THE ARCHITECTS' JOURNAL

standard contents

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

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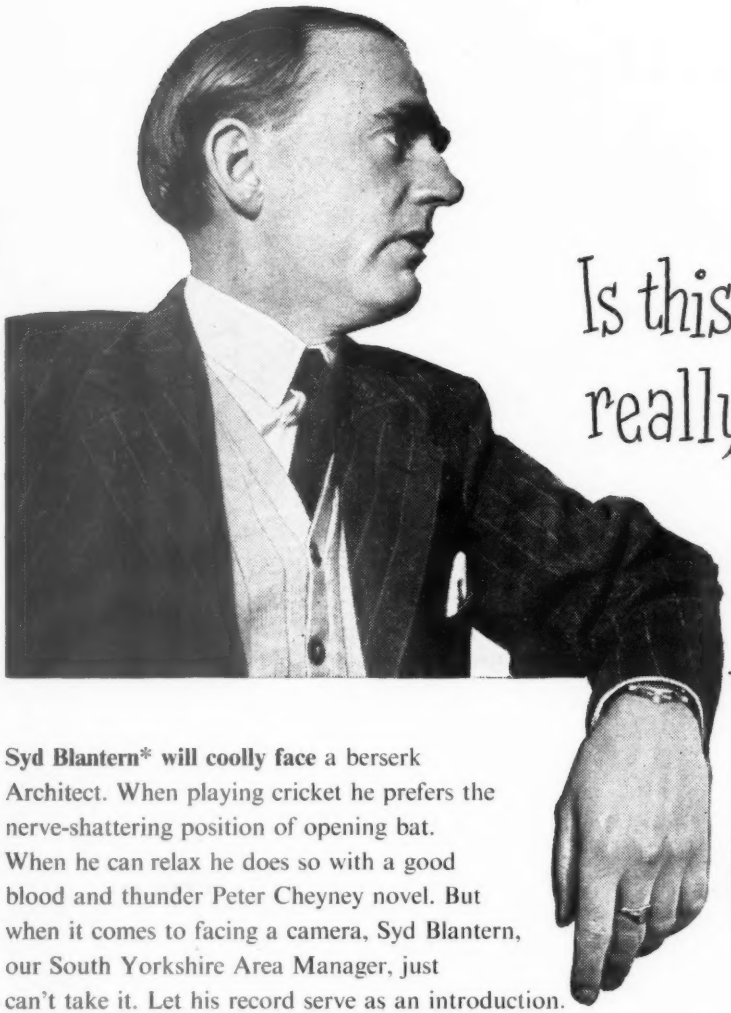
★ A glossary of abbreviations of Government Departments and Societies and Committees of all kinds, together with their full address and telephone numbers. The glossary is published in two parts—A to Ie one week, Ig to Z the next. In all cases where the town is not mentioned the word LONDON is implicit 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. 5, 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
ArchSA	Architectural Students' Association. 34/36, Bedford Square, W.C.1.	
ARCUK	Architects' Registration Council. 68, Portland Place, W.1.	Langham 8738
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
BRDB	British Rubber Development Board. Market Buildings, Mark Lane, E.C.3.	Mansion House 9383
BRS	Building Research Station. Bucknalls Lane, Watford	Garston 2246
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. 4, Vernon Place, W.C.1.	Holborn 8146/7
CABAS	City and Borough Architects Society. C/o Johnson Blackett, F.R.I.B.A., Civic Centre, Newport, Mon.	Newport 5491
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.	Sloane 5255
CCP	Council for Codes of Practice. Lambeth Bridge House, S.E.1.	Reliance 7611
CDA	Copper Development Association. Kendals Hall, Radlett, Herts.	Radlett 5616
CIAM	Congrès Internationaux d'Architecture Moderne. Doldertal, 7, Zurich, Switzerland.	
COID	Council of Industrial Design. Tilbury House, Petty France, S.W.1.	Abbey 7080
CPRE	Council for the Preservation of Rural England. 4, Hobart Place, S.W.	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. (Temporary address) 96, Madrid Road, S.W.13.	Riverside 6437
FASS	Federation of Association of Specialists and Sub-Contractors, Artillery House, Artillery Row, S.W.1.	Abbey 7232
FBBDO	Fibre Building Board Development Organisation, Ltd. 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.	
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.	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 4041
GBPA	Gypsum Building Products Association, 11, Ironmonger Lane, E.C.2.	Monarch 8888
GC	Gas Council. 1, Grosvenor Place, S.W.1.	Sloane 4554
GG	Georgian Group. 27, Grosvenor Place, S.W.1.	Sloane 2844
HC	Housing Centre. 13, Suffolk Street, Pall Mall, S.W.1.	Whitehall 2881
IAAS	Incorporated Association of Architects and Surveyors. 75, Eaton Place, S.W.1.	Sloane 5615
ICA	Institute of Contemporary Arts. 17-18, Dover Street, Piccadilly, W.1.	Grosvenor 6186
ICE	Institution of Civil Engineers. Great George Street, S.W.1.	Whitehall 4577
IEE	Institution of Electrical Engineers. Savoy Place, W.C.2.	Temple Bar 7676
IES	Illuminating Engineering Society. 32, Victoria Street, S.W.1.	Abbey 5215



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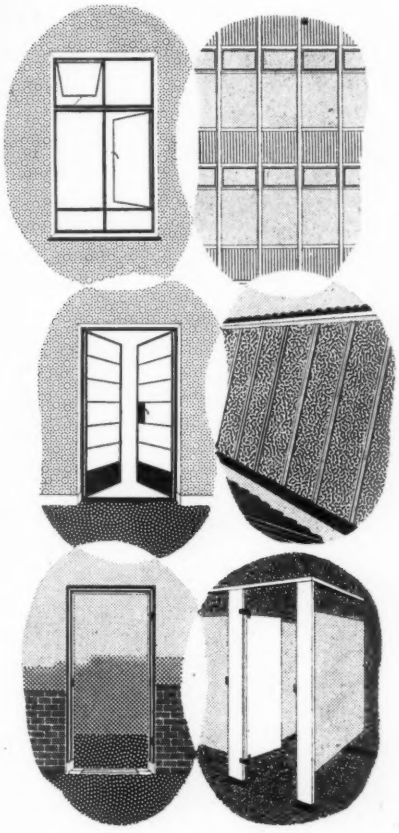

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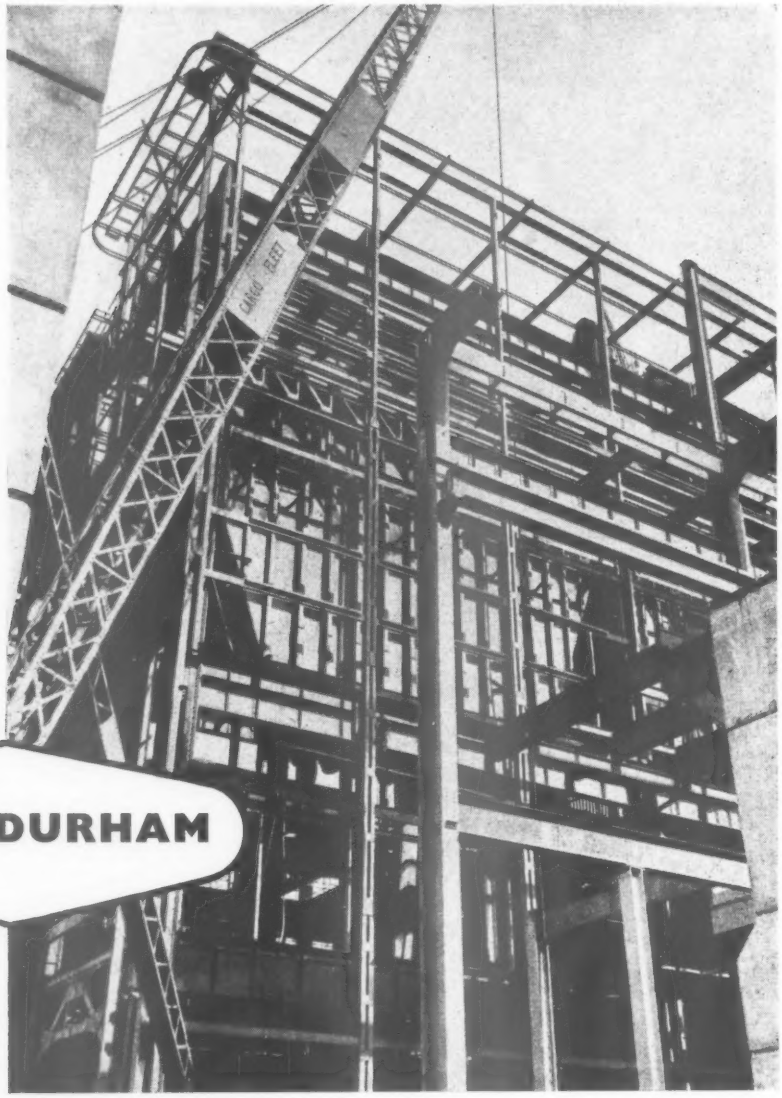

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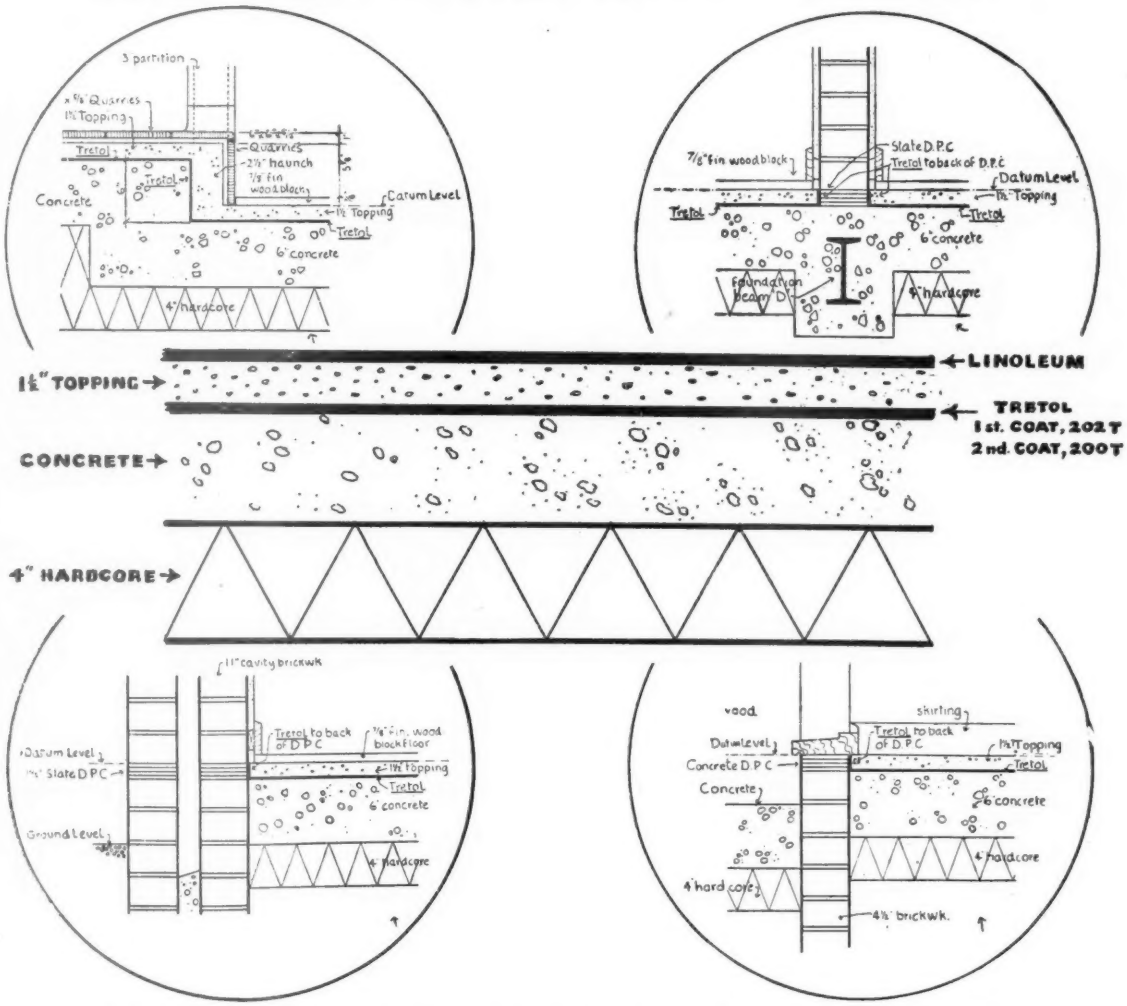

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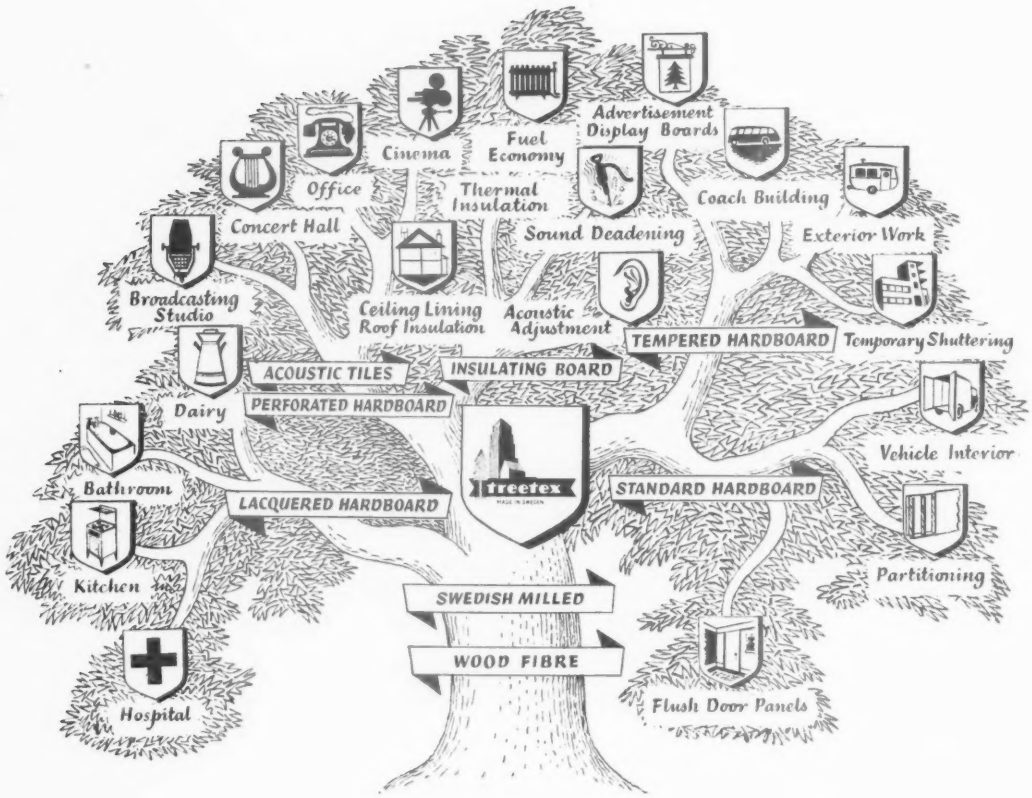

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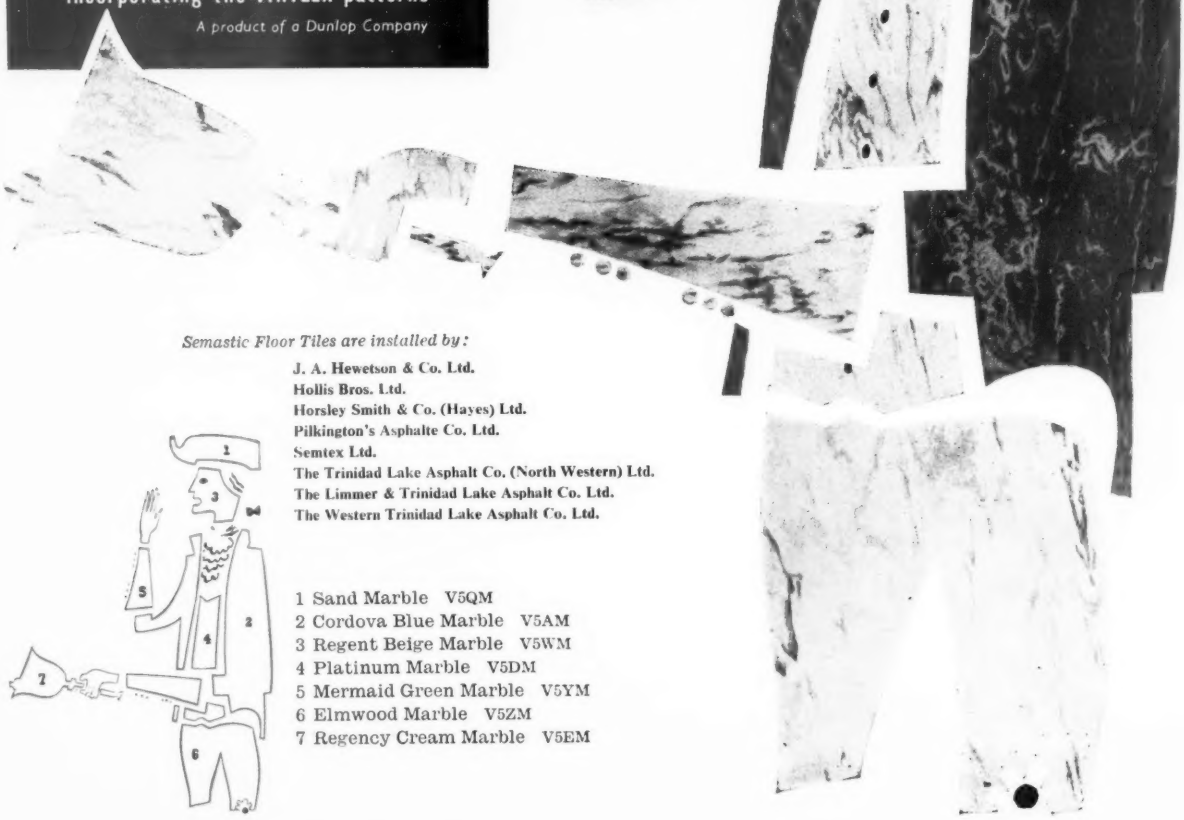

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7 Regency Cream Marble V5EM

Facts

A comparison of installation costs... between an Ascot plus open fire and open fire plus back boiler

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The figures in the chart were not specially prepared. They are from bills of quantities of schemes which had already been completed by an eminent architect before the analysis was contemplated.
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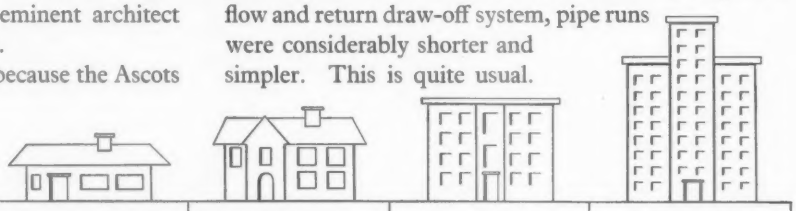

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BACK FIRE BOILER Cost of Back Fire Boiler, Coke Grate, tile surround and curb — equipment and installation.	£73 · 15 · 4	£87 · 19 · 5	£82 · 4 · 9	£101 · 5 · 8
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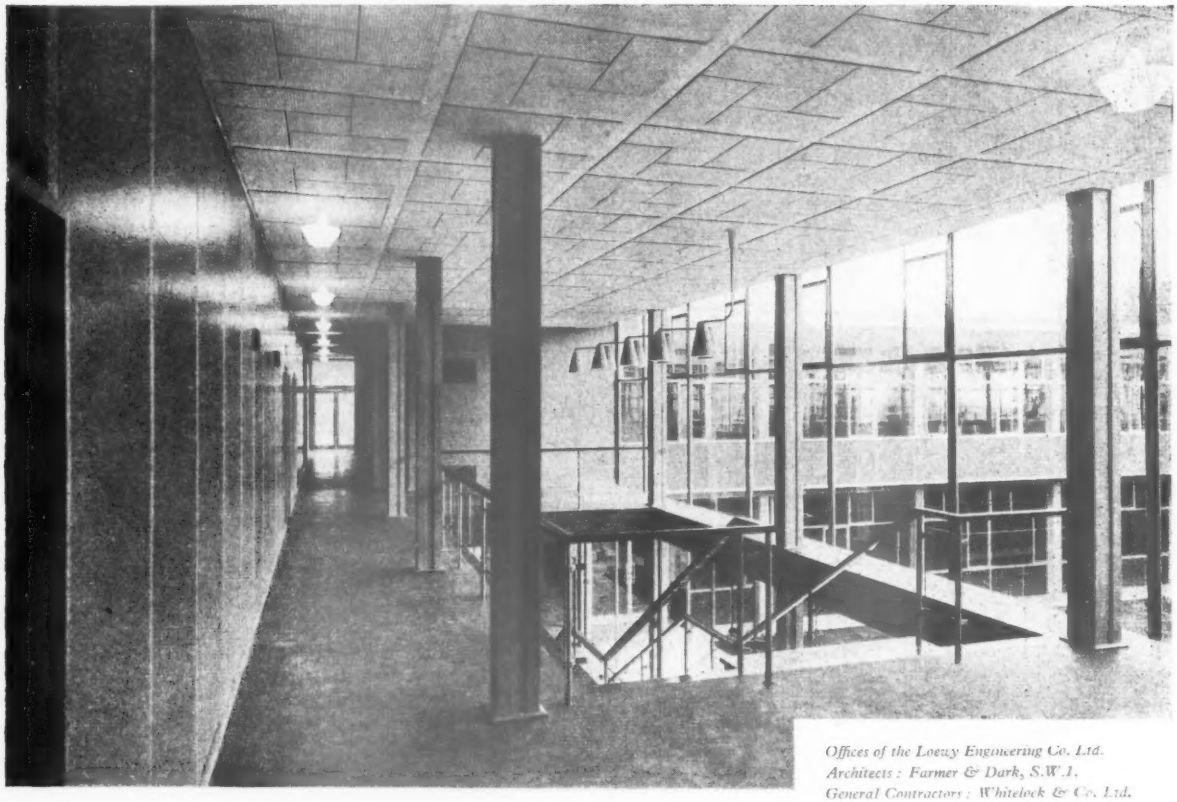

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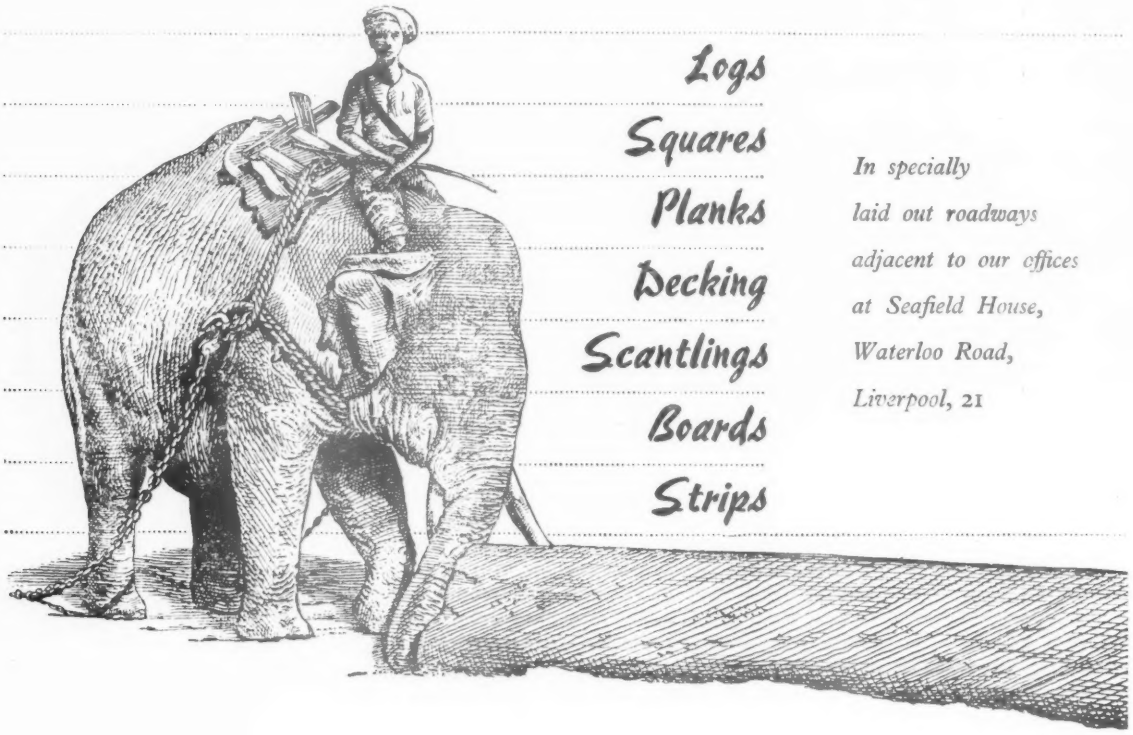

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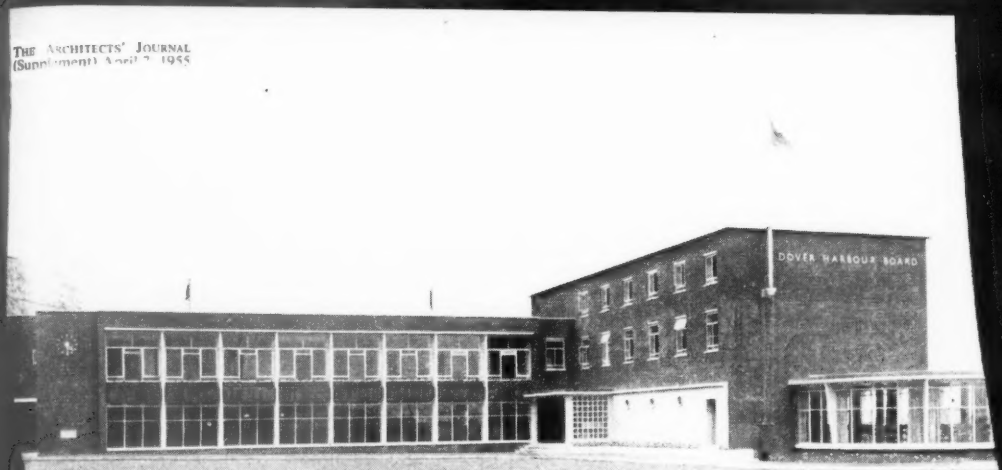

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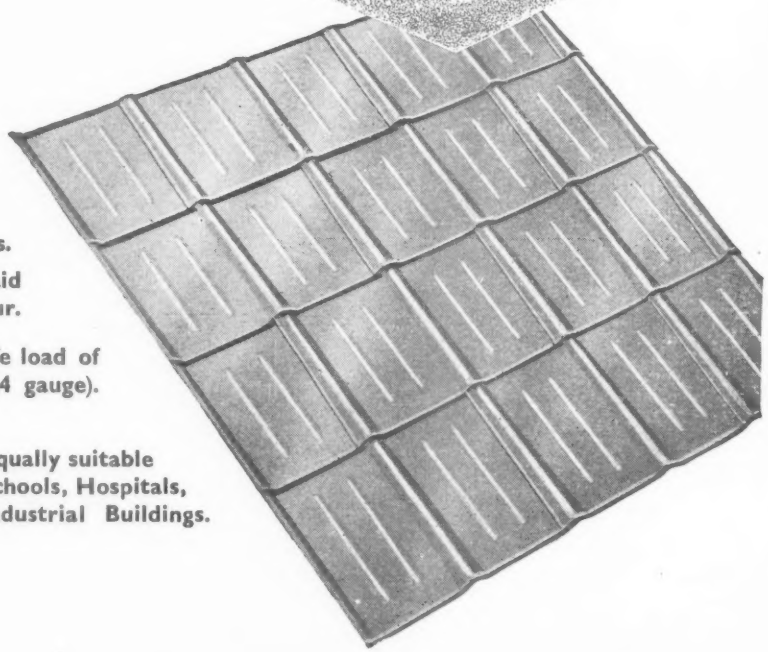

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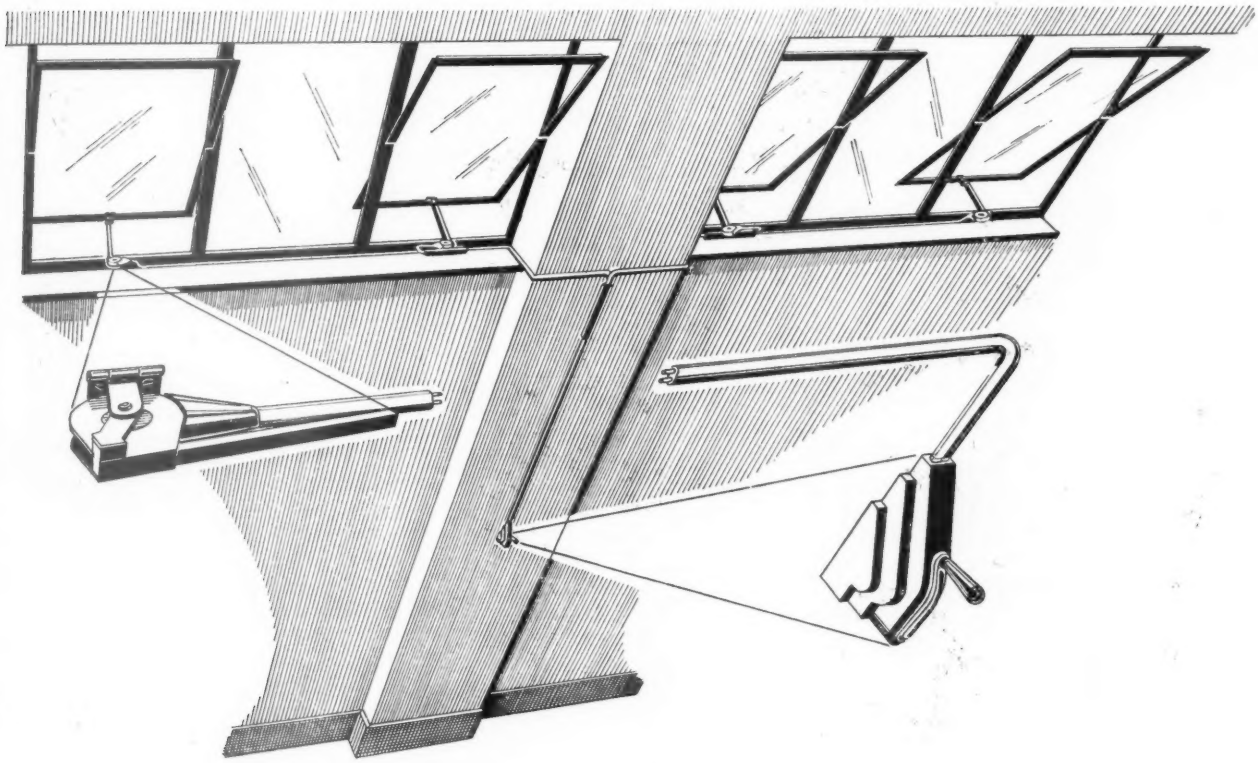

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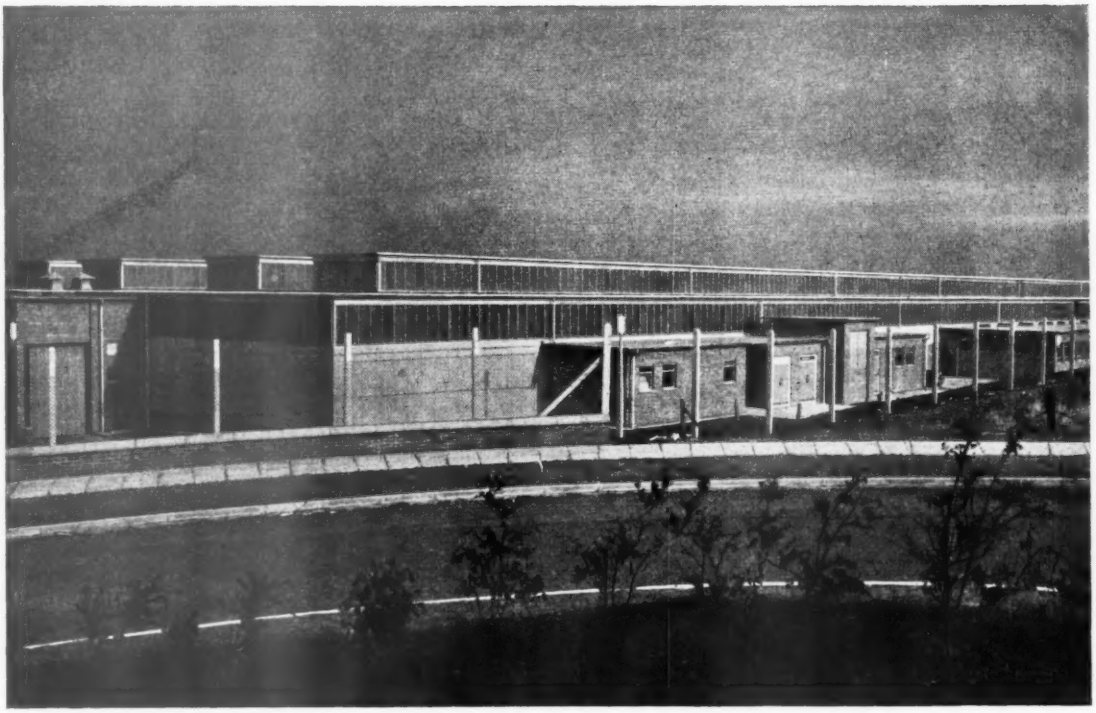

External View of the Factory

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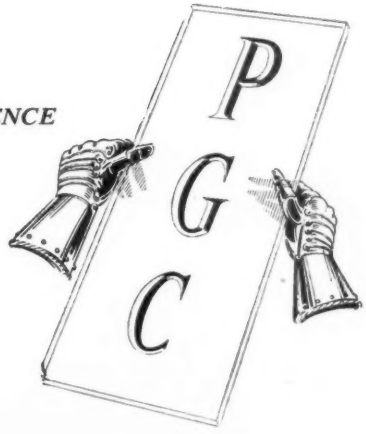

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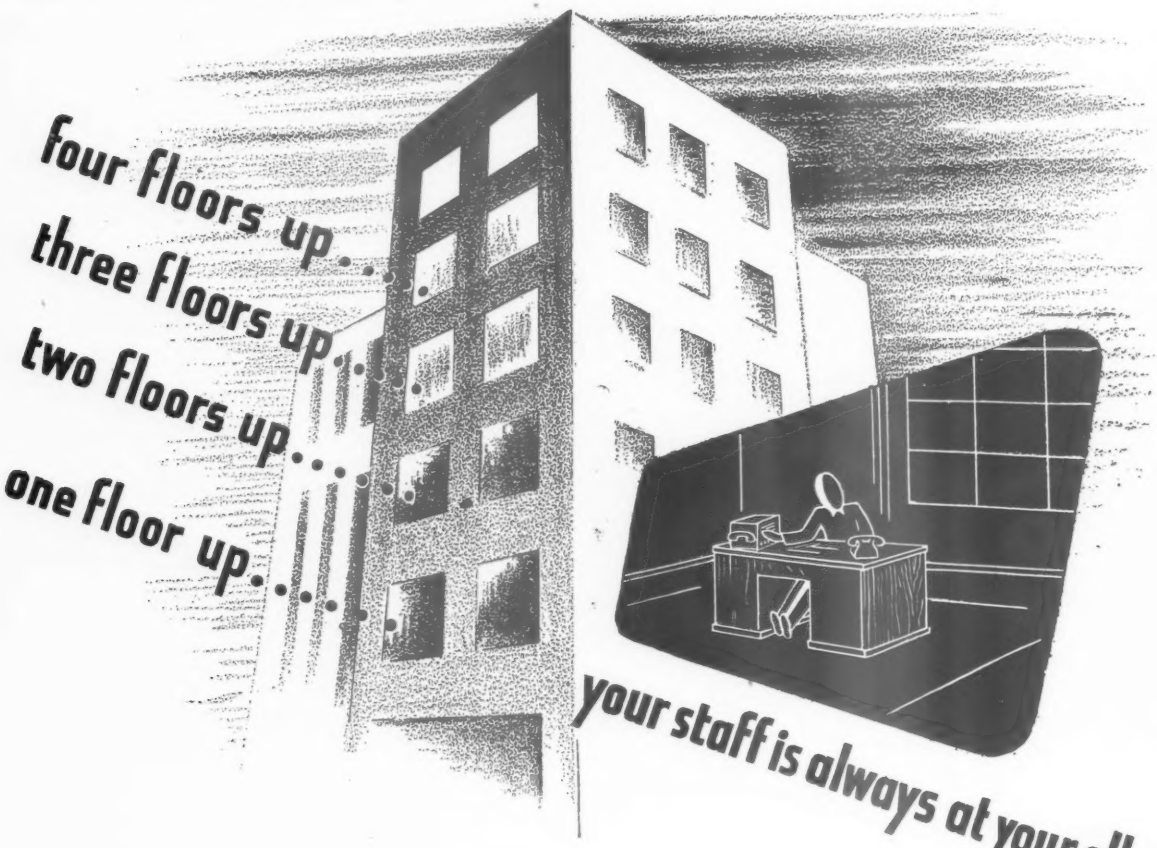

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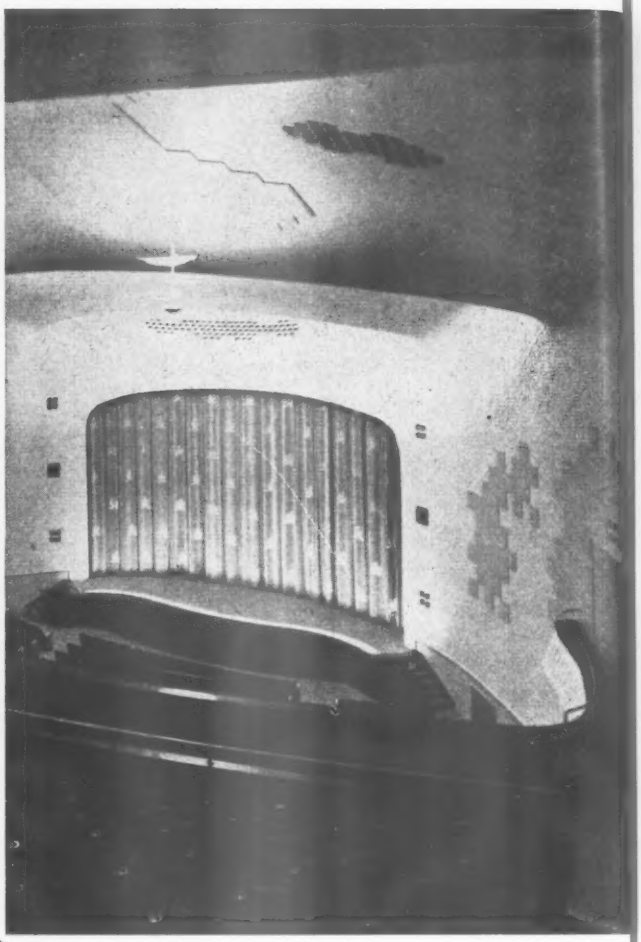

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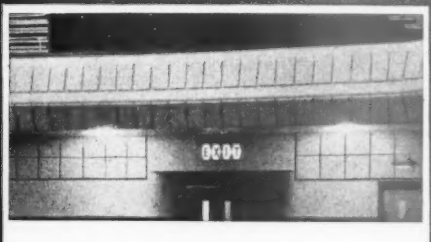

An interesting feature of this Jersey cinema is the arrangement of Paxtiles the full width of the balcony front. Used in this way Paxtiles give an unusual and attractive decorative effect, as well as providing excellent acoustical correction.

