

THE ARCHITECTS' JOURNAL

FINE ARTS



Standard contents

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

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[Vol. 131

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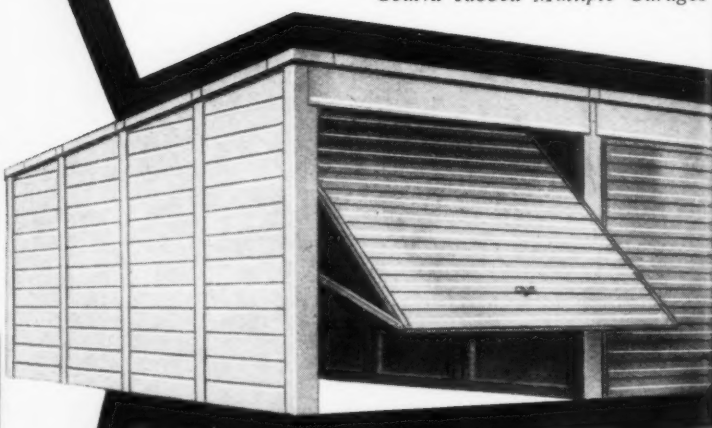
★ A glossary of abbreviations of Government Departments and Societies and Committees of all kinds, together with their full address and telephone numbers. The glossary is published in two parts—A to Ii one week, II to Z the next. In all cases where the town is not mentioned the word LONDON is implicit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

AA	Architectural Association, 34/6, Bedford Square, W.C.1.	Museum 0974
AAI	Association of Art Institutions. Secy.: W. L. Stevenson, College of Art, Hope Street, Liverpool 1.	Royal 1826
ABS	Architects' Benevolent Society. 66, Portland Place, W.1.	Langham 5533
ABT	Association of Building Technicians. 1, Ashley Place, S.W.1.	Victoria 0447-8
ACGB	Arts Council of Great Britain. 4, St. James's Square, S.W.1.	Whitehall 9737
ADA	Aluminium Development Association. 33, Grosvenor Street, W.1.	Mayfair 7501/8
ARCUK	Architects' Registration Council. 68, Portland Place, W.1.	Langham 5861
BAE	Board of Architectural Education. 66, Portland Place, W.1.	Langham 5721
BC	Building Centre, 26, Store Street, Tottenham Court Road, W.C.1	Museum 5400
BCC	British Colour Council. 13, Portland 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
BE	Building Exhibition. 11, Manchester Square, W.1.	Hunter 1951
BEDA	British Electrical Development Association, 2, Savoy Hill, W.C.2.	Temple Bar 9434
BIA	British Ironfounders' Association. 145, Vincent Street, Glasgow, C.2.	Glasgow Central 2891
BID	Building Industries Distributors. 52, High Holborn, W.C.1.	Chancery 7772
BINC	Building Industries National Council. 11, Weymouth Street, W.1.	Langham 2785
BOT	Board of Trade. Whitehall Gardens, Horseguards Avenue, Whitehall, S.W.1.	Trafalgar 8855
BRS	Building Research Station. Bucknalls Lane, Watford.	Garston 4040
BSA	Building Societies Association. 14, Park Street, W.1.	Mayfair 0515
BSI	British Standards Institution. British Standards House, 2, Park St., W.1.	Mayfair 9000
CABAS	City and Borough Architects Society. C/o S. A. G. Cook, A.R.I.B.A., Borough Architect and Director of Housing, Town Hall, High Holborn, W.C.1.	Holborn 3411
CAS	County Architects' Society. C/o S. Vincent Goodman, F.R.I.B.A., Shire Hall, Bedford.	Bedford 67444
CCA	Cement and Concrete Association. 52, Grosvenor Gardens, S.W.1.	Belgravia 6661
CDA	Copper Development Association. 55, South Audley Street, W.1.	Grosvenor 8811
COID	Council of Industrial Design. 28, Haymarket, S.W.1.	Trafalgar 8000
CPRE	Council for the Preservation of Rural England. 4, Hobart Place, S.W.1.	Sloane 4280
CUC	Coal Utilization Council. 3, Upper Belgrave Street, S.W.1.	Sloane 9116
CVE	Council for Visual Education. 13, Suffolk Street, Haymarket, S.W.1.	Reading 72255
DIA	Design and Industries Association. 13, Suffolk Street, S.W.1.	Whitehall 0540
EJMA	English Joinery Manufacturers' Association (Incorporated). Sackville House, 40, Piccadilly, W.1.	Regent 4448
EPNS	English Place-Name Society. 7, Selwyn Gardens, Cambridge.	
FAS	Faculty of Architects and Surveyors. 68, Gloucester Place, W.1.	Welbeck 9966
FASS	Federation of Associations of Specialists and Sub-Contractors, 14, Bryanston Street, W.1.	Welbeck 1781
FBBDO	Fibre Building Board Development Organization Ltd. (Fidor), Stafford House, Norfolk Street, W.C.2.	Covent Garden 3008
FBI	Federation of British Industries. 21, Tothill Street, S.W.1.	Whitehall 6711
FC	Forestry Commission. 25, Savile Row, W.1.	Regent 0221
FCMI	Federation of Coated Macadam Industries. 37, Chester Square, S.W.1.	Sloane 1002
FDMA	The Flush Door Manufacturers Association Ltd. Trowell, Nottingham.	Ilkeston 623
FLD	Friends of the Lake District. Pennington House, nr. Ulverston, Lancs.	Ulverston 201
FMB	Federation of Master Builders. 33, John Street, W.C.1. Tel.: Chancery 7583 (6 lines)	
FPC	The Federation of Painting Contractors, St. Stephen's House, S.W.1.	Whitehall 3902
FRHB	Federation of Registered House Builders. 82, New Cavendish Street, W.1.	Langham 4341
GPDA	Gypsum Plasterboard Development Association. 11, Ironmonger Lane, E.C.2.	Monarch 8888
GC	Gas Council. 1, Grosvenor Place, S.W.1.	Sloane 4554
GG	Georgian Group. 2, Chester Street, S.W.1.	Belgravia 3081
HC	Housing Centre. 13, Suffolk Street, Pall Mall, S.W.1.	Whitehall 2881
IAAS	Incorporated Association of Architects and Surveyors. 29, Belgrave Square, S.W.1.	Belgravia 3755
ICA	Institute of Contemporary Arts. 17-18, Dover Street, Piccadilly, W.1.	Grosvenor 6186
ICE	Institution of Civil Engineers. 1, Great George Street, S.W.1.	Whitehall 4577
IEE	Institution of Electrical Engineers. Savoy Place, Victoria Embankment, W.C.2.	Temple Bar 7676
IES	Illuminating Engineering Society. 32, Victoria Street, S.W.1.	Abbey 5215
IGE	Institution of Gas Engineers. 17, Grosvenor Crescent, S.W.1.	Sloane 8266
IHVE	Institution of Heating and Ventilating Engineers. 49, Cadogan Square Sloane 1601/3158	
IIBDID	Incorporated Institute of British Decorators and Interior Designers, 100, Park Street, Grosvenor Square, W.1.	Mayfair 7086

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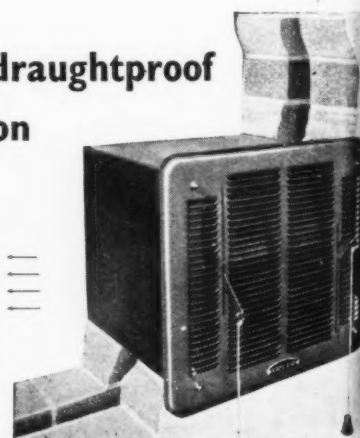
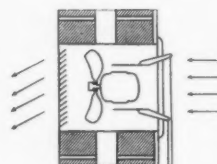
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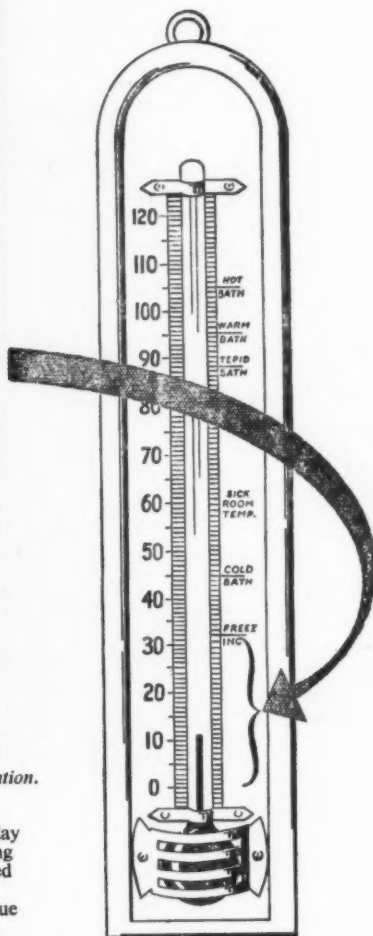
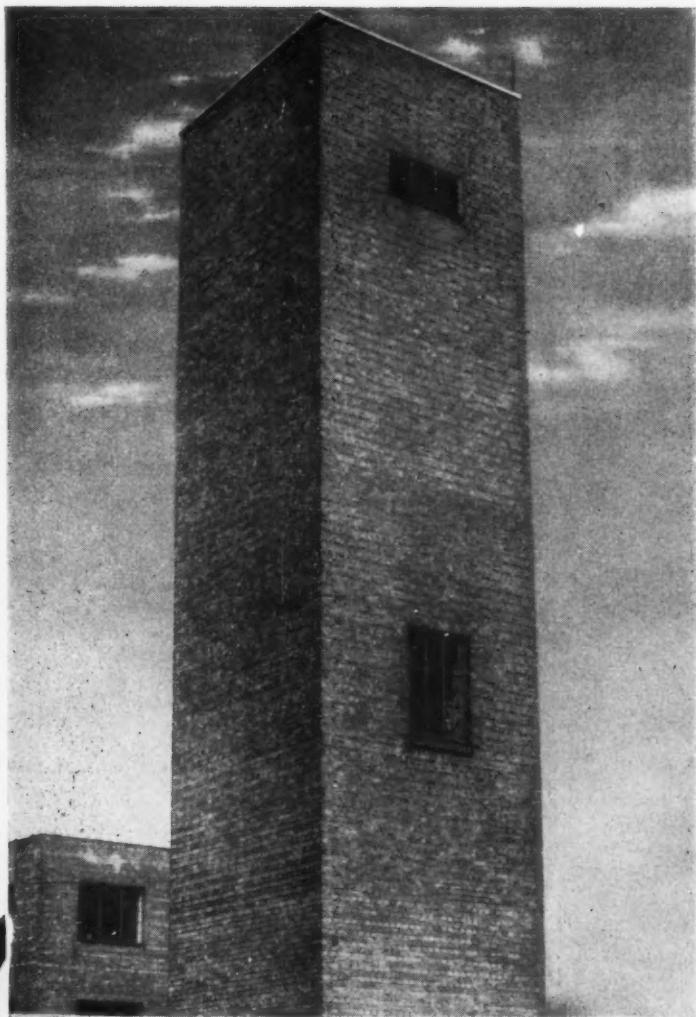
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Contractors: Messrs. R. Mathews Ltd., 25, Villiers Street, Sunderland.

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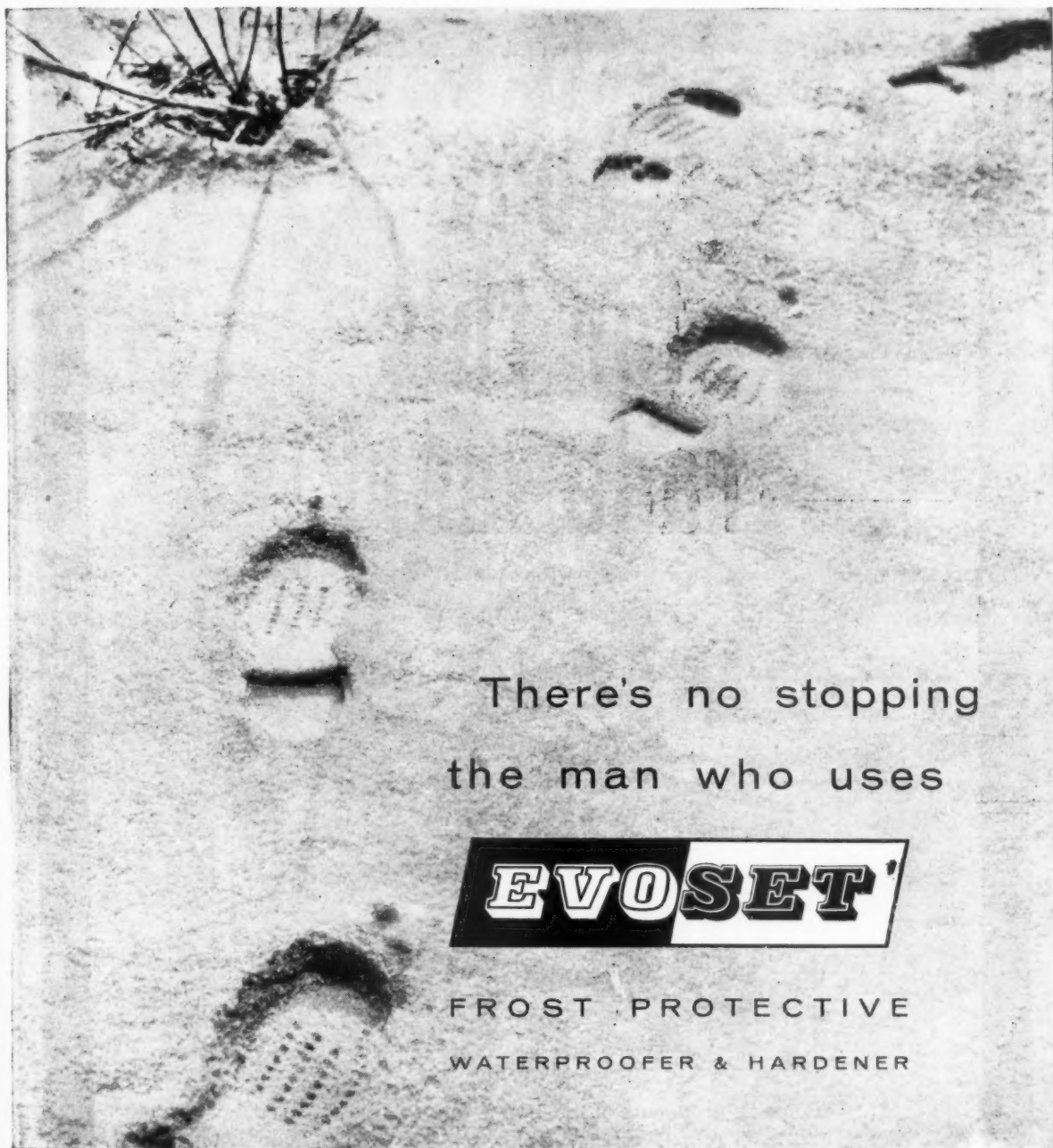
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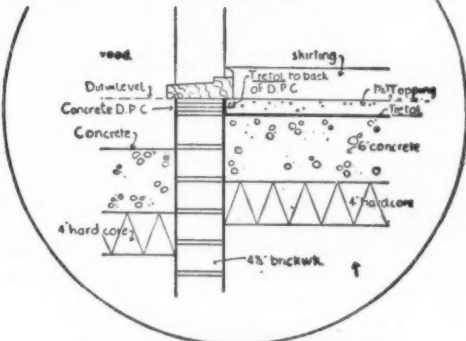
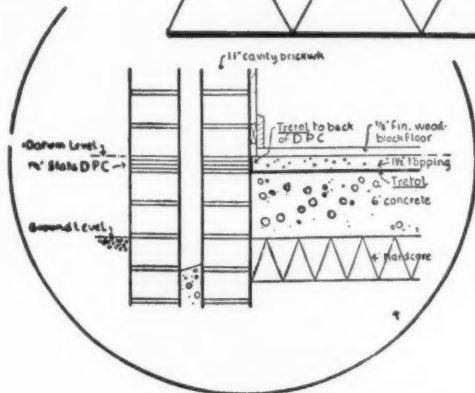
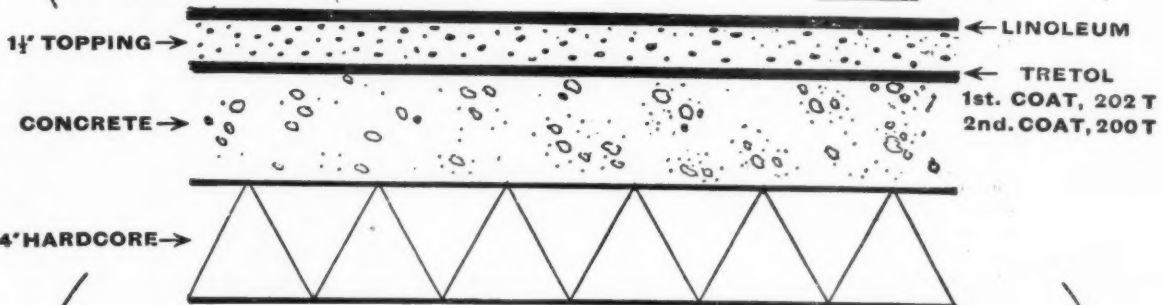
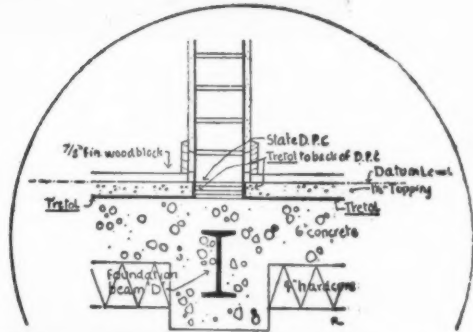
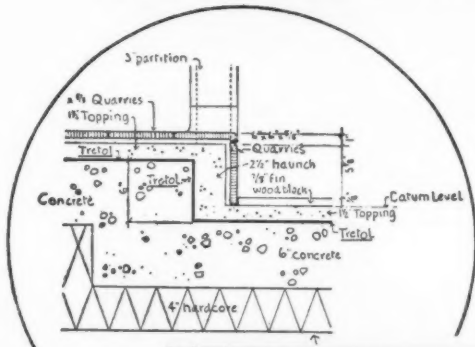
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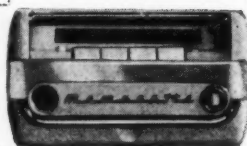
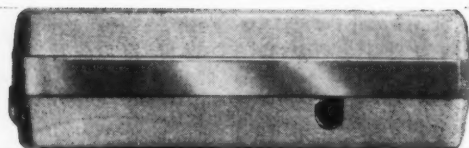
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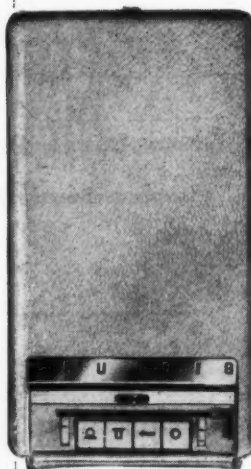
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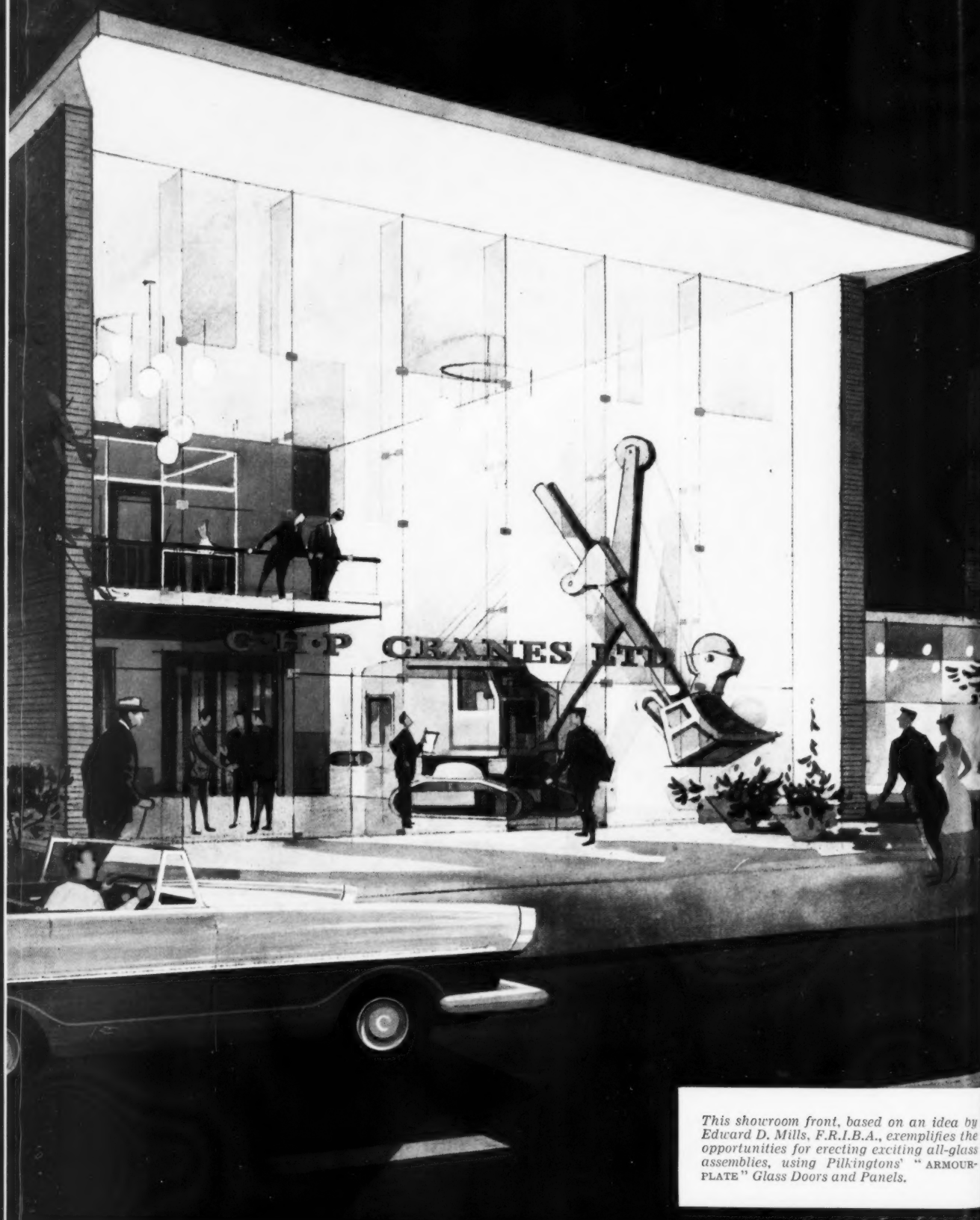
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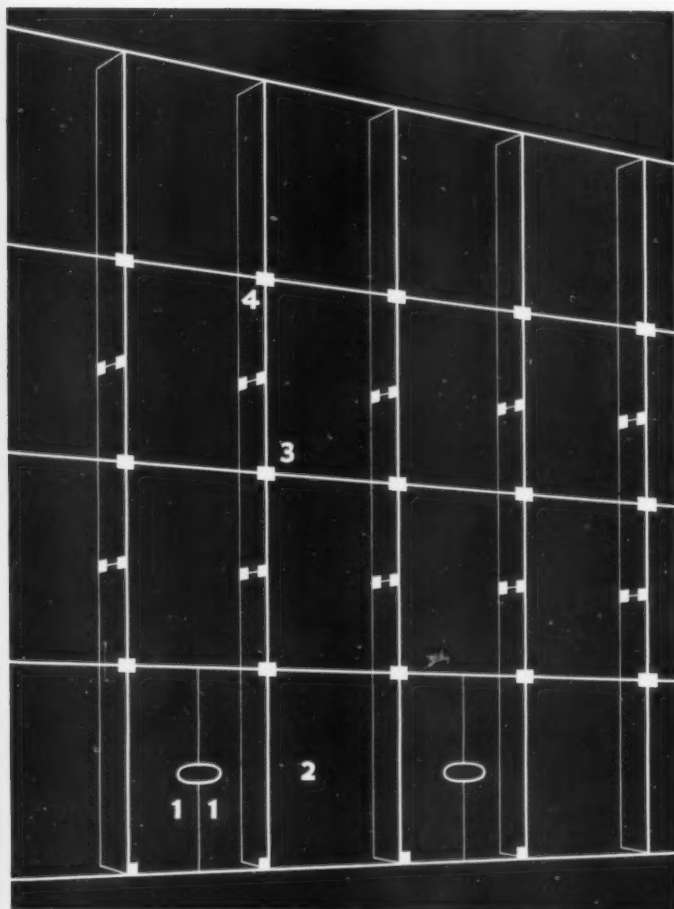
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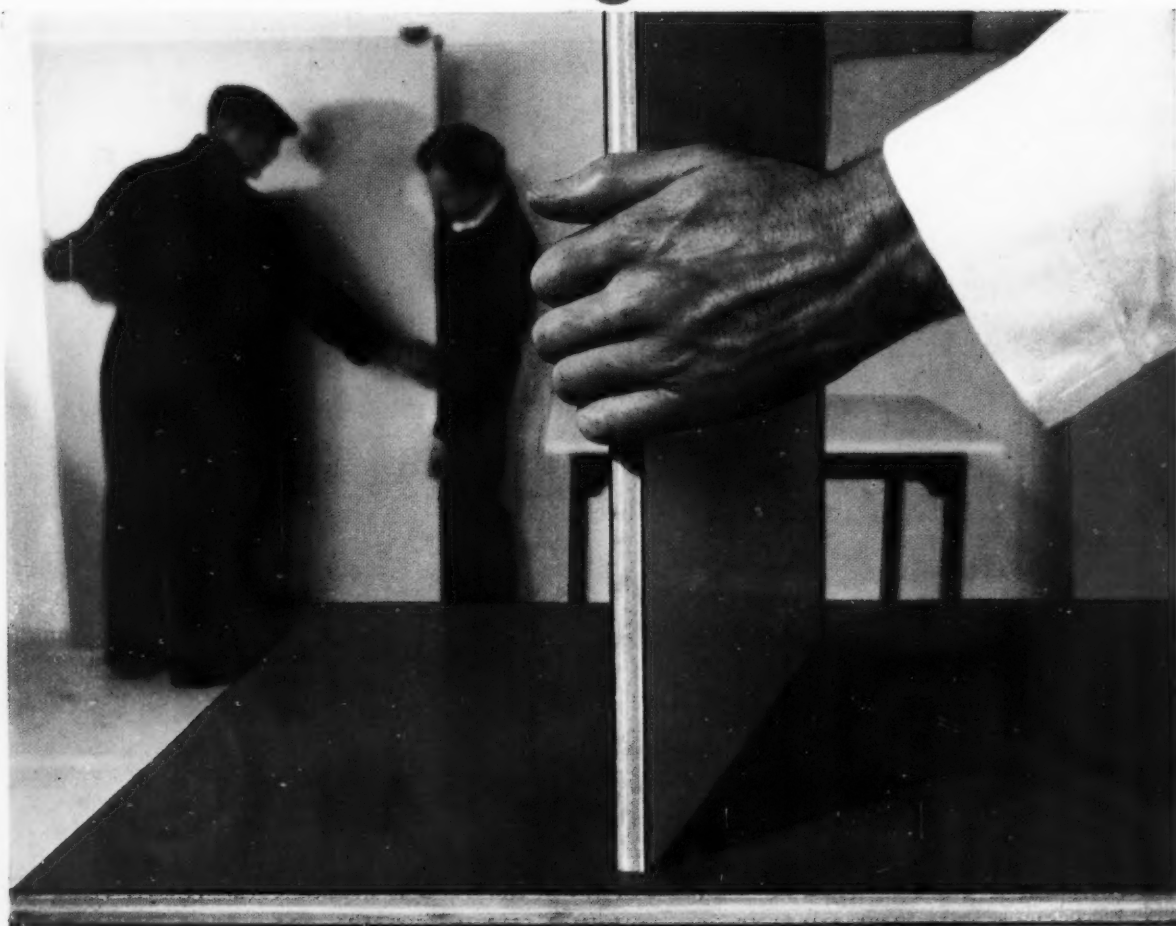
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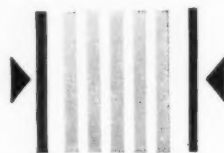


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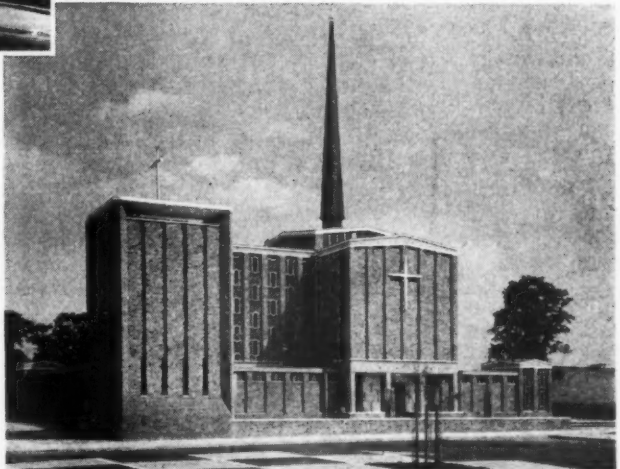
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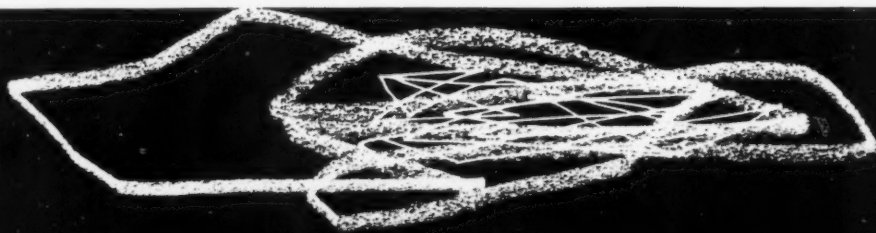
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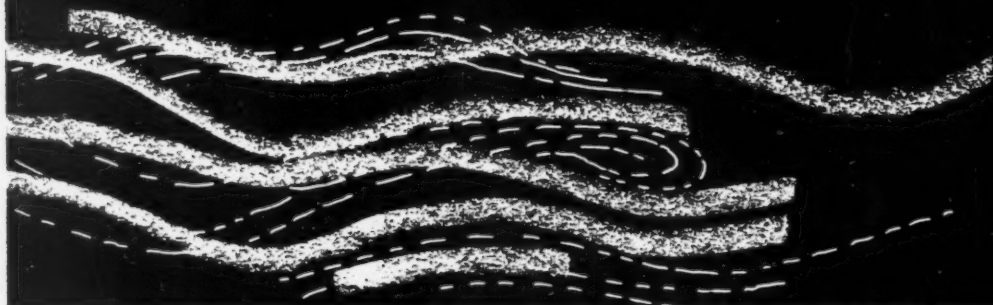
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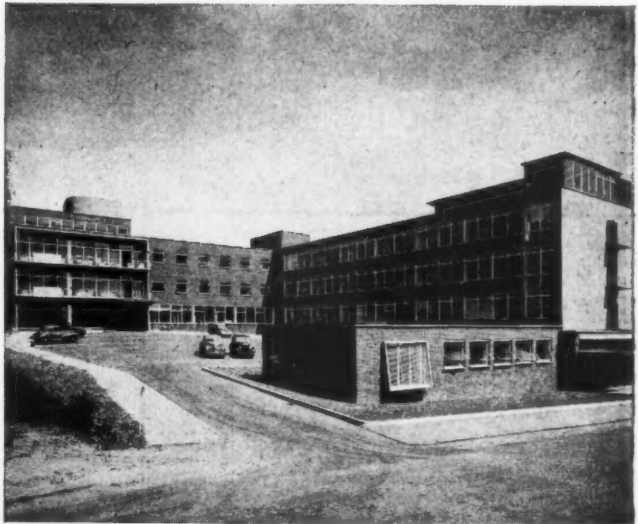
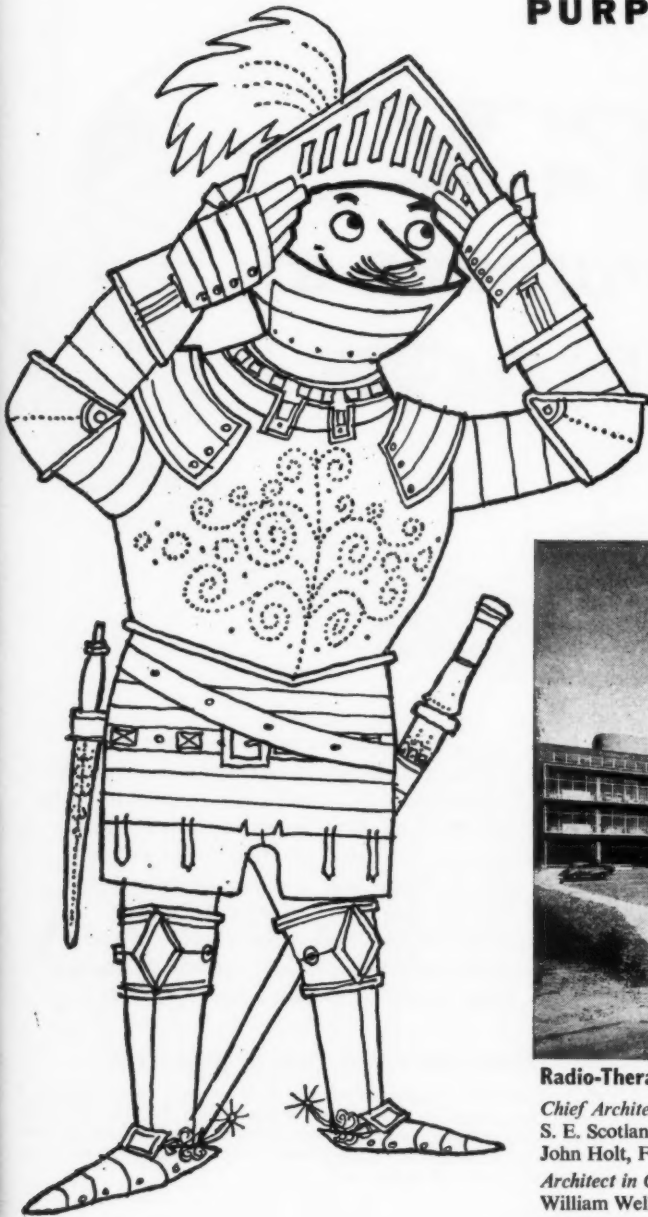


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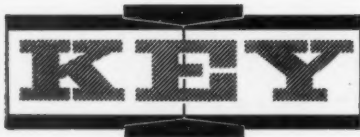
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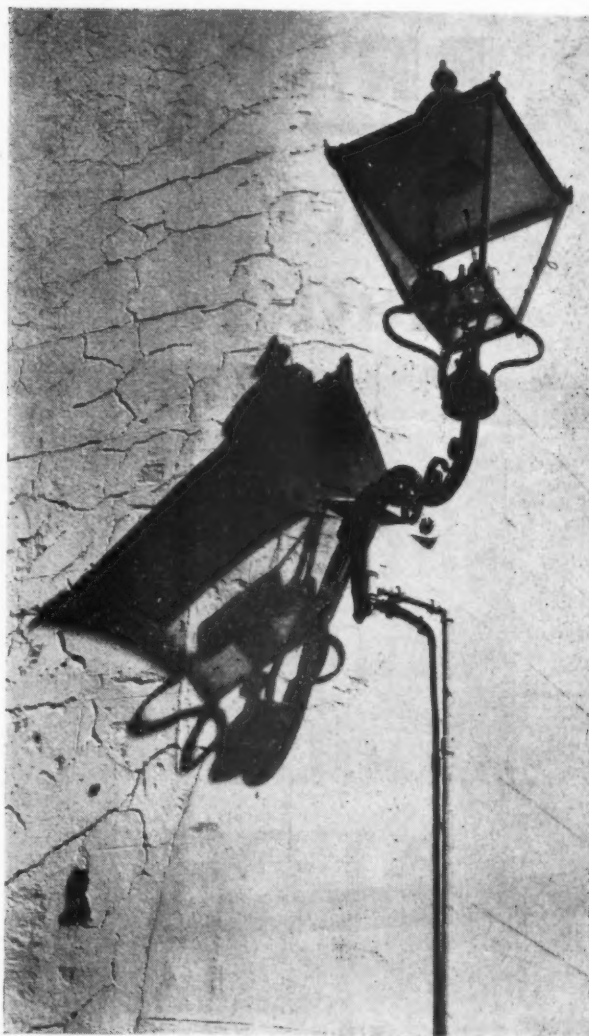


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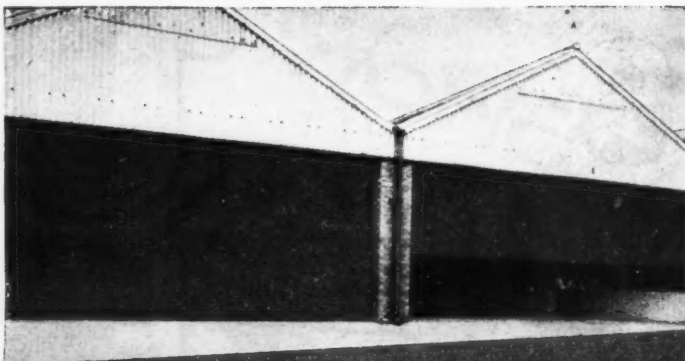


Eric de Marc

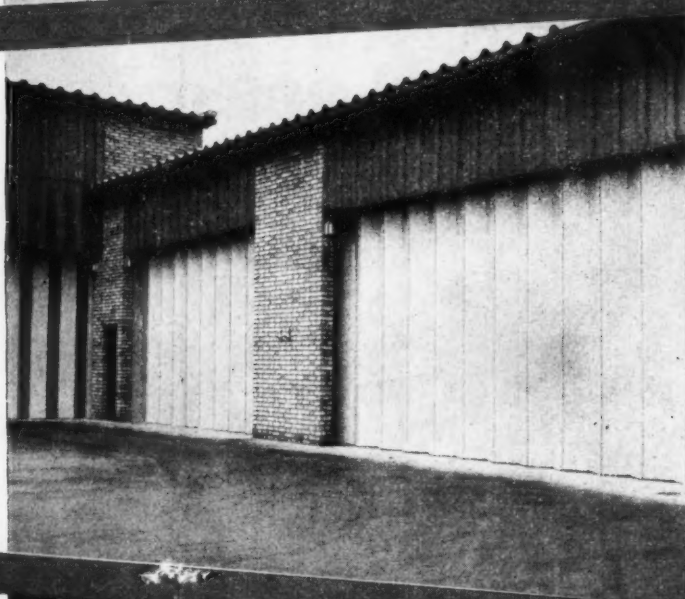
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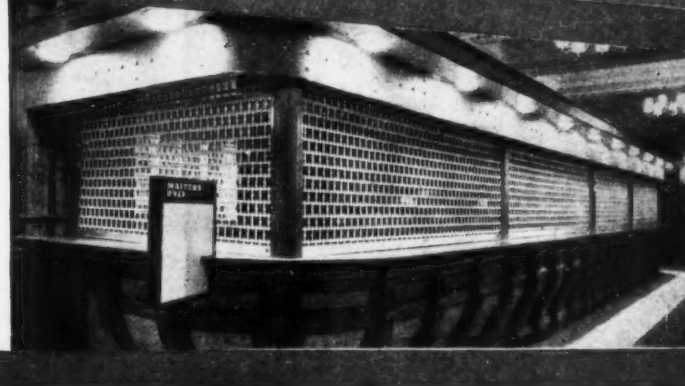
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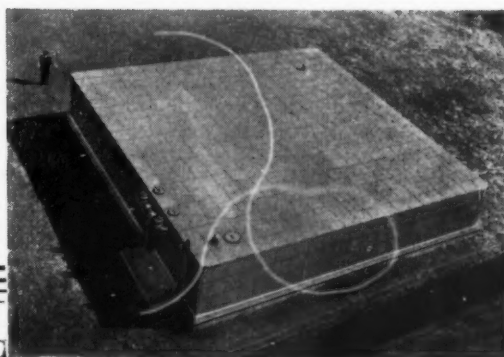
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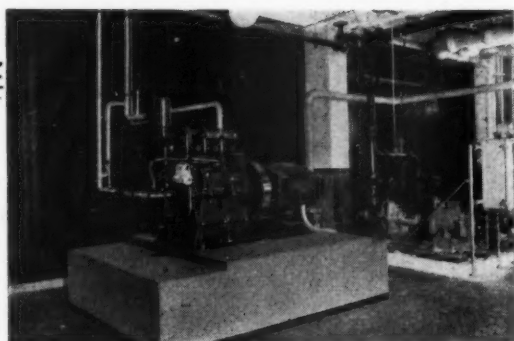
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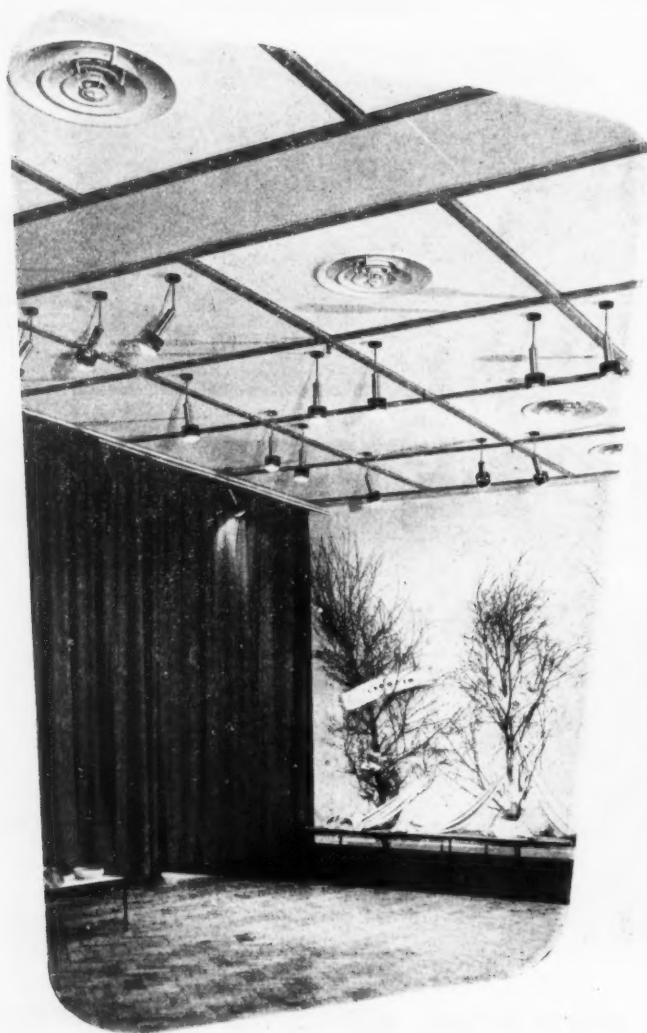
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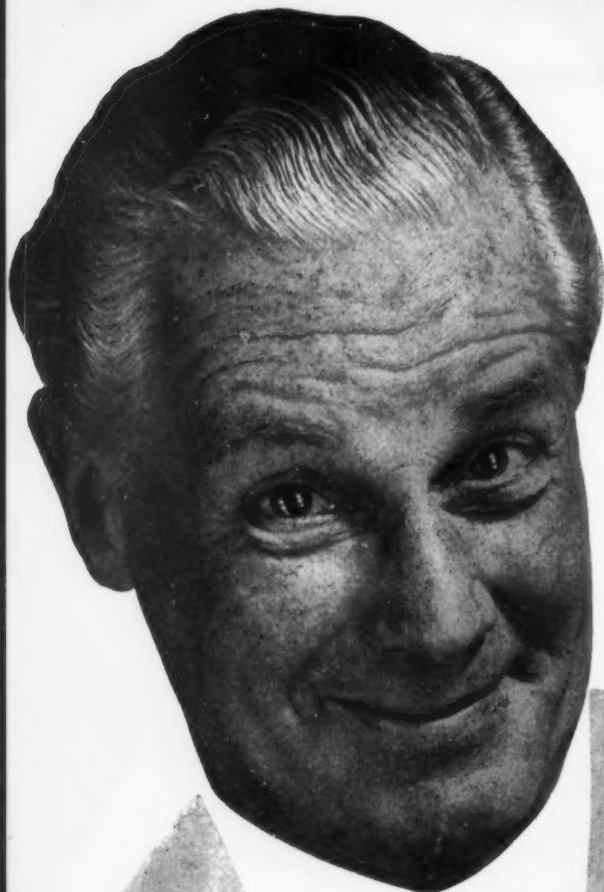


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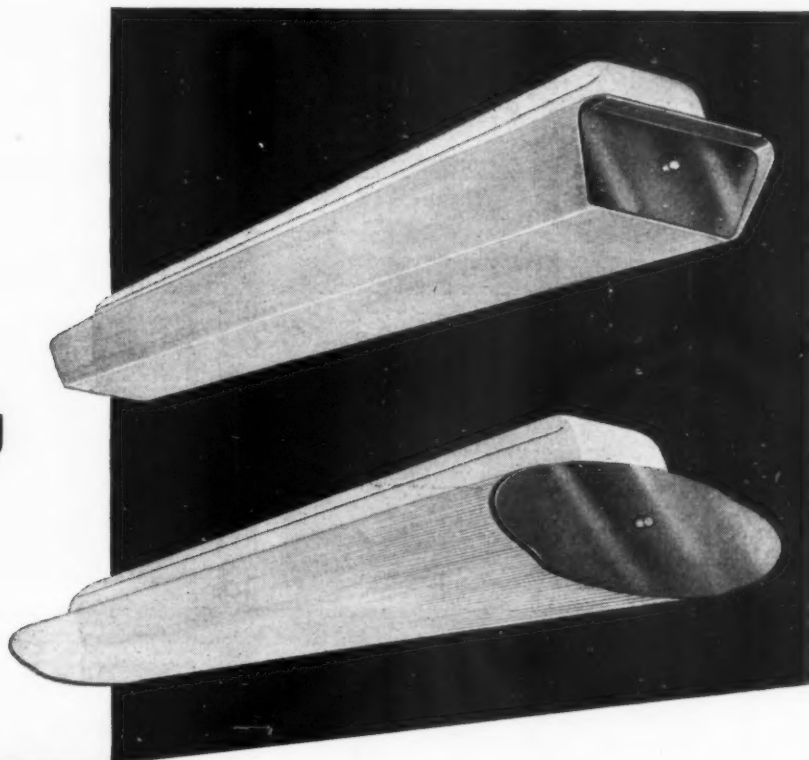
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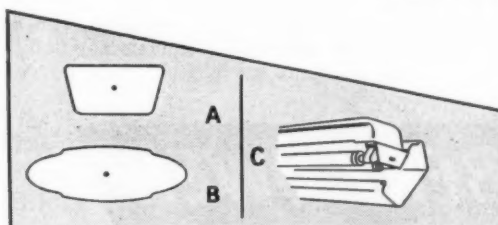
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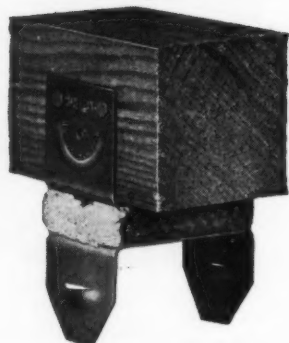


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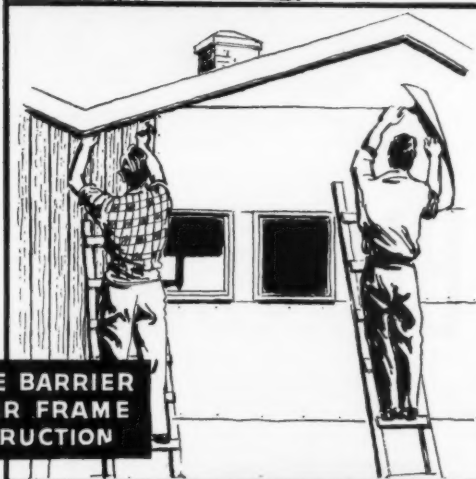
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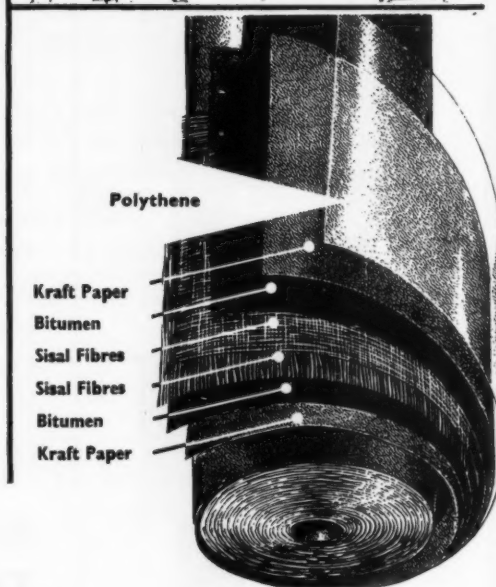
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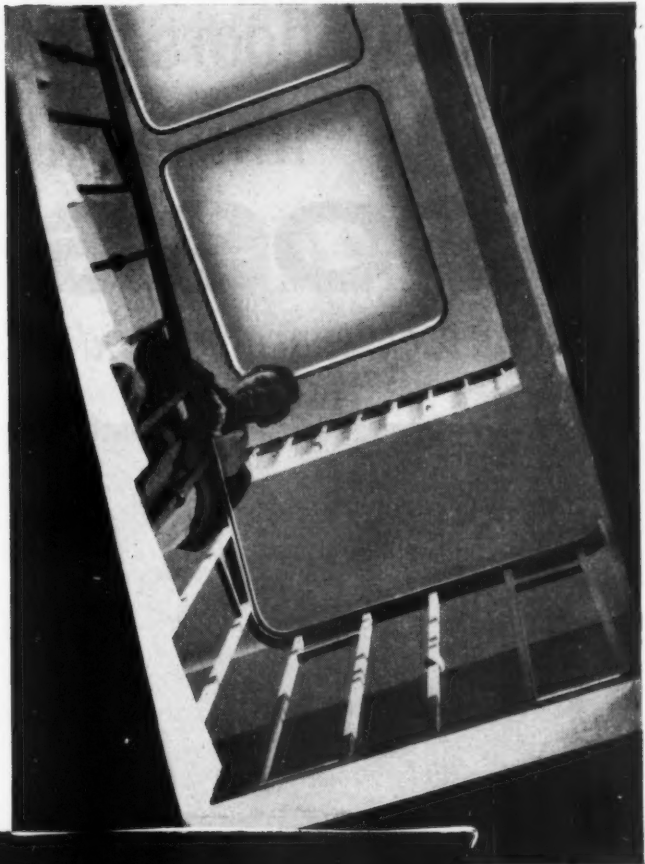


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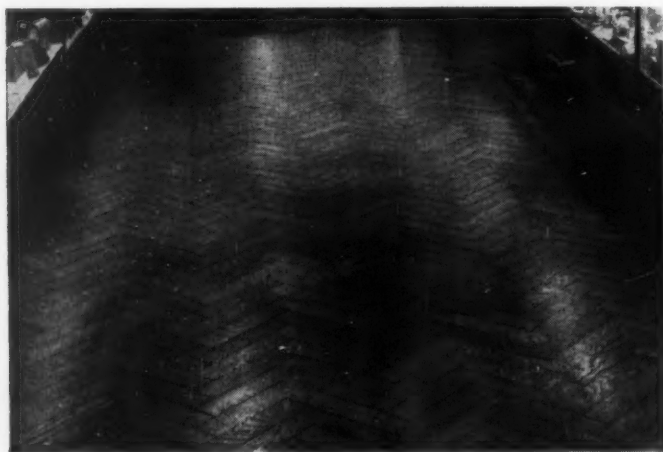
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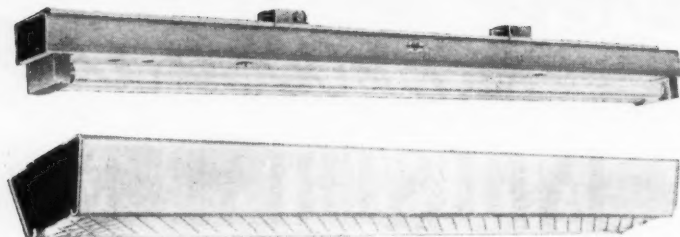


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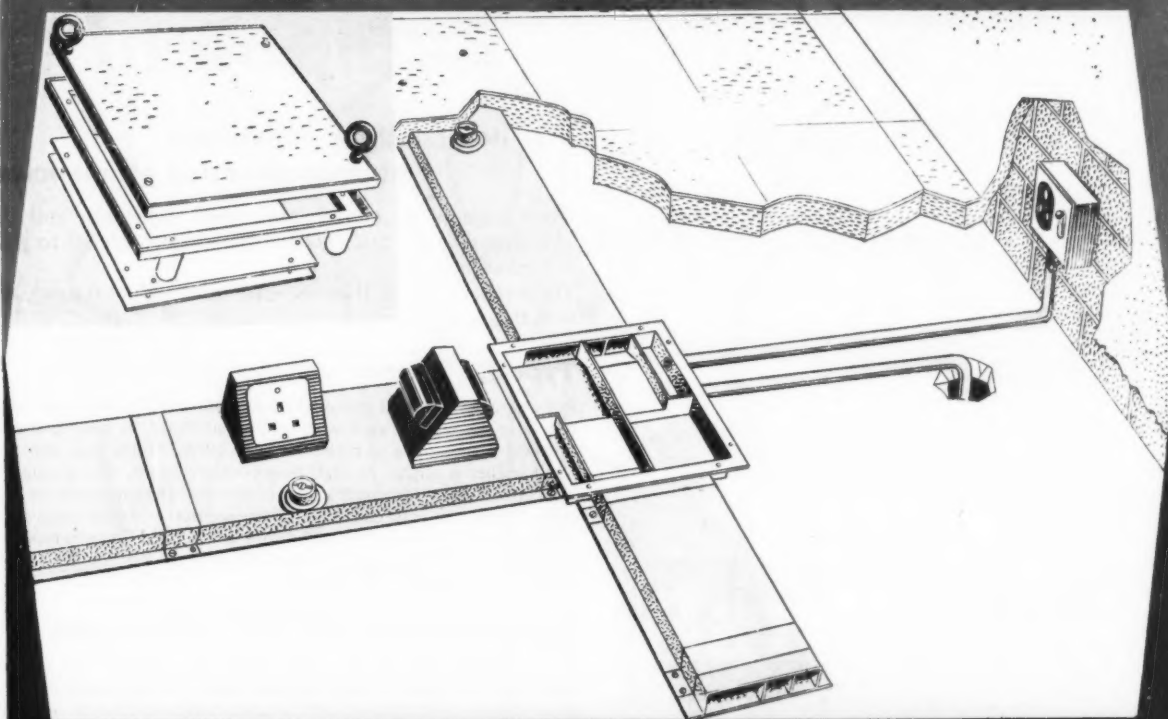
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For capacities above 10 gallons per hour, incorporating one small and one large air register, each with its own atomiser, to give optimum efficiency whether one or both are in operation. At low flow only the small burner is alight. At high flow both are alight, thus giving an ideal combination for variable load conditions. Design allows for hot oil circulation to both atomisers before ignition to ensure clean start and self cooling of large burner on shut down. Used for most types of heating and industrial boilers, with 220 secs. oil and, on the larger models, 950 secs. or 3,500 secs. oil.

Type M Burner *Modulating Automatic Control*

For Horizontal Shell Boilers. Spill return type atomiser with output range of 3 to 1. Specially developed air register to give clean narrow flame without impingement. Hot oil circulation on starting and self cooling on shut down. Suitable for 220 secs. 950 secs. or 3,500 secs. oil.

