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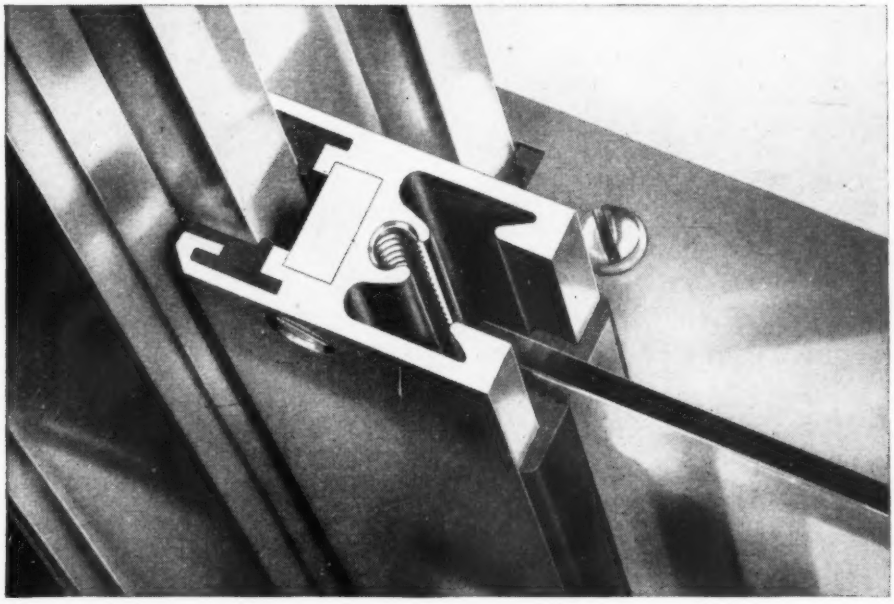
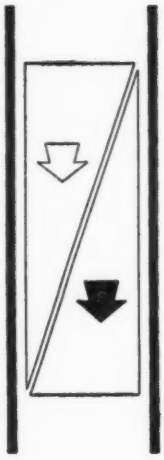
★ A glossary of abbreviations of Government Departments and Societies and Committees of all kinds, together with their full address and telephone numbers. The glossary is published in two parts—A to Ig one week, Ih to Z the next. In all cases where the town is not mentioned the word LONDON is implicit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

AA	Architectural Association, 34/6, Bedford Square, W.C.1.	Museum 0974
AAI	Association of Art Institutions. Secy.: W. Marlborough Whitehead, "Dyneley," Castle Hill Avenue, Berkhampstead, Herts.	
ABS	Architects' Benevolent Society. 66, Portland Place, W.1.	Langham 5721
ABT	Association of Building Technicians. 1, Ashley Place, S.W.1.	Victoria 0447-8
ACGB	Arts Council of Great Britain. 4, St. James' Square, S.W.1.	Whitehall 9737
ADA	Aluminium Development Association. 33, Grosvenor Street, W.1.	Mayfair 7501/8
ARCUK	Architects' Registration Council. 78, Wimpole Street, W.1.	Welbeck 2915
BAE	Board of Architectural Education. 66, Portland Place, W.1.	Langham 5721
BATC	Building Apprenticeship and Training Council. Lambeth Bridge House, S.E.1.	Reliance 7611, Ext. 1706
BC	Building Centre. 26, Store Street, Tottenham Court Road, W.C.1.	Museum 5400
BCC	British Colour Council. 13, Portman Square, W.1.	Welbeck 4185
BCCF	British Cast Concrete Federation. 105, Uxbridge Road, Ealing, W.5.	Ealing 9621
BCIRA	British Cast Iron Research Association. Alvechurch, Birmingham.	Redditch 716
BDA	British Door Association. 10, The Boltons, S.W.10.	Fremantle 8494
BEDA	British Electrical Development Association. 2, Savoy Hill, W.C.2.	Temple Bar 9434
BIA	British Ironfounders' Association. 145, Vincent Street, Glasgow, C.2	Glasgow Central 2891
BID	Building Industries Distributors. 52, High Holborn, W.C.1.	Chancery 7772
BINC	Building Industries National Council. 11, Weymouth Street, W.1.	Langham 2785
BOT	Board of Trade. Whitehall Gardens, Horseguards Avenue, Whitehall, S.W.1.	Trafalgar 8855
BRS	Building Research Station. Bucknalls Lane, Watford	Garston 4040
BSA	Building Societies Association. 14, Park Street, W.1.	Mayfair 0515
BSI	British Standards Institution. British Standards House, 2, Park St., W.1.	Mayfair 9000
BTE	Building Trades Exhibition. 32, Millbank, S.W.1.	Tate Gallery 8134
CABAS	City and Borough Architects Society. C/o Johnson Blackett, F.R.I.B.A., Civic Centre, Newport, Mon.	Newport 65491
CAS	County Architects' Society. C/o F. R. Steele, F.R.I.B.A., County Hall, Chichester.	Chichester 3001
CCA	Cement and Concrete Association. 52, Grosvenor Gardens, S.W.1.	Belgravia 6661
CCP	Council for Codes of Practice. Lambeth Bridge House, S.E.1.	Reliance 7611 Ext. 1284
CDA	Copper Development Association. 55, South Audley Street, W.1	Grosvenor 8811
CIAM	Congrès Internationaux d'Architecture Moderne. Doldertal, 7, Zurich, Switzerland	
COID	Council of Industrial Design. 28, Haymarket, S.W.1.	Trafalgar 8000
CPRE	Council for the Preservation of Rural England. 4, Hobart Place, S.W.1.	Sloane 4280
CUC	Coal Utilization Council. 3, Upper Belgrave Street, S.W.1.	Sloane 9116
CVE	Council for Visual Education. 13, Suffolk Street, Haymarket, S.W.1.	Reading 72255
DGW	Directorate General of Works, Ministry of Works, Lambeth Bridge House, S.E.1.	Reliance 7611
DIA	Design and Industries Association. 13, Suffolk Street, S.W.1.	Whitehall 0540
DPT	Department of Overseas Trade. Horseguards Avenue, Whitehall, S.W.1.	Trafalgar 8855
EJMA	English Joinery Manufacturers' Association (Incorporated). Sackville House, 40, Piccadilly, W.1.	Regent 4448
EPNS	English Place-Name Society. 7, Selwyn Gardens, Cambridge.	
FAS	Faculty of Architects and Surveyors. 68, Gloucester Place, W.1.	Welbeck 9966
FASS	Federation of Association of Specialists and Sub-Contractors, Artillery House, Artillery Row, S.W.1.	Abbey 7232
FBBDO	Fibre Building Board Development Organization, Ltd. (Fidor), 47, Princes Gate, Kensington, S.W.7.	Kensington 4577
FBI	Federation of British Industries. 21, Tothill Street, S.W.1.	Whitehall 6711
FC	Forestry Commission. 25, Savile Row, W.1.	Regent 0221
FCMI	Federation of Coated Macadam Industries. 37, Chester Square, S.W.1.	Sloane 1002
FDMA	The Flush Door Manufacturers Association Ltd., Trowell, Nottingham.	Ilkeston 623
FLD	Friends of the Lake District. Pennington House, nr. Ulverston, Lancs.	Ulverston 201
FMB	Federation of Master Builders. 26, Great Ormond Street, Holborn, W.C.1.	Chancery 7583
FPC	The Federation of Painting Contractors, St. Stephen's House, S.W.1.	Whitehall 3902
FRHB	Federation of Registered House Builders. 82, New Cavendish Street, W.1.	Langham 4341
GPDA	Gypsum Plasterboard Development Association, 11, Ironmonger Lane, E.C.2.	Monarch 8888
GC	Gas Council. 1, Grosvenor Place, S.W.1.	Sloane 4554
GG	Georgian Group. 2, Chester Street, S.W.1.	Belgravia 3081
HC	Housing Centre. 13, Suffolk Street, Pall Mall, S.W.1.	Whitehall 2881
IAAS	Incorporated Association of Architects and Surveyors. 29, Belgrave Square, S.W.1.	Belgravia 3755
ICA	Institute of Contemporary Arts. 17–18, Dover Street, Piccadilly, W.1.	Grosvenor 6186
ICE	Institution of Civil Engineers. 1, Great George Street, S.W.1.	Whitehall 4577
IEE	Institution of Electrical Engineers. Savoy Place, Victoria Embankment, W.C.2.	Temple Bar 7676
IES	Illuminating Engineering Society. 32, Victoria Street, S.W.1.	Abbey 5215
IGE	Institution of Gas Engineers. 17, Grosvenor Crescent, S.W.1.	Sloane 8266

A new design aluminium double-hung window at a new low price





Pressure on top wedge (white arrow) binds wedges together in channel, locks device in position. Pressure on bottom wedge (black arrow) permits free downward movement. The converse is true for upward movement. This is the principle on which the 'Alomega' suspension works. The wedges are accommodated in the jambs of the moving sash, and the whole mechanism is completely enclosed.

Wedge-and-wedge suspension in place of sashlines-and-weights

● *This, we believe, is a complete and challenging innovation.*

As the diagram shows, the 'Alomega' suspension, though exceedingly ingenious, is very simple. The components have a theoretical life of well over 200 years. The tests were by no means exhausted by then, but to carry them further, it was felt, would be unnecessary.

The advantages of aluminium double-hung windows have been well-known for some years, and it has probably been the desire of many architects to use them. The only difficulty has been the price.

Now, Williams & Williams have changed all that. These new windows compete in price with wood, and so can offer their advantages for nothing.

Price example for comparison : £6.0.7d. for window 3′ 8⅜″ x 1′ 11½″

This low price (the example quoted here applies to quantities over 48) is possible for two main reasons: first, because there is no expensive counterbalancing mechanism; and secondly because the jamb sections of the window can in consequence be much slimmer, which saves considerably on the amount of aluminium used.

The 'Alomega' window is completely prefabricated, assembled *and glazed* at the works. Site-costs are saved in three ways:

1 Because no painting is required—construction is entirely of aluminium.

2 Because no glazing is required—windows are despatched ready-glazed *ex works*.

3 Because next-to-no building-in is required—mounting is by wood-screws set in Rawlplugs set direct into the masonry—no sub-frame required.

The appeal to the architect and building-owner is of course considerable: appearance is excellent, and there is a heartening NIL against maintenance costs.

Standard sizes or Purpose-Made

'Alomega' Windows are available for inspection at any Williams and Williams Area Office or merchant stockist, and are made in the following standard sizes:

TYPE 14, 3′ 8⅜″ x 1′ 2½″	TYPE 24, 3′ 8⅜″ x 1′ 11½″
TYPE 34, 3′ 8⅜″ x 2′ 8½″	TYPE 44, 3′ 8⅜″ x 3′ 5½″
TYPE 15, 4′ 8⅜″ x 1′ 2½″	TYPE 25, 4′ 8⅜″ x 1′ 11½″
TYPE 35, 4′ 8⅜″ x 2′ 8½″	TYPE 45, 4′ 8⅜″ x 3′ 5½″
TYPE 16, 5′ 8⅜″ x 1′ 2½″	TYPE 26, 5′ 8⅜″ x 1′ 11½″
TYPE 36, 5′ 8⅜″ x 2′ 8½″	TYPE 46, 5′ 8⅜″ x 3′ 5½″

Owing to the method of construction, purpose-made sizes present no difficulty and are available up to a maximum of 6 ft. x 4 ft., at approximately pro rata prices—although, of course, there will be a certain delay.

WILLIAMS & WILLIAMS
Alomega

Williams House, 37/39 High Holborn, London, W.C.1. Tel: HOL. 9861

Some people talk a lot of nonsense

Particularly about this business of overpainting iron and steel and wood in places likes this... you have only got to open your eyes to see the corrosion and rust already. Trouble is... people don't know enough about these dew moist primers and anti-corrosive paints... ought to see that fellow from Evode, he'll tell 'em.

Heard about EVOLED

Here's a true Red Lead Rust Inhibiting Primer that can be applied to dew moist surfaces and overpainted in six to eight hours (even with paints containing searching solvents) and with unequalled adhesion too. This means you can get on with the job even in bad weather. No more hold ups due to lifting or bleeding through and overpaint in six to eight hours, remember!

Heard about EVODYNE

Protection is the word for Evo-Dyne Chlorinated Rubber paints. Where there are acids, alkalis, corrosive gases and salt water... forget oil and synthetic resin based paints and specify Evo-Dyne. Leading Authorities endorse the far advanced properties of Evo-Dyne... its high chemical resistance, hardness and impermeability to water. There is every reason why you should get educated about Evo-Dyne Chlorinated Rubber Paint... the only protective paint which guarantees long term and economic resistance to trouble.

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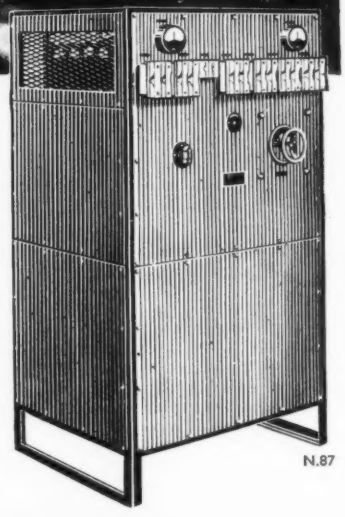

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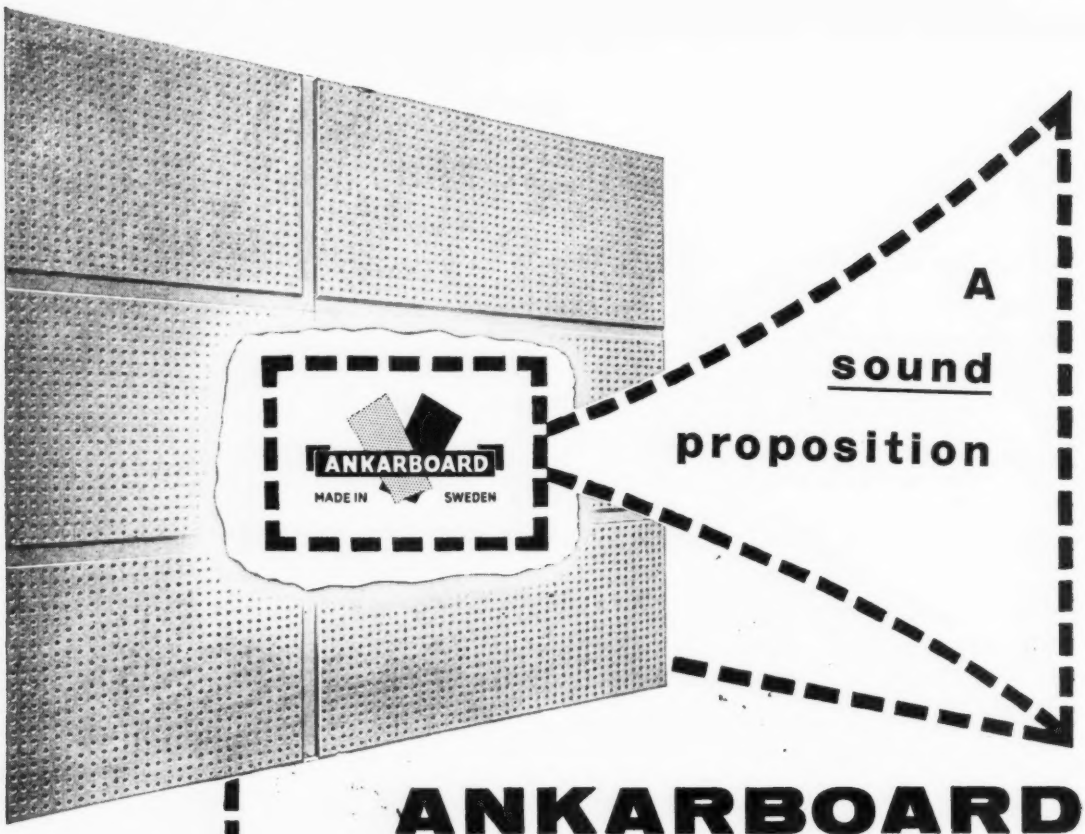

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—achieve a dual purpose in combating disturbing noise and improving acoustics. The perforated boards are specially prepared with grooved and ship-lapped joints for easy fixing and give an extremely attractive finish when in position.

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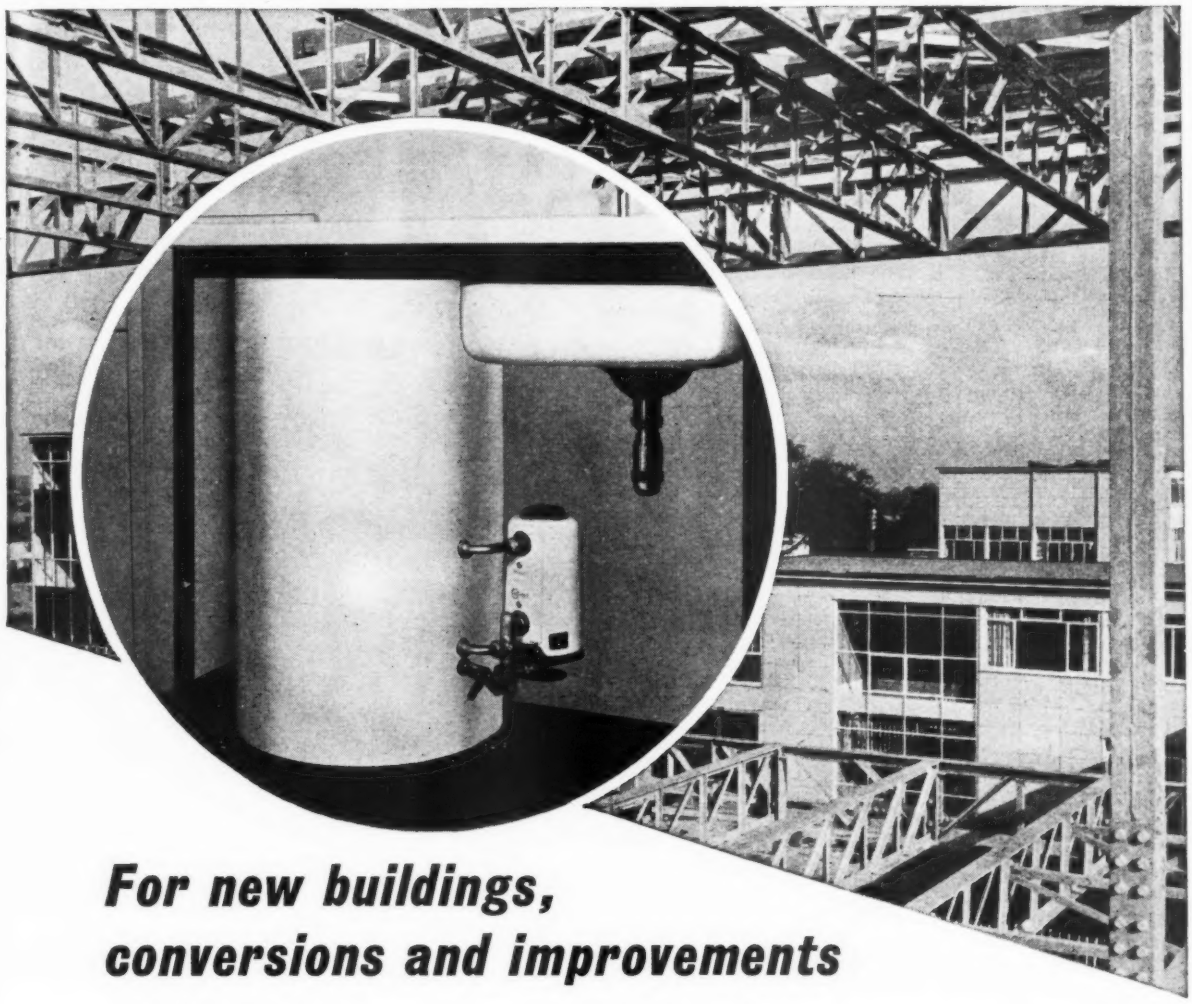

For new buildings, conversions and improvements

The universal demand for a complete hot water service which is reasonably priced, easily fitted and economical to use, has turned the attention of Architects and Municipal Authorities to the **NEW WORLD** Gas Storage Systems.

As an example, the **NEW WORLD** C.12.L. Circulator, fitted to a lagged 20 gallon cylinder, can be accommodated under the draining board in the kitchen. With the Economy Valve the user has the choice of heating 4 gallons for the sink and wash basin or 20 gallons when a bath is required. The temperature of the water is automatically controlled by the Regulo. If ventilation in the kitchen is adequate no flue is needed.

This installation is being extensively used in new houses and flats, and for the modernising and conversion of old property.

A similar type of installation is available for use in an airing cupboard, and when the house contains no ball valve cistern, a combination unit complete with cistern mounted on the cylinder can be supplied. The **NEW WORLD** Circulator can also be used as an auxiliary to an existing solid fuel system and is available in three sizes, the largest of which is suitable for schools and institutions.

NEW WORLD Storage Water Heaters provide hot water at the same temperature, Summer and Winter alike. They can normally be operated on the existing Gas and Water Services and require a minimum of maintenance.

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Another Dolcis Branch features

Rydura

Dolcis have again specified RYDURA, this time for their new Branch at Charing Cross Road, London. The illustrations show RYDURA used as a wall decoration for the main stairway of the new Dolcis shop. The use of RYDURA is in keeping with the Dolcis policy of modern and attractive shop fitting.

RYDURA, the cotton fabric with the remarkable 'PROFILM' finish, is also being applied equally successfully for seating of all kinds, and for modern furniture decoration, in hotels, restaurants, ships, shops, etc. Available in a wide range of designs and colours, RYDURA has important practical qualities. Easily applied to walls, it can be cleaned with a damp cloth, and is virtually unstainable.

Ask also to see RYJACK, the highly successful chair covering that is water repellent, rot resisting, and does not absorb dust.

Photographs by courtesy of Dolcis Ltd.

For full details of RYDURA and RYJACK, please write to:

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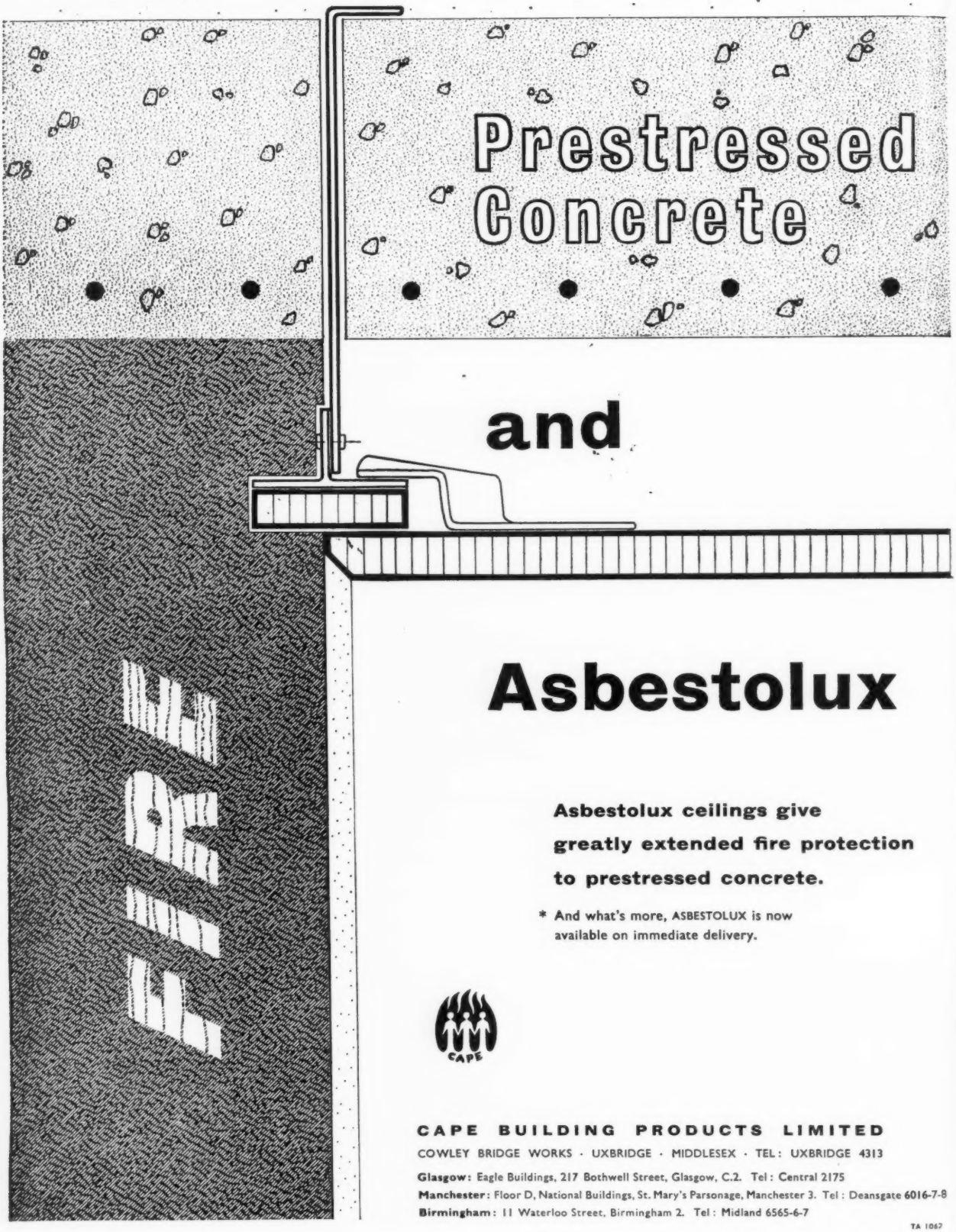

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* And what's more, ASBESTOLUX is now available on immediate delivery.

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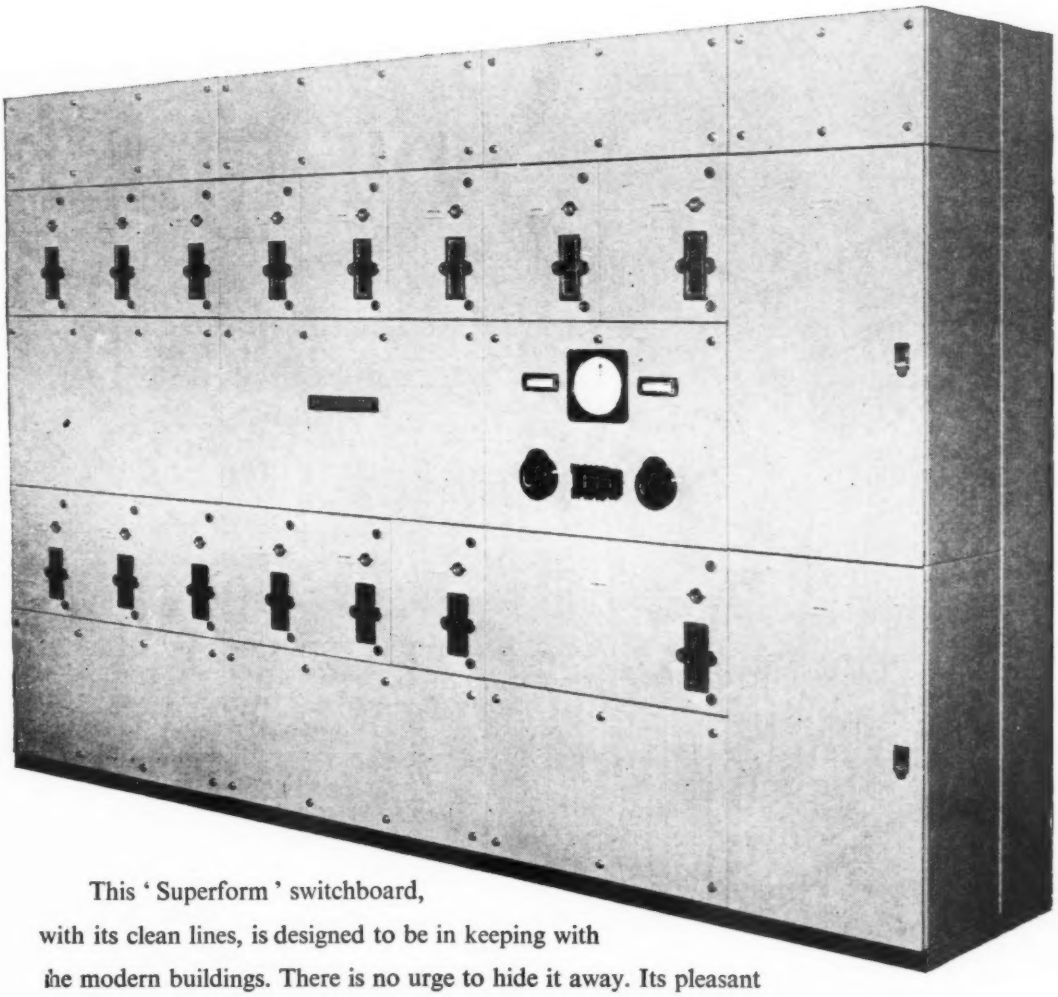
Birmingham: 11 Waterloo Street, Birmingham 2. Tel: Midland 6565-6-7

TA 1067

Not made to Hide and Seek



This ' Superform ' switchboard, with its clean lines, is designed to be in keeping with the modern buildings. There is no urge to hide it away. Its pleasant appearance invites installation in whatever position is desirable for convenience and accessibility. The smooth contour enables it to be kept clean easily.

'ENGLISH ELECTRIC'
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THE ENGLISH ELECTRIC COMPANY LIMITED, QUEENS HOUSE, KINGSWAY, LONDON, W.C.2

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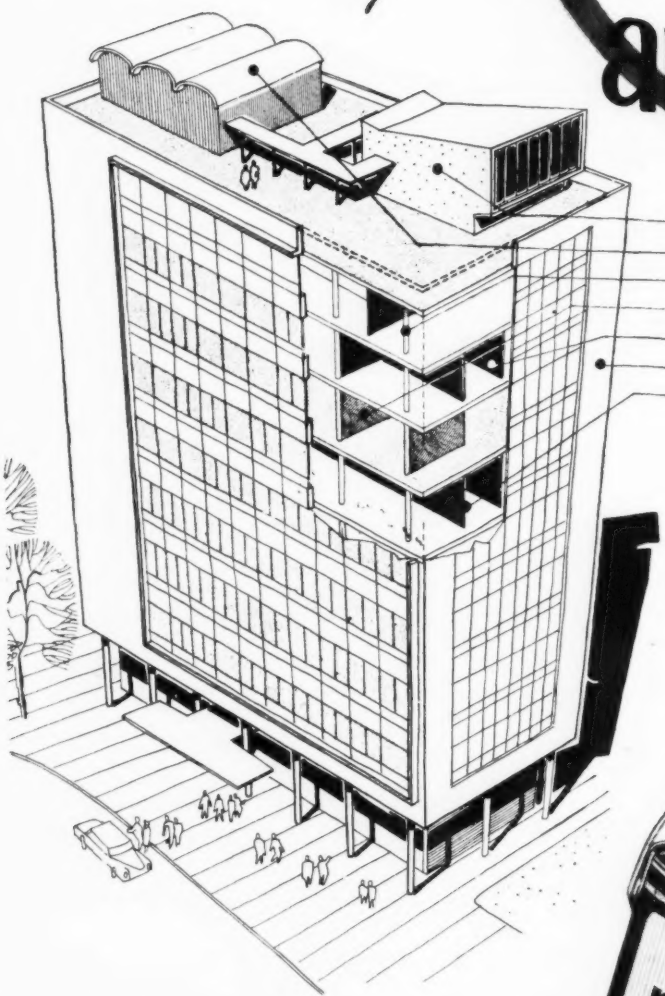

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Gone for ever are the problems of specifying different decorative finishes for different surfaces.

Now you can confidently choose one product—Cementone NUMBER SEVEN—and decorate practically *everything*, with no wastage, no wrong estimating, no complicated ordering, and no time wasted in matching or mixing. And there is a wide selection of finishes—gloss, semi-gloss, eggshell and flat—to give you unlimited scope. The range of 54 colours is quite exceptional, too; colour card and standard specifications will be gladly sent on request.

... and for a stone-like effect—and waterproofing

Cementone No. 9 waterproof stone face composition is a unique material for use on brick, reinforced concrete, cement rendering, asbestos-cement, plaster, compo board, etc., to give a natural stone finish. Available in 10 standard colours.

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The cocktail bar of the Royal Hotel, Cardiff. *By courtesy of Messrs. Ind. Coope & Allsopp Ltd.* Architect: John Morton, A.R.I.B.A., A.A. Dipl. Chartered Architect. Fitted by Gaskell & Chambers (London) Limited.

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are called to the bar

Hardwearing WARERITE Laminated Plastics can take on the hardest assignments—like the top of this new cocktail bar. Made by the London branch of Gaskell & Chambers Ltd. for the Royal Hotel, Cardiff, the top is in a colourful WARERITE 'Raindrop Red' pattern, which blends perfectly with the teak woodwork and brass setting of the bar. Long-lasting and smooth; resistant to cigarette burns; unharmed by liquids and stains; easily wiped clean and dry, WARERITE is an ideal surface for any busy bar or counter top.

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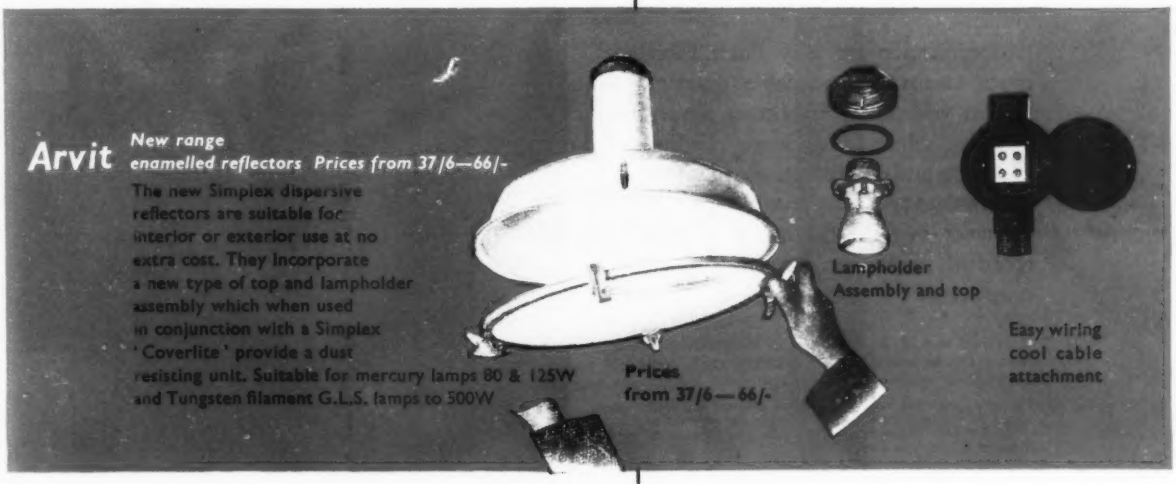

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Branches throughout Britain and agents throughout the world

A (TI) COMPANY

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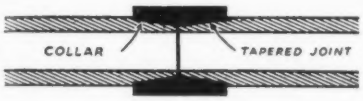
porcelain vitreous enamel is now standard for all Simplex industrial reflectors

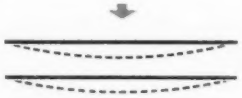
Smooth bore and clean joints

Key Pitch Fibre pipes have precision-machined taper joints which require no mortar or compounds. Combined with their smooth bore, this means a high flow factor, with no problems of root growth.



No cracking through settlement

The resilience of pitch fibre pipes ensures that no cracking occurs under normal conditions of earth settlement. This also means that bedding concrete is unnecessary.



Resistant to corrosion

Key pipes are vacuum-impregnated with pitch and are non-porous and resistant to normal effluent corrosives throughout their thickness.

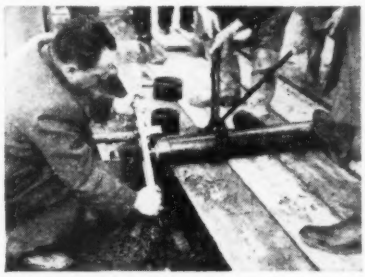
Maximum loan period

The 30-year loan period applies to all Key Drain pipes. Pitch fibre pipes have been used with notable success in the United States for over 50 years.

A piece of heavy timber is placed against the coupling and a length knocked home.

The precision-machined taper joints require no mortar or jointing compounds.

Short lengths of pipe can be cut with a coarse toothed handsaw.



A special hand lathe is used for cutting joints on short lengths.

SPEEDING THE JOB—CUTTING THE COST

500 feet an hour is a modest rate for laying Key pipes. The simple system of jointing also ensures that the pipe can be laid in all weathers. Because there is no cement to dry out, the completed drain can be tested immediately and the trench back-filled without delay. When contracts must be carried out to a tight schedule these advantages are well worth bearing in mind. On a cost plus labour basis, pitch fibre pipes are cheaper per installed foot run than other drainage systems.

THOROUGHLY TESTED AND APPROVED

British Standard

Key pipes exceed the requirements of BS 2760/56 for Pitch-impregnated Fibre Drain and Sewer Pipes. This standard was approved by the Bituminous Products Industry Standards Committee consisting of representatives of Government departments and professional bodies, including the following:

Royal Institute of British Architects
Ministry of Housing & Local Government
Ministry of Works
Institution of Civil Engineers
Royal Institute of Chartered Surveyors
D.S.I.R.— Building Research Station
Institution of Public Health Engineers
London County Council

Ministry of Health Model Bye Laws

Pitch fibre pipes are deemed to comply with M.O.H. Bye Law requirements.

Building Research Station Report

Key pipes were tested by this body and given a favourable report.

Other approving bodies

Federation Civil Engineering Contractors.

National Federation of Building Trade Employers.

Royal Society for the Promotion of Health.

Many local authorities have installed KEY pipes

Test Results

Key pipes have been subjected to detailed physical tests.

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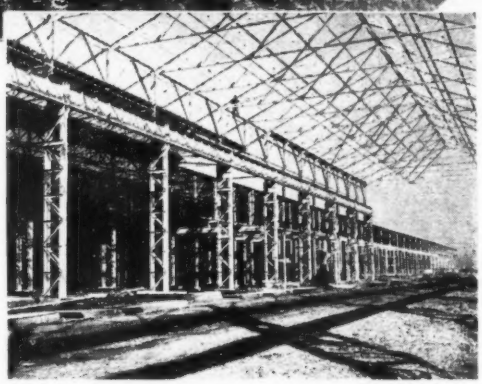

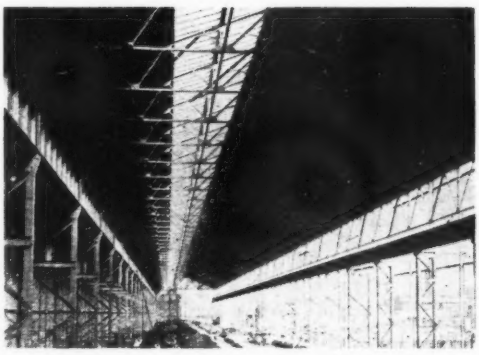

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The entire structure comprises one bay 1,260ft. long of 60ft. span and a lean-to 30ft. span 210ft. long, both of which have now been completed; also two 870ft. bays of 60ft. and 70ft. span and 720ft. long.