Good sound insulation is good business in the cinema industry. In this installation in the Odeon Cinema, Jersey, C.I. (Architects: Messrs. T. B. Bennett & Son) cinema patrons enjoy the best acoustic treatment that sound engineers can devise. Here, Newalls (Regd. Brand) Paxtiles are applied to Auditorium and Circle Foyer Ceilings, and walls of Auditorium, Circle and Stalls, to afford not only first class sound insulation but an attractive finish as well. Newalls have made a special study of cinema and projection box sound insulation and, as manufacturers of sound insulating materials with experienced personnel for the application of them, can offer an acoustic service which many cinema owners have used to good effect.

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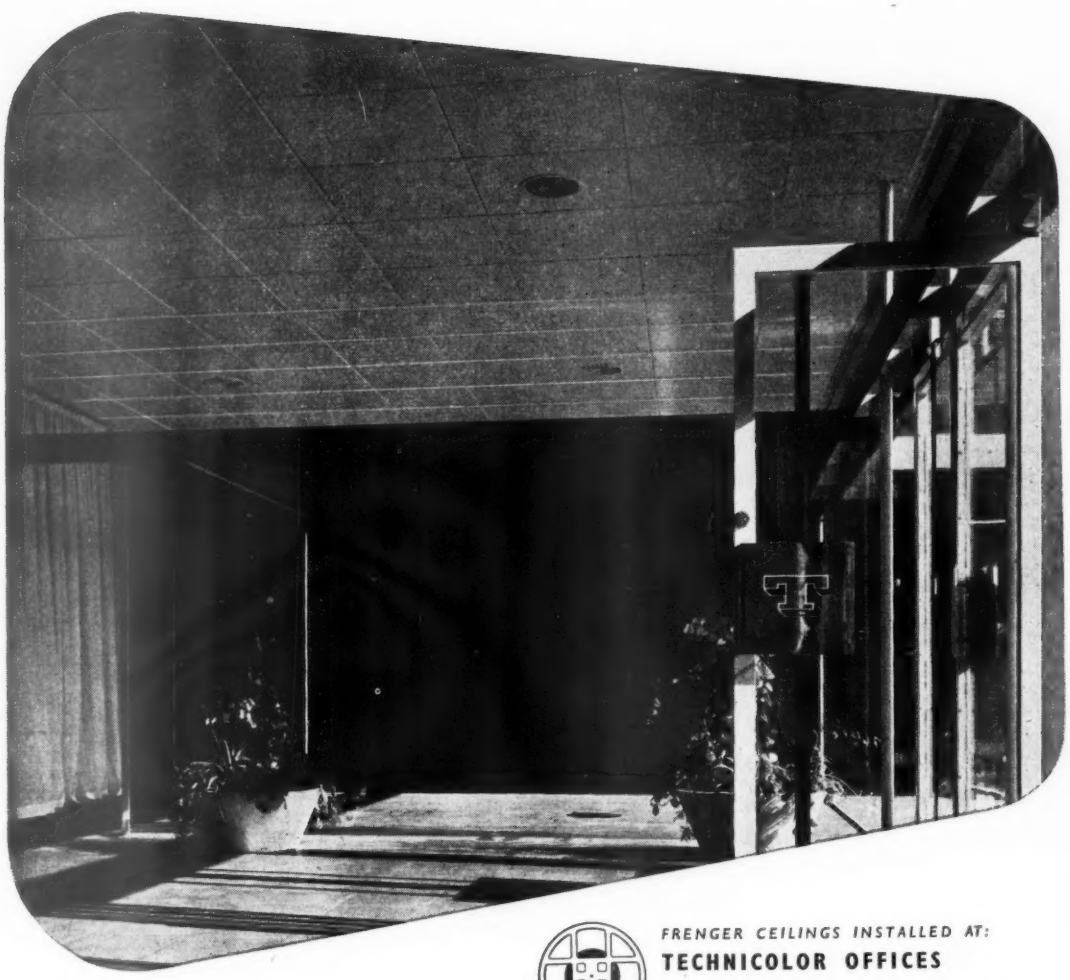

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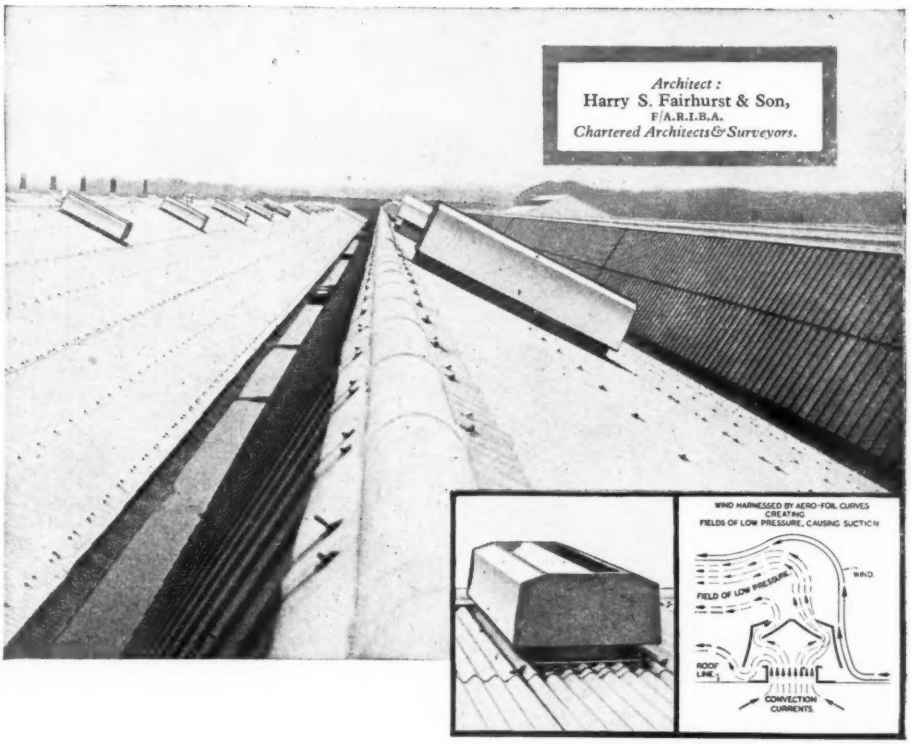

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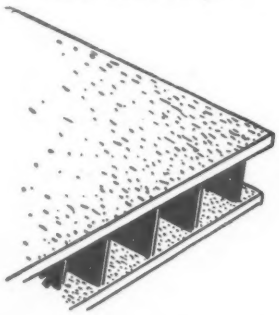

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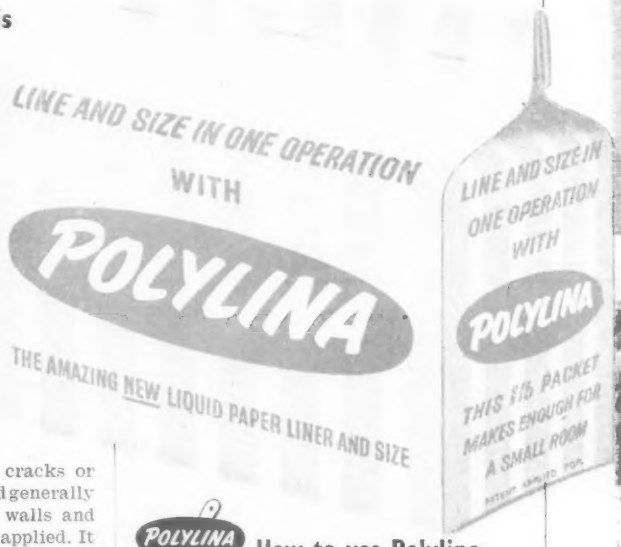
POLYLINA is a fibrous cellulose material easily mixed with water to form a smooth paste, easily brushed on any wall or ceiling surface. When dry it forms a paper-like film—a perfect base for paper-hanging without further sizing or rubbing down.



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POLYLINA fills up small hair cracks or lines in wall or ceiling surface, and generally helps to hide imperfections in walls and ceilings when the final paper is applied. It greatly reduces the risk of blistering and lifting edges even with the most difficult wallpapers. Used in conjunction with POLYCELL it bonds cellulose liner with cellulose paper, no contrary movements possible here.

According to the thickness of application, POLYLINA forms a thin sheet similar in structure to cellulose wall-boards and has the same kind of insulating qualities for sound and heat.

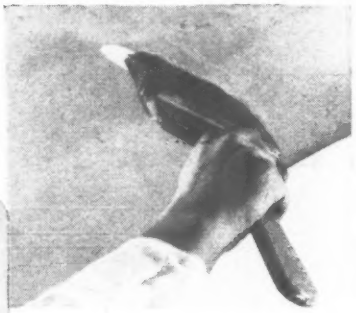
How to use Polylina

Empty contents of packet into a bucket and pour on half a gallon of cold water, mixing with the hand into a dough. According to the state of the surface, dilute with another 2 to 6 pints of water, stirring in with the hand. Fully develops in 10–50 minutes. A rough wall needs a thicker solution: a normal plaster wall a medium solution; a painted wall a thinner solution. Apply with a brush in even strokes. Use a coarse brush (a short ceiling brush, or grass brush) to prevent heaping.

Polylina adds charm to distemper and ceiling-whites without extra cost

Take a handful of POLYLINA in dough form and mix it into about 4 times its volume of liquid distemper or ceiling-white and you will get a richer colour and texture, with additional elasticity, which prevents flaking of the distemper film. No need to size before this treatment. Larger additions of POLYLINA give a slightly plastic finish which can be increased by stippling. For heavier plastic effects, such as combing, add oil paints and fillers to POLYLINA.

Improve your ceiling-white with Polylina.



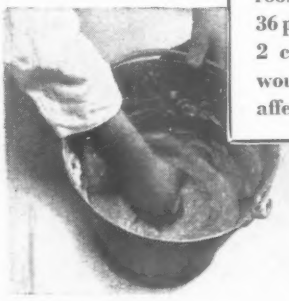
Polylina applied with coarse brush, lines as you size.

SAVE TIME, MONEY & STORAGE SPACE

POLYLINA is packed in one standard size: one packet does a small room, two for a larger room. 36 packets store in space of just over 2 cu. ft.—equivalent lining paper would take 7 cu. ft. Polylina is unaffected by damp and is vermin proof.

Water on to powder.

Mix to a stiff dough.



Further dilute according to use.

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New high output MARVEC Fire

heats up to 2,250 cu. ft. and supplies hot water

SPECIFICATION Vitreous enamelled cast-iron fire front. Combined hook-on trivet and extension piece. Plain cast-iron interior sealing frame to fit behind tile or precast surround. Firebrick lined firebox; removable bottom grate; restrictable throat.

Wrought welded or copper boiler with 1 in. connections on top. Sealing rings for pipes passing through casing. Self-contained boiler flue and damper and lift-off back-plate. (Cast-iron interior frame, enamelled to match fire front, can be supplied.)

COLOURS Beige mottle or black. Allustre A2. Alisheen black, bramble, bronze or copper. Hook-on trivet — black vitreous enamel.

STRUCTURAL OPENING **Minimum Dimensions**

Width :	20 ins.
Depth :	13½ ins.
Height from hearth level to underside of lintel :	33 ins.

Alternative adaptors are available to suit tile surrounds with 2⅜ ins. and 4⅜ ins. return to wall.

FIRE OPENING IN SURROUND

Width :	16 ins.
Height :	22 ins.

GAS IGNITION Connections ¾ in. B.S.P. on either hand. Provision can be made for a concealed gas connection.

SPACE HEATING CAPACITY If provision is made to introduce convected air to the living room, a room of 2,250 cu. ft. can be heated.
If convected air is used for warming other rooms, full heating up to 1,750 cu. ft. is provided, and background warmth for other rooms up to a total of 2,000 cu. ft.
Note: These figures apply to rooms of normal construction.

BOILER OUTPUT Maintainable maximum 9,000 B.Th.U. per hour.
Provided the system is compact the boiler can heat a towel rail in addition to supplying domestic hot water. If the boiler is not used to provide domestic hot water, 45 sq. ft. of radiation surface (including unlagged piping) can be heated.

HOT WATER SYSTEM The recommended size of cylinder is 30 gallons (direct or indirect). The cylinder must be lagged and should be fixed vertically as near as possible to the boiler. In no case must flow and return pipes exceed 30 ft. each in length. Pipes longer than 15 ft. must be lagged. The draw-off pipe to the taps must be a dead leg connection from the expansion pipe.

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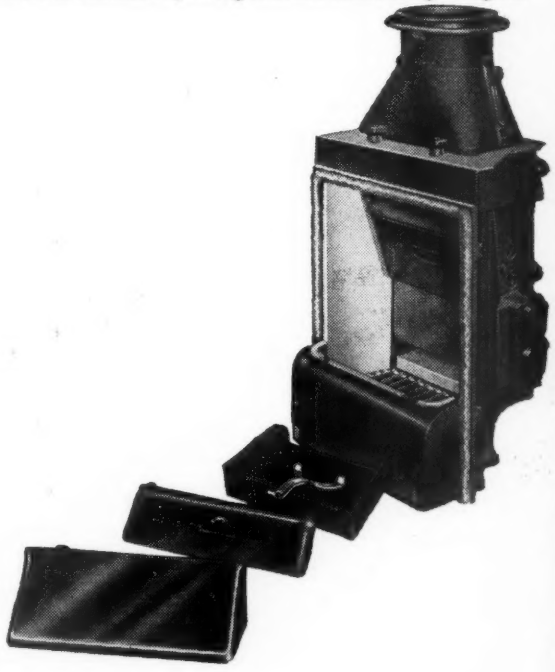

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THE ARCHITECTS' JOURNAL
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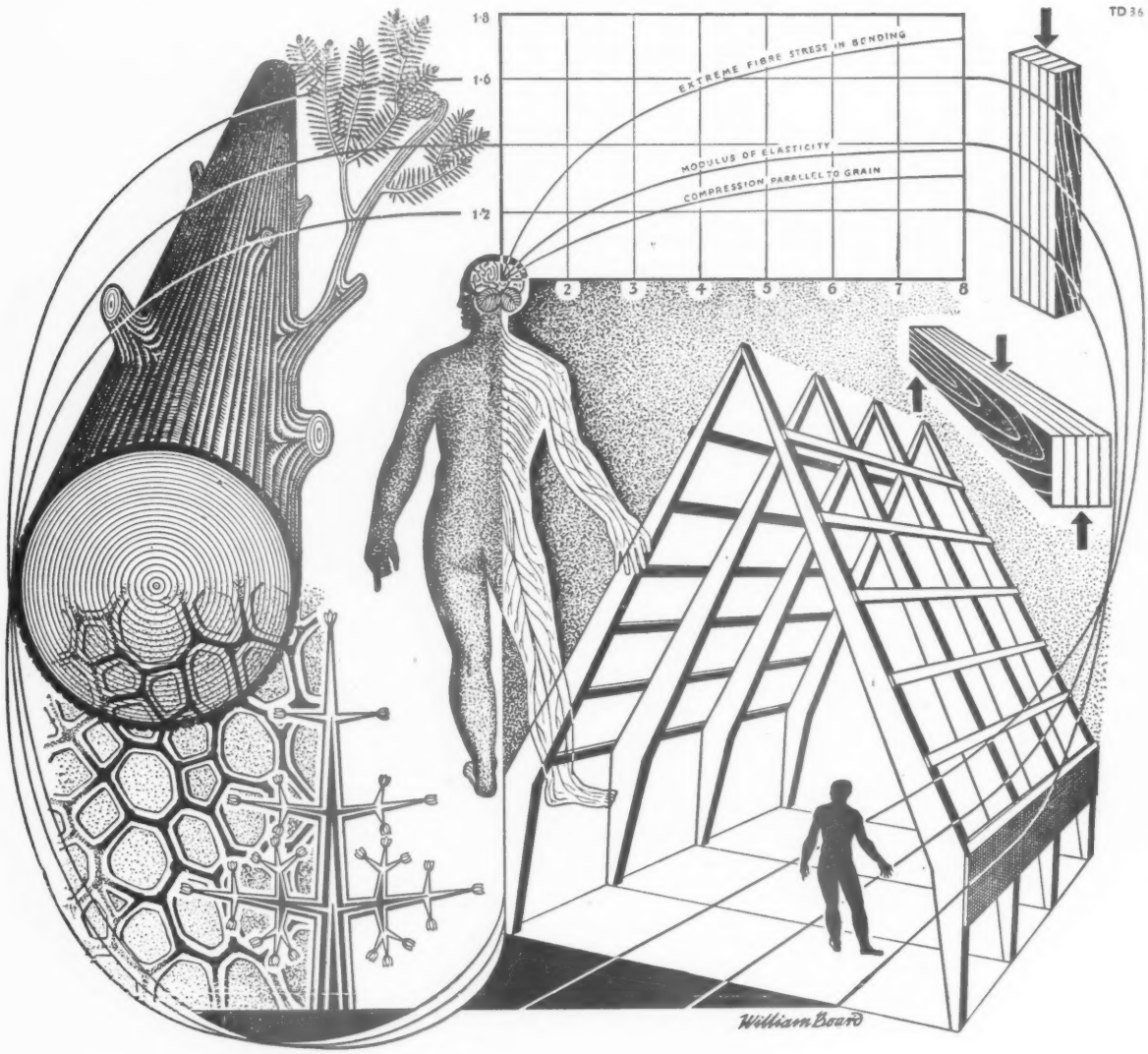

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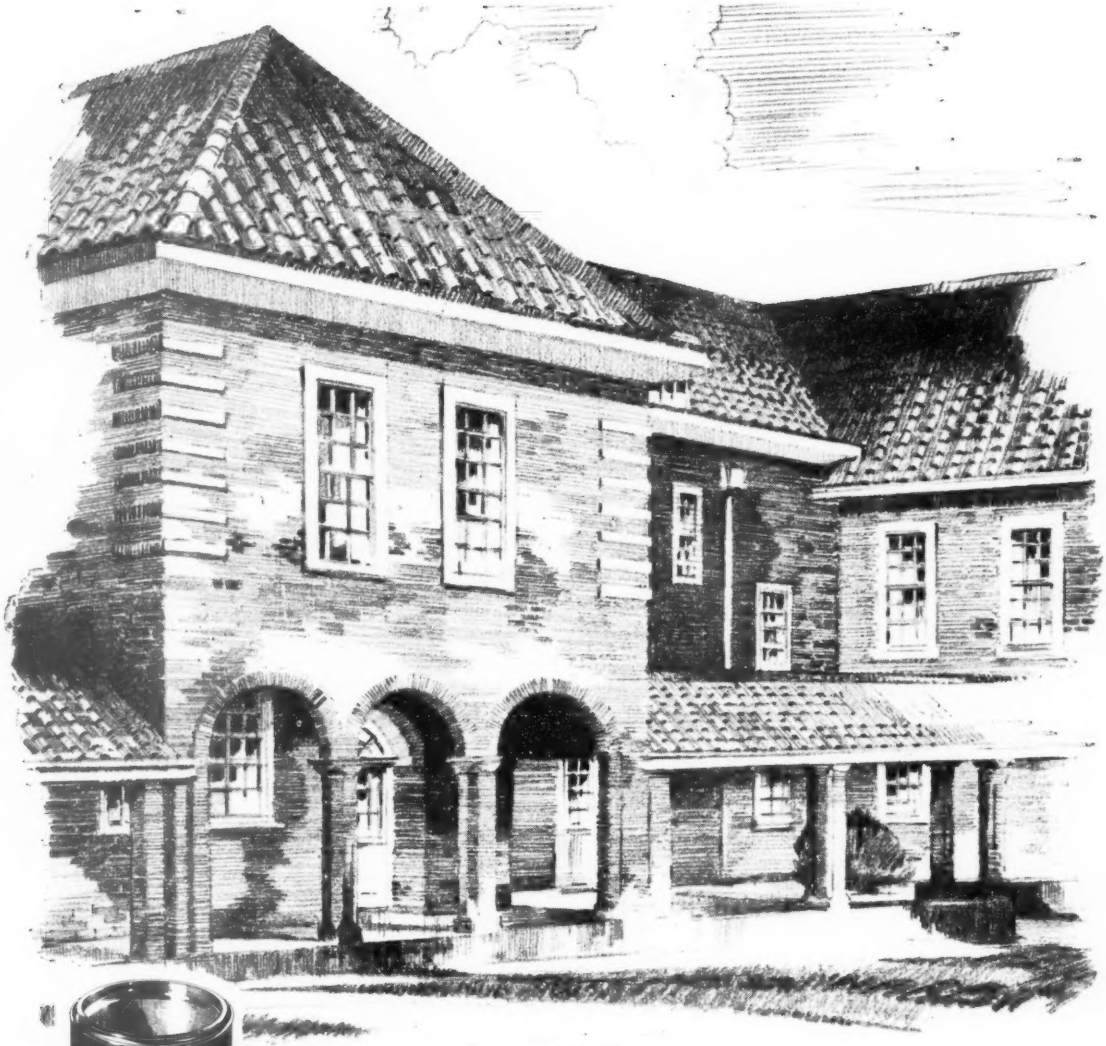

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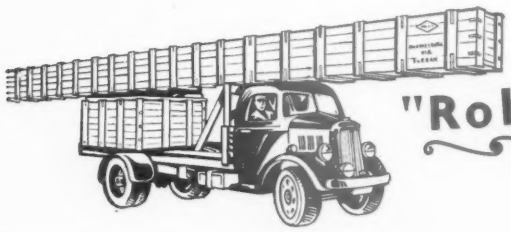

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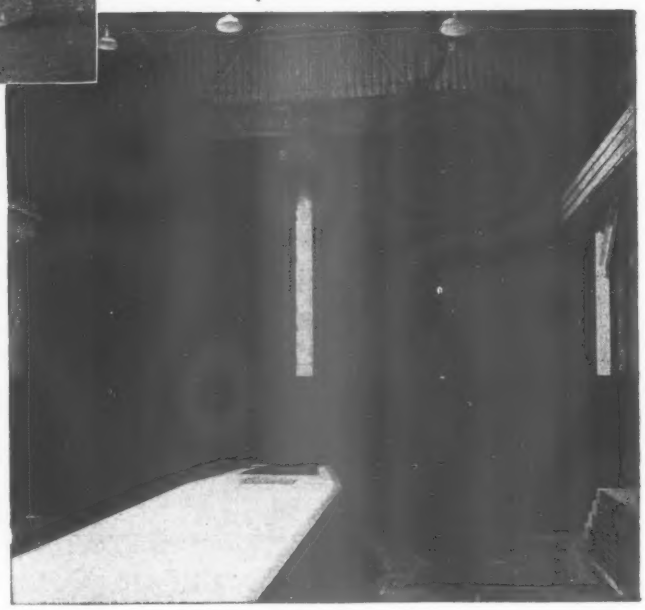

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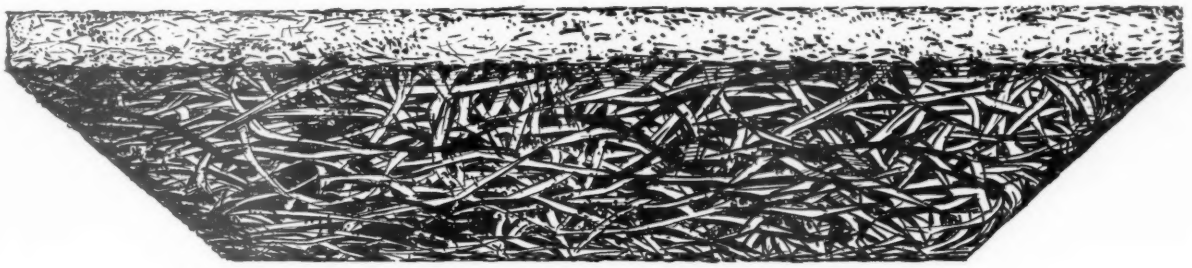

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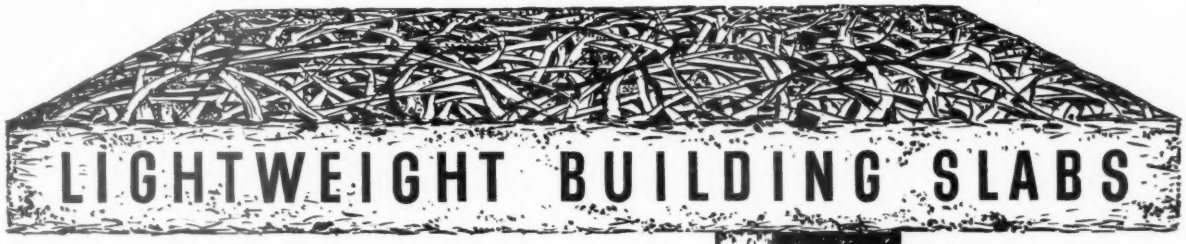

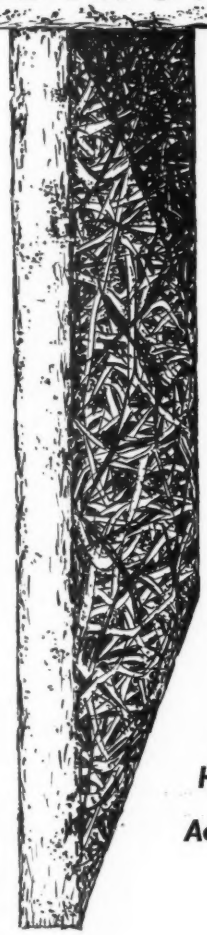

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Bradford's were appointed by the Ministry of Works as contractors for the flooring of this building. Their hollow-block system was used throughout.

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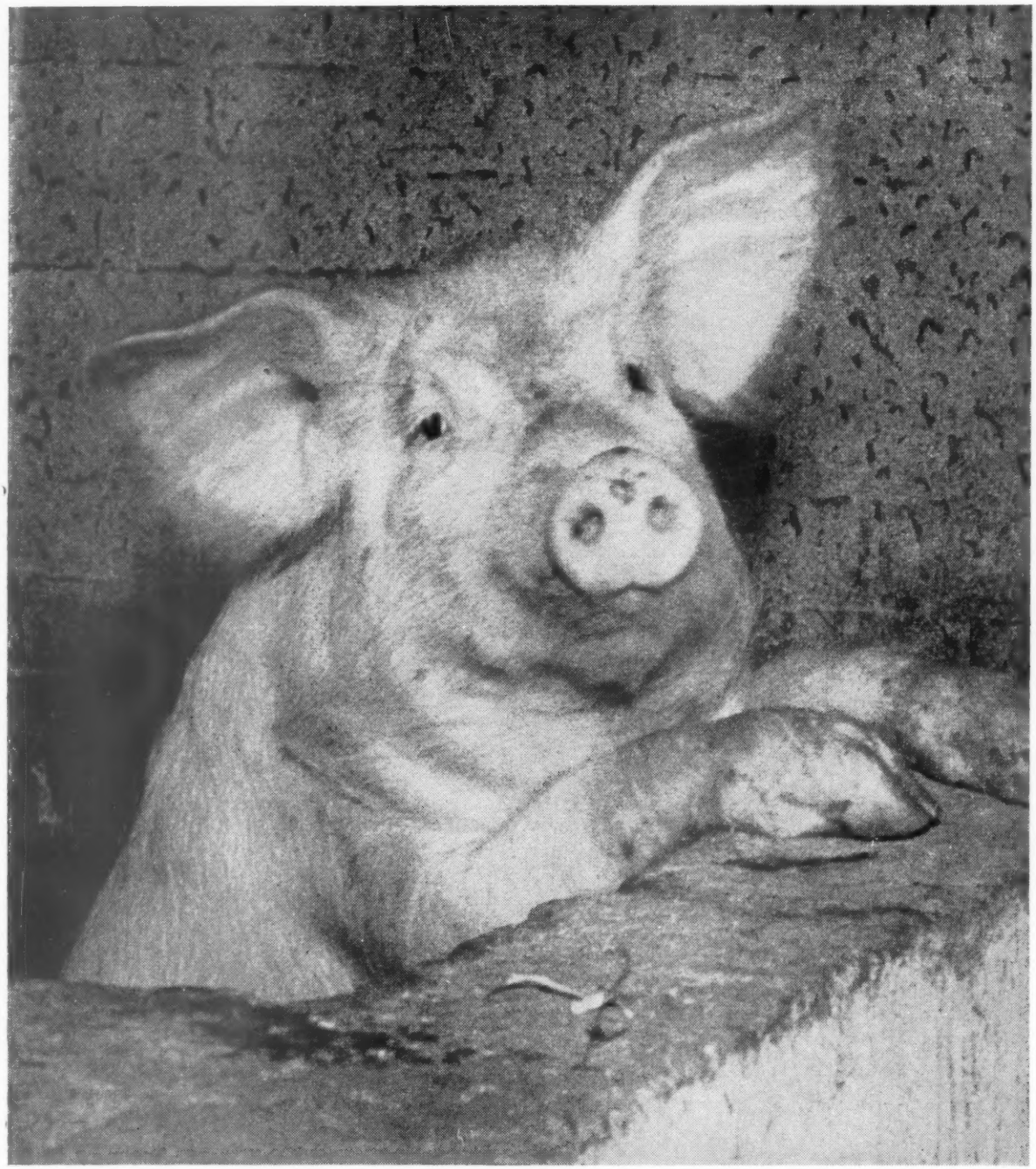

Farmer & Stock-Breeder photograph

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or free standing

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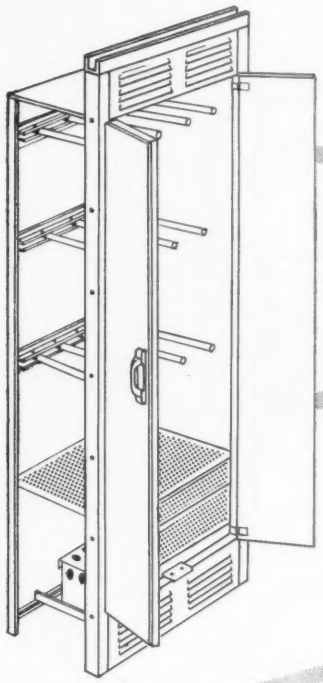
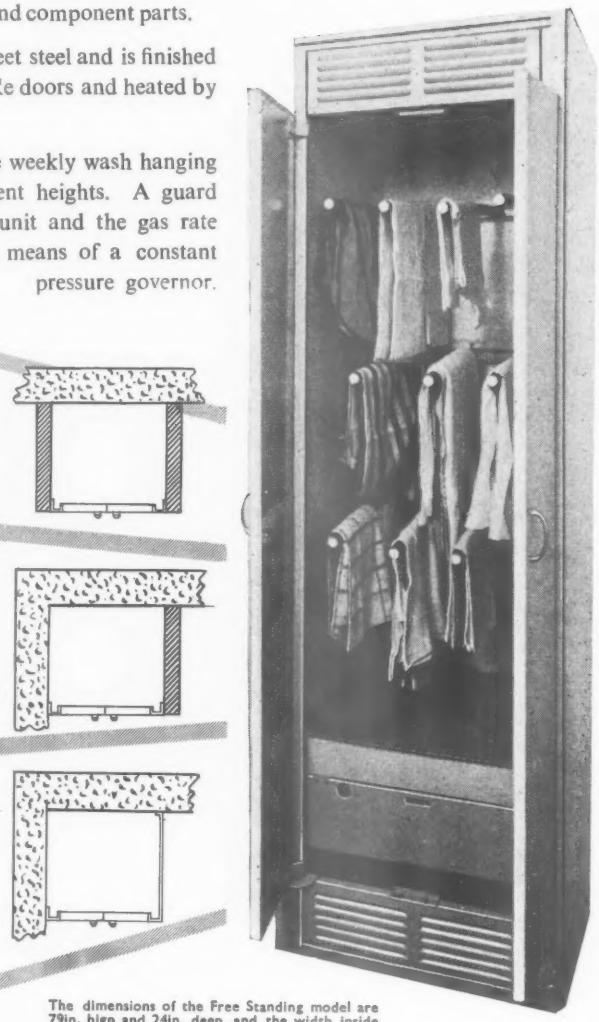
The cabinet is strongly constructed of Zintec sheet steel and is finished in cream stove-enamelled paint, fitted with double doors and heated by means of a gas burner unit in the base.