Type G Burner *On/Off Operation*

Generally similar to type F burner but uses 40 secs. oil.

Type F Burner

On/Off Operation

Available in capacities from 20 lb. to 90 lb. per hour, using 220 secs. oil. Factory-set air/oil ratios and pressures give suspended intense flame and do not require further adjustment.

Riley Incinerators

A range of incinerators, for disposal of rubbish and waste materials, is available. Write for full information.

Type 'HL' Burner

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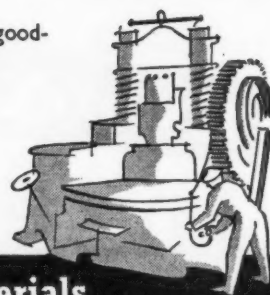


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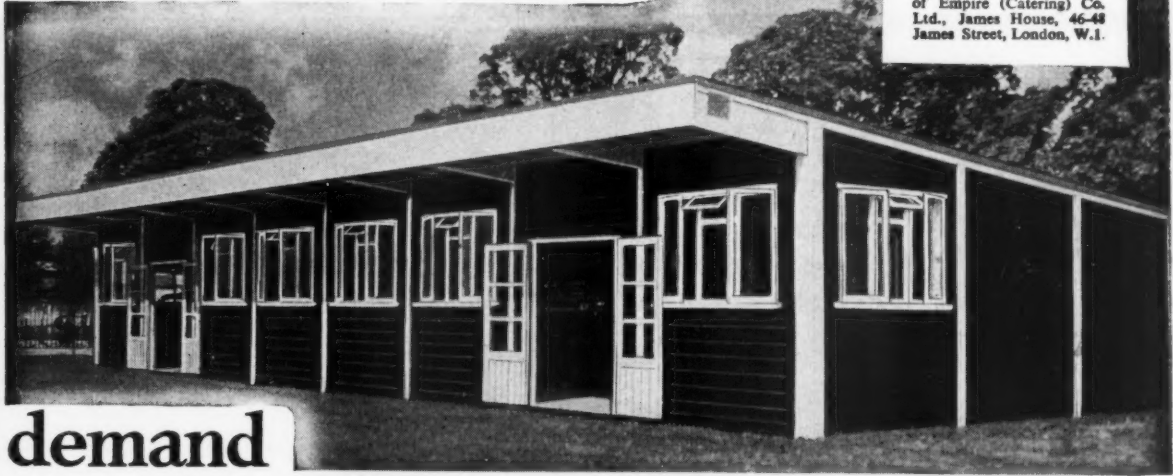
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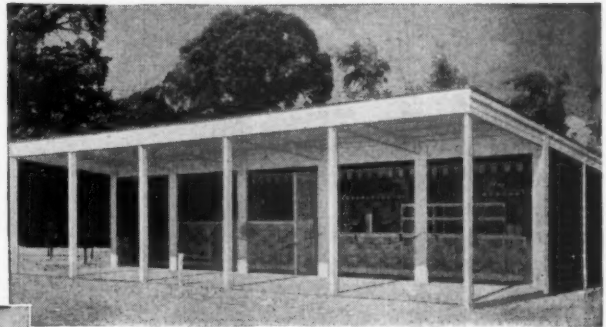
Photographs by courtesy of Empire (Catering) Co. Ltd., James House, 46-48 James Street, London, W.1.

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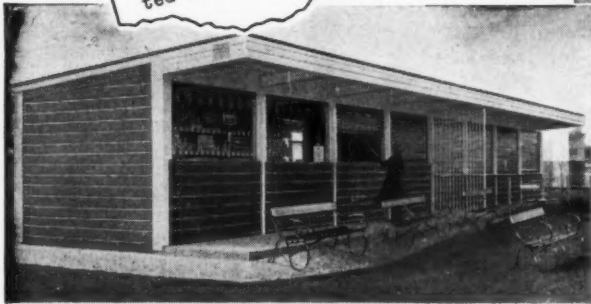
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Generally speaking, it is quicker and more economical to use one of Thorns standard systems of construction, but Thorns are equally capable of designing and producing buildings to a customer's special requirement.

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The new Redfyre 60

A controlled-burning fire with exceptionally clean modern lines. It's easy to install, and burns any solid fuel efficiently and very economically. Suitable for rooms up to 1,750 cubic feet, and for use with standard size 16" brick back. "An approved appliance." Also available with the famous Redfyre Bacboiler as a complete unit.

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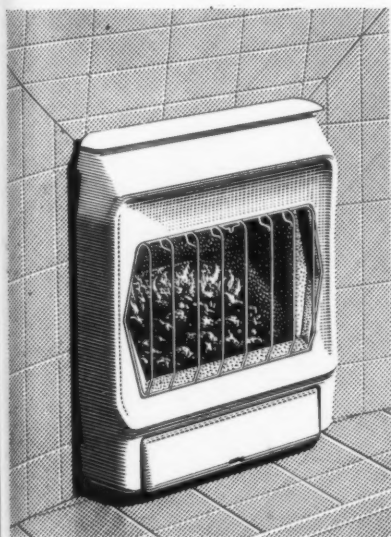
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low-cost heating with *top-designer looks*

Redfyre, whose famous Bacboilers put them years ahead in low-cost heating, now take the lead in tackling a new problem: matching really low cost with the best modern design. Styled to merge successfully with contemporary room schemes, the new Redfyres are equally suitable for modernising old property or for new build-

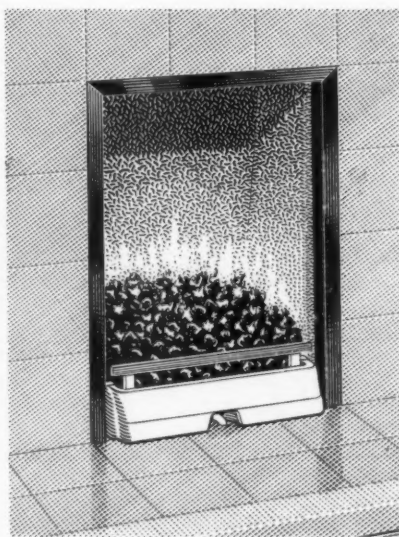
ing. And, as you'd expect from Redfyre, the whole range is very practical, very economical and remarkably low in initial cost.

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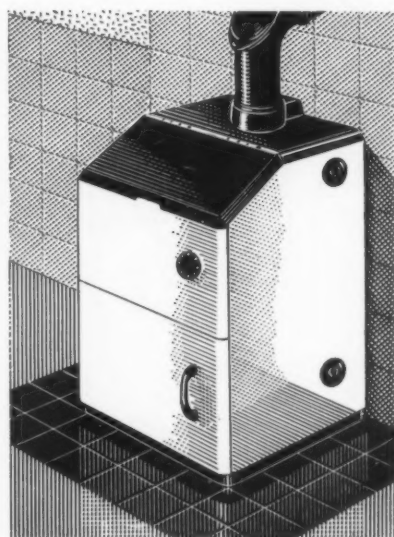
Redfyre Convector No. 2.

A superb new open convector fire which gives two-way warmth, by radiation and convection. An adjustable throat restrictor increases efficiency still further, giving far more comfort from far less fuel. It burns a wide range of fuels and is easy to install in almost any fireplace opening—no fire back is necessary. Suitable for rooms up to 2,000 cubic feet. *"An approved appliance."*



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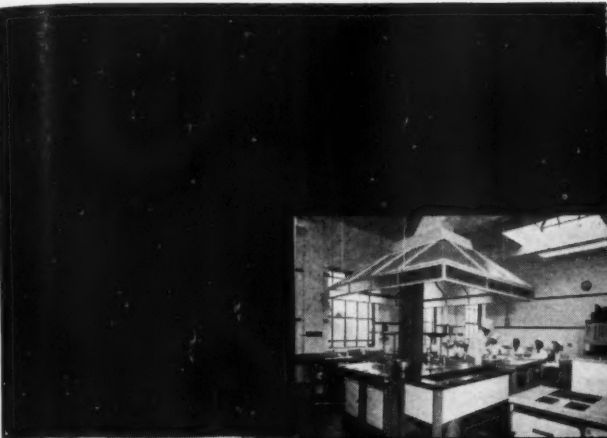
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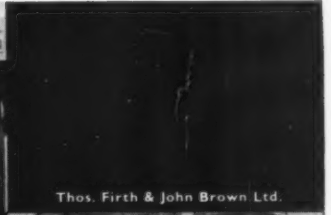
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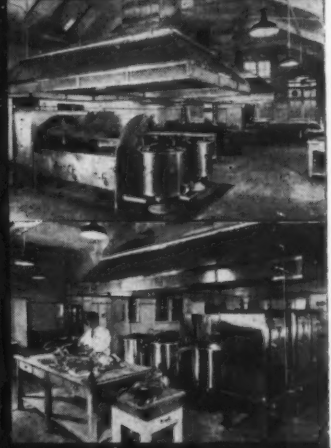
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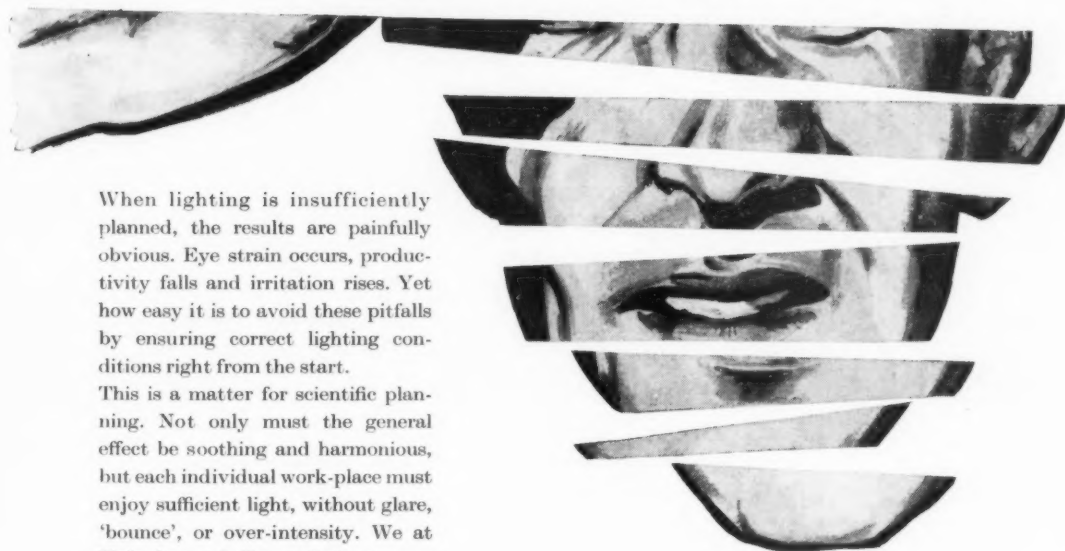
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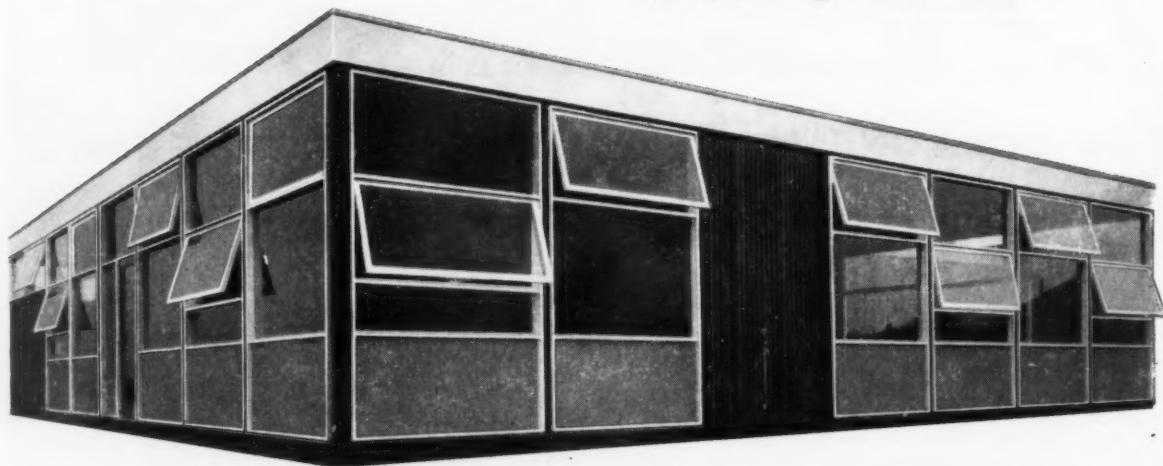


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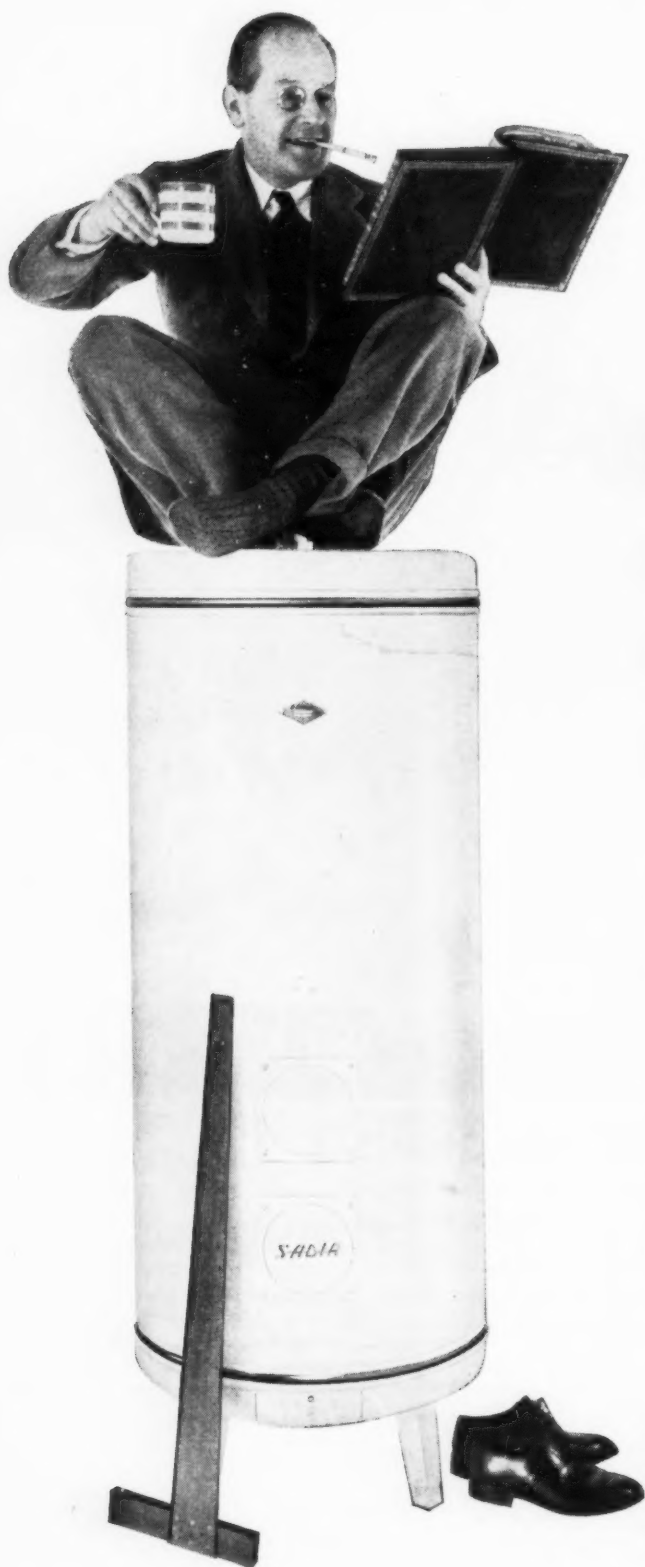
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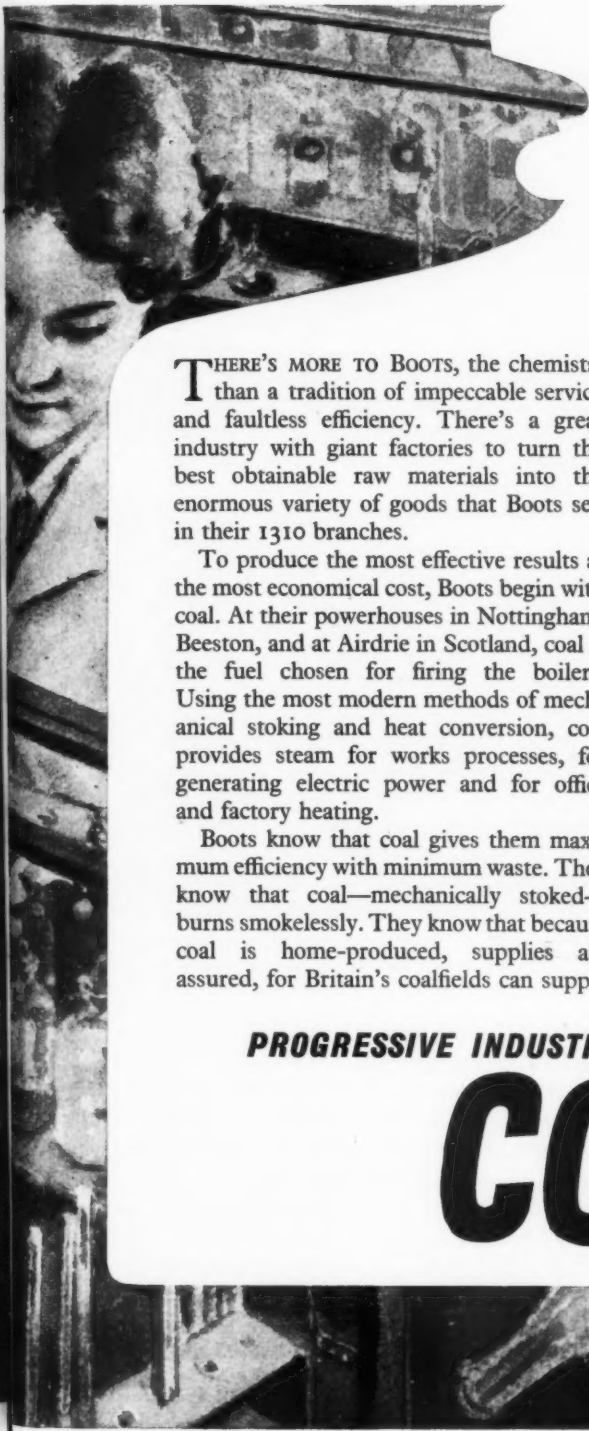
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Boots formula



for power – Coal



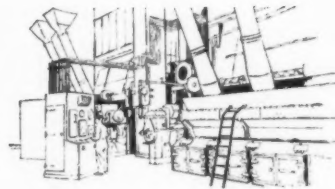
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To produce the most effective results at the most economical cost, Boots begin with coal. At their powerhouses in Nottingham, Beeston, and at Airdrie in Scotland, coal is the fuel chosen for firing the boilers. Using the most modern methods of mechanical stoking and heat conversion, coal provides steam for works processes, for generating electric power and for office and factory heating.

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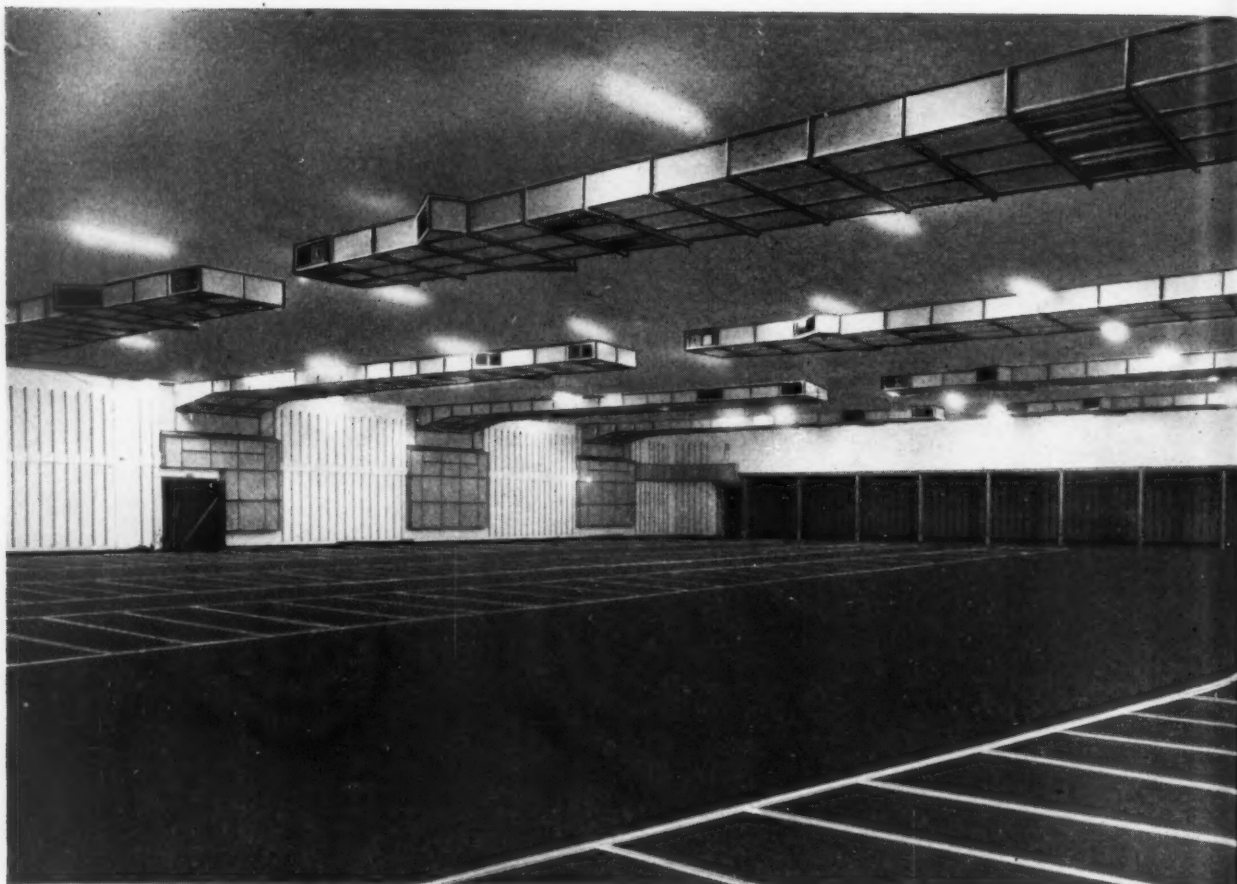
**Here are some key facts and figures
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Annual fuel consumption :	63,000 tons of coal

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● Superb finish throughout.

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● Big capacity. From the "Bunnie" to the "Warden" Wandsworth incinerators cope just that much better.

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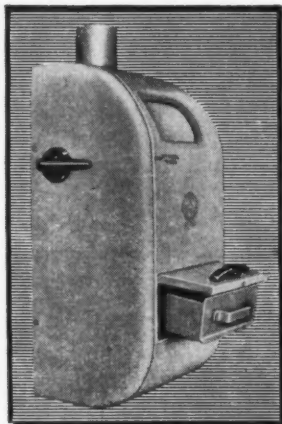
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shown below, is available for surface, flush or pedestal mounting.



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Wandsworth

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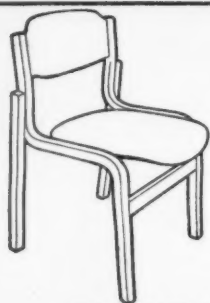
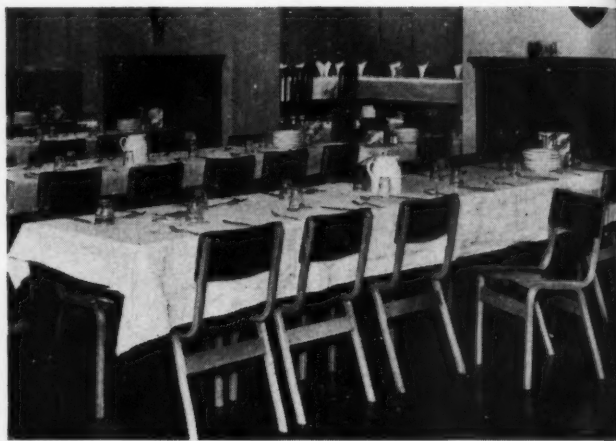
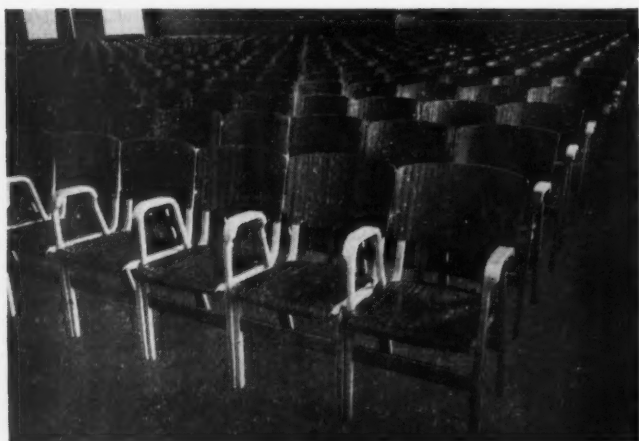


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Built on laminated frames made of layer upon layer of beech bonded together under pressure, Tecta Stacking Chairs have less joints—a chair's weakest points—therefore more strength. Designed to stand up to the most robust handling, the lamination process brings absolute protection against warp, dry rot or insect attack.

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There's no uneasy shuffling from people seated in Tecta chairs: seats and backrests are styled for comfort. Many of the chairs are available part or fully upholstered with hardwearing washable plastic or leathercloth over a foam interior.

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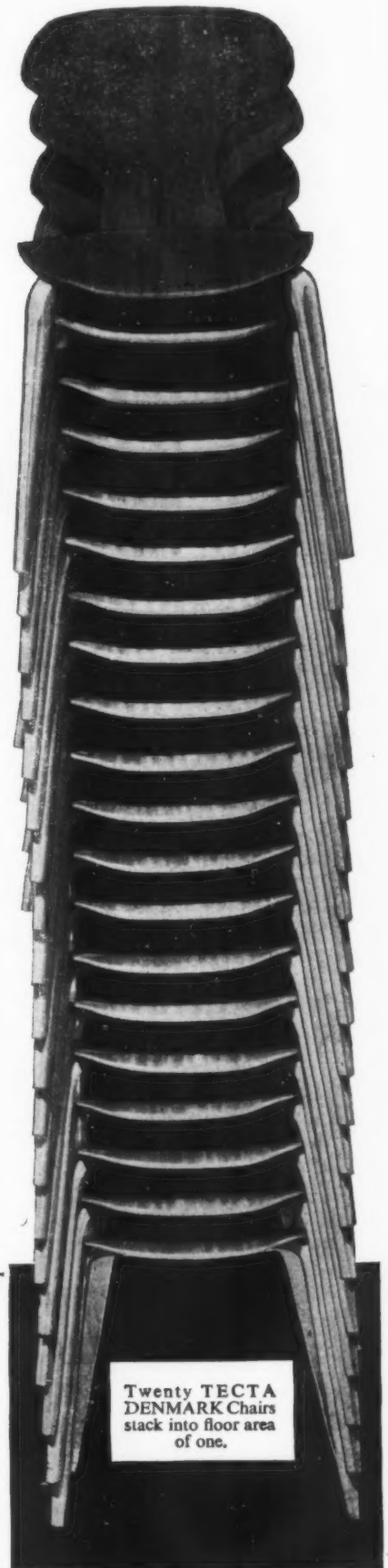
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Twenty TECTA
DENMARK Chairs
stack into floor area
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Illustrating the full range to: Tecta Furniture Ltd., (Dept. A.J.2) 119 New Bond Street, London, W.1

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4 m.m. holes at 15 m.m. centres. Depth of holes is arranged for maximum acoustic effect while corner holes are bored to half thickness, thus ensuring good grip when tiles are screwed or nailed to fixing grounds.

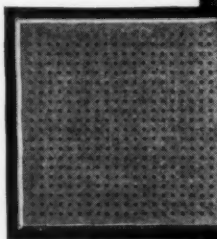
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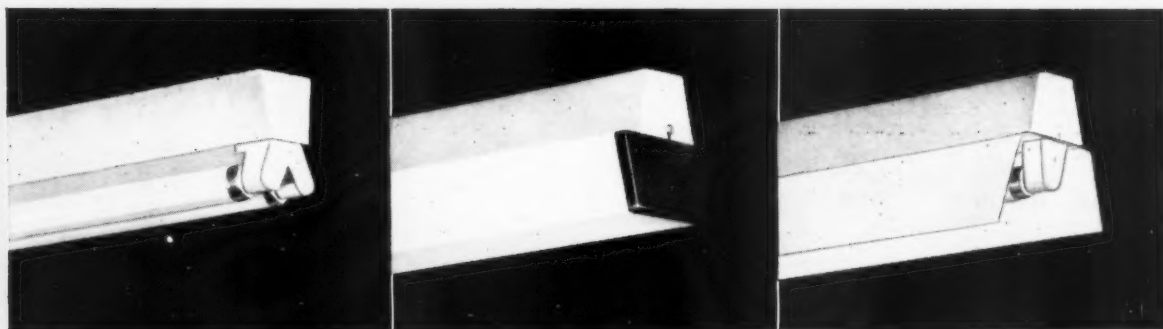
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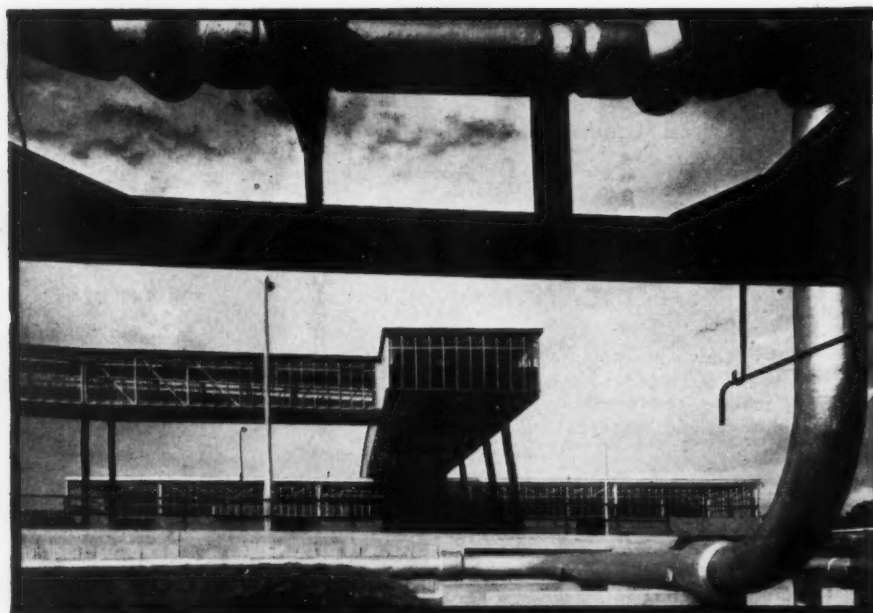
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The new Heinz factory at Wigan is the largest factory to be built in Britain since the war. Shown here is the ancillary can factory, clad in Williams & Williams "Aluminex" vertical patent glazing. The continuous opening lights are gear-operated to give critical control of ventilation.

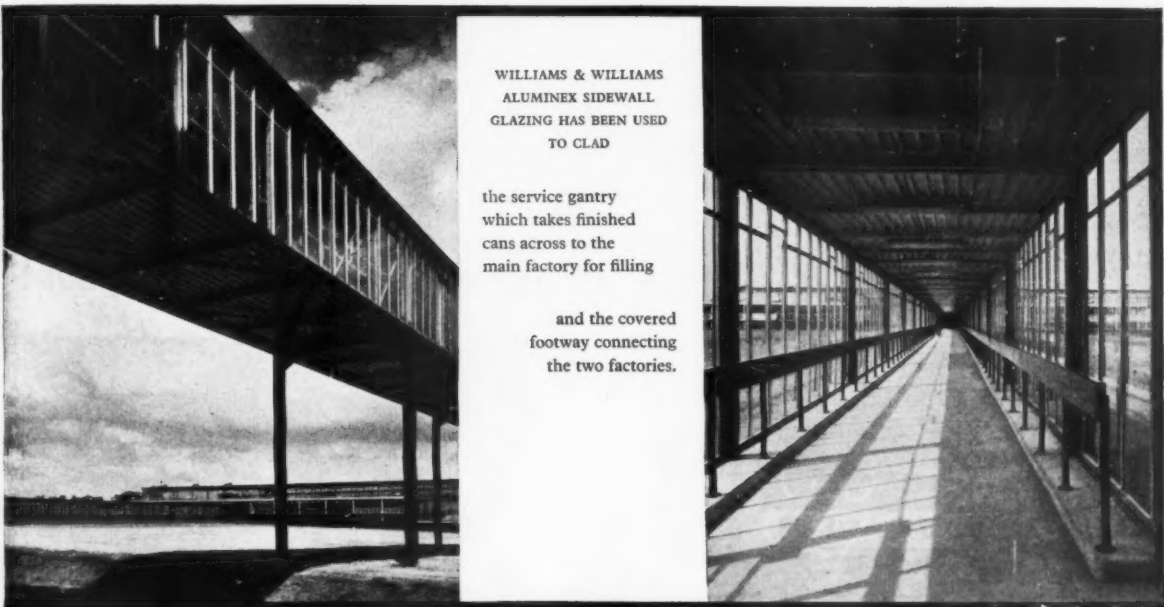
Architects:
J. Douglass Mathews
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The new Heinz factory is turning depressed Wigan into a boom area. By the time it is in full production it will be employing some 3,000 local people and taking up a good deal of the local agricultural produce, which is both abundant and high in quality.

The 127-acre site has a gradient of 1 in 40 which has been exploited to give the factory two working levels—both accessible to lorries.

Manufacture starts on the upper level with unloading, storage, preparation and cooking. Products are then gravity fed to the lower level for can filling, sterilization, packing, warehousing and finally dispatch.

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the service gantry
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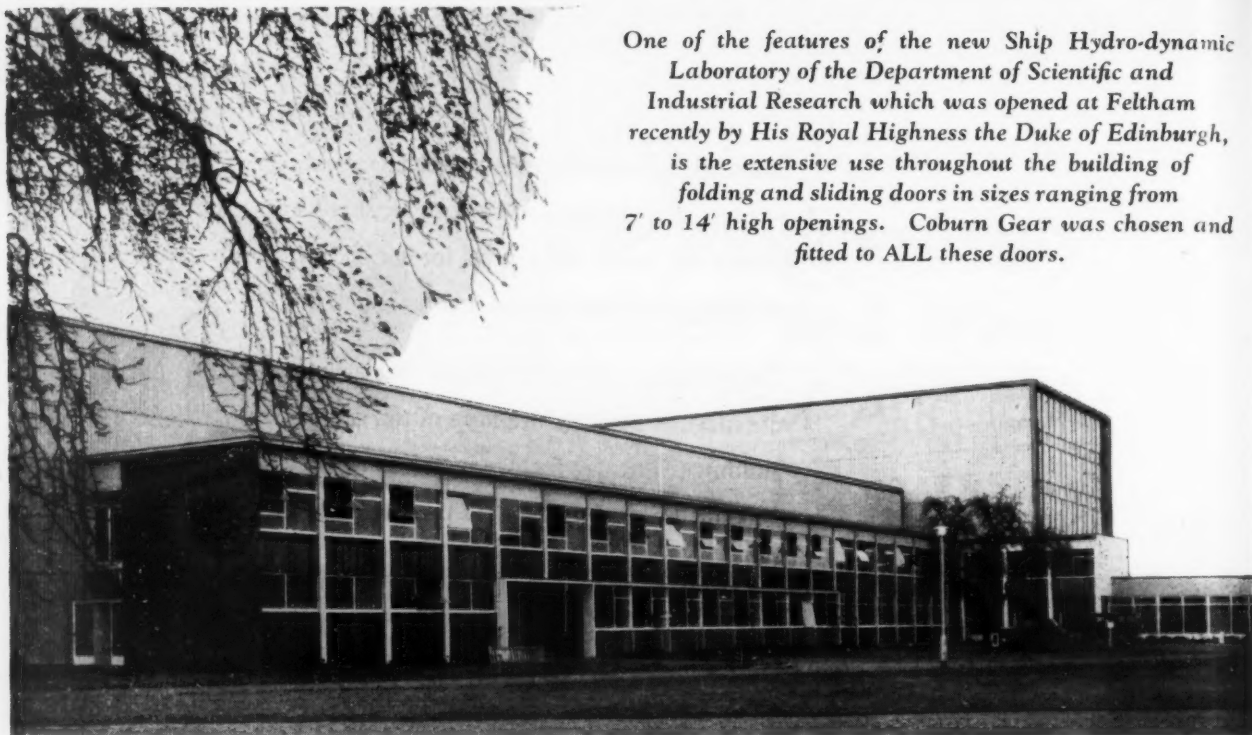
and the covered
footway connecting
the two factories.

and is linked to it by a service gantry
which feeds the finished cans into the
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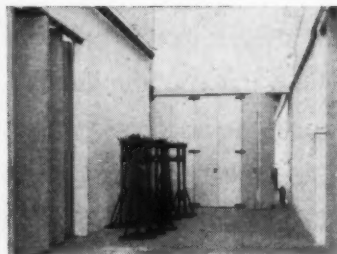
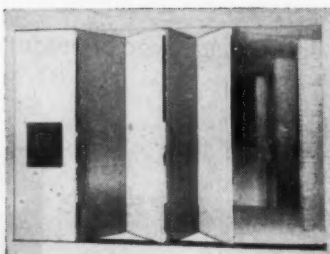
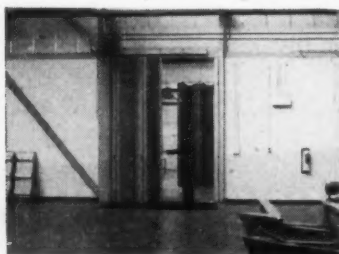
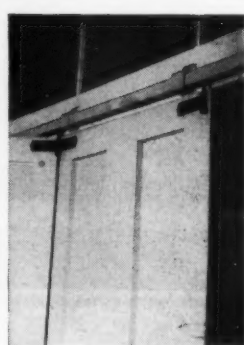
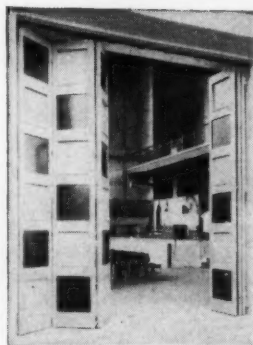
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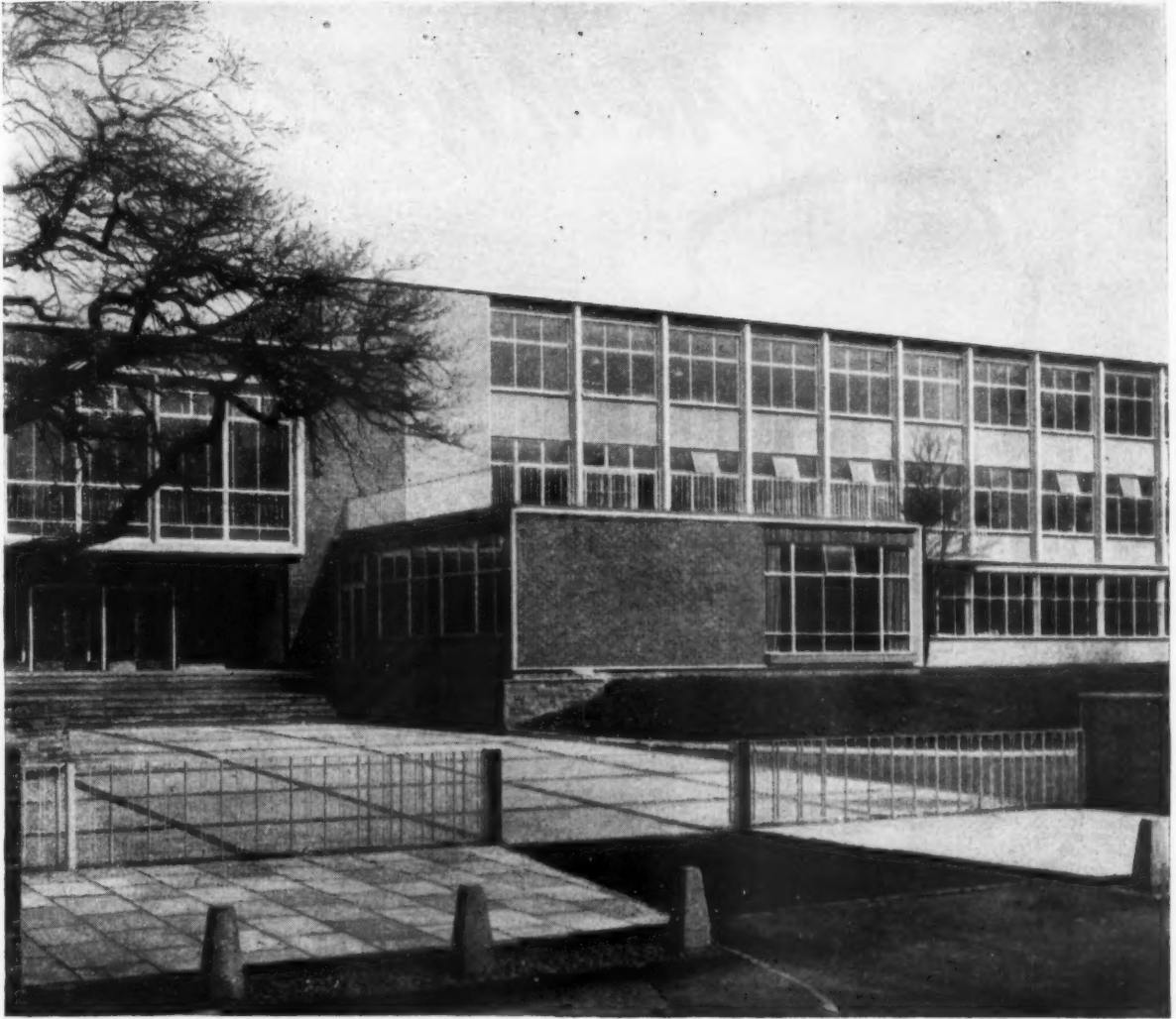
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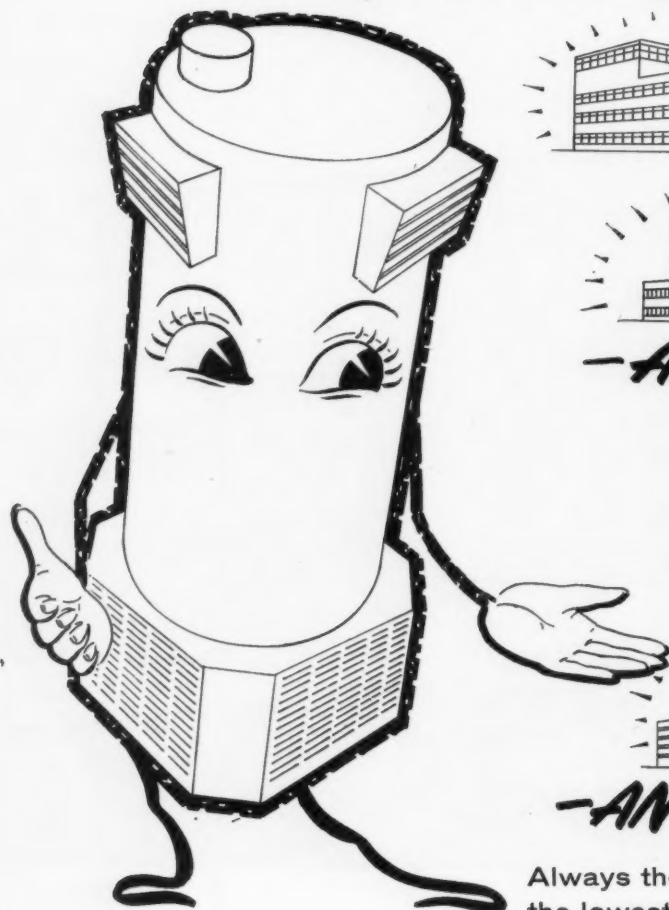
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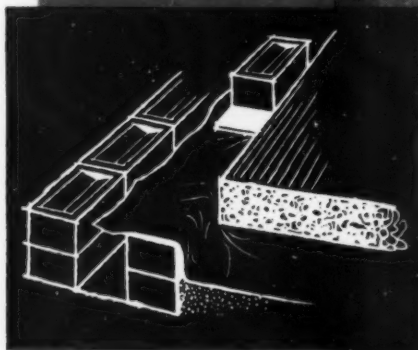
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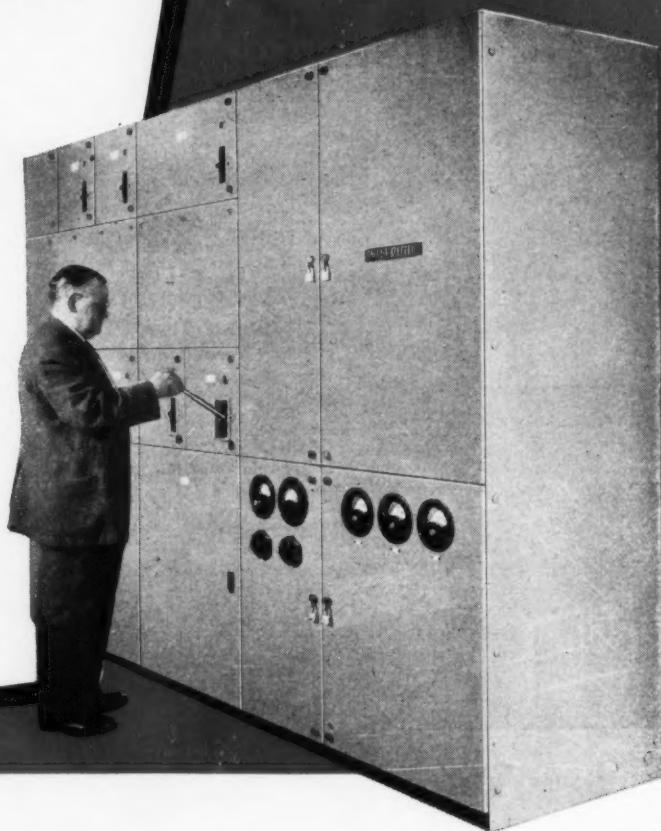
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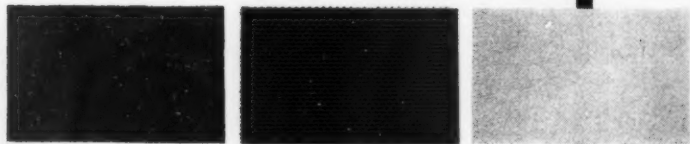
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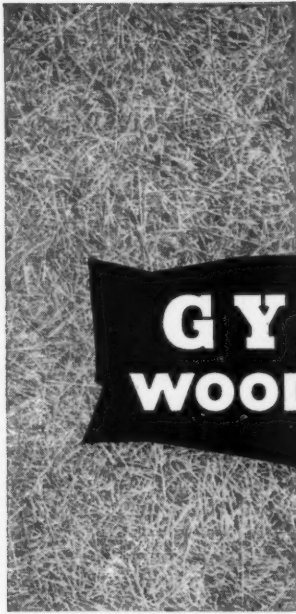


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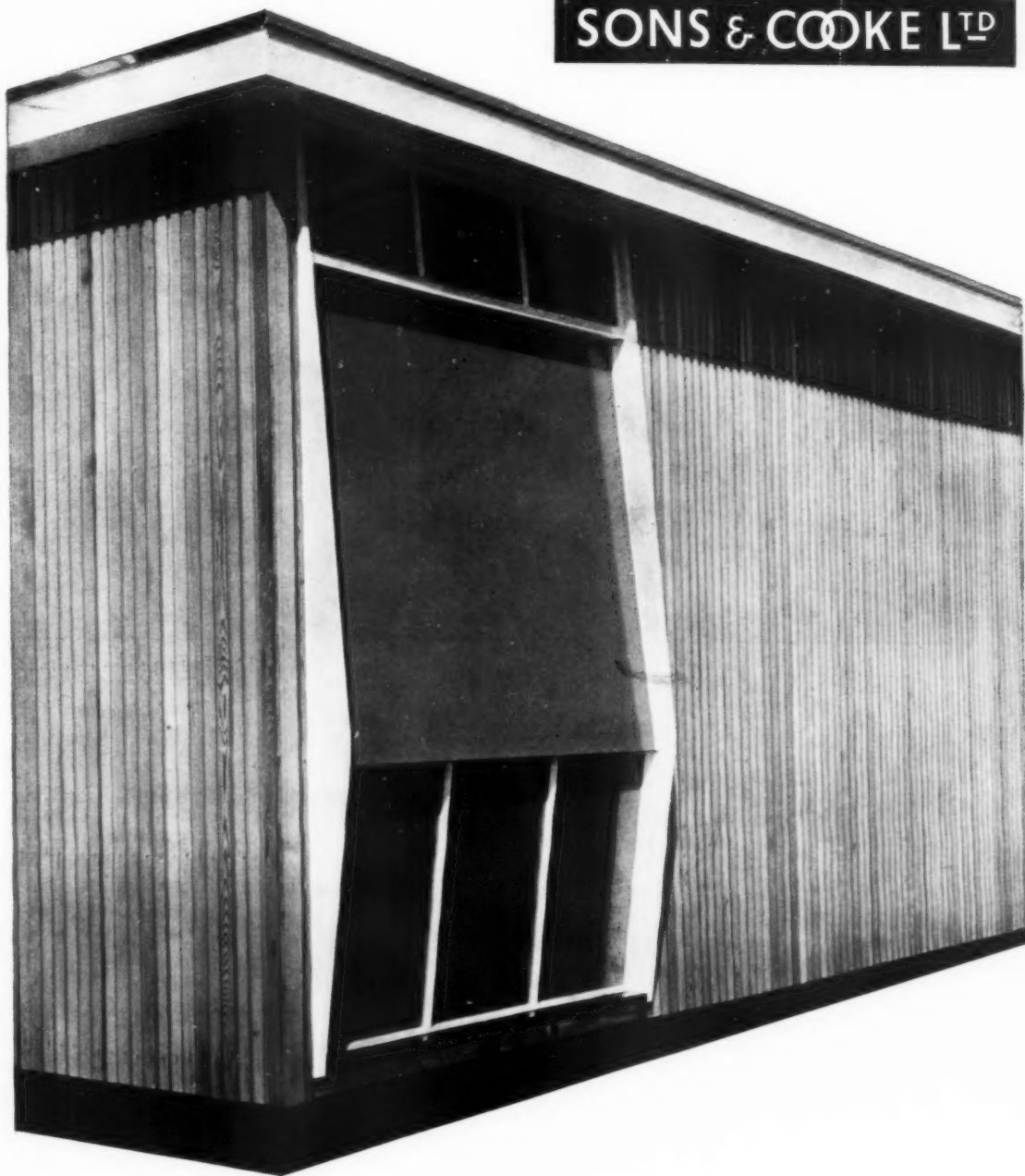
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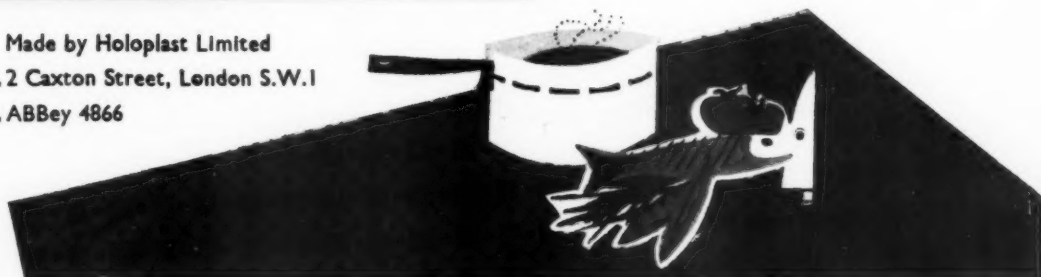
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The Architects' Journal

No.3378 Vol.131. January 14, 1960

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Eighteen thousand Marbleheads?

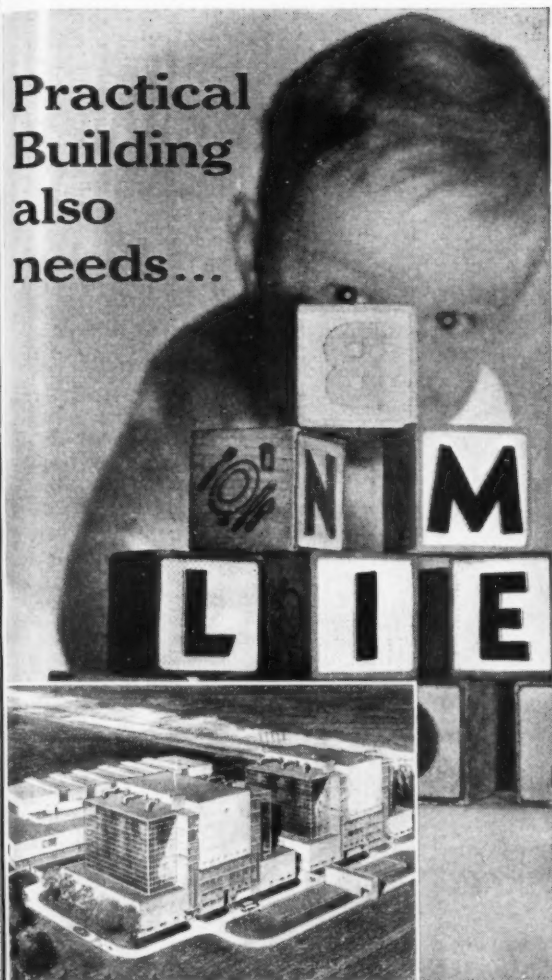
I like architects; I love architecture; I am grateful for the convenient arrangement whereby I—who am no architect—can be paid real spendable money for writing about architecture. But this is no mere marriage of convenience, I am devoted to the cause I have espoused.

But there are days when I wish I had taken up with snake charmers or fore-edge painters instead; days when I wonder why the human race puts up with the architectural profession; days when my greatest need is a bill of divorcement from the whole stupid shower.

One such day—scribe its name in black—was the Fifth of January last, when the architectural profession welcomed what promises to be a pretty stirring decade in the affairs of men by staying away in droves from a meeting of their Royal Institute. Admittedly there is nothing very unusual about massive abstention from the proceedings in Portland Place, but in this case the paper to be read by a distinguished speaker was on a subject that would have had any other body of men (except possibly Mr. Selwyn Lloyd, who is reported as saying that people aren't very interested in that sort of thing)—would have had any other body of men hanging from the chandeliers and swarming up the extract ducts.