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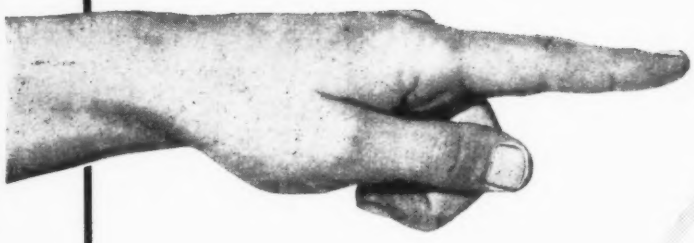

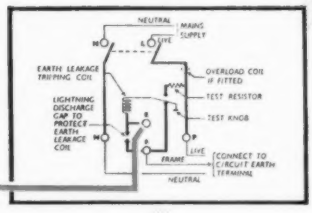

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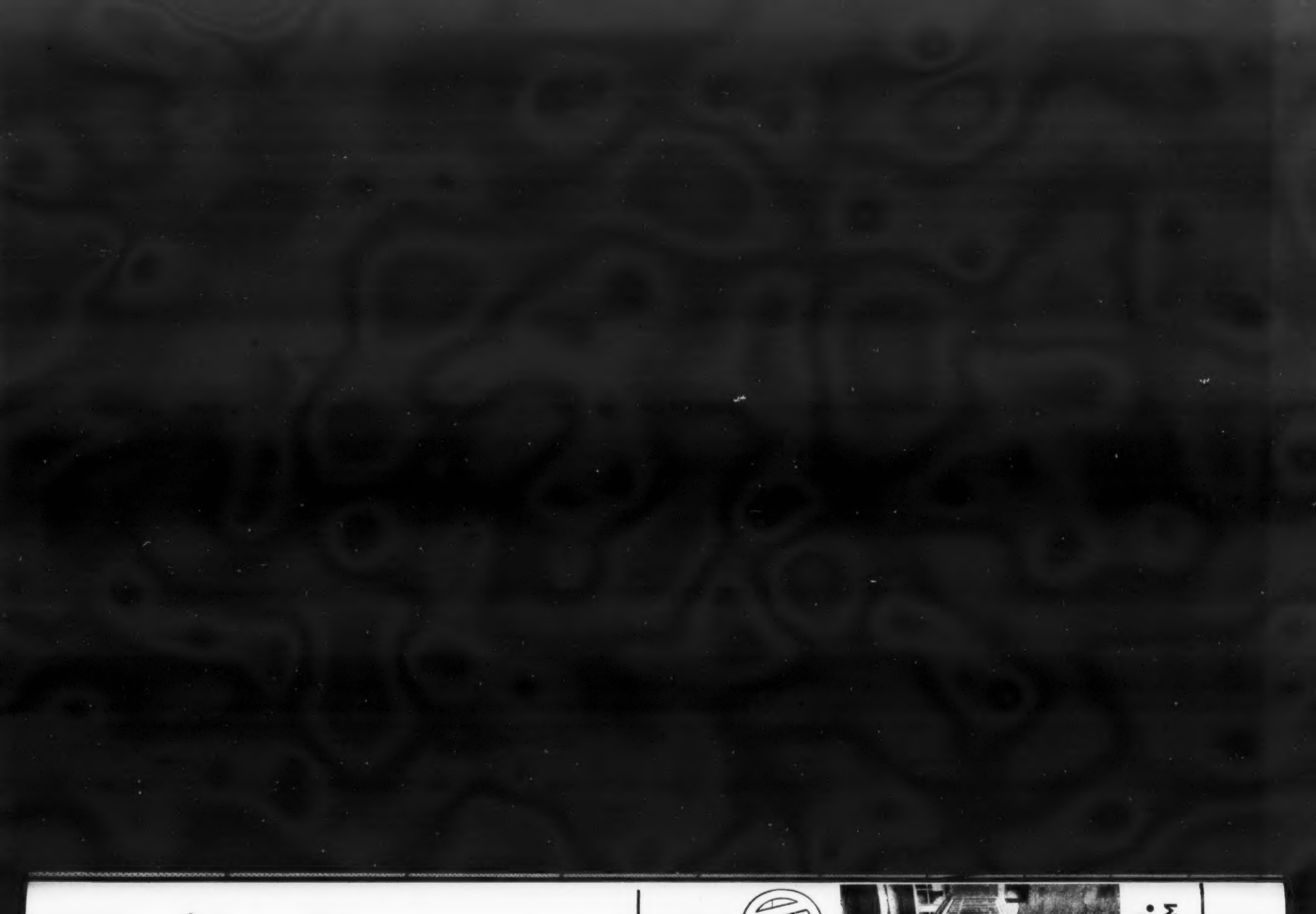

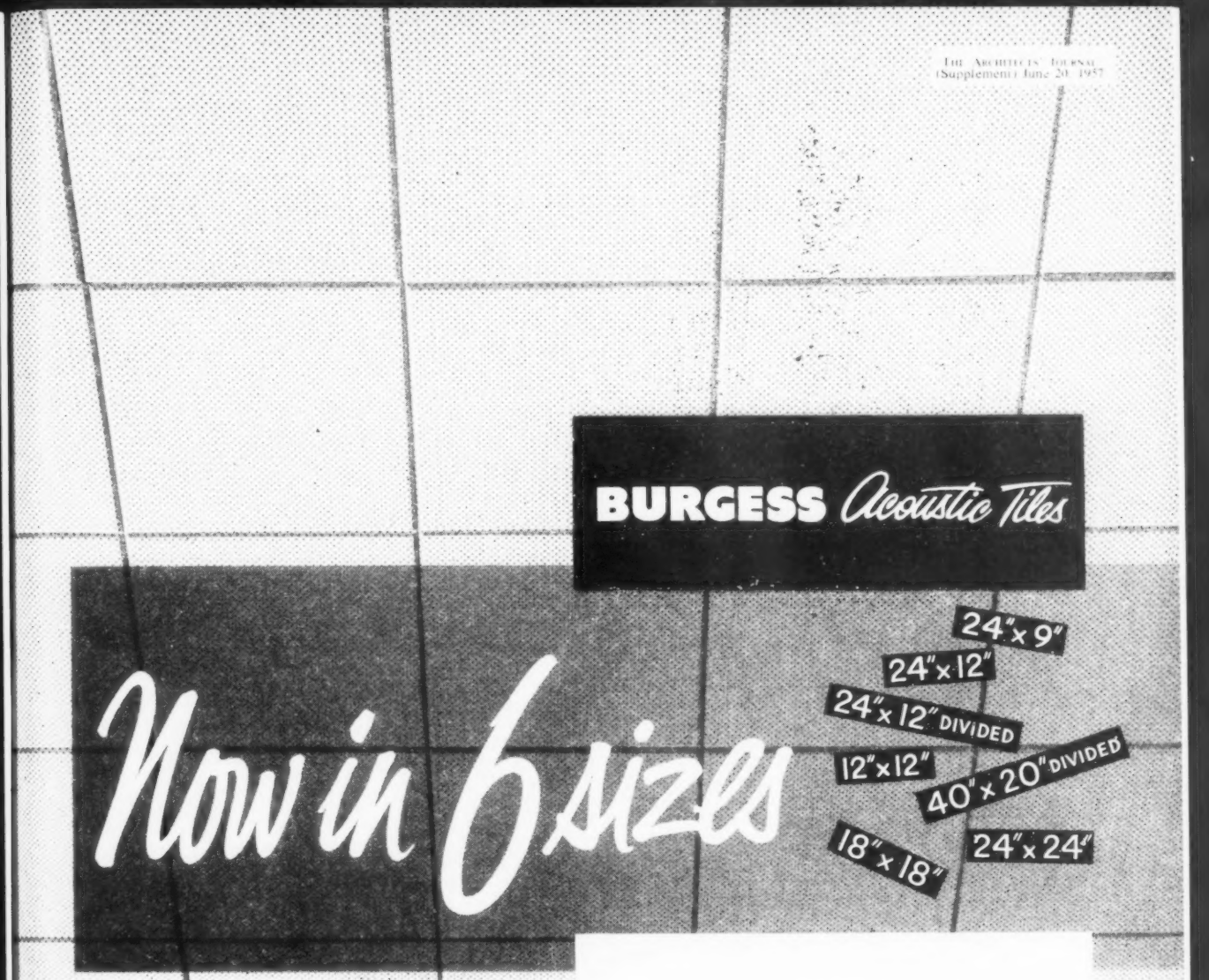

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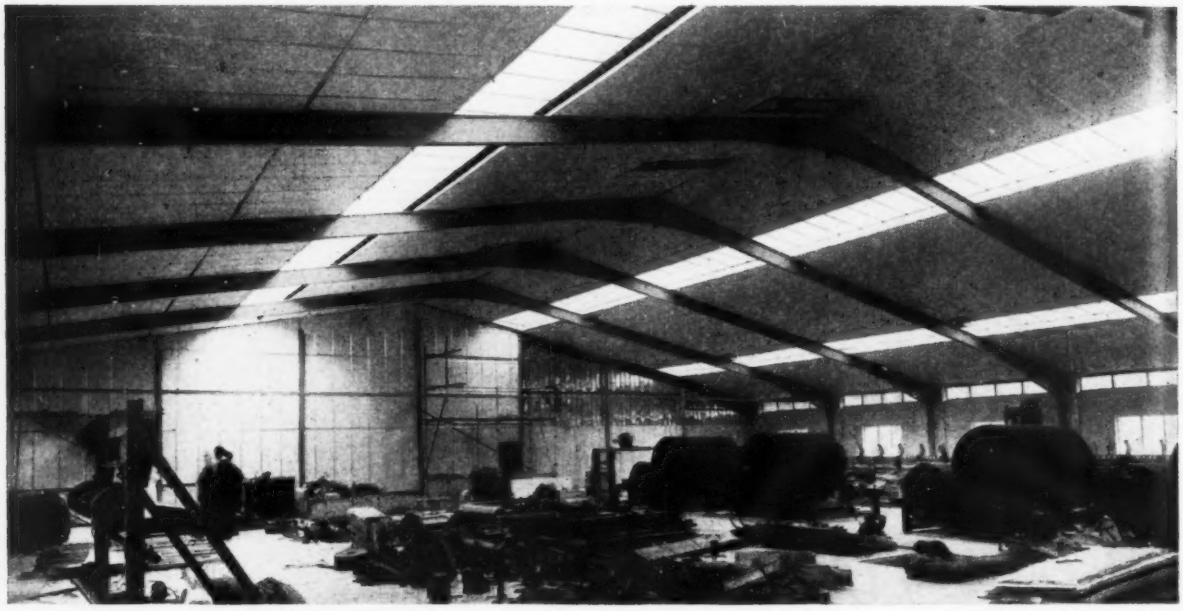

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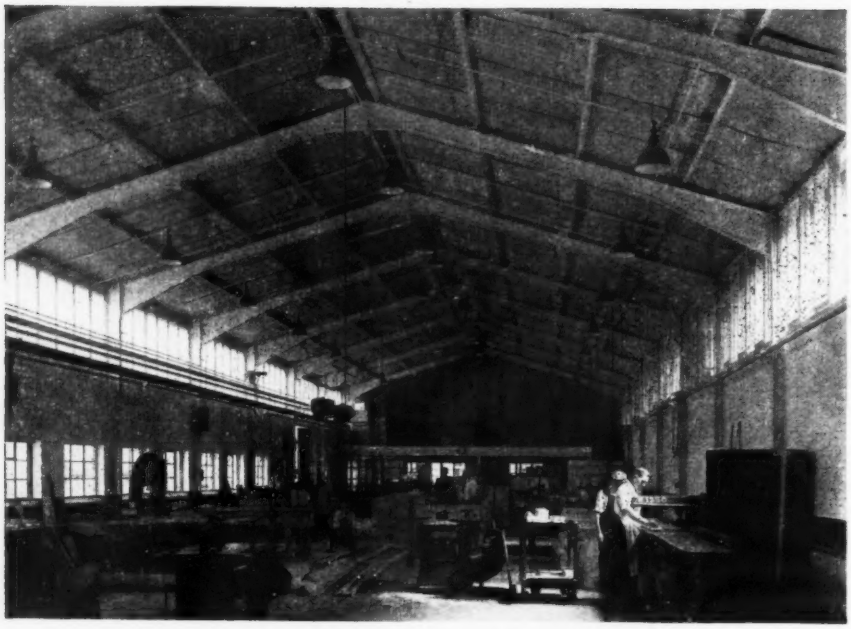

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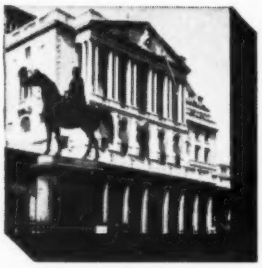

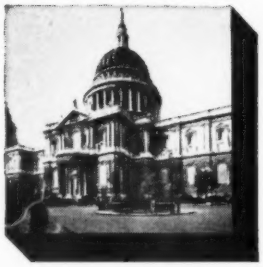

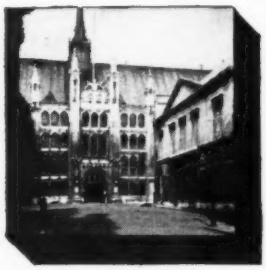

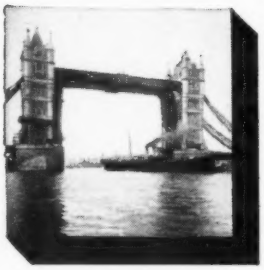

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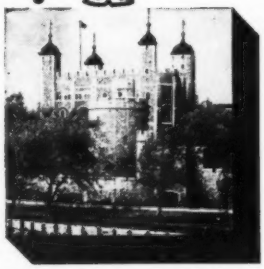

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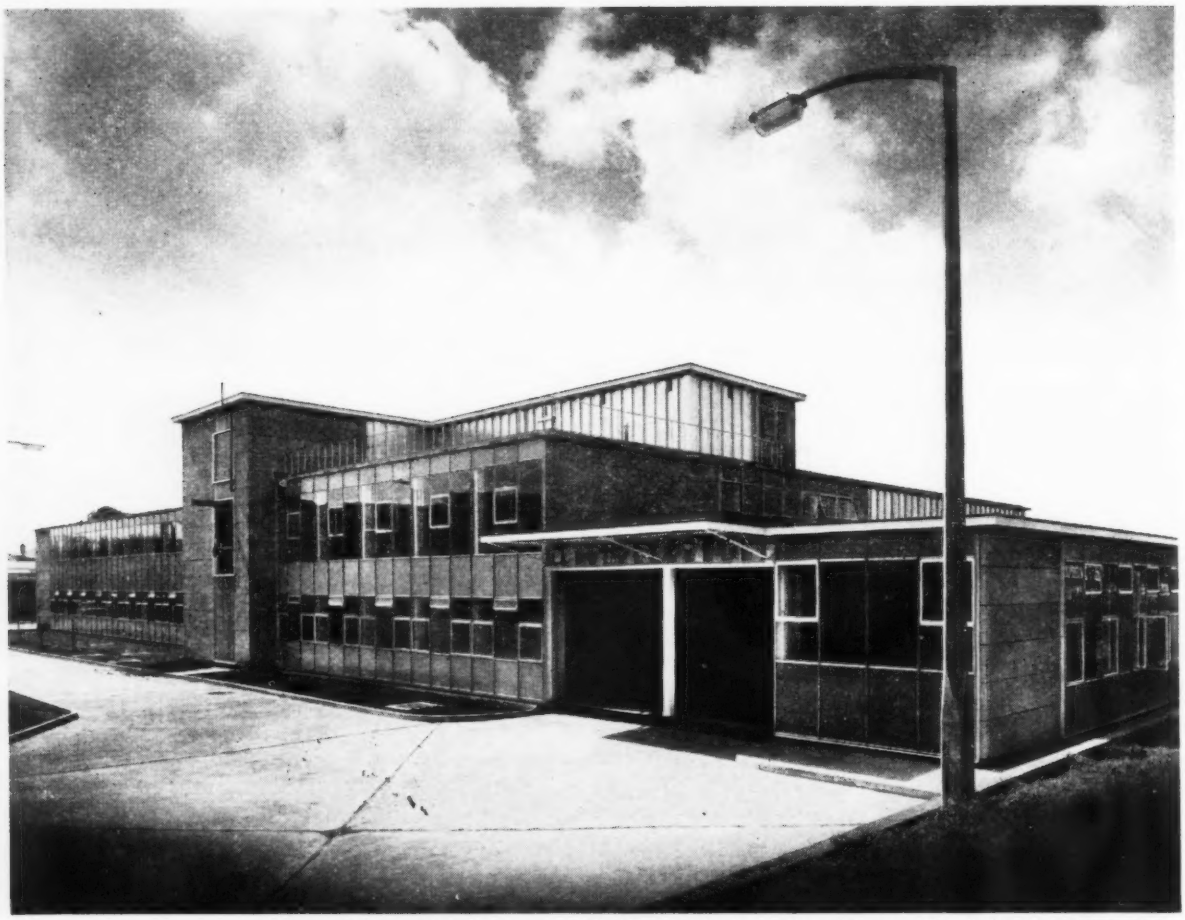

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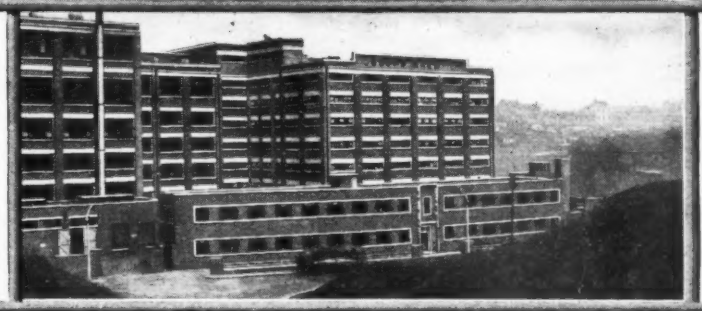

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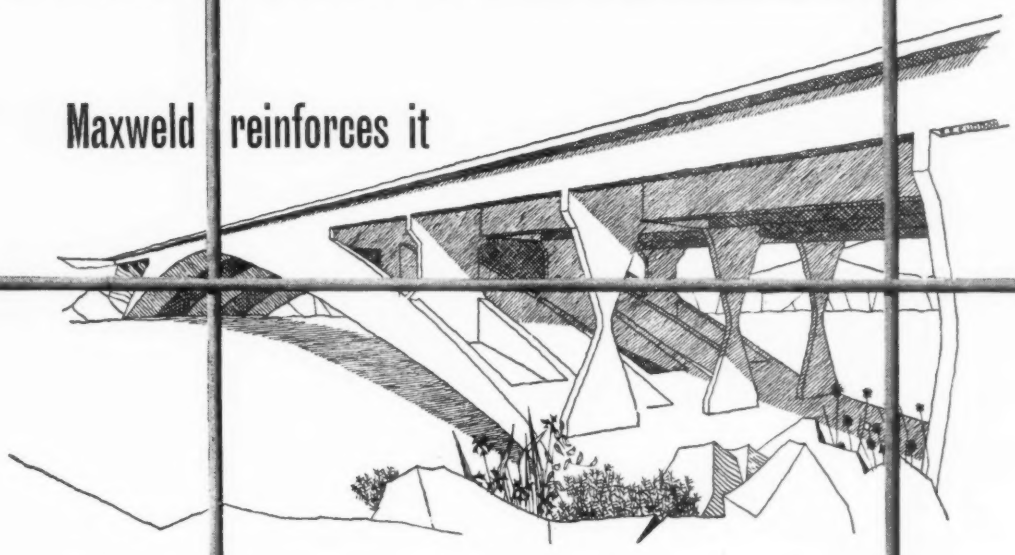

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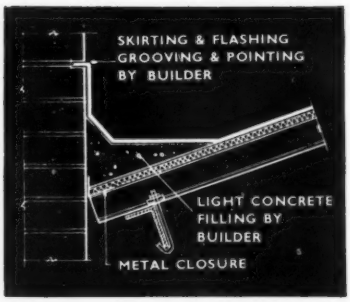

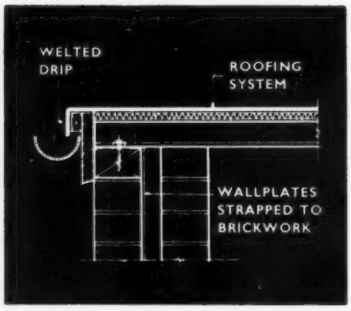

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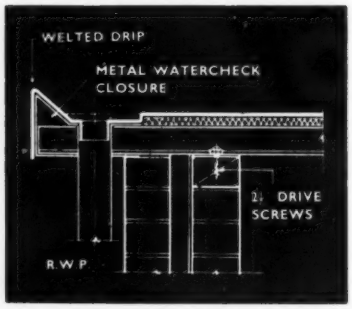

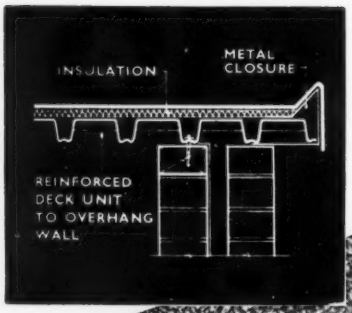

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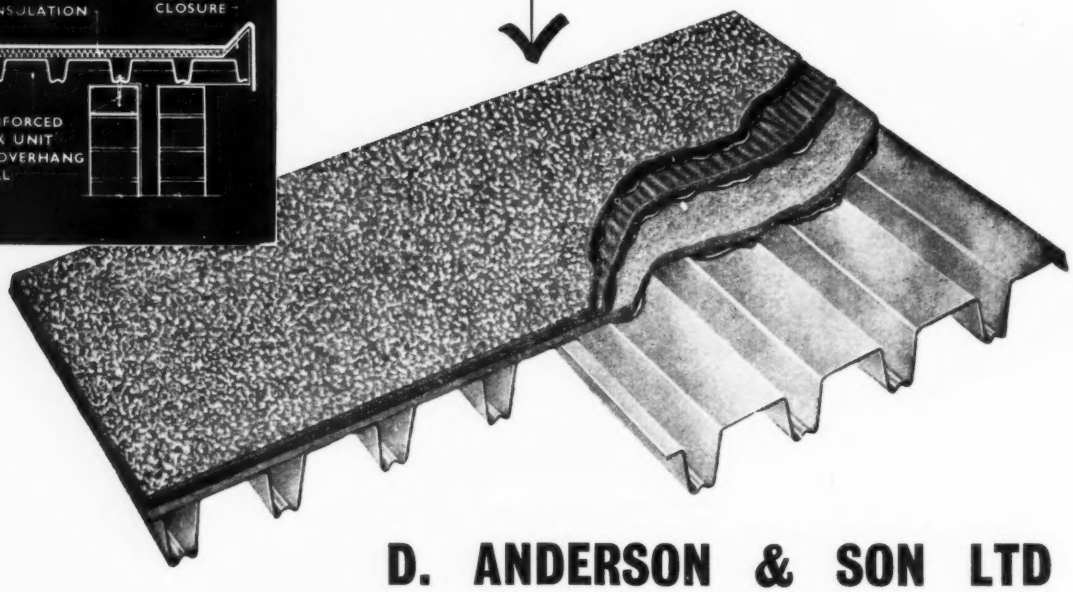

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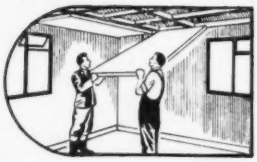

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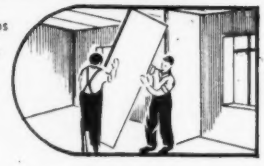

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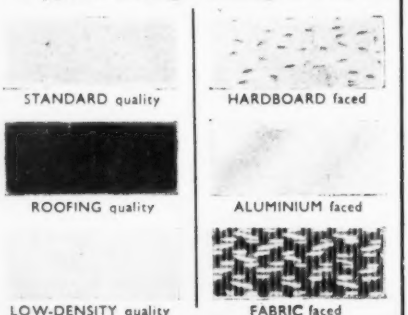

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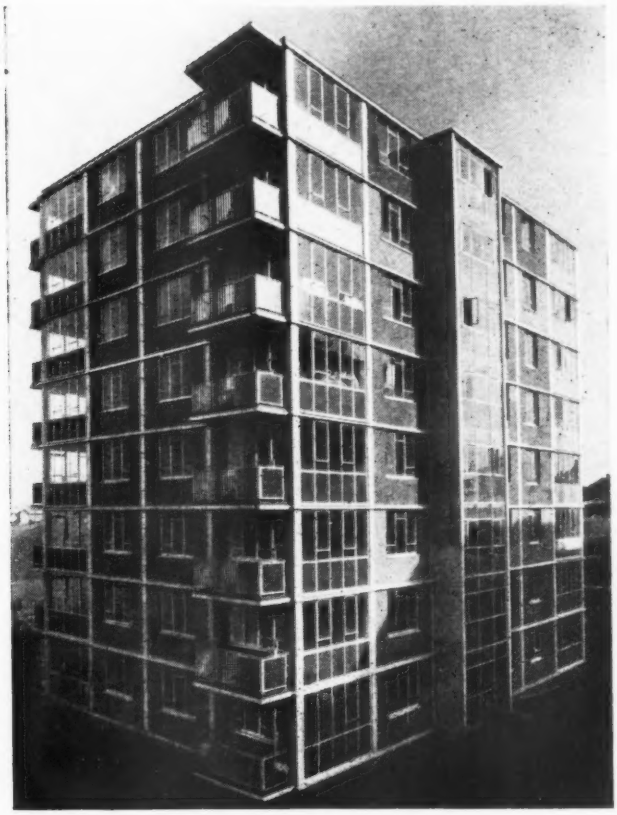

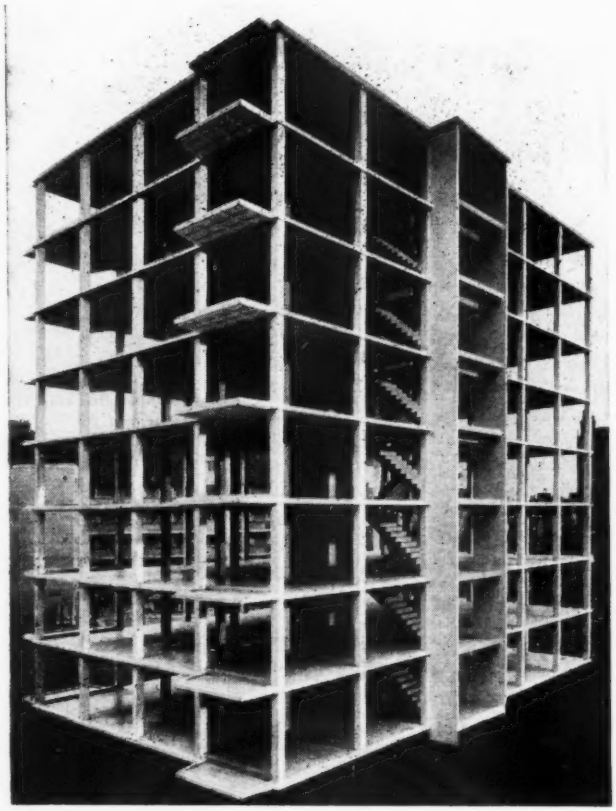

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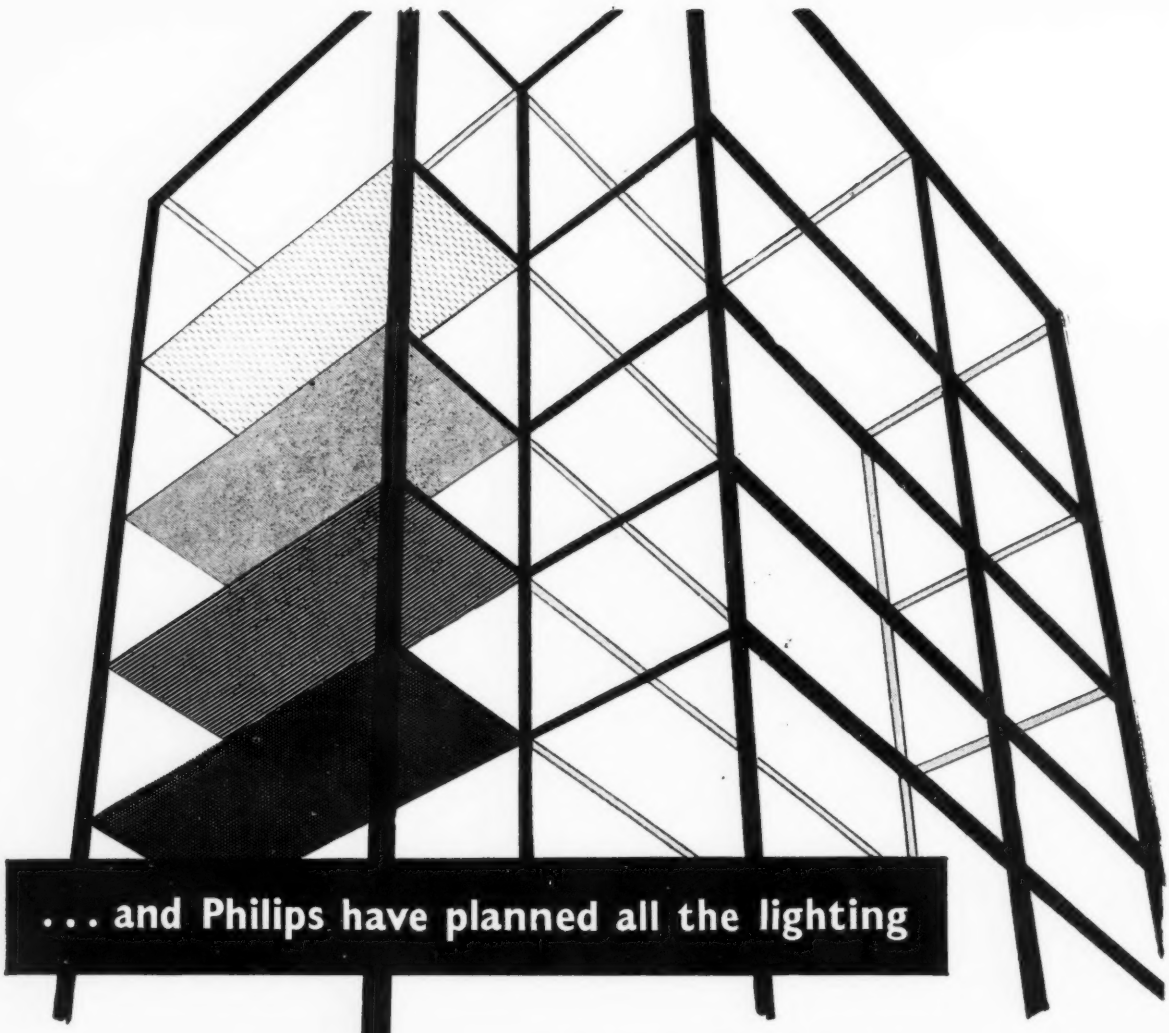

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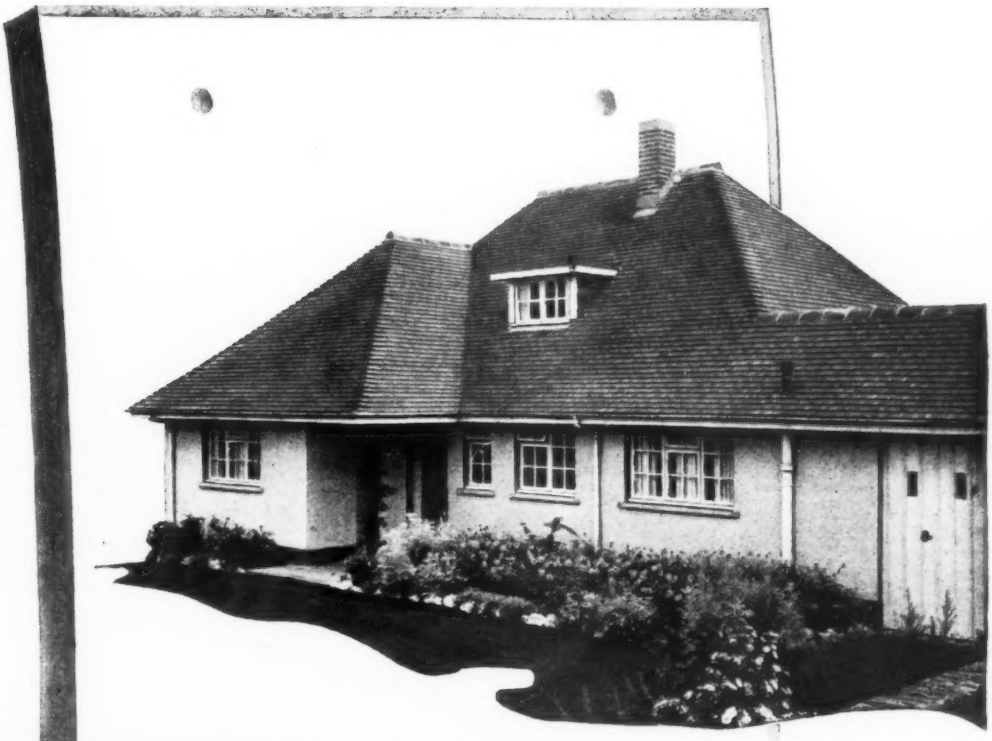
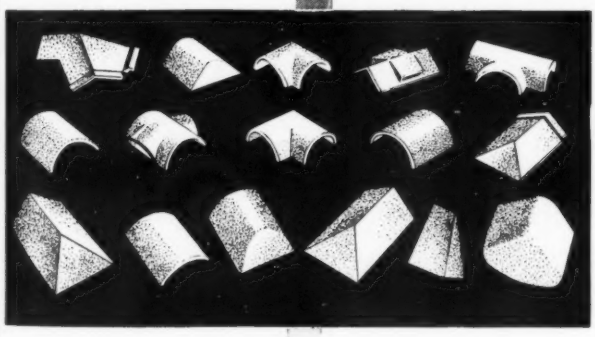


Bungalow at Higher Lane, Langland, Swansea. Designed by: Clifford G. Vaughan, Esq., L.R.I.B.A., Chartered Architect, 1 St. James' Gdns., Swansea.



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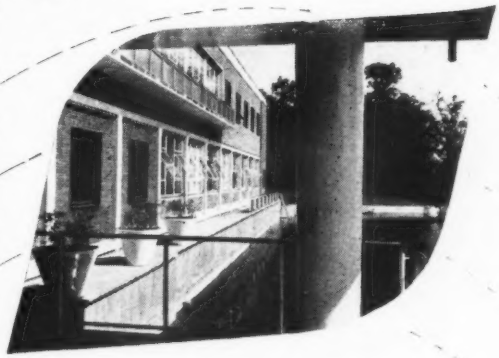

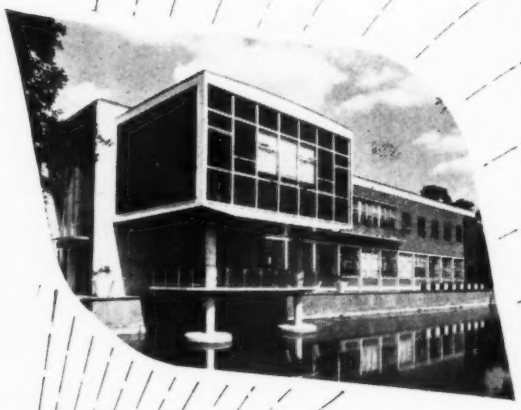

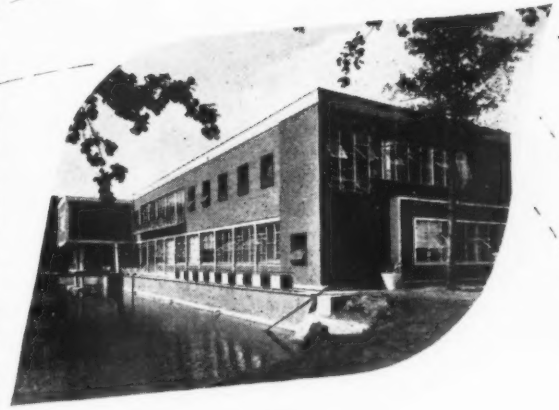

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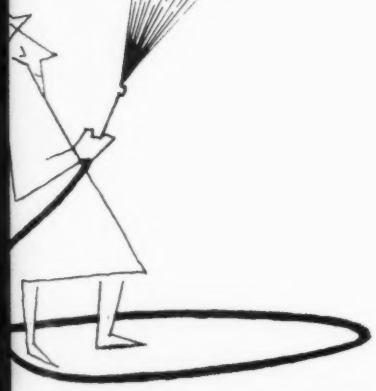

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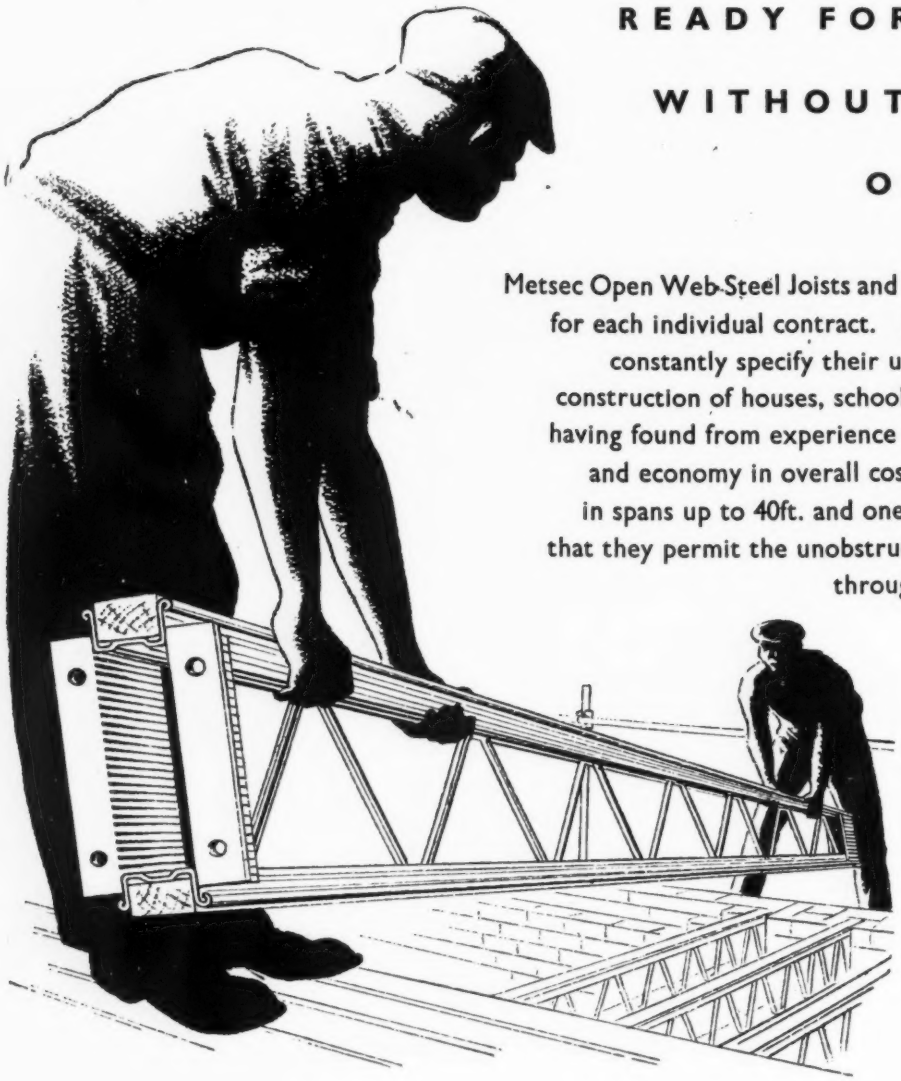

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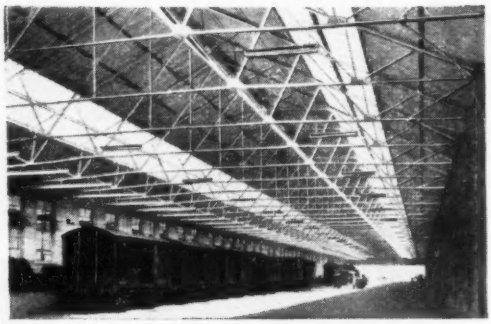
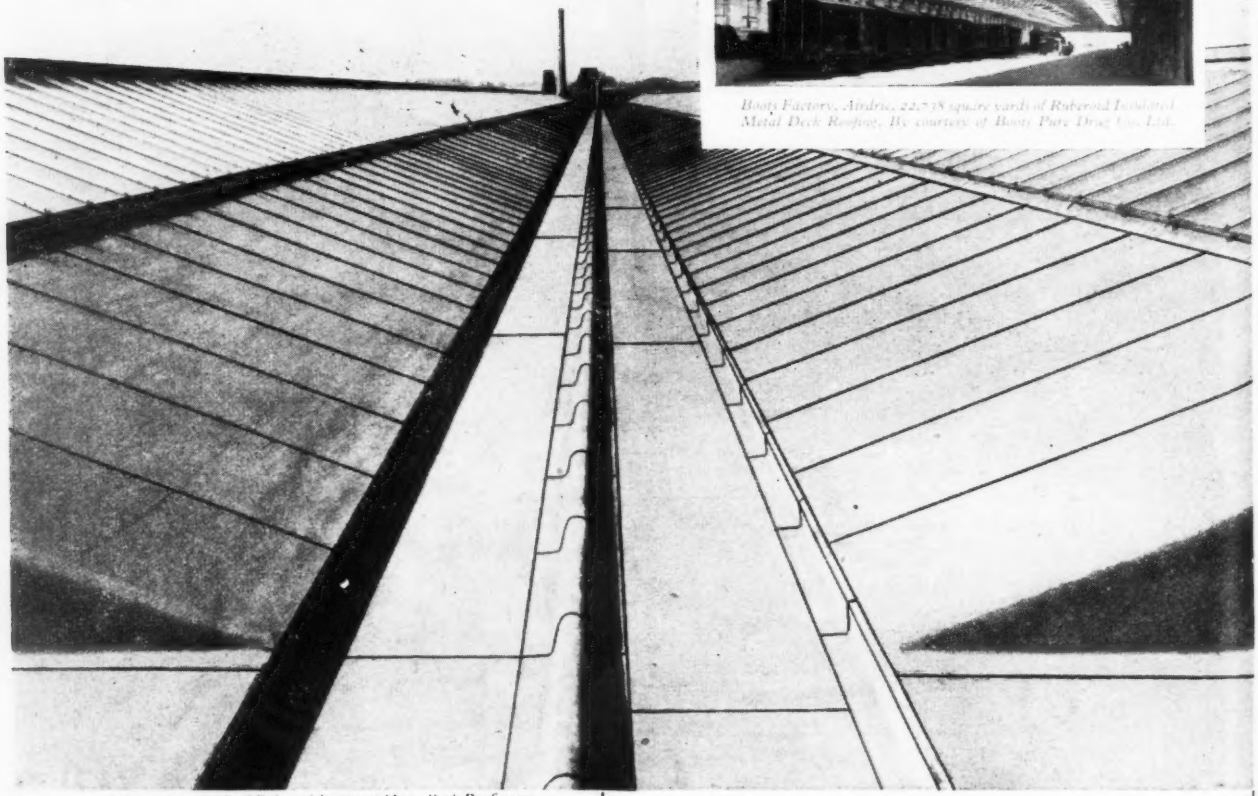


Boots Factory, Airdrie, 22,758 square yards of Ruberoid Insulated Metal Deck Roofing. By courtesy of Boots Pure Drug Co. Ltd.



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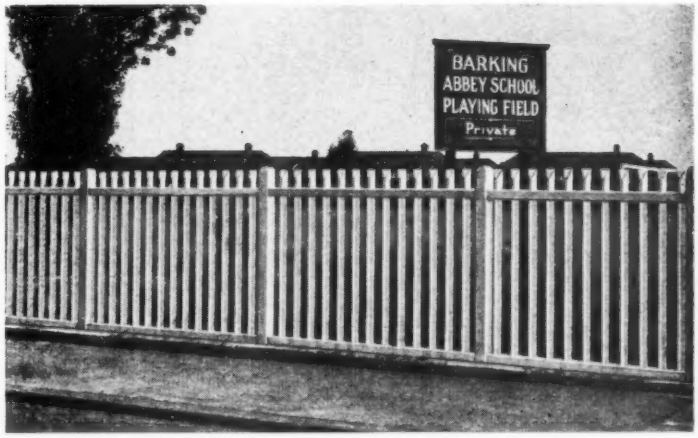

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The "Winslot" Type 3 solid unit fence is available in heights varying from 1ft. to 12ft. overall with or without trellis, thus providing wide choice of design. The panels are sand finished on one side and a pleasing and mature effect is obtained by tinting the concrete a sepia shade of brown colour.
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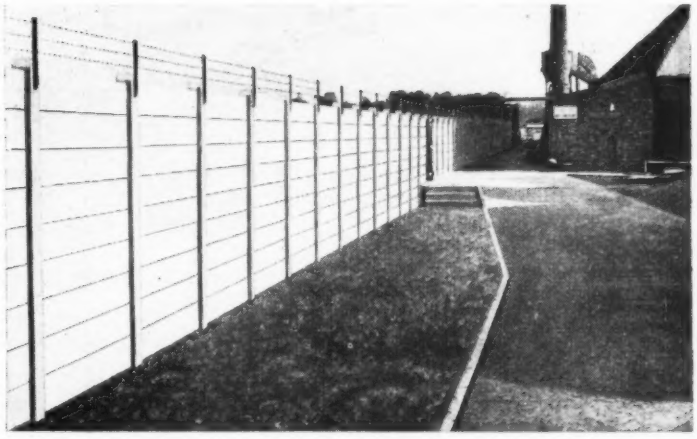

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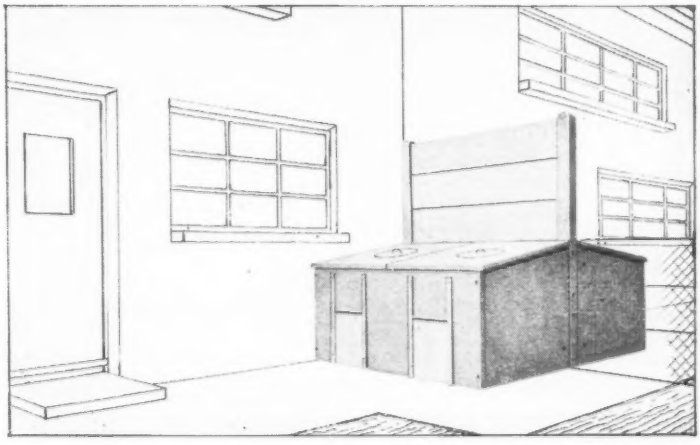

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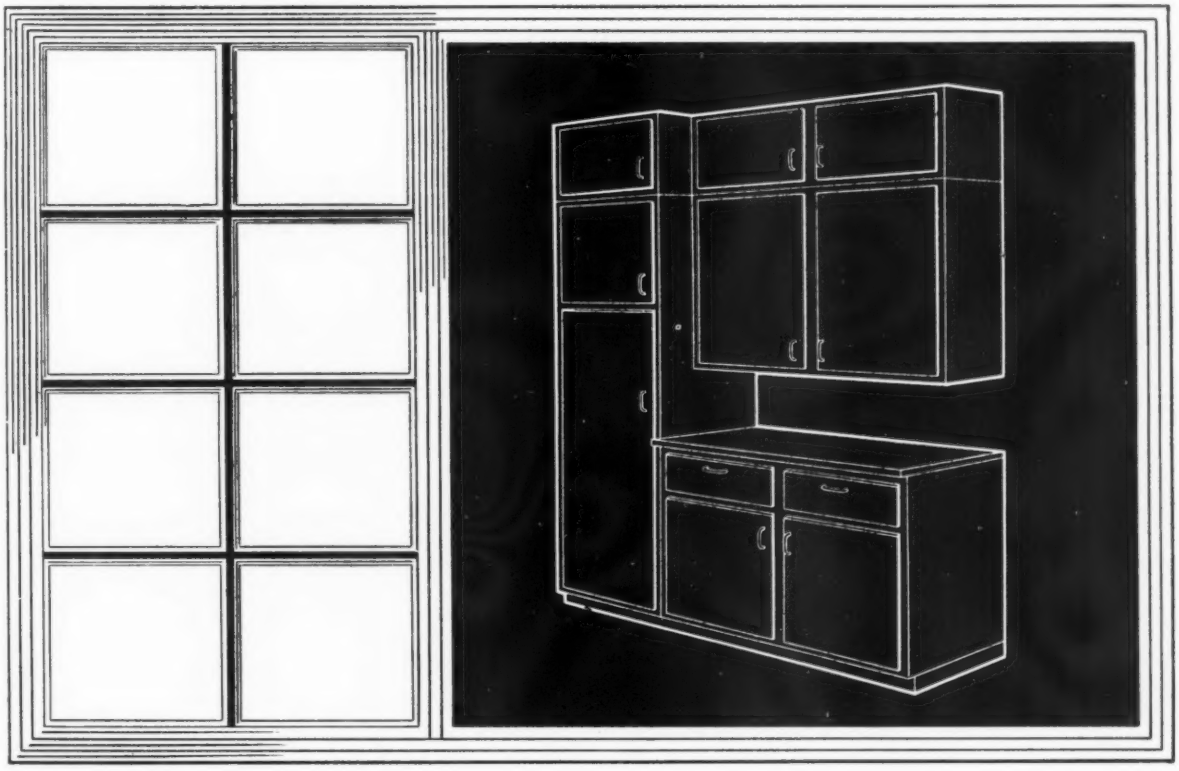

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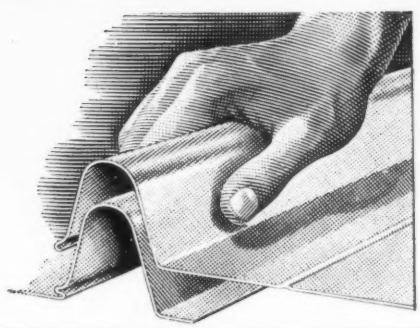

One of a number of blocks of maisonettes at the L.C.C. housing development, Picton Street, Camberwell, S.E.5. Architect to L.C.C.: Hubert Bennett, F.R.I.B.A. Contractors: John Laing and Son Limited. Snaprib used here has grey "pyluminised" finish.