The dryer is large enough to contain an average weekly wash hanging on eleven tubular Bakelite rails at three different heights. A guard is provided above the burner unit and the gas rate controlled by means of a constant pressure governor.





Built on existing wall face with breeze block sides.

Corner installation with breeze block right hand side.

Corner installation with metal panel right hand side.

The dimensions of the Free Standing model are 79in. high and 24in. deep, and the width inside the cabinet is 23⅛in.

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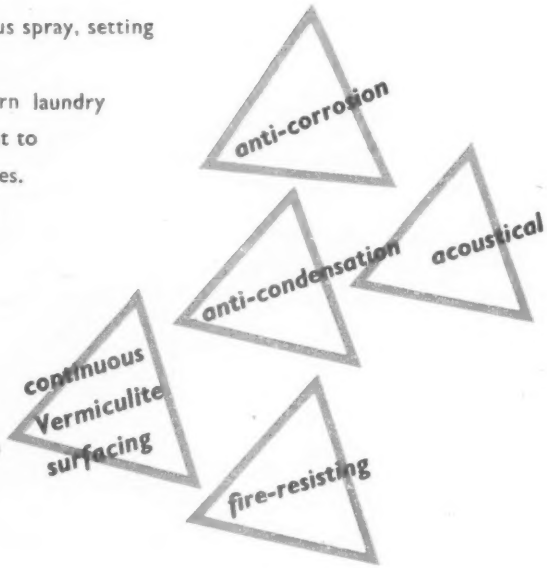

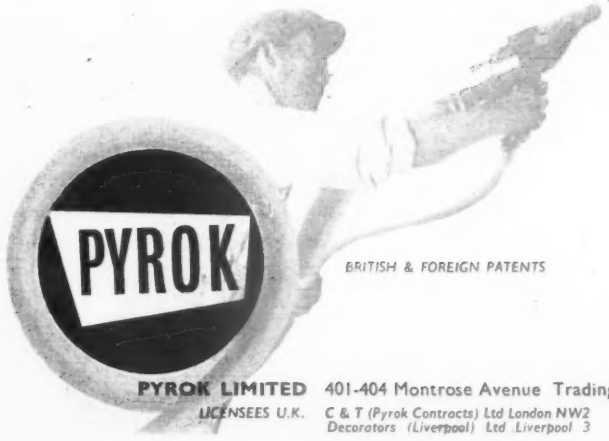

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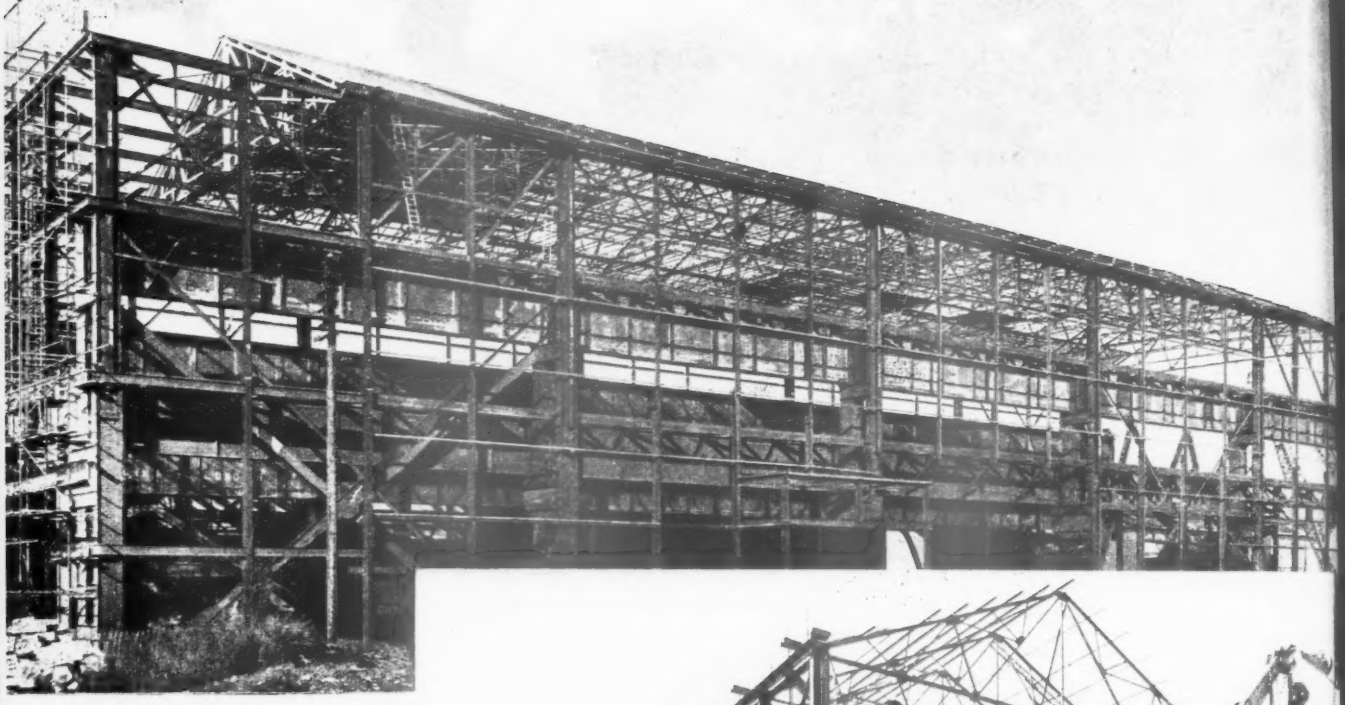

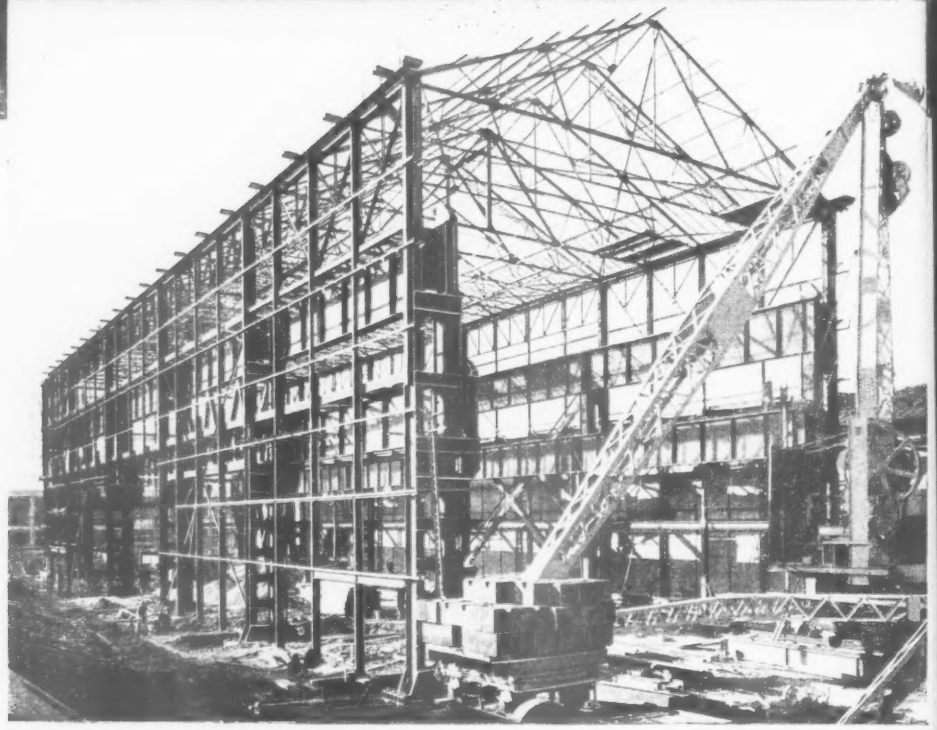

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THE ARCHITECTS' JOURNAL

9, 11 & 13, Queen Anne's Gate, Westminster, London, S.W.1 Whitehall 0611

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ARCHITECTS ON SHOW

The Factory Equipment Exhibition, at Earls Court, stayed open for less than a week, so I don't suppose many readers found time to get to it. There was nothing much there of immediate use to architects, but it is useful to see some of the things factory owners are using nowadays—fork lift trucks; the many slotted angles for light constructional work; handling equipment of all kinds, as well as the multitude of office machinery, calculating machines, duplicators, and the many types of punched-card machines which so many firms use nowadays for anything from wage packets to stock-keeping.

*

Quite unexpectedly, ASTRAGAL found a large stand, arranged by the RIBA Public Relations Committee, to show how much architects have done in the way of factory building since the war. This is very much the sort of thing the RIBA ought to do, for the exhibition must certainly have had too many visitors who would never think of going to an architect at all. Most of the work shown was pretty well known to architects, but there was a wide selection, and no factory owner who saw it should have gone away thinking that architects are interested only in five-million-pound jobs.

*

From a practical point of view I would have liked to see bundles of drawings, a specification or two, or even a list of all the authorities an architect has to cope with. But these things are not easy to arrange, and there are probably far too many people to ask why A has had all that publicity when I haven't had any.

*

Before I leave the subject, congratulations to the RIBA for its idea of putting young architects, from private firms, on to the stand. But were these architects briefed as to what to say to potential architect-users? As far as ASTRAGAL knows, they were not. Surely the RIBA's next move should be to give their representatives on stands at public exhibitions a little publicity drill.

NOT WANTED: A MUSEUM

Most of this column's august contemporaries have expressed very, very tempered enthusiasm for Mrs. Mendelsohn's project for an international architecture museum—and for once ASTRAGAL finds himself in agreement. After all, most of the historically important drawings and architectural models are already in the hands of public-spirited bodies of various sorts. Not always in the right place, of course: it must be very galling for Italian students of Leonardo da Vinci to have to do most of their work at Windsor or in the Louvre, and equally galling for French students of Clérisseau to think that many of his best drawings are in Leningrad.

*

But, by and large, they are already being taken care of. As for the drawings of living masters, dreadful scenes are clearly going to ensue if the proposed museum acquires drawings of early works that they are trying to forget about—there is a villa at Chaux-de-Fonds for instance, a log-cabin near Berlin, and probably a few prentice jobs in Illinois. . . .

*

There is a revealing story going round, concerning an American museum that wants to build up an authoritative collection of Bauhaus material. From time to time it runs some real collector's-piece to earth, and submits it to one of the ex-masters from Dessau for verification or, perhaps, dating. The reply is almost standardized: "But that is just the sort of thing we were trying to train them out of. . . ." ASTRAGAL'S sympathies are entirely with Dessau. How on earth you museumize a teaching process without making a whited sepulchre of it is quite beyond me.

LLEWELYN DAVIES: FRONTIERSMAN

The gravelly rasp of Llewelyn Davies's voice gave a pleasing edge to his criticism—in a Third Programme talk—of the approach to architectural design by Mies Van der Rohe and Corbusier. In

The RIBA not only laid on a stand at the Factory Equipment Exhibition, at Earls Court, last week: they also produced a special pamphlet on "The Architect and Industry" which was available on the stand, and arranged to have a rota of architects (see ASTRAGAL'S *first note) to distribute them, and to interview potential clients. Apart from this stand (above), designed by K. Bayes, the only display area that looked as if an architect had worked on it was the one for Orlit Ltd. (right). Designer, Sir Hugh Casson.*

this talk, "On the Frontier of Knowledge," he did much more than merely point out the increasingly obvious inadequacies of what journalists, students and the hero-seeking public love to call Great Men. He was chiefly concerned to show the steps being taken today, through research, to help the architect "understand what the purposes of present-day building really are." The talk is being printed in part, the Editors tell me, in next week's issue, so you can judge for yourself whether the architectural profession cannot profit from the description of the medical profession as the most successful in combining: "*specialized* knowledge with *general* practice."

*

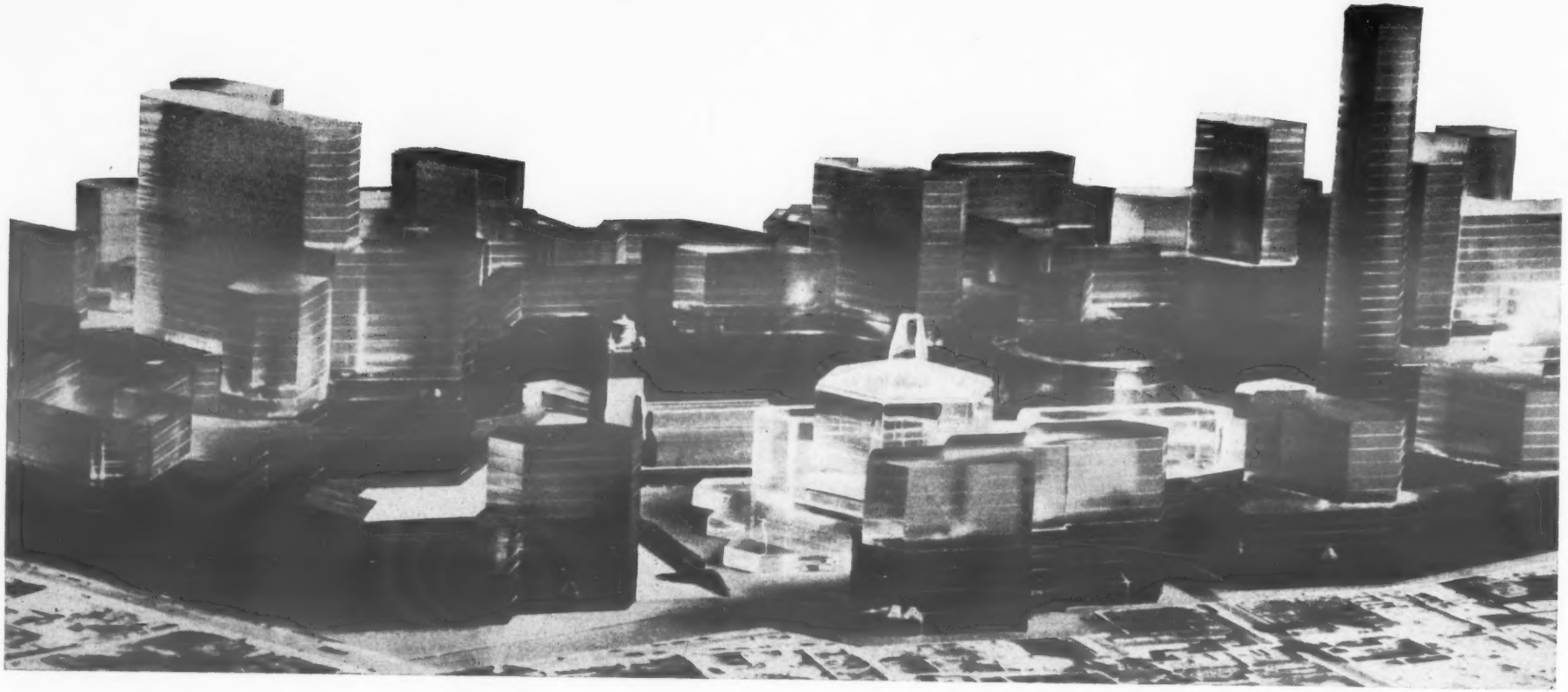
Llewelyn Davies and his team are slowly putting modern architecture—as regards certain building types—on to a true scientific basis, instead of the phoney functionalism we have had so long. I predict that his name, rather than many now more familiar and fashionable, will eventually go down in history as a pioneer of a truly modern architecture. One can feel a certain envy for the holder of the Nuffield Architectural Research Fellowship—who will be working with Llewelyn Davies's team and for which applications are now being invited.

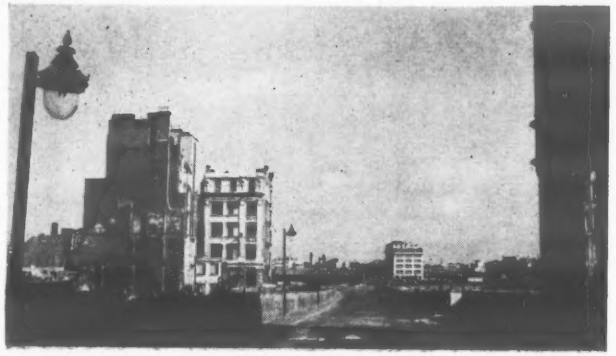
BC AT CLARIDGES

Each year the lunch given by the Council of the Building Centre pleasantly surprises with its air of luxurious informality. The list of guests bristles with the names of the stalwarts—and most of the elite—of the building industry and of those associated with it. The occasion is a neat and tactful way of reminding everyone that all is well with the BC and the modest incomparable director, F. R. Yerbury, who goes with it. Another source of pleasure for the humble columnist supping with the great—and possibly pleasurable for the great too—is the absence of speeches. Sir Harold Emmerson's brief "Thank you; more participation in research, please; and good wishes for '55," though not quite so succinct as written here, was hardly long enough to be called a speech, and might well be imitated by old so-and-so of the you-know-where.

EARLY AUSTRALIANS

Australians are curiously proud of the fact that their first, most famous,





Advancing in Threes

Last week some of those sympathetically disposed towards more comprehensive planning for the central areas of London, and elsewhere, had the opportunity of seeing, at the House of Commons, a film and a model (above) showing the proposals of architects Kadleigh, Whitfield and Horsbrugh for the rebuilding of the blitzed Barbican area, left, of the City of London. The project was first illustrated in the JOURNAL of October 14, 1954. Two official proposals for the comprehensive planning of this area, by the LCC and the City Corporation, are published for the first time on pages 466 and 467, and portray an entirely different approach to the problem of rebuilding a large area as a whole to that taken by the private architects. The fact that there are, at the moment, two official proposals, both of which have been submitted to the RFAC is due, indirectly, to a fundamental failure of the 1947 Planning Act, which, while appointing the LCC as the planning authority for zoning and programming, and giving the City powers to deal with applications to build, failed to state clearly who was to handle 3-dimensional comprehensive development. The situation which arises from such an indecisiveness is indicated in this week's leading article opposite.

and to some tastes finest, architect was a self-confessed forger whose death sentence was commuted to transportation for life. Perhaps this is merely a sublimation of a widely-held sentiment about architects, but be that as it may, there can be no doubt that Francis Greenway (1777-1837), was one of the most useful exports with which Britain ever favoured any of her colonies, and he is very properly the subject, not to say hero, of the longest and most fascinating chapter in Morton Herman's excellent new book on *Early Australian Architects.**

*

Greenway gets, in fact, nearly a fifth of the book, but as one reads it one can see why. Compared with him, his contemporaries—Watts and Kitchen, his successor Lennox and the small fry of early Colonial building lagged behind. This book is worth reading for the account of Greenway alone, but the complete work is a revealing study of architects working in a tight and tiny human society, and of a little known offshoot of Late Georgian building practice and design.

GLOSSY AND GOOD

A new bi-monthly magazine from France, *Aujourd'hui,* tries to cover all forms of design from painting to toilet fixtures, from architecture to aircraft—all viewed from the "purely aesthetic" angle. The first issue of this all-embracing work—the sort of thing that always gets ASTRAGAL'S sympathy, even when he is not sure that it is worth the trouble is bound to interest English readers, because it opens with a very fully illustrated appreciation of the work of painter Ben Nicholson. Further on most of the aircraft illustrated are English as well. Practically half of the issue, by weight, is taken up with a thorough coverage of the last Triennale in Milan, and much of the rest of the magazine runs along the dangerous borderline between architecture and furnishing.

*

Since it comes from the same publishing house as *Architecture d'Aujourd'hui* (and let's hope the similarity of the titles doesn't cause too much trouble) it has the same glossy paper throughout, the same knock-out blacks, steely blues and colour-work generally. It looks most exciting.

ASTRAGAL

* Angus and Robertson, 3 gns.

The Editors

BARBICAN STAKES

THE New Barbican scheme, when put forward by architects Kadleigh, Whitfield and Horsbrugh six months ago, was welcomed for two reasons: its proposed imaginative use of modern engineering, planning, servicing and building techniques to get maximum value out of a derelict central area, with some regard to amenity; and the purpose it might serve as a pacemaker. With such an example set (and, allegedly, with the financial backing which would enable it to be built) it was hoped that the City Corporation would feel compelled to abandon their largely piecemeal 2-dimensional planning and produce a 3-dimensional scheme for the comprehensive development of these 40 acres. However, that other planning authority, the LCC, had been preparing a comprehensive scheme before the Barbican Committee had briefed their architects—since January, 1954. The many individual applications to build in this area which were coming to the LCC for planning approval obviously demanded a more comprehensive planning approach. Nevertheless, the first scheme prepared by the planning division of the LCC in agreement with the consultants of the City Corporation was, in fact, rejected by the City Corporation. The issue of comprehensive development did not, therefore, arise again until an application for planning approval for a large—five acre—scheme for development within the area was submitted. This proposal was passed to the RFAC for comment, and the RFAC, rather naturally, asked to be shown a comprehensive planning scheme of the whole area in which this large project was to be placed. Confronted by this demand and by the fact that the LCC had been giving the matter further thought, and had prepared yet another comprehensive plan, the City Corporation produced their own proposal. So two schemes have been produced and submitted to the RFAC; one by Sir William Holford, lately the City's consultant, in collaboration with Anthony Mealand, the Planning Officer of the City Corporation—the other by Arthur Ling's LCC planning division, under the direction of Dr. J. L. Martin.

There are, therefore, now three schemes for this area of the City of London, and photographs of models of these three proposals are shown on the opposite page and on pages 466-467. Any impression of a slight *embarras de richesses* can quickly be removed. The RFAC has commented on the two official schemes in the hope that someone—it is not clear who—will incorporate in a final scheme the best points from both plans. Then, with planning permission largely a formality, the City can go ahead and find the backers to finance the scheme.

What of the proposals of the New Barbican Committee? Their duties as pacemakers over, so to speak, do they lie twitching by the track ? Not yet, at any rate. Their plans

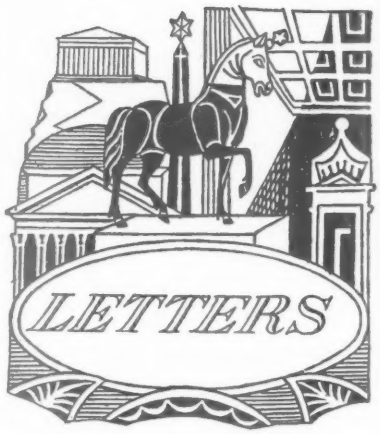
who was to handle 3-dimensional comprehensive development. The situation which arises from such an indecisiveness is indicated in this week's leading article opposite.

were rejected by the City Corporation, one of the reasons being the lack of an industrial development certificate from the BOT. They are now equipped with the necessary BOT certificate, and are asking the City to reconsider their application for permission to proceed with their scheme. Last week a measure of the support which the Barbican Committee commands was shown by the attendance at a reception given by them in the House of Commons. Here were shown a model of the proposals, plans, and a film, to a packed audience of what Sir Gerald Barry, Chairman of the New Barbican Committee, hopefully called intelligent and forward-looking people: councillors, members of parliament, financiers, valuers and planners.

What are the chances of the New Barbican scheme—the Kadleigh-designed private enterprise scheme—against an official scheme (*i.e.*, a revised version of the Holford and LCC schemes illustrated in this issue)? Obviously the Kadleigh scheme attracts the idealist element in everyone because of the very sweep of its comprehensiveness. Here is a synthesis of social, visual and functional needs which is bound to appeal to the intellect after the relative untidiness of more piecemeal (but therefore often more flexible) development as expressed in the official plans.

The sheer size of the project should not intimidate unduly. The New Barbican site is 40 acres in area; the South Bank Exhibition, for instance, covered 30 acres. Rather more vivid is the comparison made by Sergei Kadleigh between the New Barbican and the Palace of Westminster. The latter, with its own low-level service road, libraries, offices, debating chambers and restaurants, is an example in miniature of the multiple use proposed for the former. Indeed we can go further. The Palace of Westminster covers about one-quarter the area of the New Barbican site and was built a hundred years ago for just over £2,000,000 which, allowing for the depreciation in the value of the £ is not far short of one-quarter of the roughly estimated cost (£50,000,000) of the New Barbican scheme. And one feature—the Victoria tower—is directly comparable. At 330 feet high it is only 20 feet lower than the highest tower in the New Barbican scheme. Yet who today looks aghast at the height of the Victoria tower, or deplores its relationship with the Abbey?

The chances of the New Barbican scheme against the more orthodox, but still comprehensive, plans of the official schemes, should depend, however, not just on technical know-how, but on an accurate assessment of demand. This is the question which should be answered: is the type of development shown in the New Barbican scheme an accurate forecast of the type of central area urban development which mankind will need fifty—or even a hundred—years from now, or is it merely solving today's needs in terms of yesterday's habits of working and living? The answer cannot be given by architects alone. Advice should come from economists, historians and scientists. What might on the one hand be an expert anticipation of demand could also, so easily, be but a plinth for Ozymandias.



R. Towning Hill, A.R.I.B.A.

C. Wooster, A.R.I.B.A.

R. Sheppard, F.R.I.B.A.

New Arbiter of Taste

SIR,—Your editorial of March 10, referring to "the New Arbiter of Taste," raises a question which demands our immediate attention; even if we must, for the moment, set aside consideration of the influence of those other important arbiters of taste—the Building Societies, whose influence on the shape of buildings cannot be ignored.

Whilst no one in their right mind is likely to question the necessity of exercising control over development, there is abundant evidence to show that the way in which this is at present exercised provides plenty of opportunity for the repetition—ad nauseum—of those very things which the instigators of the new Act sought to control, and also plenty of opportunity to frustrate any scheme which might be the product of enlightened thought and could be labelled as progressive in any sense.

It is a very safe bet that the majority of architects in this country today who seek with energy to find new solutions to the problem of building, will be confronted with stubborn opposition as soon as their proposals appear before the local authority, and this, when they have overcome the first difficult hurdle and obtained the unqualified support of their clients.

As you rightly point out, the planning appeal machinery is such that in practice one is not really free to appeal—there are too many factors working against the designer, who feels justifiably indignant. They are chiefly of course, questions of time and cost. Heaven knows, it is difficult enough to persuade the average client that a change of outlook is necessary if we are not to continue with complacent satisfaction to do things as we have always done them before. One needs no great powers to imagine the effect on his morale when he is informed of the delays occasioned by the battles with the planning authority, when it is common knowledge that Bill Bashon, the builder, always has his plans passed for speculative houses without any fuss at all.

Your JOURNAL constantly points to the necessity for the architect to regain his authority in the eyes of the public, so before this present deplorable state of affairs manages, by devious means, to plant another nail firmly in his coffin, I suggest that instead of sitting back and commiserating with each other, we should stand up and—Do Something Now!

R. TOWNING HILL.

London.

An Architect Rationalizes His Work

SIR,—I have been very interested in the articles by your guest editors. The sad story of the office building is too near the truth for any architect to remain complacent and airily blame builders for out-of-date methods. The beginning of the trouble is clearly in the architect's office, where he is rarely the master of time, or costs for that matter, but all too often a man struggling against unknown odds. I think any architect who runs a job should be able to make an assessment of the time and manpower required to cover a project, and moreover should have good hopes of keeping to his dates. Then being sure of his ground he will be in a strong position to explain and show to his client why the building cannot be started as soon as might be hoped.

I am at present engaged upon a project that has been programmed and is being controlled in the architect's office by a technique that I believe would allow any competent architect to make an appraisal of any job, to programme it, and organize it so that plenty of warning is given of impending time difficulties. If warning is given, action can be taken so that last-minute panics and skimpings can be avoided.

Such an idea may sound far-fetched and impractical, but I should like to say that it is based upon varied experiences, *e.g.*, the work of borough, county, and central government offices, private practice, including keeping step with high efficiency commercial undertakings; developing artillery field survey for mobile war conditions, which involves appraisal, programme and execution of largely unpredictable tasks at high speed; and some knowledge of industrial consultants and production engineers techniques. It is indeed no more than an attempt to rationalize and order an architect's work.

C. WOOSTER.

Bucks.

Cost Analyses: Difficult But Useful

As readers will know, the JOURNAL *Editors are anxious to publish cost analyses, whenever possible, as part of their new and more comprehensive way of describing buildings. Many architects have shown their willingness to co-operate by supplying details of costs. One of them, Richard Sheppard, wrote us the following letter containing a proposal that may interest reader-contributors.*

SIR,—I very much sympathize with your wish to present buildings in the JOURNAL in a more comprehensive way. I am quite sure that the adoption of the scheme of cost analysis in particular, on the general lines suggested by the Ministry of Education, would be most useful. I need not go into the reasons for this, nor the difficulties in preparing such a cost analysis, as you must be well aware of them.

We shall be very happy to co-operate with you in producing a really detailed analysis that would be useful to other people. To have the maximum value, we really ought to start a job on this assumption and relate the first cost analysis figures to the final ones. This would be a long-term process and might take three or four years, since we should have to start at the inception of the scheme.

A job which has just been completed would scarcely be so useful, although the method would have valuable results even here.

RICHARD SHEPPARD.

London.

RIBA

This Year's Conference

Four speakers will talk about "The Organization of the Building Industry and the Architect's Responsibilities" at the British Architects' Conference at Harrogate. The speakers at the RIBA-sponsored conference, to be held from June 8 to 11, will be Sir Thomas Bennett, D. E. Woodbine Parish, G. Grenfell Baines and A. G. Shepherd Fidler.

A reception and a dinner will be held at the Majestic Hotel; meetings—and a civic reception and dance—will be held at the Royal Hall, and there will be a garden party at Harewood House.

Parties will visit Leeds, Wakefield, Newby Hall, Fountains Abbey, the Yorkshire dales and York.

Comparisons in Structural Steelwork

A talk on "Comparisons in Structural Steelwork" was given by Professor Fisher Cassie and D. W. Cooper at the RIBA on March 22. It was divided into two parts: the first, by Professor Fisher Cassie, was devoted to a historical survey of research and practice in the calculation of steel structures during the last thirty years; the second part, by D. W. Cooper, included the description of some recent steelwork techniques.

Professor Fisher Cassie began by discussing the work of the Steel Structures Research Committee, which had been founded in 1930 with the object of bringing steelwork practice into line with knowledge. He said that current practice in the 'twenties and 'thirties had assumed that the connection between beam and column was a simple free joint. The strength of each element was therefore calculated in isolation and on the understanding that the stress must not rise above a defined "safe" value at any point in the structure.

The Steel Structures Research Committee established that the beam stanchion connection was not a simple free joint but that the moment transferred increases with the stiffness of the joint. The Committee put forward six characteristic beam/stanchion connections with corresponding grades of stiffness and proposed an alternative method of calculation which would allow the transference of stress to be taken into account. Unfortunately this method of calculation, though logical in itself, did not allow the designer to work from loads through to the final beam and stanchion section: he had to select likely sections and then calculate whether or not they were sufficient for their task. Further, it was found that the total weight of steel was not greatly reduced. As a result, the new method was not much used, so that in effect the methods advocated in the 'twenties had remained in general use. The revision of the Code in which they were incorporated (BS.449) in 1948, though it raised the permissible stress to 10 tons per sq. in., took little notice of this research.

Professor Fisher Cassie paid a tribute to Professor J. F. Baker who, as the Secretary of the Steel Structures Research Committee, was the man principally concerned in this development, and congratulated the RIBA on having elected him an honorary associate. He said that Professor Baker, who was shortly to publish the second volume of his book "The Steel Skeleton," had been chiefly concerned in substantiating the concept of "collapse load" as the basis for design. (Under this concept safety related to the resistance of the whole frame against collapse, and the permissible working load became the collapse load—based on the observed mode of collapse—multiplied by an agreed load factor.)

Mr. Cooper began his review by remarking on the tendency for building research to borrow techniques from other spheres, and he quoted the use of the oscillograph, borrowed from television, and of brittle lacquers, borrowed from cosmetics.

He then discussed the technique of using cold-formed steel sections in place of hot-rolled ones. This method, he said, allowed unlimited variety and permitted designers to have sections formed to their requirements. This was favourable for small and medium spans; and for spans of 25 to 50 feet, savings of 18 to 20 per cent. in the cost of steel were claimed. To these might be added a further saving of up to 25 per cent. on the cost of site work. It was his opinion that fears about the possible high rate of corrosion of cold formed steel were not borne out by evidence. The usual treatment today was phosphatizing and stove painting, but there was a new process on the market for rust-inhibiting steel.

Mr. Cooper also spoke about the structural use of steel tubes, a technique which had come from the aircraft and motor industries. Tubes, he said, gave the designer a choice only of diameter and wall thickness. They had a high stiffness/weight ratio and as they were jointed by welding tubular structures, had low self-weight with great stiffness.

Mr. Cooper pointed out that both cold-formed sections and tubes involved more costly techniques of fabrication than traditional hot-rolled sections, and he concluded by discussing the contribution of the castellated beam: a type of beam which was formed by cutting the web of a hot-rolled section into two along a castellated outline and welding the resulting components to form a single beam of greater depth. By this means, he said, a section was produced which was 1½ times as strong in bending and nearly twice as stiff as the parent section. It was this second quality which made this type of beam so valuable in limiting deflections on long spans.

COMPETITION

Snowdonia Symbol

The winner of a competition for an "identification symbol" for the Snowdonia National Park is Gwyn Richards, of Newport, Shropshire, who received £50.

The competition was organized by the Snowdonia Joint Advisory Committee. The judges included Professor Sir Patrick Abercrombie.

The symbol is to be used on milestones, direction boards, signposts, etc.

" The unimaginative meanness of many of our post-war office blocks is nowhere evident " in the rebuilding of Central Rotterdam, says Rolf Rosner in this article. Although much of the city's current development is open to criticism, in the author's opinion, he points out that the city and its river are now united—in contrast to pre-war Rotterdam. The photo on the left shows the new paved square at the north end of the Leuve Docks: the sculpture is called " Destroyed City."

RE-BUILDING ROTTERDAM

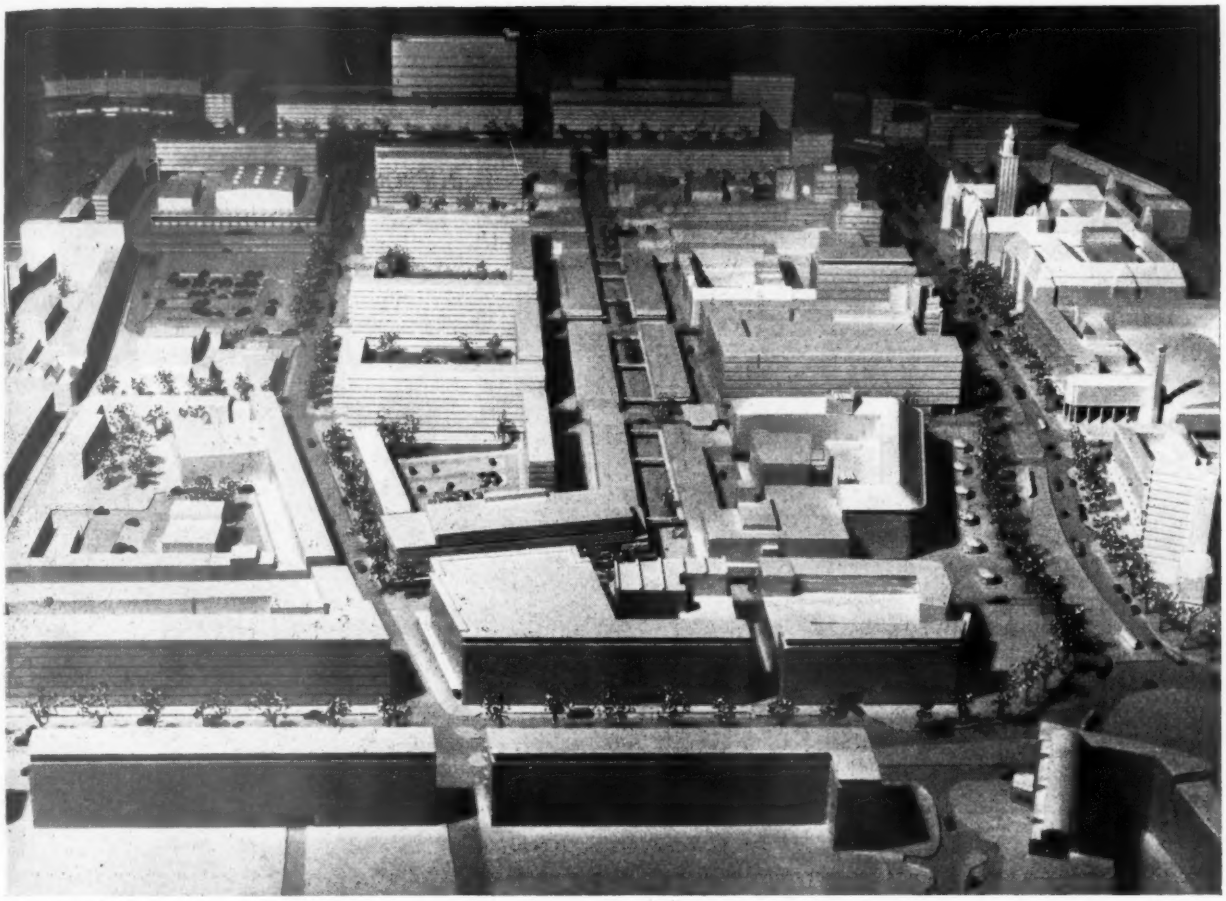
Rolf Rosner

The re-building of Central Rotterdam is of particular interest when compared with the current stage of reconstruction in the City of London.