As it was, Tom Margerison, editor of the *New Scientist*, gave his talk on "Design Problems of Space Travel" to a literally half-empty house. The RIBA, under the impression that architects are normal human beings with enquiring minds, had opened up the annexe at the back of the main hall, in anticipation of an overflow house, but the audience didn't quite fill the part to the left of the gangway in the body of the hall, and the place was so empty that you could

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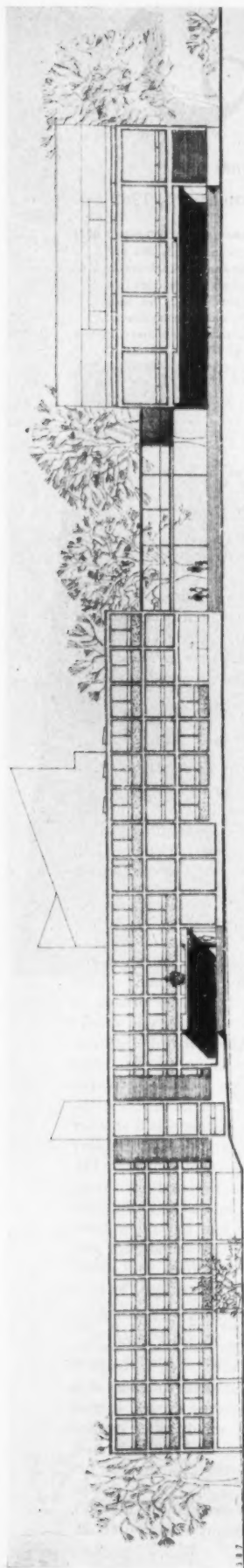
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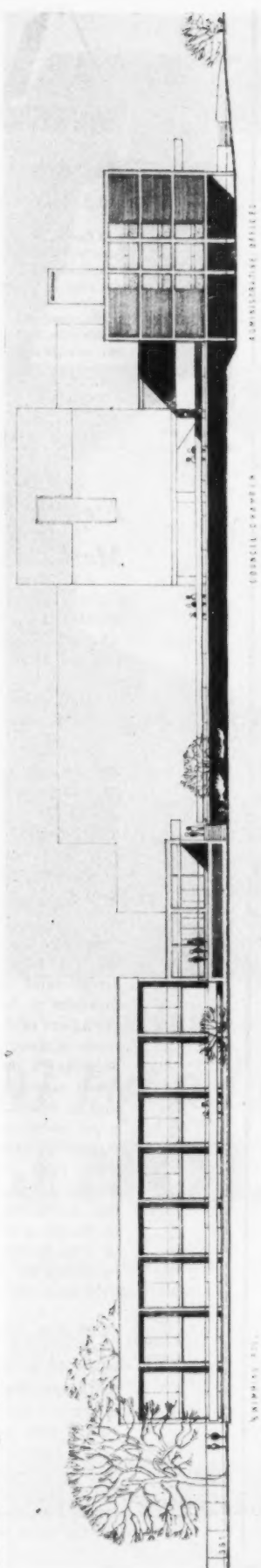


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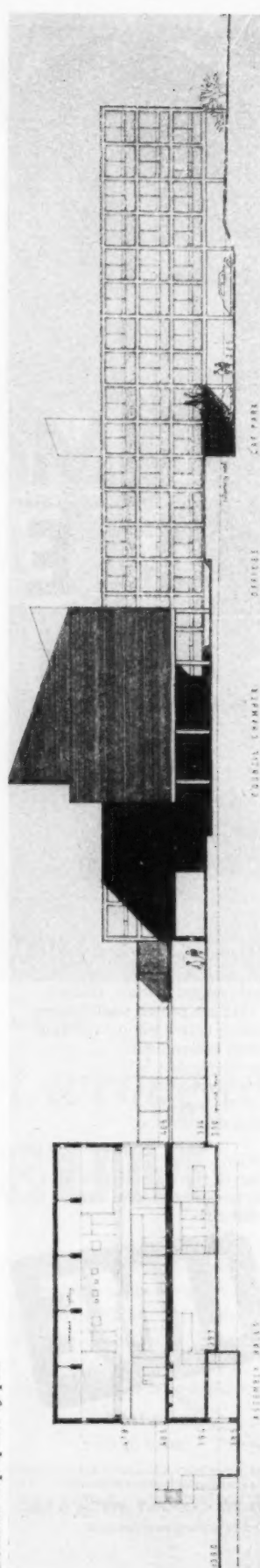
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Elevation to George Street



Elevation to proposed by-pass



North-south section

Woodland Civic Centre for Corby New Town

Three elevations of E. de Pierro, N. Farrington and J. Denny's winning design for the competition held by the Urban District Council of Corby, Northants, for a new civic centre to provide a council chamber, public assembly halls and a swimming bath on a six-acre site about two hundred yards west of the existing market square. The competition, which attracted seventy-one entries, was assessed by Edward D. Mills who announced his decision on January 4. The first prize was £1,000 and J. Peverley and P. Buckhurst won the £750 second prize. The third prize of £500 was divided between Colcutt and Hamp and Peter Dunham, Widdup and Harrison. The site is unusual for a civic centre in that it is bounded on one side by woodlands. All the prize

winners (whose designs are illustrated on pages 46-53) had the common merit that they made full use of the woodlands to the west of the site and separated pedestrian traffic from cars. The assessor praises the simplicity of the selected schemes and adds the general remark on the competition as a whole that a number of competitors had indulged in curious shapes and forms, particularly for the assembly hall and swimming bath, and that many had failed to explain how these were intended to be constructed, and had also ignored the fact that the use of such shapes would undoubtedly increase the cost of the building.

hear the applause feeding back over the public address system—an effect that I have never heard there before.

And that small audience consisted of Jim Cadbury-Brown, Max Fry . . . no that's not the point. The point is that the audience conspicuously did not consist of, say, the BASA Boys—not a whisker in sight that I recognized—the Stockbrick Corbusiasts, the Poly-Bowellists . . . the absence of the young was so conspicuous that it even drew Presidential comment from the dais.

It's a pretty dismal look-out for the profession when its next generations and the men who will soon be the guardians of its creative conscience can't stir their lazy bones enough to hear a briefing—a very sane and crafty briefing as it turned out—on one of the major adventures of the human race.

Wassamatter with you all—still hung over from your Christmas gluttony? Or is it true, after all, that you're marble from the ears up?

And let's have none of that old "remote from my experience" jazz. As Margerison was at pains to point out, the problems he was discussing were architecture—problems of how to create human environments. Tactfully he didn't point out in so many words (though the message was there, clear enough) that architects, lying easy on the temperate face of earth, can design in almost total ignorance of the facts of life, while the space-vehicle designer has no such margins for sloppiness, and must know in detail and exact numbers what is going on, going into and coming out of, the human lives he is required to house and shelter. Hearing Dr. Tom detail the extremes of heat, cold, radiation, and deprivations of pressure, oxygen and weight against which space-men will have to be protected, one had to realize that men are so well adapted to life on the surface of their home planet that the environment controls that architects design have to make only very minor marginal corrections to living conditions—which is just as well, since that is about all they *can* make.

In the vote of thanks after the lecture, John Allan of Avro's made some shrewd observations about the way space thought is affecting the aesthetic aspects of other branches of design. He, equally tactfully, did not talk about what it might do to the technical aspects, but it strikes me that if the space-men, who command the *facts* on how to keep people alive and happy, were to move in on building design at ground level, then 18,000 marbleheaded members of the RIBA might find themselves forming a very long dole queue.

REYNER BANHAM

The Editors

THE BOGEY OF LOS ANGELES

THE difference between the layout and disposition of towns in the eastern states of the US and of those of the West is largely due to the fact that when the east was developed it was dependent on horse power for its growth and when later it became the turn of the west it had the steam engine. The countries with the relatively highest concentration of inhabitants in the metropolis and the larger cities are those countries—like Australia, New Zealand, Argentina, Israel, and Western America—which were settled by modern transport: the motor car and the railway. In earlier times the transport difficulties of getting food into towns caused them to be smaller and more evenly disposed in a well-populated countryside. Today the greater flexibility of motor transport, however, is making as drastic a difference to the pattern of population as did the railways.

This in brief is the argument most persuasively put forward by Colin Clark, Director of the Agricultural Economics Research Institute, Oxford, at the RICS last week as he pointed out that urban sprawl is far from coming to an end. There is, unfortunately, no easily defined limit to commuting to work. It is unlikely that the individual would be prepared to spend the time or money travelling more than 30 miles to work each day, so, in theory, a city's catchment area for labour will be only 60 miles across. But that is true only while the work stays at the centre. If the high costs of land, or traffic congestion at the centre or other reasons persuade employers to provide workplaces on the periphery of existing development say fifteen miles from the centre, the total catchment area naturally grows from 60 miles to 90 miles across. This is what is happening to London, partly as a deliberate planned policy (New Towns) and partly fortuitously. It was the economics of horse transport that kept towns compact. This confining band has been drastically loosened, and the only check now on sprawl is the green belt policy, and green belts are being whittled away as far and as fast as builders and developers can do so.

At the other end of the scale, Colin Clark points out, the truly rural areas are still losing population despite the efforts of the Board of Trade. The economics of modern transport do not help here. The population of this country is contracting into certain definite areas. Clark believes that if the present trend continues there will be an almost continuous built-up area from Liverpool to Dover: Abercrombie's coffin, in fact. The corollary, of course, is that the rest of the country will be impoverished and depopulated. It can be argued that such a course would mean that not all the British Isles would be spoilt by development, and it is quite possible to envisage a "coffin" which would be so planned as to be a very satisfactory environment in which to live.

One of the troubles besetting us today is that we cannot get rid of the romantic concepts of living produced by a set of

circumstances which disappeared over a hundred years ago. We continue to think that towns should be roughly circular rather than linear, and set in agricultural land to provide contrast. But modern mass transport suggests linear forms for towns, and the farmer does not need proximity to towns today nor does he enjoy having uninvited visitors strolling through his herds and crops. What the townsman needs is truly recreational space: sports grounds, playing fields, water for sailing, parks, and commons.

Mr. Clark thinks that the present trend of concentration of population "is undoubtedly one of the examples, perhaps one of the few examples in economics, where the unchecked operation of the free market certainly does not produce the most socially desirable results." But it is surely not impossible that planners and architects, approaching the problem after studying the economic forces, might not evolve a more satisfactory urban and rural pattern of development than will ever be achieved by clinging to the outworn urban shapes we have today.



PRECEDENT RIBA

Have you ever skipped an RIBA meeting because you couldn't make up your mind whether to trudge south from Regent's Park station or north from Oxford Circus? And have you ever postponed an appointment at number 66 because your heart sank at the thought of waiting in that bleak (or do I mean dignified?) entrance hall, reading the names of Past Presidents (decani side) and Gold Medallists (cantoris side)? Me too. But the RIBA is providing us with built-in incentives for

getting there, including a bar (at discussion stage) a new restaurant and an elegant waiting room (slightly feminine decor by Lady Casson) with silver-grey silk wall lining and lots of white paint. No need to wait for the annual filling to see the *Tatler*!

*

But are RIBA members energetic enough to go there? The handful who turned up to hear Dr. Margerison's lecture last week also learned that no member or student of the RIBA has applied for the £400 (tax free) Florence scholarship. Doesn't anyone want a nice long holiday in the Aegean? How apathetic can you get?

LEADERS OF STUDENT THOUGHT

Do you know that students in only four out of eighteen of the recognised schools of architecture in this country consider their Principal a "reactionary old fogey"; in eight others they are "progressive administrators" and/or "leaders of student thought and design"; and in the remaining six, mere "routine administrators," a somewhat humiliating description? Do you know that only eight of these eighteen schools possess a students common room; that 85 per cent. of the students have grants for the whole of their course; that marking systems in current use sometimes have as many as nine different grades; and that lipstick and creosote is said to be a popular rendering technique in at least one school?

*

These and many other fascinating, if often depressing, titbits of information

are contained in a report on architectural education drawn up by the British Architectural Students Association and presented at their conference in Bristol last weekend. Its conclusions are gloomy and depressing; working conditions often very bad, the staffs needing drastic overhaul (often performing functions they are not qualified or fit to perform) and lacking the confidence of the students; the students themselves largely apathetic, presumably bewildered, following a course they do not appreciate in its entirety; unsatisfactory staff/student relationship; lack of contact between schools, etc., etc.

*

In spite of this gloomy picture and the even gloomier setting of the Churchill Hall of Residence of the University (one of the principal targets of the Bristol Architects Forum), the conference, to which Guy Oddie, Colin St. John Wilson and Frank Jones gave excellent papers, was a great success, and BASA are to be congratulated on their achievement.

*

Final resolutions included one endorsing the Oxford Conference's recommendation to raise the standard of entry into the profession, and another rejecting "the proposal for the establishment of an approved form of training for technicians on the grounds that it simply recognizes an existing situation, but does not examine whether this situation is desirable in the present or likely to continue in the future." A very pertinent point. A full report of the conference, ASTRAGAL understands, will be published shortly in the BASA Supplement to the JOURNAL.

WHO DUNNIT?

Who exactly *is* ASTRAGAL? The question has been asked before, but never quite as earnestly as at the Piccadilly inquiry last week, where I sat with bated breath, false beard and dark glasses as three very learned QC's tried to identify me. Was I J. M. Richards? Mr. Richards said I wasn't, though Sir Milner Holland and Ramsay Willis, counsel for the developers and their architects, seemed to think he was not only me but also the centre of a spider's web of conspiracy—the man who organized the "campaign" as they called it. Though even if he had done so, wasn't he within his rights? Isn't that the duty of a critic when he sees something he believes to be wrong?

It was really great fun seeing J. M. Richards treated like the principal character in a spy trial. Did he write the AJ leaders, supply information to *The Spectator* (how shocking!), talk to an MP (No, no, not *that!*), suggests the Cadbury Brown round-robin, write about Mr. Cotton in *The Times* or act as the moving spirit in the Civic Trust? The answers, in the same order, were no, no, no, no and likewise no. But if you question anyone for long enough you'll get something out of them. It was a triumph when counsel discovered that J. M. Richards got his information for a broadcast from Hubert Bennett, who had not only shown him the latest Piccadilly plans but had explained all his views. Collapse (I hope, though it didn't show) of interrogating party.

*

Are QC's worth all the money they cost? I couldn't help wondering as I watched them sniffing clumsily along false trails and spending hours making points to a non-existent jury, including the revelation that J. M. Richards and R. Furneaux Jordan don't practise architecture. I suppose a jury might have been persuaded that the criticisms made by Messrs. Richards and Jordan were not valid. But in the absence of a jury who are counsel trying to convince? Not the Inspector, surely. He's known the work of the two critics for years.

*

Sir Milner Holland said he was determined to find out what had happened between March and November to get the "campaign" going. The answer, which came from Furneaux Jordan, was very simple. Mr. Cotton's advertising men had called a Press conference. By the way, in case Sir Milner still wonders where I got the information for my comments (April 1) about Mr. Cotton's business connections, let me put it on record that I simply rang up the Cotton office and asked for the facts.

*

I know the whole thing is very funny. But isn't it also intolerable that there should be so many witch-hunting irrelevancies at a public inquiry—that Cadbury Brown should be told, by Sir Milner, not to "mince his words" and that he "lobbied Lord Conesford." (We all know that Lord Conesford, who is President of the Architecture Club, was boiling with fury about the Piccadilly design). And isn't it getting near a



The architects of the winning design in the Corby Civic Centre competition. Right, Enrico de Piero; centre, Nigel Farrington and, left, John Denny.

breach of parliamentary privilege to try and ferret out the sources of an MP's information? It's a pity that counsel for the "prosecution" (or should it be "defence") didn't have such a good time. Most of the important people (like Cotton and his architects, Cyril Walker, Sir Isaac Hayward and various LCC officials) failed to submit themselves for examination. Would too many cats have jumped out of bags?

THE SCULPTURE OF THE BOOK

Books, as you all know, are widely used nowadays for interior decoration. You can get them in such attractive colours that, provided no thoughtless guest grabs one to read, they can be used either vertically or horizontally with satisfying effects. But what about old books? Is there no use for them? Sculptors among you will be glad to hear that John Latham is using them in relief sculpture. You can see the result at the ICA, together with sculpture and collages by Theo Crosby (of *Architectural Design*) and pin-up compositions by Peter Blake. Mr. Blake's work is good clean fun—probably not art or even what the Third Programme has called Art-anti? Art—ranging, as someone said to me, "from the contractors' shed aesthetic to the King-Size Christmas card from N.W.3." His exhibits include drum majorettes covered with spoof medals (Steinberg influence?) and a cupboard papered with Kim Novak, Brigitte Bardot, the Modern Jazz Quartet, etc., and contain-

ing a pair of . . . plaster feet—or are they shoe trees? Crosby's sculpture wasn't new to me, but I hadn't seen his collages before. I overheard a visitor say that these achieved a maximum impact value, and whatever that means I think I agree.

CAMBRIDGE SURVEY

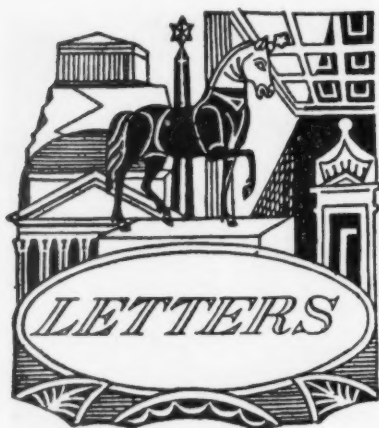
I've just received two fat volumes, plus a case of maps, on Cambridge.* They are magnificent. But it's exasperating that these scholarly surveys, with their beautiful illustrations, come so infrequently from the long-established Royal Commission on Historical Monuments. So far surveys of only seven counties, as well as London and Oxford, have appeared—and only three volumes are still in print. It is seven years since we had the last volume, and heaven knows when we shall get the next, let alone the complete set. Can't the Government spare some more money?

*

The Cambridge survey is twice as big as the Oxford one. The reason is that since 1946 the surveyors have been allowed to include buildings more recent than 1714 (At one time it was doubtless assumed that architecture died with Queen Anne). You can imagine how silly the Oxford survey seemed in omitting the Radcliffe Camera and the Ashmolean.

ASTRAGAL

* *City of Cambridge. A survey.*



W. R. Hazlewood and
John B. Tunstall, A/A.R.I.B.A.
R. D. Butterell, A.R.I.B.A.
Bernard Gold, F.R.I.B.A.
Geoffrey Robson, F.R.I.B.A.
T. A. Sutcliffe, F.R.I.B.A.
Hon. Secretary, Hertfordshire Chapter

Two Tier Profession

SIR: There is a feeling becoming more general that the RIBA Council are pushing ahead with almost indecent haste, the recommendations of the Oxford Conference on Architectural Education, before the rank and file has had time to digest the serious effect these proposals may have on the profession. How can the proposal for the technician and technologist be considered realistic, as without some knowledge of design the wishes of the designer cannot be properly interpreted through the working drawings, detailing, etc? A good assistant (all cannot be principals) is not a machine and must be one of the team, he must visit the site in order that the full benefit of his services is given to the jobs and in consequence must have the authority of the architect. The rarefied atmosphere of the training at some of the Schools is hardly likely to produce the men to handle the smaller jobs, which in many instances are the mainstay of the small and medium size offices, this work will in all probability be lost to the "architect" of the future in a "take-over" bid by the technician. The larger jobs may similarly vanish in the "all-in" service. If the RIBA is not to lose its influence, further serious thought must be given to these proposals; it is agreed that to-day the standard of entry is too low for the complex responsibilities of an "architect" and it may be that two "A" levels is too high. A higher standard of examination is desirable which must be competed for by all, the profession will benefit from members undergoing different types of training, office, part time or full time, there is room for all and each will find his level. The profession should be fully consulted through the Allied Societies in a recognized

democratic procedure before any further drastic changes are implemented.

W. R. HAZLEWOOD
JOHN B. TUNSTALL
Cambridge

Architects as Directors

SIR: I would like to draw your attention to a paragraph from the *Observer* of Sunday, December 20, 1959.

"Cotton began to come into the public eye about a year ago, when he took over the chair of City Centre Properties (he had always been the power behind the throne). He also runs Jack Cotton and Partners, the estate agents, and Cotton, Ballard and Blow, the firm whose architects designed the controversial project for the Monico Piccadilly site."

While I am all for architects being involved in any form of direction which is likely to advance the cause of good modern architecture, I find these facts hard to understand when we, as a profession, are apparently bound hand and foot by the rules and regulations of the RIBA.

We are "Professional Gents" and commerce is a dirty word.

So how does Mr. Cotton "run" Cotton, Ballard and Blow? Is he the Cotton of the firm as I can find no trace of him in the RIBA Kalendar? How does Mr. Cotton "run" a firm of developers and a firm of estate agents?

I am sure that there must be others among your readers who find this matter equally puzzling, especially as the latest surprise is that the "father of the design" appears to be the Architect to the LCC. Perhaps you could persuade some member of the Professional Relations Committee of the RIBA to enlighten us?

London

R. D. BUTTERELL

The editors write: Jack Cotton, the senior partner of Cotton, Ballard and Blow, also directs City Centre Properties and is a partner in a firm of estate agents. He is not an architect, but architects are permitted to enter into partnership with non-architects who are not bound by the Codes of Conduct. It has also been stated at the Piccadilly Circus Inquiry that Cyril Walker, F.R.I.B.A., is a director of Island (Piccadilly) Developments Ltd., and a "general consultant" to Cotton, Ballard and Blow. We are informed by the Architects' Registration Council that they are watching the Piccadilly Circus Inquiry "very closely." We are also informed by the RIBA that it is not their practice to consider alleged infringements of the RIBA Code of Professional Conduct unless a member complains in writing.

Ventilating Complaints

SIR: Every time I have completed an office building project and have visited the building after occupation, I have invariably observed that the permanent vents required by the LCC have been blocked up by paper or other means by the occupants and I have always felt rather indignant to see what I have always believed to be a health requirement being abused.

For the first time in my life I have taken

offices in a modern block where the regulation permanent vents have been allowed for, my previous office being old-fashioned and without such up-to-date forms of ventilation. Since moving I sit with a constant draught blowing down my neck and am overloaded with complaints from the staff.

I strongly feel that the LCC should start considering as to whether a slightly stagnant atmosphere is more damaging to health than sciatica.

London

BERNARD GOLD

Two-or-three Coventry Schools

SIR: I must apologize to Mr. Levy and Mr. Drake for misquoting their cost analysis figures; the figure of 71s. per sq. ft. relates not to the nursery school described but to a CLASP school quoted as a comparison, and should read 69s. 7½d. The figure of 69s. for St. Michael's should read 68s. 10½d. These glaring errors (particularly the 1½d.) deprive my comments of any point.

May I say, however, that I could hardly agree more with the architects' approach to the design of these schools? After years of being bludgeoned by fulsome descriptions and illustrations of prefabricated buildings full of botched detailing and make-the-best-of-it planning, in which far too high a proportion of the cost has gone into elaborate structure—whether in lightweight steel, aluminium or precast prestressed concrete—rather than into generous areas and good finishes, one should be only too glad to see illustrations of buildings using brick, concrete or timber intelligently and efficiently. It seems a pity that one cannot do this without magnifying the achievement and presenting elementary principles as revolutionary discoveries; perhaps however the elementary principles have been so far forgotten that it is necessary to state that "steel frames for single-storey schools are not economical."

So may I wish Mr. Levy and Mr. Drake good luck in the New Year, and as someone is almost bound to invent two-storey construction during 1960, may I offer the following hint, found by my own research team in an old copy of the AJ describing a school by a well-known architect—"Changes of level have been overcome by means of steps."

London

GEOFFREY ROBSON

Herts Panel

SIR: In the caption to your illustration of a design for a house at Hadley Common, on page 773 of the issue for December 31, you refer to the Hertfordshire County Council panel of architects.

In order that your readers may be quite clear on this point I think I should mention that this refers to the Architectural Advisory Panel of the Hertfordshire Chapter of Architects, who are independent of the County Council. This may reassure developers whose cases are submitted for the panel's advice in the future, who might have been misled into believing that the panel was some kind of County Council department.

T. A. SUTCLIFFE

Hon. Secretary, Hertfordshire Chapter

NEWS

In Brief

An international competition has been approved by the IUA for the development of the town of Tunis. The final closing date is in October, 1960, and the awards are as follows: First prize 5,000 Dinars, Second prize 2,500 dinars, Third prize 1,500 dinars, Fourth prize 500 Dinars, Fifth prize 500 Dinars. Further details may be obtained on application to the Secretary, UK Committee of the IUA, 66, Portland Place, London, W.1.

From January 1, 1960, certain applications under the Town and Country Planning Acts and the London Building Acts and Bylaws are being sent by the London County Council to the Metropolitan Borough Councils to deal with in accordance with proposals recently approved by the Minister of Housing and Local Government.

The procedure for making applications remains the same, i.e., all applications should be submitted in the first instance to the LCC who will continue to maintain the Statutory Register of town planning applications and decisions. When an application is delegated to the Metropolitan Borough Council concerned, the applicant will be so informed. All further contact on that particular application will then be direct with the Metropolitan Borough Council.

R. J. Birchall has been appointed Borough Architect to the Llanelly Borough Council, and takes up his new post in February next in succession to J. E. Thomas. Mr. Birchall, who is 36, has been Deputy Architect to the Cannock Urban District Council, Staffordshire, since April, 1952.

The Saltire Society's awards for good housing design have been made for 1959 for flats at Hutchesontown, Glasgow, by Dr. G. A. Jury, Glasgow City Architect, and his staff, and for houses at Forres, Moray, by Rowand Anderson, Kininmouth and Paul. Two schemes at Kelty, Fife, and East Kilbride are commended, but the Saltire Society's announcement does not name the architect!

A Joint Committee has been formed of members of the City and Borough Architects Society, and the Library Association, with the idea of publishing a manual on the technical aspects associated with the design and construction of new central library buildings. The RIBA is also represented on this Committee.

John Barker, the present deputy architect of Buckinghamshire, will succeed Vincent Goodman as county architect of Bedfordshire from March, 1960. Previous to his Buckinghamshire post John Barker was divisional architect, schools, at Coventry.

Roger Walters, formerly deputy architect of the Eastern Region of British Railways, has now joined the Directorate of Works of the War Office, under Donald Gibson, as chief architect (development).

When the Piccadilly Circus Inquiry was resumed last week before Colin D. Buchanan, the Inspector appointed by the Minister of Housing and Local Government, the Civic Trust presented the case against the proposed building on the Monico site. Evidence was given by the town planners Dr. Thomas Sharp and Sir William Holford, by the critics J. M. Richards and R. Furneaux Jordan, and by several well-known architects. Our report will be continued next week.

PICCADILLY CIRCUS INQUIRY

Architects and Planners say 'Reject the Application'

Elwyn Jones, Q.C., opened the Civic Trust case briefly. The astonishing fact had emerged, he said, that nobody appeared to have designed the proposed building. Like Topsy "it just grew." A building on this all important site should surely be created consciously if it was to stand for many years as an example of the architecture of this time; it should not merely be a by-product of technical controls concerned with the maximum quantum of commercial application. The pedigree of the proposed building appeared to be by plot ratio out of permitted uses. The coyness of the developer's architects, Cotton, Ballard and Blow, had reduced them to complete silence in the Inquiry, save for their own counsel's apology.

'Defeatist solution'

The first witness was J. M. RICHARDS, editor of the *Architectural Review*. The proposed building, he said, was a second rate piece of architecture and stood in the way of the execution of a satisfactory plan for the Circus as a whole. No one was asking for a "finite architectural solution," but for a general plan. The present proposal, being a piecemeal development, could not be regarded as part of a future long term unified scheme. Mr. Bennett, he said, had fallen back on the rather defeatist solution of driving pedestrians underground. Mr. Bennett's evidence bewildered him, because he stressed the disadvantages of an upper level walkway system, and then spoke of the possibilities of incorporating it along Shaftesbury Avenue, Coventry Street and the eastern part of the Circus. Great opportunities for being the first great city to segregate pedestrians were within the LCC's grasp; yet in fact, faced with an application for the first building in the area, they had consented to a design that completely nullified these opportunities. They had sabotaged their own far-sighted plan.

While strongly in favour of the use of Piccadilly Circus for advertising. Mr. Richards considered that the design of the building completely failed to integrate the display of advertisements with the architecture. The Circus should be enclosed by a curtain of buildings of which the lights should form

part, but the advertising panel raised 156 ft. in the air would destroy the effect of enclosure. Mr. Richards criticized the disproportionate height of the podium, and the lack of any proper relationship between the podium and the lumpish, rather ungainly towerlike structure above it.

In cross-examination Sir Milner Holland, Q.C., asked if Mr. Richards advised that his broadcast should be published in the *Listener* (answer "no"), if he wrote the comment in the ARCHITECTS' JOURNAL of Mar 19 ("no"), if he contributes to the ARCHITECTS' JOURNAL ("very seldom"), if he contributed comment in the ARCHITECTS' JOURNAL on December 10 ("no"), if he supplied material to Kenneth Robinson, M.P. ("no"), if he supplied the material for Mr. Levin's article in *The Spectator* ("no"), if he knew who did ("no"), if it looked as if the ARCHITECTS' JOURNAL knew in advance of Mr. Levin's attack ("It does indeed, but my editorial post is editor of the *Architectural Review*; ex officio I have a seat on the Editorial Board of the JOURNAL, but that does not mean I have any connection with the week-to-week conduct of the JOURNAL"), if he suggested the circularisation of architects by Mr. Cadbury Brown, President of the AA ("no"), if he wrote an article about Mr. Cotton in *The Times* ("no").

Ramsay Willis, Q.C., for Cotton, Ballard and Blow, asked Mr. Richards why he had said in a broadcast that it was all wrong that the architecture of the building should be in the hands of a firm whose chief interest in the project was financial? Mr. Richards replied "I think it is very important, if you are to achieve good architecture, that the architect should be in a disinterested position and should not be involved financially in the building that he is designing. I think that as a professional man he has to have an objective attitude, that you cannot have if you are also financially concerned." Mr. Stewart-Brown, Q.C., for the LCC, asked if Mr. Richards did not think it advisable before broadcasting his criticism over the whole country to find out the latest proposal in regard to the building from the LCC. Mr. Richards replied that before making the broadcast he had seen what were then the most up-to-date designs with Mr.

Bennett. Mr. Stewart-Brown consulted Mr. Bennett and observed "Mr. Bennett does not have any recollection of that." Later Mr. Richards explained that Mr. Bennett telephoned to him, asked if he might see him, came along to his office bringing the plans with him, and showed them. He also gave Mr. Richards his views on the whole Piccadilly development.

Mr. Stewart-Brown also examined Mr. Richards with the object, apparently, of showing that upper level walkways were impractical. He suggested that escalators to reach walkways would disrupt the ground and first floor areas for shopping, and that if walkways were at 20 ft. the ground floor shops would have to be 20 ft. high, and that if this was not acceptable to the developers it had to be rejected by the LCC. Mr. Richards replied "it might be one of the conditions that the planning authority could impose, that there should be a 20 ft. walkway incorporated." Mr. Stewart-Brown: "and get nobody to build on the site?" Mr. Richards: "well, that depends. If the LCC got out a sufficiently imaginative scheme I think it very likely that developers would be found willing to fall in with it." In answer to questions from the Inspector, Mr. Richards stressed that here was a heaven-sent opportunity for the LCC to initiate in the West End of London, a system of segregation of pedestrians from motor-traffic, which was one of the greatest problems facing the modern city.

'Conflicting verticals'

R. FURNEAUX JORDAN, the next witness for the Civic Trust, argued that for all its human and architectural chaos Piccadilly Circus was still a vital and focal point in Nash's plan. To create a rival focal point, an aggressive architectural counter-attraction to the County Fire Office on the north side of the Circus would be fatal to the design of the Circus as a whole. The unresolved duality of these two conflicting verticals might possibly be capable of solution in the hands of a very great, perceptive and sensitive architect, but he saw no evidence in the Monico proposal that that sort of an architect had been employed on it.

The LCC, he said, should have grasped the point that the whole Circus had already once been part of a great piece of royal comprehensive planning, and in a new context of traffic and pretty lights and modern architecture it should again become so. They should have insisted that there be an architect of the very highest calibre.

Mr. Jordan recalled how in 1956 Mr. Lane, the Chief Planning Officer of the LCC, had produced a coloured transparency of the LCC's imaginative advisory scheme and said "look what we are going to do to Piccadilly Circus." Mr. Jordan found it disturbing that in one room of County Hall such a scheme could be produced, while in another room collaboration could go on for the design of a building which undermined the primary massing of the first building to be built in that scheme, substituting a vertical for a horizontal mass. What was the good of a development scheme if almost every point was surrendered to the first developer to come along?

'Square tower idiotic'

What Mr. Jordan objected to in the building was its solid geometry: it seemed to be the negation of all the basic principles of architectural composition and design so admirably expounded to him by Sir Howard Robertson 32 years ago. Producing a drawing of the building Mr. Jordan said "we have here one of the most remarkable things in architectural history—a square tower. A square in itself is seldom a satisfactory proportion, and for a tower it is idiotic. It is like the man who used to boast he was the shortest giant in London. I think this tower fails as town planning because it is in the wrong place for a tower. It fails as architecture because extrinsically it has no beauty, and it even fails as an advertisement hoarding because there is no drama in it." Going over the eight principles the LCC applies to the planning applications for tall buildings Mr. Jordan awarded the proposed design "a dubious half mark out of eight."

Students' resolution

He concluded by reading a resolution passed by the Student's Committee of the AA, supported by all the recognized RIBA schools except the Regent Street Polytechnic and by the British Architectural Students' Association. The resolution said that approval of the design by the government "can only lead to bitterness and disillusionment among young men and women."

Sir Milner Holland (for the developers) wanted to know why Mr. Jordan had criticized the building in *The Observer* in November, but not in March. "Something must have happened, and I am determined to find out," he said. Mr. Jordan, who had already explained that he only criticized buildings when invited to do so, replied that he had been invited to criticize the building by Crawfords Public Relations, who asked him to a press conference on October 16. Ramsay Willis challenged Mr. Jordan to name a suitable architect. Mr. Jordan replied that Sir Leslie Martin would be a most admirable person. He also suggested that Nervi might be invited to design the pedestrian bridges. Modern r.c. bridges with graceful curves on the underside would, he thought, be enormously attractive. Stewart-Brown, for the LCC tried unsuccessfully to get Mr. Jordan to agree that it would be better for pedestrians to go round the Circus underground.

Plan must come first

THOMAS SHARP, the Past President of the Town Planning Institute and of the Institute of Landscape Architects, submitted that the application should be refused for two reasons: first, because the redevelopment of Piccadilly should be subject to a comprehensive plan, and second, because the building contravened the principles of good planning even when considered as an individual structure. It should be made plain, he said, that no further application similar in kind should be approved until a plan for the redevelopment of the Circus as a whole has been settled. Until a plan had been agreed any large-scale development on the lines proposed would frustrate the achievement of

satisfactory architectural redevelopment. This argument applied much more strongly to traffic considerations. Until the space and arrangement required for the movement of vehicles and pedestrians were planned as a whole it would be the height of folly to allow development of this kind to take place. Dr. Sharp said that to satisfy pedestrian needs and fulfil its traditional function the Circus might well have to have far more radical treatment than anything so far mentioned. His own suggestion, he explained later in cross-examination, would be to put the traffic roundabout underground and transform the whole surface of the Circus into a pedestrian concourse.

But even for the LCC's solution a whole comprehensive plan was indispensable and must precede redevelopment. To illustrate this point Dr. Sharp produced a drawing to show that if the London Pavilion site were compulsorily acquired now, instead of waiting until the leases expire in 1965, it would be possible to extend the Monico site eastwards and eliminate the long splay where Shaftesbury Avenue enters the enlarged Circus. This, he considered, would not only aid traffic circulation, but would enormously improve the shape of the Circus, its architectural form and character, by doubling the length of the frontage on the northern side, and so giving it a sense of enclosure. Comprehensive planning, Dr. Sharp pointed out, involved more than drawing lines on a plan: it might involve acquiring a site in advance so that another site could be improved.

Government finance

He realised that there were enormous financial and commercial considerations. But, the Circus having the national importance it had, the LCC had the right to expect substantial national financial backing in dealing with it. The Minister should reject the application, instruct the LCC to prepare and submit a comprehensive redevelopment plan for the Circus and its environs, and indicate the Government's intention of making some special financial assistance available.

A tower building, Dr. Sharp argued, was wrong in this position, and could only be disruptive. The real reasons for a tower building on this site, as on many others, were neither architectural nor functional, but were concerned with mere architectural fashion. It would be over-dominant, at least until other developers claimed the same rights and the city scene became a complete anarchic medley of tower buildings of all shapes and sizes. It could be demonstrated that a horizontal building with six floors could be designed with as much floor area and as good daylighting.

The developers' main consideration had been to acquire the maximum space for the display of advertisements. To propose a display of day and night advertising rising to a height of 156 ft. was indefensible except for private profit at public expense—and that was not a good ground for permitting it under town planning. In his view advertisements should only be visible within the enclosure of the street or square where they are displayed, or unavoidably from the streets entering them. Dr. Sharp also submitted that the application should be

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rejected because it did not satisfy the very minimum of pedestrian needs.

Cross-examined by Sir Milner Holland, Dr. Sharp said that he disliked the LCC's advisory scheme very much, because it proposed to put high buildings on the south and east sides; particularly high tower buildings at right-angles to the square. Examined by the Inspector, C. D. Buchanan, Dr. Sharp gave another reason for disliking the LCC scheme. He saw very great difficulties in applying the idea of walkways to a limited area of this kind in an existing city, even if it was subject to a comprehensive plan. He did not know if the difficulties were insuperable, but he thought segregation of walkers and vehicles might have to take another line, such as undergrounding the traffic, or keeping all but service traffic out of the centre.

Public land ownership

SIR WILLIAM HOLFORD, Professor of Town Planning at London University, confined himself to two questions: the first, the problem of securing positive and constructive public development, the second the attitude of the Royal Fine Art Commission of which he is a member.

"Now that the days of the great landowners in London have passed" he said "it is obvious the public authorities have the responsibility to take their place and to produce not only the control of day-to-day building in the Metropolis but also sometimes to rise to the occasion when the occasion, as at Piccadilly, seems to demand it.

"The developer could not be blamed for securing the maximum floor space and the maximum advertising space which the site allows. The only alternative is for the public authority to acquire and as ground landlords, owning the freeholds, perhaps to build themselves, with public money, or to give building leases for the development of the rest of the area. I do not see how even the LCC could afford to do this in the very many cases, the key points in London, where that kind of treatment might be desirable.

"The public authorities, where they are not in fact owning the buildings, can act only under the Planning and Building Acts, and therefore their control, however collaborative and helpful to the developer, is a negative control. The process becomes one of negotiating between the private and the public developer to secure some compromise between the public and private interests. But the imaginative, the positive, the non-revenue producing elements in the scheme which the public could enjoy are necessarily left out, the constructive side, things like strolling space, escalators, promenade decks, traffic bridges, vantage points, embellishments of all sorts down to mundane things like seats and public conveniences, tend to be left out of a scheme like this which is neither carried out completely by one developer nor carried out completely by the public authority. I think it is the system which is at fault here."

Sir William added that, while he agreed with Hubert Bennett and Sir Howard Robertson that it was no use dreaming up

the style and fashions of the future buildings in the Circus, a comprehensive development scheme meant knowing in advance what public features were required in the next 10 or 20 years. In this case he did not think that either the character of the rest of the Circus or the pedestrian circulation had been determined sufficiently in advance. The essence of a comprehensive plan was that it should be flexible in that it opened opportunities for individual clients and their designers to fill it out, inflexible in regard to things that allowed no flexibility, such as traffic.

Fine Art Commission

Speaking of the Royal Fine Art Commission as an individual, but after consultation with the Chairman, Sir William agreed (in cross-examination), that it would have saved a great deal of heartburning and a lot of time if the RFAC's letter of February, which raised no objection to the massing, volume or general architectural character of the building, had been as full as its final letter. But, he explained, the members of the Commission had never regarded that letter as their final views.

While the matter was still under discussion the RFAC treated the matter in a friendly and informal way. Even the most formal of the Commission's letters were not couched in terms of condemnation while the design was still under consideration. But in December the scheme was final, and had passed beyond the stage at which further discussion by the Commission would be useful or even possible. As the matter was thrown open for comment the Commission, which had only two days to see the revised drawings, thought it best to make their views known fully and without reservations.

Freer advertising

Sir William suggested various ways in which the RFAC's recommendation that the building be treated as a background for a much freer kind of advertising could be implemented. He denied that the only way to do it was by placing advertisements across the fenestration. One way might be to carry a free-standing structure, penetrated by light in the daytime, round the building. For large advertisements he suggested that the ends of the building arms were the most suitable place, but it was perfectly possible to have fountains of light, moving advertisements, lines, dots, all sorts of combinations of gay light on a treillage, like an open grill, which might go up to 100 ft.

Several well-known architects expressed their personal views on the design. RICHARD SHEPPARD, hon. secretary of the RIBA, said that no single part of Piccadilly Circus should be redeveloped without relation to the other sides immediately surrounding it. He had seen no designs for the south side of the Circus that in any way related to the Monico site. Putting up offices in the Circus was rather like putting them over the Folies Bergères.

DENYS LASDUN said the function of the Circus was an arena for people, and only required one really fundamental character, that of enclosure. This sense of enclosure should be preserved irrespective of changes

in scale and independent of stylistic considerations. The "sky factor" on either side of the proposed building would completely destroy the sense of enclosure. If Piccadilly Circus was going to double its size, the upper level concourse, in the LCC plan, possibly with a minor building on it, limited the view and assisted the sense of enclosure.

DAVID DU R. ABERDEEN said that the building showed impoverishment of both heart and mind. It was a greedy, tasteless, lumpy, clumping, squat tower on an amorphous podium. If asked to criticize it in detail he would ask "can I criticize the wart on the hag's face?"

JANE DREW said the building in its present form would make impossible a total conception of quality for the whole Circus, and make impossible a really good traffic and pedestrian plan; it also prevented well-placed advertising in a total conception. The ideal answer would be for the design of the whole Circus to be in the hands of one architect who was fully responsible for the whole thing. She also suggested that there might be a Commonwealth architectural competition for the Circus.

Cecil B. Elsom asks us to state that he did not sign the letter criticizing the proposed building on the Monico site, Piccadilly Circus, that was published in the ARCHITECTS' JOURNAL on December 24, 1959.

DIARY

RIBA Library Group Meeting. Robert W. Pite will talk on the work of Professor B. Pite, at the RIBA, 66, Portland Place, London, W.1. 6 p.m. JANUARY 18

Architects' Christian Union Reception. Speaker, the Bishop of Coventry. In the Henry Jarvis Hall of the RIBA, 66, Portland Place, W.1. 7-8.30 p.m. JANUARY 19

Methods of Restoring Ancient and Historic Buildings. Lecture organized by the Institute of Builders and given by G. B. A. Williams in the Henry Jarvis Hall of the RIBA, 66, Portland Place, W.1. Admission by ticket, obtainable from the Secretary at 48, Bedford Square, W.C.1. 6.30 p.m.

JANUARY 20

Lightweight Fire Protection and the Structural Engineer. Talk by A. R. Mackay at the ISE, 11, Upper Belgrave Street, S.W.1. 6 p.m. JANUARY 21

The Development of Traffic Engineering in London. Talk by A. J. H. Clayton. Traffic Engineering Study Group at the ICE, 1, Great George Street, S.W.1. 5.30 p.m.

JANUARY 21

London Roads Competition Exhibition. Organized by the Roads Campaign Council. On view at Charing Cross Underground Station. UNTIL JANUARY 31

CORBY CIVIC CENTRE COMPETITION: FIRST PRIZE-WINNING

On January 4, the assessor, Edward D. Mills, awarded the first prize of £1,000 to the design by Enrico de Pierro, Nigel Farrington and John Dennys with S. Shine as cost adviser, for their scheme for a new civic centre at Corby, Northants. The second prize of £750 goes to John Peverley and Peter Buckhurst, and the third of £500 is divided between the designs by Colclutt and Hamp and by Peter Dunham, Widdup and Harrison. The most important requirements of the competition were for the provision of municipal offices, assembly halls and a swimming bath.

EXTRACT FROM THE ASSESSOR'S REPORT: In confirming my award for the above competition, I have pleasure in reporting on the Schemes submitted as follows: The seventy-one designs submitted were examined in great detail and the first premium was awarded to the Scheme by E. de Pierro, Nigel Farrington and John Dennys, which I considered to be an outstanding design which complies in all respects with the conditions and should result in an attractive building, easily maintained and operated, and worthy of the important site for which it was designed. The general layout is very compact and makes good use of the site levels, taking full advantage of the view of the woods by Corporation Street, and providing an attractive route through the site to the woods as an alternative to the present footpath by the Technical College.

The scheme provides adequate car parking facilities and, by the careful use of levels, provides excellent circulation to the various buildings and at the same time, ensures that all car parking is concealed from the proposed bye-pass road and George Street. The elevations are simple and dignified, depending for their effect on good proportions and the careful choice of materials, colours and textures. In this connection, the choice of treatment for the exposed concrete frame to the administration block will need careful consideration as this is not specified in the competitor's report, and painted concrete is not considered a suitable weathering finish for a building of this standard. The colour and material of the infill panels will also need careful consideration.

The planning of individual buildings is exceptionally good and the detailed arrangement of the assembly halls with their cloak-rooms and lavatories has been exceptionally well considered. The Civic Square is an attractive feature of the scheme, but consideration should be given to some planting in this region to relieve the area of hard paving. There are a small number of minor planning errors, particularly in the administration block, but these can easily be adjusted. Mention must be made of the arrangements for the rates hall which are not entirely satisfactory and the size and position of some of the staff lavatories could be improved with a little re-arrangement.

The estimate of costs is well represented, but the costs per foot cube given by this competitor are generally considered to be optimistically low, resulting in a total figure of £496,417. A careful study of the scheme suggests that with certain modifications which would not materially affect the design of the buildings, the scheme could be erected within the upper limit of the budget estimate, plus the 10 per cent marginal increase allowed by the conditions. The scheme allows for the

possibility of building the individual units in phases as required by the conditions.

The Council are to be congratulated on the high architectural quality of this design, which should result in a building of which they can be justifiably proud.

The design by John Peverley and Peter Buckhurst, which was awarded second premium, is also an excellent scheme with a spacious forecourt facing George Street, good economic use of the site, dignified elevations, and good detailed planning. The car parking arrangements are not so satisfactory as the scheme awarded first premium, and a number of other planning faults can be observed, in particular the relation of the swimming bath to the office block which would lead to disturbance to the offices by noise from the swimming bath, particularly in summer months. Service access from the parking area to the swimming bath is inadequate. Although the detailed planning is generally good, the chair stores to the assembly hall are too small and the boiler house is inadequate in size. The competitor did not submit a schedule of measurements for checking as part of his report as required by the conditions, but the estimated costs given are considered to be reasonable and realistic and the scheme could be erected within the budget, plus 10 per cent.

Colclutt and Hamp share the third prize with Peter Dunham, Widdup and Harrison. The design by Colclutt and Hamp has a good compact layout with single entry to the site for road traffic. The detailed planning arrangements are not as good as the first and second premiated schemes. The assembly hall is not sufficiently adaptable for the various uses envisaged. The caretakers' houses assume too much prominence in the scheme and the ugly factory chimney would be too prominent. Detailed planning of the scheme is, however, excellent in parts and in particular the plan of the swimming bath and stage planning in the assembly hall. The elevations are simple and attractive, but the estimate is extremely optimistic.

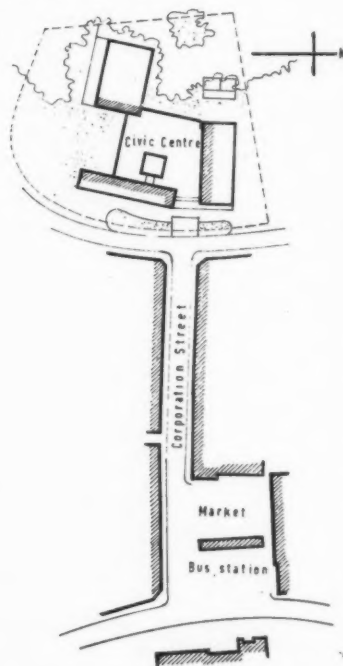
Peter Dunham, Widdup and Harrison's design has a well-considered layout with a car park well screened from the roads and the untidy side of the technical college well screened from George Street. One major disadvantage of the layout is the fact that access to all buildings is through the car park. The assembly hall ground floor cloak-room planning, which is an important part of the programme is not as good as the first and second premiated schemes and the open sided arrangement for the assembly halls would not be satisfactory in practice. The elevations are interesting and would mass well, giving a dignified appearance from both George Street and the new bye-pass road.

FROM THE COMPETITORS' REPORT: In designing the general layout of the site the following principles were considered of primary importance. First that the town centre, bounded on the east by the police station and court house, should be visually concluded by a square of similar importance to the market place. Secondly, that the general line of the woods running from the back of the technical college across the proposed by-pass should be maintained and that the trees should be visible not only for the length of Corporation Street but also from all other approaches to the site. Thirdly that the new civic square should be reserved for pedestrians, that vehicles should be strictly controlled and that car-parks should be as unobtrusive as possible. So that the civic square shall be used fully, entrances to the swimming pool and small hall are from it and the existing public right of way to the north of the site is diverted to run through it.

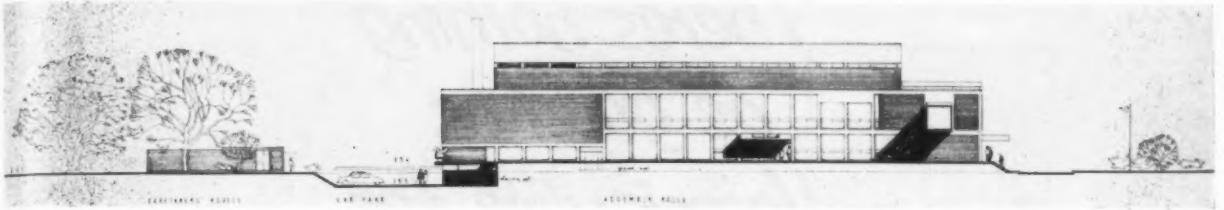
The main buildings, municipal offices, assembly halls and swimming pool which are necessarily different in both use and construction are designed separately and placed on the site to infer three sides of a rectangle; the fourth side is enclosed by the woods.

The focus of the square is provided by the Council Chamber building which is raised

Plan showing relationship of winning design to Corporation Street and Market Place.



DESIGN BY E. DE PIERRO, NIGEL FARRINGTON & JOHN DENNYS



West-east section through assembly hall

ten feet above the general level of the terrace and which by a change of scale and contrast of materials, dominates the enclosure. Vehicular access is from George Street and occurs at two points only. Direct

access is allowed to the municipal offices and this is joined by a ring service road which leads to car parks on the north, south and west sides. A wide paved pedestrian crossing is situated at the end of Corporation Street

and is the main pedestrian access to the square. Pedestrian bridges at the north and east of the swimming pool connect to paths leading into the woods and towards the proposed by-pass.



Site plan. A service road runs from the right entrance, past the assembly hall and caretakers' houses, under the swimming pool building and out past the municipal offices.