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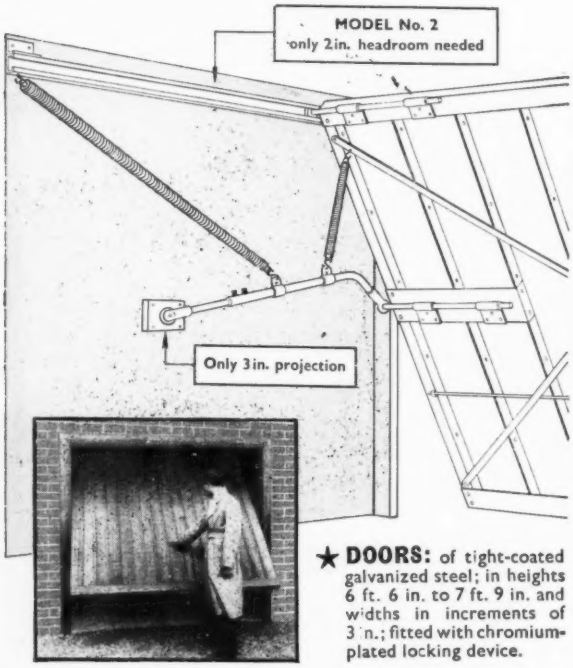

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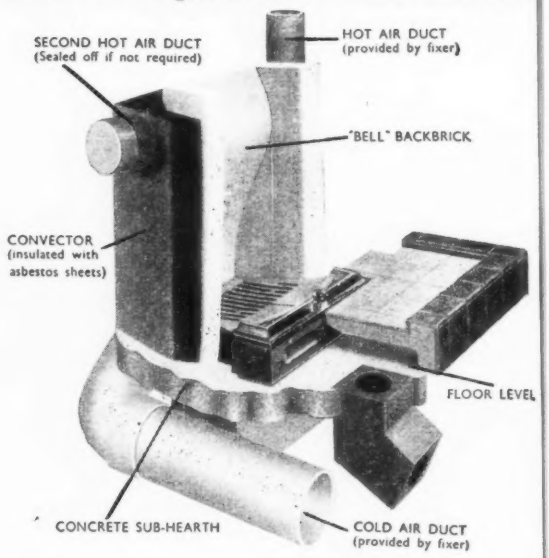

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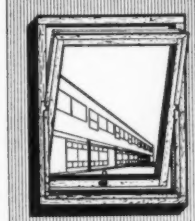

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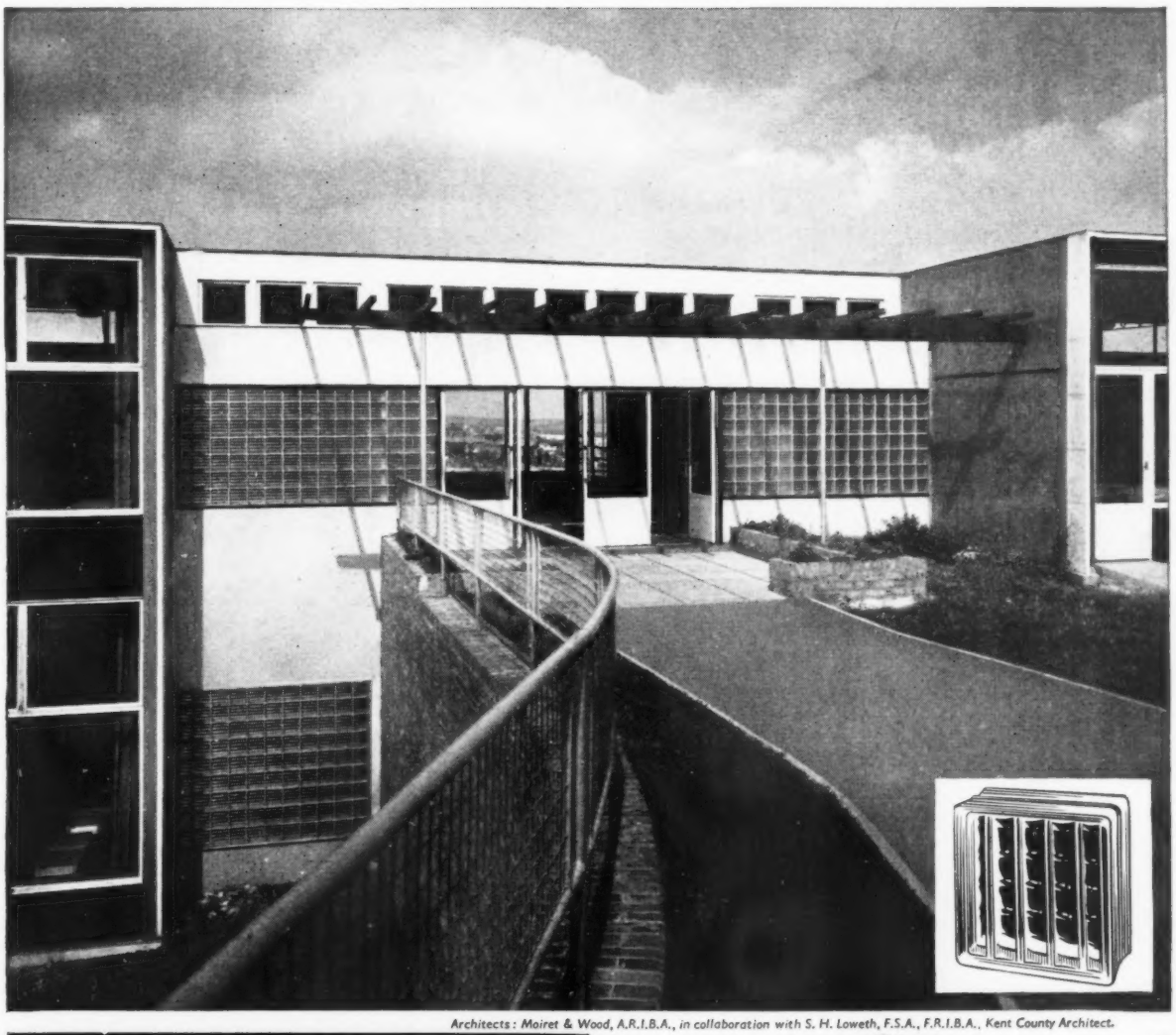

Architects: Moiret & Wood, A.R.I.B.A., in collaboration with S. H. Loweth, F.S.A., F.R.I.B.A., Kent County Architect.

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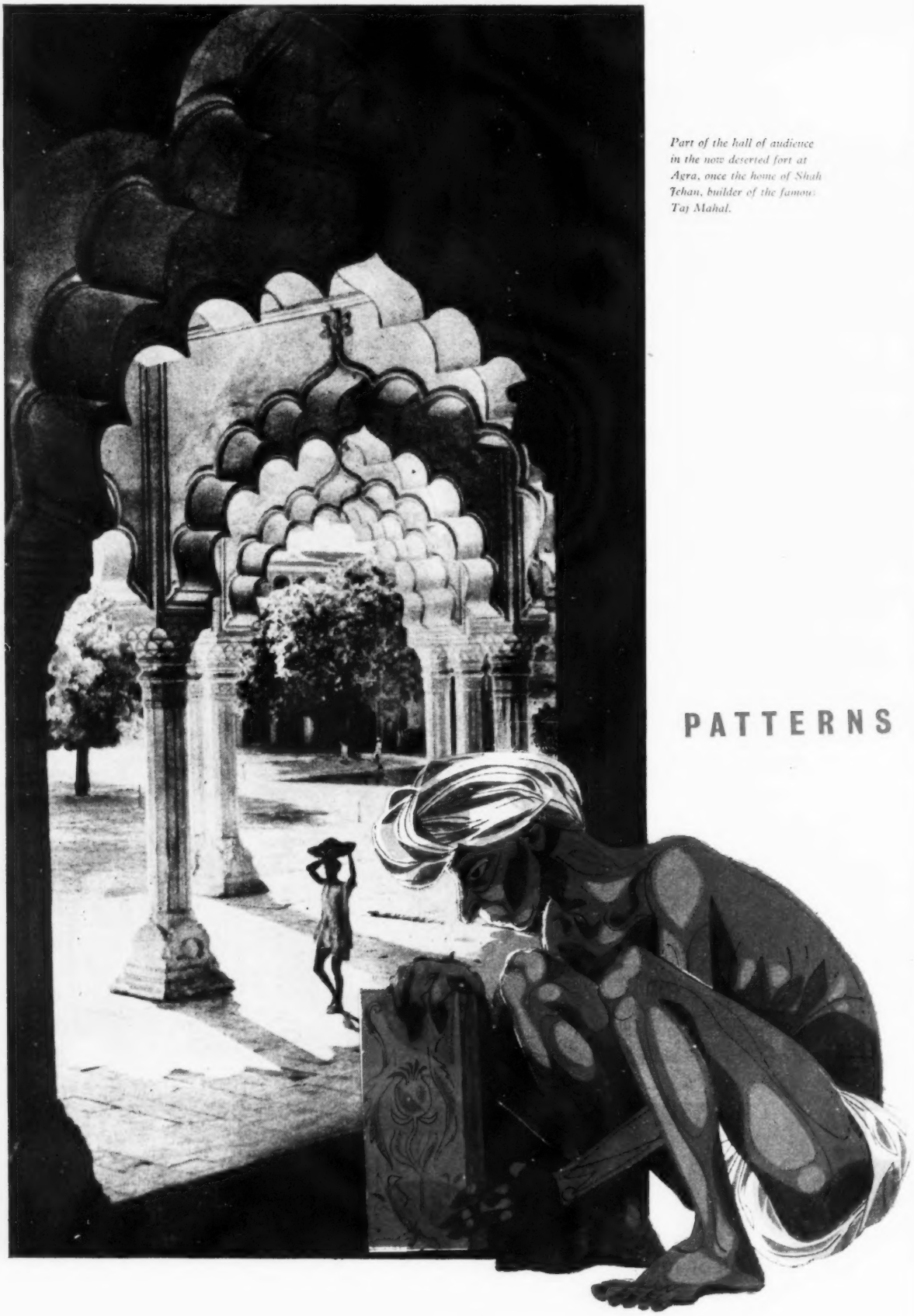

Part of the hall of audience in the now deserted fort at Agra, once the home of Shah Jehan, builder of the famous Taj Mahal.

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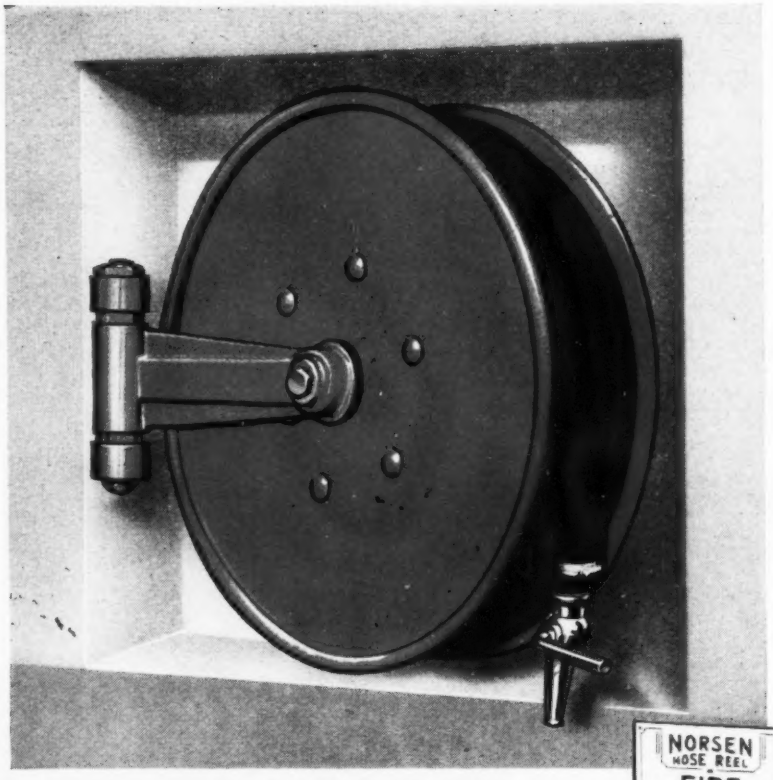

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House of Design and Productivity, 1957

The Festival of Women may be an attempt by the various women's organizations to rally support with the aid of modern commercial techniques, or merely a bright idea of Fairs & Festivals Ltd. to cash in on the present fashion for all things Suffragette. Whichever it is, there is no doubt about the purpose of its House of Design and Productivity. An accompanying booklet makes it crystal clear that its purpose is to advertise 72 building components, 9 Trade Associations, and 64 manufacturers of furniture and interior fittings.

*

The house is sponsored, first by the British Productivity Council, secondly the Council of Industrial Design, thirdly by the Royal Institute of British Architects. Any member of the RIBA who lent his name in order to advertise a building material would surely be sharply rebuked. A sponsor is one who "enters into an engagement on behalf of another" or since 1931 "a business firm who pays for a broadcast programme which introduces advertisements of a commercial product." We do not have sponsored television in this country, so what engagement

The south-west elevation of the Festival of Women's house.

This is the House of Design and Productivity shown at Wembley this month as part of the Festival of Women. The house has been sponsored by the RIBA, the COID and the British Productivity Council. Left, the ground and first floor plans. Above left, the dining room and right, the fireplace. This house is here the subject of a critical review by architect Diana Rowntree, starting on the previous page.

has the RIBA entered into on behalf of this house?

*

What sort of a house is it, and what does it claim to be? According to the booklet, it is a "house of new ideas, new materials, and new methods." The idea: that the principle of mass-production which is being belatedly applied to the building trade is not being applied in the right way. Prefabrication should not aim at a standardized end-product, like the pre-fab house, but at standardized components capable of being assembled with infinite variety. Although a sound idea this has not been a new one for at least 20 years. The structure of the house is brick, timber, and concrete, so I take it that new materials refers to plastic finishes, though these do not outnumber the traditional ones, slate, brass, wallpaper, and wrought iron. About the wide-radius aluminium cove that gives the rooms a nice Edwardian flavour that would otherwise be lacking, the less said the better. Certainly if you overlook concreting and the weight-bearing brick walls, the house is in dry construction, which can usefully be encouraged in this country.

*

"The key to productivity" we are told "is standardization and simplification." It is not, however, the standard units of this house that are simple (on the garden elevation alone there are seven sizes of window pane); it is the plan. Simplicity in planning is a great and rare virtue, which cannot be over-praised. Unfortunately this simple plan is on a lordly scale. The innocent viewer will ascribe the effect of spaciousness to architectural wizardry when it is merely due to large size. Anyone who can afford to buy a site with 43-ft. frontage can also afford large rooms. *House & Garden's* current House of Ideas, a commercial project, has a frontage of 20 ft. 2½ in., and, in Hampstead, Amis and Howell designed terrace houses of real architectural merit on frontages of only 12 ft. Should the RIBA be encouraging us to nibble faster at our dwindling building land? Then, if not short of space, why not have a spare bedroom? Two excellent things about this house are cupboard space and the little yard cunningly planned for dustbins and the things that gather around kitchen doors.

*

The simplicity prevailing at the planning

stage has been jettisoned on elevation. The house is the type whose brick side walls support the floors and curtain cross-walls. But here the SW garden elevation is not the usual simple alternation of timber and glass bands. The living rooms stretch right across the ground floor, yet the elevation differentiates its functions as though it were two rooms. There are two bedrooms above, but do they in fact require contrasting window treatment? The larger bedroom is dignified with a feature from the 1880s, the ornamental balcony too narrow for use with, believe it or not, doors that actually open to lure you out on to this precipitous ledge. The saddest thing about this elevation is the use of Western Red Cedar, not in the pleasant tradition of weather-boarding or vertical boards, which weather from tan to silver, but in flat panels whose surface is moulded into a minute texture like a plastic cloth.

*

The great give-away is the chimney breast, whose immense size fails to achieve the Lloyd Wrightian splendour presumably aimed at. What is a solid chimney breast 10 ft. long and fair-faced *both* sides doing in a prefabricated house with underfloor heating? The hearth is not even a ritual centre, this position being conceded to the TV receiver. This machine, a really fine design, deserves better than the shocking little niche made, not to *fit it*, but a couple of inches larger to ensure a good view not only of the screen but of the large and clumsy plug that stands beside it. After this pathetic shot at the built-in, the fraying mitres of the over-mantle and staircase balustrade cause no surprise. This is the kind of detailing that discredits "modern" design with good craftsmen, professional and amateur. It is baffling to find them alongside the beauty and worth of the slate windowsills and the lovingly detailed surround to the sink. Here, plastic material is skilfully used to prevent water from dripping on to the feet or down the walls.

*

The dining table and chairs are very good indeed. Almost the whole of the rest of the interior is a striking demonstration of what happens if you close your eyes and expect *Design Review* to furnish for you. To anyone who has seen the size and scope of *Design Review*, whose gigantic task is to raise the whole field of industrial design from abysmal levels, this would be immediately obvious. All the same, one hopes devoutly that the handles on the doors of the bedroom cupboards are not included in the *Review*. Too many vested interests spoil a building. It is clear that at the House of D. & P. the architect has not been in a position to resist commercial pressures. This is quite a usual position for an architect to find him- or herself in. But surely the RIBA would do both itself and the public a greater service if it only sponsored projects where the architect managed to keep in control, and to produce a distinguished design?

DIANA ROWNTREE

Editors

MOTORWAYS TO MOVE THE EYE

"A TOTAL landscape designed to please the eye, as well as to move the traffic, a landscape to move men's spirits, as well as automobiles; to lift the heart as well as cut the accident rate. Only when this attitude becomes dominant among all highway planners can we be sure the new 41,000 miles of highways will be put to their highest and best use." The high figure gives the clue to the source of this statement: it is the concluding remarks of Grady Clay, real estate editor of the Louisville Courier-Journal, from the recent address to the American Society of Planning Officials. But the sentiments are familiar, and the reason is simple: Mr. Clay is conducting an attack on Subtopian road standards in the United States in a manner similar to Ian Nairn over here. He demands that the highway planners use their legs, as well as maps and aerial photos for picking the new rights-of-way, in order to find out in detail what the new roads will do to townscape and landscape. He also wants advertisements removed, and the roadways hidden by a sound-deadening earth barrier or berm in residential areas; he wants them to carry the utilities, to save administrative and other costs; (Dame Evelyn Sharp has ideas on this, at last, see ASTRAGAL this week) and hopes that the new roads could be used to create lakes and fish hatcheries, help soil conservation and go hand in hand with highway planning and afforestation. And lastly, he advocates building expansion joints into road surfaces so as to amuse and warn the traveller. Instead of the monotonous beat of evenly-spaced joints he suggests a varied rhythm with sudden double-beats to waken half-asleep drivers to curves ahead.

Over here we are only just beginning a new road programme. In size it will not compare with the U.S. Federal programme of 41,000 miles. But is it too much to hope that it will compete in quality? There are signs that our new roads will merely be the routes we should have developed in the 'thirties. Now, 20 years later, it is possible that we require a radically new approach.

FLOWING WITH CLIENTS AND MONEY

A talk at the Architectural Association, Bedford Square, by Saarinen last week served only to emphasize the gulf between American technological progress and common practice. Asked to name important major post-war modern buildings in this country one starts, and ends, with the Royal Festival Hall. It is a little easier to produce a list in America, and Saarinen has contributed a number of buildings which would possibly be included in that list: the General Motors Technical Centre, the chapel and auditorium at MIT, for example.

Yet when it came to buildings demonstrating value for money, or development work, this country would put up a very much better show. It is, of course, appropriate that a young, still undeveloped country, bursting with riches and know-how,

should have designed, and erected, staggeringly expensive, technically complex, and aesthetically interesting buildings. The Victorians over here were, and did, just the same. But it is disappointing that an AA audience could sit spellbound before a brilliant display of polished one-off jobs and leave it to a Manchester architect-lecturer, Dr. Howarth, to ask if leading American architects were developing a theme in their designs or merely demonstrating technical and aesthetic virtuosity with a bright new design concept for each expensive new job.

The Crystal Palace may have pioneered glass and iron and prefabrication. However, what was implicit in this design was not developed properly for a hundred years. Today Saarinen shows with pride the glass curtain walls of the General Motors building and points out with more pride—if inaccurately—that it was the first. Has he yet ironed out all the wrinkles in the system? Or doesn't he consider that his job?

BIRTHDAY HONOURS

It is, perhaps, fair to see in the award of a knighthood to Dr. Leslie Martin, the present professor of architecture at Cambridge, and former architect to the London County Council, the sign of official acceptance of modern architecture. True a knighthood was given to Hugh Casson after the Festival of Britain, but there was always a slight suspicion that the award was more in recognition of his qualities as a leader of a design team than as a designer himself. Other knights, Howard Robertson and Percy Thomas, for instance, although they have both produced contemporary-looking buildings at certain times in their careers, have a fair amount of near-traditional work to comfort the official advisor on Royal awards.

*

With Leslie Martin, however, there is no such orthodox background—at least as far as ASTRAGAL has discovered—with him it has been modern architecture all the way. So the knighthood bestowed on him is, in some ways, a knighthood for modern architecture (a slightly perturbing thought) and an award, too, for those who formed, and were part of, the design teams he led.

ATOMIC JUGGERNAUT

Any relatively unspoiled stretch of coast seems to have an irresistible appeal to the Central Electricity Authority in its feverish search for sites for nuclear power stations. It is now making test borings in the neighbourhood of Dungeness, in Kent, and on the west coast of Wales north of Aberystwyth. Dungeness is one of the few parts of the coast in South-east England that has escaped the concentrated attention of the commercial developer. Transmission lines from the Welsh station would, it is understood, cross the Snowdonia National Park to Blaenau Festiniog where a pumped storage scheme is now being developed inside the Park itself. Lord Mills, the Minister of Power, said in the House of Lords in April that it was the primary concern of the CEA to avoid national parks and places of outstanding beauty, and he moved an amendment to the Electricity Bill only three weeks ago requiring the CEA to take into account the effect of amenities in its power projects.

*

We expressed a doubt at the time whether this amendment would prove anything better than an illusory protection, and it will be interesting to see whether in these cases the procedure of consultation and public inquiry has the slightest effect in stopping the atomic juggernaut that is rolling over the land. But since the inquiry is held, not by the Ministry nominally responsible for planning, but by the Ministry of Power itself, ASTRAGAL is sceptical. The Council for the Preservation of Rural England requests, in its annual report, that the Ministry of Housing and Local Government should, as a matter of extreme urgency, prepare a master plan to ensure that there is no haphazard piecemeal selection of nuclear sites. It is a scandal of the first order that no such plan exists or, if it does exist, has not been published.

TREMBLING WHITEHALL

If there is one Ministry that ought to be concerned about all this it is the MOHLG. But Dame Evelyn Sharp, the Permanent Secretary, came to last week's annual meeting of the CPRE to smooth away anxieties. Whitehall, she asserted, trembled at the name of the CPRE, and if it rejected its advice only did so for the best of reasons. The Minister of Power, she assured the delegates, was enormously impressed by the importance of amenity, and was discussing with the MOHLG the revisal of the procedure for siting nuclear power stations. Her Ministry was examining the coastal parts of the country to "try and eliminate whole stretches where one could not have these things at all" (a job, one might have thought, that should have been done a good many months ago).

*

Dame Evelyn interspersed her official pronouncements with rash expressions of her private emotions (sample: "I am convinced Government departments don't know what they are doing") which were more forthright and much less complacent. As a private person she thinks that shooting is too good for litter louts, but as an official regrets that a Private Member's Bill to punish them would be unworkable. As a private person she expresses her horror at the disfiguring tangles of overhead wires in villages, and her hope that the

authorities concerned will get together and put the wires underground. Her official views on this subject, however, remain a secret: possibly because her Ministry, if it were functioning as it should, would have got the authorities together a long time ago. ASTRAGAL can only hope that when her unofficial appeal is placed upon her official desk she will allow her admirable unofficial emotions to influence the official advice that she will tender to the Minister. We can't afford to have schizophrenia in the Ministry of Planning.

SPACE PLANES

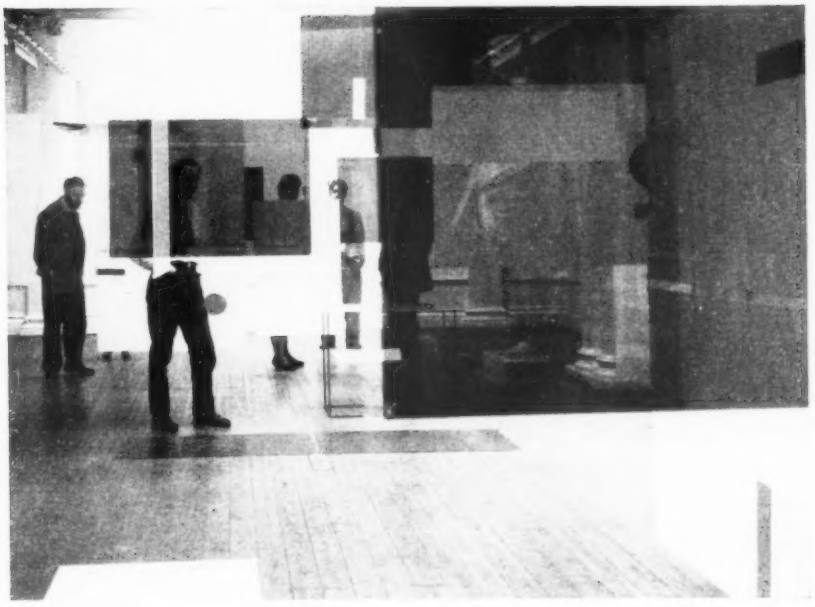
Northern readers probably know the curious Hatton Gallery at King's College, Newcastle, and they will equally probably know that since Lawrence Gowing became Professor of Fine Art at King's, the Hatton has been the scene of some livelier exhibitions. What makes the Hatton so curious is that its dead-beat classical internal architecture, with coupled Ionic columns and three glazed domes, is an extremely stimulating setting for extremely advanced exhibits, and the past fortnight has seen it filled with a device entitled, simply, *an Exhibit*, that gets full value from it.

*

An Exhibit, dreamed up by Victor Pasmore, Richard Hamilton and Lawrence Alloway, was little more than a quantity of Perspex sheets of varying degrees of transparency, hung various ways on a rectangular grid (see above) so as to make a sort of maze to walk about in, and at the same time, a *visual* maze of open, closed, half open, half-opaque views, and any number of combinations thereof, changing all the time as you walked about in it. All this, of course, has quite a lot to do with what quite a lot of people think quite a lot of modern architecture is about, and whatever the projectors of *an Exhibit* may have thought they were doing ("are you maze-bright or maze-dim?" they enquired in their ingeniously folded brochure-catalogue) the result will have proven architecturally instructive to frame-and-fill minded architects.

*

And if you are sorry you missed it, as well you might be, there is cheering news for you. *An Exhibit* will almost certainly be seen in London fairly soon, though—alas—without the Hatton Gallery for a setting.



An exhibit called—appropriately enough—an Exhibit, *at a gallery in Newcastle, recently made play with problems of transparency and reflectivity such as worry thoughtful architects today. The result, above, shows what Perspex sheets of differing opacities and reflective values can do to a statue of the Emperor Augustus (faintly, right) and the designers, Victor Pasmore and Richard Hamilton (in part section, left).*

OXFORD TRIANGLE

Oxford has been in the news again for three reasons in the last few days. First, Minister Henry Brooke has advised the city to take an up-to-date and comprehensive survey of traffic and parking, the lack of which makes the value of all road-planning schemes under discussion extremely vague. If, when this has been prepared, Mr. Brooke holds an enquiry and firmly resolves to knock together the heads of the rival pressure groups and commercial interests, an acceptable solution might emerge.

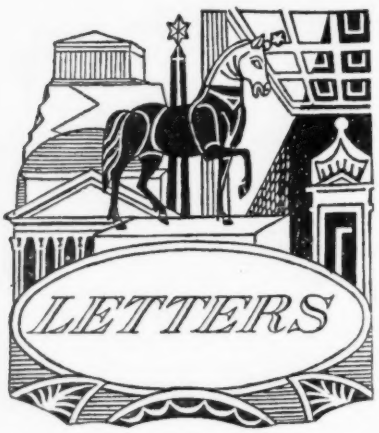
*

But can it be assumed that any rearrangement of the roads would leave the Keble Road triangle undisturbed? For the second item of news concerning Oxford is Basil Ward's proposals for the development of the triangle as a science area. This looks superficially satisfactory, to judge from the photographs of a model published in the newspapers, but one would like to know how much traffic goes along Keble Road or Parks Road, and whether one or both could be restricted or closed to non-U vehicular traffic. In any event the narrow, northern apex of the triangle is too restricting for Ward's serpentine block. A building at right-angles, running into the unnecessarily sacrosanct park would, in compensation for this outrage, block Parks Road and form a better terminal—or introduction—to the university area than a building lying along the thin edge of a wedge.

*

Those few of you who were up at Oxford—ASTRAGAL can only recall Lionel Brett—will, no doubt, have made by now your contribution to the £1,750,000 they need to repair their buildings—the third item with which Oxford is in the news. The mouldering stonework—of Headington freestone—can be lifted away in handfuls (sounds like an advertisement for a hair restorer) and bits of a cornice, pinnacle and angel have crashed within a few feet of the unwary. No one knows what the surveyors to these buildings have been doing during the past 20 years. Crying alone in the wilderness? Or blissfully dumb? It is the same with all these historic buildings—Ely, Lincoln, Westminster Abbey, and so on—and now Oxford: for years all goes well—only minor make-do and mend necessary, apparently. Then, whump! an angel falls, or tock! a beetle ticks, and immediately the demand goes forth for a million pounds or so. Presumably, we like our disasters large.

ASTRAGAL



Michael M. Laurie
Alexander Flinder, A.R.I.B.A.
Paul Ritter, A.R.I.B.A.
G. F. Cole, Secretary I.E.S.

A New University Faculty

SIR,—Percy Johnson-Marshall in "A New University Faculty" (AJ June 6, 1957) put forward a theory which might well form the basis of a united education policy of all the institutes and associations concerned. Surely there must be many people in the professions and trades involved in his scheme who see the obvious advantages and sheer logicality of the formation of such a faculty.

Though the ideal may take time to achieve, that would be no reason for not making it the ultimate aim of a combined policy. Is it inconceivable that there may be enough conviction and persuasive influence in this country to see such a progressive programme started in the near future?

MICHAEL M. LAURIE.

London.

SIR,—Percy Johnson-Marshall has, in his exhilarating article, expressed the views held by many architects who have been associated with teaching.

The building industry is so rapidly becoming industrialised that unless the architect recognises the revolution that is taking place, and acts accordingly, he is very liable to be toppled off his pedestal, and his place taken by the engineer, surveyor, or builder, or even more likely, the gentleman who is a combination of all these latter professions.

Even the most modest of schemes is the product of a team, of which the architect is frequently the captain. In recent years, however, this has not always been the case, and all too often one comes across projects (usually the very large ones) in which the architect is "the chap who makes the thing look fairly decent."

As Mr. Johnson-Marshall observes, there are eleven experts who are members of the building team, and although the architect in practice often works intimately with his ten colleagues, his contact with them in his five years of training is virtually nil. Surely a ludicrous state of affairs. Mr. Johnson-Marshall has shown that the solution lies with the "integrated course," with its basic technological and art course in the early years, developing to specialization in the final years. In discussing the initial formation of such courses, however, he appears to have missed the obvious advantages of the "schools of building," and similar colleges. I am thinking particularly of those at Hammersmith and Brixton. Both of these schools are already training architects, engineers and surveyors, and the former has the added asset of an Art School. A certain amount of "integrated" work has already been carried out at Hammersmith, but this had necessarily to be limited.

The over-riding factor, however, is that an intending architect is only going to enrol in a course that is "recognised," or alternatively that leads the student to the threshold of the RIBA Final. Therefore, if the "integrated course" is to stand any chance of success, it must have the full recognition of the RIBA and the other professional bodies.

A university faculty would be of immense value to the industry and professions, and should be discussed during the coming meetings between the RIBA, RICS, and IOB on Training in the Building Industry.

ALEXANDER FLINDER.

London.

SIR,—I applaud Percy Johnson-Marshall's suggestion for a faculty of building. The success of such an idea depends, it seems to me, on an integrated approach to knowledge and a philosophy for our students which allows and engenders enthusiasm.

In such a faculty close association of experts would certainly give more opportunity to study more facts from immediate sources but this would emphasize one of the seemingly intractable problems of architectural education: namely that there is too much knowledge by far, the body still growing, for anyone to absorb and integrate in the few years.

To solve this, Richard Llewelyn Davies's recommendations should be adopted: "We shall need a certain change of emphasis in the training of the architectural student. This must now have the object of giving him a broad grasp of the whole field of knowledge, and of teaching him those attitudes and methods of work . . . whereby the details of a subject can be fairly quickly learnt, so long as the essential principles have been understood." (AJ, May 23, 1957.)

To this I would add, for myself, the need for teaching techniques which allow students to work at their own pace at such problems as seem vital to them at any particular time and which test a far wider range of qualities in the student than the present—programme, pretty drawing, working drawing—routine.

PAUL RITTER.

Nottingham.

Lighting Terms

SIR,—The JOURNAL, when referring to levels of illumination in buildings (e.g. in the analyses of buildings), makes use of a variety of units and only occasionally uses the right one.

In this country levels of illumination are given in lumens per square foot, abbreviated $1m/ft^2$. It would appear to be a practice of some architects to express illumination levels in "lumens." A lumen is the unit of light output. A lamp is said to provide so many lumens and it throws them out in all directions. With luck some of them hit the places the architect wants to light much in the way that a sprinkler squirts water all over the place some of which will fall on the fire it is hoped will be extinguished. A thousand lumens falling on an area of 100 sq. ft. provide a density or level of illumination of 10 $1m/ft^2$. It is really quite simple. Could you please help architects by using the right term yourself?

G. F. COLE.

London.

BIRTHDAY HONOURS

Professor Martin Knighted

The following honours were announced in the Birthday Honours List:

Knights Bachelor: John Leslie Martin, Professor of Architecture, University of Cambridge.

C.B.E.: B. Gray, Keeper of Department of Oriental Antiquities, British Museum; F. C. Hawkes, Secretary, Chartered Auctioneers' and Estate Agents' Institute; J. G. Pearce, Director of Research, British Cast-Iron Research Association; D. G. Sopwith, Director Mechanical Engineering Research, Department of Scientific and Industrial Research; M. C. Tebbitt, Superintending Architect for Public Health Service, Ministry of Housing; G. G. Wornum, architect.

O.B.E.: G. Ford, Assistant Chief Architect, Ministry of Works; S. C. Foulkes, for service to architecture in Wales; M. J. Hellier, County Planning Officer, Derbyshire; J. A. McGregor, Burgh Engineer, Surveyor and Planning Officer, Paisley; H. A. Metayers, Senior Architect, Home Office; A. D. Parham, Deputy Chief Housing and Planning Inspector, Ministry of Housing and Local Government; E. V. Walshe, Town Planning Officer, Belfast Corporation; W. E. H. Watkins, consulting engineer and architect; G. Weston, Technical Director, British Standards Institution.

M.B.E.: Mrs. Winifred Dance, Secretary, SPAB; R. C. Rose, Director, Historic Buildings Bureau, Ministry of Works; Miss Edna M. Rutland, First Assistant Secretary, RICS.

HISTORIANS' SOCIETY

Inaugural Meeting

The Inaugural General Meeting of the British Society of Architectural Historians took place on Saturday, June 1, in the rooms of the York Institute of Architectural Study, which had been placed at the disposal of the Society by the Director, Dr. W. A. Singleton. More than 40 people attended the meeting which was under the chairmanship of Dr. Thomas Howarth. The architectural profession, various interested Government departments, as well as libraries and educational establishments throughout the country were represented.

The Chairman opened the meeting by outlining the aims of the Society which were, briefly: the provision of a forum for the discussion and dissemination of ideas related to the history of architecture and the publication of significant contributions to the literature of this field. A proposed

constitution, drafted by a committee appointed by the working committee, was then read by the Acting Secretary, Frank I. Jenkins, and the Chairman opened the meeting to contributions from the floor. An enthusiastic and lively discussion followed, contributed to by Bruce Allsopp, Arthur Arschavir, Professor Cordingley, Cecil Farthing, Leslie Ginsburg, Dr. S. Lang, Jeremy Lowe, W. A. Pantin, Alan Reed, Michael Rix, Norman Scarfe, F. H. W. Sheppard, Dr. Helen Rosenau and Reginald Turner. A vote was then taken and the meeting unanimously approved the action so far taken by the working committee and authorised the committee to make arrangements for the first annual general meeting of the Society.

In an address Howard Colvin said there were three ways in which the study of architectural history could be carried out—by architects, through the study and measurement of actual monuments; by historians, through the study of documentary evidence; and by art historians, through the study of ideologies and styles. It was, Mr. Colvin said, essential that the architectural historian maintain a balance between these approaches, and in this respect he felt that the newly founded society would serve a useful purpose in bringing together architects, documentary historians and art historians, with their different but interdependent disciplines.

In the evening some thirty people attended a dinner in the Merchant Taylors' Hall, which proved to be a particularly enjoyable occasion.

ARCUK

Professional Conduct

The Professional Purposes Committee of the Architects' Registration Council has reported to the Council the action taken in the cases concerning professional conduct, and offences under the 1938 Act.

The Committee have considered a complaint that a firm of paint manufacturers are affixing to touting letters a label as follows:

"At the request of ....., L.R.I.B.A., A.M.I.MUN.E., Chartered Architect," followed by his address and telephone number and the words "Member City and Borough Architects' Society, Colour Consultant." The architect is being informed that the affix "L.R.I.B.A." and the words "Chartered Architect" should be removed. He has already been directed by the Borough Architects' Society to delete any reference to that body. As he is not practising as an architect he is not infringing Example (i) of Principle VII of the Code of Conduct.

The Committee have considered a complaint concerning an article in the *Evening News* containing a biographical paragraph on an architect who had designed a house for the Festival of Women Exhibition at Wembley. The architect is being informed that the Committee consider that architects should insist on seeing a proof, before publication, of articles in the lay or technical press describing their work or practice, to ensure that they comply with the spirit of the Code and are not ostentatious.

The Committee have had under consideration an advertisement in *The Times* by an architect, of offices to be let, applicants being invited to apply to the architect. The architect has informed the Committee that the property in question is his own personal property and investment but that in future advertisements he will state that applications should be sent to the resident caretaker.

W. H. Palmer was prosecuted at Grimsby on March 22 for practising and carrying on business as an architect and fined £10 with £6 18s. 0d. costs. Two other prosecutions are pending and warnings have been issued in two further cases.

EDINBURGH

Architectural Association Symposium

In the celebration of its Centenary, the Edinburgh Architectural Association gathered together several distinguished personalities to read papers on the more general aspects of this crucial question of "the Architect and Society." There followed what really amounted to a self-analytical debate which was in many ways the most appropriate and useful way to mark this first Centenary. The underlying theme of all contributions in the discussion—from the floor as well—was that the architect must demand of himself a great deal more insight than he has demonstrated so far, if he is to fulfil the public expectations of him in his new place in our social life.

The principal speaker was Steen Eiler Rasmussen, Professor of Architecture at the Royal Academy in Copenhagen, who had been invited to Edinburgh as the guest of the Edinburgh Architectural Association for this occasion. In his address, Professor Rasmussen emphasised the social responsibilities of the architect, and deplored idolisation of the buildings of the "great masters."

The architect, he said, was a sort of theatrical producer, the man who planned the setting for our lives. He worked with living things, with human beings. If they could not thrive in his house its apparent beauty would not help it; without life it became a monstrosity. Indeed, one of the proofs of good architecture was that it was being utilized as the architect had planned.

We could go through the whole of history and always find the most complete correlation between social organization and architectural expression. We who lived in the twentieth century felt that we were living in a storm-swept Spring of great social changes, and architecture could not be unaffected by it. It was our great responsibility to create new frameworks for coming generations. In the nineteenth century architects saw it as their problem to design monumental edifices and houses for the well-to-do. Today we designed blocks of flats and neighbourhood units. We knew that all scientific and technological progress was based on extensive co-operation and good team-work. But nevertheless that which seemed to arouse most interest in the architectural world today was still sensational works by individual masters. "Not since the days of Bernini have there been architects who have enjoyed the fame of a Frank Lloyd Wright or a Le Corbusier. To many this seems an obsolete tendency, a hang-over from the nineteenth century greatly intensified by the efficient methods of modern publicity. For my own part, I cannot help feeling that this is somewhat out of keeping with our times, this cult of the "master," this hero-worship of the individual."