On May 14, 1940, the whole central area of Rotterdam was levelled to the ground as a result of one of the most concentrated air attacks of the war. 24,704 dwellings, 2,350 shops, offices and factories, 1,450 cafés, hotels and lodging houses, 24 churches, 13 hospitals, 62 schools, 25 public buildings and 12 cinemas were destroyed.

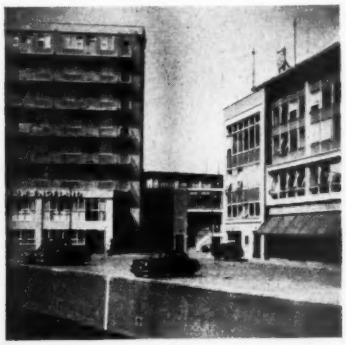
The municipality immediately took possession of the affected area and commissioned the preparation of a development plan. One of the main elements of this plan, which was completed in 1946, was the provision of more space between buildings and an attempt to solve anticipated post-war traffic problems by means of an arterial road net, roundabouts, two level crossings, and parking space for up to 10,000 cars. The designated area included 3,600,000 m.² or nearly 900 acres; *i.e.*, an area 40 per cent. larger than that covered by the City of London. 2,500,000 m.² or 620 acres were reserved for streets and open spaces. This represented an increase of 55 per cent. over the pre-war figure; 1,100,000 m.² or half the pre-war figure were

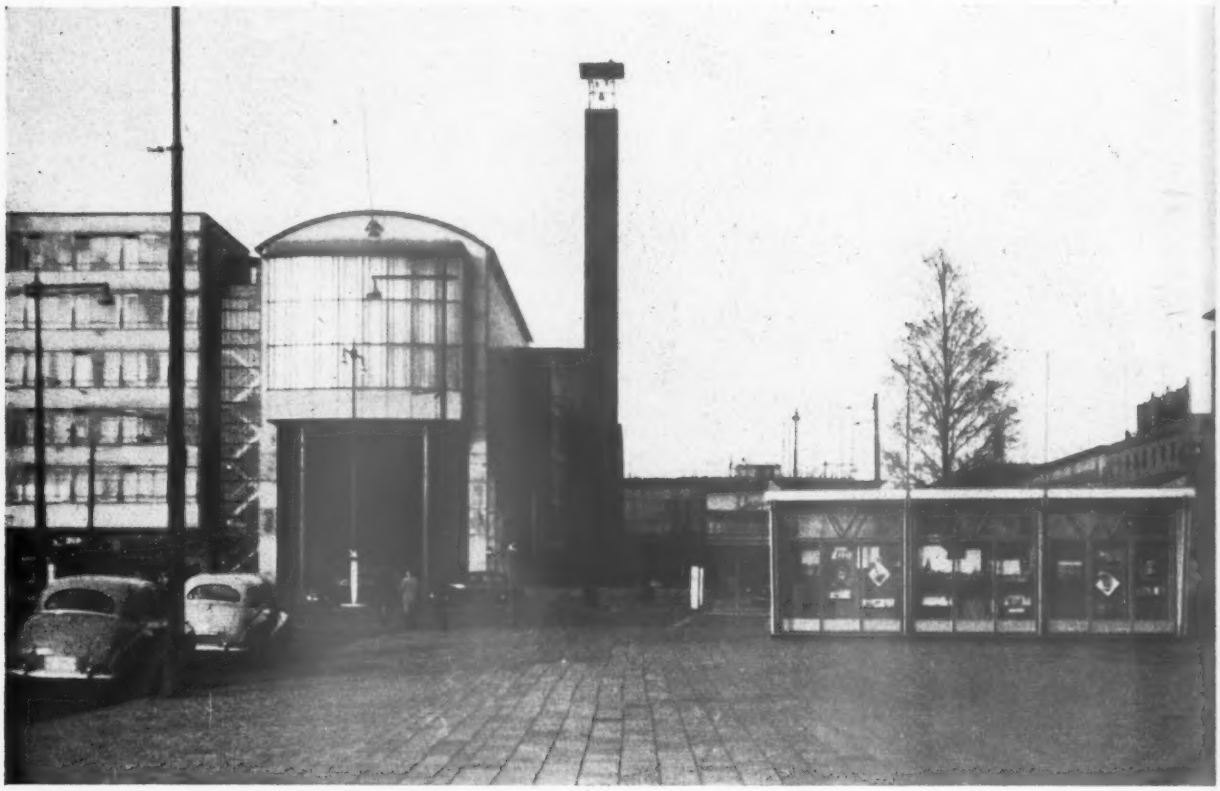
Flats overlooking the west bank of the Leuve Docks.



Above: a model of rebuilt Rotterdam. Below: left, new department stores; right (top) balcony access flats and stores; (bottom), flats for higher income groups.

set aside for building development. The 1939 volume of building, however, remained unaffected and this obviously foreshadowed building upwards and a complete change of scale. Sites were sold back to pre-war owners at 1940 rates, allowance having been made for betterment resulting from widened roads and new adjoining open spaces.



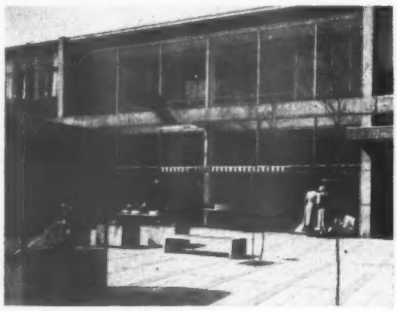


The Bourse: in the foreground is an information kiosk.

The average building costs in the centre of the town may now be taken at 60 per m.³ (a rise of 400 per cent. since 1993). As Government aid for central area reconstruction amounts to 10-11 per m.³, it is clear that business concerns are left to deal with considerable financial commitments. Zoning is not very rigid; numerous blocks of flats for the higher income groups and even a few flatted factories have been included in the scheme.

Architecturally, much of Rotterdam's current development is open to criticism. If a number of buildings express an elegant simplicity of line and proportion, others incorporate somewhat ornate elements of a more traditional nature. However, exacting attention has been given to detail and the unimaginative meanness of many of our post-war office blocks is nowhere evident. The variety of detail conveys a feeling of restlessness. Fortunately, much land has not yet been built upon and a real possibility remains to amalgamate existing development into a harmonious entity. But one can foresee the difficulties, for among the firms and concerns undertaking reconstruction, there appears to be a tendency to favour individualist styles as a means of gaining commercial advantages.

Below: left, stores with adjoining blocks of flats near the Bourse; right, the rebuilt Hoogstraat.



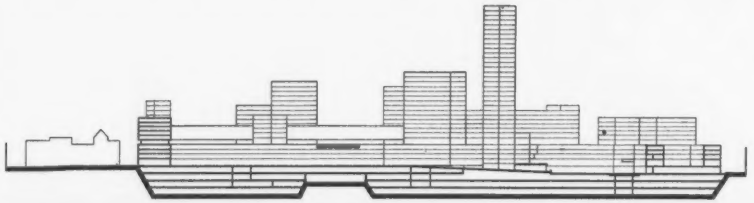
Top: open-air cafe in the Lijnbaan. Above: left, another view of the Lijnbaan, in which concrete seats are covered with coloured mosaic; centre, the southern end of the Lijnbaan; right, the road in front of these stores is to be turned into a paved square, which will form the southern end of the Lijnbaan shopping precinct.

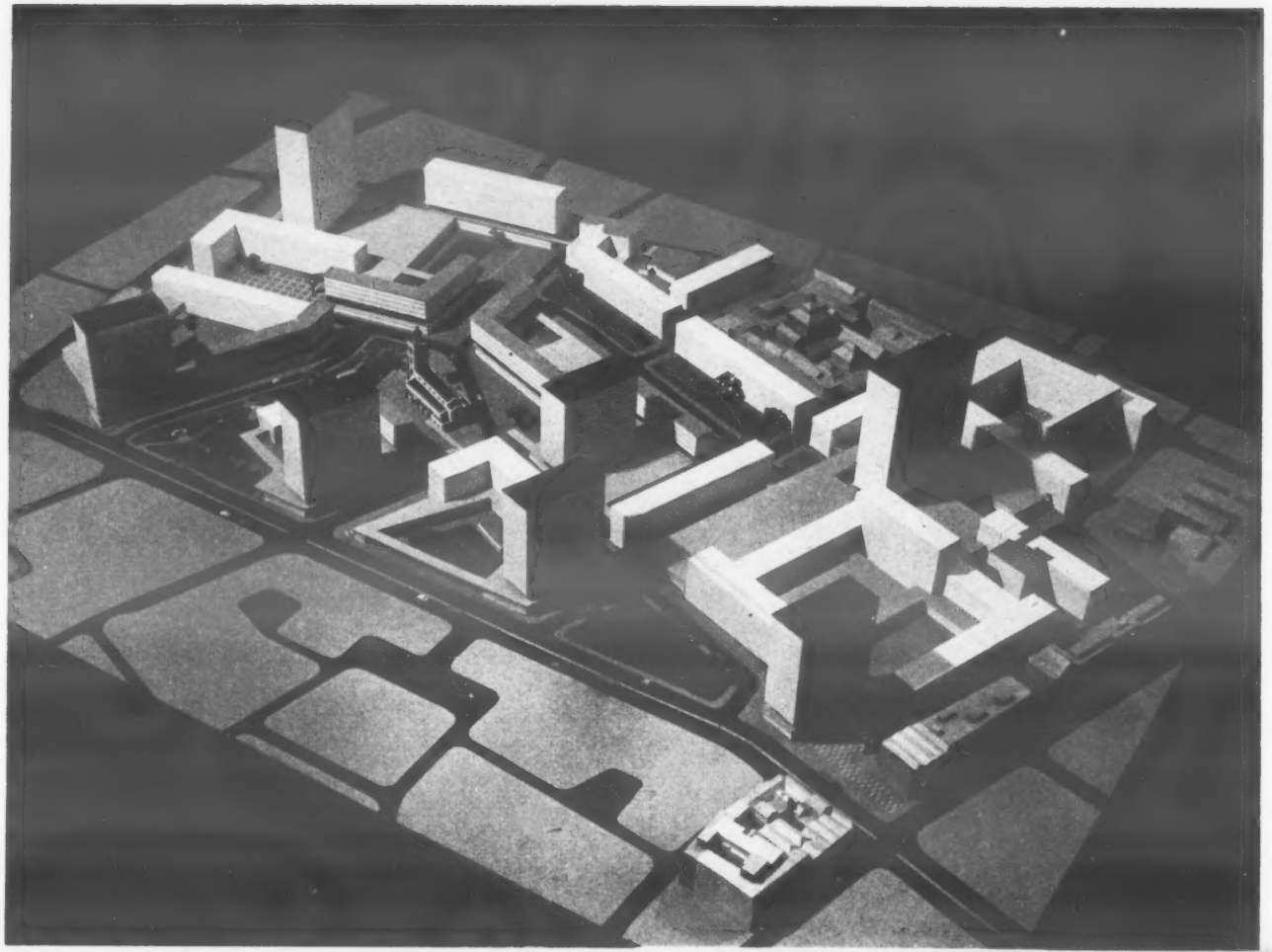
These shortcomings are more than offset by positive achievements. The Leuve Docks, previously hemmed in by ugly and obsolete development, are now a source of visual delight to the inhabitants and visitors. To the north the docks are flanked by a large paved square with the impressive sculpture by Sadkine depicting the destroyed city. Here truly lies not only the physical but also the spiritual centre of Rotterdam. To the east, the docks are flanked by blocks of flats,, well set back from the waterfront, and to the south there is a tree-lined river walk curving along the north bank of the Maas. Another impressive element of the reconstruction is the Coolsingel boulevard, more than 200 ft. wide and adjoined on either side by the most important public and commercial buildings. The Coolsingel will form part of an arterial road sweeping from north to south with a magnificent vista across the Leuve Docks and the river Maas beyond.

Finally, there is the Lijnbaan, the pedestrian shopping centre by van den Broek and Bakema, which is unique of its kind.

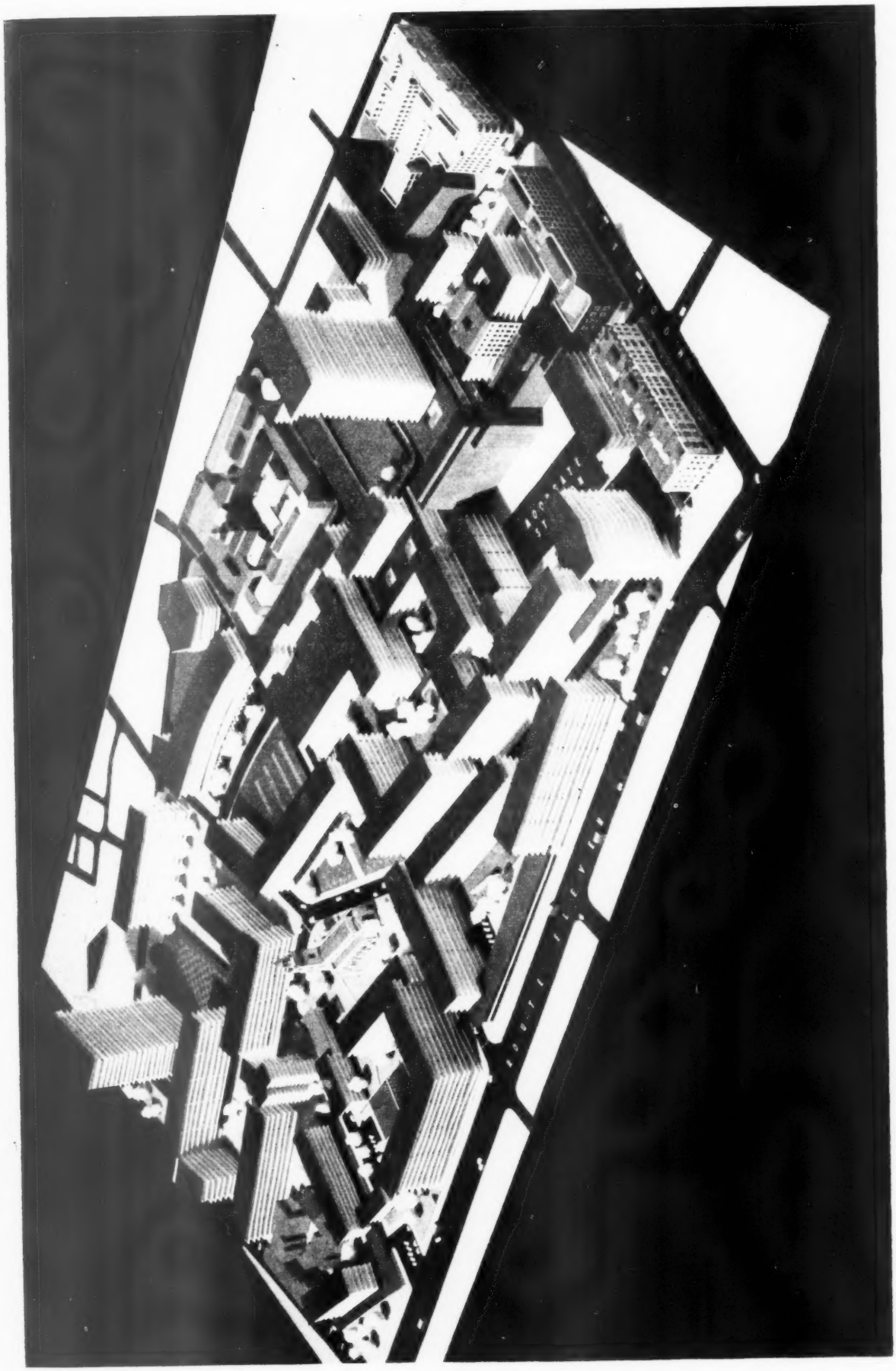
So far as its aesthetic conception is concerned, the reconstruction of Central Rotterdam may be regarded as only partially successful, but positive achievements should not be underestimated. In contrast to pre-war days, river and city are now united and in many cases traffic problems have been solved quite admirably.

THREE PROPOSALS FOR THE BARBICAN SITE, CITY OF LONDON





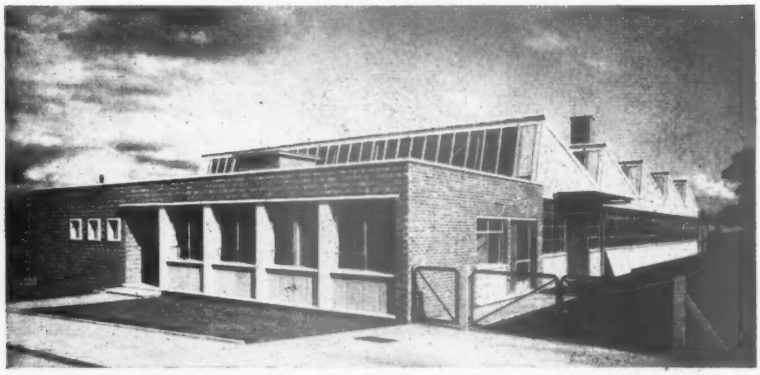
These schemes for the comprehensive development of the area of the city of London north of St. Paul's, now generally known as the Barbican site, should be compared with that shown on page 458. The latter was prepared by Sergie Kadleigh, William Whitfield and Patrick Horsbrugh, and the section, above left, shows the principles employed of mass excavation and infilling with four floors below ground level, on which are superimposed further floors of close development, on top of which, again, rise office blocks and flats. The model, left, was prepared in the planning division of the LCC. In the left foreground is Route Eleven, the major inner circulation road proposed for the city, with, at right angles to it, four tall blocks of offices. Grouped around the church of St. Giles are six-storey maisonettes, with shops under, providing a residential area. The white blocks are largely for commerce, and the two point blocks, one in the background and one on the right, are for offices. The model on the opposite page was prepared in the planning department of the City, in collaboration with Professor Sir William Holford. Here office blocks run parallel with Route Eleven and a closer development of blocks for offices and commerce is introduced. The twenty-storey point blocks of offices are sited in similar positions to those in the LCC's scheme. Some blocks of flats are introduced on the far side of St. Giles. The model incorporates, in the area around the point block in the background, a five acre office block project proposed by a private developer. See also this week's leading article on page 459.

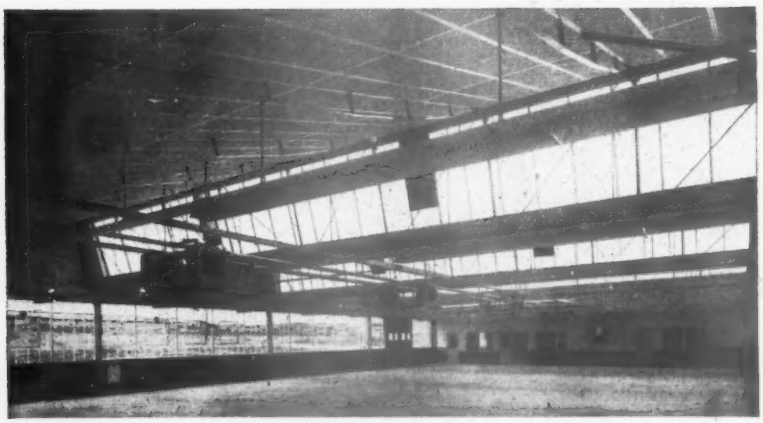


Proposed Factory, Ware, Herts.

Above and right are two views of the model of a proposed Sterile Products Building for Allen and Hanbury's Ltd. on which work is soon to begin at Ware, Herts. The scheme was designed by Peter Dunham, Widdup and Harrison, the consulting engineers are G. H. Buckle and Partners and the quantity surveyor Oswald E. Parratt. The building, which will cover 33,000 sq. ft., will be used for the production of specialized pharmaceutical products. It is designed on a 3-ft. 4-in. planning grid.

BUILDINGS IN THE NEWS





Factory at Dallington, Northants

The photographs left and below left are of a factory at Dallington, Northampton, for Leather and Ferrersflex Components Ltd., which was designed by A. W. Walker and Partners. The consulting engineers were Leonard and Grant and the quantity surveyors, Ernest Howard and Son. The factory, which has an area of 9,372 ft. super, including offices and boiler room, was built in 26 weeks at a cost of 37s. 8d. per ft. super. The contract price was £17,656. The production space, seen in the bottom photograph, is of steel frame construction with stanchions at 24-ft. 9¾-in. centres supporting trusses which span 60 ft. Trussed rafters are fixed at 7-ft. 6-in. centres and the roof is covered with asbestos sheeting and lined internally with insulation board. There is continuous side wall glazing between stanchions, north roof lighting and artificial lighting by continuous bands of fluorescent tubes in each bay. General contractors : Robert Marriott Ltd.

OFFICE EXTENSION

BATH ROAD, HARMONDSWORTH, MIDDLESEX

designed by LESLEY GOODAY and WYCLIFFE NOBLE

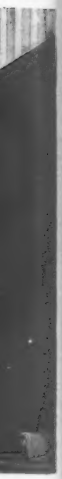
assistant architect, STANLEY ELSAN

consulting engineers and quantity surveyor, R. T. JAMES and PARTNERS

The clients for this office extension, Technicolor, Ltd., decided to start a new process by a certain date. It was clear to the architects and the nominated builder, at the time the client's instructions were received, that design and construction had to overlap. Some of the problems which the architects, consulting engineers and contractors had to solve are discussed and illustrated by sketches on pages 476 to 479.

View from the south-east. Viewpoint 1 on key plan on page 471.

Above: The glass wall around the main entrance doors (seen from point 3 on the key plan opposite) was put up by a firm of shop-fitters. The white spots at eye level are intended to discourage people from walking into the glass. The two thin posts at each side of the entrance doors are shop-fittings which support the transom of the glass wall. Above this wall are four offices behind which is a corridor which links this extension with the old factory buildings (A, B and C on the key plan). The windows of these offices are seen in the photograph on the left (from point 2 on key plan). The double-glazed main windows have frames of polished natural mahogany, and the single-glazed opening windows above them are set in mullions and transoms of extruded aluminium, painted black on the sides and white on the face. The bottom panel of the curtain wall is finished with western red cedar board, left to weather. Beneath it, at ground level, is a brick wall which encloses the " film movement " area. It is treated with a mixture of boiled linseed oil and lamp-black. Below: the high wall in the background of this photograph (from point 4 on key plan) is the refaced wall of one of the old factory buildings (C on key plan). The fair-faced brickwork on the extreme left is of Ibstock multi-buff facings.



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WORKING DETAIL **ROOFS AND CEILINGS: 23**

MONITOR ROOF: FACTORY AT STEVENAGE NEW TOWN

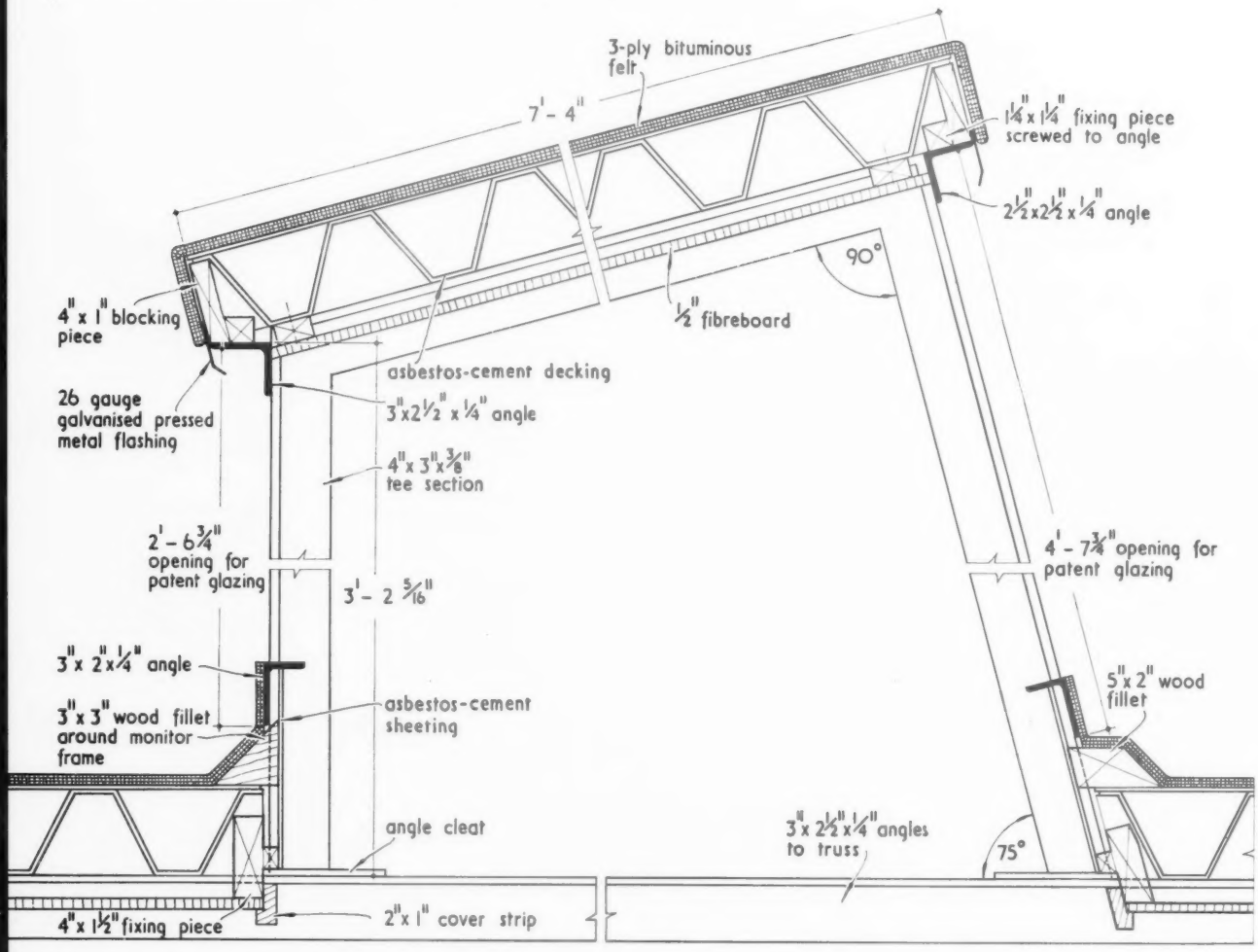
D. P. Reay, chief architect, Stevenage Development Corporation

The monitor rooflights are spaced at 20-ft. centres and are carried on the latticed secondary beams of the factory structure. These beams span 40 ft. at 30-ft. centres, and have a top chord consisting of two steel angles to which the monitor frames are bolted by means of an angle cleat. The roof is of asbestos decking and is lined internally with fibreboard fixed to timber battens which were glued to the decking during its manufacture. The aluminium patent glazing is glazed with ¼-in. rough cast glass. This type of monitor gives an even daylight factor of 5·7 at working level.

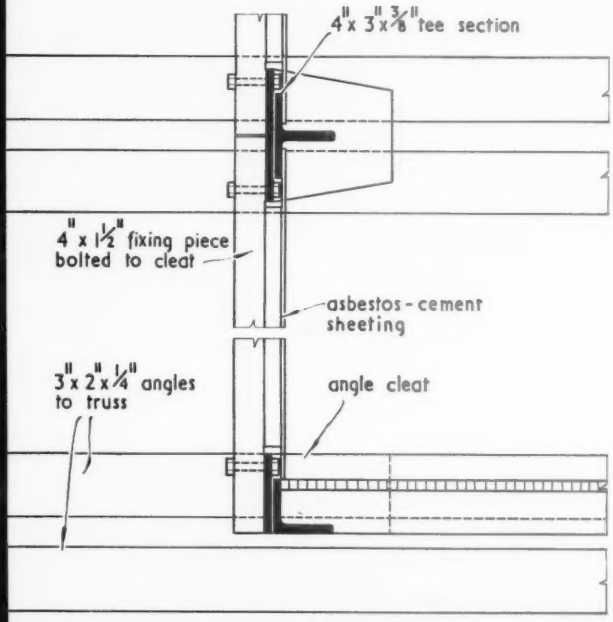
WORKING DETAIL

MONITOR ROOF: FACTORY AT STEVENAGE NEW TOWN

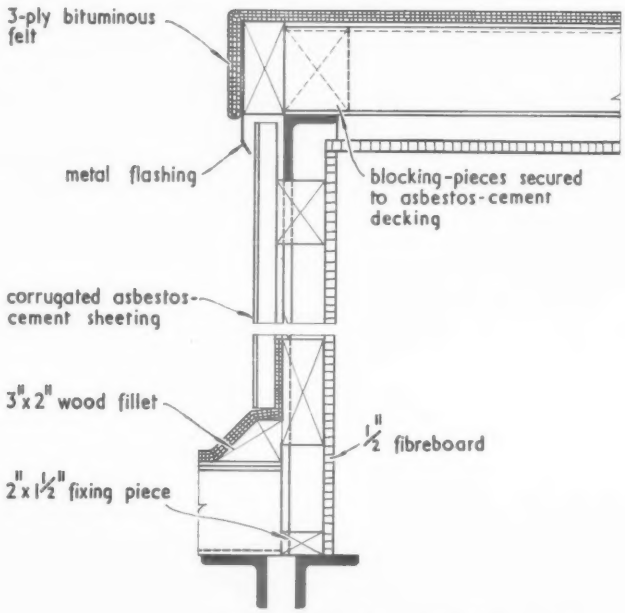
D. P. Reay, chief architect, Stevenage Development Corporation



VERTICAL SECTION THROUGH MONITOR. scale 1½" = 1'- 0"



PLAN SHOWING JUNCTION OF MONITOR FRAMES TO TRUSSES. scale 1½" = 1'- 0"



VERTICAL SECTION THROUGH END OF MONITOR. scale 1½" = 1'- 0"

WORKING DETAIL

DOORS: 23

FOLDING DOORS: FACTORY AT STEVENAGE NEW TOWN

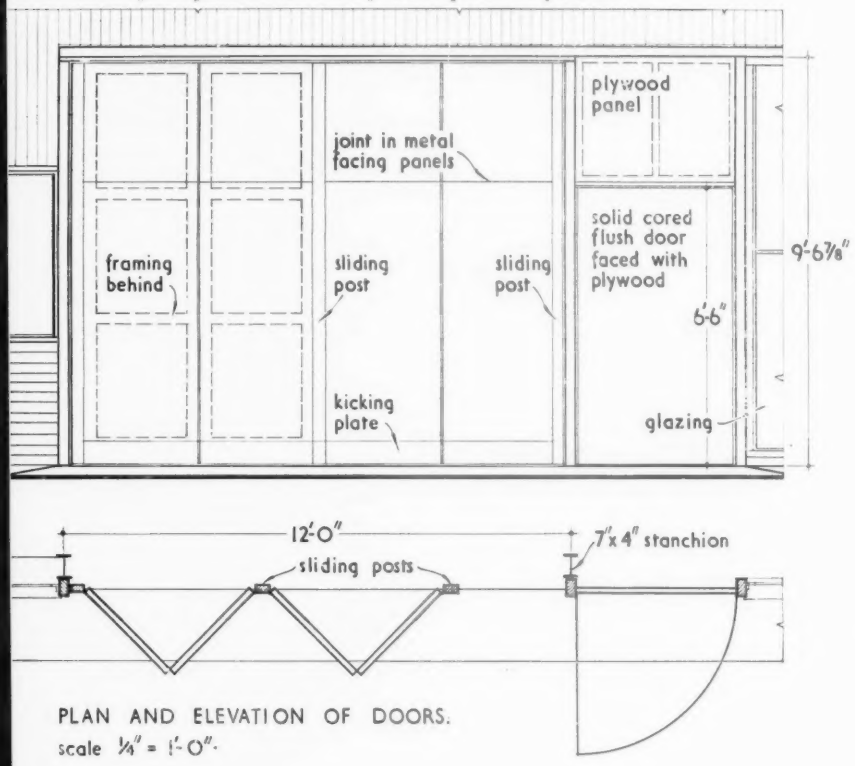
D. P. Reay, chief architect, Stevenage Development Corporation

The doors are arranged in a suite of four, folding to one side of the opening. One end leaf is hinged to the jamb, and at the other end, and at the centre, are sliding posts equipped with bottom roller-gear running on a steel track. At the top of the opening is a guide track which takes the horizontal thrust of the doors when open. The leaves are framed in timber and faced with galvanised metal sheet, painted black.