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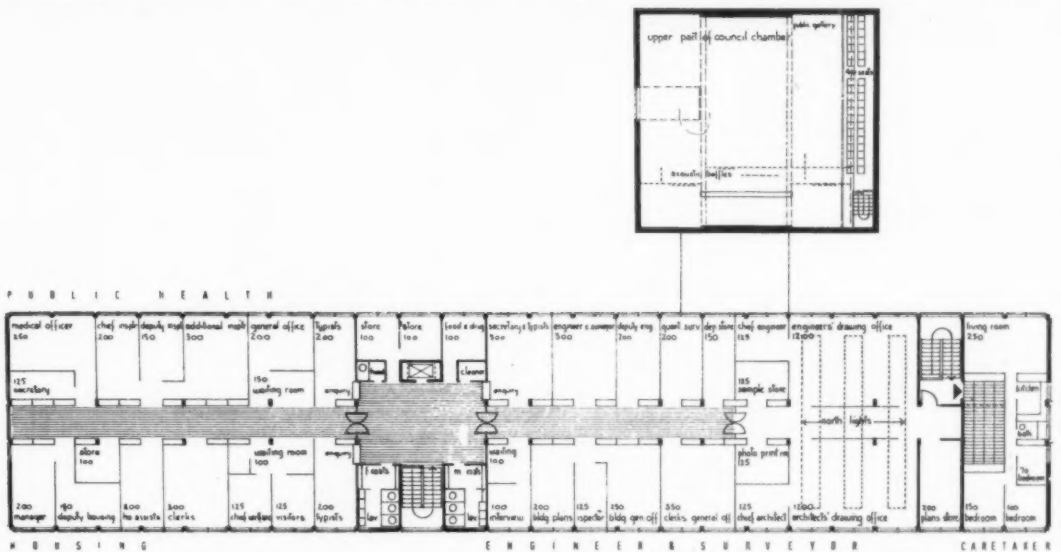


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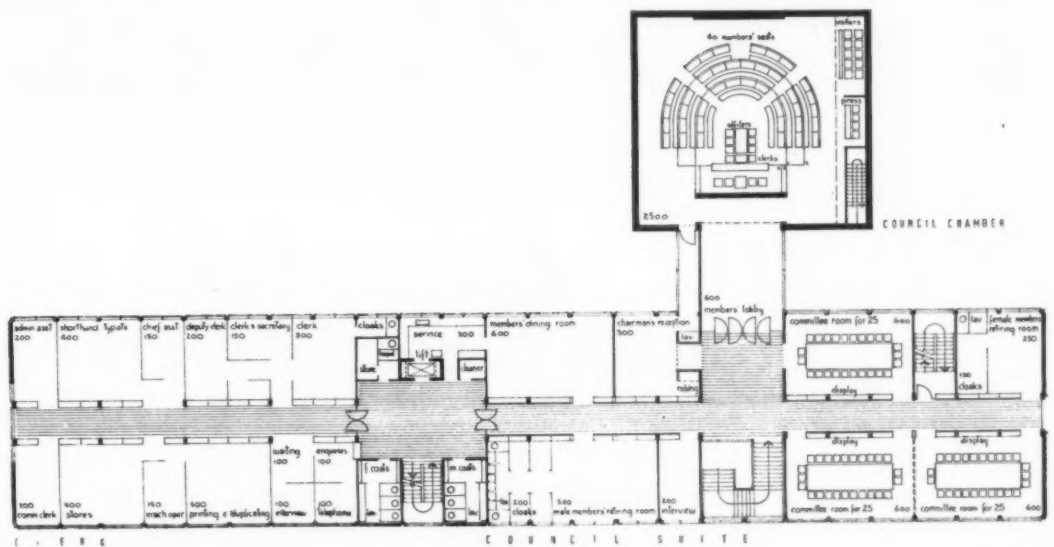


Corby Civic Centre Competition:

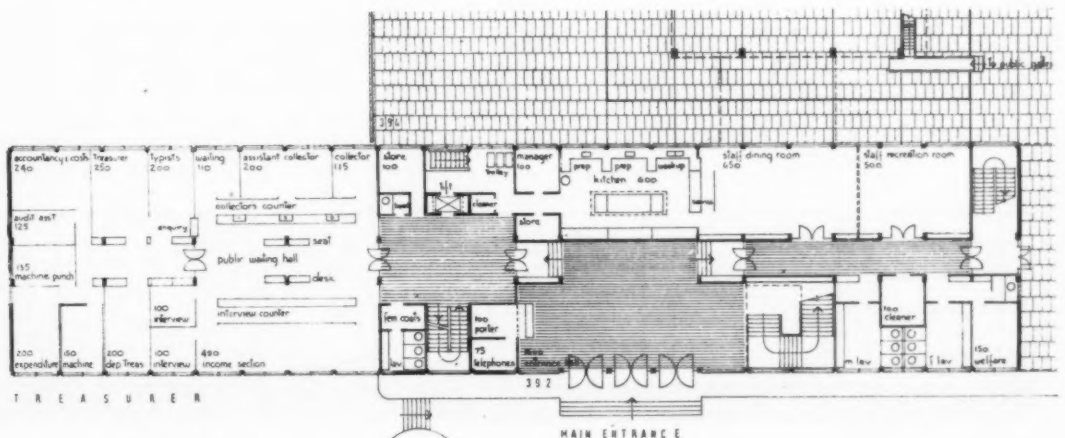
FIRST PRIZE-WINNING DESIGN BY E. DE PIERRO, NIGEL FARRINGTON AND JOHN DENNYS



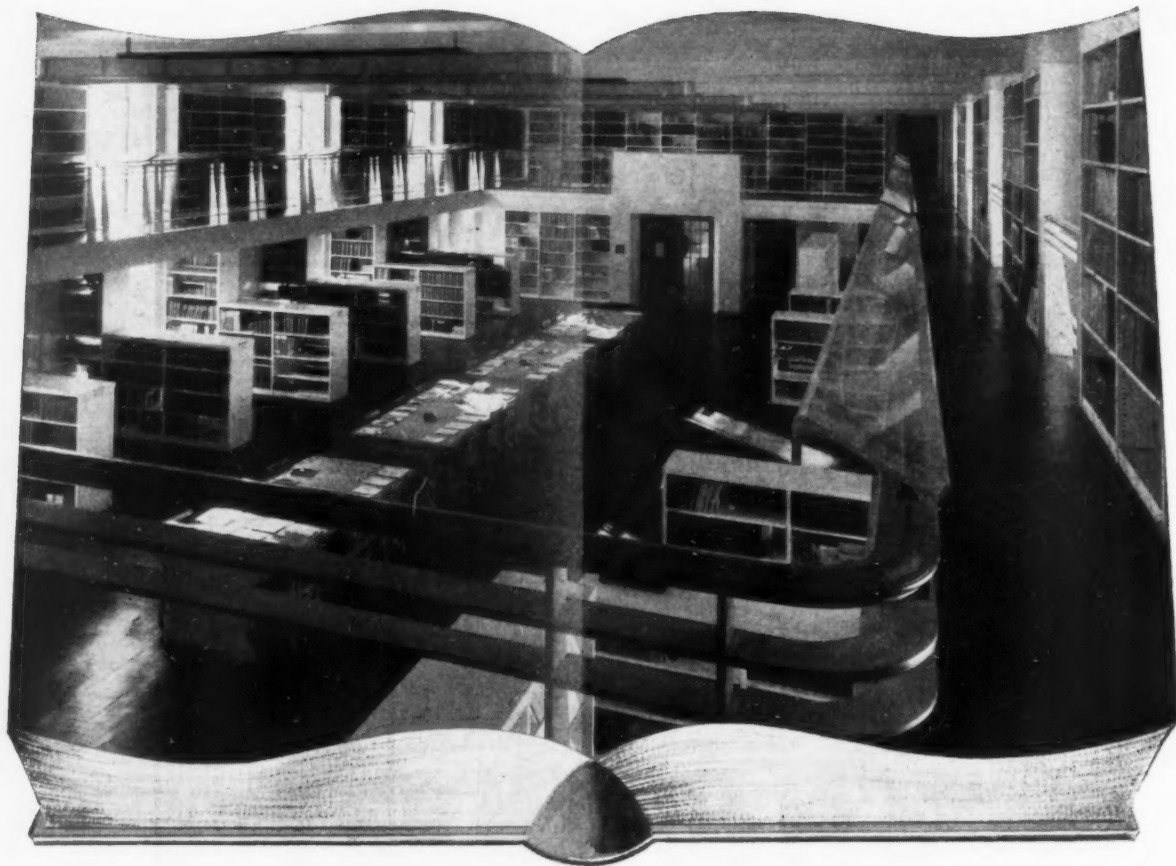
Second floor plan



First floor plan



Ground floor plan, municipal offices



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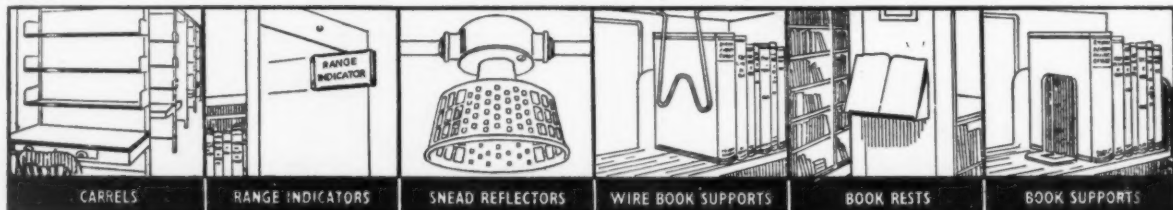


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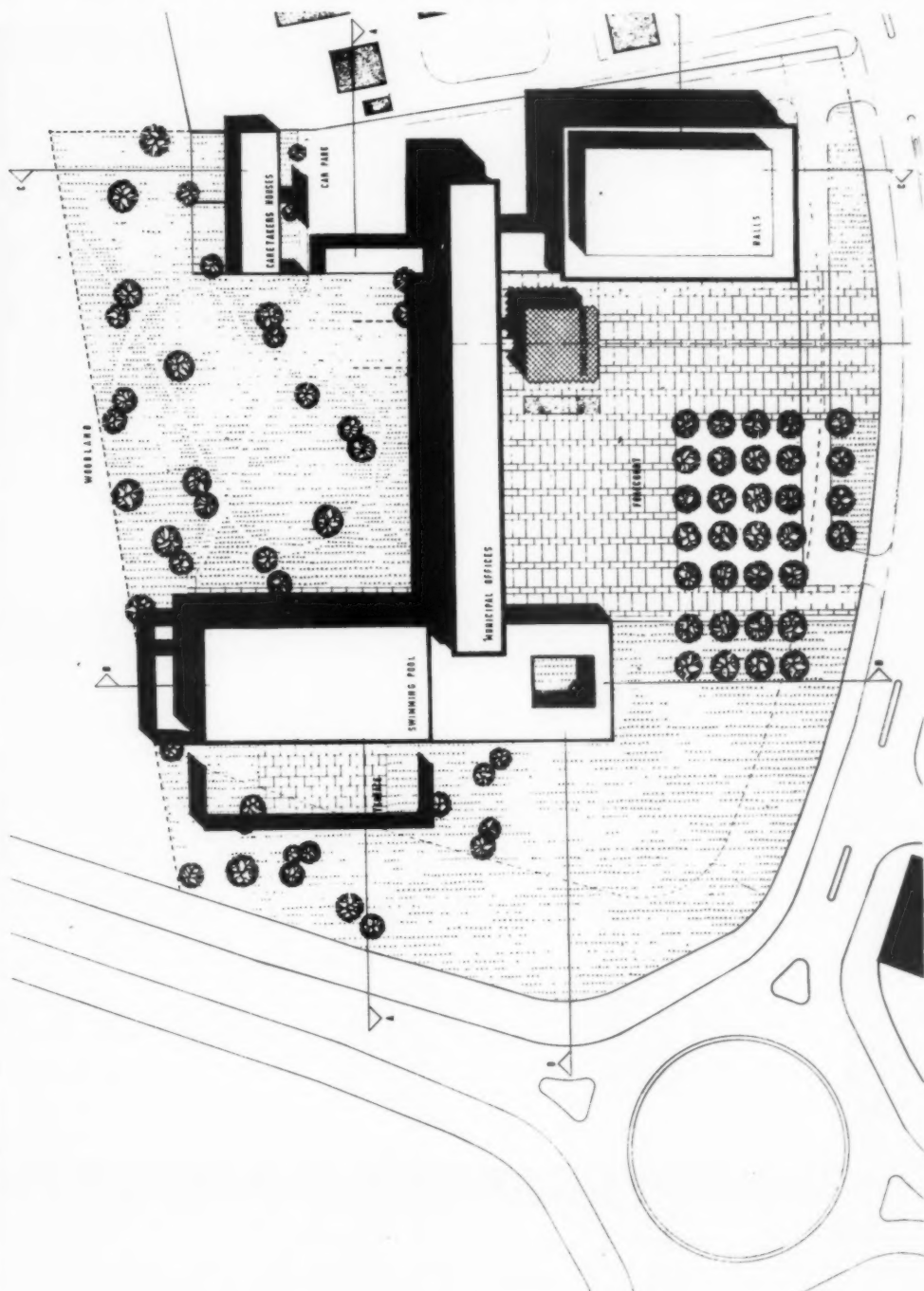
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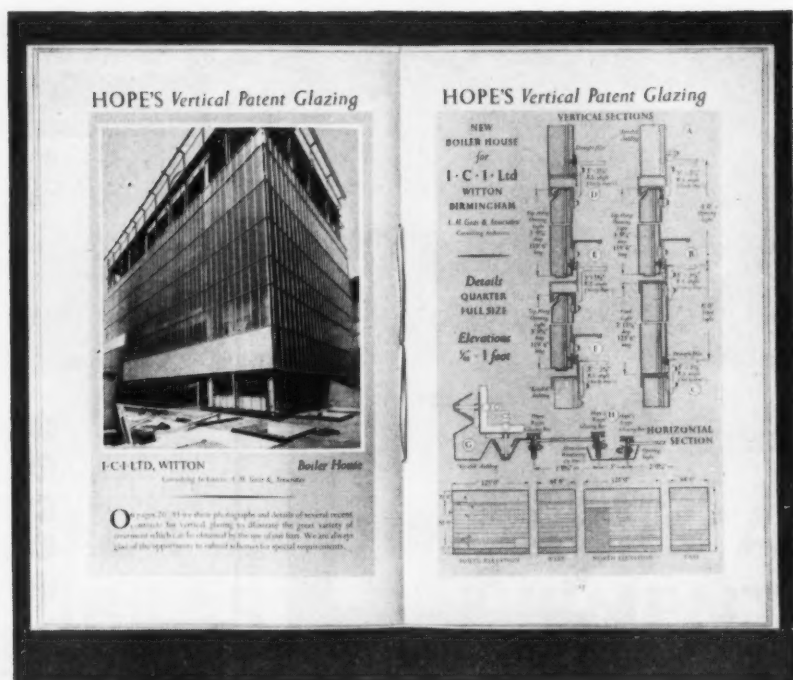
Elevation to George Street

FROM THE COMPETITORS' REPORT:
The essential requirement that the existing woodland to the west of the site should be visible and accessible from Corporation Street has determined the character of the buildings. The assembly hall and the swimming pool are parallel to each other and to Corporation Street and provide a directional emphasis to the public right of way into the woodland. The municipal offices which link the assembly hall to the swimming bath are built on columns so that whilst the spacial effect of the square terminating the end of Corporation Street is created, the vista through to the woodland beyond is retained. Continuity between the parts of the composition is provided by the parallel brick plinth walls on which the assembly hall and swimming bath are constructed. There are two points of vehicular access to the site and these, together serve into a "U"-shaped approach road to the car-park at the north end of the site. The paved square provides easy pedestrian access to all parts of the scheme.



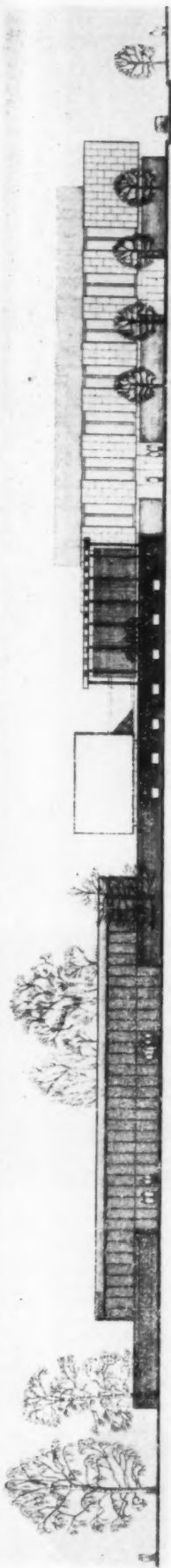
Site plan (north is to the right).

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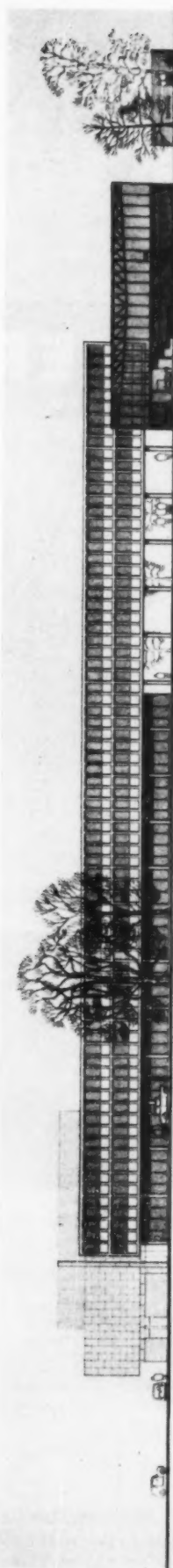


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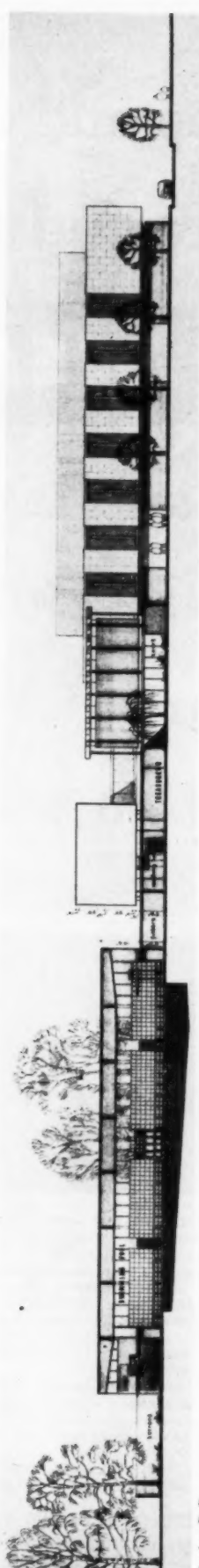
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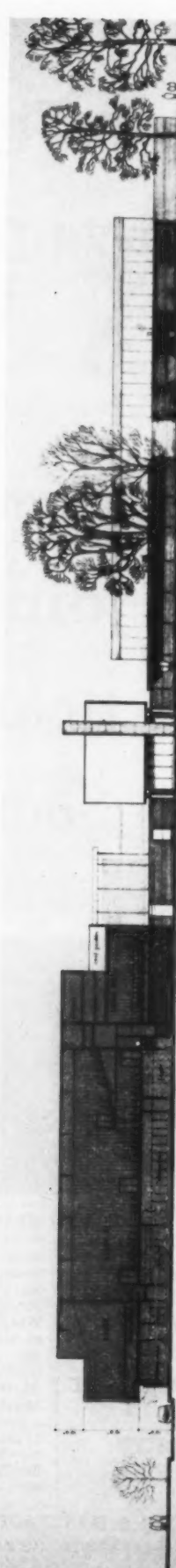
South elevation



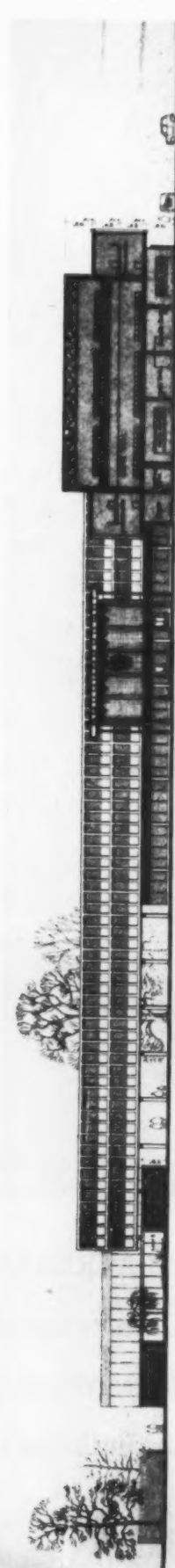
Section A-A



Section B-B



Section C-C



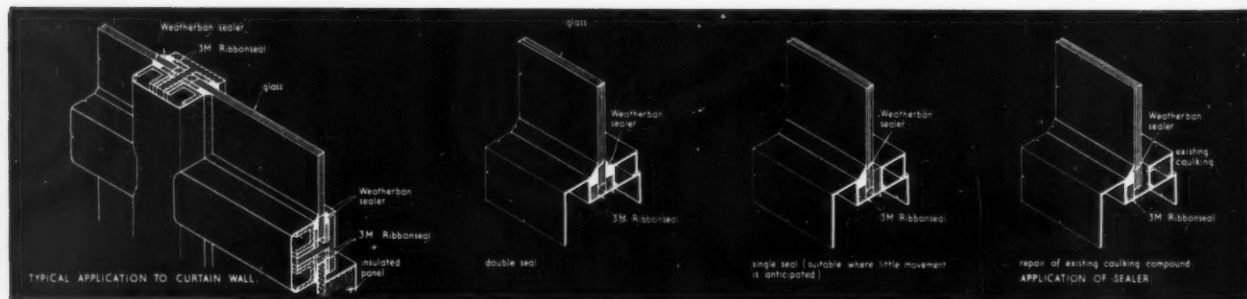
Section D-D

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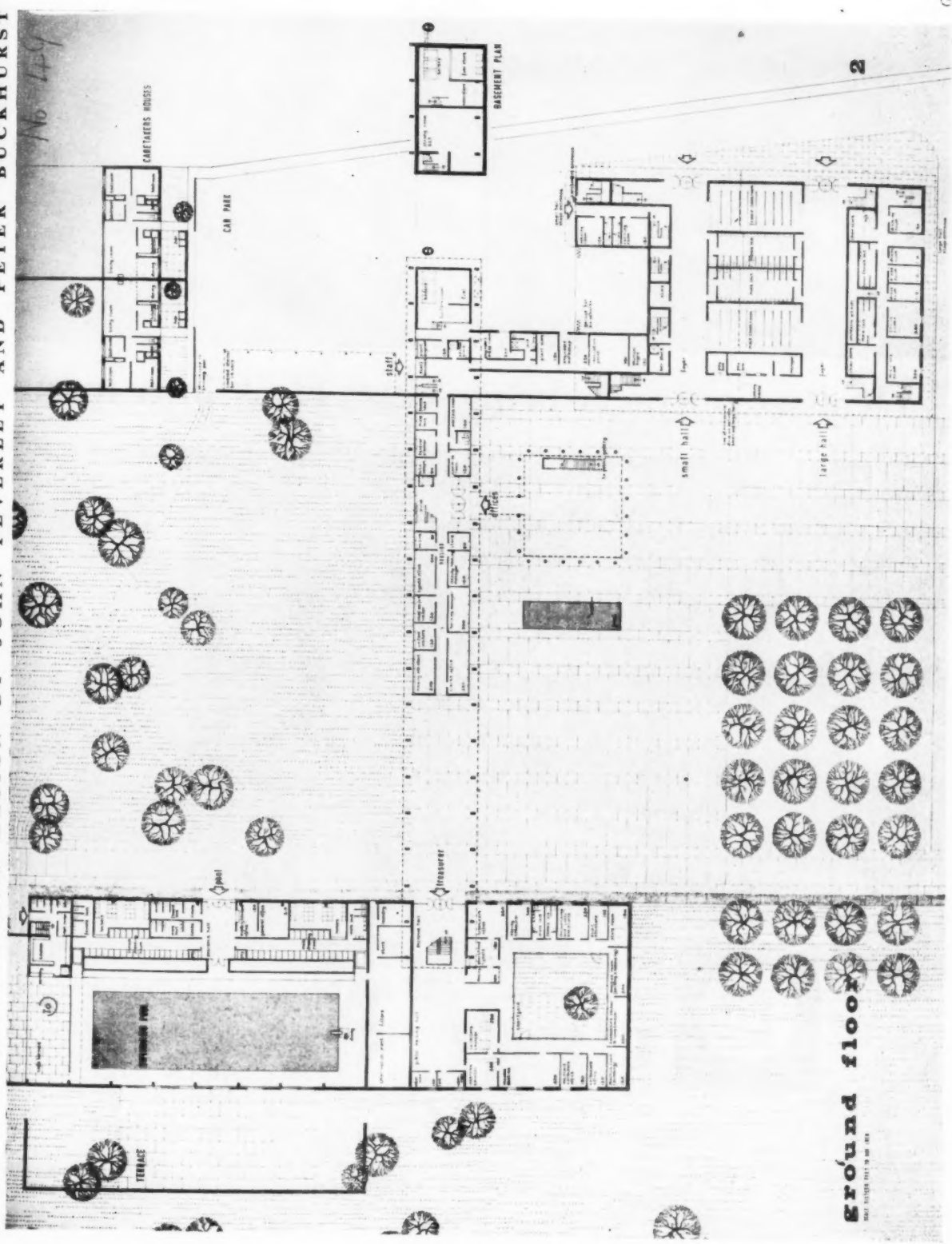


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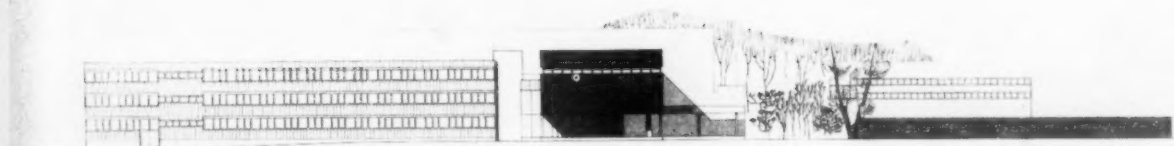
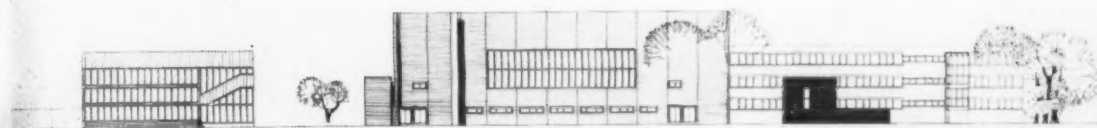
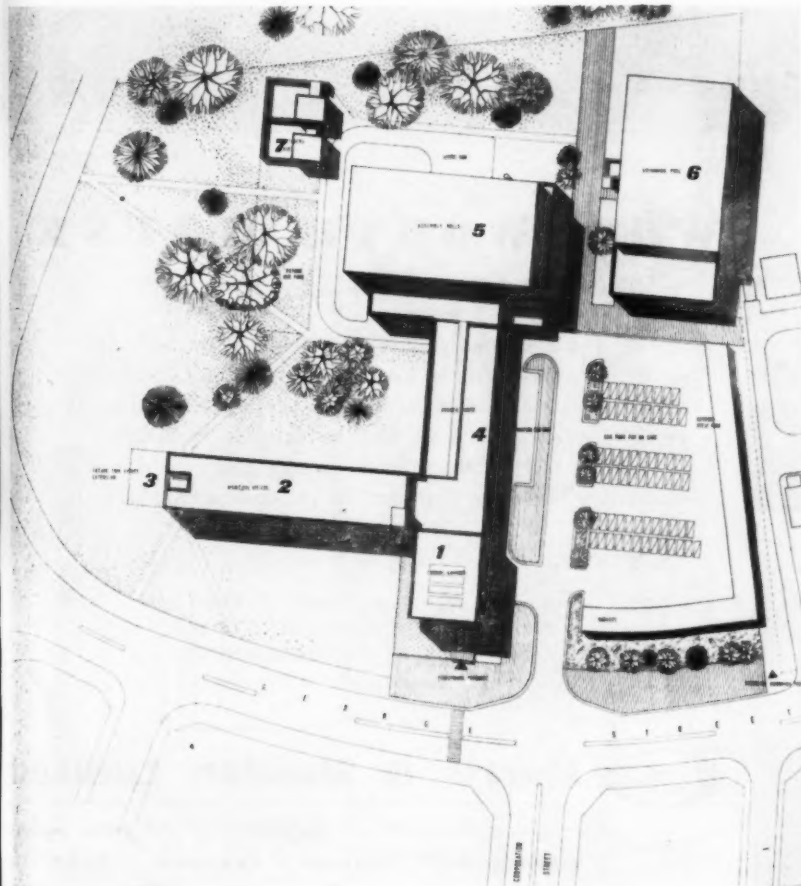


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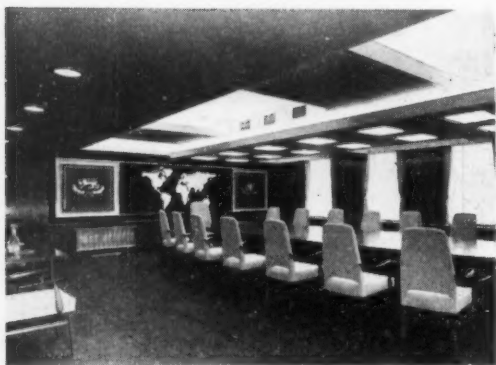
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Corby Civic Centre Competition:**THIRD (EQUAL) PRIZE-WINNING DESIGN BY PETER DUNHAM, WIDDUP & HARRISON***North elevation**East elevation**South elevation**West elevation***FROM THE COMPETITOR'S REPORT:**

After a visit to the site and a study of the existing and projected buildings it was immediately realized why a view of the woods was to be retained from Corporation Street. This street, as now built, appears when viewed from the market place to be much shorter than it really is and the woods appear to be very close. It was therefore decided to lay out the buildings of the new civic centre so that the main service road from which the municipal offices, assembly hall and swimming pool would be entered formed an extension of Corporation Street. This continues as a wide pedestrian way leading past the pedestrian way and into the woods. The main access to the layout also serves, on its right hand side, a large car-park which would be suitably screened from George Street by the covered garage and tree planting. The whole area, bounded by the new civic centre and the technical college then forms a large civic square, open on one side to George Street. The car-park has been sited in this position as most accessible and it would be alongside the bicycle parks and other service buildings.

*Site plan (north is to the right).***KEY:**

1. Council chamber
2. Municipal offices
3. Future 2-storey extension
4. Council suite
5. Assembly hall
6. Swimming pool
7. Caretaker's house



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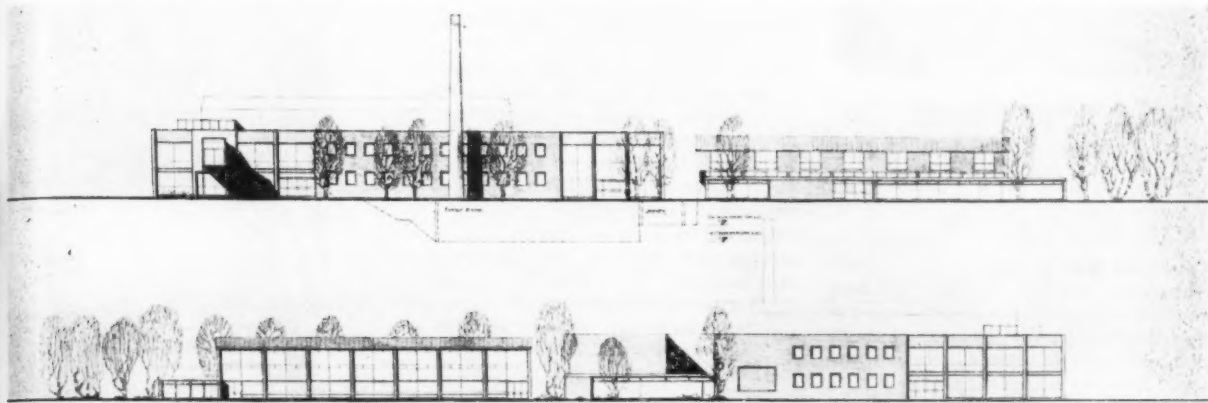
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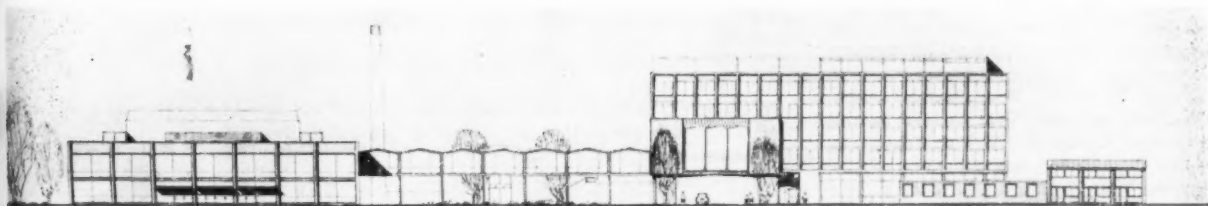
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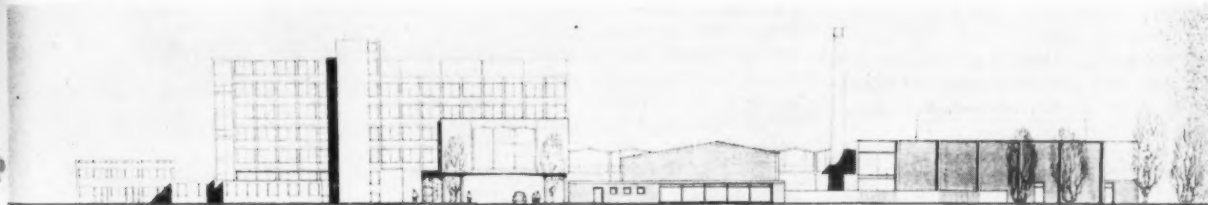
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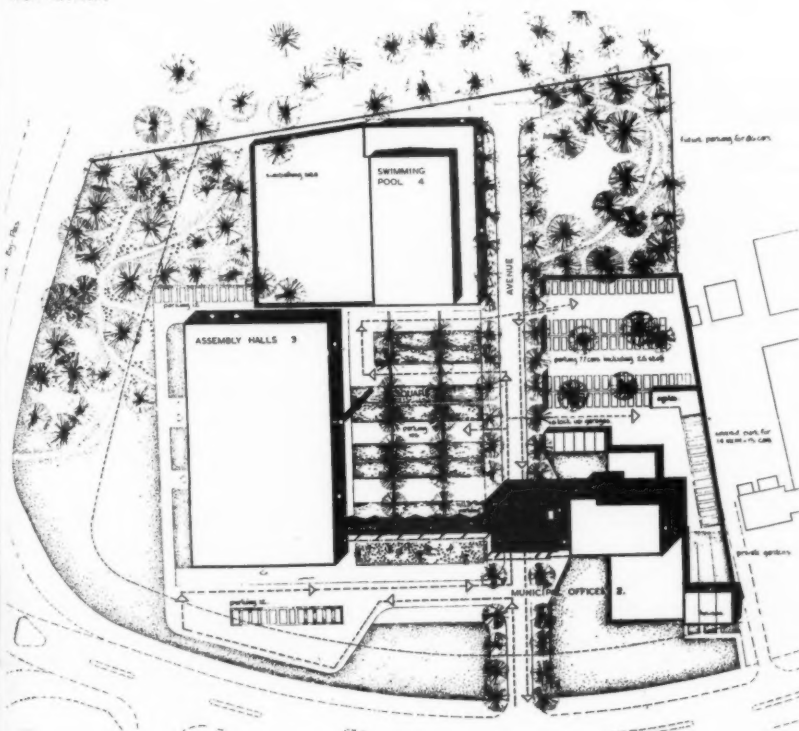
North and south elevations



George Street elevation



West elevation



FROM THE COMPETITORS REPORT: It has been assumed that the need at Corby is for a hard-wearing but inexpensive buildings and particular attention has been given to economy of structural cost and the elimination of maintenance. The several buildings have been grouped around an avenue which continues the line of Corporation Street and provides the only entrance to the site. The office block is placed across this avenue with the council chamber on the main axis and the woods beyond visible through the opening beneath. The original access to the woods on the north edge of the site has been incorporated in the site and access to the woods is via the avenue. The link between the council chamber and the assembly hall is at first floor level in order to open up the square which will be treed and planted to provide a pleasant open space. This square will be used for car-parking when the large hall is in use. The assembly halls fill the southern side of the square and have their entrances well separated. The baths are placed at the west end of the site with the restaurant looking into the woods. Car-parking and garaging is on the north boundary of the site.

Site plan (north is to the right).

technical section

THE INDUSTRY

From the industry this week Brian Grant describes a new floor heating system, metal roofing and new display lettering in metal.

Re-wireable floor heating

Thermadore, who have for some time been producing electric storage heaters, have now evolved a floor heating system in which the wiring is renewable without its being necessary to take up the floor screed. The heating elements consist of a zinc coated resistance wire in a p.v.c. tube whose diameter is more than twice that of the wire, which is therefore easy to pull in.

The drawing shows the general arrangement of the system. Heating cables are run from a trough which can, if necessary, be combined with a service duct to take lighting or general service cables. The troughs are laid on the base concrete, and, after installation, the heating cables are screeded and the floor completed with plastic tile, wood block or almost any other type of finish. Troughs are covered with removable filler boxes for access to the wiring, and these normally run along the side of the heated area so that there is a minimum of disturbance to the main floor. (*Thermadore (Great Britain), 94/98, Petty France, London, S.W.1.*)

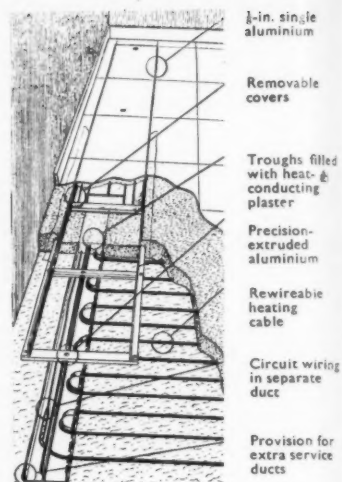
Metal roofing

A new system of metal roofing has recently

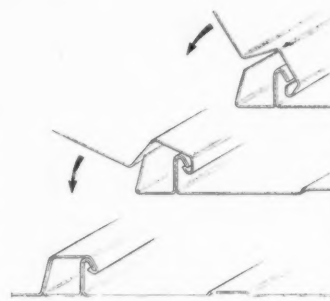
been produced by British Aluminium and is marketed under the name of Lokroll. In appearance it is virtually indistinguishable from the traditional batten roll roof, but the roll is factory made and the panels are secured by fixing clips. The diagram shows how the side of each roll hooks over its neighbour, and it can be seen that the space which would normally be occupied by a wood roll becomes in effect a secret gutter and provides extra weather protection. The panels are made in two profiles, each with a cover width of 12 in., and are available in lengths up to 40 ft. They may be laid to a fall as low as 2 inches in 10 ft. and the clip fixing means that there are no holes to be drilled on the site. The roof structure may be fully boarded, but the panels can equally well be laid on purlins: condensation troubles can be avoided by using vapour sealed ceilings or by insulating the roof sheets. The use of a factory-made roll is an interesting development in roofing technique, for which patent application has been made. There seems no reason why it should not be applied to almost any of the usual roofing metals, but is, in this case, limited to aluminium. (*The British Aluminium Co. Ltd., Norfolk House, St. James's Square, London, S.W.1.*)

Lettering in metal

Hopes have just introduced an alphabet of Egyptian metal lettering which has been designed for them by Nicolette Gray. At the moment it is available in one size only, 12 in. high and 1 in. thick, and in bronze, silver anodized aluminium, or aluminium anodized and primed for painting. (*Henry Hope & Sons Ltd., Smethwick, Birmingham.*)



Above, the Thermadore floor heating system. Below Lokroll metal roofing.

**The Gas Council on Catering**

On the following pages is a supplement on catering which is sponsored by the Gas Council. This is the eighth of a series of supplements which have as their object to give a full technical description for architects of the different uses to which gas and coke can be put. Like Information Sheets, these supplements are a journalistic hybrid: they are "advertisements" in the sense that the space they occupy is paid for by the sponsors and that their ultimate object is to foster the greater use of gas; but they are "editorial" to the extent that the means chosen is to provide as much reliable information as possible and that this information has in fact been "approved" by the JOURNAL's Technical Editor. We hope that readers will extract and keep these supplements for future reference. For this purpose a special binder can be obtained, free of charge, on application to the Publicity Manager, Gas Council, 1 Grosvenor Place, S.W.1. Alternatively, readers may apply through the business reply folder at the back of this issue. The first seven supplements "Domestic Space Heating 1. Fires and unit heaters," "Domestic Space Heating 2. Central heating by gas and coke," "Domestic Water Heating," "Gas Flues," "Coke," "Flues in Tall Buildings," and "Domestic Kitchen," appeared in the JOURNAL for November 29, 1956, April 25, 1957, September 26, 1957, April 24, 1958, January 22, 1959, October 8, 1959, and November 26, 1959, respectively.

gas supplement

5th File No. (95)

UDC No. 725-7

CATERING

The last supplement in this series was on the domestic kitchen. This one is on the public counterpart of the domestic kitchen which, as it can take many forms, is best described under the general heading "Catering." Catering is a highly specialized business and the chief purpose of the supplement is to provide a link between caterer and designer and a common terminology. The supplement begins by considering the different circumstances of industrial, institutional, residential and commercial catering. Next the service of meals is discussed and the different planning arrangements required for counter, multiple counter, cafeteria and table service. Attention then turns to the problems of control and of washing up before considering the actual cooking and preparation of food. The kitchen itself is classified under two main heads: the large kitchen with its many sub-divisions and the small kitchen, with an additional note of special types of kitchen (e.g., for Indian and Chinese cooking). The last part of the supplement describes the service requirements and the different types of gas-fired catering equipment now available.

One out of every six meals consumed in this country is served in a catering establishment, and judging by the number of projects announced every day, there is no sign that saturation point is being reached.

The last twenty years have seen an immense growth in the number of catering undertakings and a much wider interest in the social, nutritional and hygienic aspects of catering. That this wide expansion took place in a critical period when food, equipment, building material, labour and finance were subject to acute limitation and rigid control indicates that many of the standards, principles and practices adopted may not be acceptable now that there is greater scope in all respects.

Each catering department has features peculiar to the function it performs and each caterer, according to his experience, has particular methods and preferences. The designer must necessarily analyse and endeavour to meet specific requirements whilst conforming to a sound basic plan.

The basic plan

There are four main processes to be considered in initial space allocation and their relative positions should conform to a sequence which will give a directional flow as work proceeds. These processes are:

Storage Preparation Cooking Service

The proportion of the total area allocated to each process is dependent upon the type and function of the establishment and the circumstances under which it operates.

Basis for planning

Before the designer can commence planning certain basic information must be made available from which it should be possible to outline the project. Further development of the scheme, however, should be made in consultation with specialists in each particular sphere to ensure that each feature is given its due measure of consideration from the best and most up-to-date experience.

Types of catering establishments

The circumstances under which catering establishments exist, and the relationship between them and their clientele have an important bearing on design. Identification of the type of catering to be carried on will narrow the field of preliminary enquiry and will give an indication of the type of clientele and the reasons for their patronage, revenue, and how it is obtained, the range of service required and the obligations or limitations placed on the establishment.

Industrial catering

The function of this group is the operation of a catering service for an organization, whereby its employees may be provided with meals during their working day.

Usually the service consists of a main meal at mid-day, with morning and afternoon beverages and, possibly, snacks. Where continuous processes or shift work are in operation it may be necessary to provide a 24-hour service, but even so, it is generally found that the mid-day meal has the largest attendance because the staff not directly engaged in processes or shifts are employed in normal working hours.

The time allowed for the service of meals is usually determined by arrangement with the main organization and must take into consideration the nature of the work on which it is engaged. An engineering works, for instance, may find it expedient to switch off all machinery, causing all its employees to stop and take

gas supplement

meals at the same time, whereas a commercial firm will wish to maintain its activities and expect its staff to take meals in relays.

Although there may be an obligation on the part of the employers to provide catering facilities, there is no compulsion on the staff to use them and the percentage of employees attending for meals will be affected by the proximity of their homes, the cost and attractiveness of the meals and the presence of other facilities nearby.

The cost of operation may be borne partly by the management, with the employees paying for what they have at nominal charges by prepaid token or ticket or in actual cash at the point of sale.

Institutional catering

This group includes hospitals, convalescent homes, sanatoria, prisons, colleges, boarding and day schools and the armed services. A full catering service for the inmates and staff is required, possibly with the addition of meals for non-resident staff on duty.

The range of meals covered includes breakfast, morning break, dinner, afternoon break, high tea or supper, and, in some cases a late evening drink and snack. Where night supervision is required provision should be made for meals to the staff involved during their hours of night duty.

The time allowed for meals is determined by the curriculum or routine which has to be followed in treatment, tuition or work programme, according to the type of institution.

The numbers to be catered for are not likely to fluctuate widely as they may in other spheres of catering, and generally not without prior warning to the caterer, except perhaps in the case of non-resident staff who may attend meals only from choice. Nevertheless, in common with industrial catering, the peak load is generally at midday when all inmates and the majority of the staff, both resident and non-resident, are present.

The cost of operation is borne by the institutional authority who budget on a yearly full diet per head basis for the inmates and deduct an agreed sum from the residents' salaries. Non-residents either pay for meals as they are taken or elect to pay an agreed sum over a period.

Residential catering

This group includes hotels, boarding houses, holiday camps, etc., where the function is to provide a full catering service for the residents. Although in some cases catering for non-residents considerably increases the demand at certain times, residents are free to take their meals elsewhere if they wish, thus peak loads are more difficult to forecast than in institutional catering. The range of meals includes breakfast, luncheon, tea and dinner, with the additional feature of early morning tea and an intermittent service of tea or coffee as required through the day. Licensed premises will also provide a service of alcoholic drinks for which special service and storage facilities will be required.

The period of time in which meals are served is determined by the extent to which the management can reasonably meet its clients' requirements and is likely to be much longer than normally found in industrial or institutional catering.

Where large numbers are involved, however, as in some holiday camps, there must be some degree of promptitude at meal times to ensure a satisfactory service to all.

Revenue is obtained entirely from the resident on a daily or weekly basis, according to the services rendered, the non-resident patron paying according to the fare he chooses.

Commercial catering

This group covers the range of non-residential catering establishments including restaurants, cafés, bars, etc., where the numbers to be served cannot be estimated on a "potential" basis. The seating or customer capacity will have a physical limitation, but the extent to which this is used will depend on so many factors, such as location, appointment, nature of service, cost, etc., the skill in assessment of which determines the success or failure of the undertaking.

The meal time periods are likely to be prolonged, even to the extent of overlapping, so that a continuous service is operated throughout the hours of business, with the possibility of peak periods at certain times, according to location and surrounding activities.

The range of meals covered will vary according to the type of trade the establishment wishes to promote or seek. Payment by cash is the general rule, but the "luncheon voucher" and "signed bill" practice is increasing.

Consultation with the client

In the industrial and institutional fields it is apparent that the catering service is an adjunct to the parent organization, with the caterer, if one exists when a new project is envisaged, subordinate to the main authority. In such circumstances the designer may have to take the initiative in the early stages, dealing with interested parties whose knowledge of catering may be less than his own. On the other hand it is inconceivable that a financial venture into residential or commercial catering, would be made without professional experience or advice. Here the designer is well advised to accept the caterer's guidance, keeping in mind his own responsibilities as an architect.

Numbers to be fed: The total number of meals to be served daily may give some indication of the amount of work to be done and the quantities of food to be handled in the establishment, but this would not necessarily determine the space and equipment required. A much more realistic estimate can be made, however, if the output is analysed in terms of time and demand, to establish if, where and what peak load conditions exist.

The first step towards compiling the essential information is to list the number of dining rooms or service points, detailing the numbers to be served at each meal

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or sitting, and the times thereof as shown in the example below.

Peak load analysis of a main meal

	12.00	12.30	1.00	1.30	Total
Dining room A	90		120		210
Dining room B	40		30	30	100
Dining room C	50			40	90
	180		150	70	400

The total number of meals is 400, with a peak of 180 at the outset, followed by a further peak one hour later.

Interpretation of these figures in terms of space allocation and equipment varies according to the work done and time allowed for it in each department.

Service: Dining rooms A, B, C should be furnished and equipped for minimum numbers of 120, 40 and 50 respectively.

Cooking: Fast cooking process equipment such as gas fryers, grillers, vegetable boilers, etc., would need sufficient capacity for approximately half the total, say 200 because the one hour period between the two peaks would allow a second batch to be cooked after the first had been removed for service.

Slow cooking process equipment such as gas ovens, steamers, soup and stew pans, would need sufficient capacity for the total of 400, even though each batch is cooked separately and commencing at different times, because the cooking periods would overlap.

Preparation: Sufficient working space for the entire meal to be prepared, plus advance work for future meals, should be provided. Machinery should be provided on the basis that its output will cope with quantities involved within a reasonable time before being required for cooking or service.

Storage: Peak period or daily requirement figures have no significance in regard to storage space, except for acute perishables such as milk, cream, bread, etc. For other commodities it will be necessary to analyse such factors as the incidence of delivery and the quantities to be held in stock. The data given later will serve as a guide to space required.

Continuous operation: Not every establishment can be analysed in neat tabular form as the foregoing example would suggest. Where a continuous service is operated over a long period it is reasonable to assess the output over two hours at the heaviest demand as a basis for space allocation in the kitchen and preparation departments. Service arrangements, however, would be determined by speed of turnover in clientele.

Range of meals: A layout based entirely on a mid-day meal figure may fall short in certain respects if other meals are to be provided. The style of cooking for breakfast varies from that for other meals and care must be taken to include adequate equipment for this. The service of beverages during the morning and afternoon may be required by many more than are served with the mid-day meal and may call for special preparation and service points to deal with a large demand in a very limited period. Late night drinks and

early morning teas could also be covered by the provision of suitably placed equipment for an occasional beverage service. High teas, suppers and dinners may be assumed to be covered in the provision for the mid-day meal, provided the numbers to be fed do not differ greatly.

Menu

The range of the menu throughout the year should receive attention to ensure that suitable equipment is provided to cope with seasonal changes and special occasions. Closer study, however, should be made of the number of courses to be served at each meal, with special regard to the number of choices for each course.

A menu giving the choice of two dishes in each course would appear to require duplicate ranges of certain equipment each with half the capacity needed for a set meal. In practice, however, the number of choices does not always indicate multiples of equipment since the experienced caterer will "balance" the menu and choices to bring equipment into service which would stand idle if a "no choice" menu were in force. On the other hand, it is unlikely that alternative choices will be equally popular, so that cutting cooking capacity in strict ratio to the number of choices is not possible. Some excess capacity is always needed.

The foregoing observations may appear complex, but it is important that these considerations are given attention if a good layout is to be achieved. An appreciation of the complexity of catering requirements will perhaps reduce the liability of using so called "constant factors" arbitrarily without consideration of the peculiar features that each catering department boasts or suffers.

THE SERVICE OF MEALS

The style of service cannot be assumed from the type of establishment to be planned. Although it is unlikely that the luxury restaurant or hotel will have any type of service whereby its customers fend for themselves, it is not uncommon for industrial or institutional establishments to operate a full waitress service in some dining rooms. The choice between styles of service in such places may be dictated more from managerial considerations than practical catering experience and here the designers should accept the situation unless, of course, limitations of space and facilities jeopardise its practicability.

Descriptions of various styles of service, methods of operation and space considerations, commencing with the simplest form, are given below and are represented diagrammatically in Figure 1.

Counter service

Each diner goes to the counter to collect his dishes with the necessary cutlery, and carries them to his table. Dirty crockery and cutlery are returned through a separate hatch or on to a mobile rack for transport to the washing department. In the simplest form of service the courses are pre-plated and stacked, with

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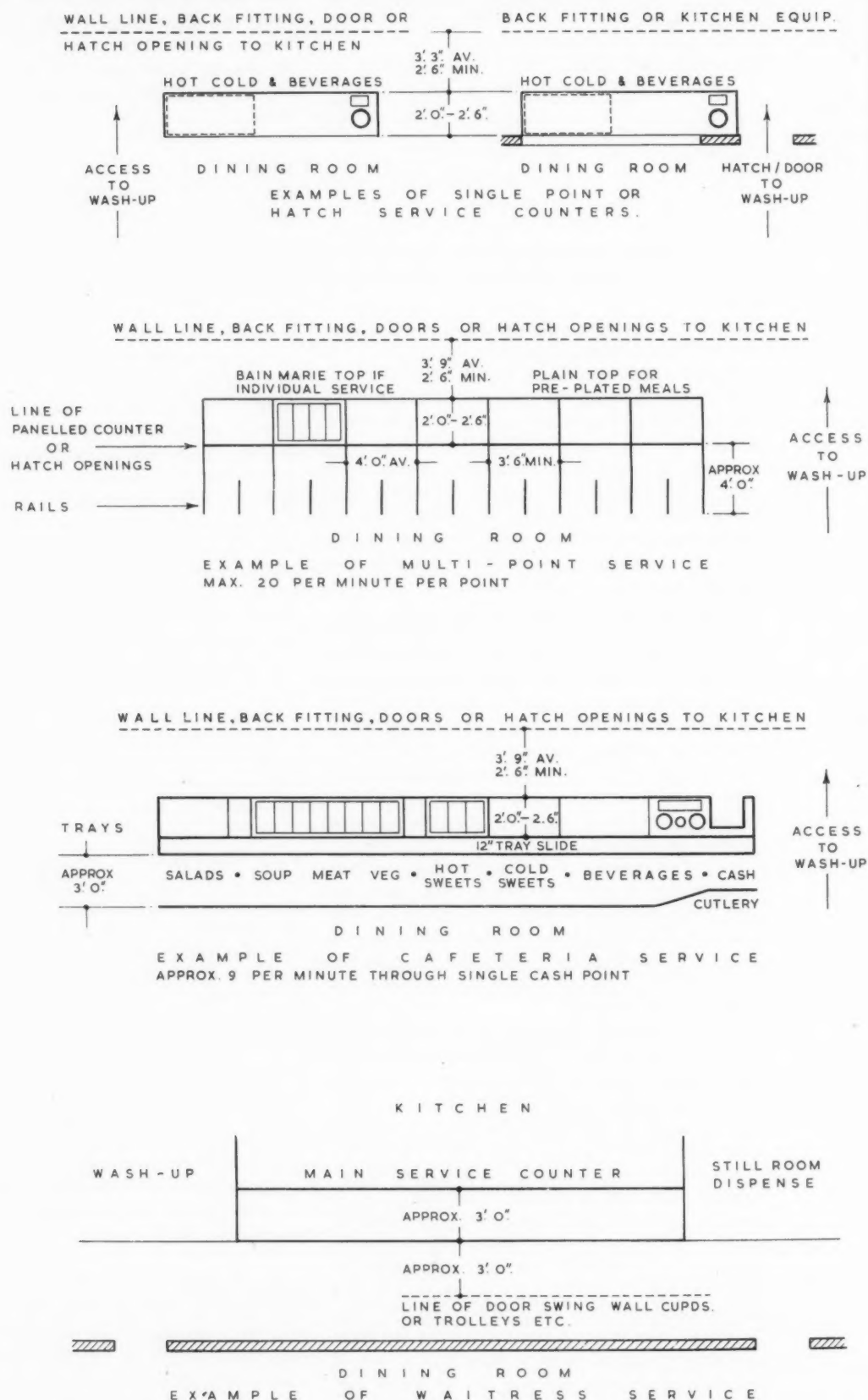


Fig. 1. Servery data.

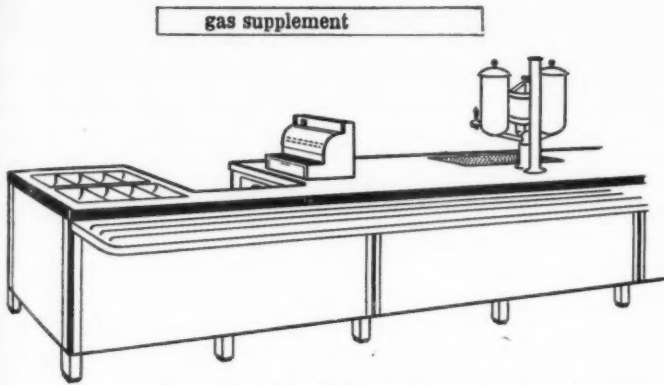


Fig. 2. End of cafeteria service counter showing beverage unit, cash desk and cutlery section.

the use of plate covers or rings, in a service counter. A choice of menu does not affect the size of equipment to any extent other than allowing for easy access to each variety offered. The service becomes more complex when any of the plating-up process is done to the diners' requirements. Thus the main dish may be pre-plated but the vegetables, sauces and gravy added at the point of service. The sweet, also, may be pre-portioned except for the sauce which is added according to the diners' choice. The plated entrees and sweets take up the same volume of space as the completely pre-plated meal and extra service top space will be required for vegetables, gravies, sauces, etc. This method of service is slower in operation but is more satisfactory to the consumer and saves waste of food. If the entire meal is plated at the point of service extra counter-top space will be required to accommodate the range of items on the menu, but cabinets need only be of sufficient capacity to hold plates at the required temperature. The speed of service is necessarily slower according to the number of operations which have to be carried out for the service of each course. Beverages, cold drinks, ice cream and other additional items may also have to be considered in space allocation. (See Fig. 1, top.)

Multiple counter service

Where large numbers are to be served in a short space of time the service is distributed over a series of service points, each offering a particular choice of course. Thus, there may be three for the main dish, two for sweets, one for beverages and one for sundries such as ice cream, confectionery, cigarettes, etc. The same considerations apply with regard to the choice between pre-plated dishes and portioning at the point of service, but with only one course consisting of a single entree, two vegetables and gravy or sauce, the service top space required for either method would be amply covered by the width which has to be allowed for "in" and "out" gangways and barrier rails. See Fig. 1, second diagram from top.

Cafeteria service

This is an embellished form of the single counter service where the diner is provided with a tray on which can be carried the entire meal and the necessary cutlery at one visit to the service counter, along which a tray slide is provided. See Fig. 1, second diagram from bottom.

In planning the layout of the cafeteria system, the sections should be presented as far as possible in the order which customers normally consume their meals. Thus, after the tray stand, fruit juices, *hors d'œuvre*, salads, cold meat, soup, hot entrees, hot vegetables, hot sweets, cold sweets, ice cream, sandwiches, bread, rolls, pastries, cheese, savouries, beverages, cold drinks, cash desk and cutlery would present an order which customers would recognize and be able to anticipate their needs. Cutlery is advisedly placed after the cash desk since customers who overlook their needs in this respect should not be required to re-enter the queue and pass the cash desk again. (See Fig. 2.)

A certain amount of pre-plating is acceptable and even desirable, especially with regard to *hors d'œuvre*, salads and cold meat which when displayed stimulate demand for these dishes.

Although it appears that the length of the counter is determined by the range of menu that it is desired to offer, it should be borne in mind that an undue length of counter will restrict the speed of service. A total length of 30 ft. would be reasonable to provide for a range of menu giving two or three choices of each course and a rate of flow up to nine customers per minute through the control point. Where greater numbers than this are required to be served, then it is advisable to duplicate the entire service.

In institutions there is often a need for cafeteria service for the heavy mid-day meal demand, or for quick services at the breakfast meal, but the evening meal, patronized mostly by resident staff only, may be more leisurely to the extent of providing a waitress service. The provision of screens or access doors to the cafeteria counter would make it possible for the style of service to be altered as desired.

Table service

The style and appointment of a table service vary considerably between establishments, to the extent that the only generalization that can be made is that the diner is seated and the meal is brought to him. In the simple establishment the service may consist of plated courses brought from a single hatch service. A variation of this may include the placing of vegetable dishes, gravy and sauce boats on the table for the diners to help themselves, a situation which is often found in staff dining rooms. In this case provision is required for preheating and filling the dishes which can be achieved more easily if the service counter is provided with doors on both sides. (See Fig. 1, bottom diagram.)

The service associated with the luxury restaurant or hotel probably needs less detailed study as far as the actual counter is concerned, since this acts mainly as a barrier or transfer point between the kitchen departments and the service. Adequate storage accommodation must be provided for hot and cold plates to be accessible from the service side, and for service tableware from the kitchen side. The general practice is for each section of the kitchen to portion and place its products in the appropriate dish on to the counter, according to the orders placed by the waiting staff. A kitchen clerk normally is stationed at the service coun-

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ter to receive and pass on the orders to the kitchen and to control and record the portions served. Each waiter or waitress will require a side-board, near to the section of the dining room they serve. Other additional features may include a cold buffet, grill section, and mobile trolleys for *hors d'œuvre*, pastries and sweets, and joints to be carved at the table, in the charge of specialist staff.