In proposing a vote of thanks on behalf of the Association, Lord Sempill (who wore the kilt) remarked that it was a great privilege for him to make such a proposition to "sic a skeelie professor."

Richard Sheppard's address as supporting speaker was delivered in the usual dynamic Sheppard manner and included several amusing aphorisms which seemed to stimulate his audience. He was concerned lest architects should imagine they were there simply "to satisfy the megalomania of the Press Lords, or Duncan Sandys, or someone like that." We must justify our function more properly than we had been doing and, above all, take care to ask the right kind of questions. It was Richard Sheppard's opinion that the various Ministries had been asking silly questions and getting silly answers for a number of years now.

In rounding up the platform party's contribution, Robert Matthew, as "the local boy," advocated some keen self-examination as the immediate step provoked by our having moved "from the outskirts to somewhere very near the centre of the life of the community." He regretted the lack of progressive thought which had been evident in many quarters in Scotland, "particularly on the part of those who had been in a position to influence large scale development." He deplored the comparative disregard of Patrick Geddes and also the past practices of architects who, when called in to accept important commissions, had done so "more in the guise of antiquarians resurrecting Italian palaces, Baronial castles and Gothic motives, fitting these as best they could with a grand, if somewhat bogus, air of scholarship to the problems in hand." Professor Matthew disagreed with those who were still saying that we had had comparatively little opportunity in Scotland since the war, and to those who said we were a small country, he replied that small countries were outstandingly the leaders in architectural thought today. "Let us take heart," he concluded, "from our own past—a small group of young men in the 18th century made Edinburgh a focus for a time of the world." This was very well received by at least part of his audience. There followed some lively discussion in which it was emphasized that proper cost control and cost consciousness was more than ever essential today, but that we should not perhaps make too much use of what happened to be "a convenient peg in this commercial age."

At the Edinburgh Architectural Association's centenary reception, in the Royal Scottish Academy: Above, the ten-tiered birthday cake with 99 candles, Sir W. O. Hutchison, P.R.S.A. (dressed figure) and exhibit (the undressed one); Below, Professor Rasmussen, the principal speaker at the symposium, in conversation with the younger generation, Michael Laird and Knud Peter Harboe.

SUMMER SCHOOL

At Venice University

The International Summer Seminar of Architecture (formerly the CIAM summer school of architecture) will be held this year from September 7 to 28 at the Venice University Institute of Architecture. The Seminar is open to students in their last year at a school of architecture, or to graduates who took their degree not more than two years ago. Applications must be filed not later than July 15, the fee being 10,000 lira, including excursions. For further information write to Seminario Internationale Estivo di Architettura Istituto Universitario di Architettura, Fondomenta Nani 1012, Dorso Duro, Venezia.

EUGENE FREYSSINET

ISE Gold Medal Award

The Institution of Structural Engineers is this year awarding its Gold Medal to Eugène Freyssinet, the eminent French engineer, and inventor of prestressed concrete. It is hoped that Monsieur Freyssinet will be present to receive the award in person.

OBITUARIES

Sir Ian MacAlister

We regret to announce the death of Sir Ian MacAlister, who was secretary of the RIBA from 1908 until 1943. The following personal memoir is by E. J. Carter, former RIBA librarian and editor of the *RIBA Journal*.

I suppose that the ARCHITECTS' JOURNAL in asking a now-long-time-ago colleague of Sir Ian MacAlister to write a memoir is seeking to re-create some sort of picture of a very remarkable man who until 1943 and for 36 years ruled the fortunes of the architectural profession and who, more than any one else formed the administrative structure within which architecture in Britain now lives and grows. But apart from the difficulty of recalling clearly a period which ended in war and is clouded by general forgetfulness, it is nearly impossible to draw together all the strands of MacAlister's highly complex character; charming, sensitive, scholarly and retiring on one side, and on the other a "fonctionnaire" rigid authoritarian and at times alarmingly unapproachable. No one who saw him mainly in the RIBA can pretend to interpret or even describe him fairly. The unofficial part, which we saw less of, all the time modified and controlled the high cardinal of Conduit Street and Portland Place.

It is certain that on some RIBA occasion, honouring Sir Ian, someone came out with "si monumentum requiris, circumspice." The quotation, however banal, is true enough; none of the great and permanent institutional features of architecture in Britain could have been achieved as and when they were, had it not been for MacAlister's skill and loyal single-mindedness in his rôle as RIBA secretary.

He worked like a functionalist architect, aiming only to provide good means of achieving objectives defined by his clients (as they would imagine). But all the time he had a clearer view of the ends and certainly of the means than most RIBA councillors. Every detail of policy was refined by his intelligence and became MacAlister's policy whatever means were employed to give it democratic validity. Because he, alone, was always at the centre and because of his clarity of purpose he had almost unassailable power which was often resented and often, and almost always unsuccessfully, opposed. He went on his own self-confident way, suffering agonies of frustration which generally he was diplomatist enough not to reveal.

Those who worked with him were always nervously aware that "Mac" belonged, and knew he belonged to an aristocracy of intellect. In later years his superbly agile mind seemed to become overlaid by the weight of his experience which tended to make him inflexible and conservative: he was apt to domineer by reference to the past. This, so alien to his essentially lively, progressive character was perhaps stimulated in his last years by an enormous fatigue which would have excited more sympathy than it did if he had at that time been content to ease off his habit of one-man control.

His psychological adjustments to RIBA work were matched by numberless gimmicks to avoid unwanted contacts. No member of his staff dared to ring him up on the house 'phone, nor could an outside telephoner easily wriggle through the wire entanglements. It amused us to see him flit like a wraith out of his room, close along the wall, up in the lift to the 4th floor cloak room to avoid unwanted chance meetings in the members' cloak rooms. He would shyly slip into his place at meetings at the last moment to avoid lobby talk and after each holiday come back with horrifying stories of how in some remote hide-out an RIBA bore would appear to ruin the holiday.

My experience of MacAlister was in the less "professional" affairs of library and JOURNAL and in the Institute's foreign relations and the development of the cultural and scientific side. Here his capacity to give all the support a junior could want was shown in many ways; mostly by letting well alone, seeming, even, not to care until something went wrong and a muffed side shot from library or JOURNAL landed in the political court. Administrative detail bored him and specialized activities were left to run in charge of committees with whom junior staff worked out their own destinies. His senior staff, despite so many advantages of confidence, were frustrated by MacAlister's unwillingness to take them into his confidence *as a group*. During my fifteen years in the RIBA there was not one round-table staff talk. Much might have been gained if there had been this small concession.

How much, in this tangle of politics and affairs, did MacAlister care for architecture? Occasionally in debate and continually in his exercise of patronage he showed his enthusiasm and taste. Many young architects owed their place in the elite of a limited competition or in some big post to his imaginative use of this authority. His opinion on individual architects were largely based on an instinctive awareness of "architectural sincerity" and "competence" rather than æsthetic preferences. He detested pompousness, pastiche and architectural careerism, ancient or modern. His own preferences would have been for the work of the "Grays Inn School," (where he found his closest personal friends in the profession).

His last years at the RIBA were difficult and there is no doubt that he found them intolerably hard to bear. Increasing physical infirmity and a sad succession of family anxieties closed him up more than previously. His great days were over. It was sad for the RIBA and must have been poignantly distressing for him that after this remarkable career of service he should slip out with few of the salutes his life's work deserved.

A Memorial Service for Sir Ian MacAlister will be held at All Souls' Church, Langham Place, London, W.1, on Friday, June 28, at 11.30 a.m.

George Grey Wornum

We regret to announce the death in New York of George Grey Wornum, the day before the award of a C.B.E. was announced in the Birthday Honours List. The following tribute is by V. V. Tatlock, of the Architectural Press.

Grey will be remembered by his host of friends, and indeed they were legion, not so much for his talents as an architect and his exceptional decorative ability, as for his personal charm, kindliness and sensitive humanism.

Certainly, and deservedly, he won distinction as an architect. Indeed, as designer of the headquarters of the Royal Institute of British Architects in Portland Place (1932) he could claim to be most especially honoured among his professional colleagues throughout the world. In competition with members of the institute from all parts of the world (and some 270 sets of designs confronted the appointed assessors) he was the victor. This surely would seem to quaiify as one of the architectural plums of his generation; Grey accepted his "good fortune" (as he called it) with a degree of modesty that was almost apologetic.

It was inevitable that a building of such unique architectural importance should receive a measure of adverse criticism (t'would have been miraculous had it been otherwise) but of the 270-odd competitors Grey Wornum was one of the few to show constructive appreciation of a corner site. There were many who, recognizing the worthiness of Wornum's building as a structural design, were critical of the character and extent of the sculptural and other decorative embellishments. In his dealings with the rising generation of artists and craftsmen, so many of whom were sadly lacking opportunity for employment, Grey was always sympathetic and generous and it might be said that he erred on the side of good nature in his control of those he commissioned to assist him.

His building for the Central Cleansing and Transport Depôt of the City of Westminster won him a bronze medal of the RIBA in 1939; this building, tucked away in Grosvenor Dock as it is, has never really received the publicity and appreciation it merited.

In 1936 he was one of the three architects appointed to organize the Coronation decorations of London, and was appointed decoration architect for the passenger accommodation of the liner *Queen Elizabeth*.

He was president of the Architectural Association 1930-31 and a member of the RIBA Council from 1935. He married in 1923 Miriam Alice Gerstle, of San Francisco, a talented artist and interior decorator, and they had a son and two daughters. Up to the time of his illness, as a result of which he was cruelly crippled, Grey was one of London's truly Bohemian characters; he was an intellectual and engaging conversationalist with a ready wit and exhilirating sense of humour. His characteristic limp and darkened monocle were consequences of his 1914-1918 war service with the Artists Rifles and the Durham Light Infantry when he was wounded on active service and sustained the loss of his right eye. He was 69.

DIARY

Obsolescence or Survival. Talk by William Tatton-Brown. On the BBC Third Programme, 8.25 p.m. JUNE 20

Library Group Annual General Meeting. At the RIBA, 66, Portland Place, W.1. 6 p.m. JUNE 24

CRITICISM

by J. M. Richards

HOUSING at GOLDEN LANE, CITY OF LONDON ; designed by CHAMBERLIN, POWELL and BON

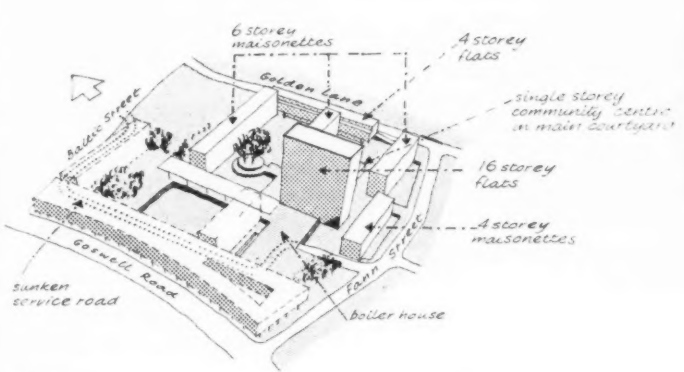
This is an ambitious and important housing enterprise which I believe the JOURNAL will be analysing fully in a later issue. I can't begin to do so in my limited space, so will confine myself in this article to discussing what I think are the significant things about it and mentioning at the same time a few points at which I feel it can fairly be criticized.

First of all, the scheme is a first-rate illustration of the fact that architecture is concerned just as much with space around buildings as with the buildings themselves. A great deal of the sense of satisfaction one has, walking about the site, comes from the well-studied relationship between the blocks of varying heights and the spaces they enclose, from the fact that they don't enclose them entirely but allow glimpses from one to the other and out beyond the confines of the site, and from the changes in ground level which make a lot of difference in giving the buildings an effect of being strongly rooted in the ground.

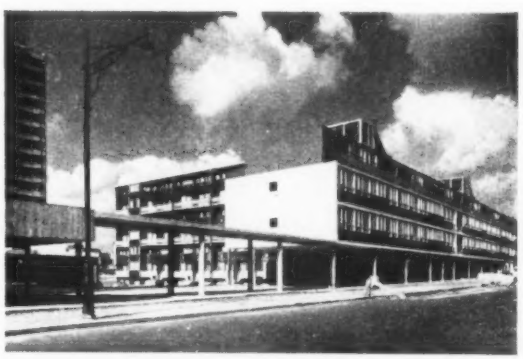
Some people may feel that these carefully designed spaces are a fraction too small—not because they seem at all overpowered by the surrounding buildings (owing to the use of one very tall block, the amount of free ground-space is quite adequate even in a scheme of so high a density), but because so much is going on in each enclosed space that one has a slight sense of restlessness—of too many architectural components chasing too few plane surfaces. This is a purely personal criticism that I offer only tentatively. There may have been good reasons why, say, three courtyards instead of four could not have been provided to allow a calmer treatment of each, and the question must be looked into again when the whole project is finished.

At present about two thirds of it is practically complete, already creating, nevertheless, a self-contained scheme (see site plan) enclosing two courtyards. The rest has only just begun. The plan has two outstanding points of interest. One is the fact that it follows the modern precinctual principle of excluding wheeled traffic from a housing area. The courtyards are for pedestrians only and the whole site is penetrated by only one service road at low level—eventually it will pass largely underneath buildings, and very skilful planning has made sure that the access points in the various blocks of flats and maisonettes are placed close to this service road or near to the perimeter roads, so that there will be the minimum disturbance of the pedestrian areas by service traffic.

The other point of interest is that the whole scheme has been planned to look inwards rather than outwards, which was the architects' way of dealing with an area surrounding their site that completely lacked character and of expressing their mistrust of how it was likely to be redeveloped—mistrust, I may say, that has been fully justified by the biggest development that has taken place so far, a particularly dreary block of red brick and concrete flats on the other side of Golden Lane which no one would want to look at from their windows if they could avoid it.



Site plan



Above: upper picture, from Golden Lane, looking into the main courtyard through the covered way that links a four-storey maisonette block with a six-storey maisonette block; lower picture, the other side of the same four-storey block, from the lower part of the two-level courtyard.

The architecture enclosing the courtyards, into which most of the windows do look, is vigorously modelled and strong in colour, the strong colour being largely provided by plum-coloured brick or gritty paint obviously designed not to show London dirt. Areas of brighter colour are provided (*e.g.* between the windows in the maisonettes) by panels of glass, which is, of course, self-cleaning. There are also, however, areas of untreated concrete which have already become grimy and streaky, notably the balcony-fronts in the southern maisonette blocks (finished about a year and a half ago), and it puzzles me why architects who have shown themselves so well aware of the importance of colours and surfaces that will stand up to the London atmosphere should also use bare concrete which, as all experience shows, will not do so.

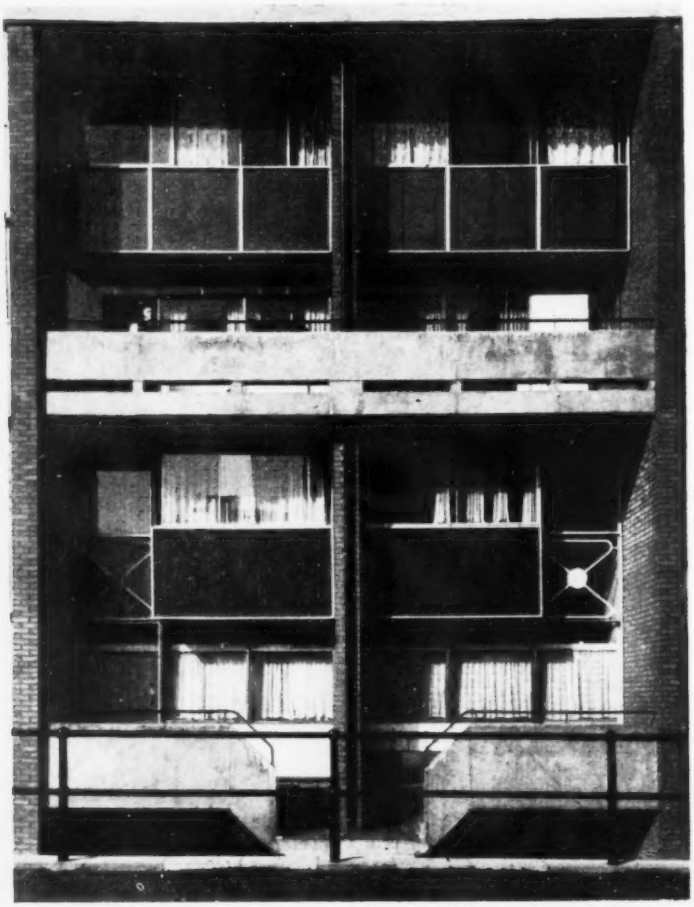
This is a style of architecture whose good qualities are brought out by slickness and destroyed by shabbiness, and my complaint is not only about the occasional shabby concrete balcony-panels but the exposed concrete framework in other places such as the stair-

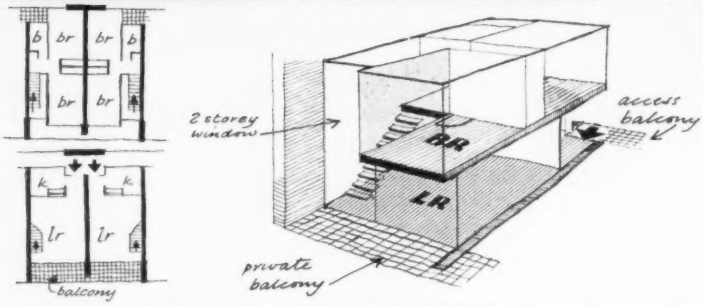
Right, from the south-west: four-storey maisonettes in the foreground; sixteen-storey flats behind. Below, six-storey maisonette block. The concrete framed staircase on the right is the one criticized in this article.

Above, in the main courtyard, looking towards the sixteen-storey block. In the shadows at its foot is the single-storey community centre. In the foreground can be seen the formal pattern in which the sunk gardens are laid out.

cases at the ends of the same blocks, which are too crude both in detail and in execution.

In general, however, the detailing and finish is of a high standard, notably in the sixteen-storey block in the centre of the scheme where it is more important than anywhere. A slab of this height must have elegance to save it from overpowering its surroundings. Some people may find the difference between this block and the others a little disturbing. The treatment is much flatter, the outer wall having more the character of a membrane, whereas elsewhere it has the character of panelling set within a vigorously expressed frame structure. I, personally, have no objection to contrasting types of treatment being employed in the same scheme, but would draw attention to one point only: the elevations of a block of flats never remain as the architects conceived them because of the variety of curtains the tenants can't be stopped—and





Left, floor plans, typical maisonette. Right, diagram showing placing of staircase

shouldn't be stopped—from putting in the windows. In the lower blocks the framework is sufficiently strong to contain these—they do not destroy the basic architectural rhythms—but the more delicate kind of treatment employed on the tall block is much more vulnerable to the fortuitous contributions curtains make to the overall wall pattern.

While on the subject of the tall block, I must refer to criticisms I have heard (chiefly, it is true, from easily startled laymen) of the concrete flourish on the roof. I think this was an excellent conception, very nearly successful in execution. We are all tired of the lumps that appear on the roofs of modern buildings, prominently silhouetted but often seeming (to judge from the total absence of design in their proportions and placing) to have got there without the architect's knowledge. To exploit them sculpturally instead of trying to conceal them is a fine idea, the well-known successful precedent being Le Corbusier's Marseilles block. But Le Corbusier has himself a sculptor's eye; the Golden Lane effort doesn't seem to me to have been quite fully enough worked out from the sculptural point of view. It is rather unsubtle, and looks much as though the kind of scribble an architect makes on a piece of tracing-paper to illustrate an idea has been trapsformed immediately into concrete.

In the courtyard at the foot of the tall block is a

Above: upper picture, elevation of one double bay of typical maisonette block, with concrete balcony front. The iron railing below is of the type criticized in this article. The cross-shaped railing shows the position of the open stair referred to; lower picture left, the same stair from inside the living-room; lower right, looking down the stair (and through the two-storey window) from the upper landing.

single-storey community centre—the focus, in a way, of the whole plan. It is charmingly designed in a severe rectilinear style, but was not this the right place for the kind of sculptural flourish that takes place almost too excitingly on the roof? The community centre is the only building without the cellular character that demands a repetitive external treatment, and advantage could have been taken of this difference to create more of a foil to the architecture surrounding it. The community centre and the roof-structure almost seem to ask to be interchanged.

I have already mentioned the changing levels that are so interesting a feature of the layout on the ground—they originate, incidentally, in the basements and cellars that remained from the houses that previously occupied the bomb-devastated site—and I should add that they serve the valuable purpose of separating the pedestrian circulation from the garden areas a little lower down, intended chiefly for the use of the occupants. The change of level safeguards the latter from indiscriminate use, and allows a certain amount of planting, though the architects have used restraint about this, insisting rightly on a strictly urban character. The consequent geometrical layout, and the design of the enclosed spaces generally, is very successful except for the unnecessarily bulbous heaviness of the black tubular handrailing everywhere. The precision of detail that is found almost everywhere is badly needed in these.

I have said nothing about the accommodation standards provided, nor about the various plan types used in the flat and maisonette blocks. This must all wait until the scheme is fully analysed in the JOURNAL, but the plans strike me as having been excellently worked out. The number of storeys of flats or maisonettes is shown in the accompanying site plan, and I illustrate here just one aspect of the internal planning that is particularly worth noting and exemplifies the thorough study the architects have given to spatial problems inside as well as out. It is the three-room maisonette in which they have given the living-room extra spaciousness by including the stair-well in it. Opposite the stairs is a two-storey window which not only gives them and the upper landing very good light but emphasizes in the living room the extra height along this side of it (see sketch). The stairs are without risers, allowing the light from the tall window to penetrate to the dining-area behind. Local authorities are always nervous of departures from conventional practice, but this unenclosed stair is an innovation that the City Corporation need certainly not regret allowing their architects to experiment with. The maisonettes have balcony access, but the balconies have been planned with recessed front doors and partially subdivided by brick piers to avoid the grimness that long galleries generally display. Flats above second floor level have lifts.

Altogether there will be 550 flats and maisonettes in the finished scheme, accommodating 1,400 people on a site of seven acres. A central boiler-house provides heating and hot water for the whole scheme. Later there will be a public house, and shops along the Goswell Road front.

CRITICISM: *what readers think*

On May 30 we published a critical article by J. M. Richards on the King's Arms pub at Peckham Rye, designed by Westwood Sons and Partners. On June 6 the architects replied to the points made by Mr. Richards.

There are one or two comments which I would like to make on the Peckham Rye Pub, by Westwood, Sons & Partners, in particular and on public house planning in general.

This pub seems to me to be very well planned. There is complete flexibility in the bar layout, and at little cost the disposition of the bars can be easily changed. The architects have made this point clear, and it is one which I think should be most carefully considered wherever possible in all pub plans. The point raised by Mr. Richards that there is too much floor space in this plan has been well answered by the architects. In general I agree with Mr. Richards, particularly if the floor area is large. In this case the bars are not large and I should have thought that furniture, the island fireplace in the saloon bar and the projecting counter, would provide a sufficient "break-up." It must be remembered that the architect when planning a bar, is always faced with the following facts:

1. As much counter space as possible and the maximum floor space for vertical drinking should be provided.
2. There must be good supervision of the whole bar.
3. Lavatories should be easily accessible from the bar and easily supervised from the services—though I do not agree with the architects' statement that the need for lavatory entrances to be visible from the bar services is a requirement of all licensing authorities. Some may insist on this but there are many cases where lavatories are entered from an entrance vestibule out of sight of the bar service. This is actually the case in this plan. The above requirements often make it difficult to provide the attractive cosy corners so much looked for and liked by the average pub user. There is a tendency now among brewers to provide one set only of men's and women's lavatories for saloon and public bars, especially in small houses, chiefly on grounds of cost. This policy is indicative of the gradual change taking place in drinking habits, and the possible adoption of one bar for all types of user instead of two as is the present custom today or, in some instances, three bars. Lavatories, in any case are most difficult to plan correctly. I remember that when I first started to plan a pub and could not get the lavatories to fit in place with the rest of the plan, I was advised to plan the lavatories first and the rest of the pub round them! The island fireplace is, I consider, a success. I also think that it is a suitable treatment in a bar.

I am glad that the question of storage for bottled beer and liquor has been brought up. This aspect of planning has now become a great problem and should be considered most carefully.

The question of overheating and dampness in the cellar has also been raised. In my experience, I have

found, and still find, that the brewer is most particular and definite on the complete isolation of the heating chamber from the cellar, and the elimination of all heating pipes, unless very efficiently lagged. In fact, all direct sources of heat should be kept as far away as possible from beer or other liquor.

With regard to dampness, this, as a rule, is not objected to except in the case of the cellar floor. Tanking is an expensive item and usually need not be employed unless there is standing water around the cellar causing undue pressure. The brewer is very particular about the cellar layout, and the architect must always give the greatest thought to this most important part of a pub plan.

I consider that the whole arrangement on the first floor is well thought out. The shape of the restaurant is good and the open air terrace and bar are well placed and attractive. The kitchen, too, is adequate in area and conveniently sited. With regard to decor, I think that Mr. Richards has given most of the answers. I, too, cannot say why the modern architect should not achieve the same atmosphere of warmth and cosiness by using modern materials and the proper use of colour as is so often found in the old fashioned pub. Much as one likes cheerfulness and brightness in a bar, it can, however, be overdone. Too much glitter, glass, and mirrored services can create a restless atmosphere rather than one of friendliness and comfort. I do not care to see relics of the Victorian gin palace, however attractive they may be in themselves, taken out of their original surroundings. Let them remain where they are and be kept as museum pieces. The decor in the bars at this pub is attractive but a little restless, particularly the counter front, which seems to me out of keeping with the rest of the decoration, but this is rather a matter of opinion. There always are conflicting views when the question of decoration and colour arises.

As to external treatment, I do not find the main front dull, but I think that the concrete slab cladding above the restaurant windows with its enclosing framework is unresolved. On the other hand the rear elevation with its white boarded walls and pleasantly spaced windows is particularly charming. There is a strong feeling of tradition in the handling of the courtyard and its approach and yet the treatment is quite modern and up to date.

Finally, I would like to stress the importance of the following points in the planning of a pub:

1. Careful attention to the ever increasing importance of the restaurant, the snack bar, and the consumption of soft drinks when considering the plan.
2. Full collaboration between the brewer, the architect, and the tenant in the selection of furniture, curtains, etc., so that there is complete harmony in the final layout.
3. The provision of loggias, and terraces for open air drinking in the summer and an attractive garden if space permits.
4. Built-in flower boxes and the use of flower decoration wherever possible.
5. The omission of obscure glass from the bar windows wherever the brewer will permit, and finally, adequate car parking facilities and a really attractive and distinctive sign.

E. B. MUSMAN, F.R.I.B.A.

One cannot over-emphasize the fact that it will never be an easy task to develop an imaginative drinking atmosphere in this country while the architect is fettered by the stringent requirements of the licensing authorities, which in themselves may be in conflict with the client's brief. However, there are one or two points on which I would like to comment, as they have not yet been mentioned:

1. Plan. Perhaps it was due to the client's brief or regional requirements, but the placing of the off-licence would appear to raise staff difficulties. It is not in the main service circulation and would seem to need its separate staff; a management problem which might have been eliminated by incorporating it in the main building, adjacent to the bars.
2. It is difficult to follow the lavatory arrangements. If lavatory entrances must be supervised from behind the bar, is there a special reason for one opening off the foyer?
3. Storage. It is not clear on the plan where the cellar access is and, if from the rear, can the brewers' lorry enter and turn in the yard? One assumes it was not possible to make greater use of the cellar for increasing storage space for bottled beer with a lift for hoisting to the bar.
4. Elevations. These, as always, are a very personal question, but I find the front elevation rather indecisive, and I feel that the ground and first floor are in conflict. The rear elevation is most satisfying and expresses the straightforward way in which the materials are handled.

OLIVER CAREY, A.R.I.B.A.

Inside the saloon bar of the King's Arms. In the foreground is one of the bays with built-in seating and in the background is the free-standing stove.

Cost control in building

Six lecture-discussions

This week we present the third and fourth of the AJ-*Polytechnic lecture discussions. The third was on* Elemental Bills of Quantities (*speakers: Clifford Nott, chief quantity surveyor, Herts. CC, and Ivan Tomlin, general manager, building division, Howard Farrow Ltd.). Chairman: Peter Trench. The fourth,* Cost Planning, *was given by G. Grenfell Baines. Chairman: M. H. Thackray.*

3 *Elemental Bills of Quantities*

speaker CLIFFORD NOTT

chairman PETER TRENCH

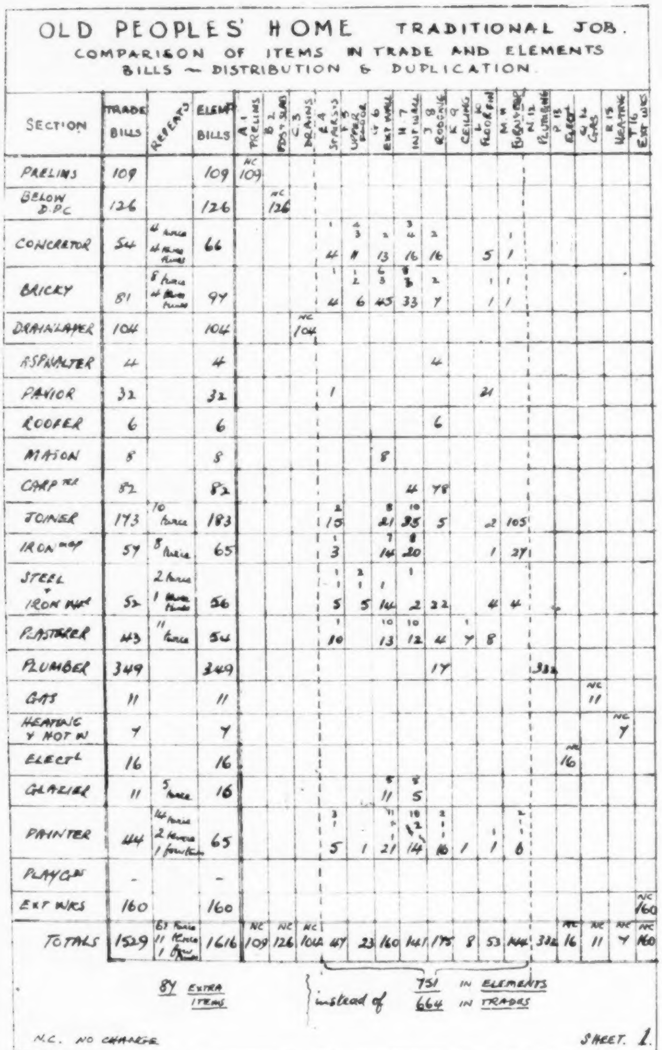
CLIFFORD NOTT: You may remember that Mr. Austin-Smith referred to quantity surveyors who allied themselves with this elemental approach to cost study, and bills of quantities, as radical quantity surveyors. I support everything he said in his lecture except that this is a radical approach. I think it is a natural progression from running contracts with the ordinary trade bill. The industry and the professions have not for some time past been satisfied that the bill in trade order gives the contractor the opportunity to price as he should be able to price. There are many firms that would wish the bill to be in some other form, so that they can price it with a more considered view.

The origin of the E.B.Q.

The first elemental bill that I know of was produced for an architect in 1951, with the aid of a private firm of quantity surveyors. It was produced for a building which was practically a prefabricated building, except for the ground slab. The bill was divided into thirty or forty sections, which really were the pattern of the operational order. It was some years later that for a totally different reason, the Ministry of Education, after they had become a leading light in this question of cost analysis, were asking the local authorities to produce information for them. In having to make cost analyses for them it suddenly became clear to us that if we could arrange our bill in the order in which the analysis was required we might be saving ourselves an operation. It then became quite clear to us that the result of this would be a better bill from the builder's point of view. We felt that this was the beginning of something which could help the builder to price in a more considered way. I think the event has shown in Hertfordshire, at any rate, that our hopes of those days, some three years ago, were not completely unfounded.

There is as yet no accepted layout for the elemental bill throughout the country. There is much to be learned from the study of one system which has been running, and all I hope to do this evening is to recall the way that we do it in Hertfordshire, so that you can see from the principles involved whether there is anything that you can use for your special purposes. We have done £3½ million worth of work on elemental bills during the past three years. We have in our own office been responsible for 20 bills, and private architects working in collaboration with us have been responsible for a similar number. I think that shows you that the system works.

The form of contract has a very considerable effect on the choice of elements. If you have competitive tendering (I think for some years yet that will be our main form of tendering, though whether it is the most enlightened form I am not sure), the elements must be selected to produce the minimum extra effort in certain sections of the work, such as the estimator's work, but it should enable the contractor to consider his prices more fully. That is becoming more important today, because competition is improving and contractors have to price more keenly and to look at every point. In Hertfordshire we feel that the elements should be functional as the architect thinks of them. That was in Mr. Nisbet's lecture last week. The main central filing system of our architect's department and the drawings, the cataloguing of information, and so on, are done so that the whole of the sequence of reference is by elements. It might be possible to take this through to the costing systems of contractors. It could also be carried forward to the British Standard specifications, and I believe that the BSI is considering this. The Building Centre also has given some thought to the question of cataloguing under functional elements. I do not know whether they have come to any decision on it.



OLD PEOPLES' HOME TRADITIONAL JOB.
COMPARISON OF ITEMS IN TRADE AND ELEMENTS BILLS — DISTRIBUTION & DUPLICATION.

SECTION	TRADE BILLS	REPEATS	ELEMT BILLS	A 1 PRELIMS	B 2 FDNS + SLAB	C 3 DRAINS	E 4 STAIRS	F 5 UPPER FLOOR	G 6 EXT WALL	H 7 INT WALL	J 8 ROOFING	K 9 CEILING	L 10 FLOOR FIN	M 11 FITTINGS	N 12 PLUMBING	P 13 ELECT	Q 14 GAS	R 15 HEATING	T 16 EXT WKS
PRELIMS	109		109	NC 109															
BELOW D.P.C	126		126		NC 126														
CONCRETOR	54	4 times, 4 three times	66				(1) 4	(4, 3) 11	(2) 13	(3, 4) 16	(2) 16		5	(1) 1					
BRICKY	81	8 times, 4 three times	97				(1) 4	(1, 2) 6	(6, 3) 45	(8, 3) 33	(2) 7		(1) 1	(1) 1					
DRAINLAYER	104		104			NC 104													
ASPHALTER	4		4								4								
PAVIOR	32		32				1						21						
ROOFER	6		6								6								
MASON	8		8						8										
CARPTR	82		82							4	78								
JOINER	173	10 times	183				(2) 15		(8) 21	(10) 35	5		2	105					
IRONMGY	57	8 times	65				(1) 3		(7) 14	(8) 20			1	27					
STEEL + IRON WKS	52	2 times, 1 three times	56				(1, 1) 5	(2, 1) 5	(1) 14	(1) 2	22		4	4					
PLASTERER	43	11 times	54				(1) 10		(10) 13	(10) 12	4	(1) 7	8						
PLUMBER	349		349								17				332				
GAS	11		11														NC 11		
HEATING & HOT W	7		7															NC 7	
ELECTL	16		16													NC 16			
GLAZIER	11	5 times	16						(5) 11	(8) 5									
PAINTER	44	14 times, 2 three times, 1 four times	65				(3, 1) 5	1	(11, 1) 21	(10, 2) 14	(2, 1, 1) 16	1	(1) 1	(2, 1, 1) 6					
PLAYGD	-		-																
EXT WKS	160		160																NC 160
TOTALS	1529	87 times, 11 three times, 1 four times	1616	NC 109	NC 126	NC 104	47	23	160	141	175	8	53	144	332	NC 16	NC 11	NC 7	NC 160

87 EXTRA ITEMS } instead of 751 IN ELEMENTS / 664 IN TRADES

N.C. NO CHANGE — SHEET. 1.

Fig. 1. A sample bill was made up in both trade and elemental form and this chart shows the number of items in each element (cols. 1 and 3), the number of times each item was repeated in the e.b.q. (col. 2) and the distribution of items among elements (remainder of columns).

If you have got a bill which is a positional specification, because of the way it is divided up, there will be less need for people working on the site to refer back as many times as they do now, through the clerk of works or through the architect, to the quantity surveyor who has to get back to his abstract, to find the split-up of composite items. I know that specifications are lacking today, but it may be that specifications will not be needed if you can get a bill which is so arranged that you have everything in one document.

The scope of elements

The scope of the elements, so that there is no ambiguity, is covered by a simple check list. Each surveyor ensures that he measures within functional sections which follow fairly closely the recognized method of taking off. If we take the structural frame, we have:

Frame, excluding infilling member for floors and roofs.
Mortices in concrete for holding-down bolts.
Grouting up under bases.
Painting on steel, and the fibrous plaster cladding, which is there either to protect the steel or to mask it.

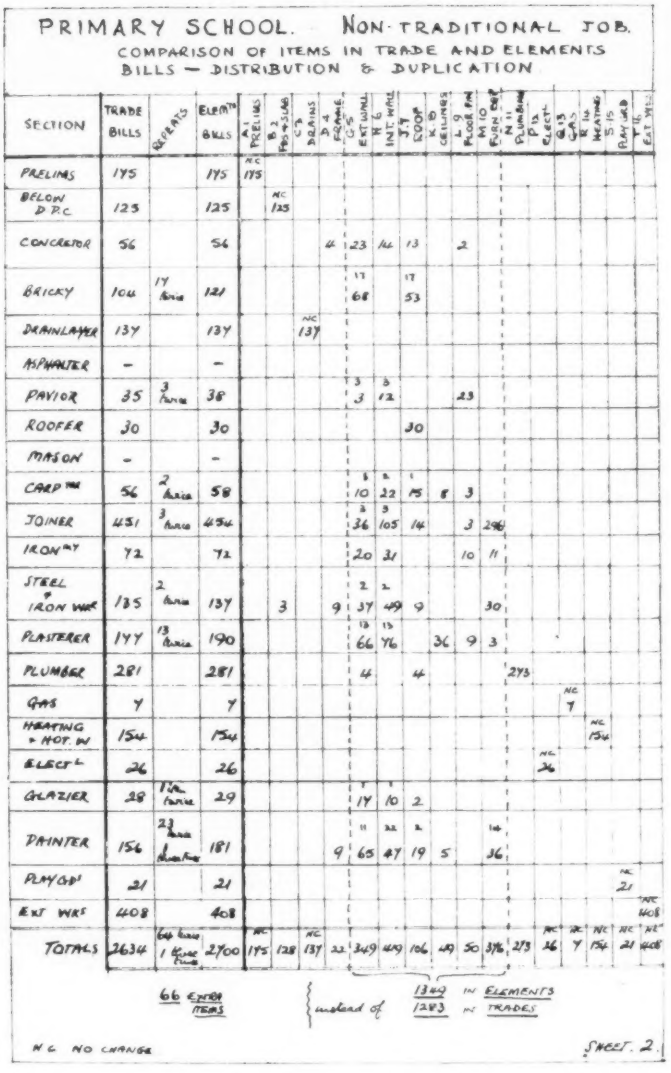
The system is very flexible. When we first started we had fibrous plaster in the walls, ceilings and partitions, but that produced minor complications, for you had to split the plaster cladding into three parts. On balance it could have gone into either of two places, but we thought it would be best to put it with steel. I do not want you to think that this so cut and dried that on every drawing you get there is a dotted line which shows you where you are going, but there is no difficulty at all in deciding where you want to put it in every job. You need to be consistent, so that when you are comparing or analysing prices you know the sums or the quantities which you are handling. By grouping the quantities into elements and billing within the elements *in trade order*, you have still got that inherent index to the items running through the bill.

The Ministry of Education shows a different set of headings, because they wanted to obtain information from all over the country for analytical purposes. It is obvious that they wanted to keep their elements as close to the trade bills as possible, in order to ensure that too much re-abstracting was not necessary from the local authorities. For that reason you will find that plastering, decoration and glazing are treated as separate elements in the Ministry of Education's list, whereas we take them in with the walls and the ceiling. As architects, you might consider the difficulty of planning, say, the cost of plastering in a new job when all you know about it is its rate per foot super in another job on which you know the quantity ratios. I think that, from the cost planning point of view, it is much better to have that cost in with your walling, rather than trying to abstract a section of the cost out of your decoration element. Therefore, we feel that these functional elements are possibly the easiest to handle from the architect's point of view. Also, drawings can be more easily handled in our functional elements.

Popular misconceptions

In the Press and at public meetings, it is mainly the criticism, of course, that gets the limelight. The first misconception is that the surveyor attempts to produce the bill in such a way that he shows the extra cost of the door over the partition, which would have been there if the door had not been there. There is nothing further from the truth, and no system which did that would be any use to anybody.

The second misconception is that the workers-up have the task of deciding to which elements the dimensions shall be abstracted. The taking-off, if it is done properly, in any system should be well sign-posted, and it is the duty of the taker-off to sign-post the dimensions to the element. Since he is measuring within elements, very little transfer is found neces-


PRIMARY SCHOOL. NON-TRADITIONAL JOB.
COMPARISON OF ITEMS IN TRADE AND ELEMENTS
BILLS — DISTRIBUTION & DUPLICATION

SECTION	TRADE BILLS	EXPERTS	ELEM'TH BILLS	1 PRELIMS	2 PROVISIONS	3 DRAINS	4 FRAME	5 EXT WALL	6 INT WALL	7 ROOF	8 CEILINGS	9 FLOOR FIN	10 FURN & EQ	11 PLUMB	12 ELECT	13 GAS	14 HEATING	15 PLAYGD	16 EXT WKS
PRELIMS	175		175	175 NC															
BELOW D.P.C.	125		125		NC 125														
CONCRETOR	56		56				4	23	14	13		2							
BRICKY	104	1Y Area	121					17 68		17 53									
DRAINLAYER	137		137			NC 137													
ASPHALTER	-		-																
PAVIOR	35	3 Area	38					3 3	5 12			23							
ROOFER	30		30							30									
MASON	-		-																
CARP^TR	56	2 Area	58					8 10	2 22	1 15	8	3							
JOINER	451	3 Area	454					3 36	3 105	14		3	296						
IRON^MY	72		72					20	31			10	11						
STEEL & IRON WK	135	2 Area	137		3		9	2 37	2 49	9			30						
PLASTERER	199	13 Area	190					13 66	15 96		36	9	3						
PLUMBER	281		281					4		4				273					
GAS	7		7													NC 7			
HEATING & MOT. IN	154		154														NC 154		
ELECT^L	26		26												NC 26				
GLAZIER	28	1/2 Area	29					1 19	1 10	2									
PAINTER	154	23 Area 1 Allow	181				9	11 65	22 47	2 19	5		14 36						
PLAYGD^	21		21															NC 21	
EXT WKS	408		408																NC 408
TOTALS	2634	64 Area 1 Allow	2700	NC 195	128	NC 137	22	349	429	106	49	50	376	273	NC 26	NC 7	NC 154	NC 21	NC 408

66 EXTRA ITEMS

instead of 1349 IN ELEMENTS / 1283 IN TRADES

NC NO CHANGE

SHEET 2.

Fig. 2. A chart expressing for a primary school the same comparison as that shown in Fig. 1—between trade and elemental presentations of the same bill.

sary. It is not so often that you are measuring items that occur in a wall and a ceiling or in external and internal partitions at the same time.

Another popular belief is that more time is needed to produce elemental bills. Nothing is further from the truth. Costings are made available and compared with those fees which we would pay to our local panel of quantity surveyors, and there is no doubt at all that my section would be closed down tomorrow if it did not show a substantial saving on fees.