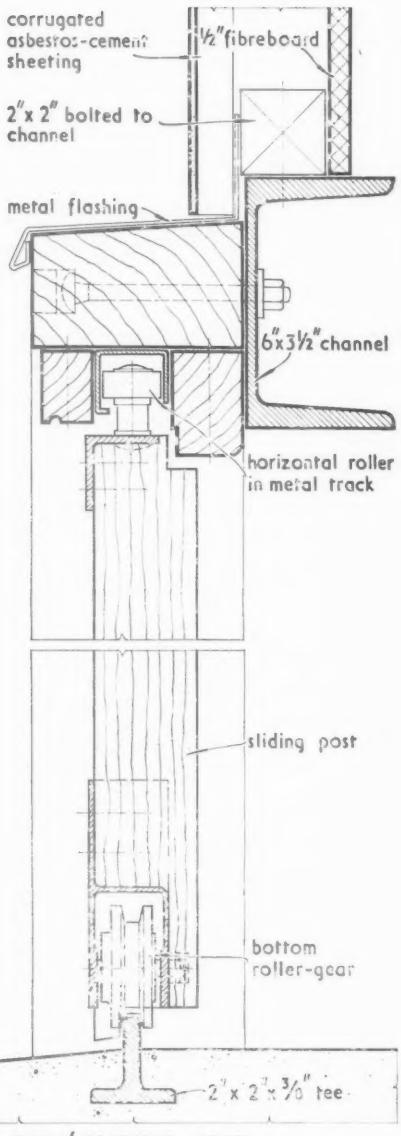
WORKING DETAIL

FOLDING DOORS: FACTORY AT STEVENAGE NEW TOWN

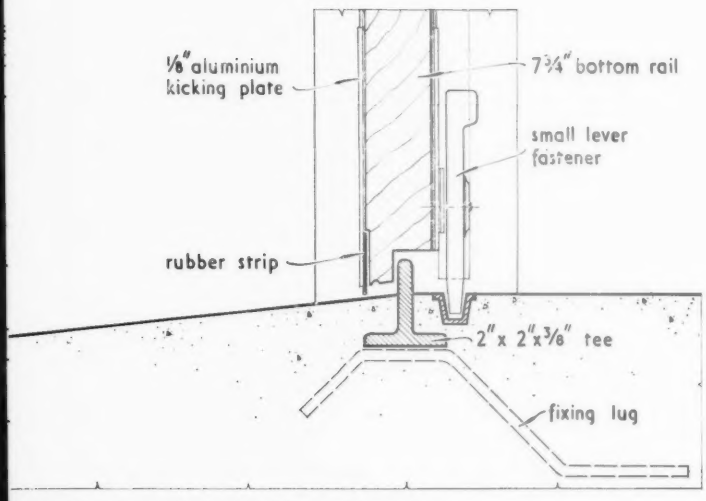
D. P. Reay, chief architect, Stevenage Development Corporation



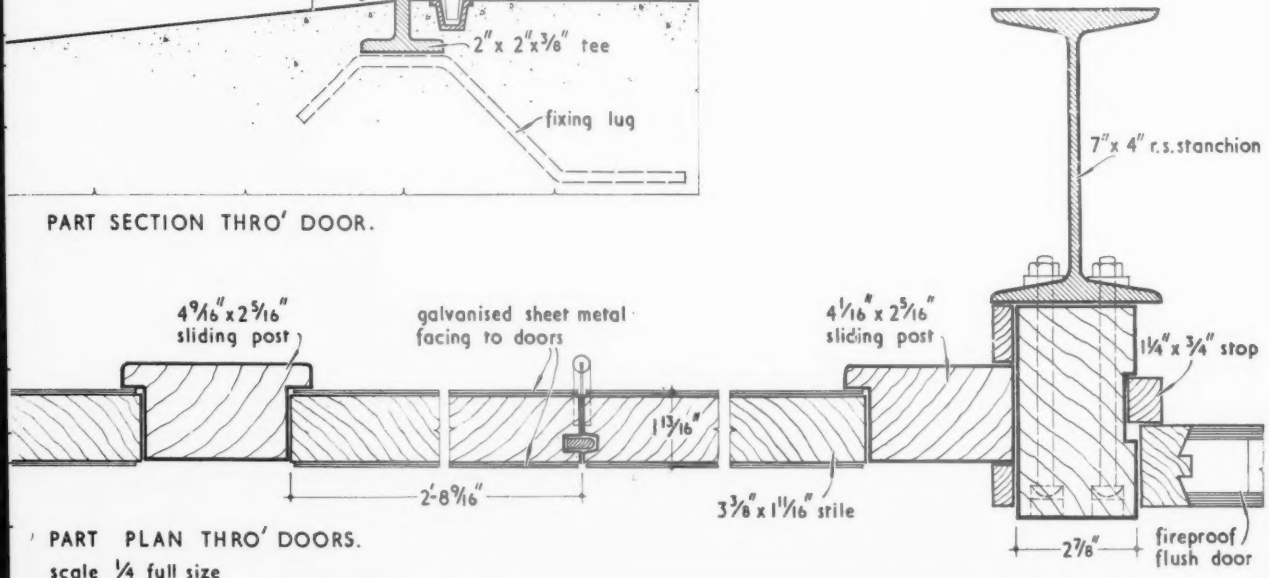
PLAN AND ELEVATION OF DOORS.
scale ¼" = 1'-0".



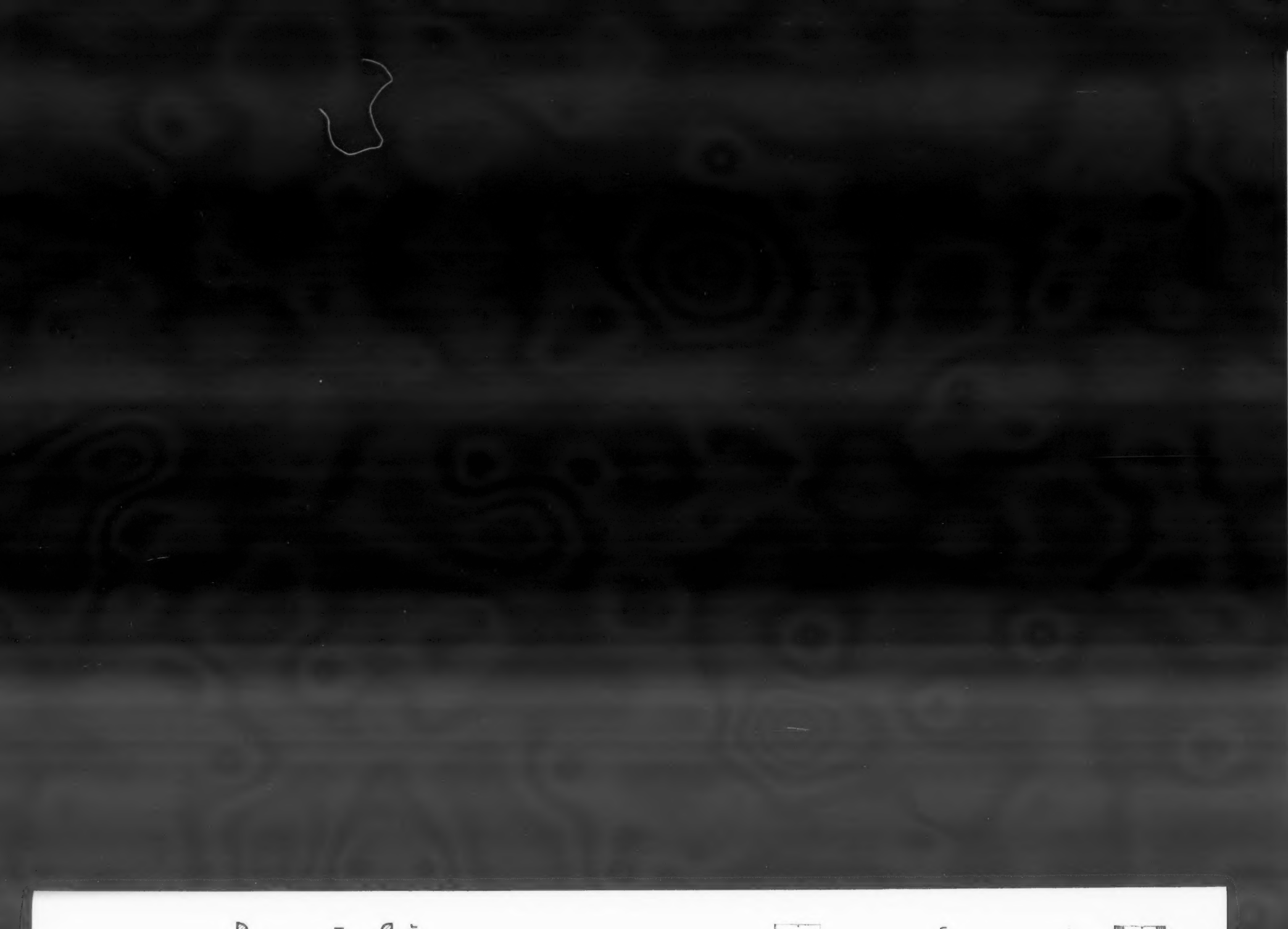
SECTION THRO' SLIDING POST



PART SECTION THRO' DOOR.



PART PLAN THRO' DOORS.
scale ¼ full size

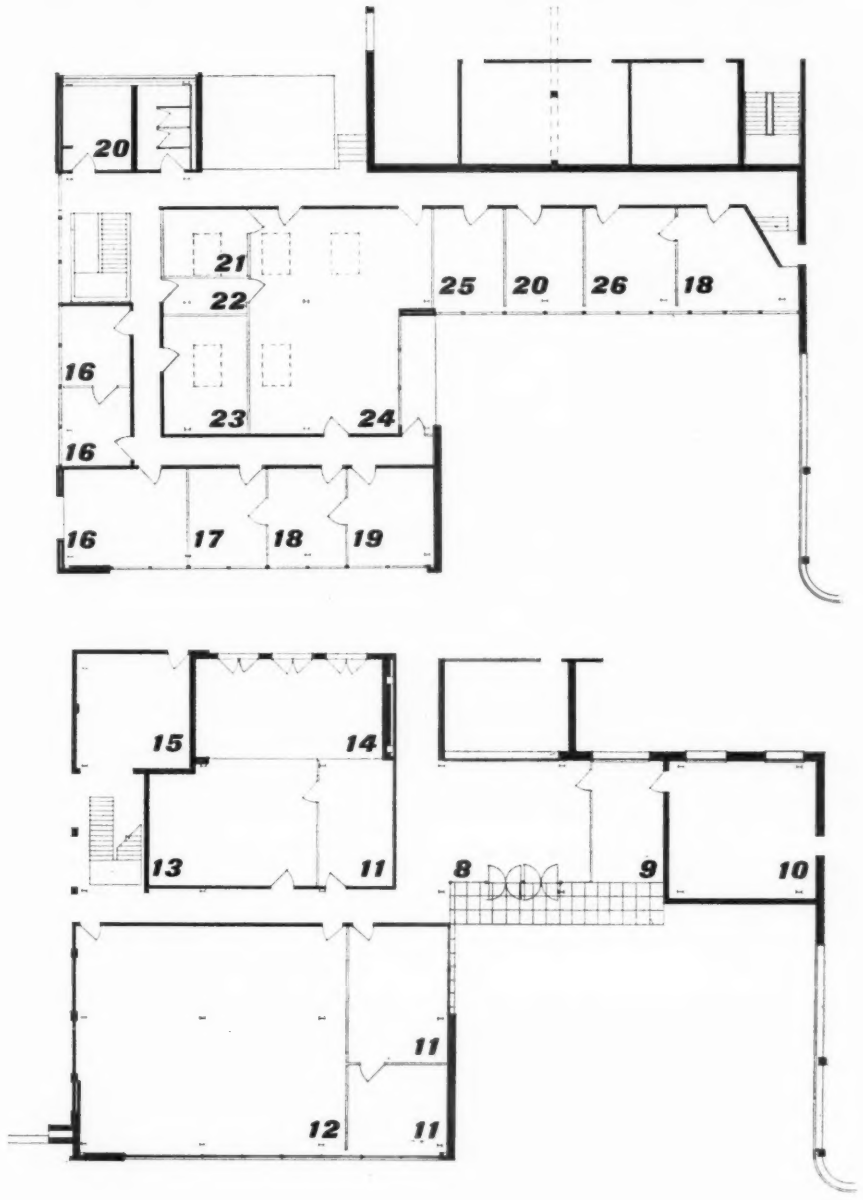


KEY

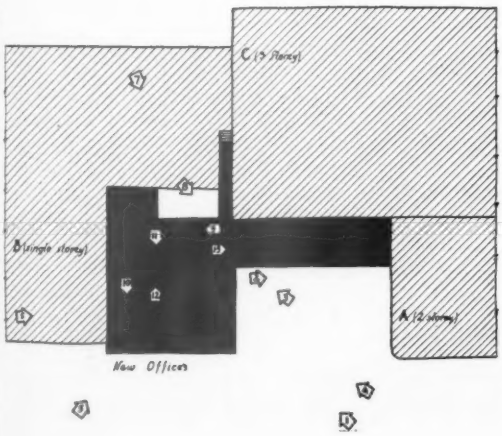
8. Entr
9. Wai
10. Ope
11. Offic
12. Rele
13. Prep
14. Gard
15. Cost
16. Tech
17. Assis
18. Secre
19. Chie
20. Prog
21. Supe
22. Wait
23. Plant
24. Posit
25. Proce
26. Plant

KEY

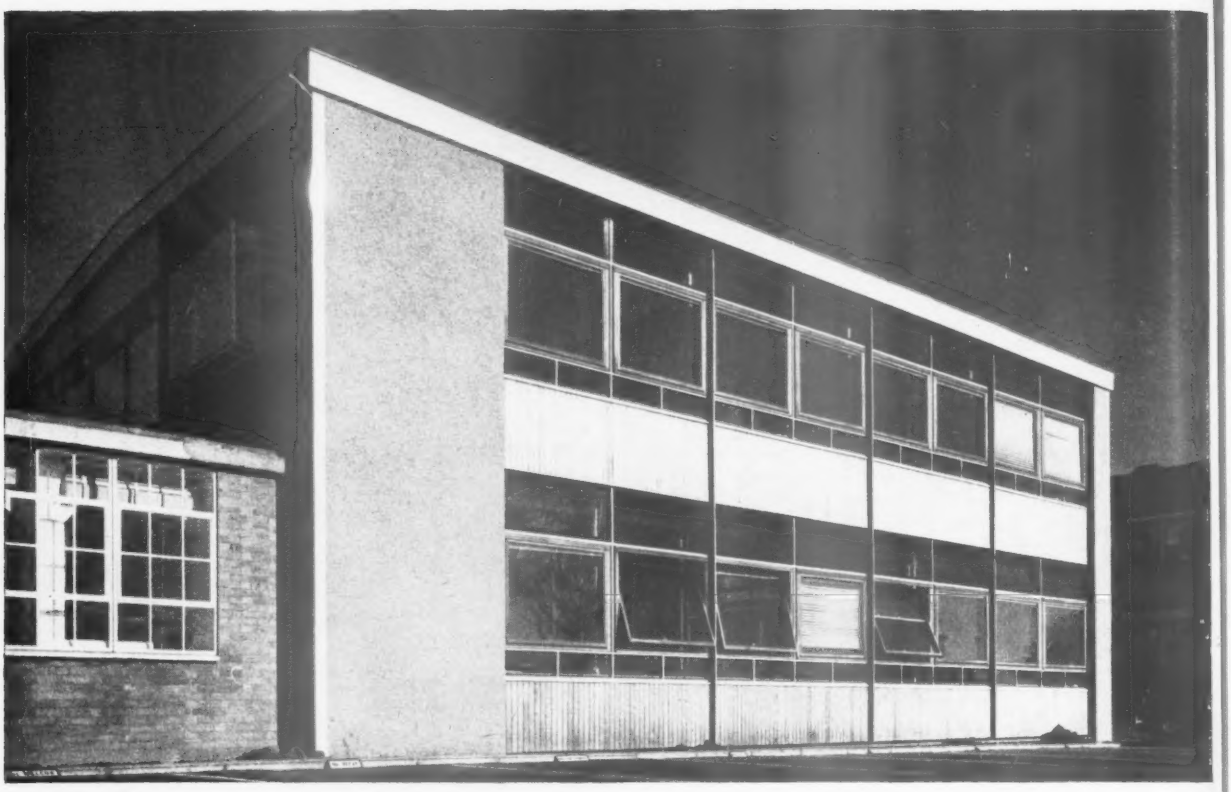
8. Entrance hall
9. Waiting room
10. Open store
11. Offices
12. Release production office
13. Preparation production office
14. Garden
15. Costings office
16. Technical development
17. Assistant engineer
18. Secretaries
19. Chief engineer
20. Progress control
21. Supervisor
22. Waiting lobby
23. Plant meeting room
24. Positive control office
25. Process superintendent
26. Plant administration



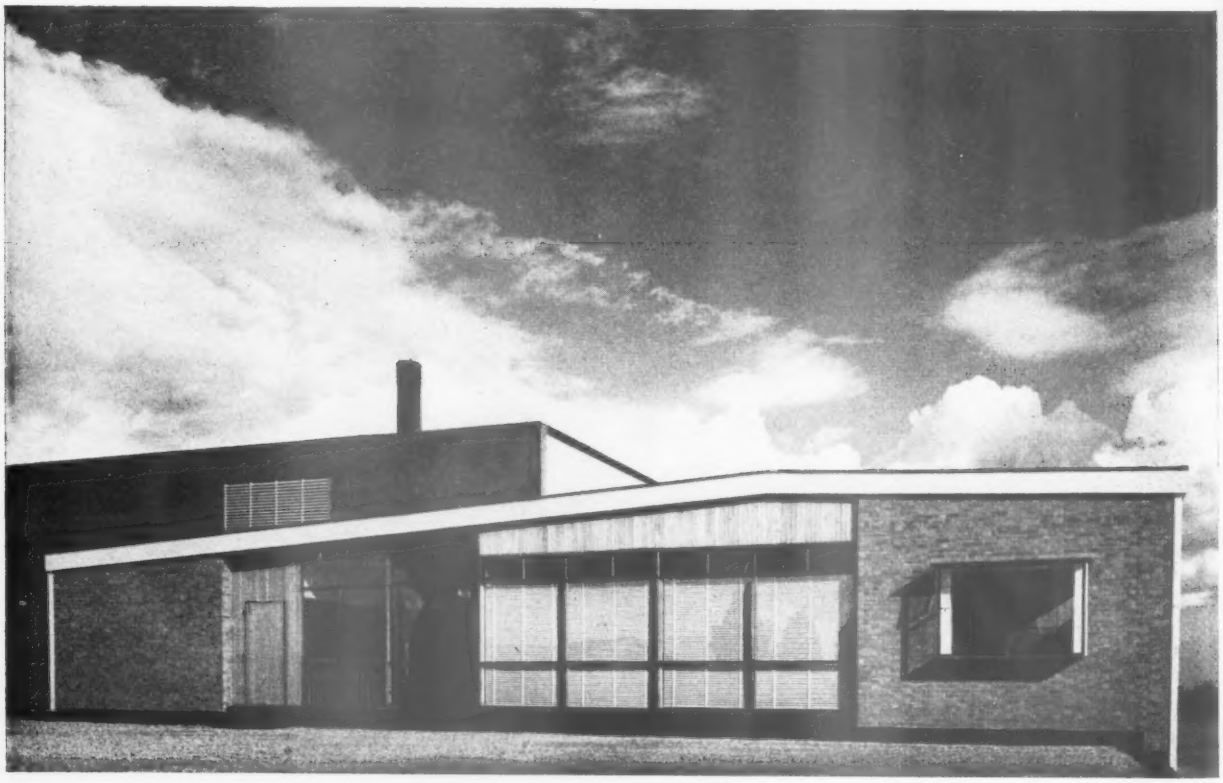
Ground and first floor plans [Scale: $\frac{1}{16}$" = 1' 0"

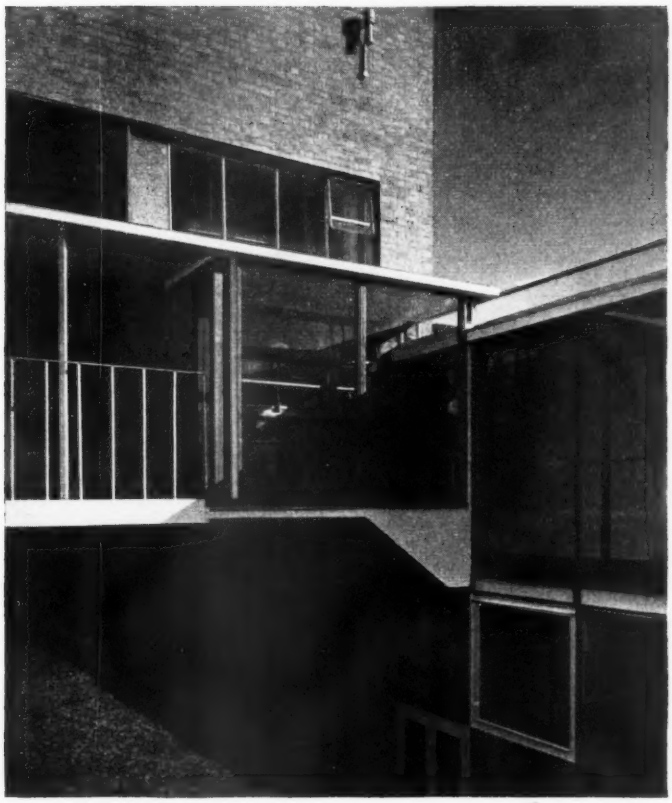


Left, key plan showing photographic viewpoints



Above: the south front of the main office block (from point 5 on key plan), showing White Derbyshire spar rendering, folded aluminium quoins—finished white, white wood fascia, topped by zinc flashing. Curtain walling does not run across the full length of this elevation because a corner of the room on the first floor required protection from the south sun. Below: this photograph (from point 6) of the west elevation of block shown above was taken from the roof of block B. The door on the left leads into the new block. Note how the aluminium quoins, whose prime purpose is to effect a satisfactory junction between fair-faced brickwork and spar rendering, also serve to clarify the edges of the building. The higher block in the background is part of the existing production plant premises.

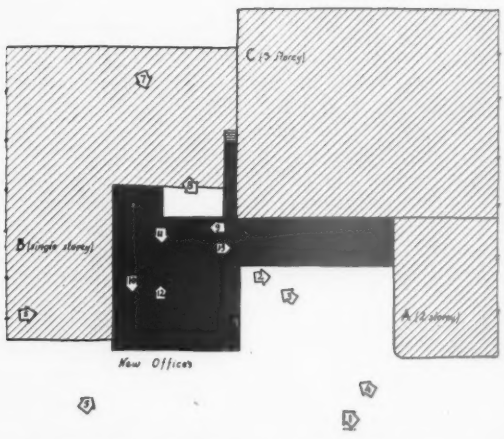




Below: the access bridge across the small area on the north side of the office extension, leading across the flat roof to the far end of Block C (from point 7). The use of the very simple balustrade and steel stringers has caught the character of good factory design, and at the same time makes a neat transition between the factory and the sleek office building.
Right (from point 8): a close-up of the junction between the bridge and the north corridor (seen below right) on the first floor.

Right (from point 9): looking westwards along the north corridor on the first floor. An opening on the left at the far end leads to stairs. The stanchions on the north side of the building are RSJs on the ground floor, and tubular columns on the first floor. Floors are of polished Rhodesian teak, with dowelled joints. All corridor walls are 4½-in. brick, plastered and painted off-white. An acoustic suspended ceiling contains heating coils. (Note how neatly a ceiling panel can be fitted round a column which goes up through it.) Light fittings were designed by the architects.

Left (from point 10): a typical partition between offices on the first floor. Note the tapered clerestory light between the partition and the sloping ceiling. The partition below the clerestory is built up of 3-ft. wide units 8-ft. 6-in. high, consisting of a soft wood frame covered on each side, first with fibreboard and then with the moulded batons as shown in the sketch on page 478. The conduit for electric wiring was incorporated in the partitions where necessary. The only top fixing provided was to the suspended ceiling. It may seem surprising that the ceiling was strong enough, but the suspension grid for the ceiling had to have considerable strength so that a secure fixing could be provided for the network of hot water pipes which are a feature of the ceiling system. The problem of partitions running into the narrow mullions of the curtain walling was solved by providing a plate glass link as shown in the sketch referred to above. To make the partitions adequately sound-reducing, the cavities were filled with fibre glass.
Below (from point 11): the head of the stairs, with a view westwards over the flat roof of block B. The finish on the stairs is rubber tread and nosing, fixed with adhesive direct to hardwood. It is perhaps worth noting that although a very generous blind box has been provided throughout the building, the building users do not operate venetian blinds as neatly as architects are able to detail them.



Key plan showing photographic viewpoints. Nos. 12 and 13 apply to ground floor. Nos. 9, 10 and 11 to first floor

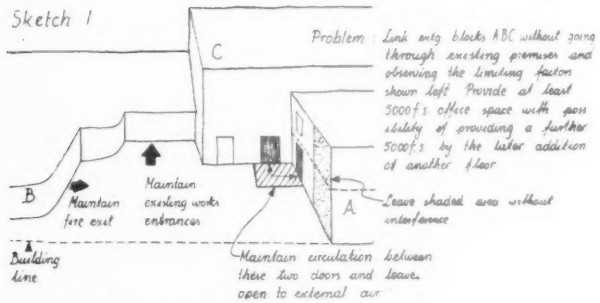
Right (from point 12): the staircase seen from the ground floor. Note timber infilling to RSJ stanchions. Below (from point 13): looking east in the main entrance hall. The two white dots in the middle of the photograph are "anti-smash" fixings at eye level on the plate glass wall. The door behind the plant tub on the left, leads to a waiting room. The floor finish is of grey, hydraulic-pressed, concrete tiles, with carborundum finish, smoothed over in-situ and finally wax-polished. The semi-transparent curtain on the left of the waiting room conceals roller-shutter doors (with a sprinkler system over), giving access to the production plant. Natural finishes are used here—and indeed throughout most of the building—the only applied colours apart from white being olive green and flame (House and Garden range). Flame is used to indicate fire exits, but apart from this, sensibility rather than regulated system underlies the use of both applied and natural colour throughout the building. The wall in the background is of blue bricks, treated with lamp black and vegetable oil. The continuous transom to the ⅜-in. plate glass is painted black. Exposed steelwork is finished with graphite-coloured ferro-radium paint.

OFFICES, HARMONDSWORTH

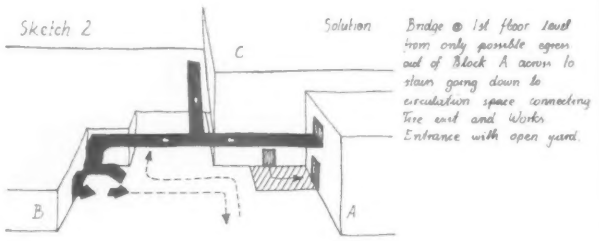
CLIENT'S BRIEF: his stated requirements

The clients required a link to be built between existing office blocks on opposite sides of an open courtyard, with a branch of the link leading to a third block of offices. Within this covered link was to be provided a minimum of 5,000 sq. ft. of office space—capable of extension to about 10,000 sq. ft., possibly by the addition of a first floor. Only certain parts of the offices were to be planned as permanent divisions, the remainder to be capable of sub-division according to requirements which would vary from time to time. No fixed cost target was stipulated; the clients simply asked the architects to prepare a scheme and to tell them how much it would cost. The cost estimated was accepted, and as soon as the foundations had been laid the clients instructed the architects to go ahead with the completed scheme. The clients insisted that the ambient room temperature should be 70° F. They made a strong request that the building should be completed by a certain date. Occupation of the new offices began within one year of the commencement of drawings.

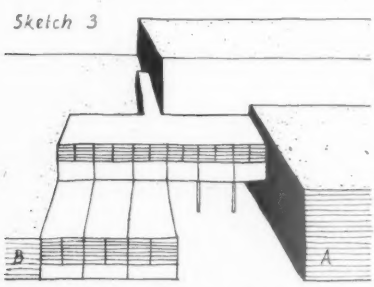
Sketch 1, below, shows factory premises before the new building was added. The only connections between A and B were across the open court (used as a car park) or along a tortuous route through various parts of the factory. C was connected with A and B only by congested chemical plant rooms. The architects had to provide a link between A, B and C. Egress from the top shaded area of block A was undesirable, because the clients did not want offices on the external corner of the block to be disturbed. On the ground floor egress from the unshaded area was impossible as the requirements of combustible film movement demanded that the area shown hatched should be left open to the air. Therefore the only possible egress from block A was through the unshaded area on the first floor. The basic solution to the problem of finding a link is shown in sketch 2 below.



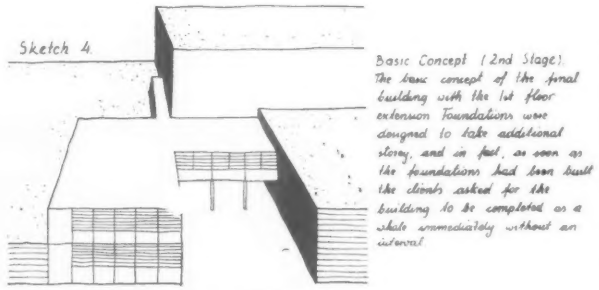
Sketch 1, site before building commenced



Sketch 2, the circulation problem



Sketch 3, the new extension, stage 1



Sketch 4, the new extension, as illustrated

SITE: topography, surroundings, access

The site available was an open area between the existing office blocks, approximately 6,000 sq. ft. The principal problem was to unite the building with the existing premises. As there is heavy traffic on a nearby arterial road, and London Airport is not far away, the clients asked for good sound insulation.

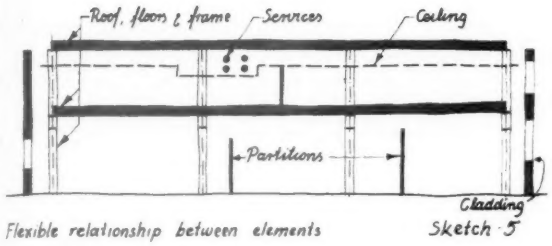
PLAN: general appreciation

The link across the open court was made at first floor level, in the form of a corridor with offices branching off it.

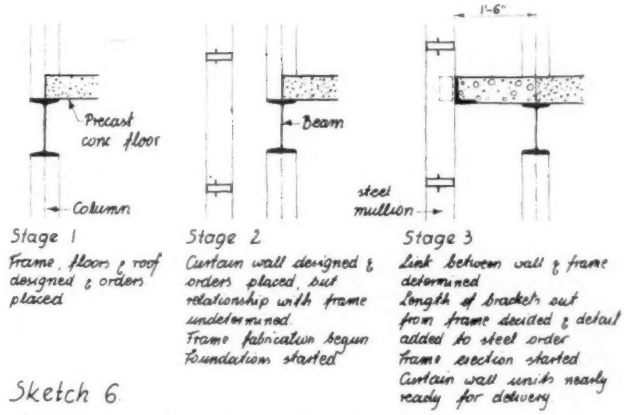
The contractor to the project was nominated at the same time that the architect was briefed. He was already engaged on other work in the factory and the architects had previously worked in association with him. The same applied to the structural engineers, who in this case also acted as quantity surveyors. Thus, although time was short the design team was assembled from the very outset, and it was therefore possible for the various members of the team to agree the best method of allowing design and erection to overlap. The solution proposed was that every major element of the building, i.e., frame and floors, cladding, internal partitions and services should each be as independent of the others as possible. See sketch 5. This meant that the link between one element and another became a crucial technical issue. An example is shown in the relationship between frame and curtain wall. See sketch 6. Similarly, the central heating services were required to be, as far as possible, independent of the floors and walls, and this was a major factor in the choice of the acoustic ceiling system, which incorporates low pressure hot water pipes in its construction.

MAIN CONSTRUCTION

LOADBEARING ELEMENT: RSJ stanchions and beams with bolt connections. RSJ's vary according to load. *Location:* Stanchions are placed on the grid intersections at 17-ft. and 18-ft. centres. Beam depths vary with span. Main beams span from column to column in both directions; subsidiary beams divide span to take economical length of pre-cast concrete floor units. *Reasons:* The stanchion lay-out was determined in relation to the plan so as to avoid interference with the use of office space, and so as to make it possible to utilize sections which the structural engineers knew to be available. FOUNDATION TYPES: *a.* Mass concrete pads. *b.* Strip foundations. *Locations: a.* Under stanchions. *b.* Under loadbearing walls. *Subsoil:* Clay and gravel. *Depths:* Generally 4-ft. 6-in. below ground level.



Sketch 5, basic principles of construction



Sketch 6, relationship of frame and curtain walls

OUTER WALL TYPE: *a.* Loadbearing brickwork, 13½-in. thick. *b.* 11-in. cavity brick walls. *c.* Curtain walling with timber infilling panels and lightweight concrete block inner leaf. *Locality: a.* Two-storey walls, where brick walls occur from ground level to first floor eaves. *b.* Single-storey walls, where brick walls occur above first floor level or roof of existing buildings. *c.* Generally. *Finishes: a.* and *b.* Fair-faced Ibstock multi-buff facing bricks and sometimes white Derbyshire spar rendering over common brickwork. *c.* Painted aluminium mullions and transoms, western red cedar board left to weather. *Reasons: a.* and *b.* To simplify use of dry construction. *c.* For speed of erection.

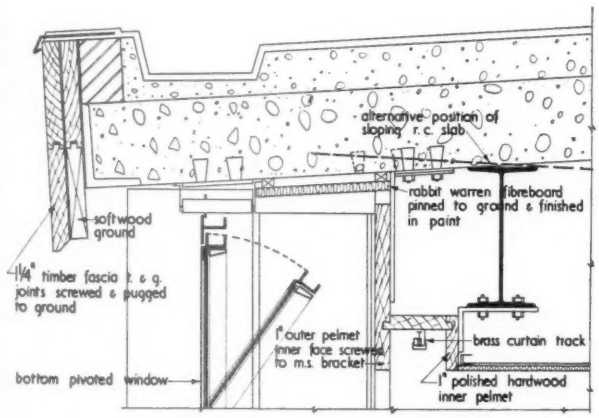
ROOF TYPES: *a.* Slight pitch. *b.* 10° pitch. *Location: a.* North corridor. *b.* Generally. *Materials: a.* Metal decking. *b.* Pre-cast concrete beams. *Finish:* Three layers of 3-ply bituminous felt, with green mineralized self-finish. *Reasons:* Speed of erection.

FLOOR STRUCTURE TYPE: Pre-cast concrete units between RSJ beams. *Location:* General. *Materials:* Concrete. *Finish: a.* Polished Rhodesian teak laid herring-bone, with dowelled joints. *b.* Polished hydraulically pressed concrete blocks with carborundum surface; in entrance hall only. *Reasons:* Hard wear, ease of fixing for demountable partitions.

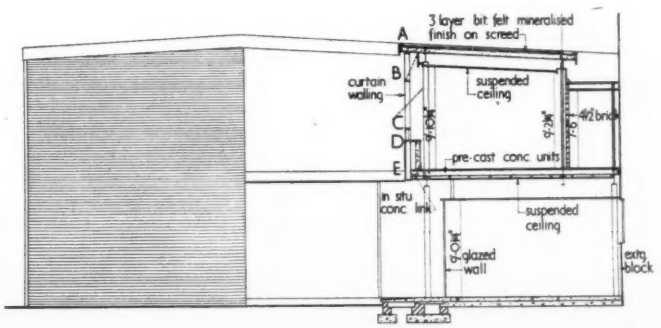
INTERNAL WALL TYPE: *a.* 4½-in. brickwork. *b.* Hardwood strips on studded prefabricated panels. *Location: a.* Along corridors. *b.* For demountable partitions between offices. *Materials: a.* Keyed flettons. *b.* Mahogany on soft wood frame. *Reasons: a.* Fire resistance along escape routes. *b.* Ease of demountability and easy maintenance even after partitions have been demounted and re-erected several times.

CEILING TYPE: Acoustic suspended ceiling fixed up to soffit of roof and suspended floor. *Location:* Throughout. *Materials:* Perforated aluminium trays clipped to metal grid or to heating pipes with glass fibre insulation in each tray. *Finish:* Oil paint throughout. *Reasons:* Best available solution for independence from remainder of fabric for sound absorption, for flexibility of operation and for flexibility of heat distribution. The use of a heated ceiling presents several special problems which it is of interest to note. Despite the glass fibre overlay, temperature between the roof or floor above is fairly high. The architects, who had experience of this problem, found that when fluorescent light sources were placed above the heating ceiling it was necessary to provide them with heat-resistant starting-gear and choke if they were to have anything like a normal life. The high ambient temperature (70° F.) which the clients asked for aggravated the problems normally associated with the use of timber. Not only was it necessary that all timber used was kiln dried to an extent considered suitable for these conditions, but also that once dried it was not possible for it to take in new moisture between the time it arrived on the site and the time the heating system came into operation. For this reason all timber was sealed immediately the units were completed in the factory, and delivered sealed to the site.