Meals at the counter

The ideal of reducing the distance between the customer and service is realised when the diner is seated at the actual service counter.

The designer, in this case, endeavours to create the greatest possible counter length, commensurate with reasonable access on both sides, in order to provide the highest number of places for customers. The range of menu can be considerable since sufficient counter space can usually be provided for the necessary service equipment. The introduction of cooking equipment behind the counter also permits cooking and service by the same operator. Other cooking equipment may be needed "behind the scenes" where preparation work and pre-cooking of certain items will be done. Of extreme interest to caterers is the turnover rate in this style of service, where the customer, having finished his meal, feels more conspicuous than if seated at a table.

Seating arrangements

The allocation of space for seating varies according to the style and type of establishment and obviously with the design of furniture to be used. The diagrams in Fig. 3 indicate some of the more generally used forms of seating. The arrangement of tables and chairs in a dining room, with essential service requirements, customers' access and other limiting factors present too many permutations to be enumerated. It is not likely that the architect, in outlining the project, will expect his client to decide on such details, and, therefore, some basis on which to allocate space will be required. It is found that an allowance of ten square feet per person is reasonable for industrial or institutional staff dining rooms, including gangways, access to counters, etc., but as the style and appointments improve a greater area is necessary. It should not be assumed that there is a particular arrangement that can be universally employed to make the best use of the space available. Quite often a mixture of table sizes and shapes will prove more economical in space than rigid adherence to one design only and break the monotony of a uniform layout.

Appointments

The customers' entrance in relation to the service points has a bearing on the circulation of traffic within the dining room, but is in many cases controlled more by consideration of possible positions for cloak-rooms, toilets and similar facilities which must be related to drainage and ventilation requirements.

The entrance to the dining room should be unhindered

by cross traffic of customers or service personnel and an acceptable position for this is on the opposite side of the room to the service section. If accommodation can be provided for queues outside the dining room, access to cafeterias or single counter services near the "inlet" side of the counter would allow easier circulation within the dining room. If queues must be formed in the dining room, those by the side walls offer the least obstruction to other circulation.

The inclusion of other features such as stages or displays may be required but as far as possible access to these non-catering incidentals should not interfere with the normal service routes. The position of tables and chairs should be arranged so that diners do not have to turn completely round to watch proceedings. The use of dining rooms for other functions such as concerts, dances, indoor games, etc., even if infrequent, may be essential. Layouts most suited to catering may not be ideal for such alternative uses and some measure of compromise may become inevitable. The security of the catering equipment from intrusion on such occasions should be considered, although a self-contained catering service for drinks, beverages and snacks might be included.

Control

General design should cover security of the premises against loss of revenue or stock. All external doors should be regarded as security risks and the numbers minimized accordingly. Staff and goods entrances and exits should be positioned where supervision is possible. Staff cloakrooms and toilets should be placed so that it is unnecessary to pass any other departments on the route out of the building. Methods of payment should be studied to ensure that design features do not form loop-holes for dishonest clientele. In industrial or institutional catering the ticket system precludes the catering staff from handling cash but provision must be made for the issue of tickets. Self-service cafeteria counters generally have cash desks at the end of the service counter which place reliance on one person only, and narrow the field of risk. Waitress service and the meal cheque or bill offer two methods for payment. One is that the waitress actually receives the cash from the customer on presentation of the bill, or alternatively the customer takes the bill to the cash desk, the latter generally associated with the popular restaurant. In each case, however, supervisory staff keep a watchful eye on customer and waitress to ensure an equitable settlement. The cash desk, therefore, is not necessarily immediately at the exit.

Washing-Up

This important aspect of catering should not be regarded as a fifth process but as an adjunct to the preparation, cooking and service sections. In all but the very smallest of projects, washing-up equipment for the preparation and cooking departments would be different and separate from that for the service. It is reasonable, therefore, at this point, to consider the washing-up process in relation to service only.

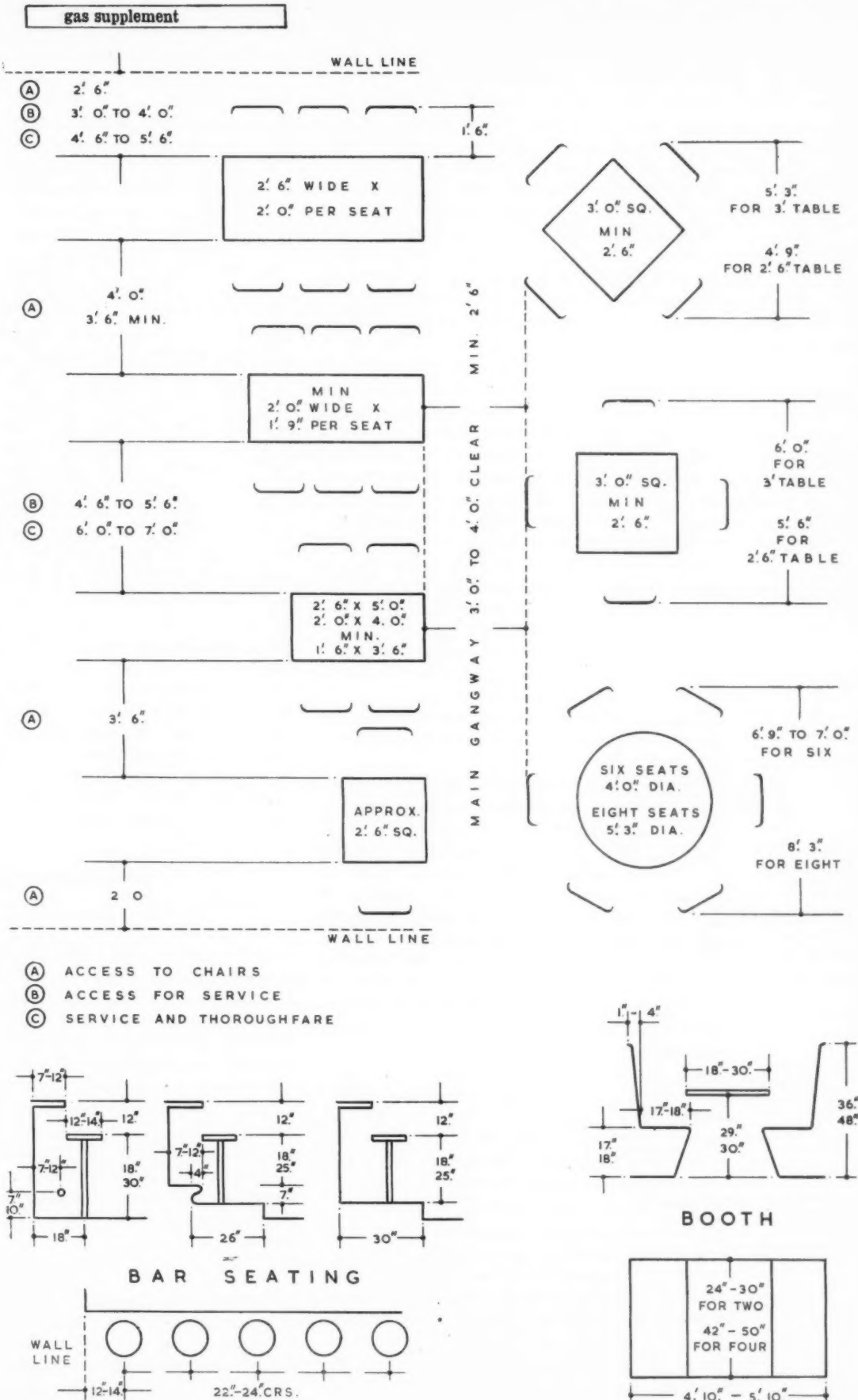


Fig. 3. Seating Data.

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The location, layout and equipment for the service wash-up will vary according to circumstances, but in all cases the principle should be to remove soiled table-ware from the diners' view as quickly and quietly as possible. The speed at which the actual washing-up process is to be effected is dependent upon the amount of table-ware to be made available, the turn-over rate of clientele and staffing arrangements. An analysis of the number of soiled items to be expected over a period and the rate of their expected return clean to the service counter will indicate the equipment and space required. The sequence of operations follows a general pattern but the methods by which they are achieved may vary.

In a small dining room soiled crockery may be collected *via* a hatch leading directly to the wash-up section. This arrangement necessarily places the wash-up adjacent to the dining room, and as near as possible to the meals service counter for the replacement of clean ware. Hatch collection is practicable only where sufficient staff and space are available to keep the hatch clear for further returns. Where large numbers are involved more flexible arrangements are advisable such as the provision of mobile racks or trolleys at convenient points in the dining room, which when filled are wheeled to the wash-up department. Mobile racks or trolleys lessen the need for the washing-up department to be immediately adjacent to the dining room, although due regard should be paid to the distances which have to be travelled.

The removal of debris from the plates and dishes is essential before they can be sorted and stacked prior to washing.

Modern hygiene standards require the washing process to be followed by rinsing and sterilizing operations. The simplest acceptable form of equipment is a sink for washing and another for rinsing and sterilizing, but wherever possible the three processes should be separate. To be practicable, sufficient space for at least one basket or rack should be provided between the sinks so that washed crockery may be placed therein for immersion in the sterilizing sink. Sterilizing allows the crockery to dry quickly by its own heat and therefore space for racks of sterilized crockery should be provided at the end of the unit to hold it while drying.

Similar arrangements apply with regard to "brush" or "immersion" types of dishwashing machine, but where a "spray" type machine is used adequate space must be provided at the inlet side of the machine for "traying-up" the crockery, and in addition auxiliary sinks are necessary for use in the event of breakdown of the machine or power supply.

After drying is completed, crockery should be stacked to save space, avoid damage and facilitate transport. Storage in the atmosphere of the washing-up department is to be avoided and transfer to the service points or reserve store should be by mobile racks. Stackable items such as plates and saucers normally need no special provision, but cups, tumblers and cutlery, etc., give longer service if accommodated in special trays

or racks, which prevent rattling.

Silverware and other forms of service tableware may need special attention apart from the normal washing process and arrangements should be made for the separation of these items from the normal crockery at the sorting stage, diverting them to a separate bay or section for washing and burnishing by machine.

Cooking and preparation

The kitchen and its ancillary sections form the heart of the catering premises and, unlike the service area, space requirements can now be based more closely on the peak load. Differences in the types of establishments and their menus do not have such a great influence on the area needed for the kitchen. Where differences exist between projects having similar basic commitments, these are often due to the shapes of the buildings. Usually, a rectangular shape, provided it is not too elongated, is better than a square, whereas triangular and complex shapes can obviously be most wasteful of space. There are also complications when there are different floor levels and where catering plays only a minor part in the function of the premises as a whole and has to be integrated with other departments. Lastly, space must be used to maximum advantage—too much can also prove an embarrassment, especially as there is a temptation to fill excess space with non-essential fittings which have to be kept clean.

It is, nevertheless, essential at the earliest stage of preliminary planning to have some indication of the overall space needed. The figures suggested below for the cooking and preparation area cover possible minimum and maximum requirements. It should be possible to use the lower figures in simple self-contained establishments of a reasonable shape.

5-8½ sq. ft. per catering unit for kitchen catering for	100
3½-5½ sq. ft. do	400
2½-4 sq. ft. do	1,000

The term "catering unit" indicates each person to be served during the peak load.

It is emphasized that the above figures exclude main storage requirements and staff accommodation, etc., which are dealt with later and are subject to greater variations. It is also noteworthy that a graph based on these figures would tend to level out at a peak load of 1,000 to 1,250. This supports the view that beyond this range no more efficiency in space can be expected and areas are then likely to be directly proportional to the peak load. This point is important in planning borderline cases where more than one kitchen may become desirable to overcome problems of food distribution.

General allocation of space

With an approximate area established and with the knowledge of the direction from which goods are going to enter the kitchen premises and be forwarded to the point of service, the next consideration concerns

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allocating space according to the processes which are to be carried out.

For a wide range of establishments, the number of different sections increases proportionately to the peak load and they are created to provide localized areas in which a particular process can be undertaken without interfering with other activities. It is not essential to allocate space by erecting walls or partitions, as suitable sections or bays can often be arranged by the siting of equipment to provide an open aspect which facilitates supervision.

Separation into sections may be of advantage in the larger establishments, but in a small unit they may be difficult to clean and cause the staff needless walking to and fro.

An indication of the manner in which catering premises in general may be sub-divided is shown in Fig. 4 below. It must be understood, however, that the diagrams are not intended to represent actual plans, but have been prepared in this manner to indicate the relationship between one section and another. They need to be examined strictly in conjunction with the following notes, which contain hints on orientation and the manner in which the main flow route from stores to service should be maintained.

Diagrams A and B clearly indicate the four main sub-divisions—storage, preparation, cooking and service. The former may be said to represent a sizeable project with a considerable number of sections, whereas the second illustrates the main divisions which are usually introduced at a relatively low peak load of about 150. The third diagram is intended to cover small establishments where preparation, cooking and service take place within one common area.

The general pattern shown in A and the principles governing its arrangement will also apply in less complicated schemes since the main flow routes should still be retained in the small project, though this will be obtained more by the siting of equipment than the creation of sections.

Ideally the overall layout should occupy a common area on one floor level but there may have to be divisions between certain of the four main sections (storage, preparation, cooking, service). For example, kitchen, dining room and bulk store may each have to be sited on a different floor necessitating lifts or special distribution equipment. Any serious break between the cooking and preparation areas should be avoided although it may have to be accepted in top floor kitchens when some departments may need to be

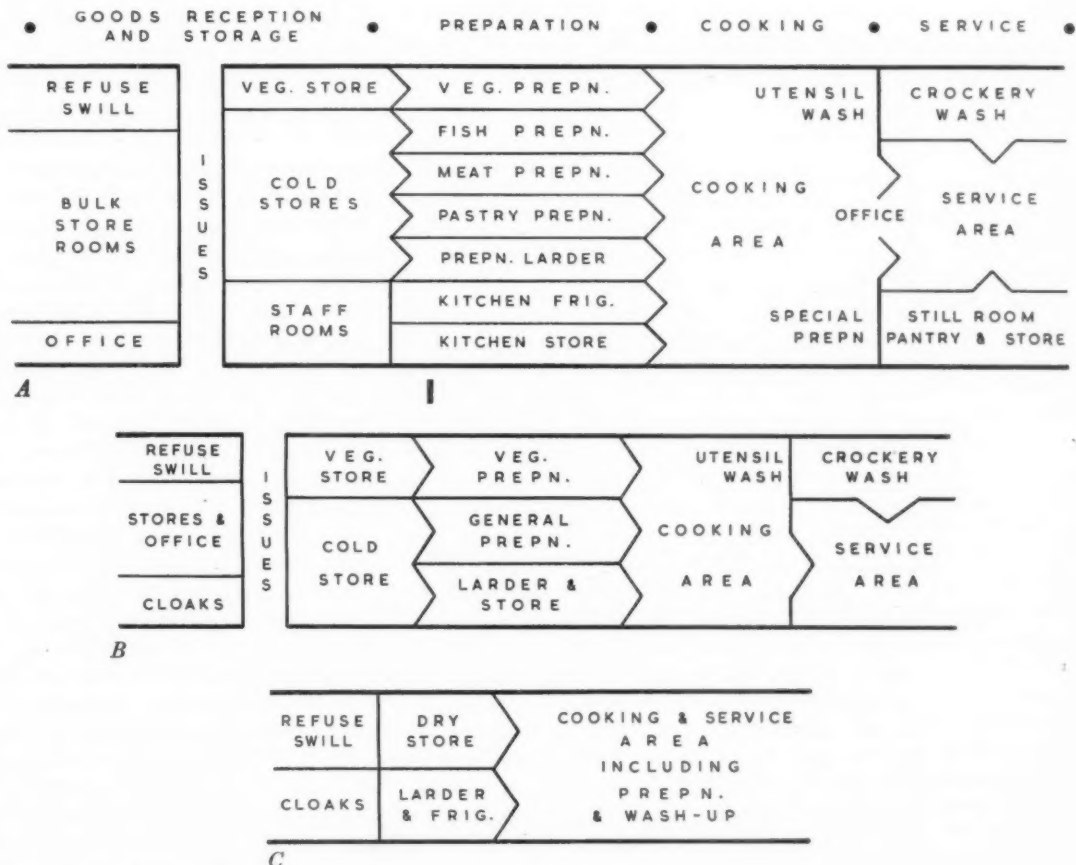


Fig. 4. Sub-divisions of catering premises.

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on the ground floor near to the delivery point. For example, this might apply to the butcher's shop or vegetable preparation, with the object of removing dirt or waste matter at the source. Nevertheless, every effort must be made to retain an orderly flow of goods through the premises.

The main flow routes can be described as follows:

1. Flow of unprepared food from the store to preparation, kitchen, serveries and dining rooms. This might involve the issues of goods to distant premises, but as most of the food will need preparation before consumption, the strongest link is needed between the stores and the preparation sections of the kitchen.
2. Flow of prepared items to the cooking equipment or servery, the former requiring the stronger link.
3. Flow of cooked items to the point of service *via* lifts or food conveyors if applicable.
4. Flow of refuse and swill which will take place in the reverse direction. The use of waste disposal units which grind the waste and dispose of it *via* the drains will reduce the quantity to be physically transported. It is obvious that there will be a certain amount of cross traffic, but the aim in planning is to keep this within bounds and to co-ordinate the layout to average overall efficiency rather than to have an ideal relationship between particular sections at the cost of difficult working conditions or bottle necks elsewhere. Some compromise is inevitable and different skilled designers would probably produce vastly different schemes for the same project. Each might be equally acceptable and trouble usually starts when the uninitiated attempt to combine the best features of each.

Large kitchens

In large kitchens of the type shown in Fig. 4 A, with preparation sections separated from the main cooking area, less than half the total space is needed by the latter.

The cooking area will usually need dividing, if only to create a self-contained section for washing the pots and pans from the preparation and cooking areas and, probably, the service dishes. Its stronger link is usually with the cooking area and it has therefore been shown as part of that area. As water can be spilt more easily in this section than most others and at times it is likely to be congested and untidy, division by the erection of partition walls, not necessarily from floor to ceiling, is advisable. In hospitals, where trolleys or containers may be used for food distribution, it may be advantageous to site the utensil wash near the trolley bay, which will form another sub-section. A further section may also be necessary for the preparation of special diets (see Special Kitchens) and this also should be sited near the trolley bay. An office for the chef should also be considered. This should overlook as many sections as possible and may well be constructed on a raised platform with glazed partitioning. In high class establishments space for the kitchen clerk may also be necessary between the cooking area and the servery.

Apart from the sub-divisions mentioned above, the

cooking area should have its apparatus positioned convenient to appropriate preparation sections. Thus such apparatus as boiling pans and steaming ovens intended mainly for cooking vegetables should be easily accessible from the vegetable preparation.

There are, of course, likely to be numerous complications and compromise is essential. As an example, there may be good reasons for placing the fryer near to either the fish or the vegetable preparation section, but because of continuous service demands it may be better to install it near the service and hot cupboards. Furthermore, apart from the relationship between certain cooking apparatus and sections undertaking different work of preparation there are other factors to consider. The grouping of cooking apparatus will simplify ventilation arrangements and central blocks of equipment are often a convenient way of achieving this, and also making it easier to clean round the appliances. There is, however, usually a need in the larger establishment to have apparatus arranged both centrally and against the wall, and if the siting of tall equipment in the centre can be avoided the layout will have a more open aspect which, apart from improving the appearance and aiding natural lighting of the kitchen, will also facilitate supervision and control.

Floor channels or gulleys to assist the emptying of boiling pans, collection of condensation from steaming ovens and general floor cleaning, should not be forgotten, but they need careful siting as even with covers they can be dangerous to the staff if positioned along or across gangways.

Most of the foregoing factors could be said to apply to most types of establishment, but where individual chefs are in charge of separate sections the architect should seek advice on the equipment each will use, and the way in which the kitchen will be divided.

Before dealing with the separate preparation sections usually needed in larger establishments their relationship with the cooking area should be studied. In Fig. 4 A one side of the cooking area is shown with access to no less than seven ancillary sections. It is unlikely that this could be planned satisfactorily, since when only one side of the kitchen faces the preparation sections passages often have to be provided to link them with the cooking area. This kind of layout wastes space and also tends to elongate the premises, causing the staff to walk considerable distances and creating difficulties in supervision. If two or three sides of the cooking area adjoin preparation sections, a more compact and manageable layout can be achieved. Such layouts may complicate the routes between the stores and the preparation areas and prejudice such desirable features as a completely centralized refrigeration block as depicted in the diagram. Some compromise is inevitable, but it is suggested that as the cooking area and the preparation sections form the hub of the catering establishment their orientation should take priority over the relationship between the stores and the preparation sections. In single storey buildings or top floor kitchens the ceiling of the main cooking area can be higher than that for surrounding

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ancillary sections, increasing scope for natural lighting and ventilation of the central area.

The vegetable preparation section

A separate vegetable preparation section is needed for relatively small establishments. Spilt water and vegetable trimmings should be prevented from spreading to other departments by the erection of dwarf walls or half-glazed partitions. This section will handle a high proportion of the total weight of food passing through to the kitchen and needs to be directly linked with the cooking area. Similarly, it should be favourably sited in relation to the vegetable store even at the cost of having to arrange a separate delivery point for vegetables.

There are few exceptions to the above; even if a large bulk vegetable store is provided some distance away, it will still be necessary to have on the spot facilities for storage, which could be sited within the vegetable preparation section.

A relatively large number of staff is likely to be employed in this section which, in the larger establishments, should be about 12 ft. wide to allow for sinks, benches and machinery along opposing walls, with a centre table.

There are occasions in large institutions when the vegetable section may be some distance from the kitchen or cooking apparatus. Difficulties in transportation could be mitigated by providing mobile sinks instead of the customary fixed sinks.

The meat and fish section

This section could be sub-divided as shown in Fig. 4 A, especially in the larger establishment. Like the vegetable preparation section, both sub-sections should adjoin the cooking area and, as they deal with food requiring refrigeration, there should also be a strong link between them and the cold stores, although a fish section could contain its own refrigerator.

There is less need for centre tables, although they must not be discounted in the meat section or butcher's shop in the larger establishment. If suitable equipment, including sinks, benches and machinery, can be incorporated against two opposing walls, the width of a combined meat and fish section need only be about 8 ft.; in fact, and as mentioned earlier, these sections in particular may be formed by the siting of equipment rather than by structural means.

The pastry section

In general, this section may take two forms. It is usually either a section dealing mainly with work of preparation, requiring sinks, benches and machinery and having its cooking apparatus sited in the main kitchen, or it is a self-contained unit having preparation, cooking and some storage facilities and, perhaps, its own wash-up.

In the first case, it must be linked with the cooking area, perhaps in a bay near to appropriate equipment. In the latter case it will have its own refrigerator or be sited near to the general cold rooms, but its rela-

tionship with the storage area is of less importance than for most other preparation sections.

The self-contained pastry kitchen is generally enclosed by partition walls and will usually need to be of a size which will enable a centre table to be included. The question of ventilation is important to ensure cool conditions, especially as the section is likely to have a refrigerator and conservator so that ice cream can be dealt with.

The preparation larder

In the type of layout as represented in Fig. 4 A with its separate ancillary sections, it is often beneficial to create a further section for other work of preparation accessible to both the cooking area and refrigeration. It is unlikely to require a centre table and a 6 ft. wide section would allow sink and benching along one wall and shelving along the other. There may also be good reasons for making the room lockable.

The kitchen store and kitchen refrigeration

Details of general storage requirements are submitted under separate headings, but some mention must be made here of the stores and refrigeration which usually need to be located within the preparation area as shown in Fig. 4 A. A kitchen store, unless it forms part of the larder, is usually needed for day to day items already issued from the main stores and it should be easily accessible from the cooking area and its preparation sections.

Fig. 4 A also shows space at the junction of the cooking area and larder for a kitchen cold room, and whether it forms part of a centralized refrigeration block depends entirely on the overall layout.

Small kitchens

Although for convenience most of the foregoing hints on orientation and general layout were based on the diagram shown in Fig. 4 A, the same basic principles hold good for establishments with a smaller number of sections or divisions, as shown in Figs. 4 B and 4 C. There are so many permutations that it might prove confusing to try to cover all eventualities, but the following remarks may serve to explain the object of Figs. 4 B and 4 C.

Fig. 4 B is fairly representative of a large number of establishments in which one could expect to find one common cooking area with perhaps a partitioned off section for utensil washing and only three main divisions within the total preparation area. The vegetable preparation section will be generally as explained in Fig. 4 A, but, of course, smaller, whilst the sections for meat, fish and pastry are likely to be merged into a common general preparation section of a size which will allow a centre table to be incorporated. The preparation sections may not need to be formed by partitioning, but the larder/store should be lockable. As the larder section represents a merging of the three remaining sections in Fig. 4 A, it is likely to require a sink as well as tabling and shelving so that it could undertake certain preparation work. Part of

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it could also act as a pre-cooling annexe to the kitchen cold room with which it should be linked.

Fig. 4 C represents the majority of small catering establishments when three of the four main divisions of the overall layout, *i.e.*, the cooking, preparation and service sections, are absorbed into one common area in which the main flow routes will be obtained by the positioning of apparatus and equipment. Whereas in the other diagrams there is most likely to be a wall separating the kitchen and the servery, screening at least the former from any adjoining dining room, service in Fig. 4 C is likely to be effected through a hatch opening. It might then be difficult to prevent diners having a view of the kitchen, which may not always be at its tidiest, but a good feature would be to provide a screen unit forming a back bar for the servery and providing table space for the kitchen.

It is far more difficult to obtain all the desirable features in a small compact layout than in the larger establishment which warrants a number of sections and duplications of the same type of equipment. For example, separate sinks are desirable for preparation, utensil washing and crockery washing. Those for the last two functions should have washing and rinsing compartments and preparation work would usually demand more than a single sink. However, there are many establishments which could hardly justify six sinks, so some interchange of use will be necessary. A separate wash-hand-basin for the personal use of staff should be provided.

Goods reception and storage

Within the composition of the plan as depicted in Figs. 4 A, B and C, one of the four main divisions, *i.e.*, goods reception and storage, remains a constant. References have already been made to the relationship between the stores and kitchen, but more details concerning actual storage accommodation and possible space requirements are submitted later. For convenience, the goods reception and storage area in all diagrams includes catering staff accommodation which may be merely locker space or a series of rooms. This is also dealt with later under a separate heading, but is mentioned here to complete any reference back to Fig. 4.

Special kitchens

1. *The diet kitchen:* The entirely self-contained unit is a rarity but when allied to the main kitchen it may still have to be treated as a separate unit even though, for example, vegetables may be prepared in the main vegetable section. Special knowledge is required in the design of such units but, to generalize, the real diet kitchen is introduced to provide separate preparation and cooking facilities for staff working directly under the control of a trained dietitian. Thus it may be that an office from which the dietitian could function is the first essential. The size and scope of her kitchen would depend on information which could only be obtained from the authority concerned.

2. *The ward kitchen:* The size and layout of these

units will again depend entirely on information given by the authorities and although it is usual for each ward to have its own kitchen, the number and type of inmates vary considerably. Approximately 200 sq. ft. could be taken as a guide to the area needed, remembering that, if service is required to the bedside, circulation space must be allowed for both heated and general purpose trolleys.

The type of equipment usually provided comprises a double compartment sink unit; storage cupboards and drawers for crockery, cutlery and a limited amount of food such as breakfast cereals and jam; a hotcup-board for warming plates; facilities for making beverages and toast, boiling eggs and a refrigerator for milk and fats. Certain ward units will need a sterilizer, a babies' ward may demand a separate milk kitchen and there could be a cafeteria style of self-service from the ward kitchen of a mental hospital. Therefore it is again emphasized that the problems of layout and design can only be tackled in conjunction with experts' advice.

3. *Other kitchens:* Establishments specializing in the service of national menus such as the Chinese or Indian restaurant need special study and, also, architects may be involved in planning kitchens where caste or racial differences will have an effect on design. Specialist consultants and most well known firms of kitchen engineers would be able to offer detailed information. They could also aid in the design of Kosher kitchens where the flow of goods from stores to service, including crockery washing, is strictly separated into two channels, one to deal with meat and items coming into contact with it and the other for the equipment and utensils involved in milk processes.

SERVICES

Gas services

In planning a kitchen it is advisable to consult with the Gas Board at an early stage on details of the service pipe required, installation of meter and extension of piping and connections to the gas appliances. In a new building this will first involve agreeing the size and the most suitable point of entry for the gas service pipe to the building or, in an existing building, a decision on whether the gas service pipe can meet the additional demand or needs to be enlarged.

The meter should ideally be positioned as near as possible to the point of entry of the service to the building and be installed in a cool dry place. If it has to be fitted in the kitchen area a ventilated cupboard with full width doors is desirable. The Gas Board will supply details of the minimum dimensions of the cupboard to house the meter and its connections.

In extending the gas supply from the meter to the kitchen, the pipe sizes should be related to the lengths of pipe run and the gas ratings of the particular appliances rather than to the size of their gas connections. Most catering appliances now have integral pressure governors to ensure a consistent performance. When ordering appliances it is advisable to enquire if

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a pressure governor is included and also to enquire the position of the gas connections on the appliance so that the gas supply can be brought to the best position for connection. If an integral governor is not included an independent one should be fitted in the gas supply near the appliance. It is also an advantage to incorporate an isolating cock to each appliance or group of appliances for servicing purposes.

Electric services

Similar considerations (voltage, availability of an adequate supply, etc.) apply as for gas.

Water services

The Local Water Authority should be consulted on details of water regulations with particular reference to the size of the cold water storage cistern and any special requirements on the connection of appliances to the main water supply or to the down feed from the cold storage cistern.

Hot water is piped usually at 140 deg. F. to wash-up, pot wash and handbasins. Connections are often needed at other points:

(a) to take the chill off water used in vegetable or fish and meat preparation during cold weather; (b) to provide hot water for general cleaning (scrubbing of tables, boards, etc.); (c) for filling some vessels (e.g., boiling pans, bains marie, saucepans, sterilizing sinks) where water is to be brought to the boil quickly.

Local heating of the water up to 180 deg. F. will be required for sterilizing. Gas heated appliances for the provision of hot water offer advantages of flexibility and high recovery rate and are particularly suitable where intermittent demands are required over a large area of kitchen.

Consideration should be given to the installation of water softening plant to reduce scale deposits and the quantity of detergents required. Capital expenditure on such plant can be kept to a minimum if treatment can be confined to water which has to be heated.

Drainage

Limitations on the number and position of drainage points affect the scope for planning to a highly important degree. If at all possible, access to drains from both sides of the kitchen should be provided to avoid the use of inspection chambers, man-holes, open gulleys and long runs of drain with shallow falls within the kitchen. If gulleys can be located near to the outside wall, so much the better, but where vegetable preparation equipment, especially the potato peeler, is concerned, shallow falls and long runs should be avoided and rodding eyes provided at every bend.

Ventilation

Although the first consideration of the ventilation scheme is to promote fresh air in the kitchen by removing cooking smells and vapours, the arrangements for collecting and discharging them must be related to the kitchen and its surroundings and this is a subject which calls for expert advice. The provision of ventilation hoods over groups of equipment serves the dual

purposes of providing collection points for the extract system and also as protection for the general scheme of decoration. Unless the hoods impede natural lighting, there is no great point in having them glazed in preference to sheet metal construction since the latter facilitates the fixing of "bulk-head" lighting where it is needed and has less joints or crevices to hinder cleaning. The extract system should be designed so that the influx of replacement air, mechanically controlled or otherwise should be from correctly placed air inlets and does not cause noticeable draughts from doorways and window openings. Space heating in the kitchen is often overlooked because of the heat given off by the equipment, but preparation areas and washing-up bays at least should be provided with local heating.

EQUIPMENT

The selection of equipment for a particular establishment cannot be made to an arbitrary scale, but the following observations may serve as a guide to what may be considered as a basis for space allocation and services required and also to prompt discussion with consultants in this particular field. The great variation in type, design and capacity of equipment available stresses the need for analyzing the requirements of the catering department, especially with regard to the "peak load" and the methods of catering employed.

Cooking equipment

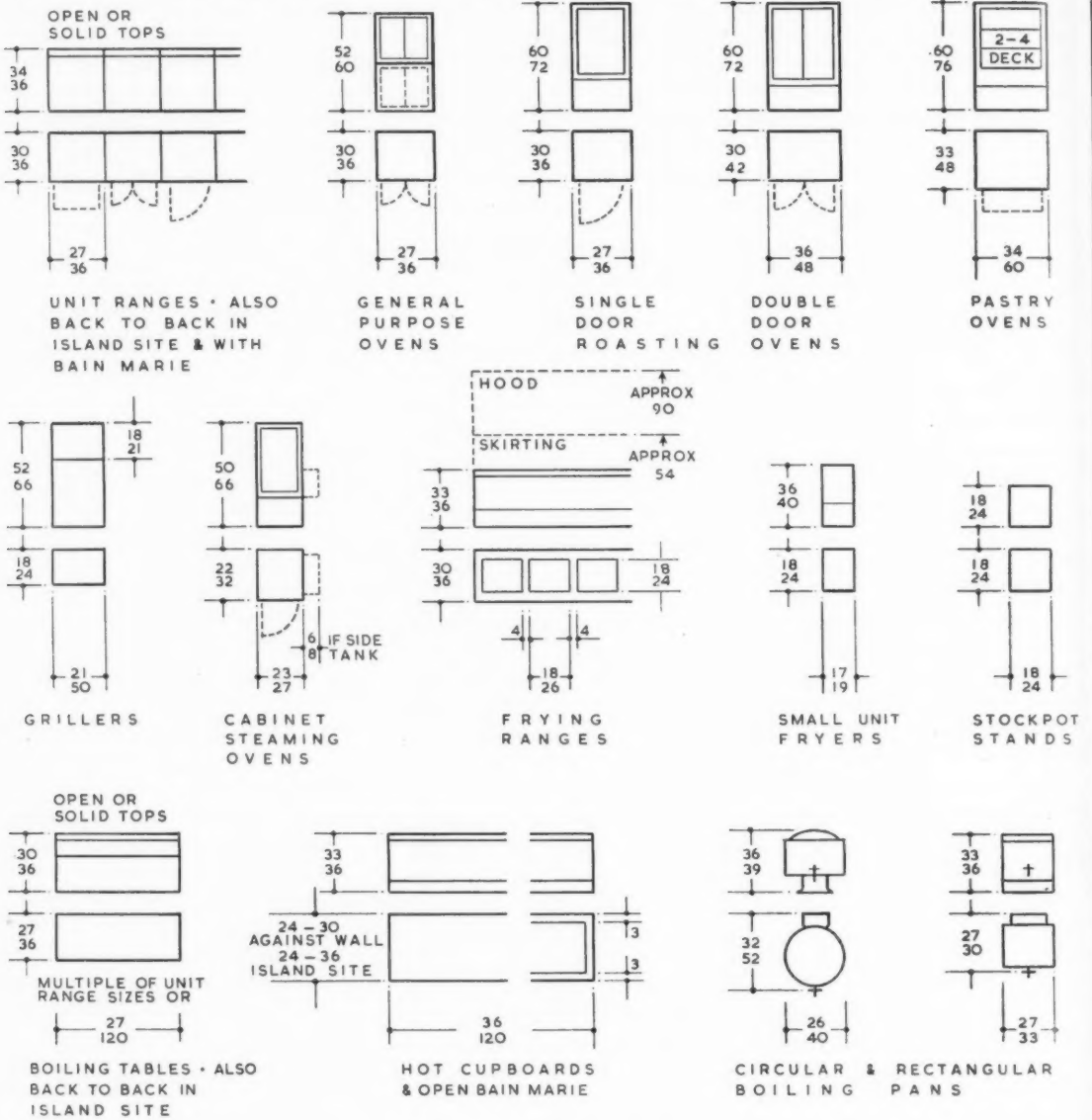
The wide range of special equipment available for each particular method of cooking may appear to simplify the designer's problems in providing adequate cooking capacity to meet requirements. This may be true in the case of very large kitchens, where a considerable amount of subdivision is possible, but in smaller kitchens such apparatus may be difficult to justify, or accommodate, so that equipment of a more general nature is required. The stage at which specialist equipment should be introduced is as variable as the establishments themselves, but the following examples show where particular items of apparatus might make their appearance for specific functions.

The cooking equipment requirements for a small kitchen serving 25 to 50 meals could be met by the provision of a single oven range and an independent unit grill, although, even for these small numbers, it may be more practical to have two small ovens than a large single unit, to allow cooking of separate items at different temperatures. The ovens should provide at least 7 sq. ft. of useful shelf area and the boiling table above should have at least four boiling burners, while the grill should be capable of toasting six slices at a time. Cooking operations such as boiling, stewing, steaming and frying can be carried out on the boiling top while the ovens are used for all roasting and baking purposes.

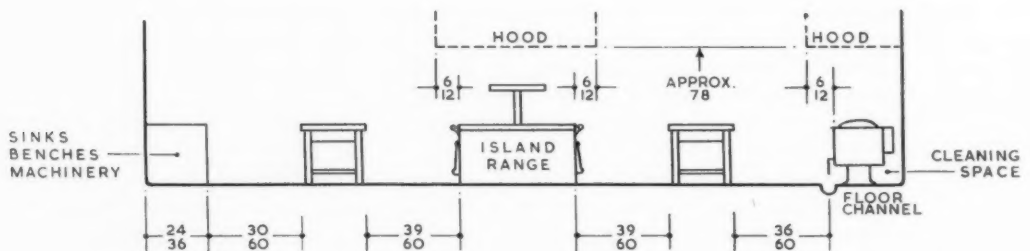
As numbers to be fed increase, the capacity of the ovens should rise almost in proportion, but the need for boiling top space tends to exceed that which can be conveniently placed above the ovens, indicating an

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GUIDE TO FLOOR SPACE WITH ELEVATIONS — EXCLUDING BENCH MOUNTED EQUIPMENT



TYPICAL SECTION THROUGH A KITCHEN



NOTE: ALL DIMENSIONS ARE IN INCHES AND GIVE APPROX. MINIMUM AND MAXIMUM SIZES BASED ON A SELECTION OF GAS HEATED EQUIPMENT

Fig. 4. Equipment data.

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extra boiling table as a first addition. Approaching the 150 meals stage, the load on boiling table requirements could be offset by the provision of a separate steaming oven, with a useful shelf area of about 12 sq. ft., and a small deep fat fryer. A hotcupboard and separate beverage making equipment also leave the ovens and boiling tables free to concentrate more on actual cooking operations.

Above the 150 meals figure, a third oven and an extra deep fat fryer would be warranted, and dependent on circumstances separate boiling pans for the bulk cooking of vegetables could be introduced. A 3 ft. boiling table, however, takes up approximately the same floor space as a 20 gall. boiling pan and will give about the same output of cooked vegetables, but in smaller pots, which always seem to give better results.

In the region of 250 to 300 meals, special ovens for roasting and pastry cooking could be considered. At this stage, dependent upon space in the kitchen, ovens and boiling tables may be separated to place each in its most convenient position and at its most convenient height. Space can be saved to some extent by placing one oven above another. Separate ovens for pastry cooking are usually arranged in tier formation and should provide approximately one quarter of the total oven capacity.

Very large kitchens are composed of multiples of the foregoing equipment and generally the tendency should be not to increase the size of individual units of cooking equipment; this would add to the disadvantages of "bulk cooking." However, where very large oven capacities are required the "reel oven" can absorb the work of many small ovens and involve less floor space.

It is emphasized that the designer should seek advice from the caterer and the consultant on the type of catering to be carried on, since circumstances may demand the introduction of special equipment in very small kitchens to suit the type of trade that is sought.

Details of cooking capacities which may be allowed on a general basis are given in the following descriptions of items of equipment in general use.

Ovens: Whether these form part of a range of cookers, or have separate status, their cooking capacity should be considered in terms of "convenient shelf area." For the term "convenient" to apply, shelves should be not less than 6 in. apart and be capable of being accessible and cooking without variations in temperature over the shelf area. Common practice today indicates oven capacity in terms of cubic feet volume, sometimes with the additional information of the number of shelves provided. This terminology does not convey to the caterer, or the designer, the number of trays, pans or dishes that can be accommodated because the size of shelves and distances between them are not deducible.

As a basis for planning, an allowance of 24 sq. in. of shelf area per person (peak load) is reasonable in industrial and institutional catering, although special

conditions in other establishments may make it necessary to increase this figure by as much as 50 per cent. Where separate pastry ovens are introduced an allowance of 6 sq. in. per person may be set aside, reducing the general oven space to 18 sq. in. per person. Other ovens, such as cabinet roasters, draw-plate, reel, etc., merely increase the general oven capacity and need no special or separate allowance.

Ranges: A range consists of two main components, the oven and the boiling top. There are two types of oven available. The "internally" heated oven is similar to the domestic variety and is so named because the burners are actually within the oven chamber. The "externally" heated oven is generally of heavier construction, with the burners located outside the actual oven chamber. Thermostatic control is provided to both types of oven. There are also two types of boiling table. The "open" type has a variety of burners which give immediate flame contact with the cooking vessel. The solid or closed top boiling table is composed of cast-iron sections heated on the underside by high-capacity burners which maintain a very high temperature at the centre of the hob, with a gradual reduction of heat towards the surrounds. Quick heating operations may be effected at the centre and slower processes such as stewing or simmering at the extremities, the smooth top facilitating the shifting of vessels as cooking proceeds. Contact with the flame can be made by removing the central bull's eye. Griddle plates may be incorporated in the boiling table for direct cooking of eggs, bacon and shallow frying without using a cooking vessel. Either type of oven may be supplied with either type of boiling top so that there are four different arrangements available for each range unit.

General purpose ovens: The separation of boiling top from cooker oven gives scope for placing each at its most convenient height. The design of cookers is a compromise between the claims of both boiling plate and oven for a convenient working level. The general purpose oven which is often referred to and used as a roasting oven, is mounted on a stand to facilitate operation. In some cases it may be advantageous to mount one oven upon another to provide necessary cooking capacity in a restricted space, although this arrangement clearly cannot place both ovens at the most convenient height.

Roasting ovens: These are basically similar to the internally heated ovens, but offer greater capacity in relation to the floor area they occupy. They are designed mainly for the cooking of joints larger than would be expected in the small establishment.

Pastry ovens: Although normal types of ovens are used successfully for pastry cooking, ideal conditions are obtained when a uniform temperature is maintained throughout the oven. The pastry oven is of shallow design, with high insulation properties and controlled ventilation. Extra capacity is not provided

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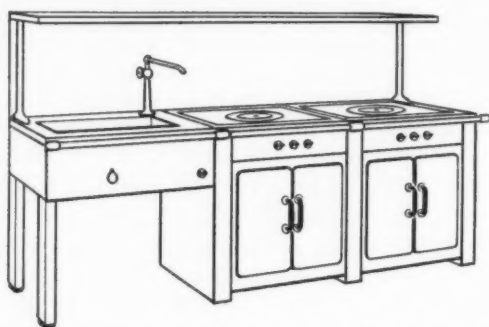


Fig. 6. Internally heated ovens and solid top boiling plates with a bain-marie forming a composite wall unit.



Fig. 7. Double deck pastry oven.

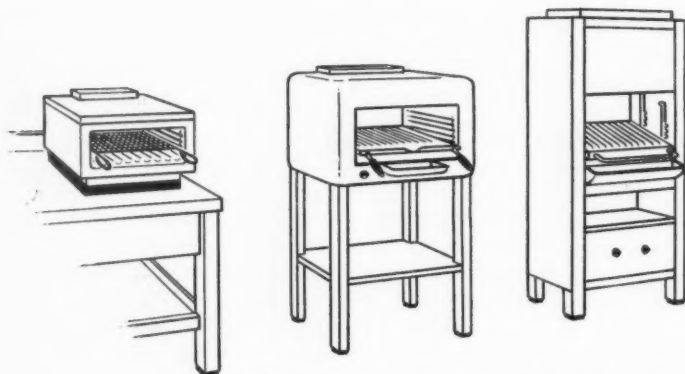


Fig. 8. Illustrating a small toaster, griller with grilling hearth and an underfired gas grill.

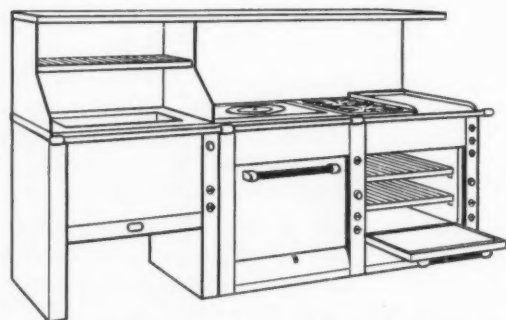


Fig. 9. Part of a wall range comprising a deep fryer, externally heated ovens, solid top, open top and fryplate.

by shelves, as with other ovens, but by duplication of ovens, or decks, one above the other, each with separate controls and ventilation. (Fig. 7.)

Other ovens: In very large establishments special ovens with large capacity may be considered, but generally the heat absorption of the large equipment will rule out its use on economy grounds if only one meal per day is to be served. The most flexible of these is the comparatively new "reel" oven, which operates similarly to the "giant wheel" at fairgrounds, but with shelves taking the place of passenger cars, rotating within a large oven. The rotation of shelves brings each to the access door for loading in turn and also uniformly distributes heat to the shelves as they travel round the oven. The capacity of these larger ovens is always given in shelf area.

Boiling pans: In small kitchens such operations as boiling, steaming and simmering will always be carried out in saucepans on the boiling top of the cooker, but as demands increase the capacities and the number of the vessels become too large to be conveniently handled, and a boiling pan may be considered. As a general rule, nothing larger than a three to four-gallon vessel should be considered as portable equipment.

The number and capacity of pans required for a specific kitchen will depend on the menu provided and the number of sittings or services. As a guide for estimating basic requirements, an allowance could be made on the following scale. For gravies, sauces, garnishes, etc., $\frac{1}{4}$ pt. per person; for root vegetables, stews, soups, etc., $\frac{1}{2}$ pt. per person; for green vegetables 1 pt. per person. Alternate means or divisions of the "peak load" into sittings will have a great effect on the actual capacities required. Boiling pans are available in 10, 15, 20, 30, and 40 gallons capacity and are generally circular in plan form, although some rectangular pans are made in 20 gallons capacity. It is advisable to use a greater number of the smaller sizes rather than the larger ones because their quicker heating rate makes for better cooking. Where viscous products are to be cooked, such as thick soups, porridge, custards, etc., it may be advisable to have a "jacketed" pan. It is a commercial version of the domestic double saucepan, the jacket acting as a steam or water jacket that prevents such foods from burning. It has a draw-off cock from the inner pan. Draw-off cocks are provided to the pans and provision of a gully or channel beneath them will facilitate drainage and cope with overspill which sometimes occurs. Water connections should be by swivel arm over the pan and not as a direct feed to the interior.

Steamers: Small portable cabinets are available which incorporate a water well and are used on top of the range. Steaming ovens of the heavy duty type are provided with automatic water supply by ball valve, to ensure constant level of water in the generating tank. A steamer may operate at atmospheric pressure or be controlled by pressurestat or thermostat, to provide a slight pressure, normally $\frac{1}{2}$ lb. per square inch. In some cases, the water control valve is incorporated

Fig. 10

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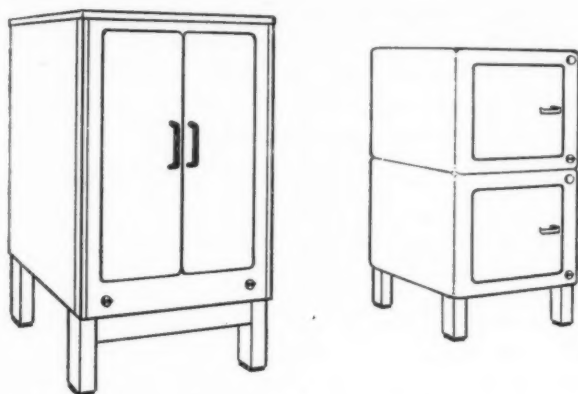


Fig. 10. Large cabinet roasting oven. Fig. 11. Two-tier general purpose oven.

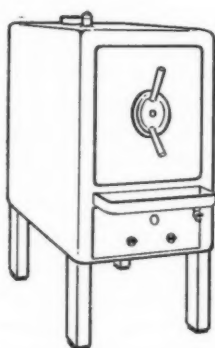


Fig. 12. Heavy duty steaming oven.

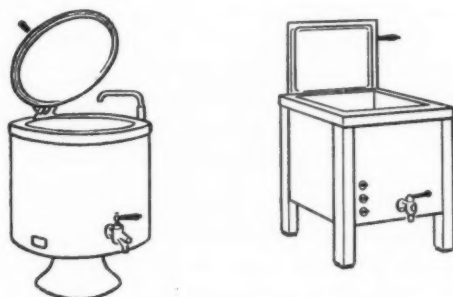


Fig. 13. Circular and rectangular boiling pans.

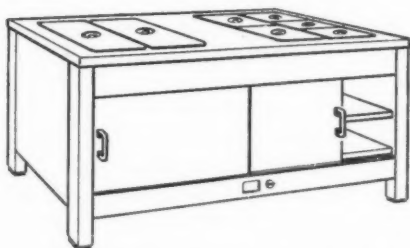


Fig. 14. Hotcupboard with fitted bain-marie top.

within the body of the equipment, thus obviating the need for a separate feed tank at the side. Oven sizes are of the order of 18 in. \times 24 in. \times 24 in. high, with five shelves. As a basis for estimating capacity required, allow 12 sq. in. of shelf area per person to be served over the whole meal service since this operation is not likely to be "batched." (Fig. 12.)

Other forms of steaming equipment are available, which operate at atmospheric pressure, two popular versions being the circular swivel tray type and the rectangular drawer type, both of which allow access to particular shelves without exposing the whole of the cooking chamber to the cooling effect of outside air.

Grillers: Even the smallest kitchen should be provided with a griller by which such operations as grilling, toasting and salamandering are carried out. Since these operations are essentially speedy, even a small unit can cope with relatively large demands. An allowance of 1 sq. in. of grill area per person to be served at one time would be reasonable in most circumstances, but it is always advisable to consider the sizes of dishes that may be used for processes preceding the salamandering operation. These units vary in grilling area from 15 in. \times 8 in. up to 48 in. \times 18 in. and may be mounted on benches, wall brackets or floor stands, but it is essential to mount them at a level convenient for the staff to operate and observe the process in operation.

In large establishments, or where the servery is remote from the kitchen, it is advisable to install extra units at convenient points.

Restaurants specializing in "grills" may install the "underfired" gas grill, which has all the features of the once popular charcoal grill with the added advantages of cleanliness and easy control (Fig. 8). Also, for specialized installations there is the gas fired spit.

Deep fat fryers: Although deep frying can be carried out in portable vessels on the boiling top, equipment is now made in such small capacities and so compact in size that the provision of a self-contained unit is warranted for the smallest of kitchens, especially since the risk of fire is considerably reduced when specialized equipment is used. Thermostatic control, which is incorporated in modern apparatus is a most desirable adjunct to deep frying units, reducing the fire risk, conserving fuel and preserving the "working life" of the oil or fat. Deep frying is an essentially speedy process and will therefore show more successful results if output can be regulated rather than produced in quantity for one particular time. Where it is essential that large quantities should be ready for service at one time, provision should be made for storing the cooked food in suitable conditions, but the capacity of the frying unit should be such that food is not cooked too long in advance of being required. The cooking capacity of equipment should be ascertained since design plays a more important part in output than the actual size of the pan. Nominal sizes of available apparatus are given on the data sheet (Fig. 5). Desirable features of design are (a) the provision of draw-off cocks to obviate lift out pans, (b) thermo-

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static control, (c) cool zone for debris, (d) storage accommodation, where this is unavoidably necessary.

Boiling tables and stock-pot stands: Where extra boiling top space is required, other than that provided by the cookers, boiling tables and stock-pot stands may be provided. The boiling table often consists of a replica of the cooker boiling top, but mounted on a stand at the more convenient height of 27 in. to 33 in. Under the burners a drip tray is provided to accept overspill and a lower shelf provides space for spare cooking vessels. The proportionate need for boiling top space appears to reduce as numbers increase, due mostly to the introduction of self-contained equipment, but also due to the fact that the operations which are then left to the boiling top, namely, shallow frying and similar operations, are quick processes and consequently may be batched. Thus, an allowance of 20 sq. in. per person is reasonable for all numbers providing that no boiling pans are to be used. A 20 gall. boiling pan and a 6 sq. ft. area boiling table are comparable in size and output. Stock-pot stands are but smaller editions of the boiling table, with one high capacity burner instead of a variety and generally lower at 18 in. to 24 in. high, to accommodate larger vessels for stock, or soup production.

Hotcupboards: Although the shapes and sizes of these units are numerous, the general pattern is the same and basically they are cabinets, with small capacity burners to maintain the internal temperature at a reasonable level to keep food or receptacles ready for service or awaiting further processing. Internal sizes of hotcupboards should be considered in terms of the dishes, trays, plates or plated meals which they are required to accommodate. Sizes range from 2 ft. to 3 ft. back to front and from 2 ft. 9 in. to 3 ft. high, with lengths from 3 ft. to 6 ft. in 12 in. intervals. For extra accommodation in the same plan area, double deck units are available, increasing the height to a maximum overall of 5 ft. 6 in. The sizes mentioned are "overall," the effective internal sizes being up to 6 in. less in each direction.

Bain-marie: This equipment may be attached to the "range," provided integrally with a hotcupboard, or be an entirely separate unit. One type consists of a large open well containing some 3 in. of water, heated by a burner below. Vessels containing cooked food can be placed in it to be kept hot until wanted for incorporation into other dishes or for direct service. The number of vessels that can be kept hot is limited solely by the size of these and the dimensions of the water well. A bain marie designed for the service counter is similar, but has a covered top consisting of a frame with fitted vessels, either deep pots for soups, sauces, etc., or rectangular containers for vegetables or entrées. To avoid the need for filling and refilling with water and to prevent the possibility of boiling dry, some bain maries are made without a water well and hot air circulates under and around the vessels. A thermostat is fitted to ensure that food is not overheated and spoiled. With the water-filled variety a thermostat is optional; it will reduce the possibility of

excess steam being produced and also save gas, but since the water temperature can never rise above boiling point, the absence of a thermostat will not affect the food storage qualities of the bain marie.

Beverage making equipment

The main factors to be considered are "quantity" and "time," and these should be analysed to ensure that the apparatus most suited to these requirements is provided. Some of the general types of equipment are described below.

Bulk water boilers: The function of the bulk water boiler is the provision of a large supply of boiling water at one particular time and the capacity is stated in gallons. A water inlet valve provides a direct connection to the drinking water supply, with an overflow outlet at a reasonable distance from the top of the open vessel and at least 1 in. below the inlet. A gauge glass indicating the actual water level should also be provided. A large bore extended draw-off cock is provided at the base. Other refinements are thermostats and thermometers. Normal capacities range from 1 to 40 gallons and an allowance of 20 cups per gallon is reasonable. These units may be mounted on wall brackets or tubular floor stands. Where intermittent supplies are required, the automatic or constant flow boiler is indicated.

Automatic water boilers: The capacity of these units is stated in terms of pints per hour, and although the average output per hour may seem sufficient for the project, the actual rate of flow when filling a teapot must also be considered. In each case drinking water supplies, gas connections and drain connections should be provided.