The amount of duplication of items worries many people. It has been quoted as involving from 10 to 50 per cent. extra pages. Figs. 1 and 2 show, for two jobs, the spread of trade items into an elemental bill. These have been done from the actual bills, and you will see that we have the trade items listed on the left, the next column shows the number of items which are repeated, and in the remaining columns you will see how those items are being spread. If you take Sheet 1, in Painter there were 14 items repeated twice (they occur in the top line with the little figures in the columns dealing with stairs right across to furniture) and there were two items repeated three times; there were six items in the next lot, one item repeated four times, and that brings you to the figure at the bottom, which is the total of items as they appear in the elemental bill. Just to see the maximum amount of increase that this elemental splitting up will produce (for these two jobs it produced incidentally 2½ and 5 per cent. more items), if we take one of the bills and split it up and re-assemble it and stick it back together again, we find there were only seven pages extra in 209 on the school bill, which had a 2½ per cent. increase in items. That does not seem to me to be a very significant increase.

The effect on pricing

I venture to suggest that the elemental bill is the one bill which will produce a quick turnover to get a bill out of the office in a short time, because every bill can be measured and closed individually. In the case of the first bill analysed here, for an old people's home, in four weeks the bill was out for tender, including typing, duplicating and binding, and without more than three queries coming back to me as to where so-and-so should go. I think that speaks for itself.

With regard to the estimator, the slightly longer time that he requires for pricing can be justified only if it is going to give him an opportunity of pricing in a better way and in reducing the covers for the unknowns. It is quite possible that an elemental bill may produce a higher price for certain sections of the work, and, if it does so, it is absolutely certain that it ought to do so. The figures in the bill ought to represent the value at the place where it occurs. It should not be a case of "what we lose on the plumbing we will gain on the joiner's work."

With this splitting up in mind, we now introduce into our bills an index by trades, which enables the estimator to price a trade at a time. I gather that the trouble with most estimators is that they are never left long enough at one time in one office to get really down to it before they get instructions to go elsewhere to do other things, so any system of billing must enable them to break off and regain their "trade" train of thought when they start pricing again. They can pick out the trade in each element from the index and price right through, but the fact that the quantities are divided up in this way will give them an opportunity, as they go through each element, to see how these trades are spread round about the building and how the operational sequence of the job may affect their pricing.

I do not think it is any good doing part-trade and part-functional, because you lose the inherent index throughout the bill, and it is most useful in the on-site work to refer back to items and find your way down the bill of quantities.

Valuations and variations

At the moment we have very few jobs which were started with cost planning and have run right through

to the final account stage. We have one or two, and there is no doubt that the early planning of these jobs has to a very large extent reduced the work of the site surveyor in measuring variations. One of the primary schools has just been finished, and I reckon that it will be the shortest final account that we have ever had. The site surveyor and the quantity surveyor working on site will find slowly, that they can get back into the office and assist the architect to plan his costs, which is the most productive way, I think, in which you can employ a quantity surveyor.

We have had no adverse reports from our own surveyors, and none of our outside panel of surveyors has felt strongly enough to come and complain to us that there is any difficulty in making valuations on site. When you have got composite items, at any early stage of a job, instead of measuring in detail the work that is done, you tend to take percentages, which may very largely tie up hidden retentions for the contractor, and I think it is quite important to remove some of the hidden retentions. You can do that by saving variations on site.

We take every tender that comes in and the first thing we do with it is to look at the summary, convert it back to an analysis by dividing it by the floor area appropriate to the job, and compare the analysis of the tender with the final cost plan to which the architect worked. That gives us an immediate check on gross errors. Immediately the job is in, of course, you have another set of analysis information for planning a future job. You have not to wait a week until you can find a surveyor to analyse a trade bill, and you cannot put it on one side and say: "We do not need this sort of analysis at the moment," and then when you do want it you have not a surveyor to do it. It is there all the time.

To conclude, we have produced for our particular problems, a universally accepted system of billing. The order follows that of drawings and all the other things that go with it, and the stage has been reached now where we should go on and use this bill not just for cost planning but for the whole of the operational work on site.

One thing which is clear is that the architects really do want cost analyses. They now realize that our approximate estimates are based on very much sounder information than we had before, when we were basing them on the old cube prices. If an architect is going to work to a cost plan he has to get down to detail and he gives the quantity surveyor that detail to measure. We get full sets of drawings now and that helps the contractor to get more control of the job again—something that he has been wanting for a long time.

The bill is no longer the quantity surveyor's closed book, for the architect can find his way round it. I think we have a good deal to do yet in the way of educating the clients, the local authorities and the large companies who are spending their money today, so that they realize that what the architect is giving them is pretty good and pretty factual, and the architect can do that only if we support him with something that we are not ashamed to have pulled to pieces.

Cost control in building

3 *Elemental Bills of Quantities (cont)*

speaker IVAN TOMLIN

chairman PETER TRENCH

IVAN TOMLIN: In the report of the Quantity Surveyors' Committee, it was stated "that the primary use of a bill of quantities is to provide a uniform basis for estimating; other uses should always be secondary and must not interfere with the primary object." I agree wholeheartedly with this statement, but it should be fully appreciated that a bill of quantities *is* used for many other purposes in a building organization. Many changes have occurred in the industry since the bill was introduced in its present form. In recent years many new management tools have been used much more widely by builders, and with the increasing cost of labour, plant and materials, their importance is likely to increase rather than diminish. The builder uses a bill of quantities more than any other member of the building team. He needs the quantities of materials, components, labour and plant in a project for many different functions. These must be considered in two parts: first, the preparation of the tender for a contract; and second, its execution where the tender is successful. Estimating for work is a costly business, particularly when one realizes that for each successful tender a builder may have up to ten which are unsuccessful. Whilst probably 80 per cent. of tendering cost is abortive, it should also be remembered that time is limited, three to four weeks only being allowed for the preparation of a tender, which appears to vary little with the value, size or complication of a project. Although with a successful tender, he may be prepared to spend many hundreds of pounds providing detailed information not given in a bill, any increase in his estimating costs on, say, nine unsuccessful tenders could easily outweigh this. Where a contract is negotiated, it pays to have a much more detailed bill and to spend more time and money preparing the estimate, for this gives untold advantages later on, when detailed quantities are needed for other purposes.

The preparation of a tender

I would like to explain what happens to a bill when a tender is prepared and explain the other purposes for which detailed quantities are required in a builder's organization. At the same time I will try to indicate the advantages and disadvantages of an elemental bill, as I see them from a builder's viewpoint.

When the estimator receives the bill, he goes through it in detail and lists the materials for which he requires prices and marks the sections to be sent to sub-contractors for quotations. At the same time he makes notes of anything which needs clarification from the architect, quantity surveyor or during his visit to the site.

Some firms, I believe, use clerical staff for this function, but we have found that it enables the estimator to get to know the bill at an early stage and to carry out his exploratory work and enquiries while the bill is with the buying department. This department is responsible for obtaining prices from merchants and sub-contractors. This means much copy typing, printing and photography, and later when quotations are returned, extending, totalling and checking to find the most competitive. All in a very limited time. Immediately the typing is completed, the bill is passed back to the estimator. He plans the job in the way he thinks it could be carried out, and decides on the methods for various operations and the plant that will be required. When he gets his quotations, he is able to price the bill in detail. When priced, the bill goes to the comptometers where it is extended and totalled. From the completed bill the estimator prepares a detailed analysis of labour, plant, materials, P.C's., sub-contractors and specialist suppliers. He also assesses the contract time and prepares a budget of site overheads and preliminaries. His part of the work is at this stage virtually complete. The bill and analysis are passed to the general manager, who, with the chief estimator, examine the bill in detail and decide on any adjustments and the addition to be made for overheads and profit. At this stage a crystal ball would be more appropriate than *any* form of bill! The tender then is complete. When the results are obtained a post-mortem will be held to try and reconcile the prices of other tenderers. If it is unsuccessful, within a few days it will be virtually forgotten and a new excitement will take its place.

What, then, is the effect of an elemental bill on the tender stage? From the analysis provided by Mr. Nott it can be seen that there are more items in an elemental bill and also you will see that the trade items are spread through several elements. This makes the marking of a bill which I described earlier a much longer process, and takes more time to type the necessary enquiries for sub-contractors' work. It also means, that due to the spread of trade items through the elements, either the estimator spends much longer finding them if he prices trade by trade, or he loses his train of thought by jumping from one trade to another. I think it is important to price a trade through completely, and we have overcome this difficulty in our own organisation by preparing an index when the bills are first marked up. I understand that some quantity surveyors are now supplying an index with their elemental bills. For the unit prices for a traditional bill, an estimator has to prepare many average rates. One item may be in several different parts of a building and he may wish to use different outputs, handling allowances or waste for different locations. He can only do this from information taken from the drawings and worked into an average. Don't forget, too, that the drawings are in the architect's office and not by his side. With a bill that is split into elements and follows the sequence of work, he is able to allow different rates for different locations or quantities. This also means that if an item is increased or decreased in quantity, the contractor is not penalized by an average rate. Even with an elemental bill this still applies to some items. Many excavation items, for instance, carry both machine and hand rates in one average price, which can cause a severe loss to the contractor if the hand portion increases to any extent. So on balance, it would appear that at the tender stage more time is spent in marking a bill and in sending out enquiries. The bill is more accurately priced and some risks from average rates are eliminated.

Other uses of the bill

What are the *other* purposes for which a builder uses a bill of quantities? First, for the buying of materials, which are now much more expensive than before the war, and, in many cases, still subject to long deliveries. The builder wants these delivered in the right quantities at the right time. He doesn't want capital tied up in materials lying on a site subject to damage and deterioration. Since the traditional bill is not sufficiently detailed for this purpose, quantities have to be taken off by the builder and a phased delivery schedule prepared. The estimator, from the bill and his price build-up, prepares a detailed methods statement showing the methods he worked on and the plant and equipment he allowed for. He also sets a labour and plant cost standard, against each item in the bill which will be carried out by the main contractor. These are used both for costing, and checking the cost of planned operations where they vary from the estimator's assumptions.

Secondly, the contract staff use quantities for planning and programming. With an elemental bill the detail is sufficient to enable them to prepare an overall programme, but is not completely adequate for operations and detailed stage planning. When detailed quantities are taken off for this purpose, they are more easily checked against an elemental bill with an operational sequence and more detailed break-down of components. It is also used to check what work the sub-contractors should do, and to what attendances they are entitled. The agent and foreman use the bill as a specification, where, as in many cases, no separate specification is issued. It is very much easier, with an elemental bill, to locate a particular item shown on a drawing.

The builder's surveying staff also use the bill for placing sub-contracts, interim valuations, bonusing and costing, payment to sub-contractors and for checking variations. Where an elemental bill is used, the costing and bonusing surveyor has the advantage of fewer *average* standards from the estimator. This should mean more accurate unit costing and, with a "feed back" to the estimator, more accurate estimating. Bonusing by stages can be used to a greater extent depending on how the bill is split up. This also applies to interim valuations, for where items are billed elementally, the surveyor can value part or all of an element without taking bits from all the trades in the

bill. Sub-contractors' accounts can be checked more quickly as their work is billed in more detail and it is easier to see which sections, and how much, has been completed at a particular time. During the contract stage, then, it would appear that whilst an elemental bill helps with its greater detail and operational sequence, if anything, a bill to be of *real* value should be broken down into even more detail.

My own personal feelings are that with more detailed billing the accuracy of estimating will increase. This may, in fact, mean increased tender prices for some buildings, as it will be more obvious where a construction is broken up into numerous and complicated components. It should also eliminate losses sometimes made by a builder because a traditional bill does not fully reveal these complications. Conversely, it should also mean lower tender prices for a straightforward building.

I would like again to quote from the Quantity Surveyors' Committee report on elemental bills—"Quantity surveyors should not resent any reasonable request to make bills more generally useful, providing that their primary purpose is not obscured. We feel that a more extensive use of annotation might be helpful." A well-annotated elemental bill increases all the advantages I have mentioned and helps to alleviate some of the disadvantages. Much time would be saved by *all* using a bill, and a positive means of location would be provided. To summarize then—*the disadvantages are*—that an elemental bill is new and largely unknown, and one must re-orientate one's ideas of where to look for a particular item. The estimator takes longer to mark up a bill, and spends valuable time preparing an index to enable him to price trade by trade as he would in a normal traditional bill. It takes longer to prepare enquiries and obtain quotations. *The advantages are*—that the estimator has a better idea of the operational sequence and, where necessary, can vary his output allowances without averaging. It is more useful than a traditional bill for preparation of the overall programme, and should help in producing more accurate costing. It is generally more useful for location of items and helps with quicker assessment of work done for valuation purposes. These advantages can be greatly increased and some of the disadvantages lessened by the use of annotation.

Finally, I would say that a builder's reaction to an elemental bill is the normal one to any form of change. Many firms have little or no experience of tendering or carrying out a contract based on this type of bill. I think we all agree that the present bill is today not an ideal tool for the purposes for which it is used. Let us try elemental bills, and if they are not the answer—"experimental bills," both if possible, with annotation.

Discussion

The CHAIRMAN (P. E. TRENCH): We have heard this evening about operational elements, to which Mr. Tomlin referred from the building planning point of view, and we have heard about functional elements from Mr. Nott. Would Mr. Nott tell us whether he thinks that the two can be brought together in the event of the elemental bill becoming part of our industrial usage?

CLIFFORD NOTT: It depends on the form of construction. The operational sequence of building a prefabricated building might not follow the usual sequence of Frame, External walls, Roof and so on. With traditional construction I think that the functional elements and the operational elements can well be the same, but there are many proprietary structures in which this would not be so. You are bound to have from job to job and from time to time a requirement for arranging them in different ways for different reasons, particularly so, I think, if you are negotiating a contract, when you would split the elements up possibly into the sections which the contractor's costing system, his actual plant, and so on, dictate to you.

J. F. HOLLIS (architect): It has been stated that all the architect's details must be finished before the elemental bill can be started or can be completed. The normal contract procedure is that the architect has a chat with the quantity surveyor and says: "Well, we will have hardwood door frames," etc., and the quantity surveyor then makes allowances in his bills for these. I wonder whether perhaps a normal bill of quantities plus an annotated specification might not answer the case better. I cannot see why it must take longer to prepare interim certificates.

CLIFFORD NOTT: You will have an equally bad bill from both systems, which will result in re-measurement on site. With regard to interim certificates. What people, I think, are doing is taking longer to produce a more accurate answer. The tendency with the elemental bill, because you have got better information, is to do the job more thoroughly.

G. F. PUTWAIN (architect): The success of cost planning does depend on 100 per cent. information at the inception of the job. The one big problem, is how an architect and a quantity surveyor can take the benefit of a particular contractor's plant

and method of working at the cost planning stage, unless the contract is a negotiated one.

IVAN TOMLIN: I think that can be done only where the contract is negotiated. Different contractors have so many different ideas as to how they tender, whether they plan or do not plan, whether they cost, whether they have a foreman on the site and a full staff on the site, and so on, but with a negotiated contract I think one can get tremendous advantages from designing a bill that will suit a particular contractor.

CLIFFORD NOTT: I support that. I think that at the moment the basis of negotiation would have to be the rates obtained from previous competitive tenders. You have to get very much closer to the contractor's office and know not only his costings and his actual operations but also his overhead organization, which might be dealt with in confidence possibly by the accountancy side of any set-up. When local authorities, are negotiating contracts for buying component parts of schools, the Treasurer will always put in a man to investigate the overheads of a contractor's office so that it is confidential, and the quantity surveyor is relieved of the responsibility of everything except the actual operational costs, to which he adds a percentage of overheads on cost.

The CHAIRMAN: Grenfell Baines is going to talk on the 28th May, two weeks from now, on cost planning, and I think that one of the most interesting answers that we shall get on the elemental bill is how the architect uses the elemental bill analyses for cost planning.

The last questioner made the statement that one must have 100 per cent. correct information at the inception of a job. I think he meant that he must be briefed 100 per cent. adequately when he starts his planning.

P. DIXON (architect): Surely the answer is that you should select your builders who are going to tender, to ensure that they are all of a comparable standing and will have more or less the same equipment.

IVAN TOMLIN: Builders of similar capabilities may in fact tackle a job in different ways. One may use a tower crane and another may use a hoist.

G. BEESLEY: In view of the increased time required for contractors to work out prices, will there be an increase in overheads to cover this?

IVAN TOMLIN: We have not yet asked for an extension of time for elemental bills. At the moment, we still get the same amount of time, whether the bill is elemental or otherwise. I do not think that tender costs will go up so much with the use of the elemental bill. With an index it will probably put another couple of days on an estimator's time.

The CHAIRMAN: With regard to the last question, I think that the theoretical answer also is that any additional time spent in the estimator's office should be knocked off in some other department, because the job should be better planned.

CLIFFORD NOTT: In local government work we are at the moment tied to competitive tendering, but tomorrow I am to be one of a group of people who are going to listen to seventeen firms of contractors representing those people who have worked with the Herts. County Council over the past few years and done successful and good work for us. We are asking them to give us the benefit of their experience and advice on how to save time on site, mainly with the object of reducing cost. From that there may well come this question of method of construction, selection of plant, and so on. I am sure, that tomorrow's limited approach will help Herts. to run a programme of schools in a very efficient way.

The CHAIRMAN: I think a great deal depends on your meeting tomorrow and the courage of the builders who come, to see how and whether they really speak from the heart. I feel that this evening we are not quite getting the speaking from the heart which I anticipated here. We have heard architects so far, but we have not heard an architect say that he has used an elemental bill. Are there any architects here who have tried to cost plan with elemental cost analyses?

A. MOIRA (quantity surveyor): On the question of interim certificates based on the elemental bill being more quickly done, quite honestly I cannot see, from what I have heard of elemental bills, how a surveyor is going to speed the job or make it more accurate than he would with a traditional bill.

Secondly, Mr. Tomlin stated that an elemental bill enables an estimator to get a better mental picture of a job and to adjust his prices according to the position, and so on, of the item being priced. I should have thought that if you wanted to cut out all these averages on, say a block of offices, you want brickwork dealt with floor by floor and the finishings in the same way.

CLIFFORD NOTT: An actual criticism made by a surveyor to me in one case is that he has taken longer to do an interim certificate because he cannot find his way round the bill. That is not a criticism of the system; it is a criticism of that particular surveyor. He cannot find his way round and therefore he blames the bill for it.

IVAN TOMLIN: With the elemental bill one is going the whole way in providing the estimator with the necessary amount of detail. If you take the case of external walls, where you may get a half brick wall mixed in with some partitioning, with a lot of angles and short lengths, that is the type of thing where he would like to allow 50 bricks an hour on one and 35 on the other. He has still to break down excavation from the drawings, and, of course, quite often the excavator is provisional anyhow, and he can take quite a risk by using an average rate.

B. E. BRENCHLEY (architect): I think that the art of architecture must never be married to the exact science of accountancy. I was rather terrified to hear what Mr. Tomlin did with Mr. Nott's bill when it got into his office. By the time he had put an index to it, re-annotated it and made it intelligible, one wonders whether there is any value whatever in quantity surveyors. Mr. Tomlin also gave me the impression that he was rather being denied access to drawings. I should like to know whether, if a proper set of graphic descriptions of the building and a well described document, honestly depicting what the architect intended, were lodged with him he could do without a bill of quantities altogether and give an honest price. I think there is a solution to this problem, and that is that this is an honest endeavour to provide a life-belt. The alternative would be for the architect's profession to become as proficient as its forefathers in describing its buildings graphically and by the written word, and for the quantity surveyor to go back into the back room of the contractor's office.

The CHAIRMAN: Were you referring to the elemental bill as a life-belt?

B. E. BRENCHLEY: Yes.

CLIFFORD NOTT: You can see that Mr. Tomlin and I have not got together on this lecture! He did not know until I spoke that we now have realized that estimators do need some help, and provide an index to an elemental bill, to show what the trade items are.

I think Mr. Brenchley should think back a little while and think how many times a quantity surveyor has been a buffer between the architect and the contractor.

IVAN TOMLIN: I am sorry if I gave Mr. Brenchley the impression that we were being denied access to drawings. On many projects it is impossible to spend a couple of hours or half a day in an architect's office and then try to get some sort of sense out of a bill and the drawings at the same time. Even with Mr. Brenchley's drawings we probably have to break the drawings down, but with a traditional bill we have to take it from the drawings.

B. E. BRENCHLEY: We have been told all the evening "how," but the question that the architect is asked is "why?"

One of the things that I should like to know definitely is whether the original cost plan is ever exceeded.

IVAN TOMLIN: Mr. Brenchley, I think, is concerned not with whether he has got to take something off the estimate but with whether he has got to go back to the client and say: "It is going to cost you another 10 per cent."

CLIFFORD NOTT: The architect's brief will no doubt be for certain accommodation within a sum of money. The cost plan is designed to spend that sum of money in the best possible way in every section of the building. It is the quantity surveyor's job to provide you with a split up of that sum and to suggest to you how it can be spent relative to work of a similar character. Then it is up to the architect to handle the job and see whether, for instance, in the case of a cinema, if he has so much allowed by the quantity surveyor for seating out of the £50,000 being invested, he can get in seating for 700 people at that figure. If he does spend more, shall he get it by reducing the amount spent on the exterior or the amount spent on the heating, or shall he get it by accepting a lower standard elsewhere?

A. T. BRETT-JONES (quantity surveyor): Since I have attended meetings and lectures on the subject I have come to the conclusion

that elemental bills are the biggest red herring drawn across the building industry and the allied professions.

I think that cost analysis can be an aid, but only an aid, to cost planning. Mr. Nott says that he is not interested in knowing the "extra over" cost. Possibly he is not interested because if he was it would make his elemental bill very much more complicated. Furthermore, what about things like structural floor ducts for heating? In your elemental bill you may put those with foundations or you may put them with heating, and if you did either of those things you would be wrong. Surely if an architect and a quantity surveyor are going to get together on this cost planning one of the things they ought to tell their client is the comparative cost of different sorts of heating, and surely you cannot get the cost of heating with solid fuel without taking the cost of the boiler house and the floor space occupied, and so on. I suggest that if you are going to put all that into the elemental bill it will become hopelessly complicated. The 10 per cent. will become 50 or 60 per cent. I am in favour of a separate cost analysis as an aid to cost planning, but I think that the elemental bill will give a false picture.

The CHAIRMAN: Mr. Brett-Jones thinks of the elemental bill as the largest red herring because he is a quantity surveyor, but it may not be the largest red herring from a builder's or an architect's point of view.

CLIFFORD NOTT: Mr. Brett-Jones will find if he does start with the elemental bill, that it is not as complicated as it sounds. With regard to the structural floor duct, it can be put in foundations or in heating, as Mr. Brett-Jones says, or if it is part of a structural frame member it may go into the frame. It does not matter which of those you select, provided that your analysis shows where it is. Therefore, when you are handling the figures which are thrown up by the analysis as rate per foot super of floor or if you convert it into the actual rate per foot super of floor slab, that is the cost of the floor slab overall, including ducts. Provided you know that you have got ducts in the figures you can make due allowance for them in your cost plan. It does not matter which of the three elements you put it into, provided you know where it is. Do not put it into the floor on one occasion and into heating on the next occasion and into the structural frame on the next occasion. That is why we run this very simple document for the takers-off. We put it in the floor slab in our particular case, but it could just as well go into the heating.

If an architect wants to know what is the comparative cost of different heating systems, you have to re-abstract for this particular problem, but you know that the ducts are in the floor slab, and you can take them out of that section of the bill to build up the total cost of heating. It is the same with the boiler house and fuel store as against an oil-fired job, where you have everything above ground. No bill of quantities, not even a trade bill, will produce an answer ready made. But I suggest that you will want less reference to dimensions in an elemental bill for that purpose than you will in a trade bill.

The CHAIRMAN: Is Mr. Brett-Jones happy now?

A. T. BRETT-JONES: I cannot say I am happy. I was not really asking a question. I was pleading a case for a separate cost analysis against an elemental bill as an aid to cost planning.

B. L. R. LIPPMANN (quantity surveyor): If an architect or a client wants a bill prepared in a certain form we are quite ready to do it in that way. All these advantages and disadvantages seem to me marginal. They are not really serious.

What has puzzled me in this course of lectures and other discussions on this subject over the last eighteen months or more is what is the real need for the elemental bill? It seems to me that an elemental analysis is a useful tool, that can be done without elemental bills. Are not we throwing too much weight on one form of cost control, analysis of costs, rather than on other methods? At the first of these lectures Sir Thomas Bennett referred to designing twenty different forms of facing panels for buildings and getting his quantity surveyor to do cost comparisons for them. That is also part of cost control and cost planning, and I do not like to see too much weight thrown on one particular method.

H. F. KERLEY (quantity surveyor): Mr. Tomlin raised the point that, if you get an item, for example, of oak frames appearing in several different elements, an estimator will be quite likely to put a different basic price against them according to their situation, but I can foresee difficulty at the final account stage. Even with a well prepared scheme there are considerable variations, and a quantity surveyor, pricing the final account, can make quite a difference in deciding what price to affix to an oak door frame which occurs in an element which did not originally contain it. He has to refer to three or four different elements each of which has differently priced items.

IVAN TOMLIN: I think you have a quantity surveyor's problem there, but it has been a builder's problem for years. He has been telling all quantity surveyors that this particular piece of work is not the same as the other piece of work, and I think it is time you accepted that. It may be that one door frame is on the top storey and the other one on the ground floor. If a man has to carry a door frame up to the top storey, of course it is going to cost more money, and the estimator will allow for that.

E. WILSON: In general terms I am not in favour of elemental bills, but I should like to support Mr. Nott on the question of valuations in final accounts. We have found that they do not take any longer to prepare. The repetition of items in the elemental bill varied in my experience on five jobs between 5 and 7½ per cent.

The CHAIRMAN: That is very useful information.

J. M. AUSTIN-SMITH: Mr. Tomlin said that the estimator had to go off to the architect's office and see the drawings for about ten minutes and then push away to the next job. I am impressed by the fact that it took two days longer for the estimator with an elemental bill. Would Mr. Tomlin say how much time it would save the estimator if he had a proper set of drawings handed out to him at the same time as the bill?—because that is a recommendation by the R.I.B.A. Practice Committee.

IVAN TOMLIN: I do not think that there is any question of saving time by having drawings. I think you are going to get a far more accurate tender, far more likely to represent the cost than it is when the builder had to allow for various unknowns. I think it is a question of price risk as opposed to time at the tendering stage.

J. A. SPON (architect): We have been talking a good deal about methods of tendering. I think it is fairly obvious that there is a concealed cost which is the builder's cost of preparing his tender. The client apparently gets that cost only in the case of the successful tender. Would it be a feasible proposition and would not it be cheaper if the builder was relieved of the necessity of extracting information from bills? Could not the quantity surveyor do it with a duplicator, and would not that in the end prove cheaper?

IVAN TOMLIN: I think on that particular point the time and cost of geting out enquiries are incurred more with sub-contractors than with materials. On this question of stabilised prices it may be that we do not have to go out as often for materials. It probably would still apply to London, because you have so many areas, and prices vary from one side of the road to the other.

On the question of tendering costs, obviously the whole cost of tenders will go into a builder's overheads, so if he gets one job out of ten that job bears the whole cost of the other tenders he has out. The client has to pay for it somehow.

The CHAIRMAN: I would leave you with this thought, that, whatever the elemental bill has and whatever the orthodox bill of quantities has, we builders certainly want something to help us in our planning stage in our offices before we start our contracts. It is true, of course, that what we want most of all is complete drawings and complete information, but, apart from that, anything that helps us will be very welcome. You have heard a good deal this evening about estimating. I am not an estimator and I have never understood estimating. Mr. Tomlin is one, and I have no doubt that he will let me into the secrets of how estimators work, but I think that one of the things we have to do in builder's offices is to bring the science of estimating to a real science, and we can do that only by getting back to measured work values. Until we do that I do not think that, whatever bill we have and however well one can see the job from the bill, the cost figure or the tender price will be a particularly accurate one. We want, really to get at, not the cheapest price but the right price for the builder. The building industry must become much more interested in cost.

I am sure we should like to thank Mr. Nott and Mr. Tomlin for their very interesting addresses this evening.

Cost control in building

4 *Cost planning*

speaker GRENFELL BAINES
chairman M. H. THACKRAY

THE CHAIRMAN: Unfortunately, I was not able to attend the first three lectures, but from what I have heard of them I think the whole series can be likened to an extraordinarily good meal of which you have already had the first three courses. You have had the *hors d'œuvres,* the soup and the fish in "The Need for Cost Control," "Cost Analysis," and "The Elemental Bill of Quantities." We can now say we have come to the main course of this meal, and who better could we have to dish it up than Mr. Grenfell Baines?

It is usual on these occasions for the Chairman to say that there is no need for him to introduce the speaker, because he is so well known. Mr. Grenfell Baines is very well known amongst the inner circle of people who work for the RIBA and with the RIBA but perhaps he is not so well known yet to such a large body as we have here present. Therefore, it is only right for me to say that amongst many other duties he undertakes, he is a member of the Council of the RIBA and is also on the RIBA Executive Committee, which I understand is the inner sanctum of that body.

Furthermore, he is, of course, a member of the Joint Consultative Committee of architects, builders and quantity surveyors and has numerous other duties. Even so, he finds the time to carry on a very busy practice in the north-west of England and to do the tremendous amount of research which enables him to put before you tonight his paper.

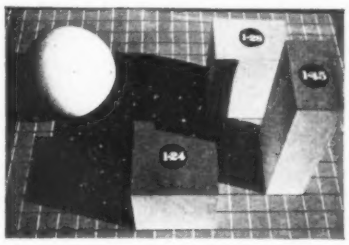
GRENFELL BAINES: I want to begin by fitting cost control into my philosophy as a designer. I believe, having tried it quite a bit, that cost control is not merely a matter of collecting a few details, unimportant and uninfluential, but can be a fundamental factor. I do realize that this audience does not consist only of architects. But one thing is common to all of us—architects, builders, and quantity surveyors—that we are all working in the building industry.

The economics stress pattern

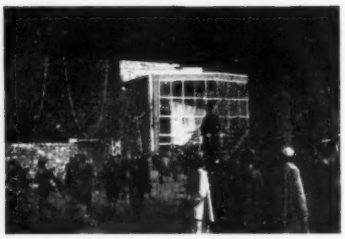
I think we have all a bit of the designer in us. We are all capable of creating. It is absolutely vital, I think, to good building that the other members of the team should have a better understanding of what is in the designer's mind, what are his aims. I am going to talk to you, therefore, almost purely as a designer, a designer who has seen that economics has its beauty; who has seen that it can be as important a factor in design as the three age-old factors—"commodite, firmnesse and delight." Although, goodness knows, all of us in the industry cannot be terribly proud of our performance in the economic field, neither should we designers in particular approach the subject with an antipathy born of the feeling that we are temperamentally unsuited for this kind of thing. Far from fettering the mind, cost planning of design can actually free it. It may lead to all sorts of inspirations and ideas, just like any other factor. I want to say, too, that I am quite certain we are not devoid of a sense of economy. It is instinctive in us.

If I am not mistaken, mixed among the many responses to these visual experiences (below) will be a sense of economy, of material, of movement, of surface ratio to volume. The first thing to give us confidence is a realization that this basic sense of economy is in all of us. I think you must realize from those slides that economy in design can affect the most fundamental aspect of architecture—shape.

I should here like to help you, as I have helped myself, with an acoustical analogy. I said that economy can vitally affect shape. From the days when an eminent professor of architecture imagined, I am told, that a few wires stretched across the back of the hall would control the wild reverberations from a barrel-vaulted ceiling, from subsequent times when it was hoped rather than imagined that a liberal poulticing of absorbents would heal our sins in fundamental form; we have progressed in acoustics, guided by the light of Hope Bagenal and others to a realization that acoustics begins with good form. We hardly even need to be told it in these days: we feel it. The way in which that science was reduced to a teaching method, the way in which we have been able to absorb it, now brings us to the point where we think of the science and of its visual outcome not only in shape by the way but in the inspiration it gives us for surface treatment. We see them synonymously. There is instinctive in us the capacity to judge relationship between width and height.



One of several slides shown to demonstrate ratios of surface to volume. All figures have the same volume.



"Force and Form," slides shown to demonstrate the analogy between stress pattern and economics stress pattern. On the left overturning moments brought to the ground, and on the right, resolved in the air.

A similar study of economics, and the various processes of using it, can lead to the self-same capacity to control and be master of the design.

We know also that a thorough knowledge of the distribution of structural stresses and the nature of the materials we use can be employed just as effectively to shape and to inspire the detail in a design.

We know that we must equate material with stress. We know that we must discover where the stress lies and how it is distributed, and it is there that we get inspiration.

Other people far better qualified that I have dealt with this in detail—Samuely in his paper "Force and Form" and Nervi, Maillart and Candella in their works. But I should like to mention one example of the distribution of stress and its use to give expression to design which has interested me. I refer to the use of continuous structure in portal frames which leads to resolving of the overturning moments in the air rather than having to be brought to the ground (see top left). It is simply a matter of expressing the distribution of stresses and taking advantage of the knowledge of how they are distributed to give character to the design.

Thanks to THE ARCHITECTS' JOURNAL at any rate—and I ought to have said further back the Ministry of Education—there is at least a glimmering of light about. But how fitful and uncertain this light can be! Just as we thumbed through the pages of THE ARCHITECTS' JOURNAL interested in the cost of other people's buildings, which helped us to bridge the gaps in our own experience, we like to thumb through them now to look at the pattern of their cost stress diagrams. And believe me, if you have tried it yourselves, you will agree that these things are not always what they seem. If you are to get anywhere at all in making comparisons, you must compare like with like.

Fig. 3. A standard pro-forma used by Grenfell Baines and Hargreaves for cost planning. Successive adjustments to the cost plan are recorded on these sheets.

COST PLANNING PRO-FORMA

Job "SHELL" CANTEEN Job No. PR.990

Area 19,800 sq.ft. (includes 3,000 basement). Estimated Cost

Target Price per Square Foot 80/-.

Serial	Cost Item	Nett Cost £ s. d.	Nett Cost Per Sq.Ft. s. d.
1	Preliminaries & Insurances	1,885. 0. 0.	1. 6.
2	Contingencies	1,980. 0. 0	2. 0.
3	Work below ground level	5,940. 0. 0.	6. 0.
4	Frame	8,580. 0. 0.	8. 8.
5	External walls & Cladding	6,435. 0. 0.	6. 6.
6	Windows & external doors	3,960. 0. 0.	4. 0.
7	Roof construction	4,785. 0. 0.	4. 10.
8	Roof lights	742.10. 0.	9.
9	Upper floor construction	990. 0. 0.	1. 0.
10	Staircases	990. 0. 0.	1. 0.
11	Glazier	990. 0. 0.	1. 0.
12	Internal partitions	3,217.10. 0.	3. 3.
13	Internal doors	742.10. 0.	9.
14	W.C. doors & partitions	206. 5. 0.	2.5
15	Wall finishes	2,970. 0. 0.	3. 0.
16	Floor finishes & skirtings	4,702.10. 0.	4. 9.
17	Ceilings	3,135. 0. 0.	3. 2.
18	Decorations	1.980. 0. 0.	2. 0.
19	Fittings	2,722.10. 0.	2. 9.
20	External plumbing	742.10. 0.	9.
21	Internal plumbing	1,320. 0. 0.	1. 4.
22	Sanitary fittings	660. 0. 0.	8.
23	Gas installation	Nil	Nil
24	Electrical installation	3,712.10. 0.	3. 9.
25	Heating installation	9,570. 0. 0.	9. 8.
26	Drainage (nett cost only)	Nil	Nil
27	External Works (nett cost only)	Nil	Nil
28	Ventilation	3,443. 0. 0.	3. 6.
29	Lifts	1,196. 5. 0.	1. 2.5
30	Piling	Nil	Nil
	TOTAL	79,100. 0. 0.	80. 0.

Definitions and developments

When you have studied a few cost plans, you do realize that different people frame these plans in different ways. There are definitions of an element, particularly the boundaries of an element, where it begins and where it ends, which are totally different from yours. Or you look at someone's cost analysis and he has 5s. or 6s. per sq. ft. in the frame. You move heaven and earth and you cannot get your frame with a similar building below 10s. You can only come to the conclusion that he is beginning and ending somewhere in the middle, whereas you are making your full definition stretch from start to finish. I am not going to say who is right or wrong. All I am going to say is this: that the most urgent body of work to be done on this subject is definition—thorough definitions of elements, where they begin and end, and what they contain. The fact that they may have to be revised from time to time or may not be entirely applicable to your job should not stop us from doing this particular piece of work.

I would suggest that this should be a joint effort for architects, builders and quantity surveyors, like this meeting, and that we should really get down to it. All the people who are ready to publish this information—and I cannot go past this point without paying a tribute to THE ARCHITECTS' JOURNAL who have started publishing it—should agree that not only will they publish it on the same basis; they should insist that every designer who puts information through to them uses that basis himself. Here, although I do not want to enter into the elemental bill controversy, it does seem that we cannot have elemental bills that

can be of any use in elucidating cost stress diagrams unless they are all taken off on the same basis.

I ought to have mentioned that we find these visual expressions of the cost plan are far easier to understand than the statistical ones. This (Fig. 4) was an exercise where we took five different designs of a warehouse. The firm concerned are going to do a very big programme and spend well over a million pounds, and we agreed that a very wide "recap" should be made. This is expressed statistically over a reduced number of elements because of the simple nature of the building. Our clients were very appreciative of this, although they had a very keen appreciation of the statistics that lay at the back of it. This sort of thing gets over to us where taking certain specifications pushes up the cost.

Now we come to the differences between published cost analyses. Here are two cost analyses for almost identical buildings (Fig. 5). They add up pretty much to the same, 41s. 9d. and 38s. 6½d. per sq. ft., but the differences between the items are quite amazing—6s. 2½d. and 9s. 0¾d. frame; 8s. 0d. work below ground—I think that was because they had a raised floor in one case—and 5s. 6½d. for the floor level with the roadway, and 7s. 9d. against 3s. 8d. for external walls—a considerable difference. Windows and doors are pretty much the same. There are these tremendous differences between published analyses that baffle designers who are trying to use these techniques to begin with. Later, I am going to tell you what we do to take advantage of this information without being completely shattered. Just going to the bottom, I see drainage was left out of that analysis. It must have been in some other item, perhaps site works. It has been put in by our surveyor in this building here. So although the final variations are very small indeed, there are big variations within items.

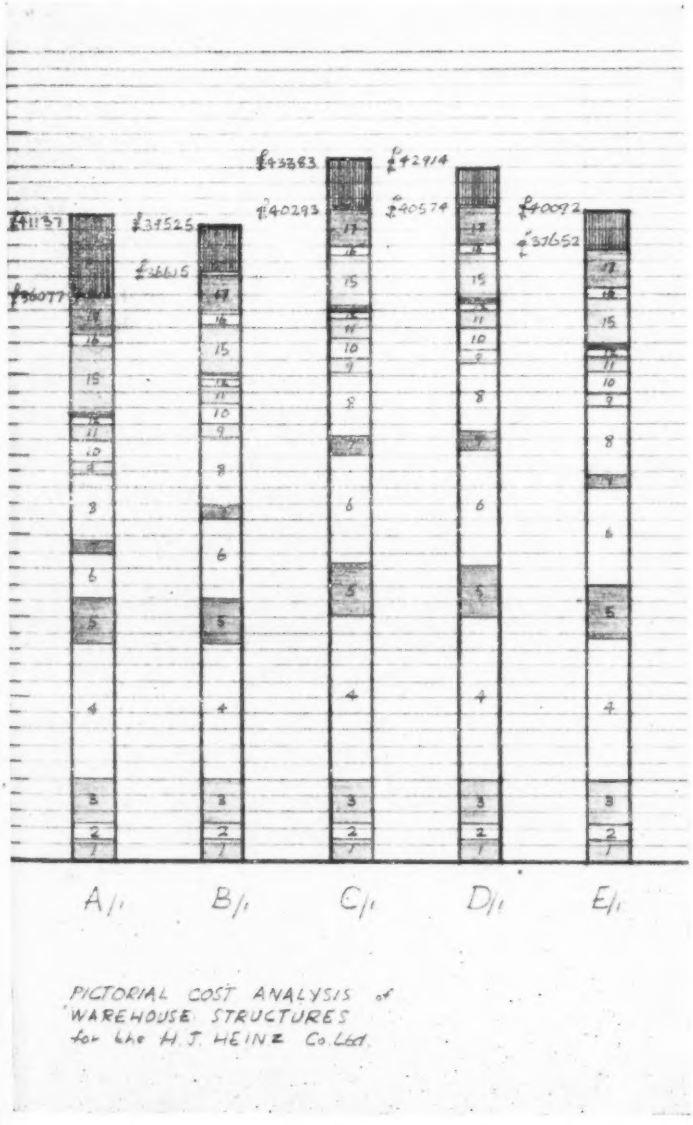


Fig. 4. "Visual" expression of 5 cost analyses. Detailed costs of these are shown in Fig. 7 on page 929.

We must get a definition of these elements, and we must have it recognized in a standard publication. On the definitions of elements up to now, while they have served us well, we have discovered a fundamental defect in such broad headings as roof, external walls, and so on. The main elements of a building, such as roof and walls, actually divide into two principal divisions, the main fabric and the edges. The critical parts of a building are its edges. It is at the edges that a building gets expression, which costs money and can often cause trouble. Of the critical parts the walls have the largest cost by putting holes through them. You can get a roof which is similar in basic fabric and eaves and verges and ridge, but you can get two architects who will treat the verges and eaves and ridge in such a way as to make comparison almost impossible. I would suggest, therefore, that we get from the quantity surveyor the linear costs of these edges and abstract them from the basic fabric stretched between. Just before I came away, I got our surveyor to tell me what were the differences in costs if one looked at a window just as a window in a wall and did not consider the surround. The difference was 50 per cent. in cost between the window where the edges were not considered and where they were. That could, of course, have a profound effect on external wall costs. I have said before that I do not want to enter into the elemental bill controversy, but I am sure the way we present our requirements to the Q's will give them a lead as to how they do their work in order to put over that information. So in addition to knowing exactly what is the scope of an element, we need to reconsider these elements, particularly the question of edges and where to make holes through walls, and so forth.

Design criteria and cost information

One of the useful things I ought to have mentioned is this. It is very useful when you are licking an arrangement into shape to present yourself with a "bogy" building; a building that really is down to the minimum.

All bogy buildings will, of course, be cubes. We may want to suggest possible enclosure to volume, but we all know that as well as the cube there are standards

COMPARISON OF COST ANALYSES FOR:
WAREHOUSE : FRANK FARRANDS LTD., NOTTINGHAM
WAREHOUSE : H. J. HEINZ COMPANY, LTD., CARDIFF.