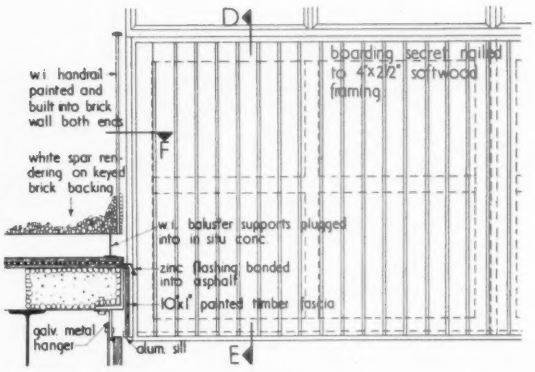
Problems invariably arise in dry construction



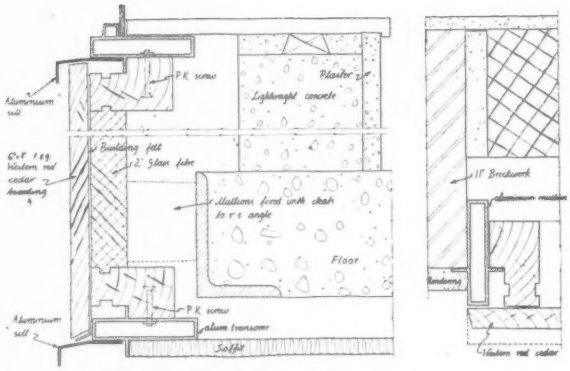
Detail section at A. [Scale: 1" = 1' 0"] For details at B, C, D, and E, see overleaf



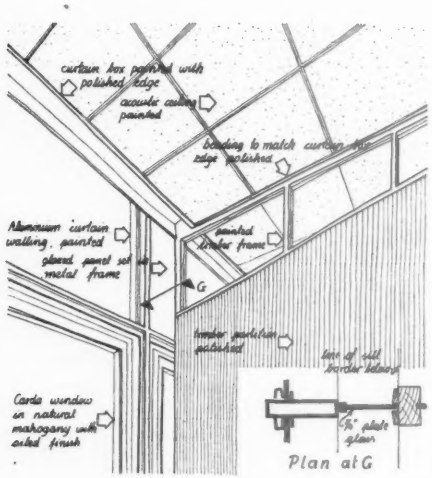
Cross-section through corridor link on south-north axis [Scale: 1/8" = 1' 0"]



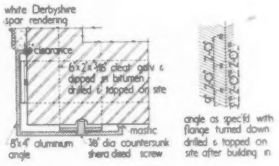
Elevation of curtain wall weatherboarding, south facade
[Scale : ½" = 1' 0"]



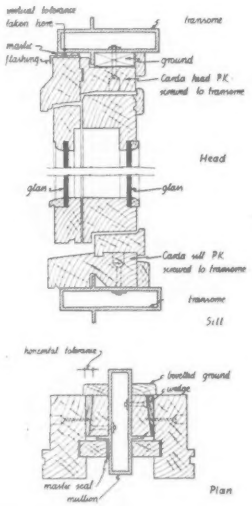
Details at D and E and plan at F [Scale : 1½" = 1' 0"]



Typical intersection of internal partition and curtain wall



Typical external corner treatment
[Scale : 1½" = 1' 0"]



Detail sections B and C
[Scale : 1½" = 1' 0"]

when different prefabricated elements must fit together and when means must be found of overcoming their respective manufacturing and erection tolerances. In this case the units concerned were the aluminium transoms and mullions. The "Carda" windows and the cedar-boarded timber panels (see detail sections B, C, D and E). In the case of the vertical section the timber units (either Carda or solid panel) were allowed to rest on the lower transom or sill, with the sole-plate PK screwed into the aluminium section. The slight gap resulting at the head was filled with mastic in the usual manner. The horizontal tolerances presented a rather different problem, since in this case the timber units had to be fairly tight up against the mullions. The problem was overcome by screwing a continuous bevelled ground (PK screws again) to the mullions, fitting in the timber unit from the outside and then wedging between the ground and the jambs of the unit. The units were then screwed to the ground to secure permanent fixing and to prevent dislocation of the wedge by vibration.

ARTIFICIAL LIGHTING

SOURCE AND FITTING TYPE : Mains A.C. electricity. *a.* Tungsten filament semi-direct. *b.* Concealed fluorescent above egg-crates. *Location: a.* To walls in corridors, to ceiling in staircase and for local desk lighting in executives' offices. *b.* Elsewhere. *Illumination level and quality:* 12 to 15 lumens per sq. ft., with local lighting for desks. In rooms where the main general lighting is fluorescent, no direct lighting is thrown on to the ceiling and there is consequently a high contrast between the light source and its surroundings.

WIRING AND SWITCHING TYPES : VIR in screwed rod conduit. *Location:* Across suspended ceilings. Droppers through demountable partitions. Socket outlets served from ring round external walls. *Reasons:* Ease of wiring for different sub-divisions of offices.

POWER SUPPLY TYPE : Single-phase: all final sub-circuit wiring was carried out with VIR cable run in heavy-gauge screwed conduit concealed in the wall and ceilings and connected to distribution boards.

NATURAL LIGHTING

WALL GLAZING : Window units fixed between mullions and transoms of glazed curtain wall. *a.* Single glazing. *b.* Double glazing in main windows. *Location: a.* Generally, except *b.* For sound reduction and thermal insulation on south facades.

ROOF GLAZING TYPE : Moulded glass dome roof lights. *Location:* Over large general office to supplement side light.

THERMAL INSULATION

Type: *a.* 13½-in. brick. *b.* 11-in. brick. *c.* "Carda" double glazing. *d.* Weatherboard panels with glass fibre lining and thermal inner leaf. *e.* Glass fibre over all ceilings. *f.* Foamed concrete screed over roofs. *Location:* *a.*, *b.*, *c.* and *d.* On walls, as described. *e.* and *f.* As described. *Value:* *a.* U = 0·3. *b.* 0·3. *c.* 0·47. *d.* 0·075. *e.* 0·2. *f.* 0·2. *Comments:* There is no heat loss through the roof from the rooms below—only from the space above the suspended ceiling as described under heating and ventilating. It was decided to have an average of 0·2 transmission through the walls, including glazed areas. This accounts for the very good U value of the curtain wall panelling.

HEATING AND VENTILATION

As little wall space was available in the building for heating units, and the source of heat available was from a plant room in an adjacent building, at a higher level than the new offices, it was decided to use ceiling heating. The heating is by low pressure hot water, thermostatically controlled and distributed in pipes behind the patent suspended, perforated metal acoustic ceilings. This system has the advantage of allowing demountable internal partitions to be added to or moved when required, without any alterations to the heating system, and no pipework is required below ground floor ceiling level. Although there is no heat loss from the room through the roof, there is an upward emission from the first floor ceilings through the roof. This amounts to 7 to 8 B.T.U./hr./sq. ft., based on room temperature of 70° F. with an outside temperature of 32° F. This can be compared with the heat loss from a room not heated in this way. At 70° F. through a roof of U = 0·2 to an outside temperature of 32° F. would be about 8 B.T.U./hr./sq. ft. Thus the loss with the heated ceiling in close proximity to the roof slab is practically the same or a little less than the loss if radiators had been used. The cost of the heating installation, including the patent ceilings, calorifier, pump and thermostatic control, was £4,837. Heating by an ordinary radiator or convector system would amount to considerably less, but it should be noted that this figure includes ceiling costs and saves additional builders' work in the ground floor slabs.

SPECIAL ACOUSTICAL TREATMENT

The use of curtain walling, had to be considered in relation to a special problem arising from the proximity of heavy traffic on the Bath Road, and of London Airport, about three miles away. Calculations were made of the amount of external noise which would have to be reduced by the external walling, and various techniques were compared for use in the infilling panels. It was found by calculation that the infilling panels finally proposed gave a higher degree of sound reduction than 9-in. masonry walling for about half the weight per foot run. Where masonry was used externally the factory provisions of the local by-laws demanded that 13½-in. brick-work be used for two-storey walls although they permitted 11-in. cavity construction for single-storey work.

The provision of a high standard of sound reduction in areas of solid walling would obviously be of no account if the sound were allowed to penetrate through open windows. For this reason the top lights of all ranges of windows opened inwards, and at the window head a highly absorbent sound baffle was contrived, as shown in detail section A. The "Carda" windows themselves were double-glazed, with a venetian blind in the cavity, giving a high degree of sound reduction when closed.

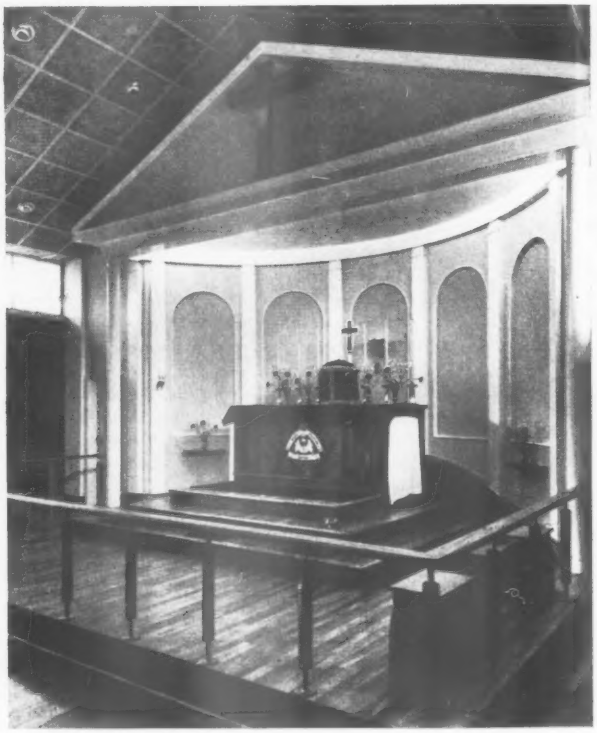
TIME SCHEDULE

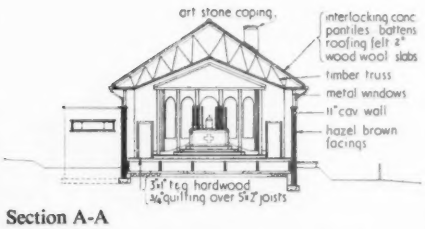
Drawings: July, 1953, to May, 1954. *Work commenced:* October, 1953, occupation began May 18, 1954. *Type of contract:* Agreed schedule of rates for labour and craftsmen, and measurement of completed work.

COST

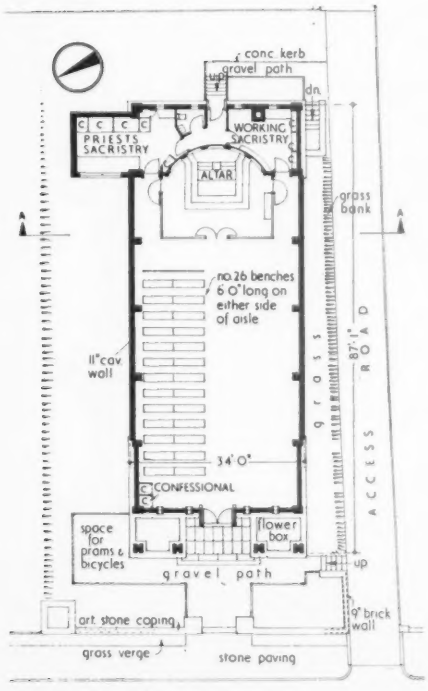
Owing to the type of contract it is not possible to provide an accurate cost analysis. When figures are available they will be given in the JOURNAL. Area of ground floor, 5,061 sq. ft. Area of first floor, including balcony, 4,599 sq. ft. total floor area, 9,650 sq. ft. Estimated cost per ft. super, given to clients after building had begun, was £4 13s. 4d. (Total £45,000). Estimated cost per ft. super on completion, £4 15s.

ROMAN CATHOLIC CHURCH, SOUTHLANDS ROAD, SIDLEY, SUSSEX



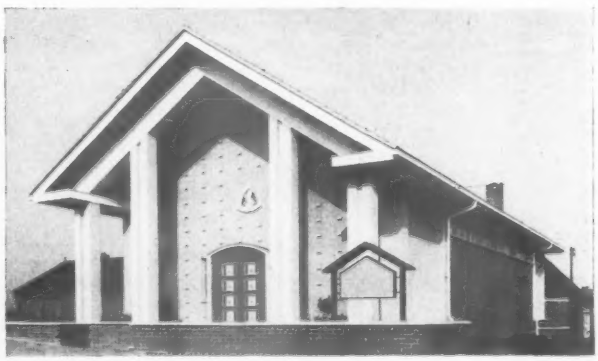


Section A-A



Ground floor plan [Scale: 1/8" = 1' 0"]

The Roman Catholic church of Our Lady of the Rosary in Sidley has been built for the Southwark Diocese. It was designed by Alex F. Watson, of Leo O. L. Hannen and John H. Markham. The photograph above left shows the north-east facade, with main entrance doors and porch. The columns are of reinforced brickwork, carrying a r.c. cranked beam supporting the porch roof. Above right is the altar apse with stud partitions, which are finished with plaster on expanded metal lathing. The photograph on the right shows the interior seen from the chancel. Side walls are of cavity load-bearing construction, with brick piers between windows. The church was built in 12 months at a cost of £12,372. Cost per ft. cube, 3s. 1½d., per ft. super, 77s. 1d.



TECHNICAL SECTION

Readers of the issue of the JOURNAL devoted to cross walls (March 17, 1955) will find much useful supplementary information in the new BRS Digest, No. 75, *Strength and Stability of Walls.** This is, in fact, an annotation of BS Code of Practice CP111:1948, *Structural Recommendations for Load-bearing Walls*, and though it is not specifically concerned with cross walls it is interesting to notice that it concludes by advocating cross-wall design as the right constructional solution for calculated load-bearing walls. The structural reasons for this conclusion are, first, the absence of openings in cross walls (thence the assumption of uninterrupted runs, which allow a reduction in the calculation of the slenderness ratio); second, the absence of eccentricity in the floor loadings; third, the protection of the wall against extremes of temperature and moisture-movement effects—a more likely source of damage, it seems, than we hitherto imagined; fourth, the liberation of the external walls from all load-bearing apart from the roof and their self-weight. The Digest also discusses the relation between mortar mix and brick strength and the need to break down external cavity walls into panels to avoid thermal movement; and it calls attention to the value of using metal anchors to ensure that timber floors give the lateral support required of them. The BRS are to be congratulated on presenting so much information so clearly.

* HMSO. Price 3d.

This week's special article

24 LIGHTING
artificial light sources for industrial buildings

The lighting of factories presents a more difficult problem to the architect than the lighting of any other class of building: the conditions to be fulfilled tend to be more exacting, while the actual choice of lighting sources is more varied. A fair amount of study has been made recently on this subject, which is discussed below by J. V. Collins, an illuminating engineer, and J. A. Godfrey, an architect. The writers have paid particular attention to the question of maintenance and cleaning costs which, we believe, are here clearly explained for the first time.

The number preceding the week's special article or survey indicates the appropriate subject heading of the Information Centre to which the article or survey belongs. The complete list of these headings is printed from time-to-time. To each survey is appended a list of recently-published and relevant Information Centre items. Further and earlier information can be found by referring to the index published free each year.

In recent years the development of light sources more efficient than the familiar incandescent tungsten-filament lamp has placed at the disposal of the architect and lighting engineer a useful range of alternatives.

There are three main types of electric lamps now available for industrial use:—incandescent tungsten-filament lamps, metallic (mercury or sodium) vapour discharge lamps, and fluorescent discharge lamps. In general, the production of light by the passing of an electric discharge through a gas or vapour, as in discharge lamps, is more efficient than heating a tungsten filament, and the life of such lamps, as marketed, is longer, although the filament lamps have the merit of simplicity in installation and maintenance. All discharge lamps require auxiliary gear for running, but the following distinctions may be made between the various types:

Plain discharge lamps (MA*/ , MB/ , SO/) In these the discharge produces light of a

* For details of discharge lamp designation, the reader is referred to BS.1270 : 1952. The following conventions are, however, given for guidance:

/V	vertical burning lamps.
/H	horizontal burning lamps.
/U	lamps which can be burnt in any position.
MA/	mercury lamps with glass inner discharge tube.
MB/	mercury lamp with quartz inner discharge tube.
SO/	sodium lamp.
MAF, MBF	MA/ or MB/ type lamps with fluorescent powder coated outer bulb.
MAT, MBT	MA/ or MB/ type lamps with a series tungsten filament inside the outer bulb.
MCF/	common fluorescent tubular lamp.

characteristic colour (blue-green from mercury, yellow from sodium) which is used uncorrected. The mercury lamps require a series ballast (usually a choke) and the sodium lamps require a special ballast transformer. The mercury lamps give about twice as much light as the filament lamps for similar wattage and the sodium lamps give four to five times as much.

Colour corrected mercury discharge lamps (MAF/V, MBF/U)

These lamps are normal mercury discharge lamps, with the addition of a large outer bulb coated on the inside with fluorescent powder. This utilizes some of the unwanted ultra-violet radiation from the arc to produce (principally) more red light, and thus correct the colour of the light emitted. The 400 watt colour corrected MBF/U lamp (shown in Fig. 1) is over 20 per cent. more efficient in light output than the plain mercury lamp.

Hot cathode fluorescent lamps

In these, the most common types of fluorescent lamp, the fluorescent material is coated directly on the inside of the tube in which the discharge takes place. In order to keep the temperature of the material down to a reasonably low value the discharge takes place in a long tube, the length varying from 18 in. in the 15 watt lamp to 8 ft. in the 125 watt lamps. These lamps are made to run at mains voltage by heating the cathodes before starting. They require a series ballast. They are from two to four times as efficient in light production—depending on the colour of the light emitted—as filament lamps of similar wattage.

Cold cathode fluorescent lamps

These operate on similar principles to the hot cathode lamps, but they are made in greater lengths and are operated from a special high voltage transformer. They are not quite as efficient in light production as the hot cathode lamps, but have more than double the efficiency of filament lamps of similar wattage.

These briefly are the individual characteristics of the light sources available. We can now study the major factors which affect the choice of the most appropriate source for a particular installation. The main considerations are as follows:—

(1) Light distribution.
(2) Colour of the light.
(3) Freedom from interruption and effects of voltage fluctuation.
(4) Stroboscopic effects.
(5) Installation, running and maintenance costs.

LIGHT DISTRIBUTION

The distribution of light from any of the light sources depends primarily on the geometrical shape and intrinsic brightness of the source. Fluorescent lamps, for instance, give a general distribution of light all round, and thus may be used effectively in factory spaces of little or moderate height (*i.e.*, 8 ft. to 20 ft.). The direct light from the

Fig. 1, MBF/U 400 watt colour corrected mercury discharge lamp—20 per cent. more efficient than the ordinary mercury lamp.

lamps, controlled by a suitable fitting, can produce a reasonably uniform high level of illumination over a large area, and usually light can be spared to illuminate the ceiling and eliminate the gloomy tunnel effect that is otherwise found where there are large areas of unlighted low level ceiling. Fig. 4 shows cold cathode fluorescent lamps used for this purpose.

Where the factory process necessitates a high roof with the intervening space left clear of obstructions (possibly for travelling cranes) and a high level of illumination is required over a large area, then a relatively small number of high-powered lamps in fittings which concentrate their downward light into a relatively small angle may be the answer. This type of distribution and concentration of power is more easily obtained with the more compact form of discharge lamp (mercury or sodium vapour) or with high wattage tungsten filament lamps. Fig. 5 shows mercury and tungsten lamps used together in this situation. The great advantage of long life makes cold cathode lighting convenient for this application also and it has in fact been successfully so used, in spite of the more general light distribution obtained.

Where the work to be illuminated is of a type needing very high visual efficiency and is located at more or less fixed positions, for instance at vital parts of machines or at inspection or assembly benches, it may be necessary to use local lights to supplement the general lighting. Tungsten filament lamps are used if small areas are to be illuminated, but where intricate tasks are done over a wide area—for instance on inspection benches—local fluorescent lamps may be used.

The quality of the lighting (for instance, freedom from glare) is, of course, bound up with the detailed design of the installation. But there is one thing that has a bearing on the choice of a light source—that is the quality of the shadows. In general, fluorescent lamps, because of their larger physical size, give a more diffuse light than brighter point sources, such as tungsten filament and mercury vapour, and their shadows are thus soft and lack definition. This is not always a desirable characteristic: for some kinds of work, for instance, surface-finishing or weaving, lighting of a more directional character is required with well-defined shadows to bring out the texture or detail. This usually means either that tungsten filament lamps are used with fluorescent lamps or that only filament lamps are used.

It is sometimes thought that filament lighting should not be mixed with fluorescent lighting, but experience has shown that the mixture is acceptable if the filament lamp is not visible to the eye, but is well screened in a deep reflector.

COLOUR OF THE LIGHT

The incandescent, tungsten filament lamp is accepted now as giving a natural colour-rendering of objects at night. The amount of energy emitted at the blue end of the spectrum is a little low compared with daylight, but the relative energy emitted increases with increasing wavelength towards the red end of the spectrum, where it is at a maximum. This predominance of red is of little consequence for most industrial purposes, the exceptions being work where accurate colour control or the discrimination of fine colour differences are required. For such tasks the amount of red light can be reduced by the use of a blue filter glass or lamp bulb, but this, of course, means a drop in lamp efficiency.

Lamps which emit light by the direct excitation of a gas or vapour usually do so at certain definite wavelengths which are characteristic of the gas. The energy may be concentrated mainly at one single wavelength, as in the sodium vapour lamp, which emits light in the yellow region of the spectrum, or at several well defined wavelengths, as in the mercury vapour lamp, which emits light in the violet, blue, green and yellow regions of the spectrum. Ultra-violet light is also produced by the mercury lamp, but this is normally absorbed in the glass of the lamp bulb. These forms of source are unsuitable for nearly all work involving colour discrimination, although there may be exceptions where they can help to increase contrast in the same way that a colour filter is used to increase contrast in a monochrome photograph. Even if such considerations permit them to be used, however, the effect of such sources on their own for lighting the whole environment is generally unacceptable and it is usually desirable to supplement them with incandescent tungsten filament lamps. The blending of light from mercury vapour and tungsten filament lamps is becoming common practice in industrial installations. The tungsten filament can be used either in the same outer bulb as that containing the discharge tube (the "Dual" lamp) or as a separate lamp. (See Fig. 2.)

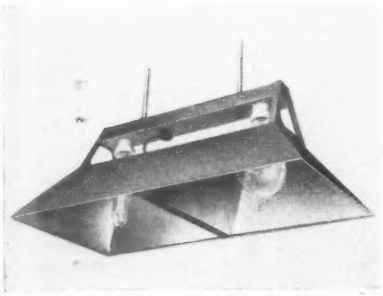


Fig. 2, above, typical "blended light" fitting with separate 400 watt mercury discharge lamp and 1,000 watt tungsten filament lamp. Right, Table showing the performance of electric lamps on interruption of the power supply.

TABLE I

Lamp	Drop in light output for 5 per cent. drop in mains volts	In danger of extinction on 230v. supply if volts drop to—	Run up time to 50 per cent. of final light output	Restrike time after momentary interruptions
Fluorescent (MCF/U) (hot cathode)	4 per cent.	210v. (lower on "instant start" circuit)	Instantaneous	Instantaneous
Fluorescent cold cathode (high voltage)	Similar to MCF/U	(Dimmable)	"	"
Sodium vapour (SO/H) ..	3 per cent. (life shortened)	120v.	About 9 minutes	"
Mercury vapour (MA/V 250-1,000w.) MAF/V	18 per cent.	200v.	About 3½ minutes	Several minutes
Mercury vapour (MB/U 80-125w.) MBF/U	15 per cent.	200v.	About 2 minutes	" "
Mercury-tungsten (MAT/V 500w.)	18 per cent.	200v.	To 2/3 final light output instantaneously	" "
Tungsten filament	18 per cent.	(Dimmable)	Instantaneous	Instantaneous

Apart from blending with other sources, the light from the mercury vapour lamp can be corrected by a suitable luminescent or fluorescent powder, which converts the unwanted ultra-violet radiation to visible light. Fundamentally the hot cathode or cold cathode fluorescent lamp is a mercury discharge lamp which is designed to produce ultra-violet, rather than visible, light and which utilizes the ultra-violet radiation to excite a mixture of fluorescent powders coated on the inside of the tube so that they "fluoresce" and emit light. In the case of the MAF and MBF types of fluorescent lamp, the small size of the mercury discharge tube is retained and the fluorescent powder is coated on the inside of an outer envelope. In this way the distribution characteristic of the concentrated mercury sources are made available with reasonable colour-rendering properties. In the case of the common hot or cold cathode (MCF) fluorescent tubes, as we have mentioned above, the fluorescent powder is coated on the inside of the discharge tube which is necessarily extended in length.

A large number of powders is now available to give a wide range of near-white light from either the hot cathode or cold cathode fluorescent lamps. The spectral distribution curves of fluorescent lamps shows a continuous spectrum for the various whites, although there are sharp increases of output at certain wavelengths because of the four main mercury lines in the visible spectrum. In "colour matching" or "natural" lamps, efforts have been made to fill in the weaker parts of the spectrum in between the mercury line radiation (at the cost of some loss in efficiency). The differences between the warm and cold white sources are mainly to be found in the relative amounts of red and blue light emitted.

Where the choice of colour is not conditioned by the necessity for providing correct colour rendering, psychological considerations may well play a decisive part. For instance, in an interior which is bound to be overheated because of power or heat liberation from the work, the use of a cool coloured light may help to improve the environment. By contrast, in a cool environment, lamps of a warm colour may be useful.

EFFECTS OF INTERRUPTION AND VOLTAGE FLUCTUATION

Under present day conditions of heavily-loaded power supplies, reduction of the supply voltage still tends to occur during periods of maximum loading and very occasionally complete interruptions of the supply must be envisaged. Supply variations and interruptions effect the different light sources in different ways. For instance, the light from tungsten filament lamps varies considerably with voltage, but the lamps still give some light down to a very low voltage. Fluorescent lamps, on the other hand, vary much less in light output with mains voltage variation, but beyond a certain drop in voltage they will extinguish completely.

The mercury vapour discharge lamps take about five minutes to run up to full light output and at the beginning of this period they need twice as much current as they do for normal running, a characteristic which must be allowed for in designing the wiring. If momentarily extinguished, they take some minutes to cool down sufficiently to allow them to re-strike and commence the "run-up" cycle again. Sodium discharge lamps also take some time to run up to full brilliance (of the order of 10 minutes depending on wattage) but if extinguished they relight immediately, the light output on relighting depending on how far they have been permitted to cool in the meantime.

Some of the relevant characteristics are summarized in Table I.

It will be appreciated that the use of only mercury vapour or mercury/tungsten lamps in places where moving machinery is installed may lead to the risk of accidents in the event of a momentary supply interruption, even if the machinery is electrically driven, as a sudden restoration of power may mean that the machinery is running in the dark. In these circumstances it is preferable to instal separate tungsten filament lamps, in addition to the mercury vapour discharge lamps, so that not only is the colour of the light improved but also some light is provided immediately a supply is available. In some situations it is, of course, necessary to have an emergency stand-by system in case of a mains supply failure.

STROBOSCOPIC EFFECTS

Mains electricity supplies in this country are now almost all alternating current, and any light source fed with such a supply will show greater or lesser fluctuations in light output as the supply voltage varies. The frequency of these fluctuations will be twice the mains frequency. A tungsten lamp will only give small fluctuations in light output on a 50 cycle mains supply, as the thermal inertia of the filament is sufficient to prevent cooling between the half cycles. By contrast, a sodium or mercury vapour discharge lamp extinguishes completely and restrikes every half cycle. The result is that a bright, fast-moving object will appear to move in jerks if viewed under discharge lamp lighting, or a rotating piece of machinery may appear stationary, or moving more slowly, or in the reverse of its true direction—depending on the relation of its speed to the mains frequency.

In fluorescent lamps, the "afterglow" or phosphorescence (amount of glow after the excitation is removed), provides some measure of inertia to prevent the light falling completely to zero every half cycle. The minimum amount of light during each frequency cycle is dependent on the type of powder used. For the powders in use at the present time the brilliance at the minimum of the cycle is greater with the "warmer" coloured lamps than with the "cold" coloured lamps. In general, at normal levels of brightness in interiors the fluctuations in light output from a fluorescent lamp will not be seen when looking at a stationary object, provided that the ends of the lamp are properly screened and the installation is properly maintained. The possibility of irritation to workers as a result of stroboscopic effects should not be lost sight of, however, and the flashing of a draughtman's pencil or a workman's tool

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under a fluctuating source may well lead to complaints. The stroboscopic effects on the rotating parts of machines already described are clearly a source of danger. The flicker and stroboscopic effects under fluorescent lamps can be reduced to unnoticeable proportions if phase displacement is ensured in the supply to adjacent lamps. This is done either by the use of three different phases of a 3-phase a.c. supply, or, where this is not available or practicable, by the use of a "lead-lag" circuit (suitable ballasts are available from most manufacturers) feeding a twin lamp fitting.

"Lead-lag" ballasts are not available for sodium or mercury vapour discharge lamps and, if possible, use should be made of the different supply phases. In industrial installations such lamps are usually mounted at considerable heights from the working plane and it should be possible to overlap the light from adjacent lamps so that the fluctuations in light output are sufficiently well smoothed out.

INSTALLATION, RUNNING AND MAINTENANCE

The best lighting installation is not necessarily the cheapest, but once the required characteristics have been determined, economy usually affects the final choice. In considering the economics of a lighting installation the following factors are relevant:—

(1) Capital cost of fittings and installation.
(2) Life of installation.
(3) Cost of electricity.
(4) Cost of lamps for replacement.
(5) Cost of replacing the lamps.
(6) Cost of cleaning lamps and fittings.
(7) Cost of other maintenance.
(8) Number of burning hours of the installation per annum.

Some very useful information on these points has been given recently in a group of papers to the Illuminating Engineering Society. Some of the points made in these papers are included in the following summary.

Capital Cost

The capital cost of a lighting installation is nearly always lowest when tungsten filament lamps are used, because of the lower cost of the fittings and because stabilizing- or control-gear is not required. This argument still holds even when account is taken of the extra lamps and fittings needed to provide a level of illumination comparable with that from other sources. To justify economically the considerable increase in capital cost of the more efficient sources the saving in running costs (and to some extent wiring) must balance this within a reasonable period, together with any extra interest involved on capital.

Life of the Installation

A reasonable life for an industrial lighting installation in a fairly clean atmosphere (*e.g.*, in a woollen mill) may be taken as 15 years, but in an engineering works it may only be 10 years, while a figure of about 5 years has been suggested for the life of anodized aluminium reflectors in a steelworks.

Fig. 3, above, low bay lighting with hot cathode fluorescent lamps mounted on continuous trunking system. Fig. 4, below, cold cathode industrial lighting installation in a printing works—low bay lighting.

Cost of Electricity

The actual cost of one unit of power supplied for lighting depends on the district in which the factory is situated and the amount and basis of "standing charges," etc., etc., but a figure of 1·0-1·1 per unit is frequently quoted as a satisfactory figure on which to base running costs in both textile and engineering factories.

Cost of Lamps for Replacement

This factor is proportional to the number of lamp-hours burnt during the period under consideration, and to the cost per lamp divided by the life to be expected per lamp. The rated life of a tungsten filament lamp is 1,000 hours. The life to be expected of discharge lamps is less predictable as manufacturers are continually claiming improvements. However, the table overleaf will give some indication of the lamp life claimed by manufacturers together with lamp cost, and replacement cost for a given total quantity of lights.

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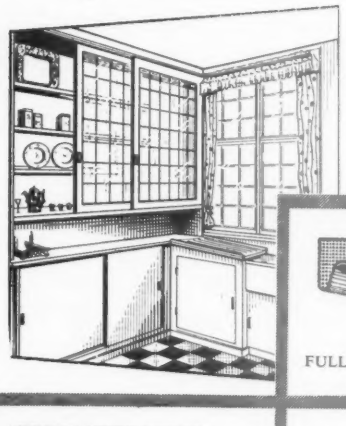

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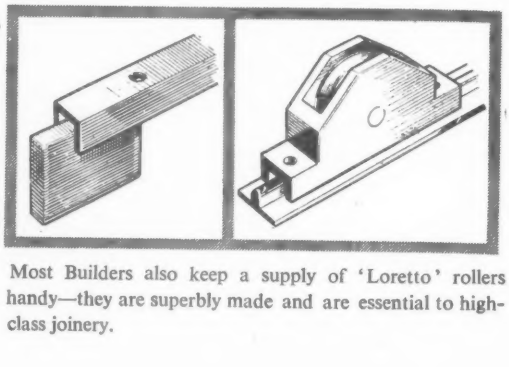

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Cost of replacing lamps

Where fittings are relatively inaccessible and a discharge lamp is used rather than the more simple and familiar tungsten filament lamp, more skilled labour is required to replace them. Moreover, where auxiliary gear is required it is not always obvious whether it is the lamp or gear which is at fault. For these reasons, therefore, there is likely to be an increased cost of labour in replacing fluorescent or other discharge lamps over that involved in replacing filament lamps. In one example the time taken to replace hot cathode fluorescent lamps by electrical staff (at 4s. per hour) was found to average 20 minutes. In another case, with the lamps mounted at high level over a crane bay, approximately 4s. was added to each lamp replaced for increased labour cost. In these circumstances when the assured life of the lamps used is relatively long, it may be more economical to carry out bulk replacement of a group of lamps after a known period of use, than to wait until each lamp fails or is giving an unacceptably low light output, and then send skilled staff to replace just one lamp. It has been found that the labour cost of replacement per lamp can be reduced by as much as 70 to 80 per cent. in the case of a large number of multi-lamp fluorescent fittings by replacing all the lamps at the same time.

Cost of cleaning

It is clearly important to adhere to a regular cleaning schedule for a large installation, particularly where long-life lamps are used. The economics of this can be best illustrated by estimating the increased capital cost and running cost of an installation to provide the light which becomes lost through dirt and deterioration of the lamps. The cost of cleaning will depend on the location of the fittings, and the frequency with which they are attended to. For high mounted fittings it is recommended that the installation be arranged to be serviced either from a travelling crane platform (if there is one available for this purpose) or from special light framed gantries or walkways (as shown in Fig. 7). The frequency of cleaning will need to be determined for each location by inspection of the installation at intervals (of, say, three or four months) on the basis of measurements with a simple light meter of the illumination received on the working plane. An installation is usually designed to give at the outset 20 per cent. or more illumination than is required, to allow for a reasonable amount of deterioration, but when the measured illumination falls short of the value when new by more than this amount, cleaning is necessary. This should only be required two or three times a year, except in dirty industries, and if, say, one hour at 3s. 6d. is spent in cleaning one fitting per annum, this is equivalent to the cost of 38 kW. hours of current at 1·1d. per unit, or some 400 hours burning for one 80W. fluorescent lamp (allowing for power losses in the control gear). The cost of cleaning in one instance has been shown to be only 7½ per cent. of the total running cost of the installation.

TABLE II

Lamps	Life expectation	Approx. cost (i) of lamp (list)	Cost over 1,000 hours	Average efficiency, lumens/watt	Replacement cost per million lumen hours
	Hours	s. d.	s. d.		Pence
Tungsten filament, 500 watt	1,000	10 0	10 0	15·6	15·4
Hot cathode fluorescent, 80 watt	5,000	16 0	3 2	27·5–50(iv)	17·3–9·5(iv)
Cold cathode fluorescent (approx.), 80 watt	15,000(ii)	36 6	2 5	20–28(iv)	18·1–13(iv)
Mercury vapour, 400 watt	4,000	59 0	14 9	34	13
Mercury fluorescent, 400 watt, MAF/V ..	4,000	81 6	20 5	32	19·2
Mercury fluorescent, 400 watt, MBF/U (iii)	4,000	180 0	45 0	40	33·8
Sodium vapour, 140 watt	4,000	107 6 or 74 6(v)	18 7	65	24·4
Mercury-tungsten, 500 watt..	3,000	70 0	23 4	21	26·6

Notes: (i) These are not necessarily current prices, nor those which would be paid by a large user, but they are given to enable the relative economics to be estimated.
(ii) There are indications that a life of 30,000 hours may be expected from this type of lamp in the near future.
(iii) The MBF/V lamp gives more light in the red than the MAF/V (7 per cent. against 4-5 per cent.) and has some 20 per cent. greater overall efficiency.
(iv) Depending on colour of light emitted.
(v) The lower price is for the inner discharge tube, exclusive of the outer detachable vacuum jacket. This latter usually lasts several times as long as the discharge tube itself.

Table showing the replacement cost of the principal types of lamp.

It is obviously more economical to have a few large fittings of high power than many of low power. For instance, it may cost 10s. per annum to maintain (clean and re-lamp) a 1,000 watt discharge lamp fitting if the work in a high-bay installation is performed at the week-ends with the services of a crane driver. This, however, is only 2½ per cent. of the total running costs. There is thus an overwhelming economical case for frequent cleaning to avoid paying for light which does not reach the working plane.