Pressure boilers: These are designed so that under normal conditions only boiling water can be drawn off, being forced to the draw-off cock by steam pressure generated within the boiler. Generally, the pressure chamber which is the main body of the boiler can be located below the counter level, leaving the service space clear except for the draw-off cock which is incorporated in a font with the flue in a decorative column. Automatic water and gas valves maintain the unit ready for instant action. A remote feed tank giving a head of 15 to 25 ft. must be provided for the water supply or alternatively an electric feed pump may be employed.

Expansion boilers: These are designed with the draw-off chamber some one or two inches above the water level in the boiler. This ensures that only when the water is boiling can it be forced up to this draw-off level. Automatic water and gas valves maintain the unit ready for service. Some automatic boilers are able to build up a reserve of boiling water which considerably increases the rate of flow above the average output for a short period, thus reducing the time taken to fill a number of teapots. Although there are certain under-counter units available, the open type feed tank must necessarily be just below the level of the draw-off cock but can be fitted behind a partition. Generally, expansion boilers are designed for mounting above the counter level.

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Café sets: Pressure or expansion boilers can form the nucleus of a café set, which consists of a boiler with milk and coffee urns attached. Expansion boilers circulate hot water round the jackets of the side urns, with perhaps separate gas burners to the urns. Pressure boilers use steam as the heating medium to the side urns, and the "pressure flow" method of coffee making. Tea can also be made in a similar manner and held in bulk ready for immediate service. The pressure boiler is also able to provide a steam jet for heating other beverages, such as powdered milk extracts by direct injection of steam into jug or cup. This device often overcomes the problem of providing separate facilities for such items.

Machinery

Mechanical aids for the kitchen depend to a large extent on the type of establishment and the grade of personnel expected to staff it. Where large numbers are to be served with a similar meal, machinery is more easily warranted than where a large variety of dishes are offered, perhaps with individual flourishes which rule out the uniformity of machine production. **Hand-operated equipment:** Miners, chippers, apple peelers, bean slicers, can openers, etc., appear in the smallest of kitchens and are usually designed for mounting on a bench. A properly designed bench to accept these, with drawers for storing components, will avoid ruining preparation tables by their piece-meal addition later.

Potato peelers: These range from 7, 10, 14, 28 to 56 lb. per load and may be hand or electrically operated, the latter being obviously more popular. A water supply is required to wash the potatoes as they rotate in the abrasive lined drum, rinsing off soil and peel particles into the drain outlet of the drum. To avoid clogging of drains, an interceptor tank, with removable basket, should be provided to strain the effluent at the nearest point to the peeler to avoid long runs and shallow falls of connecting pipes. The strained effluent enters the drain system from a screwed connection at the base of the interceptor, and the particles are held in the basket, which has to be cleaned regularly. This therefore should be conveniently situated near the vegetable preparation department and the refuse point. These machines are designed for floor mounting or for bench mounting. A common practice is to mount the peeler so that the potatoes discharge into a sink when peeled, but if a portable or mobile receptacle is provided much wider scope is given for location of the peeler and its mounting at a convenient height for operation. This is especially advantageous in small kitchens where the number of sinks that can be installed is limited. Some machines are adjustable so that some re-orientation is possible between various controls which have to be accessible. It is advisable to ensure that a particular machine can be arranged to function satisfactorily in the position desired. An allowance of 1 oz. per load per person is reasonable and could be reduced above the 500 mark. In large kitchens the provision of two machines will split the

load and also lessen the risk of chaos in the event of breakdown of a machine.

Mixers: These are described by their nominal capacity per load, i.e., 6, 10, 12½, 20, 25, 30, 40, 50, 60, 80 and 100 qt. Some manufacturers quote capacity in terms of American quarts which represent only 5/6ths of our Imperial measure. Some mixers operate at two capacities with interchangeable components. In addition to the mixing equipment, which consists of bowls, dough hooks, whisks, whips, etc., most mixers can operate mincers, vegetable slicers, shredders, graters, and other labour-saving devices. Accommodation for these attachments should be provided near the mixer. Small units, up to 20 qt., should be mounted on a bench with accommodation under for attachments. 25-qt. machines and those above this capacity are "pedestal" models for floor mounting and should preferably be accessible on three sides at least.

An allowance of 1/6th qt. per person is reasonable, but in large kitchens it would be preferable to include two machines to avoid dislocation if breakdown of a single machine occurs.

Miners: The mixing machine can have a mincer attachment, but large-scale catering may warrant a separate mincer/chopper machine which may be either bench or pedestal mounted.

Chipping machines: These electrically operated machines have an output in the region of 40 lb. per minute, so that obviously they can cope with most normal catering demands. Bench mounting and pedestal models are available.

Slicing machines: Separate designs are available for bacon, bread and hot meat, etc. The bacon slicer is likely to be located in the stores section of the large kitchen and is not generally required for small establishments. Electric or hand-operated machines are available, normally for bench mounting. A central table is preferable for this type of machine so that there is easy access all round.

The sale of sliced and wrapped bread obviates the use of a bread slicing machine except where special requirements exist.

For carving of hot meat, slicing of salad vegetables and general food slicing purposes, the gravity feed slicer should be provided near the point of service or alternatively in the larder section.

Bread-and-butter machines: These machines are designed to cut and butter the bread in one operation and are generally located in the servery section. Smaller units which spread butter on previously cut bread are also available. Both types of machine are bench mounting models.

Dishwashing machines: Three main types of machines are available. Capacities are stated in terms of pieces per hour, which includes cutlery and crockery, so that the turnover rate in terms of diners varies with the number of items that each diner uses. A wide margin of tolerance should be allowed to cover delays in return of soiled crockery.

Spray-type machines consist of a cabinet in which the

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baskets of crockery are washed, rinsed and sterilized by sprays from revolving or fixed jets. Copious hot water supplies are required, and local heating for raising the temperature of the hot water supply to 170 deg. F. for rinsing and sterilizing. Debris strainers are provided, but drain connections should be easily accessible for rodding at all points since flooding can be widespread if blockage occurs. The entrance and exit to the machine is provided with specially designed tabling, the length of which is determined by the circumstances of collection of soiled crockery and return of clean ware and the capacity of the machine. Immersion-type machines consist of two or three tanks, at least one of which is provided with a protected paddle or pump which agitates the water for washing and rinsing processes. Crockery is held in baskets and transferred from tank to tank as each process is completed. Demands for hot water are considerably less than the spray-type but local heating is required to the sterilizing tank. Tabling need not be of specific width but it is obviously better to give sufficient space to accommodate at least two baskets in depth.

Brush-type machines consist generally of one or two brushing compartments with a sterilizing tank adjacent. Electrically operated brushes wash the crockery, which is handled individually until placed in racks or baskets for sterilizing. Hot water requirements are small compared with spray machines, but local heating for the sterilizing tank is required. Tabling need not be of a specific width, but at the outlet consideration of the rack sizes may suggest a convenient width to allow two rows of racks.

Specialist machines for small numbers and for cups, tumblers, etc., may be located near to service points. Silver-burnishing machines may also be required.

Sinks: The materials for sinks should be selected for their durability, appearance and hygienic construction. The advisability of incorporating sinks with drainers or preparation benches to form long seamless units, shaped to fit the building or actually built-in, should be considered in the light of possible future alterations and the difficulty of re-using them elsewhere. It may be more prudent to have a more flexible arrangement of detachable drainers and boards, which could be more easily adapted as separate sections.

A reasonable sink size for general preparation purposes would be 24 in. x 18 in. x 12 in. deep, with the normal plug waste and overflow. A swivel arm bibcock feeding the water services allows the whole area of the sink to remain clear for access. The height to the top of the sink should be around 2 ft. 10 in.

For pot washing at least two sinks are required with drainer space between them as well as at each end to allow draining before immersion in the sterilizing sink. The size of sinks should be determined by the size of utensils likely to be washed therein, so that, to some extent, they vary according to the establishment. A depth of not less than 15 in. extending to 24 in. and a plan area not less than 30 in. x 20 in. extending to 60 in. x 30 in. indicate the range normally provided. Weirs or standing overflows should be provided to

remove the grease and scum forming on the surface of the water. Where very large sink capacities are used, local heating may be advisable to both washing and sterilizing sinks to maintain a suitable temperature in each.

Vegetable preparation sinks should have a depth of 15 in. with areas according to the volumes required. In very large establishments, especially where the distance between the preparation section and the cooking equipment is necessarily extended, the use of mobile sinks may also fill the need for transporting equipment. Furthermore, where these are used, they may be accommodated underneath the benches thus allowing more space for preparation.

Tables and benches: Apart from actual preparation work, table space or mobile racks are needed near the cooking equipment. Where hot vessels are likely to be placed on tables metal tops should be considered. The use of marble should be restricted to pastry making, whilst plastics are suitable only for light preparation work which does not involve cutting or the use of sharp utensils. Wall-mounted benches should not exceed 2 ft. 6 in. wide and for those in central positions 4 ft. wide is reasonable. The space beneath and above tables should be used for utensils and prepared food storage.

Racks: Utensils, vegetables, trayed food and store commodities can be accommodated in confined spaces by the use of racks, mobile or static. Whereas timber may be used for general storage purposes, the use of tubular steel, especially for mobile units and where prepared food or food vessels are concerned, considerably facilitates cleaning. Mobile racks should be designed with a low centre of gravity to avoid accidents and in some cases a braking device to the castors is desirable.

Service equipment: Hot and cold service counters for cafeteria, single and multipoint, service can be estimated in terms of accommodation. For every foot of length of counter space with a nominal width of 2 ft. capacity may be provided at one time for the following service: (a) A single roast meat dish for up to 100 portions, or (b) a single vegetable or entree or sweet for up to 32 portions, or (c) a choice of two vegetables, sweets or entrees up to 16 portions each, or (d) soup for 60 persons. The cupboard beneath would hold plated meals in stacks to give a total of 16 per foot run, or stacked plates only at a rate of 64 plates per foot. Double-deck units at the back of the service area would obviously hold double this quantity. Where hot food is to be held ready for serving it is advisable to have a fitted bain marie top with an independent burner.

Capacities of other service equipment which may be incorporated in the counter, such as beverage equipment, refrigerated counters, drink dispensers, ice cream conservators vary according to manufacture and should be given separate study.

Trolleys and transport of meals and beverages: The service of meals may often involve transport to a distant point, as in hospitals or other institutions. The

Some ex
ITEM
Milk
Butter
Margarin
lard
Cheese,
Cheddar
Danish B
Dutch E
Dutch G
Processes
Gorgonz
Eggs
Bacon
Meat and
— cooke
— fresh
— chilled
— frozen
Left-over
prepared
Ice cream
Items nee
temp. or
freeze
Fish
— cured
— wet
— frozen
Some ex
ITEM
Cereals a
Arrowroo
Custard p
Cornflour
Blancmar
Barley
Butter be
Lentils
Oats
Peas
Rice
Macaron
Spaghett
Flour
Breakfast
Porridge
Cornflake
Rice crisp
All bran
Puffed wh
Sugar Pu

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Some examples of items accommodated

Storage (refrigeration)

ITEM	Temp. in °F.	ALTERNATIVE ACCOMMODATION	PACKETING DETAILS		Approx. size in inches
			Container	Contents	
Milk	34/45	Larder or air lock	Churns Crates ..	10 galls. 12 × 1 qt. 20 × 1 pt.	14 dia. × 30 19 × 14 × 12 19 × 14 × 11
Butter	34/45	Larder in closed containers to exclude air and light	Ctns.	112 × $\frac{1}{2}$ lb. 56 × $\frac{3}{4}$ lb. 28 × $\frac{1}{2}$ lb.	16 × 10 × 11 11 × 11 × 9 12 × 9 × 5
Margarine and lard	34/45	As above	Ctns.	28 lb. 48 × $\frac{3}{4}$ lb. 24 × $\frac{3}{4}$ lb.	13 × 9 × 8 13 × 10 × 6 13 × 10 × 3
Cheese, whole Cheddar Danish Blue Dutch Edams Dutch Goudas Processed Gorgonzola	34/45	Cool, dark, store away from butter and eggs	Each Ctns. Each .. Ctns. Each	80 lb. 3 × 6 lb. appr. 4 lb. appr. 10 lb. appr. 6 × 5 lb. appr. 10 lb. appr.	16 dia. × 12 14 × 9 × 9 6 dia. 12 dia. × 3 13 × 13 × 8 14 dia. × 4
Eggs	34/45	Larder	Cases	360	26 × 12 × 15
Bacon	34/45	Cool, dark store	In sides or cuts		
Meat and poultry			In carcass or joints		
— cooked	36/40				
— fresh	36 (14 days)				
— chilled	29 (14 days)				
— frozen	14/16 (6/8 weeks)				
Left-overs, prepared food, etc.	40/45	Larder	In assorted trays		
Ice cream	0/5	(Conservator)	Various packs		
Items needing low temp. or deep freeze		Accommodation to customers' requirements and expert advice			
Fish	40 max.	Separate refrigeration or kept well away from other goods	Boxes	$\frac{1}{2}$ to 6 stone in boxes emptied into metal containers or trays for placing in cold cabinet.	
— cured			..		
— wet			Packs		
— frozen	25 max.				

Some examples of items accommodated

Storage (dry)

ITEM	PACKETING DETAILS		Approx. size in inches
	Containers	Contents	
<i>Cereals and Pulses</i>			
Arrowroot	Bags	7 lb.	7 × 5 × 9
Custard powder	"	"	"
Cornflour	"	"	"
Blancmange powder	"	"	"
Barley	"	1 cwt.	34 × 18 × 9
Butter beans	"	"	"
Lentils	"	"	"
Oats	"	"	"
Peas	"	"	"
Rice	"	"	"
Macaroni, short cut	"	28 lb.	19 × 12 × 7
Spaghetti, long	Ctns.	"	21 × 9 × 6
Flour	Bags	280 lb.	34 × 18 × 14
"	"	140 lb.	30 × 18 × 14
"	"	70 lb.	28 × 15 × 8
<i>Breakfast Cereals</i>			
Porridge oats	Ctns.	12 × 2 lb.	16 × 14 × 10
Cornflakes	"	32 × 12 oz.	16 × 24 × 14
Rice crispies	"	24 × 9½ oz.	14 × 13 × 21
All bran	"	24 × 10 oz.	12 × 13 × 16
Puffed wheat	"	18 × 8 oz.	19 × 12 × 23
Sugar Puffs	"	18 × 10 oz.	15 × 11 × 21

types of trolleys available are many and varied and before deciding on such equipment it is advisable to study the routes to be taken and the hazards involved. Accommodation in or near the main kitchen must be provided and merely to allocate plan area without consideration of the flaps and doors which have to be opened during loading operations often creates considerable difficulty.

Insulated food and beverage containers may also have to be provided. Normally these containers have a considerable weight even when empty. When filled they are often only just within the bounds of portability. Where they are to be transported by trolleys it is advisable to allow for them to remain mounted on such vehicles as much as possible, especially at the filling and loaded stages.

Cold storage

Conditions of storage: Lower than normal air temperatures are needed for storage of a wide range of goods on the menu, to save waste, avoid deterioration, preserve appearance and provide opportunities for bulk purchasing. The range of temperatures for different foods is indicated later, but if only one refrigerator is provided this should be set for 38/42 deg. F.

Air circulation within cold chambers is achieved by fan units and all interior surfaces must be impervious and easy to clean. Regular cleaning and defrosting are essential and good servicing arrangements are needed. In large establishments an opening which will allow trolleys to be wheeled straight into the chamber would be an advantage. The actual temperatures in all cold rooms should be indicated on the outside; internally there should be a light and an opening device fitted to the inside of the door.

The range of ideal temperatures and the use which could be made of refrigerated accommodation may be considered disproportionate to the cost and space needed to meet all conditions. Because of this a cool zone or larder area is invariably necessary both for storage purposes and as an annexe for pre-cooling certain food before it enters the lower temperature of the cold room. Similarly a series of cold chambers which provide a range of temperatures is often entered *via* an air lock which could also meet certain storage requirements but is unlikely to obviate the need for a cool, well-ventilated larder. To ensure that a larder remains cool, consideration should be given to installing a unit cooler.

Location: Total cold storage accommodation can often be broken down under two main headings—bulk storage and that needed for day-to-day requirements by the kitchen. An ideal layout might conceivably meet both needs in one composite block which would reduce overall cost considerably; this should be the designer's aim provided that such an arrangement does not hinder the main flow routes through the premises.

Centralized refrigeration or the single cold room should be sited near to the goods entrance.

gas supplement

Some examples of items accommodated

Storage (dry) continued

ITEM	PACKETING DETAILS		Approx. size in inches
	Containers	Contents	
<i>Bread, etc.</i>			
Loaves	Each	3½ lb.	13 × 5 × 5
"	"	1¼ lb.	9 × 5 × 5
"	"	14 oz.	6 × 4 × 4
Biscuits	Tins	Up to 9 lb.	9 × 9 × 9
"	Half tins	" 5 lb.	9 × 9 × 5
Cakes and pastries	Trays		30 × 18 × 3
<i>Dried and Tinned Milk</i>			
National Dried	Ctns.	18 × 20 oz.	14 × 14 × 15
F.C. Sweetened	"	48 × 14 oz.	18 × 12 × 9
Evaporated	"	48 × 16 oz.	18 × 12 × 9
Skimmed	"	48 × 1½ pts.	18 × 12 × 7
Powder	"	28 lb.	14 × 14 × 9
"	"	56 lb.	27 × 14 × 9
"	"	4 × 21 lb.	20 × 19 × 15
"	"	12 × 5 lb.	19 × 19 × 13
"	"	12 × 2½ lb.	16 × 15 × 11
<i>Milk Products</i>			
Horlicks	Ctns.	36 × No. 1	15 × 11 × 15
Ovaltine	"	24 Medium	12 × 9 × 11
"	"	4 × 5 lb.	13 × 13 × 8
<i>Canned Fruit and Veg.</i>			
Various home produce	Cases	A1 36/48 per case	13 × 18 × 10
"	"	A2 24/36 per case	14 × 11 × 10
"	"	A2½ 24 per case	13 × 17 × 10
"	"	A10 6 per case	13 × 19 × 8
" imported	"	3 kg. 6 per case	20 × 14 × 7
<i>Canned Meat</i>			
Corned beef	Cases	24 × 12 oz.	8 × 12 × 8
"	"	12 × 6 lb.	13 × 23 × 19
Braised steak	"	6 × 7 lb.	19 × 13 × 8
Meat roll	"	12 × 4 lb.	17 × 13 × 9
Luncheon meat	"	48 × 12 oz.	17 × 12 × 8
"	"	12 × 4 lb.	17 × 13 × 10
Ox tongue	"	12 × 6 lb.	20 × 26 × 8
Stewed steak	"	48 × 1 lb.	12 × 19 × 10
"	"	6 × 5½ lb.	13 × 19 × 7
Jellied veal	"	6 × 6 lb.	21 × 13 × 8
<i>Canned Fish</i>			
Sardines	Cases	100 × ¼ club	16 × 9 × 9
"	"	50 × 27½ oz.	21 × 26 × 8
Herrings in Tomato	"	24 × 14 oz.	15 × 8 × 9
Pilchards	"	48 × ½ lb.	17 × 11 × 7
"	"	48 × 1 lb.	13 × 18 × 10
Salmon	"	48 × ¼ lb.	13 × 10 × 6
"	"	48 × ½ lb.	14 × 11 × 9
"	"	48 × 1 lb.	13 × 18 × 10
<i>Dried and Evaporated Fruit</i>			
Figs	Boxes	28 lb.	17 × 13 × 5
Apricots	"	27½ lb.	17 × 11 × 6
Peel	"	28 lb.	17 × 10 × 7
Prunes	"	30 lb.	15 × 10 × 7
" tinned	"	6 × 9¼ lb.	19 × 13 × 7
Raisins	"	56 lb.	19 × 14 × 8
Sultanas	"	60 lb.	21 × 14 × 8
<i>Preserves</i>			
Jam, etc.	Cartons	24 × 1 lb.	14 × 19 × 6
"	"	4 × 7 lb.	16 × 14 × 9
"	"	24 × 1 lb.	19 × 13 × 5
Syrup	Cans	14 lb.	7 × 5 × 13
"	Cartons	28 × 2 lb.	15 × 15 × 9
<i>Jelly</i>			
Crystals	Cartons	4 × 7 lb.	10 × 12 × 7
Table	"	12 × 5 oz.	6 × 7 × 4
<i>Tea</i>			
"	Chests	10½ lb.	19 × 19 × 22
"	"	6½ lb.	16 × 16 × 18
<i>Coffee</i>			
"	Bags	14 lb.	11 × 9 × 9
"	Cartons	56 × ¼ lb.	9 × 15 × 9
<i>Cocoa</i>			
Sugar	Bags/tins	7 lb.	10 × 7 × 5
Granulated	Bags	1 cwt.	18 × 10 × 27
"	Cartons	14 × 2 lb.	16 × 11 × 5
Icing	Tins	28 lb.	10 × 10 × 13
<i>Sundries</i>			
Salad cream	Cartons	24 × 7 oz.	14 × 10 × 8
"	Jars	1 gall.	7 × 7 × 12

Where decentralization is unavoidable the bulk storage requirements should be sited as suggested and other cold rooms or refrigerators as follows:

(a) For general kitchen use, with a pre-cooling annexe, larder or nest of shelves nearby.

(b) Within or adjoining ancillary departments of the kitchen such as the pastry, meat and fish sections, or in special departments, i.e., the diet kitchen of a hospital.

(c) For the service area, dining room pantry or ward kitchen for the short-term storage of milk and fats. Condenser units for cold rooms, unless they are water-cooled, will need good supplies of cool air.

Rough guide to the areas required: Most schedules concerning allocation of space are based on the numbers to be fed at the peak period. Because of the wide use which could be made of refrigerated accommodation and the possible demands of bulk purchasing it is unwise to list definite space requirements as a guide for all types of establishments.

Industrial canteens are usually quoted as needing between ¼ and ½ cu. ft. of refrigerated space per head, whilst institutions with their bulk stores may need in all between 1½ and 2½ cu. ft. The appropriate floor areas can of course be obtained by dividing the cubic capacity by the nominal height of 6 to 7 ft. needed inside cold chambers.

It is true to say that in general much greater use could be made of refrigeration and that today the figures quoted above could be taken as minima. They should also exclude larder accommodation because although larders may meet certain storage requirements, their scope is often extended to incorporate preparation facilities.

Dry goods store

Conditions of storage: A temperature of 50/60 deg. F. is satisfactory and the store should be light, dry, and have good ventilation and be lockable.

Sack flour, cereals, etc., if not in bins need to be stacked on end clear of the floor to avoid damp and allow air to circulate. Thus a combination of floor racks and slatted shelves is needed together with space for bins, etc.

Tea and coffee which are highly sensitive to odour need storing away from such food as cheese.

Location: As with cold stores the dry stores may need to be broken down into various sections.

The bulk or issues store should be sited as follows:

(a) Accessible from the goods entrance, scales and kitchen.

(b) Near to the office, control point or, for the larger project, to be complete with a separate stores office overlooking both the stores and the delivery point. This type of layout will need a sink or wash-basin and probably locker space for the stores staff.

Apart from the dry store itself there is need in even the smallest establishment to provide a cupboard in the kitchen for day to day requirements such as salt, flavourings, etc.

When larger projects demand greater decentralization

Some exa

ITEM

Salt—Cook
Tab
SoupMarmite
Bovril
Jno
Cream of
Curry pow
Fruit squa
Gravy mix
" bro
Fondant
Baking po
MustardOils—edit
Pastes—fi
Pickles

Sauces

Sandwich
Vinegar

Bottled b

Some exa

Potatoes
Root vege
carrots, p
turnips, r
Greens, s
Cabbage,
Spring gro
Spinach
Brussel to
Brussel sp

Cauliflow

Beans
Peas
Leeks
MarrowsOnions
TomatoesLettuce
Cucumber
Celery

Apples

Oranges

Lemons
Grapefruit
Pears

Plums

Rhubarb
GooseberSoft fruit
Blackcurr
Blackberri
Cherries
Raspberri
Redcurrant
Strawberri
Pineapple
Bananas

gas supplement

Some examples of items accommodated

Storage (dry)—continued

ITEM	PACKETING DETAILS Containers	Contents	Approx. size in inches
Salt—Cooking	Bags	112 lb.	13 × 10 × 26
Table	Cartons	36 × 1 lb.	13 × 9 × 10
Soup—Canned	Cases	A10 (6 per case)	19 × 13 × 7
Powder	Cartons	24 × 1 lb.	10 × 12 × 10
"	Bags	5 lb.	7 × 7 × 8
"	"	7 lb.	7 × 5 × 9
Marmite	Cartons	24 × 2 oz.	8 × 8 × 6
Bovril	"	24 × 2 oz.	12 × 10 × 3
Jso	Tins	144 cubes	7 × 5 × 3
Cream of tartar	Bags	7 lb.	6 × 4 × 8
Curry powder	"	7 lb.	6 × 5 × 9
Fruit squash	Cartons	12 × 26 oz.	10 × 13 × 12
Gravy mixes	"	4 × 7 lb.	13 × 13 × 8
" brownings	Tins	1 gall.	7 × 7 × 10
Fondant	Ctns.	28 lb.	15 × 11 × 6
Baking powder	Bags	7 lb.	7 × 5 × 9
Mustard—English	Ctns.	6 × 1 lb.	6 × 6 × 12
"	Tins	9 lb.	8 dia. × 11
" French	"	5 kg.	7 dia. × 8
Oils—edible	Cans	1 gall.	7 × 4 × 14
Pastes—fish and meat	Ctns.	36 × 2½ oz.	13 × 14 × 5
Pickles	"	2 × ½ gall.	13 × 7 × 10
"	"	2 × 1 gall.	16 × 9 × 14
Sauces	"	12 × 6 oz.	9 × 7 × 9
"	"	6 × 20 oz.	9 × 6 × 10
"	"	12 × 4 oz.	7 × 9 × 4
Sandwich spread	"	12 × ½ pt.	11 × 9 × 8
Vinegar	"	5 gall.	14 dia. × 18
Bottled beer	Crates	24 × ½ pt.	20 × 14 × 10
"	"	12 × ½ pt.	15 × 11 × 10

Some examples of items accommodated

Storage (veg. and fruit)

Potatoes	Sacks	112 lb.	36 × 18 × 12
Root vegetables, such as carrots, parsnips, swedes, turnips, raw beetroots	Bags	56 lb.	26 × 14 × 10
Greens, such as	Boxes	Bushel	21 × 14 × 11
Cabbage, savoy	Bags	30/36 lb.	30 × 9 × 8
Spring greens	Boxes/crates	36/40 lb.	23 × 17 × 3
Spinach	Crates	40 lb.	23 × 17 × 3
Brussel tops	Crates	12/14 lb.	21 × 14 × 8
Brussel sprouts	Bags	30/36 lb.	30 × 9 × 14
"	Bags	28 lb.	24 × 12 × 12
Cauliflower	Nets	18/20 lb.	18 × 12 × 12
"	Mats	18/22 hd.	23 × 15 × 14
Beans	Boxes	8/12 hd.	21 × 14 × 11
Peas	Boxes	28/32 lb.	21 × 14 × 11
Leeks	Bags	28 lb.	26 × 14 × 10
Marrows	Crates	20/24 lb.	21 × 14 × 8
"	Bags	60/85 lb.	26 × 16 × 10
"	Boxes	30/35 lb.	21 × 14 × 11
Onions	Bags	56 lb.	26 × 14 × 10
Tomatoes	Boats	12/14 lb.	17 × 9 × 7
"	Chips/boxes	12 lb.	15 × 9 × 6
"	/Trays	12 lb.	16 × 12 × 5
Lettuce	Boxes/crates	12/18/24/30 hd.	23 × 15 × 8
Cucumber	Trays	18/24	24 × 17 × 4
Celery	Trays	12 hd.	16 × 12 × 5
"	Boxes	30 hd.	26 × 17 × 6
Apples	Boxes	40/44 lb.	19 × 12 × 12
"	½ boxes	20/24 lb.	15 × 10 × 9
Oranges	Boxes or crates	Popular size containing 210	30 × 14 × 12
Lemons	Boxes	Ditto 150	26 × 14 × 8
Grapefruit	Boxes/crates	Ditto 80	30 × 14 × 16
Pears	Boxes	20 lb.	20 × 13 × 7
"	Trays	12 lb.	16 × 12 × 5
Plums	Boxes	24 lb.	13 × 12 × 8
"	Trays	12 lb.	16 × 12 × 5
Rhubarb	Boxes	Bushel	21 × 14 × 11
Gooseberries	Baskets	½ bushel	20 × 13 × 7
"	Chips	12 lb.	15 × 9 × 6
Soft fruit such as	"	"	"
Blackcurrants	Chips	12 lb.	15 × 9 × 6
Blackberries	"	"	"
Cherries	Trays	20 × 1 lb.	21 × 17 × 5
Raspberries	"	"	"
Redcurrants	Trays	9 × ½ lb.	16 × 12 × 5
Strawberries	"	"	"
Pineapples	Crates	6	21 × 20 × 8
Bananas	Coffins	28 lb.	34 × 11 × 11

the bulk storage area needs to be sited as (a) and (b) above with consideration given to providing separate store rooms for:

(c) Day to day kitchen use, often referred to as the chef's or kitchen store, sited off the kitchen near its main preparation sections.

Rough guide to the areas required: Excluding possible needs for long term bulk storage which may need 1 sq. ft. of floor space per catering unit for even the largest project, the following could be taken as a rough guide to overall requirements for the majority of establishments.

Up to 0.6 sq. ft. per catering unit for kitchen catering for	10
Up to 0.4 sq. ft. do	400
Up to 0.35 sq. ft. do	1,000

Vegetable (and fruit) store

Conditions of storage: 35/50 deg. F. is considered a satisfactory temperature with items stored away from light in well ventilated, cool but frost-proof premises. Goods should be stacked clear of floor on suitable slatted shelves or racks and wire mesh vegetable racks are often provided, especially for the smaller project. The presence of dirt is inevitable and in some large establishments part of the storage area or an annexe is provided with facilities for washing potatoes en route to the preparation section or peeling machine.

Location: The store should be sited near the goods entrance and scales and have direct access to the vegetable preparation section. Separate stores are seldom warranted in kitchens catering for, say, below 50 persons, provided that storage racks are suitably accommodated near the vegetable preparation equipment.

Rough guide to the areas required: Excluding demands for exceptional bulk storage accommodation such as may be needed for an institution having its own farm, the following figures should meet normal, maximum requirements.

Up to 0.3 sq. ft. per catering unit for kitchen catering for	100
Up to 0.2 sq. ft. do	400
Up to 0.16 sq. ft. do	1,000

Other storage requirements

Although main storage details concerning vegetables, dry goods and refrigerated items can be classified to give some indication as to the areas required, there are other aspects of storage needing close attention although it is not possible to define them under the same headings as before and space requirements will vary considerably.

Refuse, swill and empties: A swill area, possibly near the goods entrance, is required and this should preferably take the form of a fly-proof housing complete with drain and hose point.

Although access to the area will be needed from the kitchen and particularly from such departments as the wash-up and vegetable preparation section, too many external exits tend to create difficulties in supervision and control of the premises as a whole. Thus the designer is faced with a problem in the larger project of either providing numerous doorways or allowing

gas supplement

refuse and swill to pass through quite considerable sections of the premises. Some compromise is invariably necessary.

Space must also be allocated for returnable empties which should be kept under cover and in large establishments will warrant a separate, lockable structure near the main point of delivery.

Cleaning materials: Kitchens need facilities for storing brooms, mops, pails, etc., and for soaps, detergents and other cleaning materials, preferably away from preparation rooms. In general the type and number of stores or cupboards will depend on the scope of the premises. There is usually the need to provide something separate for the dining area.

Cleaners require access to water and their store room in the larger project may well include a slop sink and/or sink and drainer.

Small and reserve equipment: The kitchen should contain sufficient cupboards and drawers for the tools of the trade. Racks, a proportion of which could be mobile, will also be necessary. The larger establishment may also need separate lockable storage facilities for reserve equipment, including bowls, pans, etc., in addition to reserve cutlery and crockery.

Dining room storage: Although cupboards and drawers for linen, cutlery and crockery, etc., may meet the requirements of the smaller unit, the suite of service rooms for the larger project and especially those under the control of a separate supervisor will usually need a lockable store or a combined store and office.

Catering staff accommodation

It would seem that the provision of suitable catering staff accommodation is a requirement that is either overlooked or given but minor consideration with the overall plan. For reasons of hygiene alone, good changing, washing and toilet facilities are most important in premises dealing with the preparation, cooking and service of food. Apart from this and in establishments where there may be keen competition for suitable staff, amenities as much as good kitchen facilities may be a deciding factor in their accepting employment.

The type of accommodation needed will vary considerably. In its simplest form all that may be necessary is locker space, access to toilets which may be

outside the precincts of the catering department and, to meet good hygienic practices, a wash-hand-basin in the kitchen.

For reasons of organization, supervision and control and to avoid even resident staff having to leave the catering premises, separate toilet and changing facilities are often warranted for relatively small establishments. A lobby is necessary to obviate w.c.s being entered directly from the kitchen and this could often be arranged to serve as a cloakroom and be provided with wash-basins. For the larger establishment it may be necessary to provide additional accommodation for staff employed in the servery and dining rooms or arrange the overall layout to avoid their having to pass back and forth through the kitchen. Categories of staff such as heads of departments or kitchen porters and stores staff may also require separate facilities and in the larger, more complex establishments it is difficult to know where to draw the line between highly desirable features, such as showers, and necessities. In all cases w.c.s must have wash-hand-basins provided close by.

Apart from changing and toilet accommodation, there may be a need for a separate staff room. This could be used for dining purposes if, as in many places, cooks are not officially allowed to eat in the kitchen and are barred from using the dining rooms. It might also be the only room within the catering premises where smoking would be permitted.

The finished plan

Although it is not standard practice to submit lengthy explanatory notes with the drawings two points are worth making.

Plans for the new establishments always show the siting of equipment within the various sections. It is suggested that they should, in addition, indicate the fundamental principles on which the layout is based, particularly if they are to be studied by a committee. Directional lines on the plan indicating the main flow routes prove very helpful. A well balanced scheme would then be more likely to receive the commendation that it deserves and any incorrect assumption concerning the sequence of events within the catering premises would become apparent at a sufficiently early stage to make correction possible.

LABORATORIES AND PROCESS BLOCK

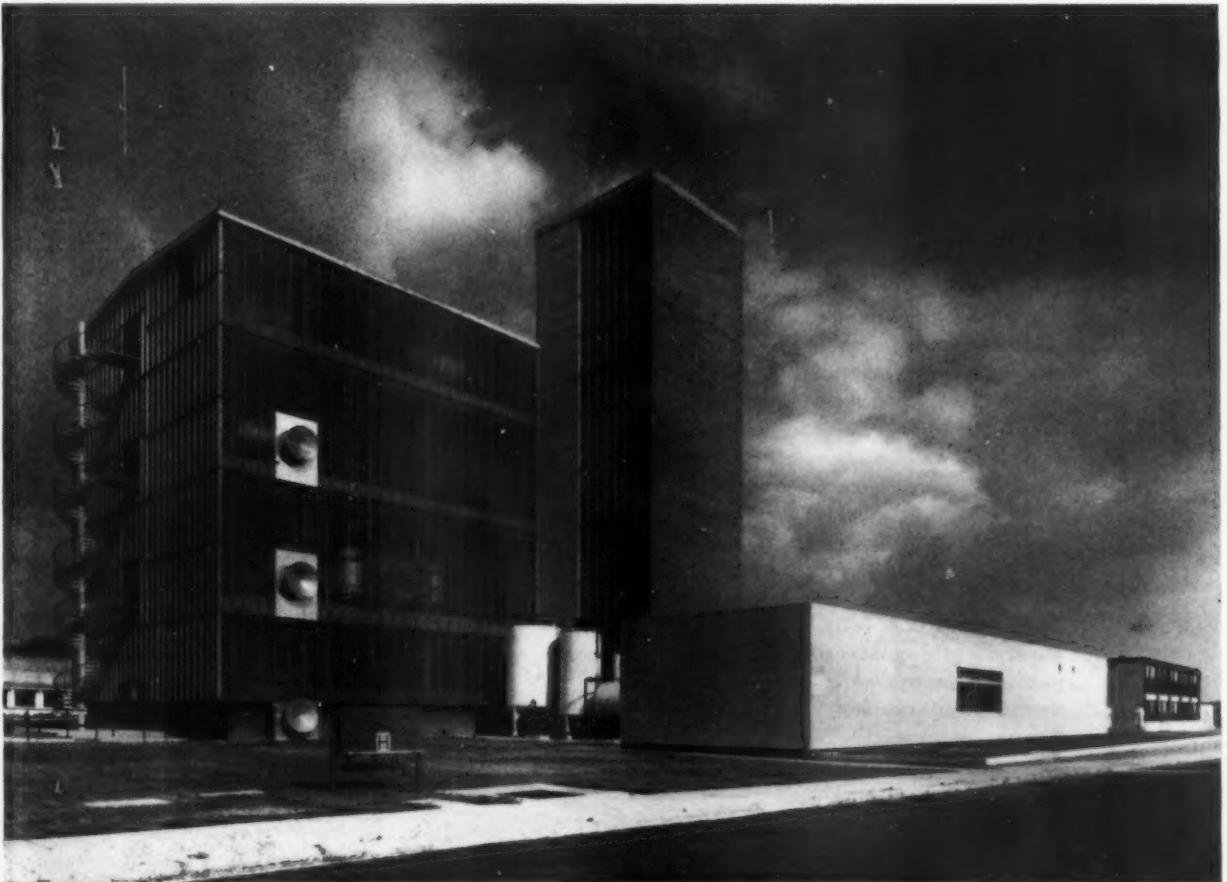
at DUXFORD, CAMBS
for CIBA (ARL) LTD.
designed by OVE, ARUP AND PARTNERS
architect/associate PHILIP DOWSON
quantity surveyors DAVIS, BELFIELD AND
EVEREST

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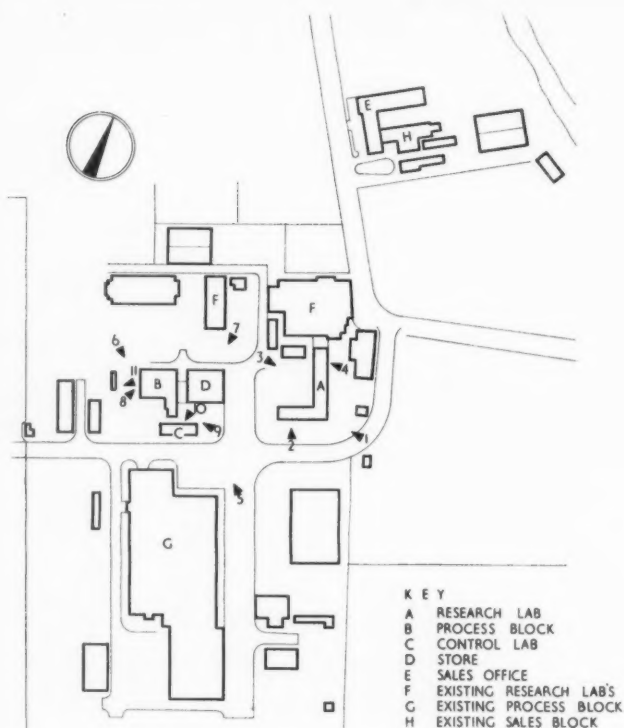
UDC No. 727.5

These are new structures for a firm engaged in the production of epoxy resins, chiefly used in the form of glues in the building industry and aircraft production. In view of the widely varying types of accommodation provided, the individual blocks have been cost analysed separately.

The process block, with the laboratories beyond.



building illustrated

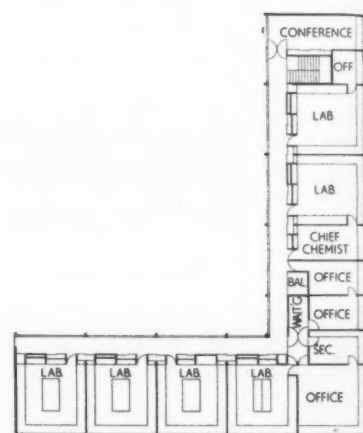


Site plan with photographic viewpoints

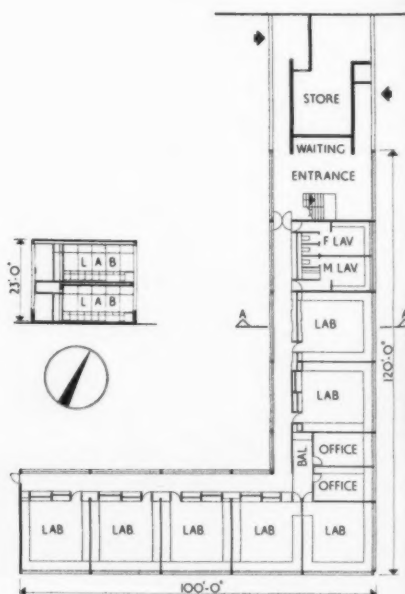
APPRAISAL: The question has been considered lately by the RIBA and individual views have been printed in recent issues of the AJ, as to whether the Code of Professional Conduct should be amended to allow architects to become principals of building firms. Many things too (some very forthright) have been said about the "all-in service." The traditionally independent role of the architect as a professional man in relation to the building industry is thus being thoroughly re-examined. Much less thought is currently being concentrated, and far less is being said, on the equally important question whether the architect should retain a similarly independent position in relation to the other professions, such as quantity surveyors, and consultants for structure, heating, ventilating, electrics, landscape and so on, or whether some positive integration would result in better client service and better architecture. It is true that in some public offices the other professions are working in comparatively close association with architects. The positive benefits in some instances have obviously been nil, in others quite outstanding, the most notable being the architect/q.s. link at MOE. Is there a case, however, for private offices to consist of such a consolidation of the various professions involved in the design of any fair-sized present-day building, a situation which hardly exists in this country? With this question firmly in mind, the buildings illustrated here this week are of particular interest, since they are the product of a structural engineer having an associate architect within the walls of his office. As a result, has a very close integration of the structure been achieved?

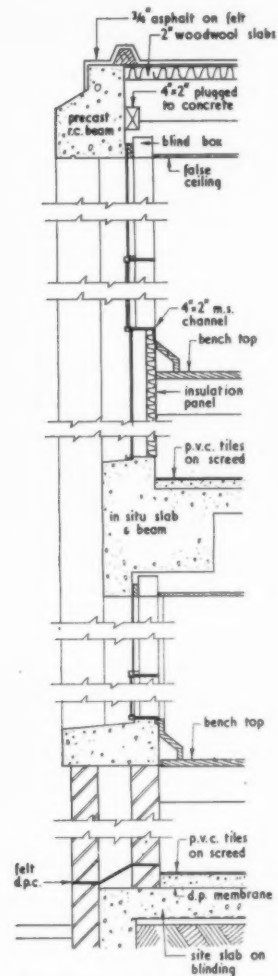
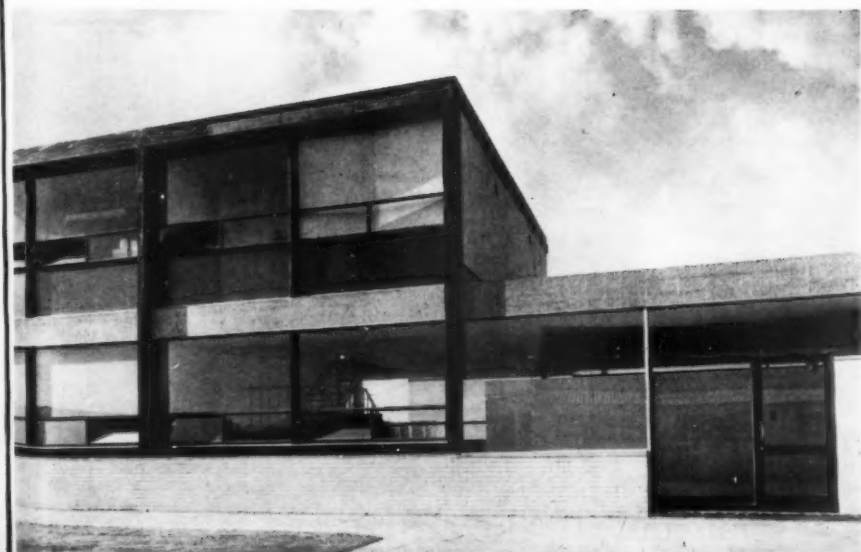
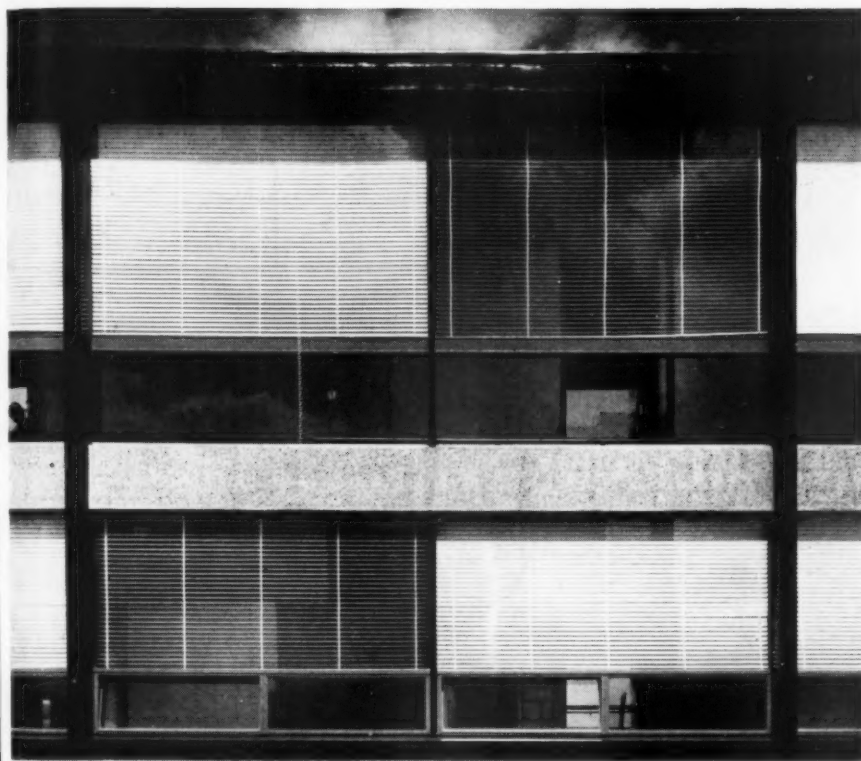
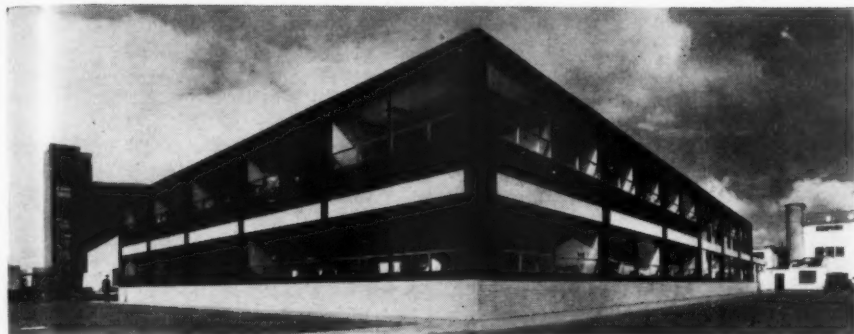
It is in the first instance of great interest to note the structural

methods which have been adopted for the various buildings in this group. The research laboratories, which are two-storey, have been constructed in a combination of precast and *in-situ* concrete. The process building, which is four-storey, has an *in-situ* concrete frame. The auxiliary buildings to it are in load-bearing brickwork, but as an added variation, in order to have an interior free of columns, the store roof is carried on lattice timber beams. A variety of structural techniques has thus been adopted, each one in fact having been chosen in answer to the client's requirements, and disciplined to the architectural solution developed in each case. There is therefore no evidence of an imposed and repetitive engineering pattern in this building—the equivalent, say, of the road bridges on the M1. Such flexibility in thinking may seem perfectly natural to architects, but it is often difficult for the average structural engineer to achieve, too many of them trying to impose their favourite structural



First floor plan

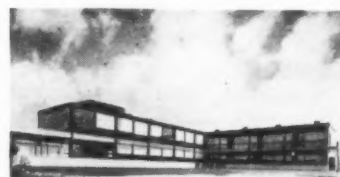
Ground floor plan and section A-A of research laboratories
[Scale 1/4" = 1' 0"]



Typical section through external wall of research laboratories
[Scale: $\frac{1}{4}'' = 1' 0''$]

Viewpoint 1: "structure very clearly expressed. . ." (top).

Viewpoint 2: "Mondrianesque in character" (left).



Viewpoint 3: "the massing of the research laboratories is at present somewhat unresolved" (above).

Viewpoint 4: "the in situ concrete having exposed aggregate while the remainder is painted black" (left).

building illustrated

method on everything, in terms of steel (BS Code of Practice or plastic theory), *in-situ* concrete, prestressed concrete, hyperbolic paraboloids, or whatever it may happen to be.

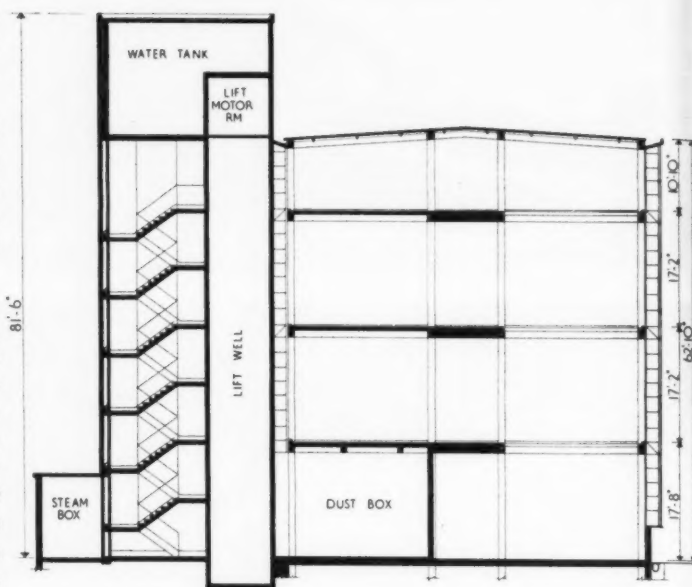
Such variety of structural techniques is, in fact, carried through in these buildings to minor elements such as the staircases, the research laboratories having internal stairs of laminated hardwood with the external escape in cast iron, the process building, *in-situ* concrete internal stairs and precast escape stairs.

But perhaps of greater interest is to observe influences in the opposite direction, that is to say, the effect of structural decisions upon the design of these buildings. In this respect it is particularly striking that with the two main blocks, the research laboratories and the process building, as far as external appearances are concerned two diametrically opposite methods have been adopted. In the case of the research laboratories, it was decided that if benches and similar fittings were to be housed neatly it was essential for the interior to be entirely free of structure, which has thus been carried and very clearly expressed externally. The process building, on the other hand, was conceived as a series of free-standing platforms, with the external cladding set well out from them to allow plenty of room for the many pipes and other services required for manufacturing purposes to pass freely from floor to floor between the two. An additional factor was that since the manufacturing processes involve a certain risk of explosion, an external skin of this nature divorced from the structure, could if necessary be quickly and cheaply replaced.

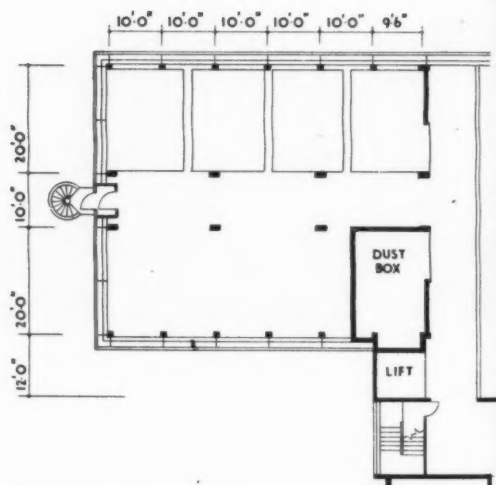
Much of the success aesthetically of these two main buildings results from the consistency with which these decisions have been carried out in detail. In the research laboratories, except where there are opening lights, glazing has been directly into the concrete frame members. At the same time the composite nature of the structure, as a combination of precast and *in-situ* work, has been expressed by a difference of finish, the *in-situ* having exposed aggregate while the remainder is painted black. The result, preconceived or otherwise, is very Mondrianesque in character, forthright and definitive. The almost complete absence of drips or other weatherings to the external vertical surfaces may have been unwise, since even on this rural site, free from any smoke pollution, streaks have begun to appear on the *in-situ* concrete and the brick panel infilling in one or two places. The architect, however, regarding some streaking as inevitable, chose to direct the streaks into a regular pattern by a series of drip points.

The structural decision to clad the process building with a light skin has been carried out by clothing the block (except for the lift tower) entirely in patent glazing. The shimmering, translucent quality that results is emphasized in a variety of ways, by the recessed brickwork plinth, by punching through with a pattern of large extract fans, and by carrying out the single-storey ancillaries or control laboratories and stores almost entirely in solid brickwork.

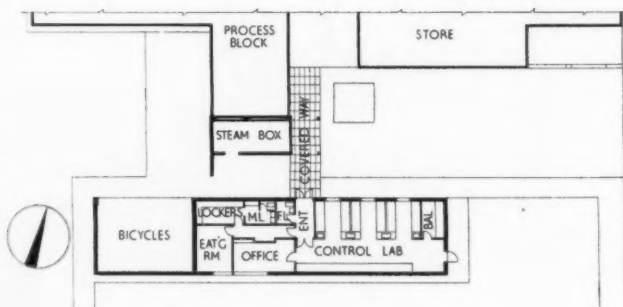
The massing of the research laboratories is at present somewhat unresolved, but this is only because the present building had to allow for a future extension to double the accommodation, and this is planned so that the completed scheme will, together with the adjacent existing block, form a court-



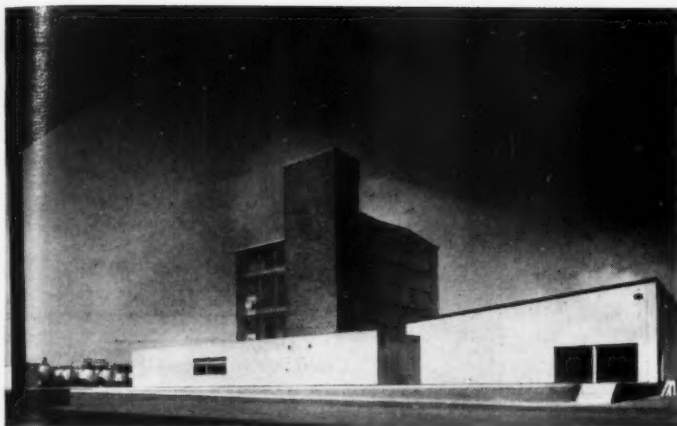
Section through process block [Scale: $\frac{3}{4}$ " = 1' 0"]



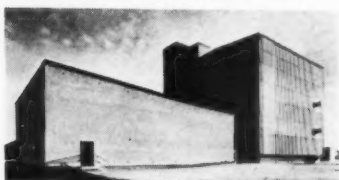
Typical floor plan of process block [Scale: $\frac{1}{2}$ " = 1' 0"]



Ground floor plan of control laboratories [Scale: $\frac{1}{4}$ " = 1' 0"]



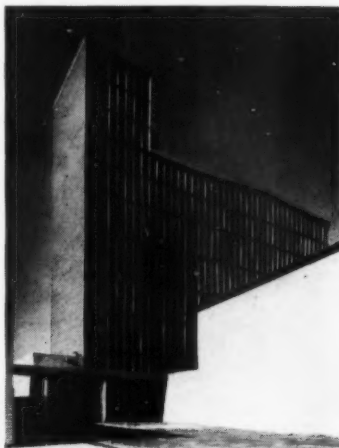
Viewpoint 5: "the process building, the control laboratories and the store have been designed as three separate units."