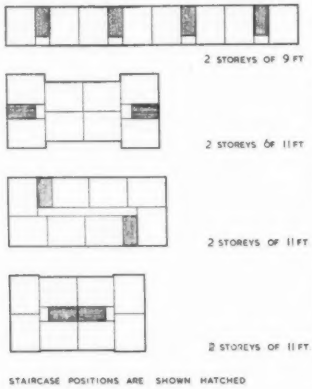
	COST PER SQ. FT. FARRANDS	HEINZ
	s. d.	s. d.
1. PRELIMINARIES & INSURANCES	2. 3½	1. 1½
2. CONTINGENCIES	2. 9½	9
3. WORK BELOW GROUND LEVEL	8. 0½	5. 6½
4. FRAME	6. 2½	9. 0½
5. UPPER FLOOR & STAIRCASES	-	-
6. ROOF CONSTRUCTION	5½	6. 1
7. ROOF LIGHTS	0½	1. 8½
8. EXTERNAL WALLS & CLADDING	7. 9	3. 8
9. WINDOWS & EXTERNAL DOORS	2. 1	1. 11
10. EXTERNAL GLAZIER	2. 8½	1
11. INTERNAL PARTITIONS INCLUDING GLASS	8	-
12. INTERNAL DOORS INCLUDING GLASS	4½	2½
13. W.C. PARTITIONS AND DOORS	-	-
14. WALL FINISHES	8½	-
15. FLOOR FINISHES & SKIRTINGS	9½	1. 0½
16. CEILING FINISHES	-	-
17. DECORATIONS	9½	1. 2½
18. FITTINGS	1½	10½
19. PLUMBING (EXTERNAL)	1	1½
20. PLUMBING (SANITARY FITTINGS)	0½	1
21. PLUMBING (INTERNAL)	2½	
22. HEATING & VENTILATING INSTALLATION	3. 7½	2. 1½
23. ELECTRICAL INSTALLATION	1. 10½	9½
24. GAS INSTALLATION	1	-
25. DRAINAGE	-	2. 2½
NETT COST	41. 9	38. 6½

Fig. 5 (above). Two warehouse analyses showing how the distribution of money can vary with comparable totals. Fig. 6 (right). Varying plan arrangements of identical units showing the different wall and roof areas and foundation lengths obtained. Units with lighting from one side only have greater storey heights.

that one could not build to. Cubes are at least buildable, although we know they are shapes of dubious virtue architecturally speaking. We like to stretch them out and put some direction into them; but it is as well in the process of doing this that you do not stretch beyond the economic elastic limit. It is very useful indeed, then, to have this "bogy building" beside you all the time, to discover just how far you are going in search of form. I was just mentioning the sort of tools we should like from the quantity surveyor in shaping and arranging buildings. I see I missed out one or two. In basic planning, we really do need to know the price of a whole stair from floor to floor. We need to know lifts. We need to have some comparison between light and widespread foundations and concentrated and heavy foundations in order to know whether we should go up, or what types of access or circulation we should plan. We have been very much helped in that by the percentages of circulation the Ministry themselves have suggested; and having tried to get them, we know they must have done a pretty good amount of research themselves before they set them, but you have to work hard to make them work. But it is useful to have these checks, not only for the ratio of circulation to working area but for "service" to working area generally. We have tried them on all kinds of buildings, not just schools, and it works for all kinds of building in principle, although you may have to change the detail. These checks within the bogy building, circulation and service to working area, are the checks that will enable you to know that basically in shaping and arranging you are keeping within the cost plan.

I should like to say a little about how we began on this. Over the last six jobs we have proved completely that cost planning works, that you can control a job from beginning to end and bring it right inside the estimates given to you, provided these ceilings are not completely crazy; and some clients have completely crazy ideas. But if you want to raise the ceiling

BUILDING SHAPE AND ARRANGEMENT



STAIRCASE POSITIONS ARE SHOWN HATCHED

	RATIOS					PERFORMANCE	
Area of Ext. Walls	Roof Area	Founds Perimeter	Horiz Circul	Stair Flights	Light & Air	Access
8136	5200	738	Nil	+64%	+50%	S
7216	4680	604	Nil	Datum	Datum	G
6776	4968	668	288	Datum	Datum	VG
6424	4680	586	Nil	Datum	Datum	G

		CARDIFF WAREHOUSE 20,000 sq. feet.		(A) 22½° UNINSULATED "BIG 6" ASBESTOS-CEMENT ROOF, TRUSSED FRAME.				(B) 22½° INSULATED "BIG 6" ASBESTOS-CEMENT ROOF, TRUSSED FRAME.				(C) 5° UNINSULATED "LARGESPAN" ASBESTOS-CEMENT ROOF, PORTAL FRAME.				(D) 5° INSULATED "LARGESPAN" ASBESTOS-CEMENT ROOF, PORTAL FRAME.				(E) 5° "STRAMIT" ROOFING, PORTAL FRAME.				
		Brickwork 19' high		Brickwork 19' high		Brickwork 15' high		Brickwork 19' high		Brickwork 15' high		Brickwork 19' high		Brickwork 15' high		Brickwork 19' high		Brickwork 15' high		Brickwork 19' high		Brickwork 15' high		
		COST		COST - 1		COST - 2		COST - 1		COST - 2		COST - 1		COST - 2		COST - 1		COST - 2		COST - 1		COST - 2		
	DETAILS	Item £.	Sq. foot s. d.	Item £.	Sq. foot s. d.	Item £.	Sq. foot s. d.	Item £.	Sq. foot s. d.	Item £.	Sq. foot s. d.	Item £.	Sq. foot s. d.	Item £.	Sq. foot s. d.	Item £.	Sq. foot s. d.	Item £.	Sq. foot s. d.	Item £.	Sq. foot s. d.	Item £.	Sq. foot s. d.	
1	Preliminaries & Insurances.	1212	1 · 2½	1330	1 · 4	1330	1 · 4	1330	1 · 4	1330	1 · 4	1330	1 · 4	1330	1 · 4	1330	1 · 4	1330	1 · 4	1330	1 · 4	1330	1 · 4	1
2	Contingencies.	800	· 9½	1000	1 · 0	1000	1 · 0	1000	1 · 0	1000	1 · 0	1000	1 · 0	1000	1 · 0	1000	1 · 0	1000	1 · 0	1000	1 · 0	1000	1 · 0	2
* 3	Work below ground level.	3000	3 · 0	2666	2 · 8	2666	2 · 8	2666	2 · 8	2666	2 · 8	2666	2 · 8	2666	2 · 8	2666	2 · 8	2666	2 · 8	2666	2 · 8	2666	2 · 8	3
4	Frame.	9082	9 · 1	8434	8 · 5¼	8434	8 · 5¼	8434	8 · 6¼	8434	8 · 5¼	10025	10 · 0¼	10025	10 · 0¼	10026	10 · 0¼	10025	10 · 0¼	8753	8 · 9	8753	8 · 9	4
5	Floor.	3200	3 · 2½	3240	3 · 2¾	3240	3 · 2¾	3240	3 · 2¾	3240	3 · 2¾	3240	3 · 2¾	3240	3 · 2¾	3240	3 · 2¾	3240	3 · 2¾	3240	3 · 2¼	3240	3 · 2¼	5
* 6	Roof Construction.	6101	6 · 1¼	3244	3 · 3	3244	3 · 3	4812	4 · 9¼	4812	4 · 9¼	6662	6 · 8	6662	6 · 8	7125	7 · 1½	7125	7 · 1½	5927	6 · 11¼	5927	6 · 11¼	6
7	Roof Lights.	1740	1 · 9	866	· 10⅛	866	· 10⅛	866	· 10⅛	866	· 10⅛	1164	1 · 2	1164	1 · 2	1164	1 · 2	1164	1 · 2	811	· 9⅜	811	· 9⅜	7
8	External Walls & Cladding.	4829	4 · 10	4161	4 · 2	3779	3 · 9½	4261	4 · 3½	4017	4 · 0¼	4161	4 · 2	3821	3 · 9⅜	4279	4 · 3¼	4056	4 · 0½	4279	4 · 3½	4056	4 · 0½	8
9	External doors.	900	10⅜	786	· 9½	786	· 9½	786	· 9½	786	· 9½	786	· 9½	786	· 9½	786	· 9½	786	· 9½	786	· 9½	786	· 9½	9
10	Floor finish.	1158	1 2	1288	1 · 3½	1286	1 · 3½	1288	1 · 3½	1286	1 · 3½	1288	1 · 3½	1288	1 · 3½	1288	1 · 3½	1288	1 · 3½	1288	1 · 3½	1286	1 · 3½	10
11	Painting.	1335	1 · 4	1026	1 · 0¼	1025	1 · 0¼	1028	1 · 0¼	1025	1 · 0¼	1114	1 · 1½	1114	1 · 1½	1114	1 · 1½	1114	1 · 1½	990	1 · 0	990	1 · 0	11
12	Fittings (Fire hoses & water supply)	884	· 10½	500	· 6	500	· 6	500	· 6	500	· 6	500	· 6	500	· 6	500	· 6	500	· 6	500	· 6	500	· 6	12
13	Plumbing (External)	131	· 1½	200	· 2½	200	· 2½	200	· 2½	200	· 2½	200	· 2½	200	· 2½	200	· 2½	200	· 2½	200	· 2½	200	· 2½	13
14	Plumbing (Internal, inc. Sanit. fittings.)	85	1	86	· 1	86	· 1	86	· 1	86	· 1	85	· 1	85	· 1	85	· 1	85	· 1	86	· 1	86	· 1	14
15	Heating Installation.	3000	3 · 0	4150	4 · 1⅝	4260	4 · 3	3000	3 · 0	3000	3 · 0	3000	3 · 0	3000	3 · 0	2700	2 · 8½	2700	2 · 8½	2800	2 · 9½	2800	2 · 9½	15
16	Electrical Installation	667	8	667	· 8	667	· 8	667	· 8	667	· 8	667	· 8	667	· 8	667	· 8	667	· 8	667	· 8	667	· 8	16
** 17	Drainage.	2231	2 · 2¼	2330	2 · 4	2330	2 · 4	2330	2 · 4	2330	2 · 4	2330	2 · 4	2330	2 · 4	2330	2 · 4	2330	2 · 4	2330	2 · 4	2330	2 · 4	17
18	Gutter boarding	—	—	106	· 1¼	106	· 1¼	105	· 1¼	105	· 1¼	75	· 1	75	· 1	75	· 1	75	· 1	—	—	—	—	18
	TOTAL	40365	40 · 4½	36077	36 · 1	35795	36 · 9½	36616	36 · 7½	36351	36 · 3	40293	40 · 3½	39963	39 · 11½	40674	40 · 7	40361	40 · 4⅛	37652	37 · 7⅝	37429	37 · 5¼	
19	Heating operation over 10 years.	3120	—	5060	—	5180	—	2910	—	3070	—	3090	—	3220	—	2340	—	2360	—	2440	—	2460	—	19
	TOTAL including (19)	43475	—	41137	—	40975	—	39525	—	39421	—	43383	—	43173	—	42914	—	42711	—	40092	—	39889	—	
20	Saving if rooflight area halved.	—	—	· 267	· 3¼	267	· 3¼	180	· 2⅛	180	· 2⅛	160	· 1⅞	160	· 1⅞	130	· 1½	130	· 1½	180	· 2⅛	180	· 2⅛	20
21	Extra for Portal Frame.	—	—	1678	1 · 8⅛	1678	1 · 8⅛	1676	1 · 8¼	1676	1 · 8¼	—	—	—	—	—	—	—	—	—	—	—	—	21
22	" " painting Portal Frame.	—	—	86	· 1	86	· 1	86	· 1	86	· 1	—	—	—	—	—	—	—	—	—	—	—	—	22
*** 23	" " Site Works	10000	10 · 0	10000	10 · 0	10000	10 · 0	10000	10 · 0	10000	10 · 0	10000	10 · 0	10000	10 · 0	10000	10 · 0	10000	10 · 0	10000	10 · 0	10000	10 · 0	23
24	" " Perspex rooflights.	—	—	110	· 1¼	110	· 1¼	110	· 1¼	110	· 1¼	—	—	—	—	—	—	—	—	—	—	—	—	24

Includes £1700 which is cost of Chippers Office excluding cost of Electrical & Heating installations.

* A minimum figure – may be doubled if ground is poor or unstable.

** Provisional figure based on Cardiff – may be higher or lower.

*** Provisional figure based on Cardiff – not likely to be much higher providing building land and accessibility to site are similar to Cardiff.

* N.B. Figures include for a canopy projection 10'0" greater than at Cardiff.

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Fig. 7. A comparison of warehouse structures with different roof constructions. This was part of the preparation for a large programme of building.

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for a client, it is easy to do it with a well-presented cost analysis. I sometimes think it is possible to prestress clients with enthusiasm, so that they will bear heavier economic pressures, although they have an explosive limit, too. But there is no doubt that you can gain a client's confidence by means of a well-presented analysis, so that he can see where the money is going, just as you can. You can get him either to cut down on the trimmings or come up on the budget.

Cost planning

When we began this, we took six jobs from THE ARCHITECTS' JOURNAL, we did not look at the architectural side at all, because they were all at different times, and rising costs and variations in cost bedevilled any comparison completely. We reduced these financial aspects to percentages of the whole to see the way money had gone on various elements in different jobs. They varied from a heavy workshop in a technical school to primary schools. We first did that and issued it out to the fellows in the drawing office, as something we thought might be good. We then discussed between ourselves whether these were the elements which readily came to our minds, as a result of which we drew up our own list of elements. I may say that we averaged these six jobs as well, to see where the average was. Those people who have made light of statistics still say it is quite wrong to average: you will be led astray. But, believe me, in the uncertainty we were in, anything was better than nothing, so we averaged these jobs and we put down an average pattern as a guide to keep us going on the subject. We can make our own cost plans quite well now, but this is how we began, and I mention that because some of you may be wondering how one can begin on this. I will show you some slides in a minute, but before I do so, there is another thing I should like to mention about the way in which we help ourselves in the office. In the synopsis you will notice there is a publication called the Cost Bible, which, some people will say, is a very dangerous thing. We realize that than can be so. The sheets have to be dated up. But we do not claim that the Cost Bible is any more than a guide, and we insist that it must not be taken as gospel!

Our Cost Bible is a way of recording the information which individual designers can sift out as it occurs. It only needs doing once, and it may be used on innumerable subsequent exercises.

This slide relates to cost performance, and we are gradually building up a series of cost-performance constants, so that we can tell the varying costs of different degrees of sound, fire and thermal resistance.

Another very interesting exercise was in comparing cross-wall construction with frame. Where there was 8s. 7d. or 8s. for the frame, with cross-walls there was nothing. We were able to spend a little more on external walls and cladding. We had another item for windows. Our roof was rather more expensive because we had money to spare. Our roof lights were a little more expensive. The upper floors were pretty well synonymous, because this is a service job carrying floor repetition, and we were able to spend more on floor finishes. Ceilings were about the same and the internal wall price was high because our internal walls were cross-walls.

Comparing the massive areas with the other, we were saving some 6s. to 8s. There were opinions as to what was in there, but it is a typical sketch issued in the office which led us to this conclusion about increased circulation. We could afford the second stair because we were saving 6s.

The cost plan and programming

This brings me to the other uses of the cost analysis. We have found that the builders, who are really keen on programming, can be persuaded to make an analysis the basis of their programme. This is a big job where the programme is based on the analysis.

One of the most interesting things which the client greatly appreciated was that it enabled us to give him the curve for financial commitments. This job lasted two years and cost a lot of money. The client wanted to know the rate at which money would be spent. We were able, as a result of knowing the figure for the elements and the estimated progress, to show the curve of expenditure that could be expected.

We use cost analysis as the basis for progress reports from our clerks of works.

The clerk of works is issued with a list of these 34 elements. The percentage value of these in the total contract he estimates, and he needs a little instruction on estimating, because items have been formed financially and are often estimated physically. Take an example. Supposing an expensive heating boiler arrives on the site. Financially it could influence the money side quite considerably, but in so far as progress is concerned, perhaps, it influences to nothing like the same degree. (To get a boiler delivered these days is terrific progress!)

Our clerk of works estimates these percentages and the percentage of a percentage gives a very good idea. It is surprising how accurate an idea it gives of how the job is going. We find that the contractors are keeping their pulse on the progress of the job and we learn far earlier whether the labour force is really adequate and whether progress is according to programme.

Here we come to the final use of the analysis which is one of the most important—its use to the architect in discussions with the client. These three slides are a series based on three analyses.

On this particular job—a big one—the client wanted several alternatives tried, and there are three different cost analyses. We had to show different definitions and uses of double as against single glazing and so on. We went to the client with our sketch plans and explanatory notes described every item. Just as a client can be carried away by a tricky little perspective model, so he can be carried away by the sketch cost plan in the same way.

When THE ARCHITECTS' JOURNAL asked me to join a small committee to discuss the possibilities of running

a course like this, we had little idea how many people would be interested. When I rashly agreed that I would try to explain how it tied in with design, I little knew how disjointed and sporadic the account might be. If I may, I will conclude by mentioning and reiterating some of the points I have made and some of the promising lines that might be followed. First, economics is a valid design factor and when properly appreciated can be made to contribute to the totality of a design just as effectively as any of the other design factors of which we are fully conscious. However, good design is a balance of the positive elements in all the factors involved, and the design process is a balance between stimulus and control. The keen winds of economics must not be allowed to stunt and distort our buildings like trees in a windswept landscape (though, in passing, there's character there). There must be control, and to control one must have knowledge and practice.

I believe that at first these developments will be essentially post-graduate studies. They will be forced along in the turbulent seas of practice. This is not only vital to good relations between practising designers (and I include quantity surveyors and engineers), their patrons and our allied profession, the builders. It is essential, too, that this information should be tried out in actual practice by post-graduates if we are going to get it taught in the schools, including the joint training courses we all hope to see.

I wonder if the time is ripe for a text book as significant as *Towards a New Architecture*, say, as useful as a Dorman Long section book. It may be, although when it comes out I have a suspicion that it will have been written by an architect and a quantity surveyor working together. Perhaps we are not ready for a text book, but we are undoubtedly ready and badly need the fullest possible exchange of information. I sometimes think the repositories of cost information in the past—the Ministries of Housing and Local Government and Education—tend to hold out on us as to the real cost of some of the jobs in the ministerial area. That may be good policy. It keeps us on our toes, and there is always the possibility of managing to hit the target and do a less costly job. What matters is how the money was distributed, and that is the key to the whole thing; to estimate where the economic stress lies and distribute the money accordingly.

Two axioms have helped me in thinking about this. One is the age-old "United we stand. Divided we fall." As long as the cost of building stays a round figure between you and the client, you cannot control it or do anything with it. Analyse it, and it falls to your mastery. The other is the golfers' axiom: "Never under, never in." In other words, you cannot hope to reach full control unless you risk over-control. This is a good axiom for architects. It might have been a good axiom for the people who tried out rationing schemes. Anyway, you can never hope to reach full control unless you risk over-control.

Discussion

The CHAIRMAN: Mr. Grenfell Baines' enthusiasm is so infectious that I feel sure we are all sorry that he has had to cut his lecture down to about 50 minutes so as to enable a discussion to take place. We could all go on listening to him for some time, but the idea of this series was, of course, to create discussion amongst ourselves. Therefore, it is my duty to say that the meeting is now open for discussion.

J. M. POWELL (quantity surveyor): I should like to ask Mr. Grenfell Baines whether he finds the elemental bill of great value to him or whether it is just his elemental analysis that is most useful.

Has the elemental bill prepared now some elements which he needs to have for his general analysis, or does he sometimes need to have further subdivisions of elements by quantities?

G. GRENFELL BAINES: Up to now, we have had all the information we wanted from our quantity surveyor without the use of elemental bills. The surveyor who will continue this next week uses abstracts, and he requires to know pretty accurately the extent of the elements we are wanting him to cost for us. Of course, the elemental analysis is vital to us. I cannot see any other way of getting to know what there is in the building or whether you are spending more than you should be. Whether it is produced by a bill based on elements or not, I am not quite sure about it. One thing I have concluded is that we architects might do much more specification by elements rather than by trades. To specify by elements gives the quantity surveyor a much clearer picture of what you are after and it might give a clearer picture to the builder. That looks like the stepping-stone to taking off elemental bills, but I do not know the answer.

D. SPELLER (architect): Has Mr. Grenfell Baines ever used cost analysis to arrive at some rough figures for actual cost per square foot or yard super? Does he consider it is possible to use that as a method of assessing the sort of thing that could be used or would that be dangerous?

G. GRENFELL BAINES: No, as a matter of fact, in expressing the cost analysis, the square foot of floor area provided is a very good foundation. It is something your client understands. It is what he is paying for—space. To use it for recording the cost of various parts of the building that go to make up the elements is the foundation of our Cost Bible. The detail going to make up the cost of the element could well be price per square foot or yard super. But the expression of the element itself and its proportion to the other elements in the cost plan is its expression per square foot of building. While it may not be realistic in

terms of actual money, it is realistic in terms of proportion. You will get used to it. You will be surprised. We are at a point where we say 4s. 6d. for electrics? Ridiculous, it should be 3s. 9d.

There is another analogy. In the office they say, "We'll have 41." They are referring to the new 101 range of colours. They now know 41 in their blood, whereas it would have been exotic apple green or something of that kind before. Your square foot will come. You will get used to having it.

S. YOUNG (quantity surveyor): Mr. Grenfell Baines explained about the use of the cost analysis with these ups and downs. I wonder if he could tell us whether he arrives at a fairly firm total cost per foot super at the beginning of the investigations.

G. GRENFELL BAINES: Yes, indeed. It is absolutely inevitable, because the client pitches the ceiling price. For that ceiling he wants so much space. He is interested in the space and the ceiling. If you get the ceiling figure and the area wanted, you know the building has to come in at 75s. or 85s. per sq. ft. As you get more experience, you are able to say straight off to a client, "Your budget is wrong. You can't get a building like this for that price per square foot." You get to know what buildings should be costing per square foot. It represents the boundaries within which you work.

S. YOUNG: I was wondering about jobs where no ceiling price is fixed, where the client asks for the ceiling price.

G. GRENFELL BAINES: I would say, yes, we do value them. We give our figures to clients on that basis. We find with the data in our possession that we are beginning to put it down in a standard way. That again underlines the tremendous importance of a standard way of recording data, so that we can say, "Yes, you ask for 30,000 square feet. This will cost £90,000 based on so much per square foot." Are you suggesting that we use the cubic foot? We have given it up entirely.

A. ARMSTRONG (architect): May I ask whether Mr. Grenfell Baines has made an analysis of the cost to the architect of this cost analysis? Are there, for instance, extra fees to the quantity surveyors? I ask this because I am left with the suspicion that it is very economical for the architect to make that cost analysis, but I should like to hear more about it.

G. GRENFELL BAINES: Thank you for that question. It gives me an opportunity to say from really solid experience that we have found when these jobs come in that there are no revisions, no last minute changes in finishes, and so on. Without a shadow of doubt it pays the architect hands down. We have worked this in our office, and during the time of working it the output of our office has gone up steadily the whole time, because our chaps—instead of turning back and revising drawings because tenders have come in wrongly—have ploughed on to the next job. The quantity surveyors are delighted, because they would very much rather take off straight bills of quantities than go back and revalue on them. I have been staggered by what they are paid for these things. We dare not charge a penny, because it is our fault, so we never charged for revising drawings because we were wrong all the time!

Builders are more pleased, too, because they are getting drawings that they really have to carry out, not "preliminary only." I wonder if any architects have any views about the notion that there could be a real inspiration to beauty in a thoroughgoing study of economics. This thought has intrigued me.

A. L. CARSON (architect): You have mentioned something which is going to affect design, but if you cast back and think of the old days, people used large baulks of timber of far greater strength than necessary. The cost of conversion was very much more than the cost of the raw material. Now we are getting to the point where the cost of the material itself, because it is man-made material, influences the design. As we get to factory production, it is possible that the cost, the extra cost, of workmanship, will affect the way in which we use the various materials, so economics is bound to affect the architectural expression.

G. GRENFELL BAINES: Yes, indeed. You have touched on something not quite in the line of design which I might have mentioned in my paper. It is the whole question of how far one carries economy of material until one reaches an optimum and crosses the line. We found it particularly during the steelwork shortage, where we were spending far more money on fabrication in order to save steel after having reached a certain point. Nevertheless, the resulting lightness and balance of the structure was considerable. This is the sort of cost information we want from structural engineers. It was too late, but I got round to asking Mr. Samuely to do a paper for me on the economics of convenience in single-storey building, cutting out columns, so that there is complete convenience. How much does it cost? You can then go to the client and say, "This convenience is costing you so much."

J. MAIDEN (builder): I am intrigued with the idea of a "bogy building." I wonder whether to relate the cost of an individual building to the cost of a bogy building of that kind (and use the plain cube if you like), would not be a better method of comparison. Have you looked into that at all?

G. GRENFELL BAINES: Not as broadly as you are suggesting. I have only used a "bogy building" as a test or enclosure for a perimeter to floor area. I was inspired by Dennis Clarke Hall, who gave a talk on replanning schools and gave some telling figures. But I and many other architects have had "bogy buildings" thrust down our throats by clients who have seen advertisements in newspapers at 8s. 6d. per square foot. I have not found that that helped me particularly in my design.

J. MAIDEN: I am not suggesting that you should design along the lines of a "bogy building," but that having designed a "bogy building" it would be possible to use it as a common denominator on a cost basis. The bogy building gives a minimum perimeter that enables you to say, "I am prepared to accept 7s. or 8s. on my building." That means that the bogy building perimeter cost figure will be, say, 7s. 6d. You take out the vagaries of design.

G. GRENFELL BAINES: That is to some extent what we do. Supposing the shape of the building we ultimately decide on results in a perimeter cost that exceeds the bogy building by so much, we have so much less to put into other elements. We do use it in that way.

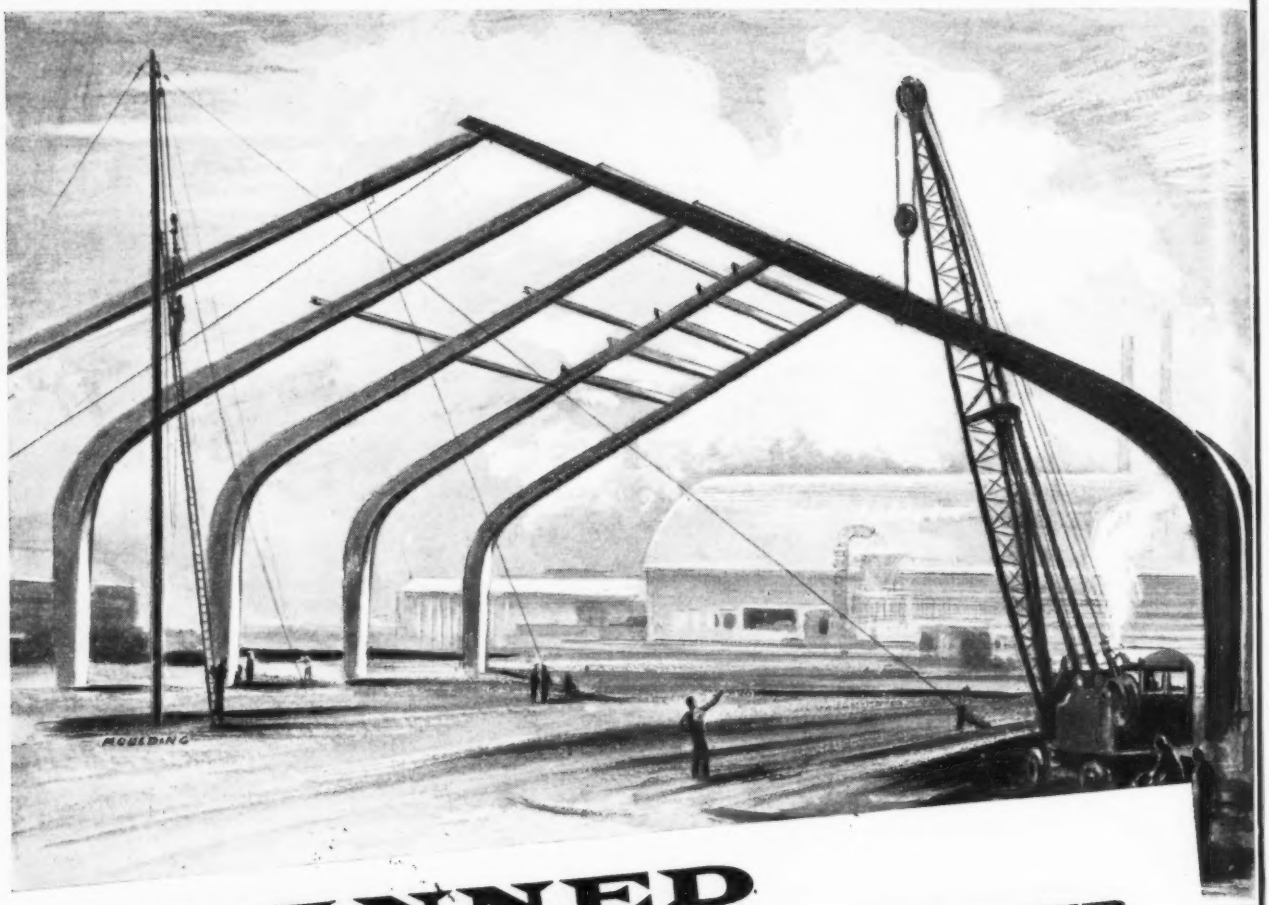
J. MAIDEN: You find it valuable?

G. GRENFELL BAINES: Yes, the whole technique of comparison, learning to compare, is valuable right through. We have to be able to integrate things to compare them in groups and later on analyse and compare them in detail. It is like sketch planning, using tracing paper time after time for visual shapes until you get where you want, a very similar technique. Is there anyone who wants to get going, and I have not said enough about our experience in starting up the cost planning technique? Does anyone want to know what else you do to get in on this?

H. F. KERLEY (quantity surveyor): I was thinking about the final account aspect. But perhaps it is a little premature. I think you said you had been working two years. If cost planning achieves what we hope, it will very much reduce the number of variations and should speed up the final account preparation a great deal. It should enable contractors to get paid more quickly and to have less retentions, and eventually it should reduce the cost of building. Have you been able to form any opinion as to whether this is being achieved?

G. GRENFELL BAINES: Not yet. You are right about reduction of variations. They can be cut down very considerably. It is completely unforeseen things, such as ground conditions and rises in costs that can upset you. It means very close links with your quantity surveyor, who has to design the building with you. There is perhaps a bit of advice I might give you if you want to start. Don't try to do it all on your own. Don't be your own quantity surveyor. Strike up some friendship if possible with a quantity surveyor. Say, "Look, this is a good thing for both of us." I don't know what the quantity surveyors may say about this, but this progress form based on the analyses can save a lot of work on interim valuations as well. It is going to give realistic valuations which will compensate for the earlier work on our cost plans.

A. MOIRA (quantity surveyor): One thing that puzzles me at the moment is to make a cost analysis useful to the architect. Perhaps I may take external walls as an example. We get a figure, say, 5s. 6d. or 10s. 6d. per foot super of floor area. The elevation can change tremendously in an assembly hall, say, where the stage end is solid brickwork and the foyer brickwork and between there is a mass of glass. To express that in one figure of 5s. 6d. and so on is not going to be particularly useful to the architect. Does he not want more



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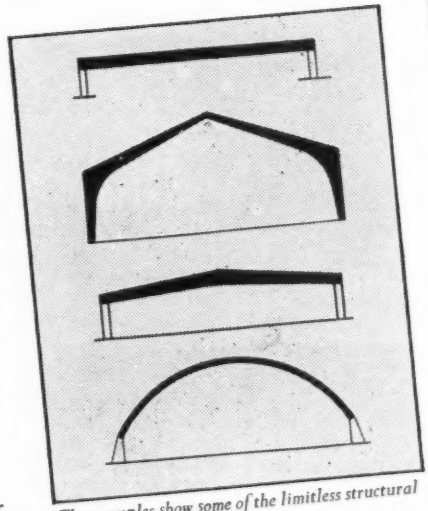

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than that? The window represents, say, 50 per cent. of the wall area and the solid brickwork 50 per cent. This gives them some idea in the drawing office of how much brickwork or window is put into the elevation.

G. GRENFELL BAINES: Yes, we want all sorts of things to proceed from cost plan A to Z. But the value of that figure is that it expresses the limits within which you can work.

You will hear how in the process of designing within the confines of that whole figure the quantity surveyor and the architect between them work out all kinds of analyses and breakdowns until each thing builds up to the overall price given.

J. A. SPON (architect): I understood Mr. Grenfell Baines to say that in effect through their experience his office are beginning to have a picture of the stresses in the cost. I am wondering, out of that picture, whether you reach a dividing line, say, with different general types of construction. Have they begun to discover that generally prefabricated structure is uneconomic for a certain type of building—that a stage is reached where it becomes uneconomic? Finally, do you employ one or two people, or a small group, to do the basic work in producing these cost bibles, or is it generally distributed so that each person contributes?

G. GRENFELL BAINES: To take the last part first, we do not specialize at all. We encourage architects to be whole people in the office and to do everything for themselves. The cost bible is a well-used piece of equipment to which everyone contributes.

Coming to the question whether we have noticed certain points are reached where prefabrication pays, we have not found that it does pay where our own design of traditional buildings comes up against it. We have been asked to use prefabrication schemes by authorities and have been able to show these people from our cost analyses that for what we are providing they are about 3s. to 5s. too much. They have to pull that down or we shall redesign it in our own way. I have come to the conclusion that the factory overheads of prefabrication must be so high that unless you use the stuff by the square mile it never will pay. The builders' overheads are so much less.

If you consider the reduction in perimeter enclosure of a building by reducing surface, you must not forget that you are reducing the heating costs as well. Therefore, the cost is put down very quickly indeed. There are a number of items where we want information in depth, and we are the people who are responsible for specifying the depth to which the investigation should be taken. But up to now I have not found any prefabrication system that is cheaper than the traditional building.

F. SHNEERSON (client): I should like to put one point from the point of view of the client. I assume you establish the cost plan and put it to the client, and I should like to ask whether it can be re-established if the client behaves in the usual manner and changes things half-way through.

G. GRENFELL BAINES: Yes indeed, and as a matter of fact this change of the client's mind, which practically always comes, practically always leads to a better idea. You have to allow clients to change their minds if they think of something better. Industrial clients often find a new process or machine, and an architect would be wrong to say, "We have settled this. I am not going to alter it for your new machine." It is inevitable clients should change their minds. One expects that.

Then there is the question, does it help? It does, indeed; because you can pinpoint where the client has changed his mind and say, "You have changed your mind about this element. It is costing more. Where can we take it from? Can we add it to the cost or shall we take it from this item?" Cost plans often enable the client to make a change in method of heating, double or single glazing and so on. Prior to having a cost analysis, I would not have had a clue what was going to happen. I would not have been able to say I could keep the cost as it was. All I could do was to mumble something about, "Yes, but it will probably cost more." Now I can know exactly how the pattern is being changed and compensate somewhere else in the building. It is very useful for the clients to change their minds. I hope there are not too many here!

A. SMITH (quantity surveyor): Suppose you have a maximum overall quoted super rate based on the client's perimeter cost, could you explain how you set about doing your cost plan? Do you put in a basic figure against each element and juggle with this, or do you fill in the basic elements during the planning or design stage?

G. GRENFELL BAINES: That certainly starts us all over again. I hope you will be able to come next time, when you will get it in much greater detail. You go to the quantity surveyor and you say, "Here is the area, the general size. Can you give a rough guess?" And you cannot go soon enough. You may not be able to turn to the cost bible, but you get the buoys between which the course must be plotted. They go in first. Then you think what about this, that or the other element which is still open? You may like to look at a certain building in THE ARCHITECTS' JOURNAL and at the cost plan to see what to put in for that particular roof and sketch it in, very much as in a sketch plan. You put down a number of things until you have fitted the first cost plan into the total, making sure the four or five big things that have to be done are done. You may find some of your figures are unrealistic. In order to give the client something special in finishes the allowance for electric lighting may be extraordinarily low. Or if the electric lighting is right something else is wrong. It is a process of shuffling about until the whole thing fits between overall limits in a shape which the client may or may not like. He may say, "Good heavens, has asking for this fancy entrance hall done me out of some specially decorative lighting?" You say, "Sorry, yes. You cannot have tiles in the bathroom, either." You say, "Supposing we come down on the entrance hall to push up the tiles in the bathroom?" "Yes, you can do that." So it goes on until finally, as you help the client to see the sketch plan visually, he sees the financial plan. It is very much the same process of going and coming between the quantity surveyor and the architect. It is very exciting for the quantity surveyor who is chasing round to find the more economical things so that they can be fitted in. It helps you both.

P. G. REEVES (architect): Can cost planning be done for alterations, and would it have any great advantage? It appears that the elements would be very different. I have not had much experience, but I have found in working out approximate estimates to tender stage that I have been wildly wrong on these jobs.

G. GRENFELL BAINES: They are the limit, those jobs. We do not apply it at all to alteration jobs. All we can get is an approximate bill of quantities from the quantity surveyor. That is the only answer. I do not know whether any builder could say how accurately he prices alterations or how he likes alterations. They are a gamble all through. I think it ought to be day-work on a fee.

P. J. BANCROFT (architect): On the first few jobs on your cost analysis did the continual correspondence and confirmation slow down the progress of working drawings and increase the period between sketch plans and taking off the bill? Would he be able to do it on a rush job where the local authority had to have tenders by the end of the financial year?

G. GRENFELL BAINES: It takes longer, I think, but that could have been due to inexperience, because we have had to fit our local authority jobs into programme dates which are so difficult. What has happened is that there has been some intensive designing to get out the job at the proper time and a lot more information has gone out as to what is going in, so the preparation of the production drawings is an easier and smoother job.

I am convinced as an architect that we are going about our job the wrong way—half a sheet for a working drawing and the design emerges. He ought to have had the design worked out long before in rough sketch and known exactly how it was going to work, so that when he put his sheet down for the production drawing it was straightforward and could have been done by a draughtsman.

Cost planning makes you do this. The quantity surveyor will say, "It is no good asking me to cost with a bare description between sketches. I want to know how it works."

Although it takes longer to reach the bill of quantities, the working drawing side goes very much more smoothly

P. DIXON (architect): I do not know the size of the office, but have you any idea of the optimum size for working this system efficiently?

G. GRENFELL BAINES: I would say that quite small offices could work this system, although the range of their experience might not be sufficient to enable them to do plans from their own resources, so they

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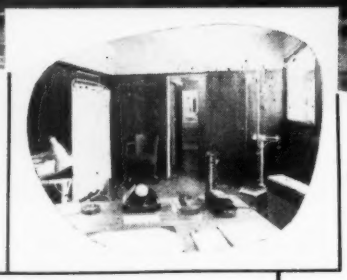
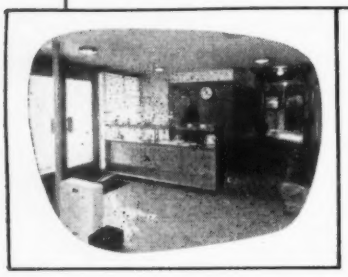


Medical Officer's Suite. Sound proofed and double glazed.



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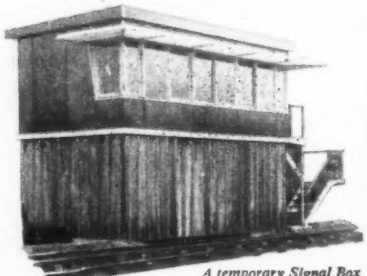

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would inevitably turn to other people for help.

I would say even the smallest office can do it if they get proper information through the appropriate channels. I was going to say through THE ARCHITECTS' JOURNAL, but perhaps I ought to say the usual channels.

A. T. BRETT-JONES (quantity surveyor): We have heard a most interesting talk this evening, the most interesting I have heard for a very long time, and I go to many meetings. I have agreed with almost everything Mr. Grenfell Baines has said on cost planning. I liked very much his idea of co-operation at sketch plan stage between the architect and the quantity surveyor. We all realize that statistics can be dangerous in the hands of anyone other than those who have actually to produce them. That indicates that we have to get down to collecting these statistics in our own offices.

A. M. EDWARDS (architect): Do you find a fairly constant relationship between the cost of the walls of a school in relation to the whole building and the cost of the walls of a warehouse in relation to the whole building, or some other type of building? Assuming reasonable economic design in each case, do you find much difference? You mentioned the average over the six different examples. Was there a great deal of difference between the different units?

G. GRENFELL BAINES: There was, indeed, As a matter of fact, there is no doubt that they vary tremendously. What does not vary is the principle of analysing down to elements. There are variations, too, caused by different interpretations of how far an element extends. One man may take the frame and put part into the roof. Another may put his monitors in the roof or into the roof glazing. It is these different interpretations that we are hoping to iron out. You must always be suspicious of existing analyses and even your own, for the building you are doing, and look for the difference. You have asked a very valuable question which gives a clue as to where the stresses ought to be investigated. Start with the differences and get those settled. Then you may find there are certain things that are alike.

N. E. HIGGITT (quantity surveyor): Is not there also a variation in tendering levels? I should like to know how Mr. Grenfell Baines takes that into account, particularly in his proposed economics section book.

G. GRENFELL BAINES: I agree that variations in tendering bedevil everything, but they do that whether you have a cost analysis or not. If you are working on a cost analysis and the variations do exceed your calculations, you can get down to where and see whether anything can be done to remedy the situation.

We were doing some standard buildings and between the west of England south of the Mersey, and the east, there was a 10 per cent. difference. The east was 10 per cent. lower than the west for the same job. The contractor in the west of England was enjoying the job and said he would tender for the east. He thought he had something easy but found he was at the bottom of the list. They must be short of work; that is all I can say! In other jobs we have been similarly surprised. They have always been pleasant surprises up to now: they have always been down on what we expected. But we might have a ceiling and discover we have undershot it by £6,000. But why should the possibility of variations affect our attitude? We must accept them as part of life. You are much better off when you have these variations with cost analysis information than when you have no idea what has caused the difference.

J. M. POWELL (quantity surveyor): Mr. Grenfell Baines obviously has a very close relationship with quantity surveyors which is a very good thing. I wonder whether he is very lucky in having his quantity surveyor in the next office? To what extent does he think it is important that the quantity surveyor should be in the same town or perhaps within walking distance of the architect?

G. GRENFELL BAINES: I come from the north where we do have a strong tradition of having the quantity surveyor in the architectural organization. In the early days of our group there was a quantity surveyor in the group. But for reasons I have since been able to see, it was not considered quite right and he ceased to be a group member, although he remains in the closest association. He is not the particular "Q" who works with us now. The quantity surveyors who work with us now are practically on our doorstep and down in London. We work with both kinds. I find that it is better to have the quantity surveyor near at hand, if possible in the same suite of offices, so as really to sit with him through some of these processes, as you will hear at the next lecture. Thinking it over, I wondered about partnership between architects and quantity surveyors, and the time is coming when perhaps we shall get that sort of thing. We have seen in large official organizations people handling large volumes of work with perfect integrity and fairness as between the owner and the builder. I should like to see this development.

N. E. HIGGITT: If you remember, I asked how you would take into consideration the vagaries in tendering in your economic stress bible. This is a big problem for the quantity surveyor who wants to help the architect, and I am asking how you take them into consideration.

G. GRENFELL BAINES: I will have another go, prefacing it with the old saying, "Don't waste your time toiling up the shadows of mountains." These vagaries which you mention could be serious if they were really big, but we do not find that they are. We have had pleasant surprises with a job turning out 10 per cent. cheaper in the east than in the west. You have given me the thought that it might help all of us who are working in this sort of thing to know the price areas. It is by areas, I think, that these vagaries occur. If you have a nation-wide practice you land into them. If you have a local practice, you know what is done and can tender normally and work accordingly. It is a matter of exchanging information and also in that case you would exchange information on the basic price per square foot of the job. You would soon know which jobs were cheap. I expect the Ministry of Education could tell us the expensive and cheap areas.