Cost of other maintenance

When using light sources which require auxiliary gear for starting, some allowance must be made for its maintenance. So far as transformers, choke ballasts and condensers are concerned, the cost of maintenance is usually negligible and may only arise as a result of an occasional accidental overload or an unexplained failure of the gear. The replacement cost of starter switches has hitherto not been negligible. However, the glow type switch has proved more satisfactory in this respect than the thermal type. The "instant start" gear now available for fluorescent lamps although increasing the capital cost, diminishes the need for starters and starter replacement and also eliminates the delay and flashing of lamps when start-

Fig. 5, a "blended light" installation—i.e. mercury discharge lamps and tungsten filament lamps used together—in a turbo-alternator hall.

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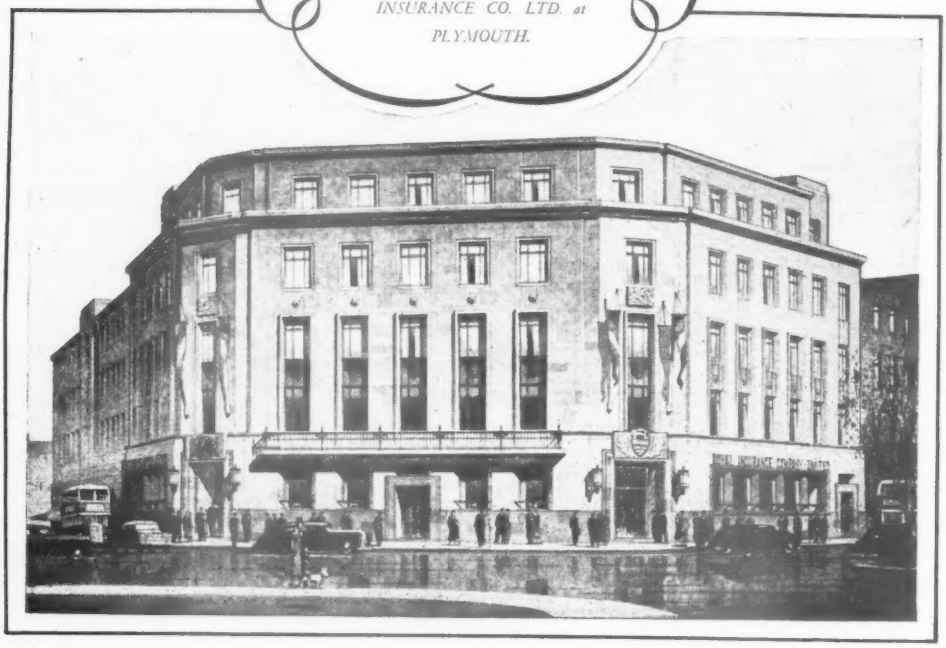

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ing with the glow or thermal type of automatic switch starter.

Number of Burning Hours

Apart from considerations of the life of the lamp the amount of money saved by using a more efficient source to obtain the same level of illumination is directly proportional to the cost of the electric power used and to the length of time for which it is used. For instance, with a power cost of 1·1d. per unit it has been shown that with fluorescent lighting there is not a significant saving in running costs over filament lighting unless the installation is in use for more than about 1,000 hours per annum. However, while this figure may not be achieved in day schools or well daylighted offices, it is frequently exceeded in industrial buildings. Where work is continued throughout the 24 hours, figures of from 3,000 to 4,000 hours of installation use per annum have been given. The actual value will depend on the type of work carried out and the level of daylighting provided.

CONCLUSIONS

In this article we have tried to show the considerations which influence the lighting engineer when choosing the most appropriate light source for an industrial building and in doing so, to indicate the main characteristics of the various lamps now available, so that the architect may judge their effects in relation to the environment he is trying to create. It is not possible to summarize all the factors involved, but the following general points will usually apply:—

1. For large factory spaces of moderate height—*i.e.*, not exceeding say 20 ft.—lamps and fittings are useful which give a good general distribution of light with light on the ceiling to avoid a "gloomy tunnel" effect.
2. For factories with high roofs, and where the intervening space must be kept clear of obstructions, a relatively small number of high powered lamps in fittings which concentrate their light downwards may be the answer.
3. For tasks demanding high visual efficiency—*e.g.*, on vital parts of machines, inspection benches, etc.—local supplementary lights may have to be provided.
4. The initial cost and maintenance of the more efficient sources is likely to be higher than the less efficient ones. With a moderately cheap supply tariff the ultimate economy therefore depends on use of the lighting for a large proportion of the working day (say over 3 hours).
5. The plain vapour discharge lamps, although a good economic proposition are not likely to produce a satisfactory environment unless employed with some colour correction (*i.e.*, mercury and tungsten filament lamps, or mercury fluorescent lamps—which are more efficient).
6. Provision should be made when installing fluorescent lamps or other types of discharge lamp for adjacent lamps to be fed from different phases of the supply mains.
7. Adequate provision in the building should be made for access for cleaning the lighting fittings to avoid paying for light absorbed by dirt or having to organise expensive cleaning operations.

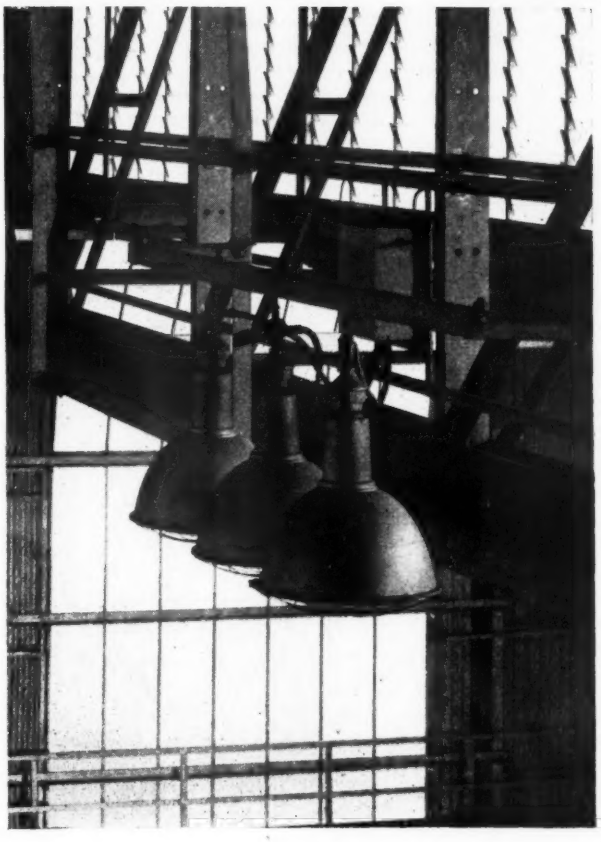

Fig. 6, above, high bay lighting with 1,000 watt mercury vapour (MA/V) lamps spaced at wide intervals in a steelworks. Fig. 7, right, "blended light" installation in a steelworks showing control gear and walkway for maintenance.

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(1) "Blended Light," by S. Anderson. Transactions of the Illuminating Engineering Society (London). Vol. 18, (1), 1953, pp. 15-22.

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(3) "The Maintenance of Lighting Installations," by W. Robinson and J. W. Strange, to be published in Transactions of the Illuminating Engineering Society (London), 1955.

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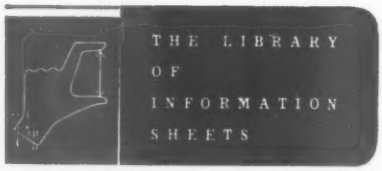

21.G1, 21.G2, 22.E1, 22.E2, 26.J3, 27.B9. *REFERENCE BACK*

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Correction

When we published a list (on page 333 of our issue for March 10) containing the names of those associated with the design of offices at Poole, we accidentally omitted Mr. Z. Pick, A.M.I.C.E., A.M.I.STRUCT.E., M.SOC.C.E. (France). Mr. Pick prepared all the structural designs and drawings for the building and its foundations.

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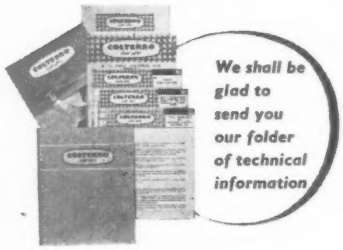

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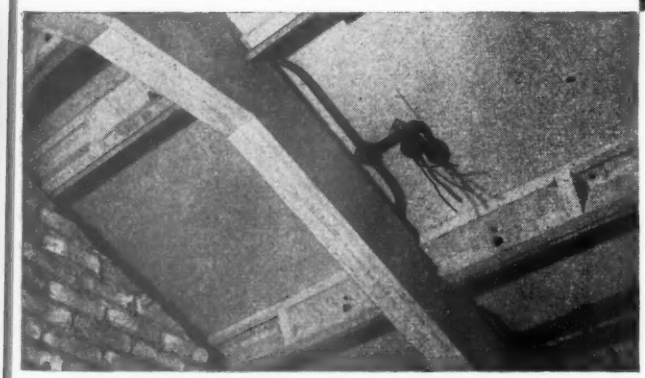

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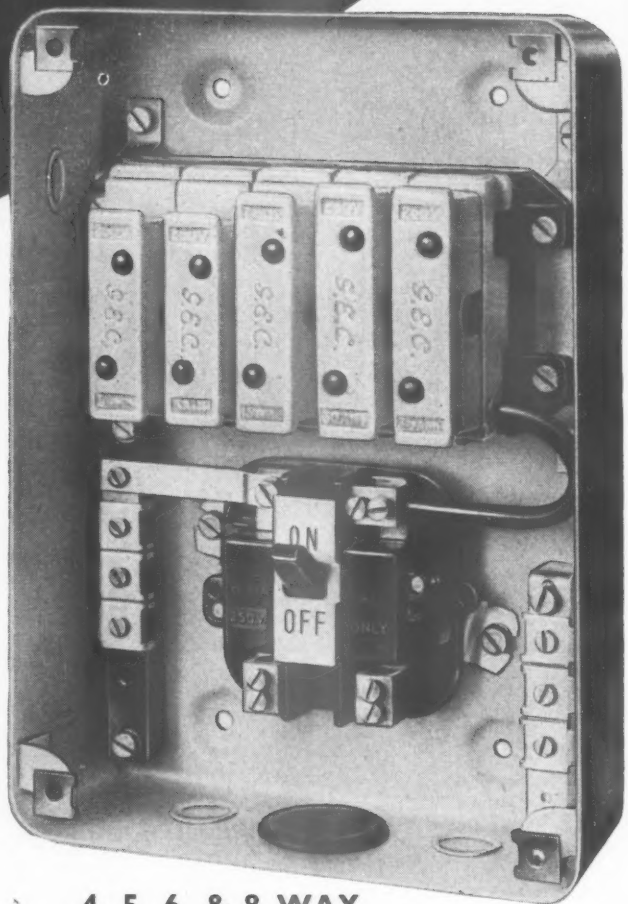

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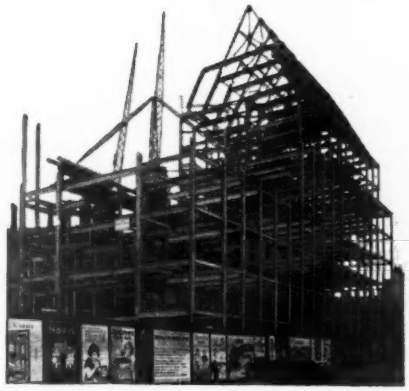

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A boiler that heats the water but doesn't warm the kitchen simply leaves the housewife cold—unless you install a second source of heat—and that doesn't sound like economic planning. But every housewife is entitled to be more than enthusiastic about the new TAYCO ROYAL. Specially designed for her (after all, she is the one who has to use it all the week) this luxury, labour-saving THERMOSTAT boiler incorporates all the latest features but at a price that will make even the husband start taking a real interest.

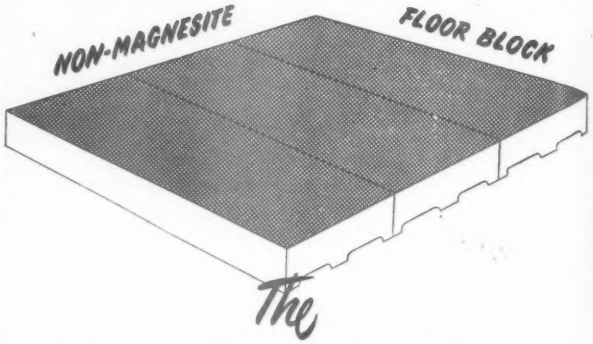
A THERMOSTAT BOILER THAT LOOKS AFTER ITSELF · NO DUST BRILLIANT VITREOUS ENAMEL FINISH · SUPPLIES ALL THE HOT WATER AS WELL AS WARMING THE KITCHEN

TAYCO *Royal*
DOMESTIC BOILERS

make less work—and more hot water

ROBERT TAYLOR & CO. IRONFOUNDERS) LTD.
66 VICTORIA STREET · LONDON · S.W.1 · WORKS: LARBERT · SCOTLAND

NORTONIA



The
DUAL PURPOSE FLOOR

★ *Decorative* ★ *Durable*

Produced to meet the demand for a durable, colourful floor at a low cost, manufactured in blocks 6" by 2" by $\frac{5}{8}$" and available in delicate and pleasing shades.

Nortonia, though resilient to the tread, will withstand the severest and most concentrated traffic under dry or wet conditions. It is suitable for schools, hospitals, churches, restaurants, canteens, workshops, mills, etc., laid on level ruled off concrete.

Nortonia blocks are maintained by washing with soft soap and water, therefore avoiding costly upkeep.

Samples and prices on application.

A TERRADURA PRODUCT

Estd. 1909

Sole Manufacturers:

THE TERRADURA FLOORING CO. LTD.

PROVIDENCE WORKS, NORTON STREET, MILES PLATTING, MANCHESTER 10
Telephone: COLlyhurst 1059

ILLUSTRATIONS AND EDITORIAL statements have been published from time to time indicating that certain chairs were designed and made by Ernest Race Limited and supplied by Maple & Co. Ltd. for T.S.S. "Olympia". In fact, the 21 chairs concerned were not of Ernest Race manufacture but were of similar design and were made by Maple & Co. Ltd. with wood and not metal frames.

An enquiry into this matter was held by the Trade Association concerned as a result of which Maple & Co. Ltd. wrote a letter to Ernest Race Limited apologising for having perpetrated inadvertently what constituted a breach of the furnishing trade's Code of Trading Practice.

Maple & Co. Ltd. have given assurance that an action of this nature would not recur.

M117

CLASSIFIED ADVERTISEMENTS

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

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

Public and Official Announcements

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

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she or the employment is excepted from the provisions of the Notification of Vacancies Order, 1952.

NATIONAL COAL BOARD.
NORTHERN (N. & C.) DIVISION.
VACANCIES FOR ARCHITECTS.

There are vacancies for ARCHITECTS at salaries up to £900 per annum in the office of the Divisional Architect at Gosforth, Newcastle-upon-Tyne, 3, for work of interest and variety in large reconstruction schemes. Work will include workshops, laboratories, offices, pithead baths, farms, fire stations, housing.

Qualified Architects and Architects at Intermediate stage are required: further particulars of the posts can be obtained from J.C. Spooner, A.R.I.B.A., A.R.I.C.S., Divisional Architect, Ashfield Tower, Kenton Road, Gosforth, Newcastle-upon-Tyne, 3, to whom applications, stating age, training, and details including salary of past and present appointments, should be submitted within 10 days of the publication of this announcement. 9095

ESHER URBAN DISTRICT COUNCIL.
ENGINEER AND SURVEYOR'S DEPARTMENT.
APPOINTMENT OF ARCHITECTURAL ASSISTANT, GRADE A.P.T. II.

Applications are invited for the above-mentioned appointment. Salary £560—£640 per annum, plus London Weighting.

The Council is prepared to assist with the provision of housing accommodation if required.

Send addressed foolscap envelope for form of application and further particulars to the Engineer & Surveyor, Council Offices, Esher, to whom applications must be returned by 12th April, 1955.

FREDERICK EDWARDS,
Clerk of the Council.

Council Offices,
Esher, Surrey.
21st March, 1955. 9252

COUNTY BOROUGH OF ST. HELENS.

Applications are invited for the appointment of TWO SENIOR ARCHITECTURAL ASSISTANTS in the Borough Engineer's Department within the new A.P.T. Grade IV (£675—£825), commencing salary according to qualifications and experience.

Applicants should be Registered Architects, preferably holding a recognised architectural qualification.

Housing accommodation will be made available if required by the successful candidates.

The appointment will be terminable by one month's notice and will be subject to the Local Government Superannuation Acts and medical examination and N.J.C. service conditions.

Candidates must, when making application, disclose in writing whether to their knowledge they are related to any member of the Council or to a holder of any senior office under the Council.

Applications stating age, qualifications, present and past appointments and details of experience accompanied by copies of three recent testimonials must be forwarded to M. Ward, M.I.Mun.E., A.M.T.P.I., Borough Engineer, not later than Monday, 25th April, 1955.

Canvassing in any form will be deemed a disqualification.

Town Hall,
St. Helens. 9291

BOROUGH OF LUTON.
TECHNICAL STAFF.

Applications invited for:—

(A) SENIOR ARCHITECTURAL ASSISTANTS. Salary Grade A.P.T. V (£750—£900). Fully qualified, with experience of housing, schools and public buildings.

(B) ARCHITECTURAL ASSISTANTS. Salary Grade A.P.T. I—IV (£500—£825), according to qualifications and experience.

(C) SENIOR QUANTITY SURVEYING ASSISTANTS. Salary Grade A.P.T. V (£750—£900). Fully qualified with experience of taking-off, abstracting and billing for large contracts, including schools, and in settlement of final accounts.

(D) JUNIOR QUANTITY SURVEYING ASSISTANTS. Salary Grade A.P.T. I—IV (£500—£825), according to qualifications and experience.

(E) MECHANICAL ENGINEERING ASSISTANT. Salary Grade A.P.T. III (£600—£725) with experience in design of heating, gas, water and electrical installations.

N.J.C. service conditions. Application forms from Borough Engineer, Town Hall, Luton, returnable by 18th April, 1955.

A. D. HARVEY,
Town Clerk.
9285

ST. THOMAS' HOSPITAL, LONDON, S.E.1.

Applications are invited for the following posts in the Hospital Architect's office for work on design and working drawings of an extensive reconstruction scheme:—

(a) SENIOR ASSISTANT.—R.I.B.A. Final standard, preferably experienced in Hospital work. This appointment will be one of growing responsibility as the office expands

(b) JUNIOR ASSISTANT.—Near R.I.B.A. Intermediate standard with a minimum of 2 years' office experience.

Applications stating age, experience, present salary and the names of two referees to the Personnel Officer. 9290

CITY OF PETERBOROUGH.
QUANTITY SURVEYOR'S ASSISTANT.

Applications are invited for the above appointment in the Department of the City Engineer and Surveyor on Grade I, A.P. & T., £500—£580 per annum.

Forms of application may be obtained from the City Engineer, Town Hall, Peterborough, to whom they must be returned not later than 15th April, 1955.

C. PETER CLARKE,
Town Clerk.

Town Hall,
Peterborough
22nd March, 1955. 9288

AYCLIFFE DEVELOPMENT CORPORATION.
ARCHITECTURAL ASSISTANT.

Applications are invited for this appointment at a salary in accordance with Grade A.P.T. III (£600 × £25—£725 p.a.).

Appointment subject to N.J.C. Conditions, Superannuation and medical examination.

Housing accommodation if required.

Preference given to applicants who have passed the R.I.B.A. Intermediate Examination.

Applications stating age, qualifications and experience, together with names of two referees to arrive not later than Saturday, 16th April, 1955.

(Sgd) A. V. WILLIAMS,
General Manager.

Newton Aycliffe,
Co. Durham. 9287

PORTHCAWL URBAN DISTRICT COUNCIL.
APPOINTMENT OF PERMANENT ARCHITECTURAL ASSISTANT.

Applications are invited for the appointment of a permanent ARCHITECTURAL ASSISTANT in the Department of the Engineer and Surveyor of the Council at a salary in accordance with the Special Grade for Architectural Assistants under the National Scheme of Conditions of Service and Salaries, namely, £650 per annum rising to a maximum of £775 per annum.

Applicants must have had extensive experience in Municipal Architectural Housing work.

The Appointment will be subject to the National Conditions of Service, the Provisions of the Local Government Superannuation Acts, the passing of a Medical Examination and to one month's notice on either side.

Forms of application, which must be used, can be obtained from the Engineer and Surveyor, Council Offices, Porthcawl, and applications endorsed "Architectural Assistant," together with copies of two recent testimonials must be received by me not later than Monday 18th April, 1955.

Canvassing will be deemed a disqualification and applicants must disclose whether they are related to any Member or Senior Officer of the Council.

D. E. SMITH,
Clerk of the Council.

Council Offices,
South Road,
Porthcawl.
24th March, 1955. 9249

NORTH RIDING EDUCATION COMMITTEE, vacancy for ASSISTANT ARCHITECT in the Education Architect's Department, Grade A.P.T. II, salary £560 × £20—£640. Candidates must have passed the R.I.B.A. Intermediate. Previous experience may be taken into account in fixing commencing salary. Local Government Superannuation Act. Form and further particulars from the undersigned. Canvassing disqualifies. F. BARRACLOUGH, County Hall. Northallerton. 9251

CORBY DEVELOPMENT CORPORATION.

Applications are invited for the following appointments in the office of the Chief Architect and under the direction of the Principal Quantity Surveyor.

(a) SENIOR QUANTITY SURVEYOR (salary scale £900 × £50—£1,100).

(b) JUNIOR QUANTITY SURVEYOR (salary scale £600 × £30—£690).

Candidates for the senior appointment should be professionally qualified and possess a wide experience of quantities and contractors' accounts of every kind.

Candidates for the junior appointment should have reached at least intermediate standard and have some experience in a first class office for at least two years.

Appointments are subject to one month's notice on either side, to the provisions of the Local Government Superannuation Act, and to a medical examination. Housing is available.

Applications, stating age, education, training, qualifications, past and present appointments and salaries, together with the names of two referees must be received by the undersigned not later than 10th April, 1955.

R. F. BROOKS GRUNDY,
General Manager.

Spencer House,
Corby, Northants. 9240

LONDON COUNTY COUNCIL.
ARCHITECT'S DEPARTMENT.

Vacancies for ARCHITECTS, Grade III (up to £892 10s.), and ARCHITECTURAL ASSISTANTS (up to £739 10s.), in Schools, Housing, and General Divisions.

Particulars and application forms from Architect (AR/BK/A/2), County Hall, S.E.1. (1058) 2205

AIR MINISTRY Works Designs Branch requires in London and Provinces (with liability for overseas service) ARCHITECTURAL ASSISTANTS experienced in planning/preparation of working drawings and details for permanent and semi-permanent buildings. Salaries up to £810 P.A. for men and £690 for women. Starting pay dependent upon age, qualifications and experience. Extra duty allowance or overtime payable. Posts non-pensionable with long term possibilities. Natural born British subjects only. Write stating age, qualifications, employment details including type of work done to Ministry of Labour, 236, Walworth Road, London, S.E.17, quoting Order 81/AA. 8506

BEDFORDSHIRE.
COUNTY ARCHITECT'S DEPARTMENT.

Applications are invited for ASSISTANTS, A.P.T. Grade IV (salary £675 to £825). Forms obtainable from the County Architect, Shire Hall, Bedford, to be completed and returned on or before 25th April, 1955. 9242

CORBY DEVELOPMENT CORPORATION.

Applications are invited from suitably qualified persons for the following appointments, in the office of the Chief Architect.

(a) ASSISTANT ARCHITECTS (Salary scale £720 × £40—£840).

(b) ARCHITECTURAL ASSISTANTS (Salary scale £600 × £30—£690).

Work is now proceeding on the design of a new neighbourhood unit, some Town Centre buildings, and factories, and it would be useful if applicants had design, construction, and supervision experience in at least one of these fields.

Applicants for post (a) should be qualified and commencing salaries in both posts will be dependent on qualifications and experience. Appointments are subject to one month's notice on either side, to the provisions of the Local Government Superannuation Act, and to a medical examination. Housing is available.

Applications stating age, education, training, qualifications, experience past and present appointments, and salaries, together with the names of two referees, must be received by the undersigned not later than 10th April, 1955. Envelopes should be endorsed "Architect."

R. F. BROOKS GRUNDY,
General Manager.

Spencer House,
Corporation Street,
Corby, Northants. 9239

BEDFORDSHIRE COUNTY COUNCIL invite applications for SENIOR PLANNING ASSISTANT, A.P.T. VII (£900—£1,100) from Corporate Members of the T.P.I. and preferably Fellows or Associates of the R.I.B.A. Wide experience in development control and in preparation of housing layouts essential. N.J.C. service conditions; car allowance; post pensionable; medical examination. Application forms from County Planning Officer, 61, High Street, Bedford, to be returned by 23rd April, 1955. 9336

THE DEPARTMENT OF HEALTH FOR SCOTLAND. Chief Architect's Office: Applications are invited for non-pensionable posts of ASSISTANT ARCHITECT: Headquarters, Edinburgh. Age 25-34. Salary range £660—£1,015 (Women £905). Duties include housing, school building (including research and development), health buildings, etc.

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, 21st April, 1955. 9208

CITY OF WAKEFIELD.
CITY ENGINEER'S DEPARTMENT.
ARCHITECTURAL ASSISTANT.
SPECIAL GRADE.

Applications are invited for the permanent appointment of an ARCHITECTURAL ASSISTANT on the Special Grade (£650 × £25—£775, commencing at £650).

Applicants must be A.R.I.B.A. and have had good experience on Housing, Schools and General Municipal work.

Housing accommodation will be provided if necessary.

Applications, stating age, with full particulars of experience and previous appointments, to be sent with the names of two referees to me by the 18th April, 1955.

W. S. des FORGES, *Town Clerk.*
Town Hall, Wakefield. 9306

LANCASHIRE COUNTY COUNCIL.
PRINCIPAL ASSISTANT ARCHITECT, £1,307 10s. × £52 10s.—£1,517 10s.

Duties: Helping Assistant County Architect with the administration of the General Branch which has a staff of 25 architects and deals with all work except Education; occasional attendance at Committee meetings and supervision of design in the drawing office. The latter is a most important duty and requires a flair for design much above the average. There is a large and interesting programme of work including Police Stations and Courts, Fire Stations, Hostels for the Aged, Clinics, etc. Application forms, from the County Architect, P.O. Box No. 26, Preston, to be returned by Monday, 18th April, 1955, quoting Ref. A/ AJ. 9215

LONDON ELECTRICITY BOARD.
SOUTH EASTERN SUB-AREA.

Applications are invited for the following positions at Woolwich, S.E.18:

ENGINEERING DRAUGHTSMEN. — Candidates should have had a good general and technical education and be experienced in one or more of the following subjects: drawing office routine, electrical diagrams, obtaining and recording all mains work and plant layout in transformer chambers.

The posts are graded under Schedule "D" of the National Joint Board agreement as Grade VI—£535 10s. 0d. to £661 10s. 0d. per annum, inclusive of London Allowance.

RECORDS DRAUGHTSMEN. — Candidates should have had drawing office experience and a good general education. Mains records experience an advantage. Salaries and conditions of service in accordance with National Joint Council agreement (Administrative and Clerical Grades) General Clerical Grade (Higher General Clerical Scale).

Aplication forms for both the foregoing vacancies obtainable from Personnel Officer, 46/7, New Broad Street, London, E.C.2, to be returned completed by 14th April, 1955. Please enclose addressed envelope and quote ref.: V/1842/1140/A. 9304

ACHITECTURAL ASSISTANT required by the NYASALAND GOVERNMENT P.W.D. on contract for one tour of 24—36 months. Salary (including present temporary allowance of approx. 13 per cent. of salary) £1,018 a year. Gratuity of 10 per cent. of total basic salary drawn during contract. Outfit allowance £30. Free passages. Liberal leave on full salary. Candidates under 36 years of age, must have at least five years' all round experience in an Architect's Office and have a sound knowledge of construction with ability to prepare working drawings and specifications from Architect's designs. Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience, and quote M2B/40715/AG. 9308

BOROUGH OF EALING requires a Temporary SENIOR ARCHITECTURAL ASSISTANT, salary A.P.T. IV—V, £675—£900, plus London Weighting. Application form and full particulars to be obtained from Borough Surveyor, Town Hall, Ealing, W.5. Closing date 18th April, 1955.

E. J. COPE-BROWN,
Town Clerk.
9307

COUNTY BOROUGH OF GLOUCESTER.
CITY ARCHITECT'S DEPARTMENT.

Applications are invited from persons with suitable qualifications and experience for the following permanent appointments:—

(*a*) ASSISTANT ARCHITECT—£650×£25—£775. Parts I. and II. R.I.B.A. Final or Special Final.

(*b*) ARCHITECTURAL ASSISTANT, A.P.T. II £560 × £20—£640. R.I.B.A. Intermediate.

Superannuable posts. Medical examination. Municipal experience not essential. Male or female.

Programme includes schools, multi-storey flat re-development, shell concrete public buildings, etc.

Applications stating age, married or single, training, qualifications, experience, previous and present appointments, with copies of testimonials or names of referees, to City Architect, Suffolk House, Greyfriars, Gloucester, not later than Friday, the 15th April, 1955. 9295

SOUTH AUSTRALIAN HOUSING TRUST, ADELAIDE.

Early applications are invited from qualified ARCHITECTS and ARCHITECTURAL DRAUGHTSMEN for vacancies in the South Australian Housing Trust. First-class steamer fares provided for appointees and families. Houses available for either rental or purchase.

Salaries: Architects, £A1,440 per annum; Architectural Draughtsmen, £A750 upwards, according to experience.

Full particulars of duties, conditions, etc., obtainable from: Agent General for South Australia, South Australia House, Marble Arch, London, W.1. 9305

GOVERNMENT OF NORTHERN IRELAND.
VACANCY FOR ARCHITECT.

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

The salary scale which attracts pay supplement of amounts between £25 and £35 per annum is £675 × £25—£750 × £30—£960 × £40—£1,000. The minimum is linked to age 26 plus an increment for each year above that age, subject to a commencing salary not exceeding £900 plus pay supplement of £30. An officer between 25 and 26 will be given an inclusive commencing salary of £675, and if under 25 will be paid according to qualifications and experience.

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

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

Application forms may be obtained from the Director of Establishments, Ministry of Finance, Stormont, Belfast, to whom they must be returned with copies of two recent testimonials, so as to reach him not later than 20th April, 1955. 9326

THE DEPARTMENT OF HEALTH FOR SCOTLAND: Chief Architect's Office: Applications are invited from ARCHITECTURAL DRAUGHTSMEN with considerable office experience for a non-pensionable post. Duties include assisting architects on Housing projects. Health buildings and schools.

Salary range £432—£680 (Women £680) with placing according to age and experience. Form of application, obtainable from Establishment Officer, Department of Health for Scotland, (Room 30), St. Andrew's House, Edinburgh, 1, must be returned by 21st April, 1955. 9209

COUNTY BOROUGH OF DUDLEY.

(*a*) ASSISTANT ARCHITECT, Grade IV (£675—£825);

(*b*) ASSISTANT ARCHITECT, Special Grade (£650—£775).

Applications are invited for the above appointments on the Staff of the Borough Architect.

Applications for both appointments should be Associate members of the Royal Institute of British Architects

Applications, together with copies of not less than two recent testimonials, to reach me by Thursday, 14th April, 1955.

P. D. WADSWORTH,
The Council House, Dudley. *Town Clerk.*
25th March, 1955. 9335

BOROUGH OF GRANTHAM.

SECOND ARCHITECTURAL ASSISTANT wanted in Borough Surveyor's department in A.P.T. Grade III (£600—£725). National Conditions of Service and Local Government Superannuation Act apply. Appointment is terminable by one month's notice. Good general experience, especially of housing, is essential, and previous local government service is desirable. A house is available.

Applications, quoting three references, should be sent to the Borough Surveyor, Guildhall, Grantham, by 19th April, 1955.

JOHN F. GUILE.
Town Clerk.
Guildhall, Grantham. 9334

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

Architect's Department require JUNIOR. Young person of either sex desirous of making architecture his/her career and who intends to obtain qualifications. Salary according to age within scale: men £170 (at age 16)—£370; women £165 (at age 16)—£305; plus London Weighting £10—£30. Apply, giving age, education and experience (if any), and stating National Service position if applicable, to Secretary, North West Metropolitan Regional Hospital Board, 11a, Portland Place, W.1, by 30th April. Names of two referees should be given. 9333

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

ARCHITECTURAL ASSISTANT required. Applicants must have passed Intermediate examination of R.I.B.A. Person appointed will give technical assistance to professional officers. Salary scale: £465 × £25(1) × £20(8)—£650 plus £20—£30 London Weighting. Commencing salary up to £550 plus weighting may be paid subject to certain conditions.

Apply, giving age, qualifications (with dates) and experience, with names of two referees, to Secretary, North West Metropolitan Regional Hospital Board, 11a, Portland Place, W.1, by 30th April. 9332

STEVENAGE DEVELOPMENT CORPORATION.
CHIEF ARCHITECT'S DEPARTMENT.

Applications are invited for post as junior ARCHITECT on N.J.C. salary scale A.P.T. IV (£675 × £30 to £825) per annum.

Candidates should have completed a course at a recognised School of Architecture or have passed the Final examination of the R.I.B.A.

Housing accommodation will be available eventually in an appropriate case.

Applications, giving details of experience and names of two referees should be sent to the Chief Administrative Officer, Aston House, Nr. Stevenage, Herts., not later than Thursday, 21st April, 1955. 9357

BOROUGH OF TOTTENHAM.

Applications are invited for the following posts:

(*A*) ARCHITECTURAL ASSISTANT (Established), A.P.T. Grade I or II (£500 to £580 or £560 to £640 plus London Weighting).

(*B*) ARCHITECTURAL ASSISTANT (Unestablished), A.P.T. Grade I or II (£500 to £580 or £560 to £640 plus London Weighting).

Applicants must have passed R.I.B.A. Intermediate Examination. Grading according to experience. N.J.C. Conditions. Application form and general conditions of appointment from Borough Engineer (AJ), Town Hall. N.15, to whom applications must be delivered not later than 18th April, 1955. 9355

BUCKS. COUNTY COUNCIL.

Applications are invited for the appointment of an ASSISTANT ARCHITECT in the County Architect's Department at a salary in accordance with the Architect's Special Grade £650—£775 p.a.

A weekly allowance of 25s. 0d. and return fare home once every two months may be paid for six months to newly appointed married officers of the Council unable to find accommodation.

Applications, on forms giving further particulars of the appointment, are obtainable from F. B. Pooley, County Architect, County Offices, Aylesbury, and returnable by 18th April, 1955. 9353

CITY OF LEICESTER.

Applications are invited for the appointment of MAINTENANCE ASSISTANT in the City Surveyor's Department. The salary will be in accordance with Grade III (£600—£725) or Grade IV (£675—£825) according to qualifications and experience, and the appointment is subject to the provision of the Local Government Superannuation Act, 1937.

Applicants should have a good knowledge of architectural practice and be experienced in the maintenance of public buildings, preparation of specifications, schedules and plans. Previous Local Government experience would be an advantage.

The successful candidate will be required to pass a medical examination.

Applications, including age, qualifications and experience, together with copies of testimonials should reach the undersigned not later than Saturday, 23rd April, 1955.

The Council are unable to assist with Housing Accommodation.

JOHN L. BECKETT, M.Inst.C.E.,
City Surveyor.
Town Hall, Leicester. 9359

BOROUGH OF CHELTENHAM.
APPOINTMENTS OF TWO ARCHITECTURAL ASSISTANTS.

Applications are invited for the above appointments (salaries within Grade A.P.T. IV—£675 to £825 per annum) on the Capital Works Establishment.