Viewpoint 7: "single storey ancillaries almost entirely solid brickwork."



Viewpoint 8 (above): "precast concrete escape." Viewpoint 9 (below): "almost entirely patent glazing."



Viewpoint 6: "a shimmering, translucent quality. . . ."



Viewpoint 10 (above): vertical sliding metal windows to control laboratories. Viewpoint 11 (below): tank farm for storage of raw materials.



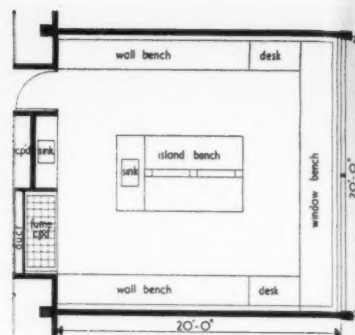
building illustrated

yard with circulation on the inside on both floors. Much of the success of such a design would, of course, depend upon the landscaping inside; that existing at present, for which the designers have not been responsible, would obviously be a failure.

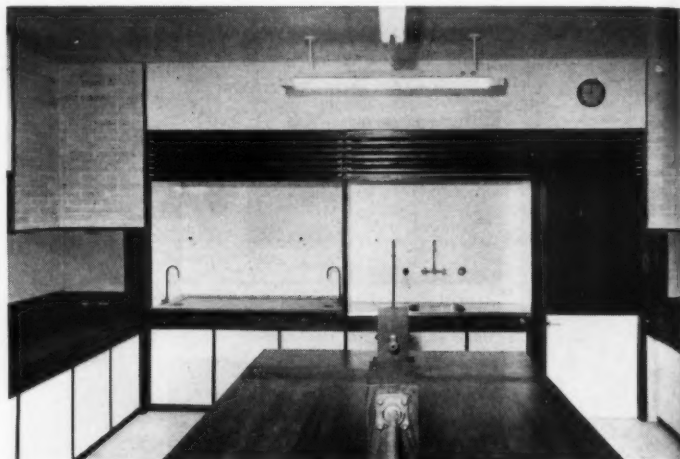
The laboratory fittings have been designed as an integral element of the building, with obviously beneficial results. In particular, the corridor wall of each laboratory forms a continuous duct for services, particularly for plenum trunking and fume cupboard extracts, and is accessible from both sides. As with the process building, therefore, a clear and logical separation of structure and services has been achieved. The general appraisal of these buildings is therefore that a high degree of integration of the structure has been realized and this has been consistently carried through to the minor detailing, particularly with regard to the separation of services. This would appear to have been made possible, or at least facilitated, by the unusually close understanding between architect and structural engineer in this instance. Equally the basic structural decisions have been the entire *raison d'être* for the aesthetic expression, with a complete absence of tricks of camouflage or clichés. On the face of it, then, these buildings are solid evidence in favour of architects and engineers working on adjacent drawing boards.



Laminated hardwood stairs in research laboratories (above).
Typical office interior (below).

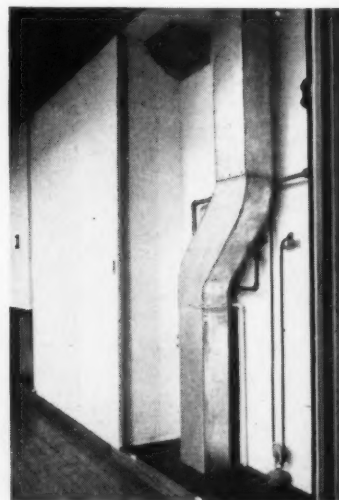


Detail plan of typical laboratory
[Scale: $\frac{1}{2}$ " = 1' 0"]



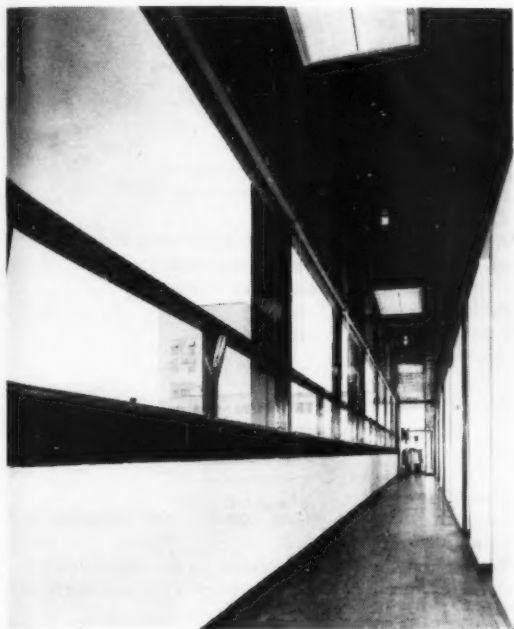
Specially designed laboratory fittings.

Services duct accessible from corridor.

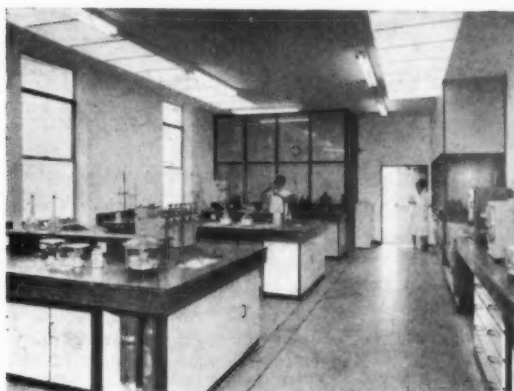
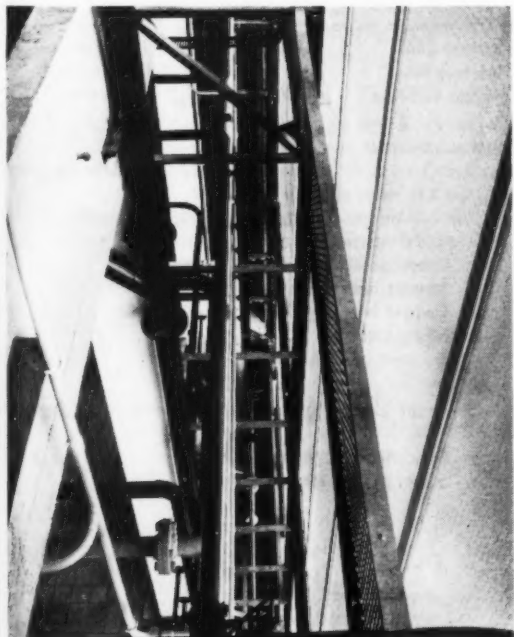




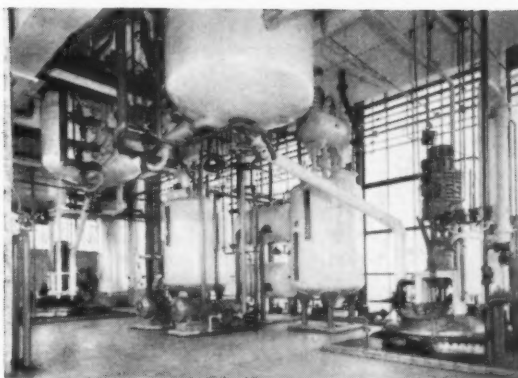
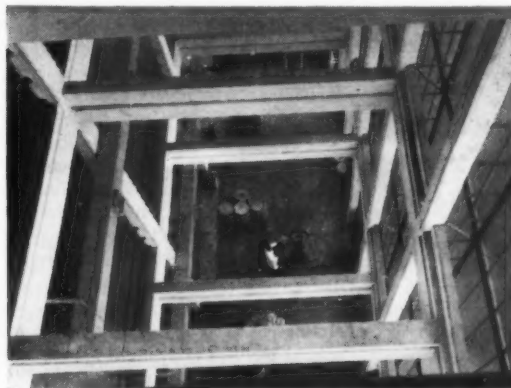
Conference room.



Ground floor corridor in research laboratories (above). The 3-ft. perimeter duct between patent glazing and structure (below).



Typical floor in process area (above). Part of the building has been left void for extension of the manufacturing processes (below).



The process laboratories. Store, with glued timber trusses (below).



analysis

CLIENT'S REQUIREMENTS

(a) a new research laboratory, consisting in the main of a series of self-contained units for work in small groups, with auxiliary offices, stores and a conference room. Allowance was to be made for future extension to double the present provision.

(b) a process block for the manufacture of synthetic resins. Since gravity feed was a convenient method for transfer of liquids between individual processes, a multi-storey building was required. Ancillaries needed were a small control laboratory for testing products during and after manufacture, and a store for raw materials and finished goods.

PLANNING AIMS

The buildings have been planned as part of a general development programme for an existing factory, the site of which had already been set out by a grid of roads and services.

(a) the basic element in the research laboratories is the individual 20-ft. square unit, with continuous benching on three sides and an island bench in the middle, the fourth wall being taken up with fume cupboards, sinks, ducts and trunking. Each 400 sq. ft. laboratory thus has a 74 ft. run of benching. The present stage forms an "L" on plan; it is envisaged that the future extension, together with the existing buildings, will form a courtyard.

(b) owing to the high fire risk involved with the use of inflammable liquids, the process building, control laboratories and store have been designed as three separate units. Patent glazing has been deliberately chosen for the cladding of the process building since it can quickly and cheaply be replaced, should an accident occur.

SUMMARY

	Research laboratories	Process block
Ground floor area:	6,263 sq. ft.	4,931 sq. ft.
Total floor area:	12,526 sq. ft.	23,774 sq. ft.
Type of contract:	RIBA.	
Tender date:	October 1956.	
Work began:	January 1957.	
Work finished:	Laboratories, May 1959; Process block December 1958.	
Tender price of foundations, superstructure, installations and finishes:	Laboratories, £76,394; Process block, £69,434.	
Tender price of external works:	£6,000.	
Total:	£151,828.	

Note: The original tender did not include for equipping or servicing the whole of the Research Laboratories, and additional equipment and services have been provided which bring the final cost of this block to £83,000 approximately. Because of the diversity of provision in these buildings, each has been cost analysed separately and costs are given at the end of the description of elements, in tabular form.

Work below ground floor level

In research laboratories, edge beams between columns to carry external brickwork.

Mass concrete pads to columns, strip foundations to external walls of store and control laboratories.

STRUCTURAL ELEMENTS

Frame

Research labs.: precast concrete frames and *in-situ* beams. At first floor level the latter have exposed aggregate.

Process building: *in-situ* concrete frame.

External walls

11-in. cavity brickwork, external facings of Uxbridge flints.

	solid wall	0.368	
Ratios:		I	
	floor area		
	Research labs.	0.223	
	Process building	I	
	Control labs	1.53	
	Store	1.48	
		I	I

Windows

Research Labs.: Metal frames for opening lights, with fixed lights formed by glazing directly into structure.

Process building: patent glazing, and vertical sliding metal sashes to control labs.

	windows	0.517	
Ratios:		I	
	floor area		
	Research labs	0.453	
	Process building	I	
	Control labs	0.133	
	Store	0	
		I	I

External doors

Research and control labs, glazed hardwood doors.

Process building and store, sliding folding shutters.

	doors	0.005	
Ratios:		I	
	floor area		
	Research labs	0.019	
	Process building	I	
	Control labs	0.047	
	Store	0.032	
		I	I

Upper floors

Research labs: 4-in. *in-situ* concrete slab spanning 20 ft. between beams.

Process building: precast concrete beams spanning 15 ft.

Area: Research labs 5,264 sq. ft; process building, 9,450 sq. ft.

Staircases

Research labs: Laminated hardwood staircase in entrance hall. Cast iron external escape stairs.

Process building: *In-situ* concrete stairs. Precast concrete external escape stairs.

Internal stairs	Width	Total rise
Research labs	3 ft. 6 in.	11 ft. 6 in.
Process building	4 ft. 0 in.	51 ft. 4 in.

Roof construction

Research labs and control labs: Wood wool slabs on timber joists at 2 ft. centres.

Process building and store: asbestos cement decking, in the latter carried on triangulated timber trusses.

Areas:	Research labs, 6,540 sq. ft.
	Process building, 4,576 sq. ft.
	Control labs, 1,776 sq. ft.
	Store, 5,005 sq. ft.

Rooflights

Metal patent glazing to control labs. Corrugated plastic in store.

Areas:	Control labs, 256 sq. ft.
	Store, 145 sq. ft.

analysis**PARTITIONS AND FITTINGS****Internal partitions**

4½-in. brickwork generally, with some 9-in. in process building.

Areas: Research labs, 7,807 sq. ft.
Process building, 1,206 sq. ft.
Control labs, 892 sq. ft.
Store, nil.

Screens

Glazed metal screens in control labs.
Area: 265 sq. ft.

Internal doors

Flush solid core doors generally. Glazed hardwood to lobbies and stair wells.

	<i>No. of single</i>	<i>Pairs of double</i>
Research labs	37	2
Process building	5	3
Control labs	5	—
Store	—	—

Ironmongery

Generally satin finished aluminium.

Fittings

Research labs: about 510 ft. run of laboratory benches and fume cupboards with services, designed by architects, finished with teak tops and plastic faces to cupboard doors and drawer fronts. About 220 ft. run of cupboards forming ducts accessible from corridor, and cupboards, display panels and blackout in conference room.

Control labs: About 60 ft. run of similar benching.

FINISHES**Floor finishes**

<i>Location</i>	<i>Finish</i>	<i>Area in sq. ft.</i>	<i>Price per sq. yd.</i>
Research labs	Pvc tiles	303	30s od
	Cork	608	35s od
	Hardwood strip	1,295	53s od
	Blue paviours	847	32s 6d
Process	Buff quarries	3,750	69s od
Control labs	Pvc tiles	410	30s od
	Buff quarries	760	69s od

Trowel-finished concrete in process building and store is included in Structure.

Wall finishes

Generally fair faced brickwork, but with some plaster and glazed brick in research labs. Control labs plastered throughout.

Ceiling finishes

Research labs, perforated metal panels for radiant heating. Control labs, skim-coated plasterboard. No finish in Process building and store.

Roof finishes

Research labs: asphalt. Area, 6,540 sq. ft.
Process building (part only): 3-layer roofing felt. Area, 726 sq. ft.
Control labs: 3-layer roofing felt. Area, 1,776 sq. ft.
Remainder of process building and store asbestos cement included in Structure.

Decorations

Emulsion paint generally, with gloss paint on doors, trim and metalwork.
Black chlorinated rubber paint on exposed precast concrete structure on research labs exterior.

SERVICES**External plumbing**

Internal cast iron downpipes in both laboratories.

External asbestos cement gutters and downpipes to store and process building, the latter having in addition an asbestos gutter at the base of the patent glazing.

Hot and cold water, heating and ventilation

Heat is supplied by steam from the existing factory boiler house and feeding calorifiers.

In research laboratories heating is by radiant ceiling panels throughout; in control labs, by convectors under sills, and in process building and store, by heater batteries with fans. A plenum system has been provided for the research labs with plant room on the roof. Additional fans are placed on the roof of the same block for fume cupboard extraction, and to assist natural ventilation in summer. As a precaution in the event of the escape of noxious fumes, the process building has been provided with six 3-ft. diameter "crash" fans.

Sanitary fittings

Salt glazed ware.

<i>Type of fitting</i>	<i>No. of each type</i>		
	Research labs	Process	Control labs
W.c.s	6	I	2
Lavatory basins	10	I	I
Urinals	3		2
Sinks	24		
Wash tub			I

Gas installation

Supply of gas to laboratories from storage cylinders. (Carried out by client and not included in contract.)

Electrical installation

Both single-phase and three-phase supply has been provided to laboratories and process building.

In addition to normal lighting provision, outlets have generally been arranged at 3-ft. centres along laboratory benches.

Lifts

Research labs, small interfloor hoist.

Process building, large goods lift for transport of raw materials and equipment.

(Cost summary on p. 88).

CONTRACTORS

General contractors: William Sindall Ltd. *Heating and ventilation:* G. N. Haden Ltd. *Electrical installation:* Rashleigh Phipps & Co. *Sub-contractors (Laboratories):* Hand-operated lift: Aldous & Campbell Ltd. *Laboratory benches:* D. Burkle & Son. *Bench taps:* J. S. & F. Folkard (London) Ltd. *Heating:* Frenger Ceilings Ltd. *Laboratory furnishings:* Charles Hearson & Co. *Timber floors:* Horsley Smith & Co. *Glass:* T. & W. Ide Ltd. *Wall tilings:* J. E. James. *Glazing frames:* Luxfer Ltd. *Plastering:* W. J. Peckett. *Polythene pipework:* Prodorite Ltd. *Timber staircase:* Rainham Timber Engineering Co. *Spiral staircase:* Debry Staircase & Ironworks Ltd. *Sub-contractors (Process block):* Roofing: Belmont Building Supplies Ltd. *Glazing:* British Challenge Glazing Co. *Asphalting:* Cambridge Asphalte Co. *Handrailing and balustrading:* Clark, Hunt & Co. *Lightning conductors:* W. J. Furse & Co. *Floor tiling:* J. E. James. *Spiral staircase:* Kingsbury Concrete Co. *Road surfacing:* Lavender & Bateman (1937) Ltd. *Lifts:* Marryat & Scott Ltd. *Glued timber roof trusses:* Rainham Timber Engineering Co.

analysis

COST PER SQ. FT. OF FLOOR AREA

	Research labs. s d	Process building s d	Control labs. s d	Store s d
Preliminaries and insurances	8 0	4 3 $\frac{3}{4}$	9 11	9 4
Contingencies	2 4 $\frac{1}{2}$	1 0 $\frac{1}{2}$	2 4 $\frac{1}{2}$	2 2
Total	10 4 $\frac{1}{2}$	5 4	12 3 $\frac{1}{2}$	11 6
Work below ground floor level	4 9 $\frac{1}{2}$	4 6 $\frac{3}{4}$	9 3	2 10

STRUCTURAL ELEMENTS

Frame	8 11 $\frac{1}{2}$	6 7	—	—
External walls	2 2 $\frac{1}{2}$	1 2 $\frac{1}{2}$	7 1	9 11
Windows	4 0	3 5 $\frac{1}{2}$	4 10	—
External doors	8 $\frac{3}{4}$	4 $\frac{1}{2}$	8 $\frac{1}{2}$	7
Upper floors	3 11	5 0 $\frac{1}{2}$	—	—
Staircases	10 $\frac{1}{2}$	6 $\frac{1}{2}$	—	—
Roof construction (inc. rooflights)	4 9 $\frac{1}{2}$	2 0 $\frac{1}{2}$	11 4	12 7 $\frac{1}{2}$
Glazing	5 1 $\frac{1}{2}$	10 1 $\frac{1}{2}$	3 11 $\frac{1}{2}$	1 $\frac{1}{2}$
Total of structural elements	30 7 $\frac{1}{4}$	29 4	27 11	23 2 $\frac{1}{2}$

PARTITIONS AND FITTINGS

Internal partitions	1 2 $\frac{1}{4}$	3	3 10	—
Screens	—	—	1 5	—
Internal doors	5 $\frac{1}{2}$	1 $\frac{1}{2}$	2 1 $\frac{1}{2}$	—
Ironmongery	7 $\frac{1}{2}$	1 $\frac{3}{4}$	6	1 $\frac{1}{2}$
Fittings	19 11 $\frac{1}{2}$	—	17 8 $\frac{1}{2}$	—
Total of partitions and fittings	22 2 $\frac{1}{2}$	6	25 7	1 $\frac{1}{2}$

FINISHES

Floor finishes	3 2 $\frac{1}{2}$	1 7 $\frac{1}{2}$	5 8	—
Wall finishes	2 10 $\frac{1}{2}$	4 $\frac{1}{2}$	1 8 $\frac{1}{2}$	1 $\frac{1}{2}$
Ceiling finishes	4 10 $\frac{1}{2}$	—	1 10 $\frac{1}{2}$	—
Roof finishes	1 7 $\frac{1}{2}$	4 $\frac{1}{2}$	4 11 $\frac{1}{2}$	—
Decorations	1 7 $\frac{1}{2}$	1 0 $\frac{1}{2}$	1 8 $\frac{1}{2}$	5 $\frac{1}{2}$
Total of finishes	14 2	3 4 $\frac{1}{2}$	15 10 $\frac{3}{4}$	6 $\frac{1}{2}$

SERVICES

External plumbing	3	3 $\frac{3}{4}$	10 $\frac{1}{2}$	8
Heating, ventilation, and hot and cold water	23 11	6 7	14 2 $\frac{1}{2}$	—
Sanitary fittings	6 $\frac{1}{2}$	—	—	—
Electrical installation	6 0	2 6 $\frac{1}{2}$	5 8	8
Lifts	3 $\frac{3}{4}$	4 0 $\frac{1}{2}$	—	—
Total of services	31 0 $\frac{1}{2}$	13 5 $\frac{3}{4}$	20 8 $\frac{3}{4}$	1 4
Additional fittings and services to complete equipment	10 6 $\frac{1}{2}$	—	—	—
Drainage	4 0	1 11	3 2	10 $\frac{1}{2}$
Other elements: link to existing building	4 9 $\frac{1}{2}$	—	—	—
Additional Fittings and Services to complete equipment	—	10 6 $\frac{1}{2}$	—	—

Total per sq. ft. of floor area (excluding external works)

£83,000	£51,934	£8,100	£9,400
12,526	17,724	1,410	4,640
= 132s. 6 $\frac{1}{2}$ d.	= 58s. 7 $\frac{1}{2}$ d.	= 114s. 10 $\frac{1}{2}$ d.	= 40s. 6 $\frac{1}{2}$ d.

COST COMMENTS

This fourfold analysis contains a wealth of cost information for those willing to ferret for it.

External walls: The apparent wide cost variation in the different blocks turns out to represent the wide variation of ratios between solid wall and floor area; e.g., the cost per

sq. ft. of the laboratory walling = $\frac{2s. 2\frac{1}{2}d.}{0.368}$ per sq. ft. of floor

area, or 6s. per sq. ft. This specification is repeated in the other blocks.

Windows: Similarly the cost per sq. ft. of window (without glazing) in the research labs and process building turns out

to be identical, 7s. 8d. per sq. ft. The vertical sliding sashes cost 36s. 4d. per sq. ft.

Upper floors: The research labs' in-situ floor, spanning 20 ft., cost 9s. 4d. per sq. ft.; the process building's precast beams spanning 15 ft. cost 9s. 6d. per sq. ft.

Roof construction: The laboratories' roofs cost the same, 9s. 1d. per sq. ft., yet cost per sq. ft. of floor area was 4s. 9 $\frac{1}{2}$ d. and 11s. 4d., while the same roof on the process building and store appears as 7s. 10d. per sq. ft. of floor area and 11s. 8d. respectively.

Screens: The glazed metal screens in the control labs cost 7s. 6d. per sq. ft.

Generally "Preliminaries" are fairly heavy, especially in the case of the store, where this item represents some 23 per cent. of the total cost.

SHOWROOMS AND OFFICES

at DUXFORD, CAMBS.
for CIBA (ARL) LTD.
designed by WESTWOOD SONS AND PARTNERS
partner-in-charge NORMAN WESTWOOD
assistant-in-charge P. C. HOPPENBROUWERS
quantity surveyors DAVIS, BELFIELD AND EVEREST
who prepared this cost analysis
consultants OVE ARUP AND PARTNERS

SFB File No.

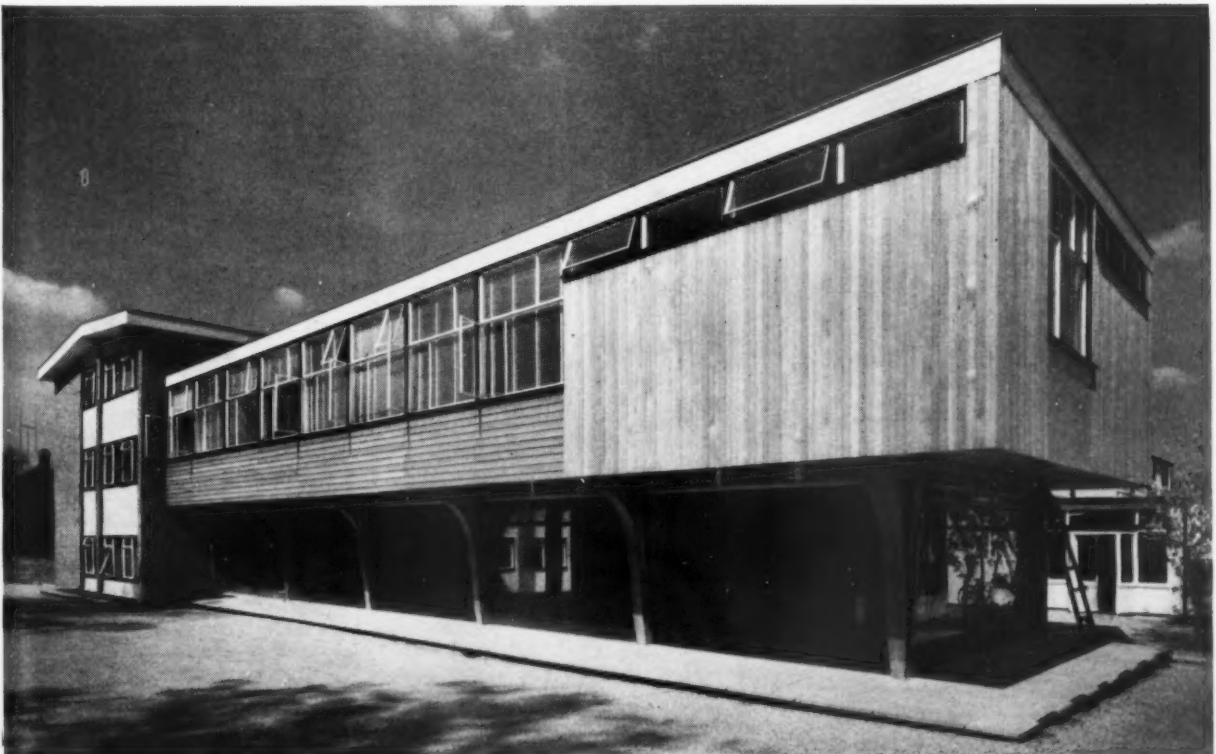
(92)

UDC No.

725.23

The showroom and office block has been designed as a demonstration of the uses to which some of the products manufactured at Duxford can be put.

The showroom and office block from the south.



building illustrated



The glued timber Y-shaped columns during building construction.

APPRAISAL: The idea of this building is a good one. The clients are manufacturers of synthetic resins used, among other ways, in the building industry, and it was therefore decided to incorporate a typical structural appli-

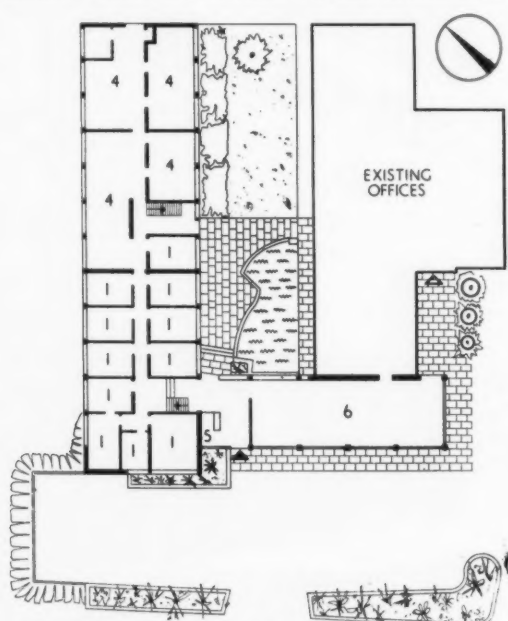
cation of them in the building. In order to express this use of glued timber members as clearly as possible, Y-shaped columns have been used to support offices on the first floor, the ground floor being merely glazed in, to form the showrooms. The detailing of the glazing has been carefully considered, so that on the main frontage the timber frames are shown in a clear, untrammelled way.

The extension has been added on to the front of existing office buildings. This has made it possible to create a small court behind the showrooms. The fact that the levels of the upper floors of the existing buildings on either side of the court are different, meant that the upper levels of the new extension could not be carried through consistently without considerable difficulty. The architects have thus created two different elements on the new frontage: the timber-framed showrooms already described, forming a two-storey block, and a three-storey block of offices at the north end. Presumably to emphasize the differences of level in upper floors, window sills and fascias, the three-storey block has been carried out in load-bearing brickwork. This differentiation of structure does not, however, resolve the problem from an appearance point of view, the juxtaposition of the two appearing to lack definity. This lack is repeated in some of the smaller elements of the design, such as the fenestration of the timber framed offices on the first floor, and the curiously inexplicable change on the front of the same rooms from horizontal to vertical boarding.

The general impression of the interior of the showrooms is pleasantly woodsy. In addition to the impression of high quality given by finish to the structural timber, the floor has been laid with veneer plywood squares and plywood has also been used for the ceiling finish. This effect of quality is repeated in the offices, which have blockboard fittings included in the contract, and in general excellently designed and arranged furniture chosen by the client in consultation with the architects. Bearing in mind the net cost of 62s. 11½d. a square foot, the good standard of finishes and fittings is a remarkable achievement.

KEY:

1. Offices
2. Executive offices
3. General offices
4. Laboratories
5. Reception
6. Showroom
7. Conference room



Ground floor plan [Scale: 1" = 10']



First floor plan

Second floor plan



Above, a director's office. Above right, the boardroom.



The entrance hall which links showroom with office block. The inner courtyard, with formal pool is visible through glazed doors and wall on left, and double doors leading to the showroom, centre.

Below, the showroom exploits the uses of glued timber with laminated Portal frames veneered woodblock floor and plywood ceiling finish.



analysis

CLIENT'S REQUIREMENTS

The building was required as an extension to an existing war-time structure which accommodated the Sales side of the business, and it was required that the new building should hide the existing structure as much as possible from the road. Its main feature was to be a showroom where examples of the firm's products and gluing techniques could be displayed, but there was also to be accommodation for conference rooms, directors' rooms, general offices and storage space for pamphlets.

PLANNING AIMS

To satisfy the request that the existing buildings should be hidden from the road, the showroom and principal offices have been placed in a two-storey block parallel to the road, with the old building behind. By this means the showroom on the ground floor would occupy a prominent position while circulation between the existing offices and the new block is maintained at first floor level.

The main entrance with enquiry counter is at one end of the showroom, so that all visitors see the products exhibited. The showroom has glass from floor to ceiling on the greater part of three sides and when illuminated after dark is most arresting. One of the panes of glass is made to slide, to allow access for large exhibits.

As it was considered important to make a favourable impression on visitors immediately, they enter the building, the courtyard between new and old blocks has been carefully laid out, with an irregularly shaped pool which contrasts effectively with the formality of the surrounding architectural shapes. In summer the noise of water from the fountain helps to make the atmosphere a pleasant one in which to work and entertain visitors.

The method of construction, using laminated timber portal frames to support the floor above the showroom, was chosen to show the use of glue, one of the firm's main products, and the tiling of the showroom floor and aluminium honeycomb louvres to the showroom light fittings also demonstrate the use of the firm's products.

SUMMARY

Ground floor area: 5,284 sq. ft.

First floor area: 5,284 sq. ft.

Second floor area: 3,919 sq. ft.

Total floor area: 14,487 sq. ft.

Type of contract: RIBA.

Tender date: October 29, 1957.

Work began: January, 1958.

Work finished: June, 1959.

Estimated final price of foundations, super-structure, installations and finishes: £45,620.

Estimated final price of external works, drainage and ancillary buildings: £1,600.

Total: £47,220.

Preliminaries and insurances

s d

8 1/2

Contingencies

2 9

Work below ground floor level

3 5 1/2

Three-storey block: mass concrete foundations to brick piers.

Concrete strip foundations to external walls.

Floor slab.

Showroom block: Concrete bases to Portal frames and floor slab.

Frame or load-bearing element

3 7 1/2

Three-storey block: load-bearing brickwork and concrete beams.

Showroom block: laminated timber Portal frames.

External walls

Three-storey block: hollow walls of clinker.

Inner and outer skin of concrete blocks.

Showroom block: timber framed walls clad with cedar board.

Ratio: $\frac{\text{solid wall}}{\text{floor area}} = \frac{0.554}{1}$

Windows

Metal windows in wood frames.

Ratio: $\frac{\text{windows}}{\text{floor area}} = \frac{0.238}{1}$

External doors

Five pairs of glazed hardwood doors.

One single glazed hardwood door. Plate glass sliding doors at end of showroom.

Ratio: $\frac{\text{external doors}}{\text{floor area}} = \frac{0.02}{1}$

Upper floors

12-in. \times 3-in. and 12-in. \times 4-in. timber joists to first and second floors of three-storey block.

Area: 3,969.

9-in. \times 3-in. joists to first floor of showroom block.

Area: 1,813

Superloads: 50 lb. and 80 lb. per sq. ft.

Staircases

In situ reinforced concrete staircases with terrazzo finish.

Cost includes balustrading and hardwood handrails.

No. of staircases: 2.

Width: 4 ft.

Total rise: 3-storey building 9 ft. 6 in.

floor to floor; 2-storey building

10 ft. 1 in. floor to floor

Roof construction

A patent light-weight roof comprising a joist system clad with compressed straw slab and bituminous roofing, lined with a fire-retarding insulation board ceiling.

Area: 6,254 sq. ft.

Glazing

26 oz. and 32 oz. clear sheet glazing generally.

Plate glass throughout showroom block.

Total of structural elements: 22s 4 1/2d

PARTITIONS AND FITTINGS

Internal partitions

Type of partition

Area of each type

Half brick

360 sq. yds.

1-in woodwool slabs

supported with galvanized iron wire tensioned with patented nails and plastered both sides.

Total 2 in. thick.

200 sq. yds.

Straw slab

45 sq. yds.

Framed, clad plasterboard

90 sq. yds.

Screens

Glazed mahogany screed and desk with cupboards and drawers in entrance hall.

analysis

Internal doors

Gaboon-faced flush doors to BS 459 P + II
Types F1 and F2 generally.

Ironmongery

Anodised aluminium door furniture generally.

Fittings

29 units of office furniture of $\frac{1}{4}$ -in. blockboard construction, with doors.
Special fittings and furnishings for conference rooms.

Total of partitions and fittings: 4s 5½d

FINISHES

Floor finishes

Type of finish	Area in sq. ft.	Price per sq. yd.
Lino and cement screed	4,530	33s. 6d.
1-in. grano and screed	2,160	12s. 6d.
Lino on hardboard	7,362	48s.
Tiles and screed	1,350	56s.
2·50 mm. oak, sapele and utile veneers on softwood	1,719	70s. (average)

Wall finishes

Plastered wall generally to three-storey block.
Plaster, lath and skim coat generally to showroom block.

Ceiling finishes

Three-storey block plaster, lath and skim coat generally.
Extension, render and set on asbestos board sheeting.
Showroom, 7 mm. plywood.

Roof finishes

Cost included under "Roof construction."
Felt roofing with granite chippings.
Area: 6,254 sq. ft.

Decorations

Two coats of emulsion paint generally.

SERVICES

External plumbing

Lead flashings. Cast-iron rainwater pipes.

Hot and cold water installation

(Estimated figure. Separate contract with clients.)
Copper pipes with Yorkshire fittings.
Calorifier tank and circulating pump in existing boiler room with new winter boiler and immersion heater for summer use.

Sanitary fittings

Type of fitting	No. of each type
Sinks	2
Lavatory basins	10
W.c.s.	6
Urinal stalls	2
All of fireclay and vitreous china.	

s d

8½

Heating and ventilation

(Cost included under hot and cold water installation, above.)

Showroom: underfloor low temperature heating coils.

5½

All other rooms: radiators under windows.
Natural ventilation only.

U of roof: 0·145 of walls (3-storey block): 0·29

1 9½

Timber faced walls: 0·38

Electrical installation

(Estimated figure. Separate contract.)

2 8

Description	Type of point	No. of each type
5 ft. fluorescent	Ceiling mounted	130
55 ft. long fluorescent continuous	Recessed in ceiling	3
100 W flat opal glass	Ceiling mounted	17
Recessed reflectors	External soffit	4
Mushroom light fitting	External wall mounted	4

Lifts

1 electric service lift in three-storey block, single speed.
Load capacity: 560 lb.

1 6½

Total of services: 18s 1d

Drainage

4-in. rainwater drains to soakaways.
4-in. and 6-in. soil drains to existing drainage system.

2 0½

8½

External works

Car park flower beds, pavings, steps, and ornamental pool.

1 9½

2 2½

Shillings per sq. ft. of floor area:

$$\begin{array}{r} \pounds 44,624 \text{ (excluding external works and drainage)} \\ 14,487 \text{ sq. ft. (measured inside external walls)} \end{array} = 62 \text{ } 11\frac{1}{2}$$

COST COMMENTS

A two-storey showroom and offices and a three-storey office block, combined, give an average cost per square foot of floor area of 62s. 11½d. while presenting an appearance of high quality. How has this been done?

Structural costs generally have been kept to the economic minimum, e.g., Traditional load-bearing brickwork to three-storey block; an average cost per square foot of only 5s. 1d. for solid external walling; spans for upper floors which permit the use of timber joist floors at an average unit cost of 3s. 10½d. per sq. ft., while overcoming the problems of fire precautions and sound insulation; an inexpensive roof covering of felt.

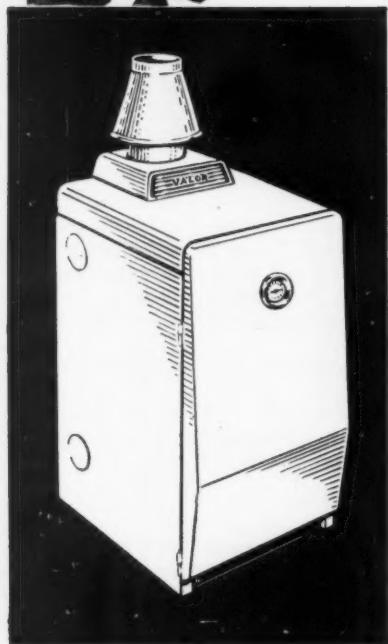
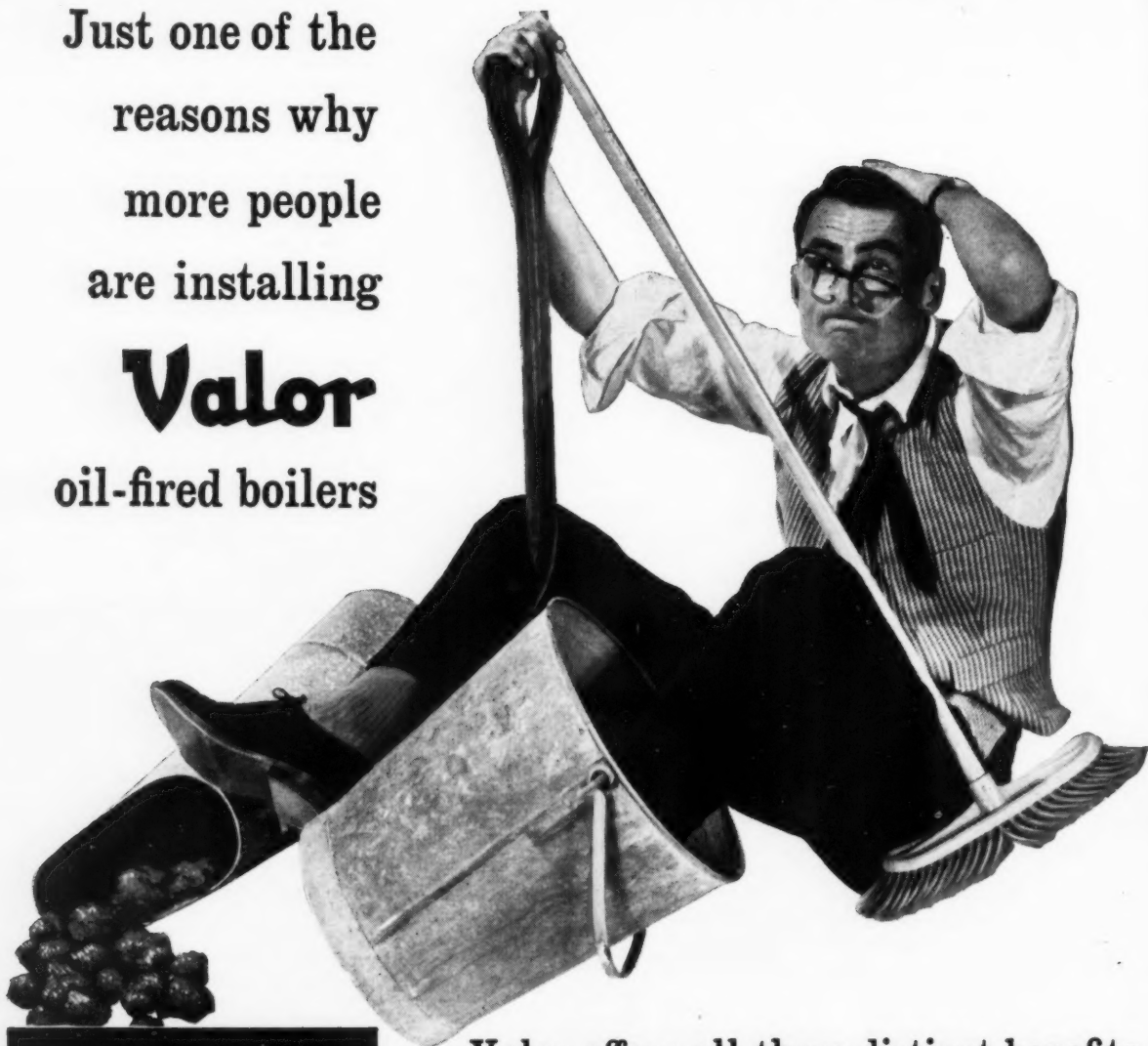
The service costs are estimated figures, and as services were supplied under separate contracts no details are given. An existing drainage system and use of soakaways for stormwater has meant an outlay on this element—not included however in the final cost figure—of only £500.

CONTRACTORS

7½

SALES BLOCK: General contractors: F. J. & T. E. Prime. Sub-contractors: Roofing: Cawood Wharton & Co. Ltd. Lino: W. Thompson & Son. Terrazzo: Jaconnello Ltd. Balustrading: Brooker & Co. (1925) Ltd. Plate glass: James Clark & Eaton. Sliding doors: Allday & Co. Ltd. Service lift: Marryat & Scott Ltd. Standard doors: Crudens Ltd. Floor tiles: British Plaster Board Ltd.

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MODEL SA 25 has an output of 15,000 B.T.U.'s constant loading suitable for 2 to 3 radiators (50 sq. ft. surface) and 30 gallons of hot water. Consumption 0.1 to 1 pint per hour.

For further details please contact:

The Valor Company Ltd., Bromford, Erdington, Birmingham 24. Erdington 6151

working detail

(21)G

WALLS AND PARTITIONS: 88

GLAZED WALL: SCHOOL IN LONDON, W.C.1

Hubert Bennett, Architect to the London County Council

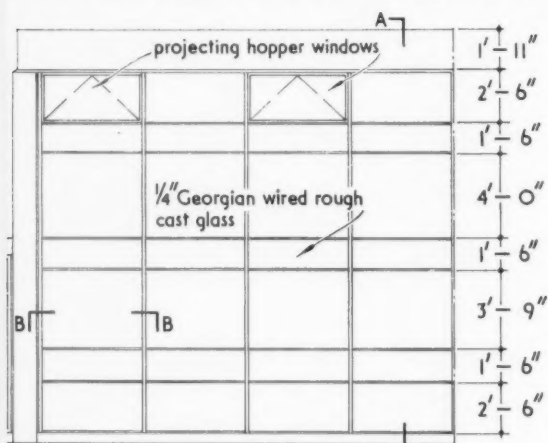
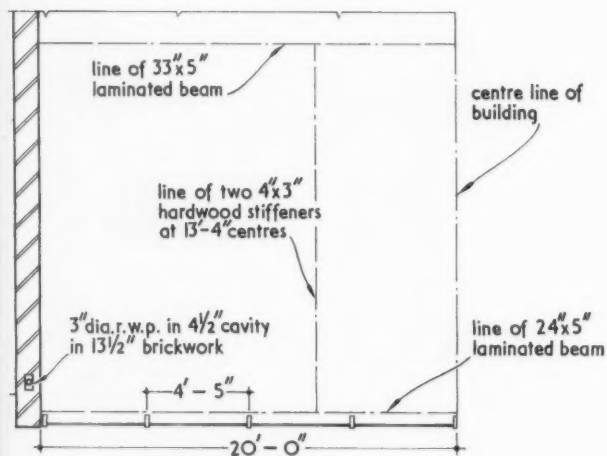
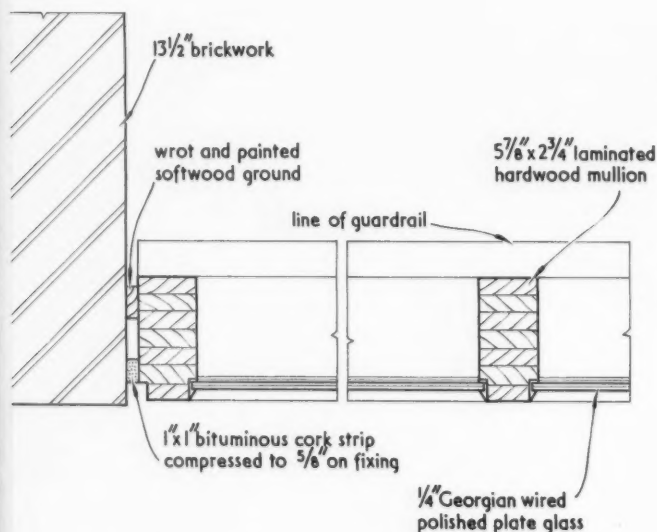
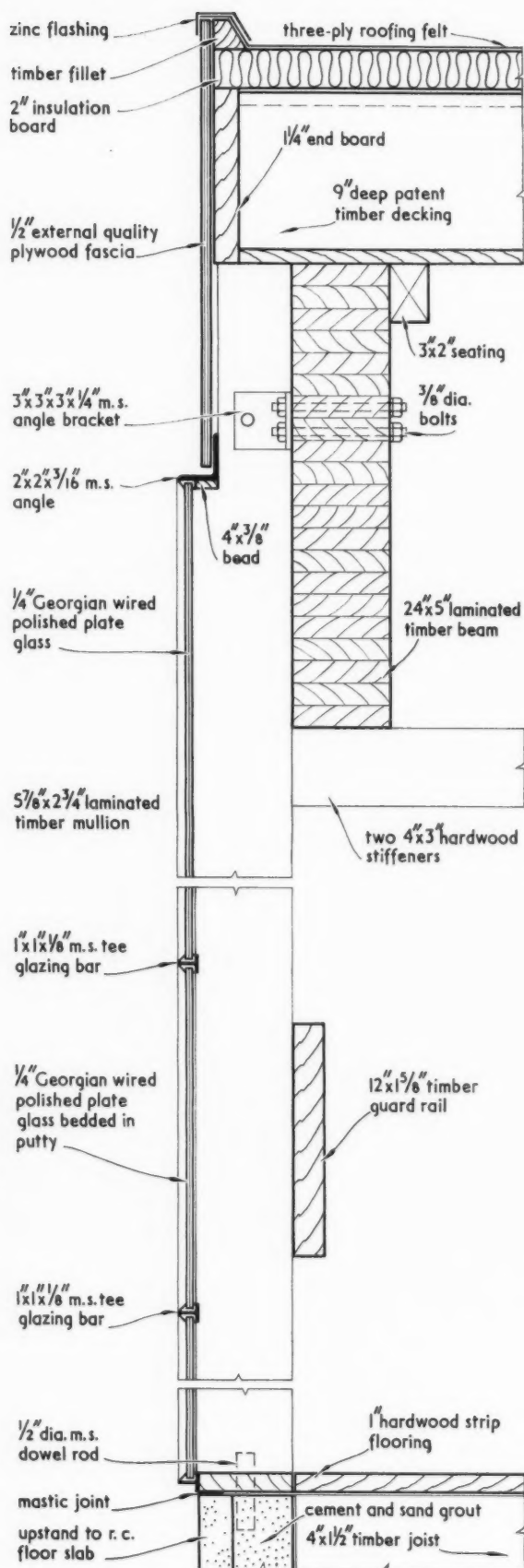


This detail is interesting for its use of timber as an engineering material. Note the laminated timber mullions and beam above. Note also (particularly on the drawing) the exceptionally neat framing to the window.

working detail

GLAZED WALL: SCHOOL IN LONDON, W.C.1

Hubert Bennett, Architect to the London County Council

ELEVATION. scale $\frac{1}{8}'' = 1' - 0''$ PLAN. scale $\frac{1}{8}'' = 1' - 0''$ PLAN AT B - B. scale $\frac{1}{8}$ full sizeSECTION A - A. scale $\frac{1}{8}$ full size

CLOAKROOM SEAT: SCHOOL AT AMERSHAM, BUCKS.

Chief Architects' Department, M.O.E., in collaboration with the County Architect, Buckinghamshire County Council; J. S. B. Coatman, Mary B. Crowley, David L. Medd and C. E. D. Wooster, architects-in-charge



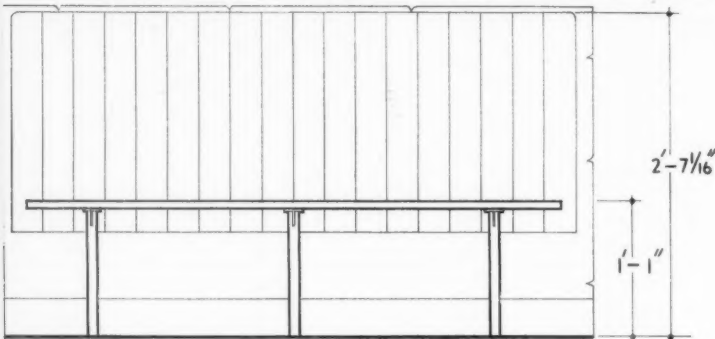
This seat is "fixed" in the sense that it can be set up only in the place where the floor sockets are ready to receive it, but it can be lifted out. Note the backplate to prevent marking of the wall and the very simple construction of the seat itself which is of blockboard.

working detail

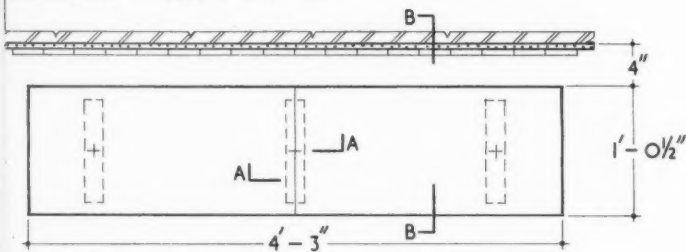
FURNITURE AND FITTINGS: 86

CLOAKROOM SEAT: SCHOOL AT AMERSHAM, BUCKS.