The CHAIRMAN: You will agree that we have had a very full and invigorating discussion which has been started entirely by Mr. Grenfell Baines' lecture. Many people have had an opportunity of speaking and two people have had two goes. One critical comment I would make on this discussion is that it appears Mr. Grenfell Baines and many of those of us who have been close to this cost planning research for some time clearly understood how these figures are built up that were shown on the slides. But apparently it is not so, because from some of the questions it has not been clear to the questioner that all the figures must have been built up either from the bill of quantities or from the approximate estimate. Therefore, you can break down all the groups; and they are grouped for the reason Mr. Grenfell Baines explained into the price of windows, the price of glazing and so on.

We rather tended to over-simplify all that on the assumption that we all knew how it was done. We ought perhaps to stress that, because the two or three hundred of us who know now want the rest of the building trade to know too.

On the point made by Mr. Maiden about the bogy building and extending Mr. Baines' idea, it may be of interest to you to know that a study group of very bright and eager young fellows has been sitting for three or four years in spare moments studying this question. Starting with what has been designed in the bogy building, they attempt to find how much more various things cost when you do that very thing. What they have realized is that it is an enormous task. But they are hoping to issue a report fairly soon, which I am sure we shall all read with interest. I have been in touch with rather a large number of quantity surveyors this year in my chairmanship of the Quantity Surveyors Committee and the number I have found even resisting cost planning slightly is absolutely negligible. As far as cost planning and research are concerned, the quantity surveyors of the Royal Institution of Chartered Surveyors are one hundred per cent behind them. Our only problem is going to be how we are going to spread the gospel.

G. GRENFELL BAINES: The spreading of the gospel can be done by means of discussions betwen architects, builders and quantity surveyors; by getting hold of interested people as Austin Smith has done, to explain what is happening. THE ARCHITECTS' JOURNAL has done sterling work and I hope the other building journals will take note and not be too professional because they did not think of it first. We ought to know a lot more about what things are costing. However difficult it is to present this information, we must find the techniques for doing it. This is the only answer. There is such a volume of information available in offices and publications and with colleagues in different districts. That information must be made more freely available and we must be ready to exchange cost information with anyone. This is perhaps the answer.

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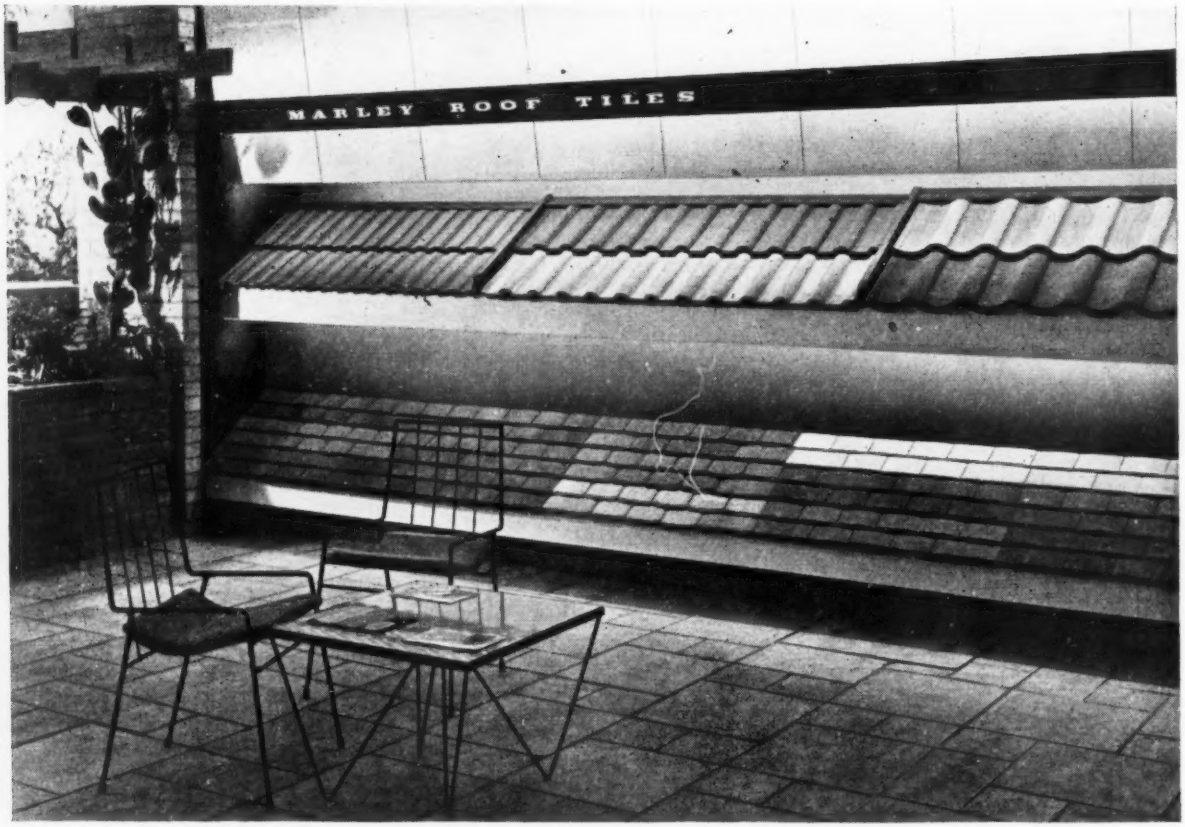
Part of the permanent exhibition at the new Marley showrooms in Tottenham Court Road is devoted to roof tiles. Here, in leisurely comfort (and with experts handy if you should need them) you can make your choice from the widest range of roof tile colours in the world, in the five popular shapes: Plain, Anglia, Yeoman, Ludlow and Westwold. But it is only fair to warn you to allow plenty of time — the ingenious arrangement of the many Marley products holds considerable attraction . . .



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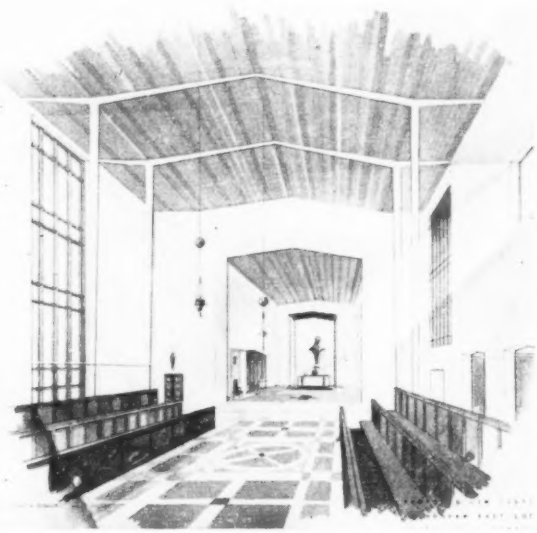
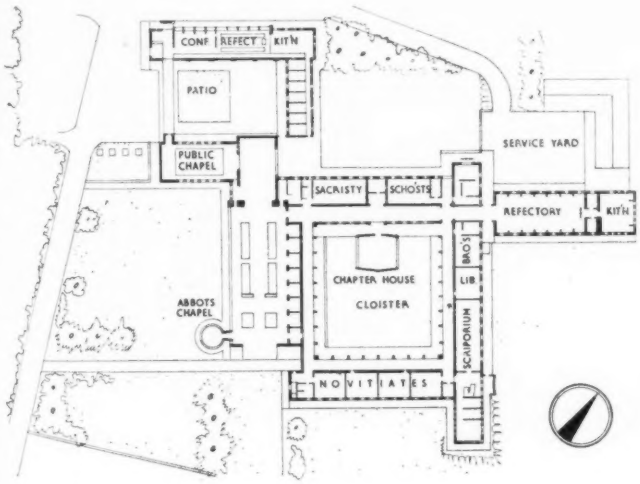
PROPOSED CISTERCIAN ABBEY AT NUNRAW, EAST LOTHIAN

The new Cistercian Abbey, at Nunraw, East Lothian, by Peter Whiston and McRobie, seen above from the south-west, consists of the following main units: Abbey Church, including choir and lay brothers stalls; Sacristies; Chapter House; Refectory; Scriptorium; Dormitories; Noviciates' classrooms; guest house and workshops and service court. The abbey, which is being built of stone, is among the largest ecclesiastical projects in Scotland and while, to a large extent, the traditional disposition of main units has been followed it is planned to conform with the present-day requirements of the Cistercian Order. The monks who own the quarry from which the stone for the scheme is taken are carrying out all the building work themselves under the guidance of two qualified stone masons. To this end electrically-powered tools and stone saws have been installed and are in use. The first development of the scheme,





Ground floor plan

consisting of the Refectory block, Workshops and Dormitory block, is now under construction. It is anticipated t . t the abbey will be completed in about 20 years time. Centre is a view of Cloister Garth and above is the interior of the Abbey Church.

working detail

SERVERY HATCH: HOUSE AT THAMES DITTON, SURREY

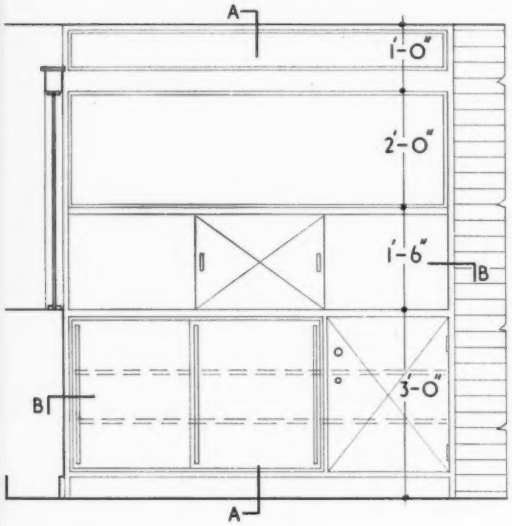
Wells Coates and Michael Lyell, architects

The hatch-cum-storage wall between dining room and kitchen has become almost a standard piece of built-in furniture. In this example sheets of rolled glass are used for the hatch proper, the two outer sheets being fixed and the centre sheet sliding to right or left. The cupboarding below is formed of ¼-in. ply painted with black gloss paint: the two left-hand leaves are sliding and are backed by two corresponding doors on the kitchen side of the cupboard. The right-hand leaf is side hung, as access to this section of the cupboard is from the dining room side only.

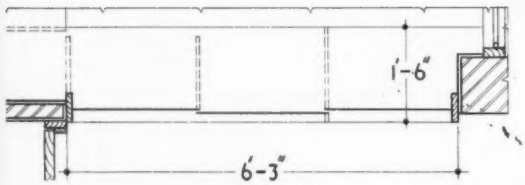
working detail

SERVERY HATCH: HOUSE AT THAMES DITTON, SURREY

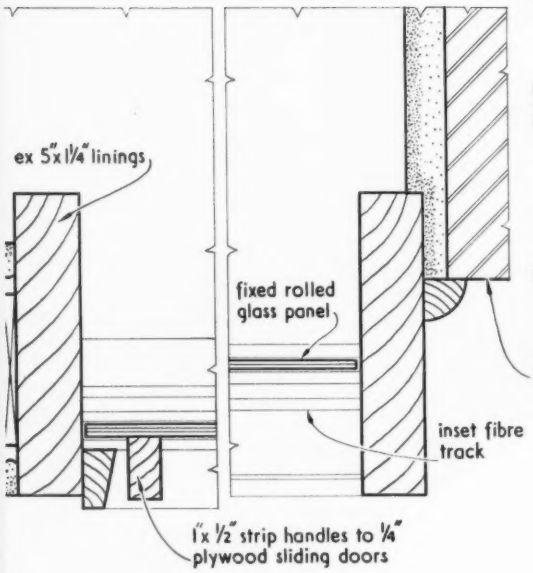
Wells Coates and Michael Lyell, architects



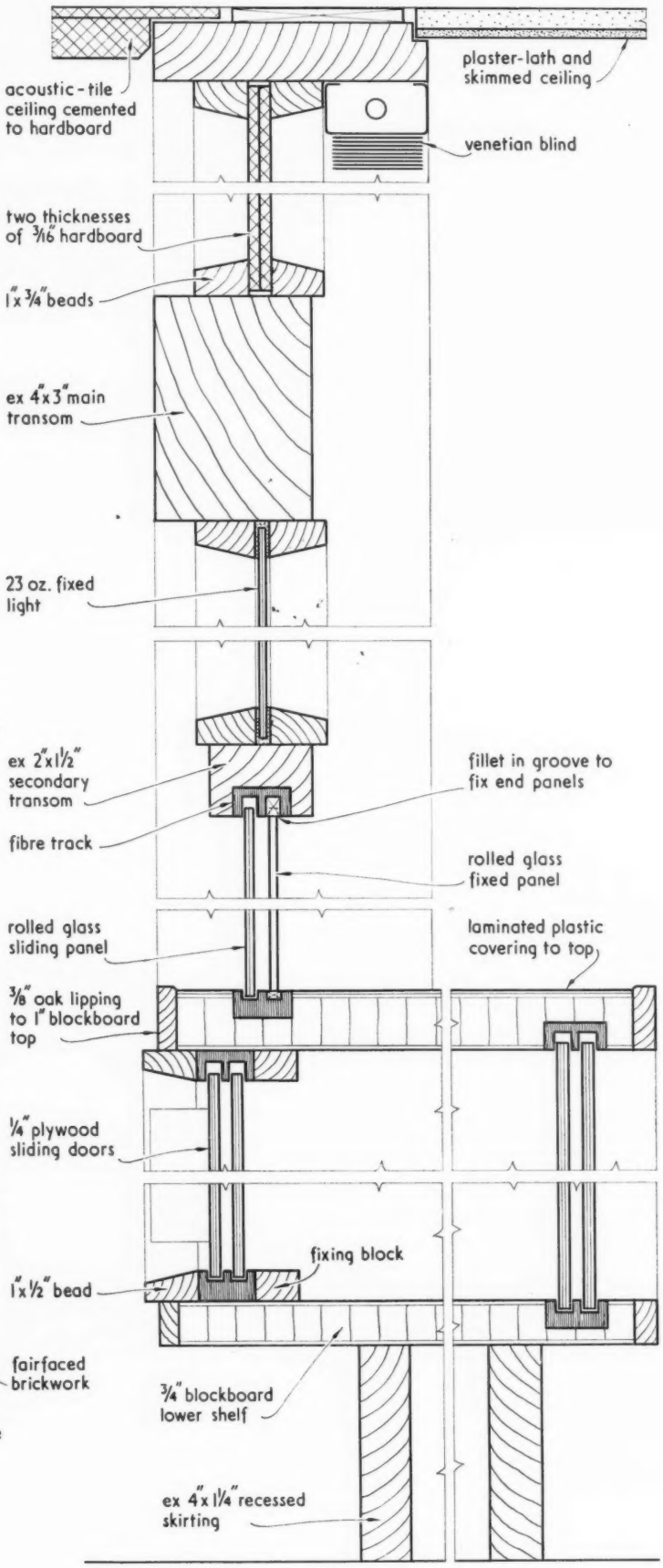
ELEVATION. scale 3/8" = 1'-0"



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



PLAN AT B–B. scale 3/8 full size

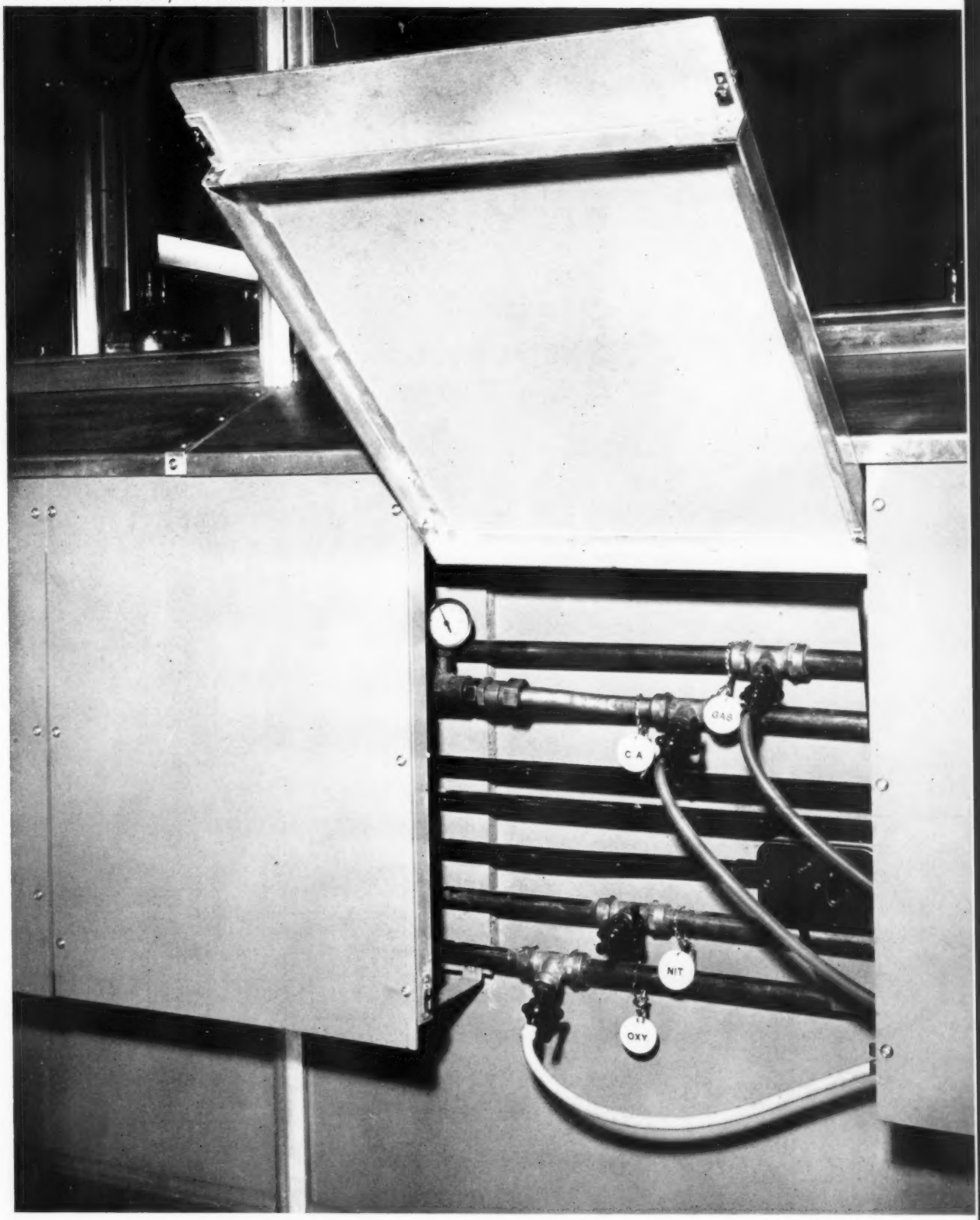


SECTION A–A. scale 3/8 full size

working detail

SERVICE DUCT, FACTORY AT WARE, HERTS

Peter Dunham, Widdup and Harrison, architects

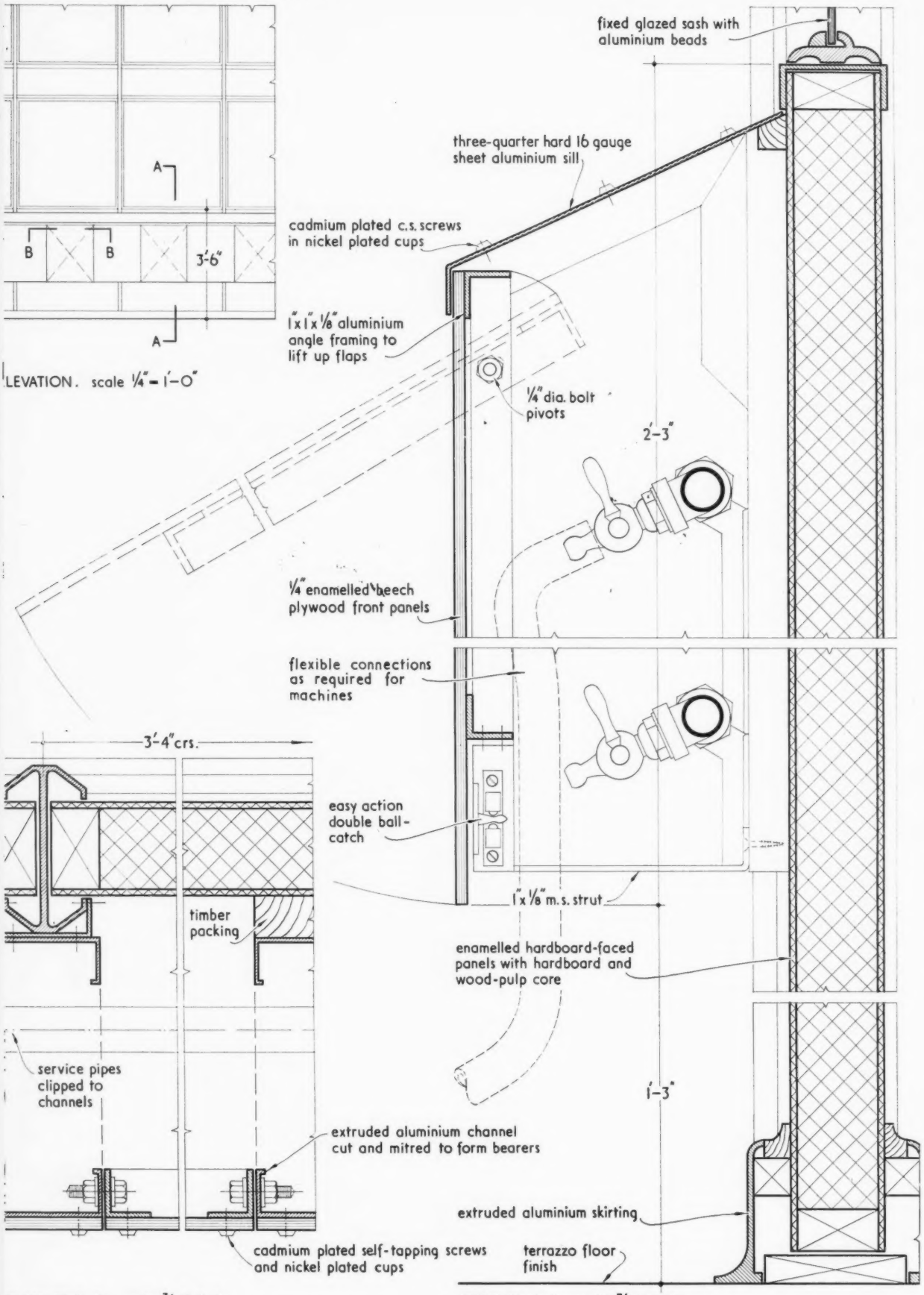


This is an interesting version of a laboratory wall duct used in association with a system of aluminium framed partitions. The main laboratory services (electricity, gas, compressed air, nitrogen and oxygen) are provided with outlets at 3 ft. 4 in. intervals along the length of the wall and access to these outlets is provided by a hinged flap.

working detail

ERVICE DUCT, FACTORY AT WARE, HERTS

Peter Dunham, Widdup and Harrison, architects

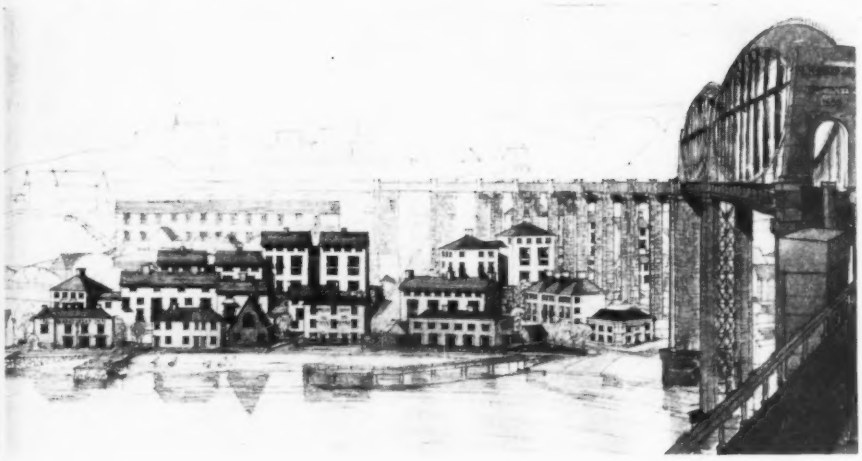


ELEVATION. scale 1/4" = 1'-0"

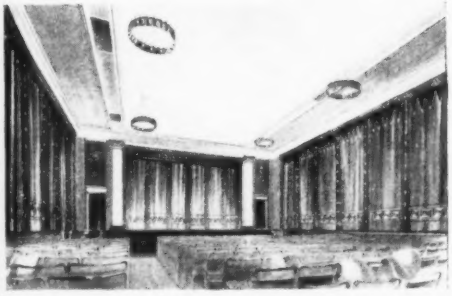
PLAN AT B-B. scale 3/8 full size

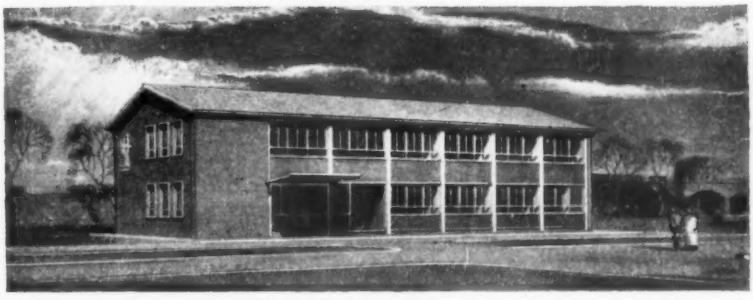
SECTION A-A. scale 3/8 full size

MORE BUILDINGS AT THE ROYAL ACADEMY



We reproduce on this page three more drawings from the Architectural Room of the Royal Academy Exhibition. Left: proposed waterside reconstruction for the Borough of Saltash; architects Louis de Soissons, Peacock, Hodges, Robertson and Fraser. Below left: interior of the Fourth Centenary Memorial Hall at Repton School; architect Marshall Sisson. Below: new office block at Widnes; architect Eric V. Collins.





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Announcements

PROFESSIONAL

Professor R. A. Jensen, B.ARCH. (L'POOL), F.R.I.B.A., of the Department of Architecture, University of Adelaide, South Australia, would like to receive the widest possible selection of catalogues, brochures, prices and other detailed or general information relating to every type of building material and equipment.

John Noble, A.R.I.B.A., has moved to 7, Homefield Road, Hemel Hempstead, Hertfordshire (telephone: Boxmoor 5704).

Brunton, Baden Hellard & Partners, A/A/A.R.I.B.A., have changed their title to Brunton, Baden Hellard & Boobyer.

City and County Borough of Belfast, Housing Architect's Department have moved to Townsend House, 97, Townsend Street, Belfast (telephone 22664).

TRADE

The British (Rubber Flooring Manufacturers' Association announce that A. A. Walker, of the Greengate and Irwell Rubber Co. Ltd., has been elected Chairman and T. H. Brooke, of Redfern's Rubber Works Ltd., has been elected Vice-Chairman of the Association.

Correction

In the AJ for April 25, on page 649, there was a spelling mistake in the name of the firm William Mallinson & Sons Ltd., who supplied the acoustic ceilings for the technical services and development building at Welwyn Garden City, Hertfordshire, for the plastics division of ICI Ltd.

COUNTER ATTACK
GROTESQUE
OLIVETTI

Ian Nairn, of *Outrage* fame, will contribute a first essay on the aims and objectives of the newly-formed **Counter-Attack Bureau,** to the June issue of the ARCHITECTURAL REVIEW, and make proposals for positive anti-Outrage policies for the threatened suburban village-centres of Ewell, Colnbrook and Huyton.

Subtopian Mess at Colnbrook.

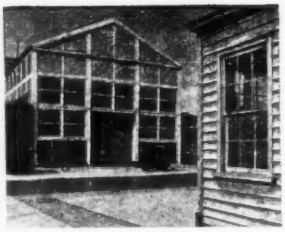
Two widely diverse Italian subjects to be discussed in the same issue will be the grotesque statuary and architecture of the Orsini garden at **Bomarzo,** considered iconographically by Dr. S. Lang, and the impressive and intelligent record of patronage in architecture, the arts, and design, of **Adriano Olivetti,** considered biographically by Georgina Masson. New buildings in this issue will be as different in type and place as the **Golden Lane** development by Chamberlin, Powell and Bon, and the **Museum at Accra** by Drake and Lasdun; the old buildings of the month will be **Balmes House,** Hackney, a forgotten, but representative piece of artisan mannerism which will be described and discussed by Priscilla Metcalf, and those in **Halifax Street,** Sydenham, another threatened area that comes within *Counter-Attack's* purview. *Skill* features of the month include a broad survey of food-preparation equipment, and in *Miscellany* Robert Melville contributes, as

Golden Lane, by Chamberlin, Powell and Bon.

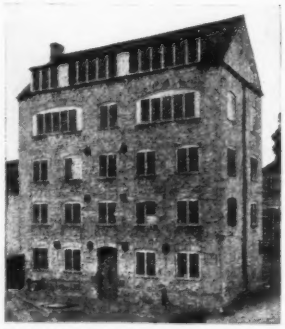
usual, his column of off-beat opinions on the world of art galleries and exhibitions.

EARLY INDUSTRIAL

Mills, docks and harbours, warehouses, fences and gates, railways and canals—all bear witness to the theme of July's special issue of the REVIEW, *The Functional Tradition,* compiled and edited by J. M. Richards. In our present need to consolidate the results of the technical revolution that has overwhelmed architecture in this century, we need the discipline of an unconscious vernacular, a simple way of doing things simply, and we have no better guide for this than the monuments of the functional tradition that dot the country from end to end, even in the most remote and rural areas. The tradition is not limited to any material—with its wooden water-mills, its brick warehouses, its iron framed naval boatsheds, its stonework by canal and railway—it had the adaptability we admire in the great masters of today, fitting together material, function and form, but into an unselfconscious unity. Most architects know of the great tradition's existence, have seen one or two textbook examples illustrated, have discovered one or two favourites of their own, but in *The Functional Tradition* they will find for the first time a systematic analysis of the nature and value of the tradition, supported by the results of an extended photographic campaign by Eric de Maré, which has rescued many unknown and forgotten buildings from undeserved obscurity, and also set on record for the first time the little known architecture of the warehouses, rope walks and other buildings in the dockyards of the Royal Navy.



Sheerness Naval Dockyard: cast iron frame extension, 1858.



Bentley's piano factory, Nailsworth near Stroud.

DRAUGHT-STOPPERS
HOTELS
ADVERTISING

The year-round English draught makes **Weather-stripping** a subject of perennial interest and in the August issue of the REVIEW, Peter Whiteley will make a study of the products available for remedial work on both doors and windows, as well as the kind of preventive design that is better than even the best of cures. Two hotels of outstanding interest will be described and illustrated; the *Malmen,* by Wallander and Varhelyi in Stockholm, and Louis Erdi's *Coachotel* in Dover, both radical solutions

Model of a village at Rushbrooke, Suffolk, by R. Llewelyn Davies and John Weeks, to be illustrated with photographs of pilot houses.

in their different ways to contemporary hotel-design problems. A creative and broadminded approach to a vexed question, outdoor publicity, will be outlined in the new proposals for **Advertising in Stevenage,** and the social and architectural problems of building new **Urban Nuclei** in rural areas will be considered in an article by Hilda Selem on recent re-settlements in Italy, and a study of Richard Llewelyn Davies' and John Weeks' rebuilding programme for **Rushbrooke** in Suffolk. Historical features in this issue will cover the early romantic days at the Weimar **Bauhaus,** whose expressionist and religious fervours are recalled by Helmut von Erffa; a sheaf of notes on out-of-the-way aspects of Italian architecture, and a study of Bernardo Bellotto's four magnificent views of the mysterious **Wilanow Palace** outside Warsaw, now on view at the Whitechapel Gallery. In *Skill,* the *Interior* of the Month will be the new offices for the Orient Line, and in *Design Review,* John Blake will survey recent developments in wallpapers and furnishing fabrics.

CLASSIFIED ADVERTISEMENTS

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

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

Public and Official Announcements

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

LONDON COUNTY COUNCIL
ARCHITECT'S DEPARTMENT

Selections for appointment are now being made from students at architectural schools who will take their final examinations this summer. Starting salary up to £676. Vacancies also for ARCHITECTS of experience at starting salaries up to £1,036. Full programme of houses, flats, schools and many other interesting buildings.

Application forms and full particulars from the Architect (Ref. AR/EK24/572), The County Hall, S.E.1. (895) 6290

HAMPSHIRE COUNTY COUNCIL
SECOND DEPUTY COUNTY PLANNING OFFICER

Applications are invited from persons who, in addition to being Corporate Members of the T.P.I., are also Corporate Members of the R.I.B.A., for the post of Second Deputy County Planning Officer at a salary within Scale E (£1,515 × £55—£1,735). Previous experience in the Planning Department of a large local authority will be an advantage. The appointment will call for a high standard of design and administrative ability in the control of a new section of the staff of the County Planning Officer particularly concerned with the design of new and expanded townships and their detailed layout.

The appointment is permanent and pensionable and will be subject to a satisfactory medical report. The successful applicant will be required to live within 5 miles of Winchester. In approved cases the County Council assist with removal and other expenses. Applications, giving age and full particulars of qualifications and experience, and accompanied by one testimonial and the names of two referees, should reach the Clerk of the County Council, The Castle, Winchester, by 1st July. Canvassing is prohibited and will be a disqualification. 6576

BOROUGH OF LUTON
TECHNICAL STAFF

Applications invited for SENIOR QUANTITY SURVEYING ASSISTANTS, salary A.P.T. (£814 17s. 6d.—£994 5s.). Fully qualified, preferably R.I.C.S., with experience of taking off for large contracts of all types and settlement of final accounts.

Housing accommodation available. N.J.C. Service Conditions.

Application forms from Borough Architect, Town Hall, Luton, returnable by 3rd July, 1957. 6655

QUANTITY SURVEYING ASSISTANTS required by Air Ministry Works Directorate in London and Provinces. Grade and commencing salary based on not less than 3 or 5 years' previous experience under Quantity Surveyor or Building Contractor. Approved full-time study will count towards 5 years period. Normally technical qualifications in Builders quantities or building, *e.g.* C. & G. Final or O.N.C. or proof to equivalent standard. Duties include abstracting and billing, site measurement and preparation of estimates. Salary range £520 to £830 London rate starting pay dependent on age qualifications and experience. Salaries somewhat lower in Provinces. Pensionable and promotion prospects. Five-day week, three weeks' leave a year. Applicants normally should be natural born British subjects. Write stating age, qualifications and previous appointments including type of work done, to Manager, Professional & Executive Register, Ministry of Labour and National Service, 1-6, Tavistock Square, W.C.1, quoting reference PE 105/745. No original testimonials should be sent. Only applicants selected for interview will be advised. 6612

CITY OF BATH
CITY PLANNING AND ARCHITECTURAL DEPARTMENT

Applications are invited for the appointment of CHIEF PLANNING ASSISTANT, Grade V (£814 17s. 6d.—£994 5s.). Applicants must be Corporate Members of The Town Planning Institute and preference will be given to candidates who possess an additional qualification.

The appointment is subject to the provisions of the Local Government Superannuation Act, 1937 and to the successful candidate passing a medical examination. Applications, stating age, qualifications and experience, together with the names of three referees, should be forwarded to the City Planning Officer and Architect, 7, North Parade Buildings, Bath, not later than 6th July, 1957.

The Council is prepared to provide housing accommodation if required for the successful applicant.

JARED E. DIXON,
Town Clerk.

Guildhall,
Bath. 6646

GOVERNMENT OF NORTHERN IRELAND
ASSISTANT ARCHITECT CLASS II

Applications are invited for pensionable posts in the Chief Architect's Branch, Ministry of Finance. Candidates must be Registered Architects by examination, with at least two years' experience in an Architect's office in the preparation of working drawings. Salary scale £744 (at age 25)—£1,002 (age 34 and over)—£1,160. Preference will be given to suitably qualified candidates who served in H.M. Forces during the 1939-45 War, provided the Ministry is satisfied that such candidates are, or within a reasonable time will be, able to discharge the duties of the post efficiently. Application forms may be obtained from the Secretary, Civil Service Commission, Stormont, Belfast. 6381

BOROUGH OF UXBRIDGE
ASSISTANT ARCHITECT

Applications are invited for the appointment of an Assistant Architect on the Unestablished Staff of the Borough Surveyor & Architect at a salary, depending on qualifications and experience, in accordance with A.P.T. Grade III (£656—£784 2s. 6d.) or IV (£727 15s.—£907 2s. 6d.) plus £30 London weighting at age 26 or over. Applicants should have had a good architectural training and experience and preference will be given to those with a professional qualification. The appointment will be subject to the National Scheme of Conditions of Service, the Local Government Superannuation Acts and the passing of a medical examination. Applications stating age, marital state, present and previous appointments, qualifications and experience and giving the names and addresses of three referees, should be forwarded to Harold E. G. Stripp, F.R.I.C.S., M.Inst.R.A., Borough Surveyor & Architect, 263, High Street, Uxbridge, not later than 26th June next. Housing accommodation will be made available if required. Candidates are required to disclose in writing whether to their knowledge they are related to any member or senior officer of the Council.

JOHN POOLE,
Town Clerk.
6642

UNIVERSITY OF OXFORD

Applications are invited from qualified assistants with some experience for the following appointment: **SENIOR ARCHITECTURAL ASSISTANT. The person appointed must have a knowledge of contemporary techniques and be capable of taking charge of a small drawing office. In addition, his duties will include assistance in the administration of the University's major building programme. Housing accommodation will be available where appropriate. Salary about £850.**

Apply for further particulars stating age, training and experience to the Surveyor to the University, 5, South Parks Road, Oxford. 6506

CANNOCK RURAL DISTRICT COUNCIL
CHIEF ARCHITECTURAL ASSISTANT

Applications are invited from Associate Members of the R.I.B.A. for the above permanent post on the staff of the Engineer and Surveyor. Salary Grade A.P.T. IV (£727 15s.—£907 2s. 6d.).

The appointment will be subject to the Local Government Superannuation Acts, medical examination and one month's notice either side. The Council will endeavour to assist in the provision of housing accommodation and a travelling allowance (essential user scale) will be paid.

Applications giving full details of age, qualifications and experience together with the names and addresses of two referees to the undersigned by Monday, June 24th, 1957.

J. P. ROBERTS,
Clerk of the Council.

Council Offices,
Penkridge,
Stafford. 6611

BOROUGH OF CHATHAM
APPOINTMENT OF CHIEF ASSISTANT ARCHITECT

Applications are invited for the appointment of Chief Assistant Architect, within A.P.T. Grade V (£814 17s. 6d. × £35 17s. 6d.—£994 5s.) commencing at £922 10s. per annum.

Housing accommodation will be made available if required.

Conditions of appointment and form of application may be obtained from Mr. J. A. T. Richards, Borough Engineer and Surveyor, Town Hall, Chatham, to whom completed application forms should be returned not later than Saturday, 6th July, 1957.

ROWLAND NEWNES,
Town Clerk.

Town Hall,
Chatham. 6612

LONDON COUNTY COUNCIL
ARCHITECT'S DEPARTMENT

Vacancies exist for ARCHITECTS, Grade I (salary £1,184 to £1,410), Grade II (salary £987 to £1,240), Grade III's (salary £775 to £1,036), and ARCHITECTURAL ASSISTANTS (salary up to £817) for Housing, Schools and General Divisions. Full and varied programme of new work including Schools, Multi-storey flats, expanded towns and major Metropolitan improvements. Starting salaries according to qualifications and experience.

Selections for appointment are now being made from students at Architectural schools who will take their final examinations this summer. Starting salary up to £676.

Application forms and full particulars from the Architect (Ref. AR/EK/34/57), The County Hall, S.E.1. (1139) 6695

COUNTY BOROUGH OF GREAT YARMOUTH
APPOINTMENT OF SENIOR ASSISTANT ARCHITECT

Applications are invited for this appointment in the Borough Engineer's Department at a salary in accordance with A.P.T. V (£814 17s. 6d. × £35 17s. 6d.—£994 5s.) of the National Scale of Salaries.

Applicants must be A.R.I.B.A. with wide experience in the design and administration of large contracts for specialised buildings carried out by a Local Authority.

Housing accommodation will be available.

Forms of application may be obtained from the Borough Engineer, Town Hall, and must be returned to me in an envelope endorsed "Senior Assistant Architect" by not later than 28th June, 1957.

FARRA CONWAY,
Town Clerk.

Town Hall,
Great Yarmouth.
5th June, 1957. 6653

CITY OF LIVERPOOL
ARCHITECTURAL AND HOUSING DEPARTMENT
APPOINTMENT OF ARCHITECTS AND QUANTITY SURVEYORS

Applications are invited for the following appointments, viz:—

(1) Two Assistant Architects, salary £814 17s. 6d. to £994 5s. per annum (A.P.T. V).

(2) Senior Assistant Quantity Surveyor, salary £814 17s. 6d. to £1,107 per annum (A.P.T. V/VI).

(3) Assistant Quantity Surveyor, salary £707 5s. to £861 (N.J.C. scale).

Applicants for: (1) should have had experience of housing architectural work and be Associates of the Royal Institute of British Architects; (2) and (3) should possess the Final Examination of the Royal Institution of Chartered Surveyors, or equivalent qualifications.

Application forms obtainable from the City Architect and Director of Housing, Blackburn Chambers, Dale Street, Kingsway, Liverpool, 2, should be returned to him by 29th June, 1957.

The appointments are superannuable and subject to the Standing Orders of the City Council. Canvassing disqualifies.

THOMAS ALKER,
Town Clerk.

(J4814) 6652

LANARK COUNTY COUNCIL require DEPUTY COUNTY ARCHITECT for Property Department at Motherwell. Salary scale £1,375 15s. to £1,638 5s. by £52 10s. per annum. Must be Fellow or Associate of Royal Institute of British Architects. Considerable experience essential in administration, in design, construction and execution of all types of buildings and in care and maintenance thereof. Department deals with all types of buildings other than housing schemes. Superannuation. Medical examination. No canvassing. Applications stating age, qualifications and experience, together with names and addresses of three referees should be lodged with County Clerk, P.O. Box No. 1, Glasgow, by 2nd July, 1957. 6651

THE METROPOLITAN BOROUGH OF HAMPSTEAD requires an ARCHITECTURAL ASSISTANT in the Borough Engineer's Department, A.P.T. II/III—£609 17s. 6d. to £784 2s. 6d. plus London weighting, to work under the direction of the Housing Architect. Successful applicants would be members of a team engaged on schemes of housing and flat development, and there are opportunities to gain valuable experience in an architect's office and on the site. No housing provided. Applications giving three referees to the Town Clerk, Town Hall, Haverstock Hill, N.W.3, by the 1st July, 1957. 6650

COUNTY BOROUGH OF BOLTON
THE HAYWARD TECHNICAL/MODERN SCHOOL

Applications are invited from Architects for the post of ASSISTANT MASTER to teach Building Construction, Building Science, and Technical Drawing and to organise special courses for boys.

Applicants should possess the qualification of A.R.I.B.A., or have other suitable graduate or graduate equivalent qualifications.

Salary according to Burnham Scale, commencing at £475 with annual increments of £25 10s., maximum of £900, plus graduate allowance of £75, £25 for training and other additions for industrial or other suitable experience. The post will also carry a Graded Post allowance of £125 per annum.