Applicants must be Associate Members of R.I.B.A. or equivalent, and experienced in the design of public Buildings, Housing and Ancillary Buildings in connection with Estate Development.

The appointments are subject to the National Conditions of Service; to the Superannuation Acts; and to a medical examination, and will be terminable by one month's notice on either side.

Applications, endorsed "Senior Architectural Assistant," stating age, training, qualifications and experience of present and previous appointments, and giving the names of two referees, are to reach Mr. G. Gould Marsland, M.B.E., B.Sc., M.Inst.C.E., Borough Surveyor, Municipal Offices, Cheltenham, not later than Monday, 18th April, 1955.

F. D. LITTLEWOOD.
Town Clerk.
Municipal Offices, Cheltenham.
26th March, 1955. 9358

INVERNESS COUNTY COUNCIL.
COUNTY ARCHITECT'S DEPARTMENT.

Applications are invited for the undernoted appointments:—

TWO ARCHITECTURAL ASSISTANTS on salary scale A.P.T. V, £665—£715, with placing according to experience and qualifications.

Candidates must be Associate Members of the Royal Institute of British Architects and preferably should have experience in Local Authority housing and educational work.

Housing accommodation may be made available, if required.

Aplications, stating age, particulars of professional training, experience and qualifications, together with the names of three persons to whom reference may be made, should be lodged with the undersigned not later than 14 days after the publication of this advertisement.

R. WALLACE.
County Clerk.
County Buildings, Ardross Street, Inverness. 9356

SOUTH ESSEX CREMATORIUM JOINT COMMITTEE.
CLERK OF WORKS.

Applications are invited for the appointment of Clerk of Works for a new crematorium at Upminster.

The appointment is for two years in the first instance at a salary of £800 p.a.

Applicants must have a thorough knowledge of good class building work including the construction of roads, footpaths and sewers.

Applications, stating age and experience (with dates), with the names of two persons to whom reference can be made, should be submitted not later than 18th April, 1955, to the Clerk to the South Essex Crematorium Joint Committee, Council Offices, Billet Lane, Hornchurch, Essex.

P. L. COX,
Clerk to the South Essex Crematorium Joint Committee.
Council Offices, Hornchurch, Essex. 9354

CITY OF CAMBRIDGE.

Applications are invited for the appointment of a SENIOR ASSISTANT ARCHITECT—GRADE IV (commencing salary £765) in the Architectural Section of the City Surveyor's Department.

The successful applicant, who must be an A.R.I.B.A. and have had sound experience in the design and construction through all stages of large Local Authority building projects, particularly schools, will be employed in a senior capacity in connection with an interesting and varied building programme which will provide scope for initiative and responsibility.

The post is permanent, superannuable, subject to medical examination and to one month's notice on either side.

Housing accommodation is available.

Forms of application may be obtained from T. V. Burrows, City Surveyor, The Guildhall, Cambridge, to whom they must be returned by the 26th April, 1955.

ALAN H. I. SWIFT.
Town Clerk.
The Guildhall,
Cambridge. 9385

BOROUGH OF WORTHING.
BOROUGH ENGINEER'S DEPARTMENT.
ASSISTANT QUANTITY SURVEYOR.

Applications are invited for the above appointment at a salary in accordance with Grade A.P.T. II of the National Joint Council's Scale of Salaries, i.e., £560—£640 per annum.

Applicants should have passed the Intermediate Examination of the Royal Institution of Chartered Surveyors, Sub-Section 3, and must be capable of and had experience in abstracting and building and measurement of works on site. Experience of taking off and in the settlement of final accounts would be an advantage.

The appointment will be subject to the National Scheme and Conditions of Service of Local Government Officers; to the Local Government Superannuation Act, 1953, and Local Government Superannuation (Benefits) Regulations 1954; and to the successful applicant passing satisfactorily a medical examination. The appointment will be terminable by one month's notice on either side.

The Council will assist in finding housing accommodation for the successful applicant if required.

Applications endorsed "Assistant Quantity Surveyor" stating age, status, qualifications, experience, present and past appointments with duties, and accompanied by copies of two testimonials, should be sent to the Borough Engineer, Town Hall, Worthing, not later than Friday, 22nd April, 1955.

ERNEST G. TOWNSEND,
Town Clerk.

Town Hall, Worthing.
24 March, 1955. 9352

STAFFORDSHIRE COUNTY COUNCIL.
EDUCATION ARCHITECT'S DEPARTMENT.

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

SECTION ARCHITECT: Grade A.P.T. VII (£900 rising to £1,100 per annum).

Candidates must be Associate Members of the R.I.B.A. and have wide experience of alterations and adaptations to school buildings; have administrative experience and be capable of taking charge of groups of Architects.

SENIOR ASSISTANT ARCHITECTS: Grade A.P.T. V (£750 rising to £900 per annum).

Candidates must be Associate Members of the R.I.B.A. and have considerable experience in educational buildings, and be capable of taking charge of a group of Architects.

ASSISTANT ARCHITECTS: Grade A.P.T. IV (£675 rising to £825 per annum).

Candidates must be members of the R.I.B.A. and have experience in school planning.

ASSISTANT ARCHITECTS: Special Grade (£650 rising to £775 per annum).

Candidates must have passed Parts 1 and 2 of R.I.B.A. Final or Special Final or equivalent at recognised school of architecture, and have at least 5 years' experience including theoretical training.

JUNIOR ARCHITECTURAL ASSISTANTS: Grade A.P.T. II (£500 rising to £640 per annum).

Candidates must have reached Intermediate R.I.B.A. standard with not less than one year's subsequent experience in an Architect's office.

Forms of applications to be obtained from:—A. C. H. Stillman, F.R.I.B.A., County Education Architect, Green Hall, Lichfield Road, Stafford.

Completed forms must be returned not later than Tuesday, the 19th April, 1955.

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

A/Advert/201/BP. 9327

ST. MARYLEBONE BOROUGH COUNCIL.
ARCHITECTURAL ASSISTANT required for Housing Department. Preference for candidates who have passed R.I.B.A. Intermediate examination. Salary within range A.P.T.I/II (£500—£640) according to experience (as defined in National Scheme of Conditions of Service), plus London Weighting progressing to special scale for R.I.B.A. finalists (£650—£775) plus London Weighting.

Learners or probationers of R.I.B.A. also considered at salary according to age in Higher General Division.

Permanent appointment subject to medical examination and superannuation scheme.

Applications stating age, qualifications, experience and positions held, with the names of 3 referees to Establishment Officer, Town Hall, St. Marylebone, W.1, within 7 days of publication. 9386

COUNTY BOROUGH OF SMETHWICK.
BOROUGH ENGINEER & SURVEYOR'S DEPARTMENT.
APPOINTMENT OF PRINCIPAL QUANTITY SURVEYING ASSISTANT.

Applications are invited from candidates, appropriately qualified for the above appointment at a salary in accordance with Grade A.P.T. V of the National Scales of Salaries (£750—£900 per annum).

The post is subject to the provision of the National Scheme of Conditions of Service, the Local Government Superannuation Acts, 1937—53, to the passing of a medical examination and to termination by one month's notice on either side.

Form of Application may be obtained from the Borough Engineer & Surveyor, Council House, Smethwick, and should be returned in an envelope, suitably endorsed, together with copies of two recent testimonials, not later than 15th April, 1955.

E. L. TWYCROSS,
Town Clerk.

Council House, Smethwick, 40. 9350

CITY OF ST. ALBANS.

Applications are invited for the following appointments in the City Engineer & Surveyor's Department:—

1. TEMPORARY SENIOR ENGINEERING ASSISTANT: Applicants should have had considerable municipal experience on highway and sewerage work but need not possess final qualifications. Salary: £650/£775.

2. TEMPORARY ARCHITECTURAL ASSISTANT: Applicants should hold the Intermediate R.I.B.A. examination, or equivalent. Salary: New Grade A.P.T. II (£560/£640).

The posts are unestablished but are not likely to be for less than two years. Housing Accommodation will be available for the successful applicant in each case. Applications must reach me by Tuesday, 12th April, 1955.

W. B. MURGATROYD,
Town Clerk.

38, St. Peter's Street, St. Albans. 9331

COVENTRY CORPORATION require
(*a*) 8 Qualified ASSISTANT ARCHITECTS.
(*b*) 1 Qualified ASSISTANT PLANNER.
(*c*) 4 ARCHITECTURAL ASSISTANTS.

Salary New Grade for Special Classes £650—£775 (posts *a* and *b*) and within A.P.T. II £560—£640 (post *c*). Additional local award £26 (men) or £19.10s. (women) in approved circumstances on salaries up to £750.

For post (*b*) Associate T.P.I. with practical experience development control work essential. Additional architectural qualification an advantage. For post (*c*) Inter R.I.B.A. or equivalent required. Housing accommodation may be available posts (*a*) and (*b*). Application form and conditions from Acting City Architect and Planning Officer, Bull Yard, Coventry, returnable 30th April. 9384

BOROUGH OF POOLE.
ARCHITECTURAL STAFF.

Applications are invited for the following appointments in the Borough Engineer's Department:—

ARCHITECTURAL STAFF: (*a*) Two SENIOR ASSISTANT ARCHITECTS, Special Grade £650—£775; (*b*) One JUNIOR ASSISTANT ARCHITECT, A.P.T. II £560—£640; (*c*) JUNIOR ASSISTANT, H.G.D.

Applicants for appointment (*a*) should be qualified in accordance with the requirements of the special grade. It will be an advantage if they have had experience in planning either new primary or grammar schools.

Applicants for appointment (*b*) should have passed the Intermediate examination of the R.I.B.A.

Applicants for appointment (*c*) must hold the appropriate educational qualifications.

Applications forms may be obtained from the Borough Engineer and Surveyor, Municipal Buildings, Poole, Dorset, and completed forms must be returned to the undersigned by not later than Saturday, 16th April, 1955.

WILSON KENYON,
Town Clerk.

March, 1955. 9351

CORPORATION OF GLASGOW.
ARCHITECTURAL AND PLANNING DEPARTMENT.
ASSISTANT ARCHITECTS
PLANNING ASSISTANTS
ASSISTANT QUANTITY SURVEYORS
ASSISTANT CIVIL ENGINEERS
ASSISTANT HEATING AND VENTILATING ENGINEERS.

Applications are invited from suitably qualified persons, salary on a scale £545—£915 with placing according to age, qualifications and experience. The posts are superannuable subject to medical examination. Forms of application may be obtained from the Principal Administrative Officer, 20, Trongate, Glasgow, C.1.

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

9119

COUNCIL OF THE COUNTY OF ABERDEEN.
COUNTY ARCHITECT'S DEPARTMENT.

Applications are invited for the undermentioned appointments in the County Architect's Department:—

(1) CHIEF ASSISTANT ARCHITECT on Salary Scale £925 × £25 to £1,050 per annum.

(2) ARCHITECTURAL ASSISTANT on Salary Scale A.P.T. VI—VIII (£750—£915 per annum).

(3) ASSISTANT QUANTITY SURVEYOR on Salary Scale A.P.T. VI—VIII (£750—£915 per annum).

Applicants for posts (1) and (2) must be Associates of the Royal Institute of British Architects preferably with experience in the design of educational buildings. Applicants for post (3) must be Associates of the Royal Institute of Chartered Surveyors.

The appointments are subject to the Local Government Superannuation (Scotland) Acts, 1937 to 1953 and the successful candidates will require to pass a medical examination.

Conditions of appointment and forms of application are obtainable from the undersigned and should be returned not later than 22nd April, 1955.

Canvassing of members of the Council directly or indirectly in connection with these appointments shall disqualify the candidate.

JAMES L. CRAIG,
County Clerk.

County Buildings, 22, Union Terrace, Aberdeen.
28th March, 1955. 9380

CITY OF NORWICH.
CITY ENGINEER'S DEPARTMENT,
TOWN PLANNING SECTION.

Applications are invited for the appointment of a TOWN PLANNING ASSISTANT in Grade IV of the new A.P.T. division (£675 to £825).

Applicants should be Associate Members of the Town Planning Institute and must have a sound knowledge of town planning and practical experience of development control and in the preparation of schemes for redevelopment areas. Applicants should give full particulars of their training, qualifications and experience and should state their age, present and previous positions, giving salaries and dates, and enclose copies of three testimonials.

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, therefore, will be required to pass a medical examination. Relationship of applicant to members of the Council or staff must be declared in the application. Canvassing, directly or indirectly, will be a disqualification.

Applications should be delivered to the City Engineer, City Hall, Norwich, not later than 10 a.m. on Monday, 25th April, 1955, endorsed "Town Planning Assistant."

H. C. ROWLEY, M.I.C.E.,
City Engineer.

City Hall, Norwich. 9368

CITY OF WAKEFIELD.
APPOINTMENT OF SENIOR QUANTITY SURVEYOR.
GRADE A.P.T. IV.

Applications are invited for the appointment of a SENIOR QUANTITY SURVEYOR in the City Engineer's Department on Grade A.P.T. IV (New), commencing at £765 p.a.

Candidates must be members by examination of the R.I.C.S. or the I.Q.S., and have had experience in large scale Local Authority housing, schools and other municipal buildings.

The appointment is superannuable.

Applications, stating age, qualifications, appointments and experience, with the names of two referees, to be sent to me not later than the 18th April, 1955.

Housing accommodation will be considered.

W. S. des FORGES, *Town Clerk.*

Town Hall Wakefield. 9377

COUNTY BOROUGH OF HALIFAX.
BOROUGH ENGINEER'S DEPARTMENT.
APPOINTMENT OF CHIEF ARCHITECTURAL ASSISTANT.

Applications are invited for the above appointment at a salary scale of A.P.T. IV/V (£675—£900 p.a.). The commencing salary will be fixed within this range in accordance with qualifications and experience.

The tenancy of a Corporation house will be offered to the successful applicant.

Applications, stating age, qualifications, present position, salary and experience, accompanied by copies of three recent testimonials, should be appropriately endorsed and delivered to the undersigned not later than Saturday, 16th April, 1955.

RICHARD de Z. HALL,
Town Clerk.

Town Hall, Halifax. 9378

LIVERPOOL REGIONAL HOSPITAL BOARD.

Applications invited for following appointment in Department of the Regional Architect, T. Noel Mitchell, B.Arch., A.R.I.B.A., 88, Church Street, Liverpool, 1:—

SENIOR ASSISTANT ARCHITECT: £900 × £30—£1,050 per annum. Candidates to be qualified Architects with experience in planning of large schemes. Person appointed will probably be engaged on the planning of new Hospital projects.

Applications, stating age, education, qualifications, experience, present and previous appointments and present salary, names and addresses of three referees (two technical) to me by 7th April, 1955.

VINCENT COLLINGE,
Secretary to the Board.

19, James Street, Liverpool, 2. 9382

NIGERIAN COLLEGE OF ARTS, SCIENCE AND TECHNOLOGY.

(*Principal:* C. A. HART, T.D., D.Sc., Ph.D., M.I.C.E., M.I.Mech.E., F.R.I.C.S., A.M.I.Struct.E.)

Applications are invited for appointment as:—

LECTURER in BUILDING, to each in following courses: Architecture, to level of Inter. R.I.B.A.; Building Surveying, to level of Inter. R.I.C.S.; Engineering, up to degree level.

Candidates should be A.R.I.B.A., A.R.I.C.S. or A.M.I.Struct.E. Degree and teaching experience an advantage.

The College encourages research.

Salary scale, incl. overseas pay: £750—£1,560. Initial salary according to experience. Post is permanent and pensionable, but temporary appointment carrying gratuity and slightly higher salary might be made. Furnished house provided, rent £57—£129 p.a. according to salary. Free 1st class passages, once each way for each tour of service, for person appointed and wife: either passage allowance or maintenance allowance for up to two children under 18. Seven days' leave for each month's resident service. Tours of service normally 10—18 months.

For further information apply to Secretary, Advisory Committee on Colonial Colleges, 1, Gordon Square, London, W.C.1. Closing date for applications (six copies), 25th April, 1955. 9365

COUNTY COUNCIL OF THE COUNTY OF LANARK.

Applications are invited for the following appointments in the County Planning Department at Hamilton:—

PLANNING ASSISTANTS.—One, A.P.T. Grade V (£665/£715); One—A.P.T. Grade IV (£615/£660). Preference given to Corporate Members of Town Planning Institute, or equivalent qualification.

PLANNING ASSISTANT (Landscape).—A.P.T. Grade II—IV (£545/£660), with placing according to experience. Candidate should have experience in Landscape Architecture and preference will be given to person holding appropriate qualification.

PLANNING ASSISTANT (Draughtsman) (Male or Female).—A.P.T. Grade I (£515/£560). Should have good experience in drawing, colouring and mapping.

Salary scales are as at 16th May, 1955.

Posts superannuable. Medical examination. No canvassing.

Applications, stating age, qualifications and experience, together with names and addresses of three referees, should be lodged with the County Planning Officer, St. Katharines, 3, Muir Street, Hamilton, not later than 18th April, 1955.

WM. C. BROWNLIE,
County Clerk.
9383

BLETCHLEY URBAN DISTRICT COUNCIL.
ENGINEER & SURVEYOR'S DEPARTMENT.

Applications are invited for the appointment of ARCHITECTURAL ASSISTANT in connection with the Expansion of the Town under the Town Development Act, 1952, and is expected to last for six or seven years.

Candidates should have had considerable experience in the design of Houses, Flats, Shops and Factories, and preference will be given to persons holding an appropriate professional qualification.

The appointment will be subject to the provisions of the Local Government Superannuation Acts, and to the Southern Provincial Council's Scheme of Conditions of Service, and will be terminable by one month's notice on either side.

Salary paid will be between A.P.T. Grade II, or the Special Grade for Architectural Staff (i.e., between £560/£640 and £650/£775 per annum), according to qualifications and experience.

Housing accommodation will be made available.

Applications, stating age, qualifications and past experience, together with the names and addresses of two persons to whom reference may be made, should be delivered to the undersigned not later than Thursday, 21st April, 1955.

J. F. SMITHIE, M.I.Mun.E.,
Engineer & Surveyor.

Council Offices, Bletchley.
31st March, 1955. 9372

HEMEL HEMPSTEAD DEVELOPMENT CORPORATION.

JUNIOR ASSISTANT ARCHITECT (Vacancy 177). Salary scale £260—£455 p.a.

Applicants should have some architectural drawing office experience, ability to execute drawings in connection with general architectural detail, and should be studying for R.I.B.A. Intermediate examination.

Housing accommodation may be available. Conditions of service similar to Local Government Charter, with opportunity of entering or continuing in Local Government Superannuation Scheme.

Application forms can be obtained from General Manager, Westbrook Hay, Hemel Hempstead, and should be completed and returned by 21 April. 9379

Architectural Appointments Vacant

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

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she or the employment is excepted from the provisions of the Notification of Vacancies Order, 1952.

BUILDING SURVEYING ASSISTANT (about R.I.C.S. Final Standard) with at least two years' practical experience required by City firm of Chartered Surveyors & Architects. 3925

ARCHITECTURAL ASSISTANT: Intermediate or approaching final. Commercial and industrial work; large-scale contracts. Watson, Johnson, Stokes, Victoria Square, Birmingham. 4895

ARCHITECTURAL ASSISTANT required for busy practice covering North West England. Box 9136.

SALARY up to £793, according to experience for ASSISTANT in first class City Office. Box 9169.

URGENTLY required. ASSISTANT for responsible position in general practice with interesting work in hand over a large area. Salary directly related to ability. Accommodation available if required. Martindale and Jackson, F./A.R.I.B.A., Cathedral Chambers, Castle Street, Carlisle 9135

ARCHITECTURAL ASSISTANT required, intermediate stage or above, some office experience. Write for interview. Box 8770.

JUNIOR and intermediate ARCHITECTURAL ASSISTANTS required. Applicants with knowledge of commercial work, including offices and stores, etc. London experience an advantage. Box 8481.

ARCHITECTURAL DRAUGHTSMEN required for industrial work, capable of producing drawings from sketch plans and instructions of architect.

Senior men with experience of this type of work preferred, but juniors would be considered.

Apply stating age, training and experience, and salary required, to Box 1502, T. & G., 167, High Holborn, London, W.C.1. 9130

ARCHITECTURAL ASSISTANT required, experience up to final or intermediate standard in preparation of working drawings, details, specifications, for South West London office. Apply in writing, giving full particulars of experience, age and salary required, to Box 9098.

"THE ARCHITECT'S JOURNAL" requires a DRAUGHTSMAN, to assist in the preparation of drawings for Working Details and Information Sheets. Good draughtsmanship, a knowledge of building construction, and a keen interest in the above type of work are necessary. Write to the Editor (Information Sheets), 9, Queen Anne's Gate, S.W.1, stating age, architectural training, and experience. 901

MESSRS. NORTH & PARTNERS are seeking an ASSISTANT with general experience in surveys of existing properties and building sites. As the practice extends throughout the whole of Gt. Britain the successful applicant must be prepared to travel. Ability to assist generally in the drawing office would be an added advantage. Salary according to experience. Reply to North & Partners, Maidenhead. 8807

RONALD WARD & PARTNERS require several ARCHITECTURAL ASSISTANTS. Apply 29, Chesham Place, Belgrave Square, S.W.1, or telephone Belgravia 3361. 7023

ASSISTANT required in busy practice in West End, in early twenties, about Intermediate R.I.B.A. standard. Excellent opportunities for gaining all-round experience. Box 5092.

ARCHITECTURAL ASSISTANT required, experienced in industrial building design, in Wembley. Write, giving age, experience and salary required, Box 9097.

ARCHITECT'S ASSISTANTS required (1 Senior and 3 Juniors) for West End Office. Write, stating full particulars and salary required, to Box 8725.

REQUIRED for Architects' office, Central London area, young qualified ASSISTANTS interested in design and construction. Write, stating experience and salary required. Box 2325.

CLIFFORD TEE & GALE, F/F.R.I.B.A., require SENIOR and JUNIOR ASSISTANTS in their Westminster Office on Research Laboratories and other interesting projects. Please apply to 5, Buckingham Palace Gardens, S.W.1. (Sloane 2296). Five-day week 8660

ARCHITECTURAL DRAUGHTSMAN required by multiple shop Co., interesting and varied work, involves a certain amount of travelling, 5-day week, staff canteen, pension scheme. Write, stating age, qualifications, salary required, to Box 9005.

ARCHITECTURAL ASSISTANTS with considerable experience required for general practice, good salary paid to suitable applicants. Reply, stating age and experience, to Thomas Worthington & Sons, 178, Oxford Road, Manchester, 13. 9141

JUNIOR ASSISTANT required for Architect & Surveyor's Office, South London. Write, giving full details of age, experience and salary required to H. Wakeford & Sons, 184, Clapham Road, S.W.9. 9138

ARCHITECTURAL ASSISTANTS required for Bristol Office. Applicants should be qualified or of Intermediate standard studying for Final. Varied and interesting work. Contributory pension scheme. Write, giving age, experience and salary required, to W. H. Watkins, Gray, FF.R.I.B.A., & Partners, 1, Clare Street, Bristol, 1. 9183

ARCHITECTURAL ASSISTANTS required for large industrial and commercial development programmes. Good salaries for suitable men, preferably Intermediate to Final R.I.B.A. standard. Write, giving details of experience and salary required: Howard, Souster & Fairbairn, 81, Piccadilly. 9188

ARCHITECTURAL ASSISTANT required in the West End Offices of Percy Bilton Ltd. Salary about £500—£600 according to experience. Work would entail preparation of drawings, details and specifications for wide range of buildings including houses, flats and offices. Write giving experience and other useful information to Staff Architect, Percy Bilton Ltd., 113, Park Street, W.1. 8292

A WELL-KNOWN Midland Motor Manufacturer requires an ARCHITECTURAL TRAINEE who has completed his Intermediate R.I.B.A. for work of interesting and responsible nature. He will be given opportunity to design complete garage premises. Reply, stating age and all relevant details, to Box 8728.

CECIL Howitt & Partners, Architects, St. Andrew's House, Mansfield Road, Nottingham, require JUNIOR ARCHITECTURAL ASSISTANTS, preferably Inter. R.I.B.A. standard. Please apply in writing, giving full details and stating salary required. 4705

SENIOR ARCHITECTURAL ASSISTANT required in Architect's Department of large financial organisation in London. The post is permanent and pensionable. Please write giving details of experience, training, etc., to Box 9374.

GEORGE WIMPEY & CO., LIMITED.

THE Architect's Department seek ARCHITECTURAL STAFF enthusiastic to apply their knowledge to new construction techniques covering Houses, Multi-Storey Flats, Offices, Schools and Industrial Buildings for contracts in the U.K. and Overseas.

Appointments range from ARCHITECTS to DRAUGHTSMEN with special interest to those of ability, recognising the value of the designer and technician as an integral part of the production team.

Appointments are on a permanent basis, 5 days a week at Head Office, Hammersmith.

Salaries will be according to qualifications and experience, and, subject to satisfactory service, there is a Pension Scheme for those wishing to make a career with the firm.

Applicants should write giving brief particulars to E. V. Collins, A.R.I.B.A., Chief Architect, GEORGE WIMPEY & CO., LIMITED, 27, Hammersmith Grove, London, W.6. 9375

SENIOR ASSISTANT required in pleasant Midlands private office for interesting and varied work. Should be qualified and experienced, capable of supervising staff and taking full responsibility. Good salary and prospect of partnership. Please write stating full particulars and salary required. Box 9373.

NORTHERN RHODESIA for growing practice —SENIOR ASSISTANT ARCHITECT, salary £1,000 p.a. Free passage, single accommodation available, home leave. Apply quoting: OSS.56/3, Overseas Technical Service, 5, Welldon Crescent, Harrow, Middx. 9376

ARCHITECT'S ASSISTANT required for Liverpool office. 5-day week. State experience and salary. Box L562, Lee & Nightingale, Liverpool. 9381

ARCHITECTS (W.C.1) have three vacancies—chiefly hospital work. Requirements are two years' practical experience, good draughtsmanship and keenness. Modern outlook appreciated and initiative encouraged in a small office—staff about 14. Salaries £600—£900 p.a. (plus bonuses) according to experience and ability. Box 9364.

ASSISTANT required in Surveyor's Department. Write: The Surveyor, Page & Overton's Brewery, Ltd., 79, Limpsfield Road, Sanderstead, Surrey, stating age, experience and salary required. 9366

ARCHITECTURAL ASSISTANT, quick, accurate draughtsman for Architect's department of London Property Development Company. Commencing salary £700 p.a., with good prospects for right man. Write, giving full details of age and experience to Box 250, Whites, 72/78, Fleet Street, London, E.C.4. 9367

GLOUCESTER.—Private Architect requires ASSISTANT, Intermediate R.I.B.A. standard. Must be interested in contemporary architecture and have some office experience. Also vacancies for JUNIORS or PUPILS. Five-day week, good working conditions and interesting and varied work. Apply with details of experience, salary required, etc., to Brian S. Tait, A.R.I.B.A., The Quay, Gloucester. 9360

QUALIFIED or experienced ARCHITECTURAL ASSISTANTS required for general practice in Lincoln. Box 9361.

SIDCUP Architect wants ASSISTANT, R.I.B.A., Intermediate standard. Small busy office with good class contemporary work and young staff. Salary according to experience. Telephone FOO 3166/7. 9363

ASSISTANT (preferably qualified) to Staff Architect and experienced ARCHITECTURAL DRAUGHTSMAN to work on design of buildings in Modular System of constructi on. Assistant may be required to visit overseas contracts. Salary range approximately £550—£850. 5-day week. Age, qualifications and experience to Mod-X Structures Ltd., 20, Lowndes Street, S.W.1. 9369

ARCHITECT required by Light Structural Engineering Firm (man of intermediate standard with some experience would be considered). Applicant should be interested in light steel structures and the constructional side of architecture. Raylor Brothers, Witney, Oxfordshire. 9371

CHARTERED Architects and Surveyors, W.1 area, require ASSISTANTS with long term view. Inter. to Final standard R.I.B.A. or R.I.C.S., preferably with experience of Commercial and Industrial work, and General Practice. Five-day week. Particulars and when available to Box 9051.

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

APPLICATIONS are invited for the following: (*a*) ASSISTANT ARCHITECTS of Inter. R.I.B.A. standard; (*b*) SHOPFITTING DRAUGHTSMAN with wide experience in store planning and design.

The salary range offered for the above appointments is up to £745 per annum according to age and experience, with prospects of up-grading.

Applications, stating age, experience, qualifications and salary required to W. J. Reed, F.R.I.B.A., Chief Architect, Co-operative Wholesale Society Ltd., 99, Leman Street, London, E.1. 9017

ARCHITECTURAL STAFF, all grades, wanted, interesting and varied work of contemporary character; light and airy offices. Apply J. Seymour Harris & Partners, 4, Greenfield Crescent, Edgbaston, Birmingham, 15. 8786

FARMER & DARK urgently require ASSISTANTS of all grades to work on a wide variety of new large scale industrial schemes. 5-day week; Non-contributory pension scheme. In applying please state experience fully and salary required. Farmer & Dark, Romney House, Tufton Street, Westminster, S.W.1. 9112

ARCHITECTURAL ASSISTANTS required by B.B.C. in London for work on design of studios, transmitter and office premises. Candidates should be up to intermediate or final R.I.B.A. standard and have had some design office experience. Salary in scales £545 to £755 or £645 to £880, according to qualifications and experience. Requests for application forms to Engineering Establishment Officer, Broadcasting House, London, W.1, within 7 days, quoting ref. EX.27 A.J. 9104

JUNIOR and SENIOR ARCHITECTURAL ASSISTANTS (male) required for London office of private Architect. Applicants should have had some office experience and be conversant with contemporary design. Write, stating salary required and giving full details of experience and qualifications, if any, to Box 9115.

ARCHITECTURAL ASSISTANTS required with office experience, preferably industrial or schools. Salary by arrangement. Llewellyn Smith & Waters, 103, Old Brompton Road, S.W.7. 9128

ARCHITECTURAL ASSISTANTS urgently required up to Intermediate standard and preferably with office experience. State salary required. Fowler, Grove & Haggar, 140, Lodge Road, Southampton. 9283

IMAGINATIVE draughtsman required. Architectural experience desirable but not essential. Charles Kenrick Associates, Designers and Architects, 20, Fitzroy Square, W.1. 9196

ARCHITECTURAL ASSISTANT required in small private office. Intermediate to Final standard. Write, stating experience and salary required, to: A. F. Bennett, 35, Queen's Gate Mews, London, S.W.7. 9266

ARCHITECTURAL ASSISTANT required with minimum qualification of Intermediate R.I.B.A. Preference will be given to applicants having some experience in the design of industrial buildings and housing. Write, stating age and full particulars, to: Mr. A. E. Cresswell, A.R.I.B.A., 40, Claremont Road, Cricklewood, London, N.W.2. 9267

JUNIOR ASSISTANT required to Staff Architect in small Drawing Office of Multiple Combine. Able to work with the minimum of supervision. Occasional travelling may be involved. Apply Box 9278.

ARCHITECTURAL ASSISTANT required by Major Oil Company undergoing expansion, for its Sheffield office. Applicants should be of Intermediate standard, and must be capable of carrying out work on the design and re-modelling of service stations. Social Club, Pension and Life Assurance scheme, generous sickness benefits. Write, giving full details of experience, age and salary required, to Box 9262, quoting Ref. A.A. 588.

ASSISTANT of R.I.B.A. (Inter.) standard or over required in Architect's Department in City of London. Should be between 26-30 with several years' office experience. Secure future and interesting good class work. Write, giving particulars of experience, age and salary required. Box 9061.

ARCHITECT, OR EXPERIENCED ASSISTANT, REQUIRED BY "THE ARCHITECTS' JOURNAL." Ability to write fluently and well, and a sound knowledge of construction and contemporary building techniques essential. Will be expected to write reports on buildings, supervise the production of technical architectural drawings, commission and sub-edit technical articles and assist production. Please reply to The Editor, "The Architects' Journal," 9, Queen Anne's Gate, S.W.1. 902

ASSISTANTS required in Architects' Department of expanding commercial organisation. Excellent opportunities for advancement. Salary according to experience. Write, giving full details of previous experience, age and salary required, to Box 9246.

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SENIOR AND JUNIOR ARCHITECTURAL ASSISTANTS required for general and commercial practice. Apply, stating age, experience, qualifications and salary required, to Duncan Clark & Beckett, F/L.R.I.B.A., F/F.R.I.C.S., Architects & Surveyors, 7, West Stockwell Street, Colchester. 9206

VACANCIES occur in busy London Architect's practice for Senior and Junior ASSISTANTS, salaries varying from £600 to £900 according to experience and capabilities. Reply with full particulars to Box 9223.

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QUALIFIED ARCHITECT and Intermediate standard ASSISTANT required. Please apply giving details of experience and salary required to Harry W. Weedon, F.R.I.B.A., & Partners, 45, Calthorpe Road, Edgbaston, Birmingham. 9207

REQUIRED in Chief Architect's Department at Head Office of Multiple Store in London. (*a*) JUNIOR ARCHITECTURAL DRAUGHTSMAN or ASSISTANT with good basic experience to prepare sketch plans, working drawings and give general assistance; (*b*) JUNIOR SHOPFITTING DRAUGHTSMAN for Store Fixtures and Fittings. Write, with details of experience and salary required, to Box 9194.

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ARCHITECTURAL ASSISTANT with good knowledge of design and working drawings required in small busy West End office, with interesting work of a varied nature. Apply in writing, stating qualifications and salary required. Box 9233.

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EXPERIENCED ARCHITECTURAL DRAUGHTSMEN required by Sir Alfred McAlpine & Son Limited, Building & Civil Engineering Contractors, Hooton, Wirral. Permanent employment and good prospects for suitable candidates. 9272

SENIOR ARCHITECTURAL ASSISTANTS required in busy office near Angel Tube Station. Pleasant office conditions. Opportunities for working on own initiative for experienced and capable men. Good salary and prospects. Full details to Bowden Son & Partners, 3, Adelaide Terrace, London, N.1. 9271

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ARCHITECTURAL ASSISTANTS of Intermediate standard, required to work on large office buildings. Apply in writing, stating age, training and experience, to Trehearne & Norman, Preston & Partners, Windsor House, 83, Kingsway, W.C.2. 9313

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Long term possibilities and good prospects.
Applications to the United Kingdom Atomic Energy Authority, Industrial Group Headquarters, Risley, Warrington, quoting 882. 9348

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ARCHITECT'S DEPARTMENT, MILTON STREET, NOTTINGHAM.

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Envelopes and applications should be marked with the appropriate S.V. reference number. Original testimonials should not be sent. 9324

£500—£700 per annum salary offered for ASSISTANT to take part in large-scale development and remodelling of petrol filling stations, service stations, garages and workshops, etc. Must be capable of working independently. Should be of intermediate standard. Work will involve original design, site visits and a high standard of presentation. Five-day week, good pension and life assurance scheme, sickness benefits and free luncheon vouchers. Social Club. Write, giving full details, stating age, experience and salary required to Box 9325, quoting Ref. Y 593.

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ADAMS, HOLDEN & PEARSON require SENIOR and JUNIOR ARCHITECTURAL ASSISTANTS immediately. Write, giving particulars of experience and salary required, to 38, Gordon Square, W.C.1. 9323

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The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she or the employment is excepted from the provisions of the Notification of Vacancies Order, 1962.

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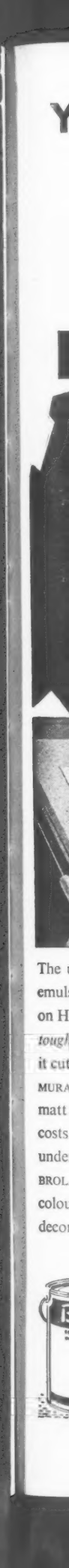

Scheme in Progress

Perspective drawing by R. C. Arnold F.R.I.B.A.

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Architect: Hector O. Hamilton, F.R.I.B.A.
Executant Architect: R. C. Arnold, F.R.I.B.A.

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