Application forms, obtainable by sending a stamped addressed envelope to the Chief Education Officer, Education Offices, Nelson Square, Bolton, should be returned as soon as possible, quoting reference ED.137. 6649

BOROUGH OF MALDEN AND COOMBE
BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT
SENIOR ARCHITECTURAL ASSISTANT (TEMPORARY)

Applications are invited for the above appointment, within the Special Scale (£707 5s.—£861 plus London weighting), commencing point according to experience and qualifications.

Forms of application may be obtained from John Apse, A.M.I.C.E., Borough Engineer, and should be returned endorsed—"Senior Architectural Assistant (Temporary)"—to the undersigned by not later than July 5th, 1957.

HAROLD E. BARRETT,
Town Clerk.

Municipal Offices,
New Malden,
Surrey. 6647

THE NORTH WESTERN ELECTRICITY BOARD
THIRD ASSISTANT ENGINEER
(Architecture and Civil Engineering)
SUB-AREA ENGINEER'S DEPARTMENT, OLDHAM

The successful applicant will assist in the design, construction and maintenance of offices, service centres, substations and workshops within the Sub-Area. Ability to supervise direct works and to estimate will be an advantage. Preference will be given to applicants with appropriate professional qualifications.

Salary scale: £850 × £20—£910 p.a. Grade K.10. N.J.B. Conditions.

Applications, naming three referees, to Sub-Area Manager, No. 3 Sub-Area, The North Western Electricity Board, Union Street, Oldham, by 29th June, 1957. 6648

BOROUGH OF BARKING
QUANTITY SURVEYING ASSISTANT

Applications are invited for the above appointment on grade A.P.T. I, £543 5s. by £20 10s to £625 5s. per annum (plus London weighting £10—£30 per annum according to age).

Applications, on forms obtainable from the Borough Architect, Town Hall, Barking, should reach the undersigned not later than 9 a.m. 5th July, 1957.

E. R. FARR,
Town Clerk.

Town Hall,
Barking,
Essex. 6645

GOVERNMENT OF THE FEDERATION OF MALAYA
ASSISTANT TOWN PLANNERS
TOWN PLANNING DEPARTMENT

To undertake work, under the direction of the Federal Town Planner, in connection with the preparation of planning schemes throughout the Federation of Malaya and deal with interim development control.

Contract appointments. Candidates who are A.M.T.P.I. and, preferably, possess either architectural, civil engineering or surveying qualifications in addition will be appointed in the inclusive salary range £1,218 to £2,730 p.a. Candidates who have passed the Final Examination of the T.P.I. but are not yet A.M.T.P.I. are also eligible for appointment starting salaries in such cases £1,092 (single man), £1,254 (married man) and £1,310 (married man with children). Gratuity of from £58 to £81 for each completed three months resident service. Free passages for officer, wife and family, up to four persons in all. Quarters, if available, at low rent. Low Income Tax. Generous home leave.

Write Director of Recruitment, Colonial Office, London, S.W.1, giving briefly age, qualifications and experience, quoting BCD 62/23/01. 6658

CITY OF NORWICH
CHIEF TOWN PLANNING ASSISTANT

Applications are invited for the appointment of Chief Town Planning Assistant. The successful applicant will be required to take charge of the Town Planning Section and should be appropriately qualified. The salary offered is the maximum of A.P.T. Grade VII.

Housing accommodation can be made available, and the person appointed will be granted a car allowance.

The appointment is terminable by one month's notice on either side and subject to the provisions of the Local Government Superannuation Act, 1953. The successful candidate will be required to pass a medical examination. Relationship of the applicant to members of the Council or staff must be declared, and canvassing either directly or indirectly will be a disqualification.

Applicants should state age, qualifications, training, experience, present and previous positions giving salaries and dates.

Applications, together with names of three referees, should be delivered to H. C. Rowley, M.I.C.E., City Engineer, City Hall, Norwich, not later than 10 a.m. on Friday, 5th July, 1957. 6657

BOROUGH OF KING'S LYNN
HOUSING ARCHITECT'S DEPARTMENT

Applications are invited for the appointment of QUANTITY SURVEYOR. Salary Grade III A.P.T. (£656 rising to £784 2s. 6d.). The appointment is superannuable and subject to the National Scheme of Conditions of Service, and to Medical Examination. Form of application and further particulars from G. Holmes, A.R.I.B.A., Housing Architect, Clifton House, Queen Street, King's Lynn, to whom applications should be submitted not later than 26th June, 1957.

E. W. GOCHER.
Town Clerk.

Town Hall,
King's Lynn,
Norfolk. 6619

WANTED

Applications are invited for the post of ASSISTANT GOVERNMENT TOWN PLANNER (Temporary) in the Department of Town and Country Planning, Ceylon, in the scale of £1,000—5 of £40—£1,200 per annum.

Further particulars and forms of application may be obtained from the office of the High Commissioner for Ceylon in the United Kingdom.

Applications for the above post should reach the High Commissioner for Ceylon in the United Kingdom on or before 15th July, 1957.

G. C. S. COREA.
High Commissioner for Ceylon in the United Kingdom.

13 Hyde Park Gardens,
London, W.2.
5th June, 1957. 6613

SINGAPORE POLYTECHNIC
HEADSHIP OF DEPARTMENT OF BUILDING AND ARCHITECTURE

The Board of Governors invites applications from persons suitably qualified in Architecture and/or Civil Engineering and with, preferably, good experience in industry and technical teaching.

It is hoped that the Department will provide courses for the City & Guilds of London Building Trades Examination, National Certificate type courses in Building Construction, etc., courses for Chartered and Quantity Surveyors, Town Planners, etc, and preparation for the proficiency tests of the Institute of Architects of Malaya and, eventually, if possible, preparation for A.R.I.B.A. New Buildings are being erected and the Head of Department will plan the equipment for the Department.

Salary incorporating all allowances:—
M$2,000 per month.

The Malayan Dollar is 2s. 4d. Sterling.

Appointment on contract for six years with option of renewal for further three years. Insurance scheme: 5% from staff, 15 % from college; accommodation, including heavy furniture at moderate rental; free medical attention; free passages for overseas person appointed, wife and up to three children under 18 on first appointment, leave, and completion of service; home leave at the rate of two months per year's service; maximum tour two years.

Application forms (two copies) and further information obtainable from the Advisory Committee on Colonial Colleges, 1, Woburn Square, London, W.C.1. Closing date 10th July, 1957. 6679

EAST RIDING OF YORKSHIRE COUNTY COUNCIL

Applications are invited for the appointment of an ENGINEERING ASSISTANT (Heating and Electrical) on the permanent staff of the County Architect.

The salary will be in accordance with Grade VI of the N.J.C. Scales (£902—£1,107).

Applicants should be Members of the Institute of Mechanical Engineers (with appropriate experience in Heating, Ventilating and Electrical Engineering) or Members of the Institute of Heating & Ventilating Engineers (with appropriate experience in Electrical Engineering).

The successful applicant will be in charge of the Heating and Electrical Engineering section of the department and should have had considerable experience in the design, supervision and maintenance of heating and hot water supply services and electrical installations, the preparation of estimates and other work incidental to such an appointment.

Applications giving particulars of qualifications, experience, age, past and present appointments with salaries, together with the names of three referees, should be sent to the County Architect, County Hall, Beverley, not later than Friday, 5th July, 1957.

THOMAS STEPHENSON,
Clerk of the Council.
6674

PETERLEE DEVELOPMENT CORPORATION
CHIEF ARCHITECT'S DEPARTMENT
APPOINTMENT OF ARCHITECTURAL ASSISTANTS (2)
Salary Grade III, £656—£784

Applicants for appointments should have passed the Intermediate Examination of the R.I.B.A., or up to that standard, and should have experience in house design.

The appointments are superannuable and will be made subject to the passing of a medical examination. Housing accommodation can be made available where necessary.

Applications stating age, marital status, education, qualifications and experience together with names of two referees should be made to the undersigned not later than Monday, 1st July, 1957.

A. V. WILLIAMS,
General Manager.

Shotton Hall,
Old Shotton,
Peterlee,
Horden,
Co. Durham. 6675

NORTH RIDING EDUCATION COMMITTEE. ASSISTANT QUANTITY SURVEYOR required in the Education Architect's Department A.P.T. Special Grade, salary £707 5s. to £861. A.R.I.C.S. or equivalent required. Previous experience may be taken into account in fixing commencing salary and experience with Local Authority not essential. Car, travelling and subsistence allowances. Local Government Superannuation Act. Canvassing disqualifies. Further particulars from the undersigned, to whom completed applications should be returned not later than 12th July, 1957. F. Barraclough, County Hall, Northallerton. 6680

THE DEPARTMENT OF HEALTH FOR SCOTLAND. The Architectural Division of the Department of Health for Scotland which provides services for all four of the Secretary of State's Departments has vacancies for temporary architects. Work covers housing, hospitals, schools, local authority buildings and agricultural colleges and includes development work.

Applications are invited for temporary vacancies of ASSISTANT ARCHITECT with Headquarters in Edinburgh.

Salary range £749—£1,160 (Women £744—£1,088). Starting pay according to age and experience.

Further particulars and application form from Establishment Officer, Department of Health for Scotland (Room 30), St. Andrew's House, Edinburgh, 1. Closing date for applications 12th July, 1957. 6615

SHARDLOW RURAL DISTRICT COUNCIL
SURVEYOR'S DEPARTMENT
ARCHITECTURAL ASSISTANT

The above Council invite applications for the post of Architectural Assistant, in the Surveyor's Department. Salary range Grade A.P.T. II, £609 17s. 6d. to £691 17s. 6d. per annum according to qualifications and experience. Applicants should have previous architectural experience and have completed National Service. The post will be superannuable and subject to medical examination.

Applications stating age, present salary, details of training and experience, together with names of two referees, should be submitted to the Surveyor, Sharlow R.D.C., 4, Full Street, Derby, not later than 6th July, 1957.

F. CLAYTON,
Clerk to the Council.

4, Full Street,
Derby.
June, 1957. 6676

CAMBRIDGESHIRE COUNTY COUNCIL
COUNTY PLANNING DEPARTMENT

Applications are invited for the appointment of ASSISTANT COUNTY PLANNING OFFICER on Grade VII of the National Joint Council's Scales (£999 7s. 6d. to £1,230 per annum).

The appointment is subject to the provisions of the Local Government Superannuation Acts, the Council's Conditions of Service and a satisfactory medical examination.

Further details of the appointment may be obtained from the County Planning Department.

Applications stating age, past and present appointments (with dates), qualifications, experience and present salary, together with the names of two referees, should be delivered to The County Planning Officer, County Hall, Hobson Street, Cambridge, not later than Saturday, 13th July.

CHARLES PHYTHIAN,
Clerk of the County Council.

Shire Hall,
Cambridge. 6677

COUNTY BOROUGH OF BOURNEMOUTH
BOROUGH ARCHITECT'S DEPARTMENT

Applications are invited for the appointment of:—

(*A*) SENIOR ASSISTANT ARCHITECT. Salary Grade A.P.T. IV, £727 15s.—£907 2s. 6d. p.a.

(*B*) ARCHITECTURAL ASSISTANT. Salary Grade A.P.T. I, £543 5s.—£625 5s. p.a.

Candidates for post (*A*) must be fully qualified (by examination) members of the R.I.B.A., for post (*B*) to have had some experience after passing the Intermediate Examination of R.I.B.A. Successful candidates will be appointed at present salary if within the incremental scale.

Application forms and further particulars from Borough Architect, Town Hall, Bournemouth. Completed applications to reach me by 10 a.m. 6th July, 1957.

A. LINDSAY CLEGG,
Town Clerk.
6678

CITY OF WINCHESTER

Applications are invited for the post of ARCHITECTURAL ASSISTANT in the City Engineer's Office (C. C. Steptoe, A.R.I.B.A., Chief Assistant Architect). It is essential that the applicant should be a neat and accurate draughtsman and have had previous experience in an architect's office. Salary, according to experience, will be within Grade II of the National Scales, and the appointment is subject to the Local Government Superannuation Act.

Applications stating age and details of experience, together with the names and addresses of two referees, should be addressed to the City Engineer, Guildhall, Winchester, and should reach his office not later than Monday, 8th July, 1957. Canvassing, either directly or indirectly, will disqualify.

R. H. McCALL,
Town Clerk.

Guildhall,
Winchester.
6th June, 1957. 6671

EAST LOTHIAN COUNTY COUNCIL
PLANNING ASSISTANT

Applications invited for post of PLANNING ASSISTANT (next to County Planning Officer) in small Office with wide variety of duties and progressive and positive planning policy. Salary £730 to £780. Superannuation. Applications, with qualifications and experience and names of two referees, to County Clerk, County Buildings, Haddington, by 1st July, 1957. 6654

COUNTY BOROUGH OF SOUTHAMPTON
BOROUGH ARCHITECT'S DEPARTMENT

Applications are invited for the following permanent appointments:—

SENIOR ASSISTANT ARCHITECT. Grade A.P.T. V—VI (£815—£1,107).

Candidates should be members of the R.I.B.A., experienced in major projects, preferably secondary schools and technical colleges.

SENIOR ASSISTANT PLANNING OFFICER. Grade A.P.T. V—VI (£815—£1,107).

Candidates should be members of the R.I.B.A. and T.P.I., preferably experienced in the redevelopment of central urban areas.

ASSISTANT PLANNING OFFICER. Special Grade (£707—£861).

Applicants should state their housing needs and indicate the salary required if this is above the minimum of the Grade.

Application forms from the Borough Architect, Civic Centre, Southampton. Closing date 6th July, 1957. 6616

RENEWED ADVERTISEMENT
URBAN DISTRICT OF FELTHAM
APPOINTMENT OF TWO ARCHITECTURAL ASSISTANTS

Applications are invited for the following appointments on the Council's unestablished staff at salaries within the Grades stated according to qualifications and experience :—

(1) Architectural Assistant, Grade A.P.T. IV (maximum salary £907 2s. 6d. per annum plus London weighting).

(2) Architectural Assistant, Grade A.P.T. II (maximum salary £691 17s. 6d. per annum plus London weighting).

Forms of application, obtainable from the undersigned, must be returned accompanied by copies of two testimonials, not later than 28th June, 1957. Canvassing directly or indirectly will disqualify and applicants must disclose in writing whether to their knowledge they are related to any member of or the holder of any senior office under the Council.

M. W. COUPE,
Clerk of the Council.

Council Offices,
Feltham, Middx. 6614

BOROUGH OF STOCKTON-ON-TEES
BOROUGH ARCHITECT'S DEPARTMENT

Applications are invited for the appointment of an ASSISTANT ARCHITECT. Salary A.P.T. II (£609 17s. 6d. to £691 17s. 6d.).

Candidates should be members of the R.I.B.A. Application forms from the Borough Architect, 28, The Square, Stockton-on-Tees, to be returned to him by 29th June, 1957.

JOHN B. HAWORTH,
Town Clerk.
6698

HAMPSHIRE COUNTY COUNCIL

SENIOR PLANNING ASSISTANT required for the North-East Area Office of the County Planning Department at Basingstoke on A.P.T. Grade IV (£728—£908). Candidates should be graduates or have a professional qualification, and at least two year's experience in the Planning Department of a public authority. Further desirable qualifications are competency in surveying and draughtsmanship, considerable experience in layout and design of housing estates and also in general architectural work. The appointment is pensionable and subject to a satisfactory medical report. In approved cases the County Council assist with removal and other expenses.

Applications, stating age, education, qualifications and experience, with copy of one testimonial, and the names of two referees, should reach the County Planning Officer, Litton Lodge, Clifton Road, Winchester, by 5th July. 6618

COUNTY BOROUGH OF WOLVERHAMPTON

PLANNING ASSISTANT required in Borough Engineer's Department. Salary Grade A.P.T. I (£543 4s.—£625 5s. per annum) or A.P.T. II (£609 17s. 6d.—£691 17s. 6d. per annum) according to experience. Candidates should be good draughtsmen, preferably with experience in a Planning Office.

N.J.C. conditions. One month's notice on either side. Medical examination. Superannuable post.

Applications stating age, training and experience, naming two referees to the Borough Engineer, Town Hall, Wolverhampton by the 26th June, 1957. 6617

CITY OF WAKEFIELD
CITY ENGINEER'S DEPARTMENT

Applications are invited for the following superannuable appointments :—

TWO JUNIOR ARCHITECTURAL ASSISTANTS (Posts Nos. 10 and 12). Grade A.P.T. II —£609 17s. 6d. to £691 17s. 6d.

Applicants should have passed the Intermediate Examination of the R.I.B.A. and preference will be given to those having Municipal experience.

Applications stating age, training, qualifications and experience, together with the names of two referees to be sent to J. N. Sedgwick, City Engineer, Town Hall, Wakefield, by the 26th June, 1957. 6673

CITY OF PLYMOUTH

Applications are invited for the following appointments in the City Engineer and Planning Officer's Department :—

(1) ASSISTANT BUILDING SURVEYOR, A.P.T. VII (£999 7s. 6d. to £1,230). Applicants must be suitably qualified and, apart from having wide experience in building, must be used to examining and reporting on deposited plans, keeping of records, and inspection of buildings. The position is that of a Section head, and applicants must be capable of organising and controlling staff.

(2) SENIOR PLANNING ASSISTANT (one only on establishment, ranking next to Chief Planning Assistant), A.P.T. V (£814 17s. 6d.—£994 5s.). Applicants must be suitably qualified and should have had experience in urban planning.

Age limit 40, or 45 if serving with Local Authority. Position pensionable, subject to medical examination. Housing may be made available, and part of removal expenses refunded.

Applications, returnable within 14 days from the appearance of this advertisement, on forms obtainable from me.

J. PATON WATSON, C.B.E., M.I.C.E.,
City Engineer and Surveyor.
Guildhall, Plymouth. 6697

LANCASHIRE COUNTY COUNCIL

SENIOR ASSISTANT ARCHITECT within the Scale £902—£1,107 to work in a Group on Education projects. Experience of Local Government work not essential.

Application forms, obtainable from the County Architect, P.O. Box 26, County Hall, Preston, to be returned by Monday, 1st July, 1957, quoting Ref. A/AJ. 6545

Tenders Invited

6 lines or under, 15s.; each additional line, 2s. 6d.

BOROUGH OF EALING
LITTLE EALING SCHOOLS

Tenders are invited for the removal of galleries and the replacement of strip boarded flooring at the above schools. Such works to be carried out between the 19th July and 9th September, 1957.

The Corporation do not bind themselves to accept the lowest or any tender.

Forms of Tender and Conditions of Contract may be obtained from the Borough Surveyor, Town Hall, Ealing, W.5, on deposit of £2 to be refunded on receipt of a bona fide tender.

Tenders (in plain, sealed envelopes, endorsed "Little Ealing Schools" but bearing no name or mark indicating the sender) must be delivered to my office not later than 9.30 a.m. on the 1st July, 1957.

E. J. COPE-BROWN,
Town Clerk.

Town Hall,
Ealing, W.5.
11th June, 1957. 6672

Architectural Appointments Vacant

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

ASSISTANT required by Liverpool Architect. Good draughtsman with general experience essential. Box 6431.

ARCHITECTS' Co-Partnership require ASSISTANTS for working drawings and detailed design. Salary according to experience. Write 44, Charlotte Street, London, W.1, or telephone Langham 5791. 6297

RONALD WARD & PARTNERS require ARCHITECTURAL ASSISTANTS with contemporary outlook and willing to use own initiative. Salary range £600 to £850. Congenial working conditions. Apply 29, Chesham Place, Belgrave Square, S.W.1. Telephone Belgravia 3361. 6322

PART-TIME ASSISTANT wanted, about Intermediate standard. Send details of experience and time available to Colin Penn, 62, Parliament Hill, N.W.3. 6670

CO-OPERATIVE WHOLESALE SOCIETY LTD. ARCHITECT'S DEPARTMENT, MANCHESTER

APPLICATIONS are invited for the following appointments:—(*a*) SENIOR ASSISTANT ARCHITECTS with experience of work on commercial and industrial projects (salary range £820 to £975 per annum). (*b*) ASSISTANT ARCHITECTS capable of preparing working drawings from preliminary details (Salary range £550 to £820 per annum). There is a five-day week in operation and both appointments offer prospects of upgrading. Applications stating age, experience, qualifications and salary required to G. S. Hay, A.R.I.B.A., Chief Architect, Co-operative Wholesale Society Ltd., 1, Balloon Street, Manchester 4. 6023

COURTNEY, POPE LTD., require SHOPFITTING DRAUGHTSMEN. Write, giving details of experience and salary required to: Ambursit Park Works, London, N.15. 5704

ARCHITECTURAL ASSISTANT required in busy London Office with varied practice. Good salary and prospects for suitable applicant. Five-day week. Write, giving particulars of age, qualifications, experience, etc., to Box 851 c/o 7, Coptic Street, W.C.1. 6376

W. H. WATKINS, Gray & Partners require ASSISTANTS up to Final Standard for interesting hospital work, pension scheme in operation.—Write or phone, 57, Catherine Place, S.W.1. Victoria 7761. 6365

ASSISTANT, Intermediate standard, required, busy West End office. State age, experience, and salary required.—Box 6046.

ARCHITECT'S ASSISTANT required in the Chief Architect's office of a large multiple retail firm with offices in London. Five-day week, pension scheme, dining room available for use of staff. Applicants should state age, qualifications, experience and salary required. Box 6332.

RAMSEY, MURRAY, WHITE & WARD require recently qualified ASSISTANTS, with two to five years' practical experience, to work on interesting industrial and office buildings. Salary by arrangement.—Apply 32, Wigmore Street, W.1. 5929

INTERMEDIATE ASSISTANT required, to run smaller jobs under minimum supervision. Contemporary office and pleasant working conditions. 5-day week. Good prospects for hard worker with initiative. Salary £650—£750 p.a.—Apply Morris de Metz, F.R.I.B.A. CITy 4086. 6227

ASSISTANT ARCHITECT. Co-operative Wholesale Society, Ltd., invite applications for the position of Assistant Architect. Must be capable of preparing working drawings from preliminary details. The post is superannuable, subject to medical examination. 5-day week in operation. Applications, giving details of age, experience and salary required, to—W. J. Reed, F.R.I.B.A., Chief Architect, C.W.S. Ltd., 99, Leman Street, London, E.1. 6350

SENIOR ASSISTANT required in busy West End Office, interesting commercial work and must be prepared to take responsibility. Please write giving details of experience etc. Box 6447.

LONDON office with widely varied practice urgently requires all grades of ASSISTANTS, preferably with London experience. Five-day week. Lewis Solomon, Son & Joseph, 21, Bloomsbury Way, London, W.C.1. Holborn 5108. 6531

ARCHITECTS' ASSISTANTS required immediately. Intermediate/Final standard. Salary according to experience. Five-day week. Staff canteen. Pension scheme. Applications in writing, giving full details of age, experience and salary to Personnel Department, British Home Stores, Ltd., 129, Marylebone Road, London, N.W.1. 6468

ARCHITECTURAL ASSISTANT. Senior Assistant is required to work under the direction of the Society's Architect. He must be up to Final R.I.B.A. standard and with experience in industrial and commercial work. Applications giving full details of age, experience, etc., should be sent to Personnel Officer, Birmingham Co-operative Society Ltd., High Street, Birmingham, 4. 6477

NORTH & PARTNERS, Chartered Architects with extensive practice, seek partner's personal ASSISTANT. Position will afford excellent opportunity for capable assistant. Reply: 40, Broadway, Maidenhead. 6502

ARCHITECT'S ASSISTANT, Intermediate standard, preferably with practical experience required in busy South-West London office. Reply stating age, salary and experience to Box 6484.

MISHA BLACK requires a SENIOR ASSISTANT for work on interior of new Orient liner. Administrative experience, design ability, and draughtsmanship equally important. Apply in writing to D.R.U., 37, Park Street, London, W.1. 6501

ARCHITECTURAL ASSISTANT for busy private office. Applicants need not necessarily be qualified but starting salary would depend on experience and ability. The work is interesting and mainly connected with Industry. Apply stating age, experience, salary required, to: A. J. Elder, A.R.I.B.A., Grosvenor Buildings, 65, Albert Road, Middlesbrough. 6564

BRETT BOYD & BOSANQUET are looking for qualified and unqualified ASSISTANTS for a wide variety of work at their offices at Watlington and at Oxford. Write, giving particulars of age, qualifications, experience and salary to Watlington Park, Oxford. 6586

SENIOR ARCHITECTURAL ASSISTANT required by progressive Company of Building Designers and Contractors, operating on a National scale from pleasant part of South Midlands and engaged on important industrial projects. The position is permanent and progressive. Pension Scheme. Box 6584.

WELL-KNOWN London Architects require ASSISTANTS between Intermediate and Final standard. Interesting projects. Five-day week. Write Box 853, c/o 7, Coptic Street, W.C.1. 6583

NORTH AND PARTNERS, Chartered Architects, with large and varied practice, require a capable experienced ASSISTANT for drawing office, salary by arrangement. Reply: 40, Broadway, Maidenhead, Berks. 6573

ARCHITECTURAL ASSISTANT of Intermediate R.I.B.A. standard required in varied practice in Croydon. Good draughtsman with practical knowledge of building construction essential. Salary according to experience. Apply Hugh Macintosh & Partners, 33, High Street, Croydon. 6568

GOLLINS, MELVIN, WARD & PARTNERS are looking for staff who will help in the planning and design, and will eventually be responsible for schemes of major importance. The vacancies call for assistants of diverse capabilities rather than of long experience, but all must appreciate the implications of today's architectural thought. Five-day week, overtime, bonus and pension scheme. Telephone WEL 9991. 6560

WELL-KNOWN and progressive practice requires SENIOR ARCHITECTURAL ASSISTANT and ASSISTANTS of both qualified and Intermediate standard. London office in pleasant surroundings, five-day week, holiday commitments honoured. Generous salaries commensurate with qualifications and experience. Box 6556.

SENIOR ASSISTANT required to take charge of large interesting jobs from design stage. Salary £800 to £1,150 p.a. according to capabilities. Apply Morris de Metz, F.R.I.B.A., CITy 4086. 6557

TWO ARCHITECTS' ASSISTANTS required of Intermediate standard capable in design and working drawings, able to work on own initiative. Holiday arrangements respected. Applications to Nicholson & Rushton, 2, New Square, Lincoln's Inn, W.C.2. Holborn 6228. 6600

ARCHITECTURAL DRAUGHTSMEN required in the Design Department of a rapidly expanding Company marketing prefabricated timber products. The successful applicants will be engaged in the preparation of schemes to Architects' requirements, and will be called upon to visit offices to discuss and advise on technical details. The work demands a high degree of individual initiative and ability.
Five-day week. Compulsory Superannuation Scheme. Starting salaries from £700 per annum.
Applicants should indicate age, past experience, qualifications and present salary level. Box 6518.

MORRISON AND PARTNERS require ASSISTANTS for the following:—
(*a*) Various schools: primary, secondary and technical.
(*b*) New neighbourhoods in Huntingdonshire, Bedfordshire, Derbyshire and elsewhere.
(*c*) Various research projects: timber houses, lighting fittings, etc.
These are key posts which offer considerable interest and commensurate salaries with good prospects. Applicants (either qualified or of Intermediate standard) should have keen and agile minds and pleasant personalities with proven ability in architecture.
The office is well situated in peaceful surroundings and has a five-day week.
Please furnish full particulars of age, experience, education and salary to Morrison and Partners, St. Alkmund's House, 103, Belper Road, Derby. 6627

ARCHITECTURAL ASSISTANT, Intermediate standard, required in busy office (S.W.7) for work on varied schemes in London and Provinces. Quick and competent draughtsman. Apply stating age, experience and present salary to Box 6620.

ARCHITECTURAL ASSISTANT, Intermediate standard or above, good draughtsmanship essential, car driver preferred. Opportunity to obtain site experience. Five-day week. Salary by mutual agreement. Harold E. Davies & Son, 9, Chapel Walks, South Castle Street, Liverpool, 1. 6621

ARCHITECTURAL ASSISTANT required by Multiple Retail Boot and Shoe Firm with Head Office in the Midlands. Five-day week; Pension Scheme; canteen available. Applicants should state age qualifications, experience and salary required to Box 6623.

ASSISTANT of Final standard required for general provincial practice; living accommodation available. Salary £750—£800. Apply with details of experience and training to E. L. Smith & Son, Melville Chambers, Sandown, I.W. 6624

ARCHITECTURAL ASSISTANT required, £12 per week. Apply Messrs. Ashenden and Clark, S./L.R.I.B.A., 23, Watling Street, Canterbury. 6629

RESEARCH ASSISTANT to deal with cost analyses, specifications, typical drawings, catalogues, etc., required by large firm of London Architects. Teaching experience an advantage. Reply stating age, experience and salary required to Box 6628.

SCHERRER & HICKS, 19, Cavendish Square, W.1, require ARCHITECTURAL ASSISTANTS. Variety of work, including research laboratories, industrial buildings, schools and housing. Must be good draughtsmen with an appreciation of contemporary design and a sound knowledge of building construction. Salary £460 to £800 according to experience. 6632

YOUNG qualified ARCHITECT required to specialise in industrial and commercial work in Greater London and provincial towns. Must be capable of preparing all working drawings from outline schemes prepared by clients and handling speculative and contractural developments. Good salary and excellent prospects for successful applicant. Please write stating experience. Ronald Lyon (Estates) Company, Limited, Lyon Road, Hersham, Surrey. 6634

ARCHITECTURAL ASSISTANT required in small, good class West End office. Excellent opportunity to gain wide and varied practical experience. Five-day week. Box 6635.

COMPETENT ASSISTANT required in Architect's Department. Good opportunity for capable man, 5-day week, and Superannuation Scheme in operation. Applications giving details of age, qualifications, experience and salary required. Box 6636.

ARCHITECTURAL ASSISTANTS required in the £600—£850 and £250—£300 salary ranges, to work in Romford. Apply, stating experience and salary required, to Thompson & Whitehead, Chartered Architects and Surveyors, 5, High Street, Romford, Essex. Romford 3849/6371. 6637

IAN WARWICK & W. E. COUSINS require ASSISTANT between Intermediate and Final standard. Interesting projects. Five-day week. 28c, Devonshire Street, W.1. WEL: 5039. 6693

ARCHITECTURAL ASSISTANTS urgently required for private practice in Glasgow with interesting and varied work. Seniors must be capable of working independently with minimum supervision from Principals. Juniors must be at least Intermediate Standard. Good prospects in salary. Holiday arrangements met. Box 6696.

ARCHITECTURAL ASSISTANT required for senior position in private practice in Norwich. Applicants should be qualified and have at least five years' office experience and fully competent to see contracts through from start to finish under principal's guidance. Wide variety of buildings in hand covering an extensive area of East Anglia and London and great scope and prospects for the right man. Salary between £750 and £1,000 per annum according to ability. Interviews granted in London, Ipswich or Norwich. Reply giving full particulars including age, qualifications and details of previous office experience to Box 6681.

ASSISTANT ARCHITECT required, qualified with about eight years' office experience for work in small London practice. Write stating experience and salary required or ring for an appointment. Maxwell Gray, M.B.E., A.R.I.B.A., 40, Bedford Street, Strand, W.C.2. COVent Garden 0565. 6692

S. P. JORDAN & PARTNERS have vacancy for Intermediate or recently qualified ASSISTANT. Apply in writing to 11, King's Road, Sloane Square, S.W.3. Salary and holiday by arrangement. 6690

BURLES & NEWTON require an ARCHITECTURAL ASSISTANT in the salary range £600 to £700 per annum. Interesting and varied practice includes Churches, Schools, Housing and Commercial Buildings. Apply 25, Bedford Row, W.C.1. Telephone Chancery 9538. 6689

LANCHESTER & LODGE urgently require MALE ASSISTANTS of all grades up to £750 p.a. Five-day week and luncheon vouchers. Ring Museum 0845 for appointment or write full particulars, 10, Woburn Square, W.C.1. 6688

ARCHITECT'S ASSISTANT required, S.E. Kent area, varied work and responsibility. Apply stating experience and salary required. Box 6687.

RESPONSIBLE ARCHITECTURAL ASSISTANTS wanted for Hospital, Housing or School work in general practice (10 miles from London on Central Line). Five-day week and pension scheme; salary according to capability. Write giving age and full details of training and/or experience to Messrs. Tooley & Foster, Chartered Architects, Midland Bank Chambers, Buckhurst Hill, Essex. 6686

ARCHITECTURAL DRAUGHTSMAN required by Ilford Limited for staff architect's office. Applicants should have completed at least two years' office experience. Apply in writing, stating age, training and experience to Ilford Limited, Romford, Essex. 6685

ARCHITECTURAL ASSISTANTS with ability to supervise medium size contracts required for small London office. Five-day week. Write giving details of experience and salary required to Box 6684.

YOUNG ARCHITECTURAL ASSISTANT (male) required in West End office. Write stating age, experience and salary required. Box 6683.

WHITE-COOPER & TURNER, F./F.R.I.B.A., require JUNIOR ARCHITECTURAL ASSISTANTS with two years' drawing office experience for London Office. Telephone Chancery 3615 for appointment. 6682

ARCHITECT, Intermediate standard, required as Assistant to partner Edgbaston, Birmingham office. Varied practice giving wide experience. Five-day week. Holiday arrangements honoured. Box 6425.

LLOYDS BANK offer opportunities for JUNIOR ASSISTANTS aged between 16 and 23 in their Staff Architect's Office at Bristol. Gratuities and rises on passing technical examinations and progressive salary scale according to age and qualification. Permanent pensionable positions obtainable by selected applicants after preliminary trial. Apply in writing, with full particulars of age, education, training and experience, and when available for interview, to the Staff Architect, Lloyds Bank Limited, 5, Baldwin Street, Bristol 1. 6666

ASSOCIATE with some tough office experience and a conscience about finishing on time. Long-haired lunatics need not apply. Box 6642.

ASSISTANT with about two years' office experience. Apply Handisyde & Taylor, 68, Great Russell Street, W.C.1. Please apply in writing. 6622

FARMER AND DARK have vacancies for two ASSISTANT ARCHITECTS (Intermediate standard) with not less than 3 years' office experience. Applications marked "Confidential" with full particulars and salary required to: Farmer and Dark, Romney House, Tufton Street, Westminster, London, S.W.1. 6487

AN experienced ARCHITECT is required, willing to take responsibility for the section of a private practice dealing with the development of petrol stations. A first class salary for the right man. Offices: London and Birmingham. Box 6667.

ARCHITECTURAL ASSISTANT of Intermediate standard, required in Central Birmingham Office, having numerous interesting industrial and commercial projects in hand. Five-day week. Salary £650 to £750 according to ability and experience. Box 6665.

ARCHITECT required to manage office having important projects at Ibadan, Nigeria, after initial period in London office. Tropical experience desirable. Write: J. E. K. Harrison, Potter, Hare & Macfarlane, F.F.R.I.B.A., A.M.T.P.I., 19, Broadstone Place, Baker Street, London, W.1. 6663

SENIOR ASSISTANT ARCHITECT required. Must be experienced in Commercial work and capable of carrying through new works to completion and alterations and extensions. Thorough knowledge of specification writing, contract procedure and site supervision essential. Apply stating experience and salary to George Baines & Syborn, Chartered Architects, 121, Victoria Street, Westminster, S.W.1. 6662

EXPERIENCED ARCHITECTURAL ASSISTANT required immediately by City Architects. Prospects and commencing salary up to £1,000 p.a. for suitable applicant. Box 6660.

QUALIFIED and INTERMEDIATE ASSISTANTS required for widely varied work in long established progressive office adjoining Regents Park. Salary by arrangement and according to experience. Five-day week. Study concession for part-time students. Apply Box 6659 or telephone Primrose 5157.

ARCHITECTURAL ASSISTANTS required in Architects' Department dealing with new office buildings, alterations and adaptations. Write giving details of age, experience and salary required to Chief Architect, Co-operative Permanent Building Society, New Oxford House, Bloomsbury Way, London, W.C.1. 6643

ASSISTANT, Intermediate standard, or qualified, required for recently established practice in Edinburgh. Write Box 6644.

Architectural Appointments Wanted

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

A.R.I.B.A. (45), at present in highly responsible position without prospect, desires a post in London leading to partnership. Box 6606.

ARCHITECT would like employment with responsibility for large contracts through all stages of work. Particularly interested in operational and elemental methods and factory techniques of construction. Salary required, £1,200. Box 6625.

A.R.I.B.A., A.A.Dip., nine years' experience with leading architects at home and abroad would like to hear from commercial organisation requiring salaried services of architect. Will consider private practice if prospects genuine. Box 6640.

A GROUP of architects, comprising: 5—Associates, 3—Final Standard, 4—Intermediate Standard, at present employed by an Industrial concern seek salaried employment as a team. Experienced in design and supervision of varied industrial buildings (Offices, Laboratories, Production buildings, Sub-Stations, Storage buildings, etc.) and non-industrial projects. The group will consider any proposals, including those involving its division. Box 6694.

DIP. ARCH., A.R.I.B.A. (34), married, Public School, car owner, tropical practical and teaching experience, requires senior position. Box 6668.

ARCHITECT requires senior position, £1,000 minimum salary Industrial work preferred. Box 6664.

A.R.I.B.A., A.A.Hons.Dipl. (41), wide experience as Senior Assistant and Principal, now returning to profession after period in commerce, seeks senior position view to partnership. Box 6691.

Other Appointments Vacant

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

SECRETARY required to help organise publication of buildings in the ARCHITECTS' JOURNAL. Specialist knowledge not so important as organising ability and initiative. Please send details of experience, age and present salary to the Editor. 917

TO QUANTITY SURVEYORS

VACANCIES occur in our "taking off" and "working up" sections, and applications are invited from Surveyors who have had a sound training and considerable practical experience, preferably in connection with large industrial buildings.

There may also be a vacancy for a Surveyor of particular initiative and administrative ability to co-ordinate the work as a whole and be responsible for estimating, adjudicating in settlement of accounts, etc.

Applications from first class Surveyors only can be considered and salaries will be negotiated according to qualifications and experience.

Applications will be treated in confidence and full particulars should be given to enable selections to be made for interviews.

E. R. Collister and Associates, Chartered Architects and Industrial Consulting Engineers, 70, Victoria Street, London, S.W.1. 6603

DESIGNER/DRAUGHTSMAN required for Showrooms and exhibitions. Write giving experience. Collett Associates, 11, Holly Lodge Gardens, N.6. 6641

RHODESIAN Chartered Surveyors require two ASSISTANT QUANTITY SURVEYORS with about four years' experience. Three years' contract initially. Passage paid. Salary £750 p.a. Apply to O.T.S., 5, Welldon Crescent, Harrow, Middlesex, quoting reference AJ.97/7. 6656

DRAUGHTSMAN required by the John Lewis Partnership for planning and shop fitting. Contemplating rebuilding at various centres including Oxford Street. Pay according to experience but not less than £700 p.a. Shopping discount, good holidays. This year's holiday arrangements respected. Non-contributory pension scheme. Write in first instance giving full details of past experience to Department of Personnel, 32, Cavendish Square, W.1. 6630

STRUCTURAL ENGINEER required in London by group of commercial Property Development Companies for the design and detailing of reinforced concrete work, for medium sized shop and office blocks. Knowledge of steelwork design an advantage. Salary £1,300 p.a., with good prospects for keen and competent man.—Box 6699.

Other Appointments Wanted

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

SECRETARY, 27, seeks position with Architect in West End. Previous experience and able to manage small office. £11. Box 6631.

Services Offered

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

GOOD LETTERING is essential for Commemorative Wall Tablets, Foundation Stones, etc. Designs prepared and estimates given for the finished work in any suitable material. Renowned as a Centre for Lettering since 1934. Sculptured Memorials, 67, Ebury Street, S.W.1. 9170

ARCHITECTURAL, Reinforced Concrete and Steel design and detailing work required. Over 30 Assistants available. MUS 8753. 5145

QUALIFIED ENGINEER, with design and contracting experience in drainage, offers his services to the profession. Prepared to vet any scheme—no savings—no fees.—Box 5185.

THE SITE SURVEY COMPANY, Blackheath, S.E.3. Tel.: LEE Green 7444-5. Fully equipped to undertake urgent Engineering and Architectural surveys in any part of the country and abroad. Specialists in ¼ in. scale detailed surveys for extensive city development areas. 1890

SITE Surveys and Surveys of Buildings prepared at short notice anywhere in Britain. MUSeum 8753. 3103

"DON" ARCHITECTURAL MODEL MAKERS. We offer the highest grade work with speed and reliability.—Please 'phone Erith 3843 or Hastings 1366. 1673

SURVEYS of land and buildings for housing, schools, factories, conversions, etc., carried out promptly by competent Surveyor. Box 5961.

QUALIFIED SURVEYORS offer confidential services to the Profession for Surveys of Land and Buildings. Detailed drawings with levels and adequate dimensions prepared. LIV. 1839. 6244

YOUNG SURVEYOR would like to assist members of the Surveying and Architectural professions, where personal attention is required for estimates, B. of Q., specifications, site measuring, surveys, etc., operating from London but any area covered. Box 6410.

NAMEPLATES AND SIGNS, Bronze, Brass and Plastics. Church Metalwork. Quick delivery.—Austin, Luce & Company, 19, College Road, Harrow, Middlesex. Tel.: Harrow 3839. 1174

NAMEPLATES, PLAQUES, CRESTS, etc., in bronze, brass and plastic, quotations and lay-outs submitted.—Abbey Craftsmen, Ltd., 78, Osnaburgh Street, London, N.W.1. Euston 5722. 4165

THE NORTH LONDON SECRETARIAL SERVICE specialises in Typewriting and Duplicating for professional firms. Prompt postal service. Strictest confidence guaranteed. 3, Whitley Road, Bruce Grove, N.17. Phone Tot 0680. 6633

CAPABLE and experienced ARCHITECTS, fully qualified, available weekends and evenings, West Midlands area, car owners. Box 6639.

ARCHITECT (47), own practice for 11 years, with office and staff, offers his services to the profession. Domestic and commercial, traditional and contemporary. Sketch plans to final accounts. Land and buildings surveys. 30 miles S.E. of London. Go anywhere. Box 6626.

CAPABLE ASSISTANT, available any time, offers drawing service to other architects. Phone BAL 5140. 6471

For Sale and Wanted

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

OLD OAK BEAMS, also Old Tiles for Sale. Apply: Natlands Ltd., 47a, High Street, Reigate, Surrey. 6669

Partnership and Financial

6 lines or under, 15s.; each additional line, 2s. 6d. Box Number, including forwarding replies, 2s. extra.

ARCHITECT with reasonable size practice in Hertfordshire wishes to amalgamate with an Architectural practice in London. Write in confidence to Box 6565.

NOTICE IS HEREBY GIVEN that the partnership business heretofore subsisting between THOMAS GIBB and DAVID HAROLD LEWIS carrying on business as Architects and Surveyors under the style or firm of "Gibb & Lewis," at Temple Chambers, Station Road, Port Talbot, in the County of Glamorgan, has been purchased and taken over by FREDERICK DAVID WILLIAMSON.

ALL DEBTS owing by the said Thomas Gibb and David Harold Lewis will be duly paid by their Personal Representatives.

Dated this 29th day of May, 1957.

R. S. BOWEN & HOPKIN W. EVANS,
Solicitors for the said Gibb & Lewis.
Oakwood Chambers,
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