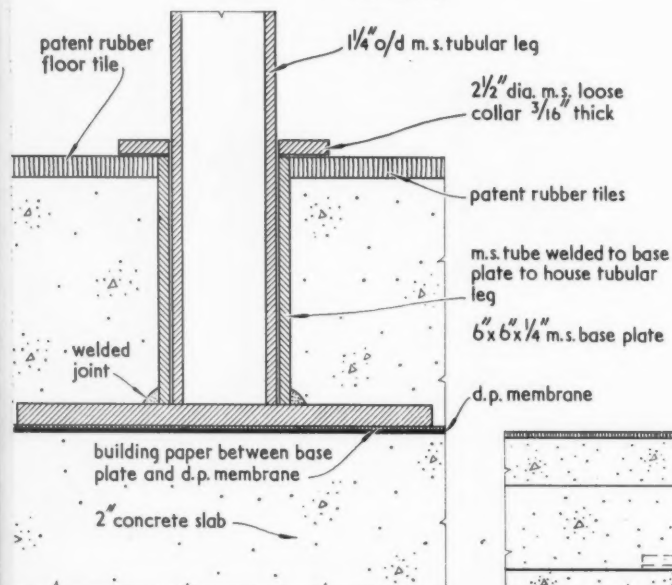
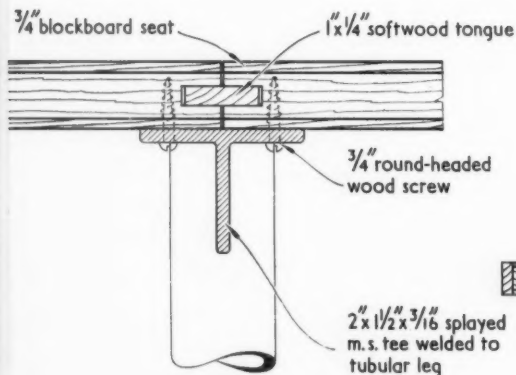
Chief Architect's Department, M.O.E., in collaboration with the County Architect, Buckinghamshire County Council;
J. S. B. Coatman, Mary B. Crowley, David L. Medd and C. E. D. Wooster, architects-in-charge



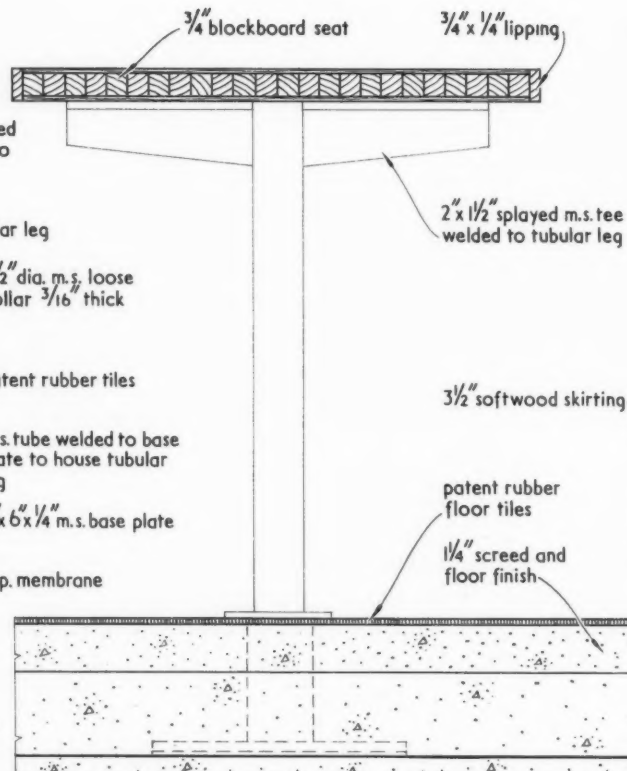
ELEVATION. scale 1" = 1' - 0"



PLAN. scale 1" = 1' - 0"



SECTION A - A. scale 1/2 full size



SECTION B - B. scale 1/4 full size



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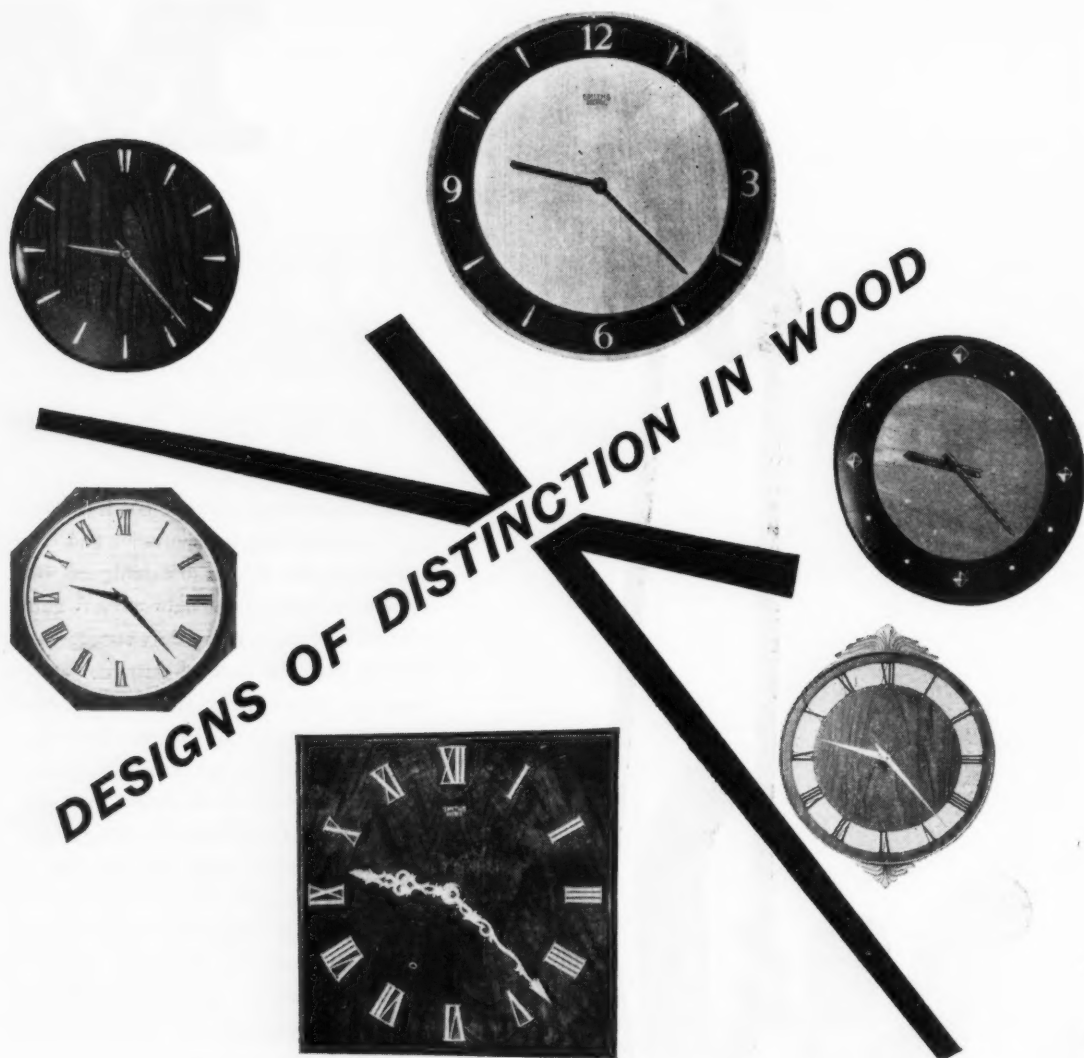
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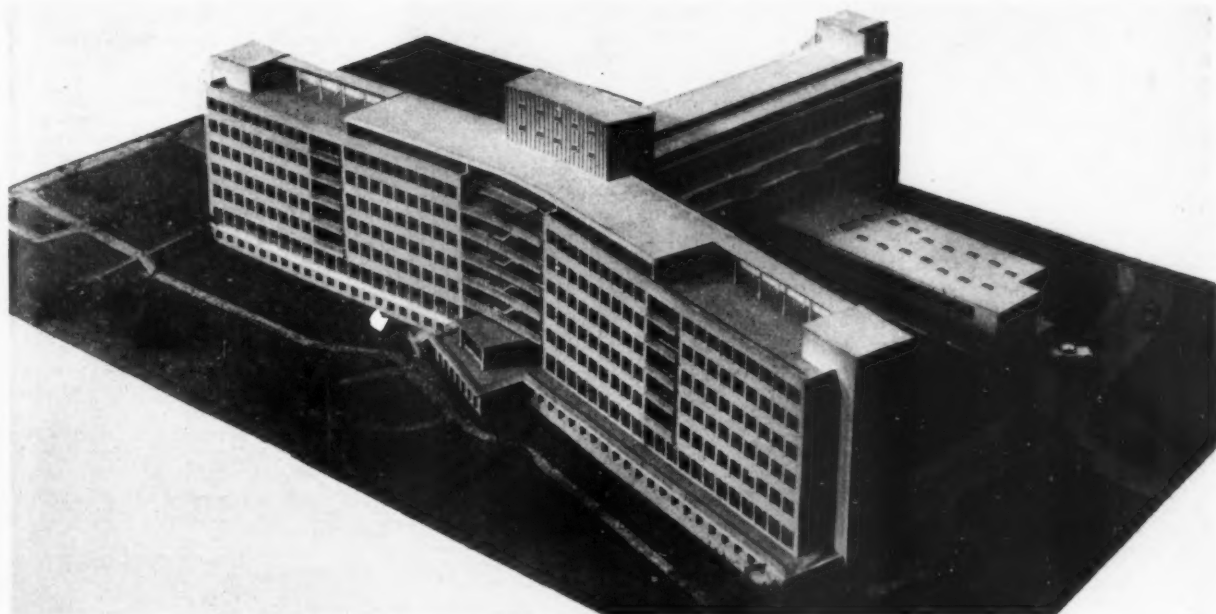
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HOSPITAL FOR WELWYN AND HATFIELD, HERTS.



One of the first new hospitals to get under way is the Welwyn/Hatfield General Hospital, now going up on a 22-acre site between the two towns. The T-shaped, 8-storey building has been designed in the architect's department of the Regional Hospital Board by C. D. Andrews and his successor F. A. C. Maunder, and will provide 324 beds, as a first stage. A psychiatric department will be added later. The building is expected to be finished in 1962 and will cost nearly £1½ million, money for which the Regional Board has been pressing since 1951. General contractors, William Moss & Sons Ltd.

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Contractors: Bone Brothers & Judd Ltd.

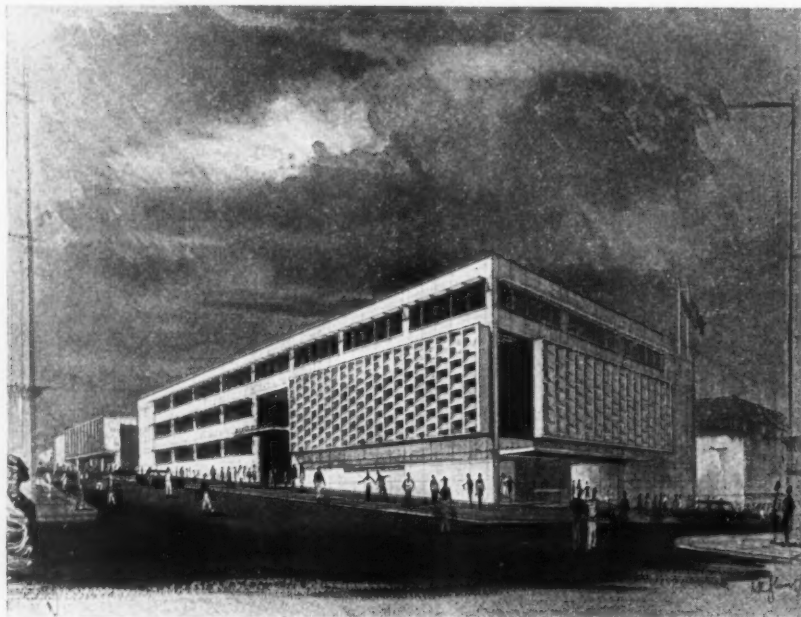
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BANK AT FREETOWN, SIERRA LEONE



The grandiose seems to be the style that appeals to bankers, and this Palace of Finance is stage 1 of Barclays new building at Freetown, Sierra Leone, designed by Nickson and Borys & Partners, and built by Taylor Woodrow. The new building, L-shaped in plan, is of reinforced concrete, its front and side elevation patterned with a dog-tooth check of concrete sunbreakers and ceramic grillwork. The building is air conditioned and a car park has been provided under the main banking hall.

Announcements

PROFESSIONAL

Burles & Newton, A.A.R.I.B.A., A.M.T.P.I., have now moved to 26, Great James Street, London, W.C.1 (telephone Chancery 9538 and 3227).

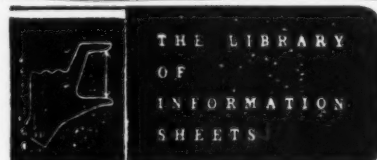
Following the dissolution of Fry, Drew, Drake & Lasdun, Denys Lasdun, M.B.E., F.R.I.B.A., will practise at 3, Albany Terrace, Regent's Park, London, N.W.1 (telephone Hunter 1822/3), as Denys Lasdun & Partners, having taken Alexander Redhouse into partnership. Maxwell Fry, C.B.E., F.R.I.B.A., and Miss Jane Drew, F.R.I.B.A., will practise from 63, Gloucester Place, London, W.1, as Fry, Drew & Partners, having taken into partnership Frank S. Knight, Norman C. Creamer, J. R. Atkinson, M.A., and, as Junior Partners, Peter Bond and Robert Byng.

TRADE

The Merchant Adventurers Ltd. have appointed M. F. Sillett as personal assistant to the Sales Director.

The Art Exhibitions Bureau has now moved to 6, Suffolk Street, Pall Mall East, London, S.W.1 (telephone Whitehall 6844).

Crane Ltd. have opened a new Branch at Sweet Street, Leeds, 11 (telephone Leeds 3-5026).

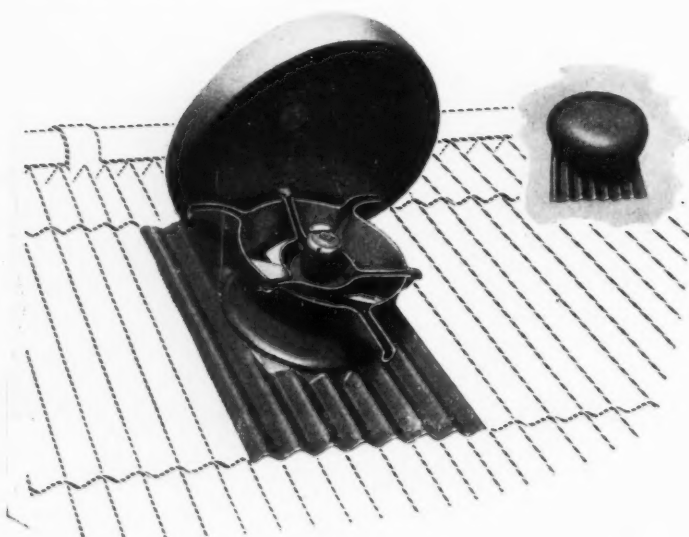


20.22 CANCELLATION

Readers are asked to note that Sheet 20.22 is cancelled and should be removed from collections.

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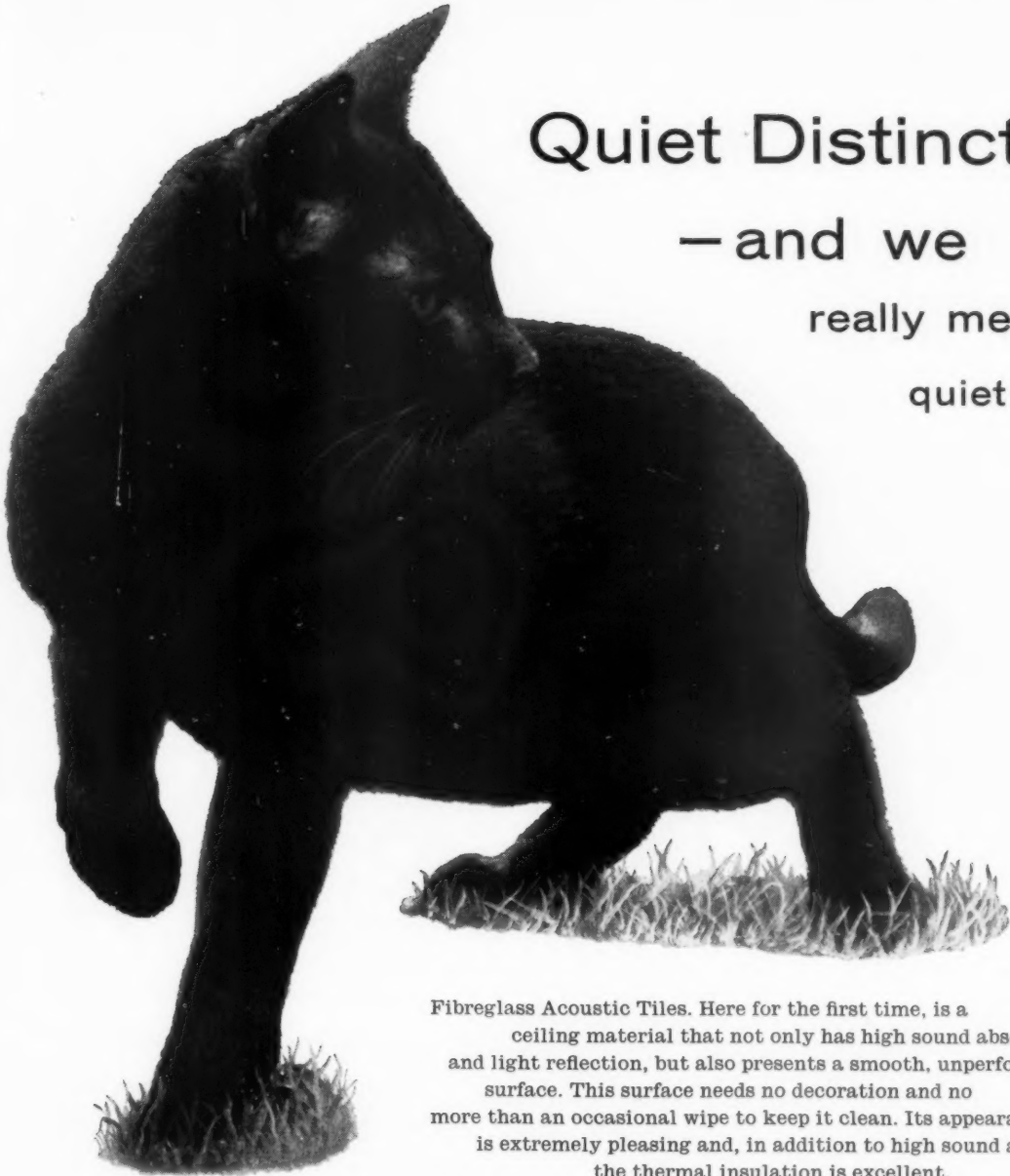
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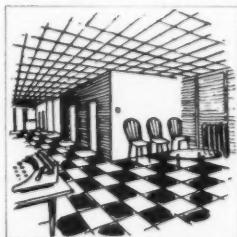
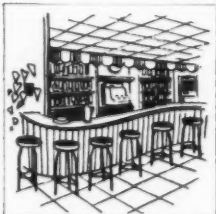
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Fibreglass Acoustic Tiles. Here for the first time, is a ceiling material that not only has high sound absorption and light reflection, but also presents a smooth, unperforated surface. This surface needs no decoration and no more than an occasional wipe to keep it clean. Its appearance is extremely pleasing and, in addition to high sound absorption, the thermal insulation is excellent.

The tiles are based on a rigid board of glass fibres faced with a decorative plastic film which is completely stable.

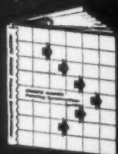
There is a choice of two surface patterns. They are extremely light — 6½ lb. per sq. yd. — and will not warp or buckle, expand or contract. Fitting is simple — by demountable or fixed systems, by adhesion or clips.



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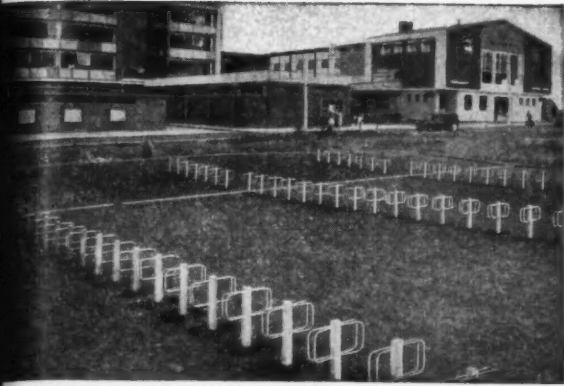
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the versatile **VelopA**

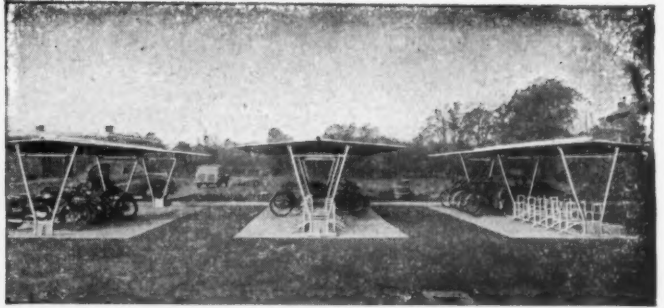
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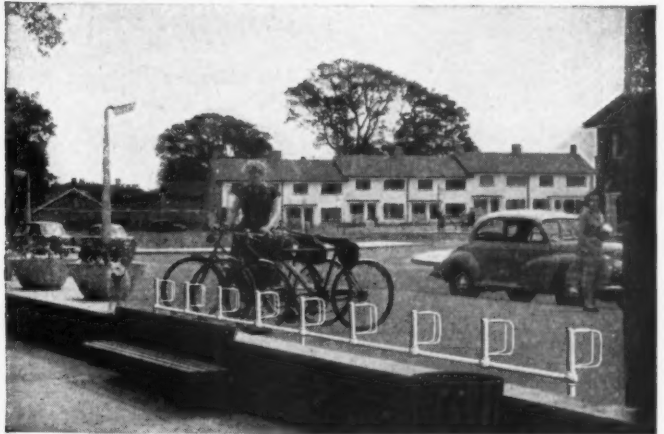
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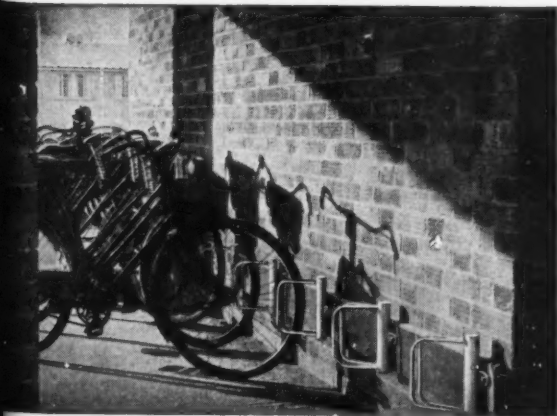
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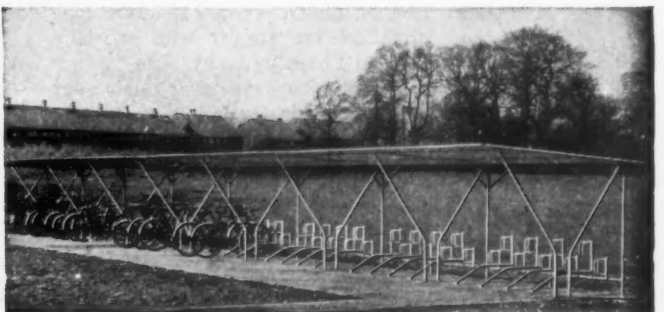
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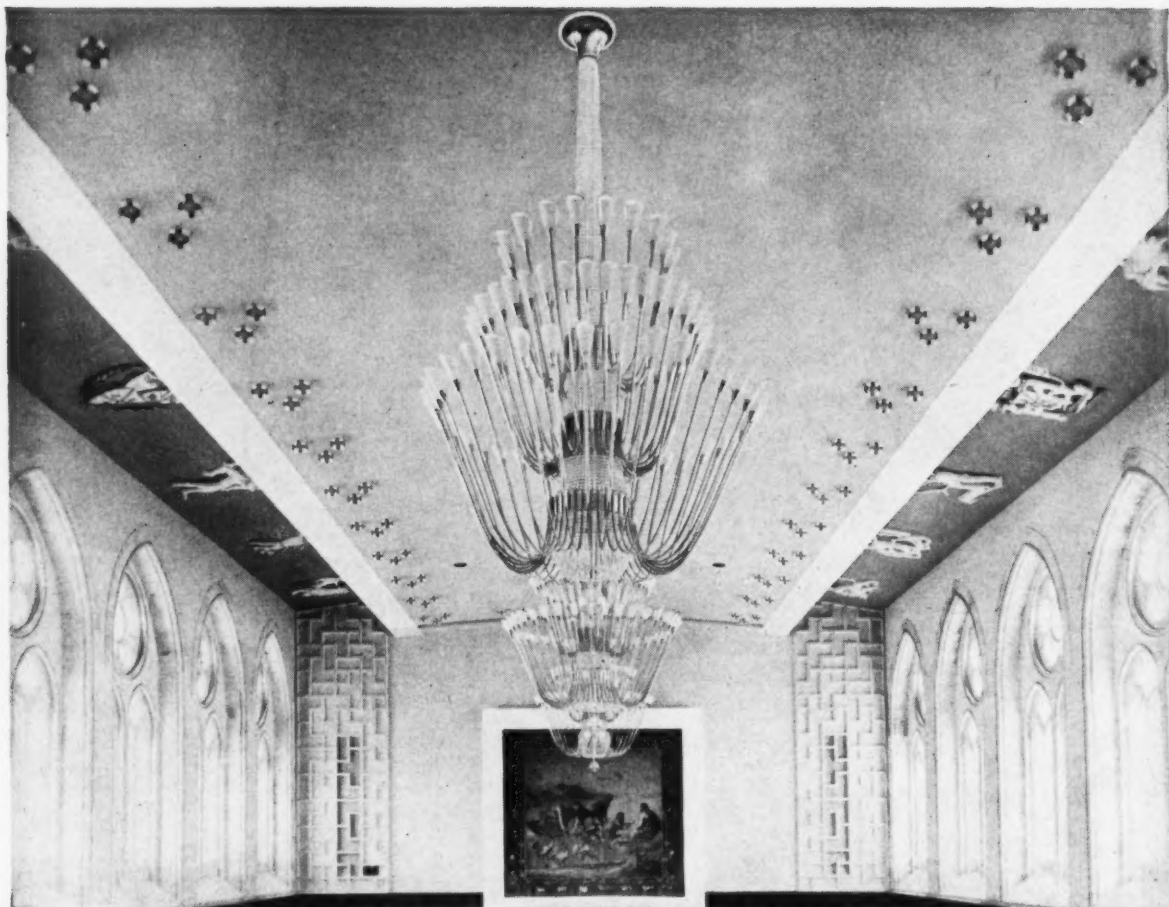
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Highlighting **a lighting problem** ... AT PLYMOUTH GUILDHALL

When this beautiful new $\frac{3}{4}$ ton chandelier installation was planned at Plymouth Guildhall the problem of maintenance was given consideration in the very early stages. London Electric Firm Ltd., were consulted and produced the answer with specially designed Raising and Lowering Gear.

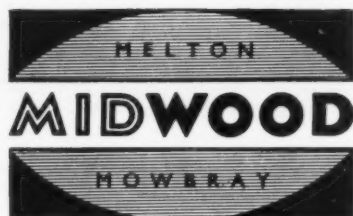
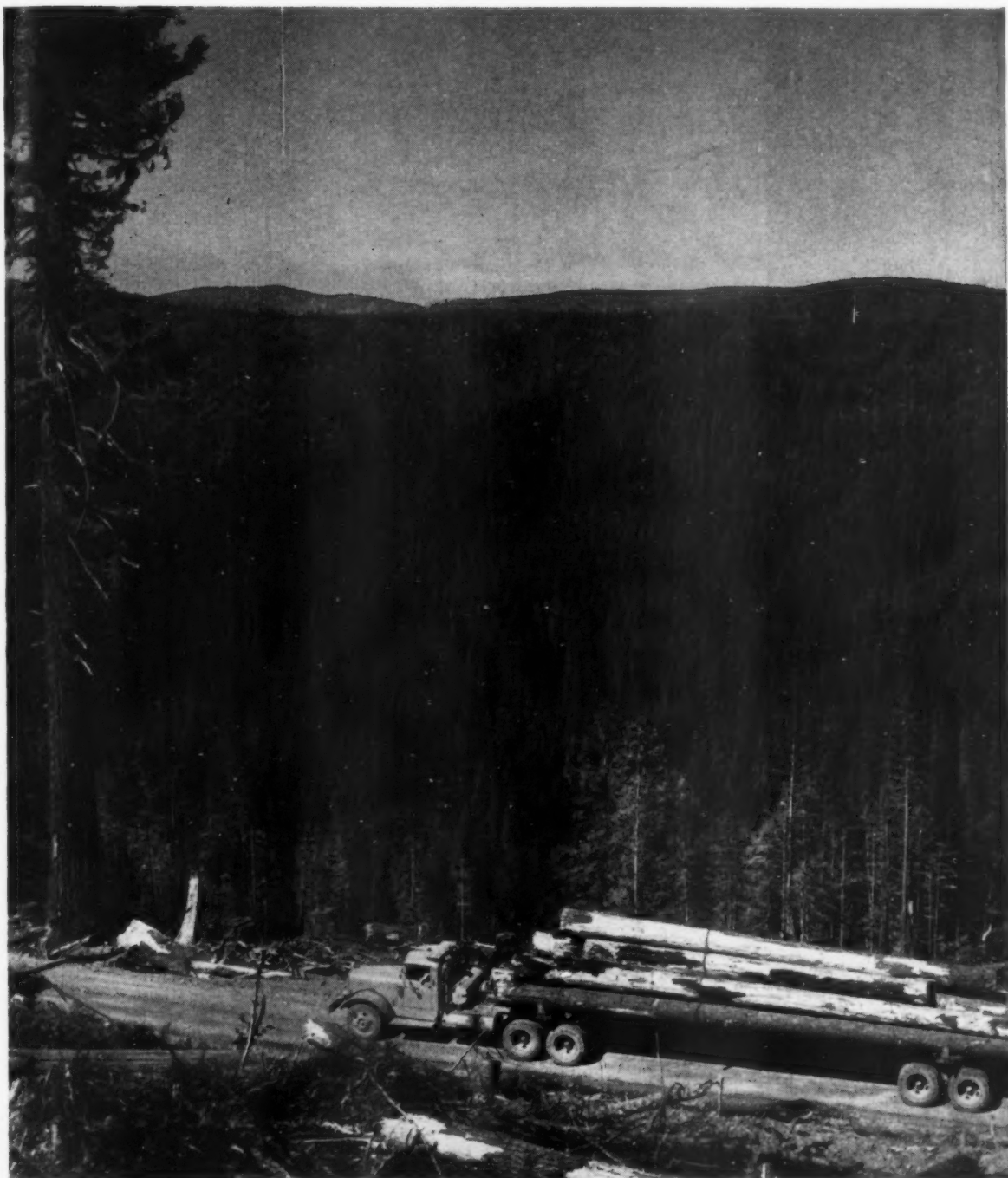
This equipment enables servicing to be carried out easily and quickly at floor level, but is entirely concealed when the fitting is returned to position.

The design of walls and ceiling is not affected in any way.

London Electric Firm Ltd., is constantly solving similar problems involving many different forms of lighting equipment and ceiling construction. It is of great importance that the installation of L.E.F. Raising and Lowering Gear should be discussed at the planning stage, so that the simplest and most economical equipment can be built-in.

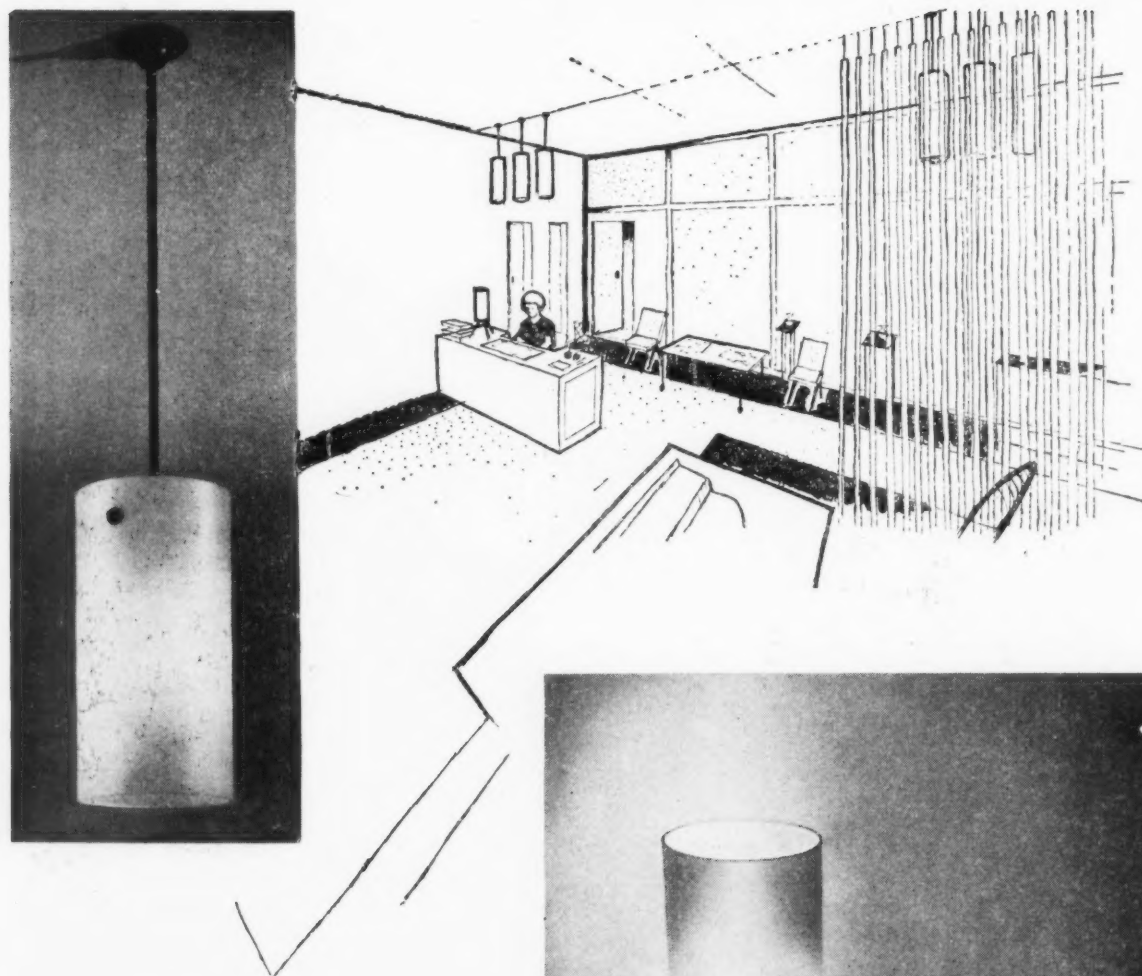


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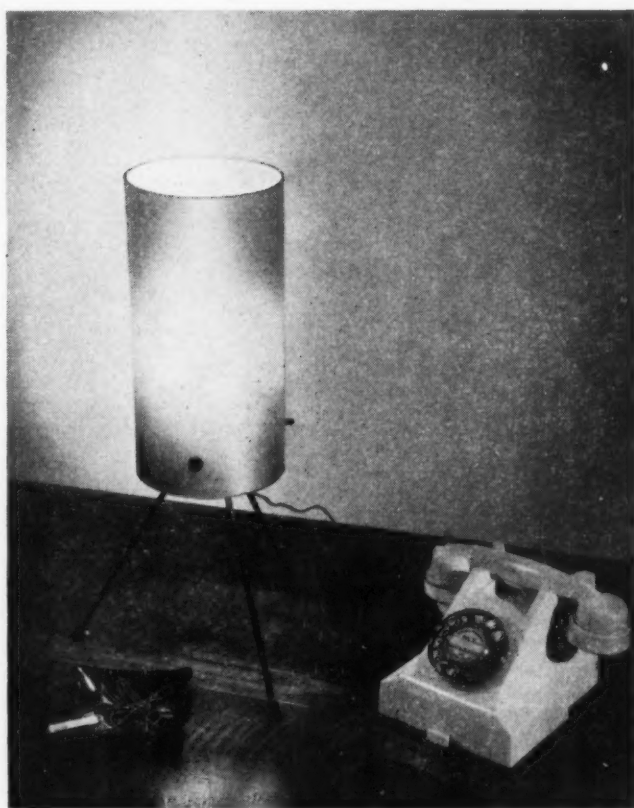


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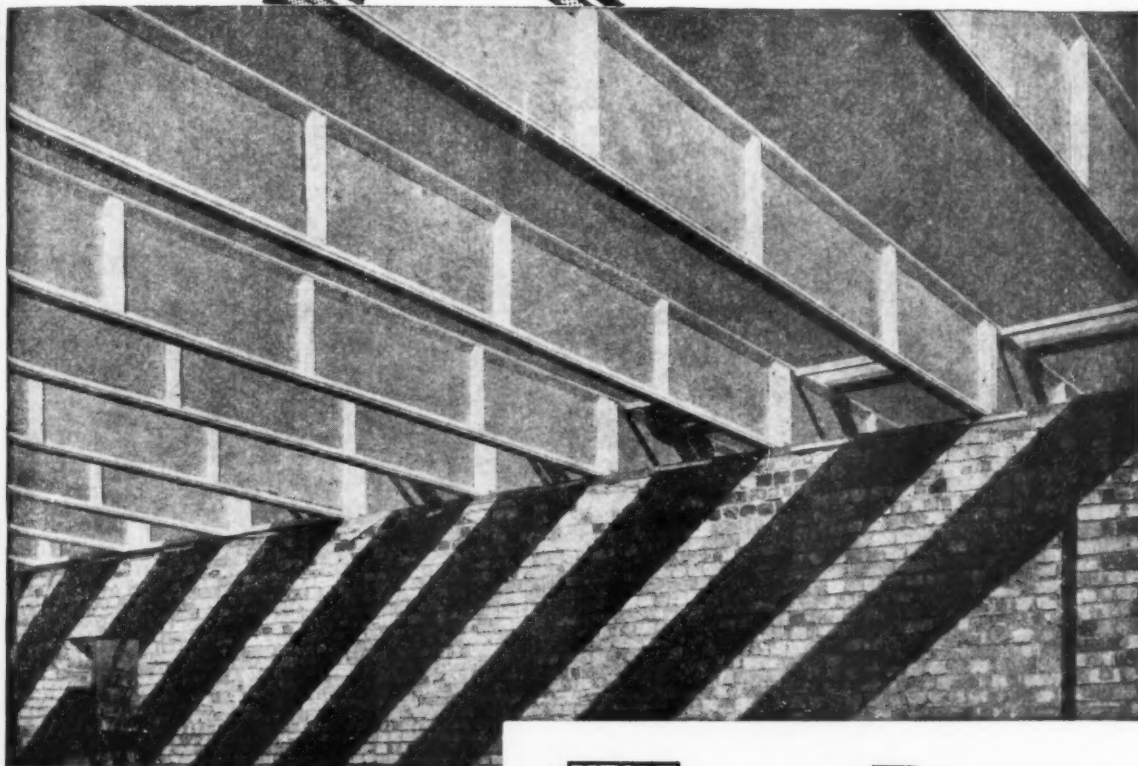
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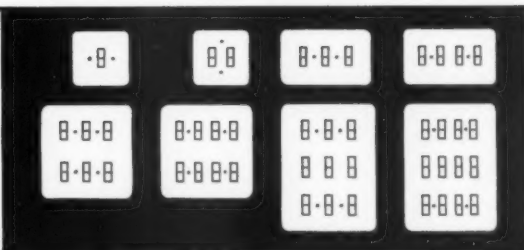
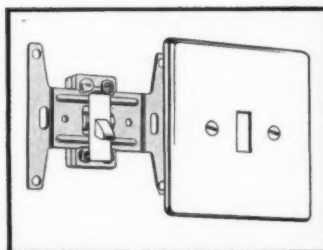
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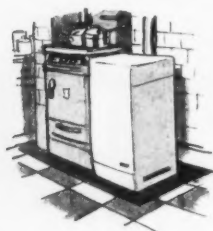
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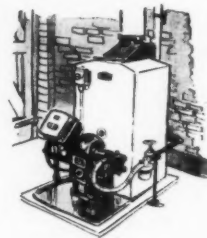
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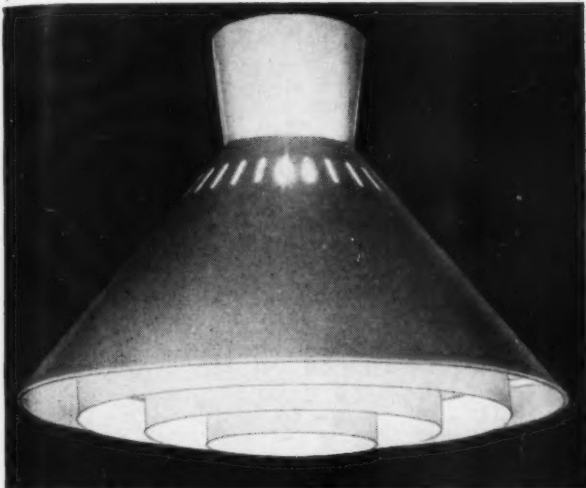
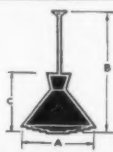
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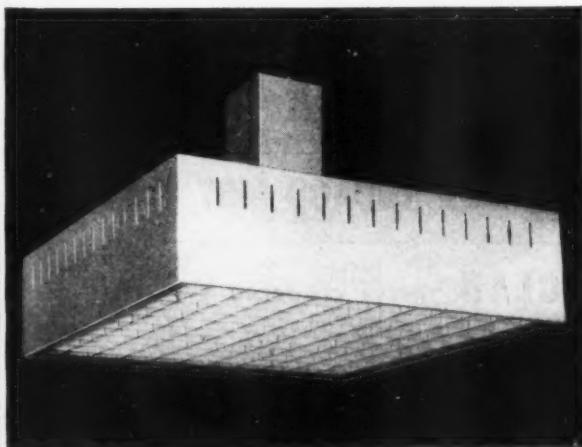


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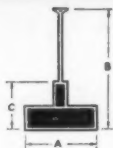
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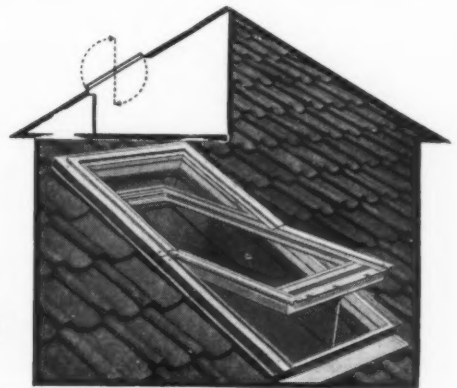


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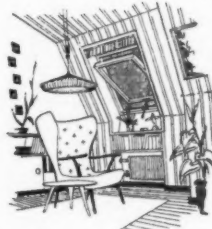


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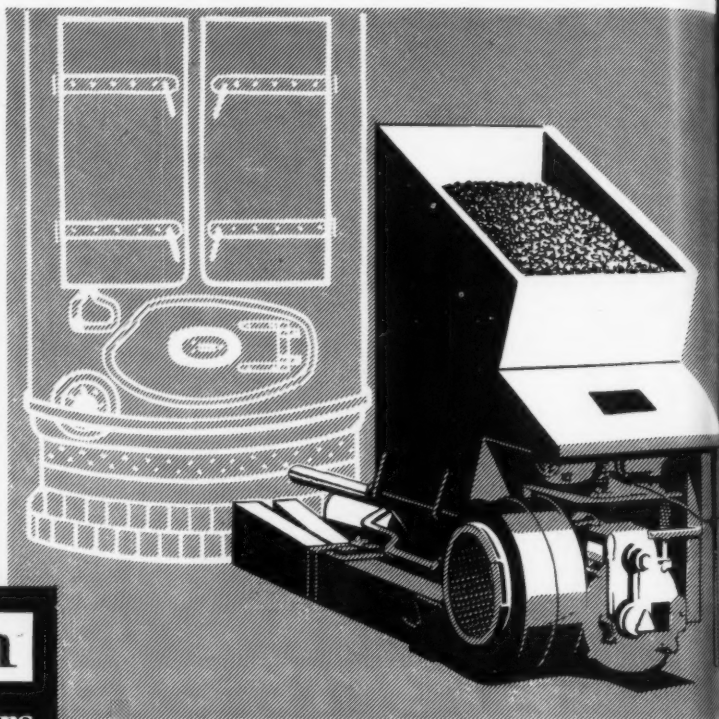
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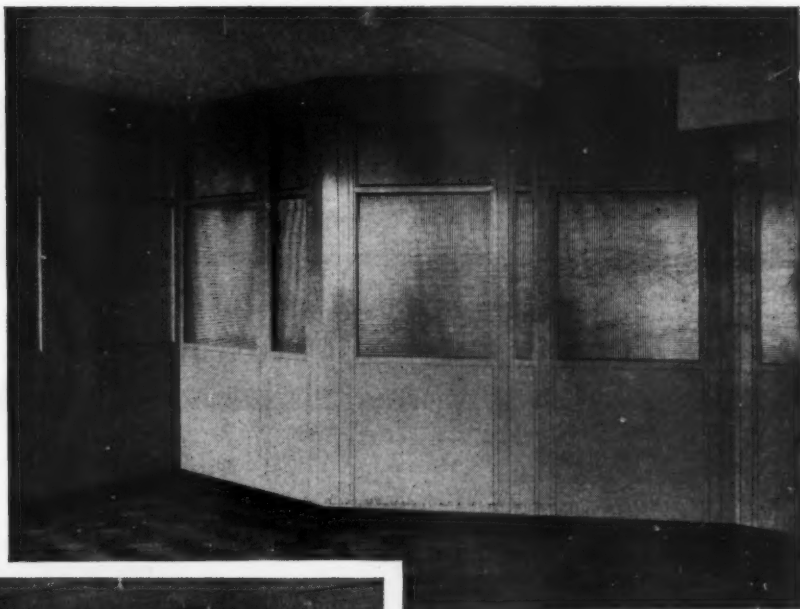
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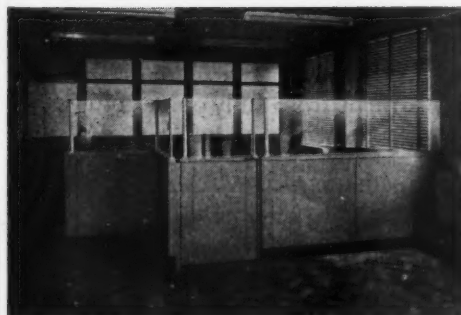
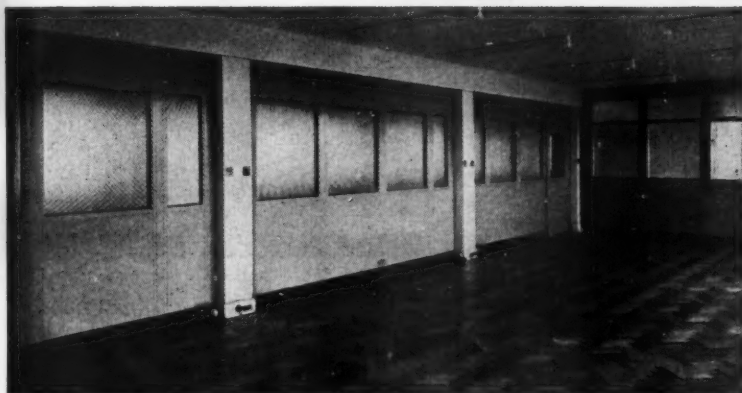
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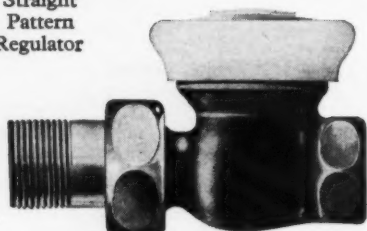
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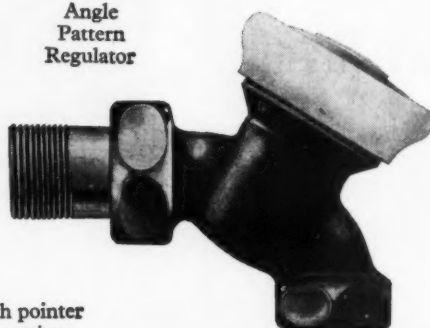
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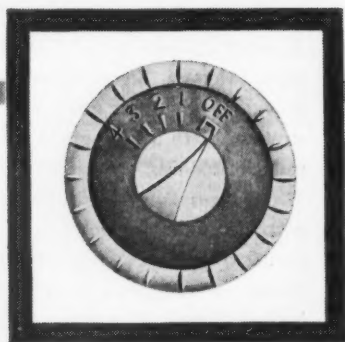
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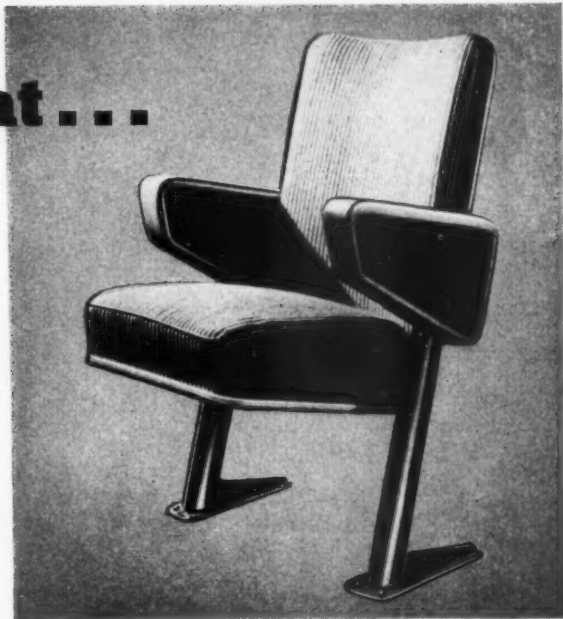


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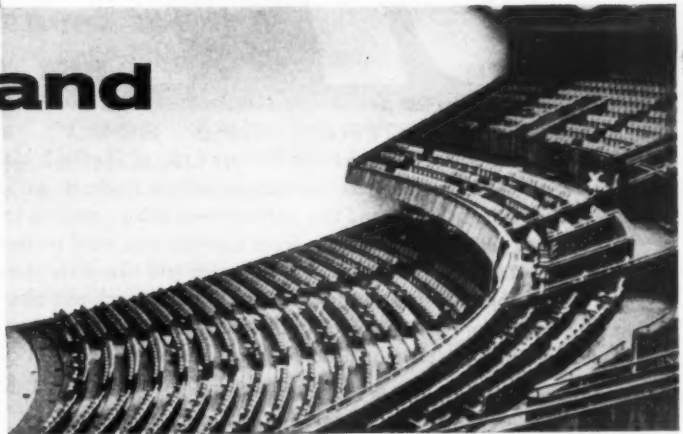
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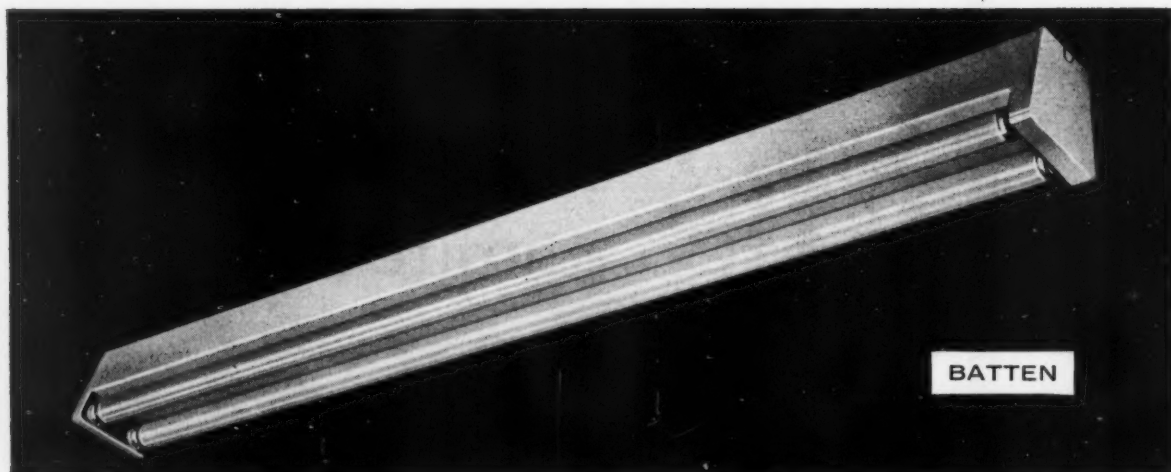
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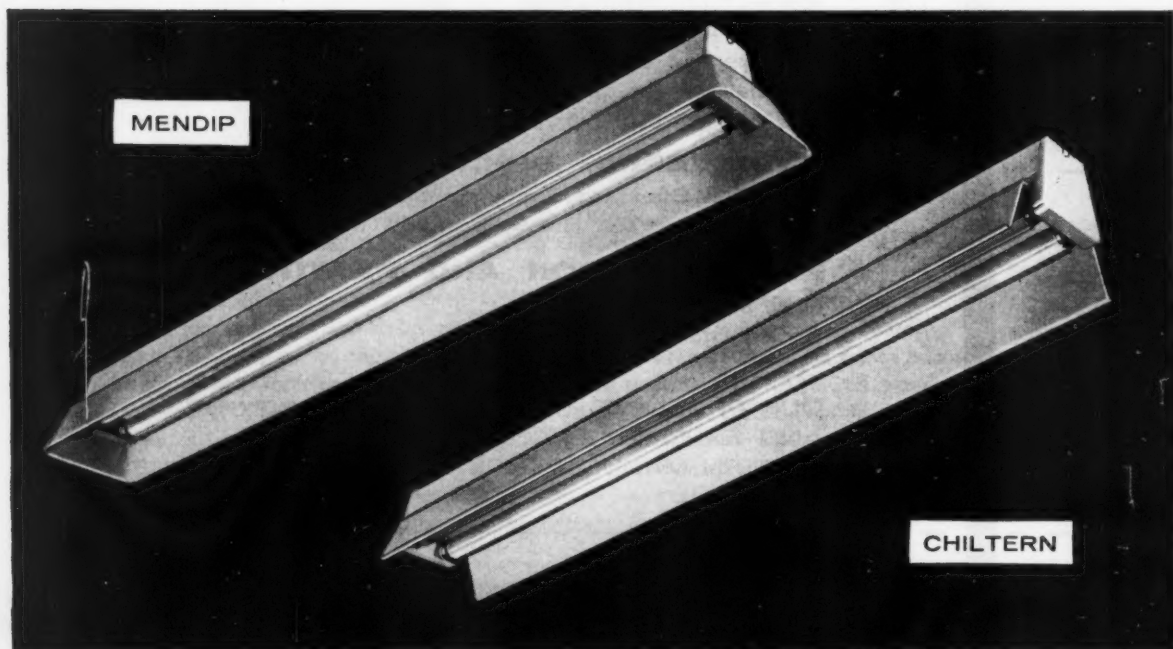
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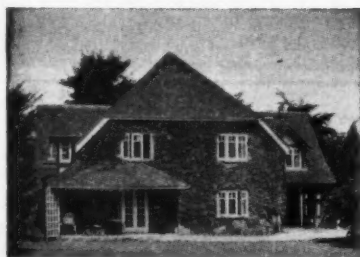
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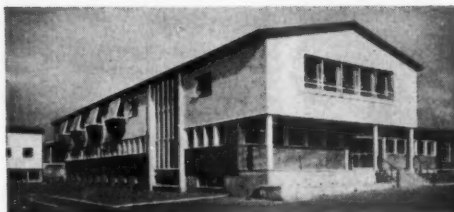


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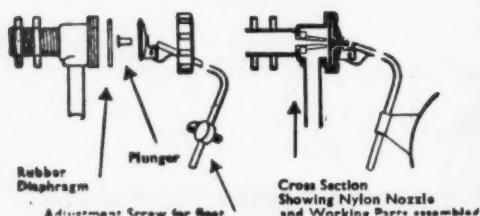
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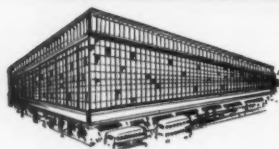
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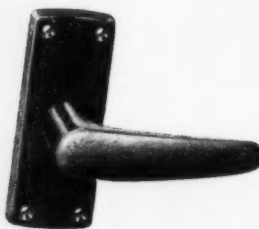
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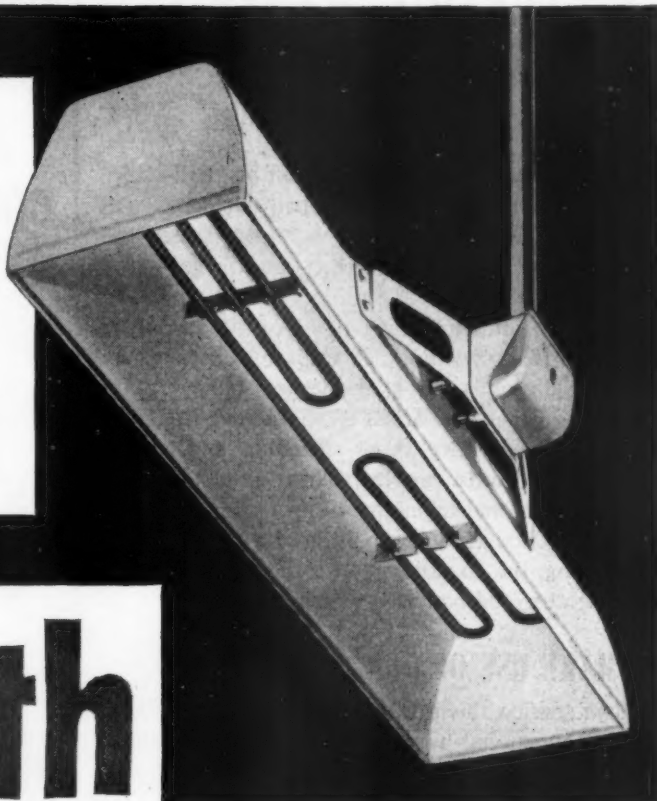
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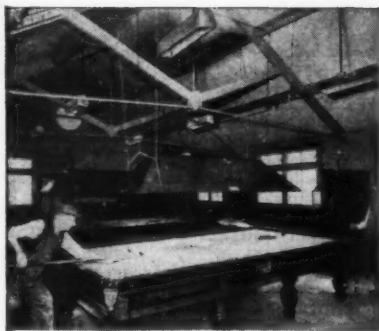
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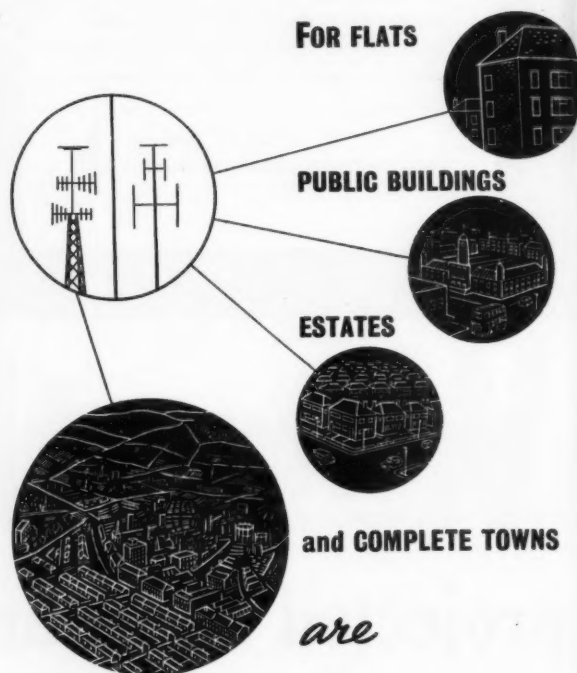
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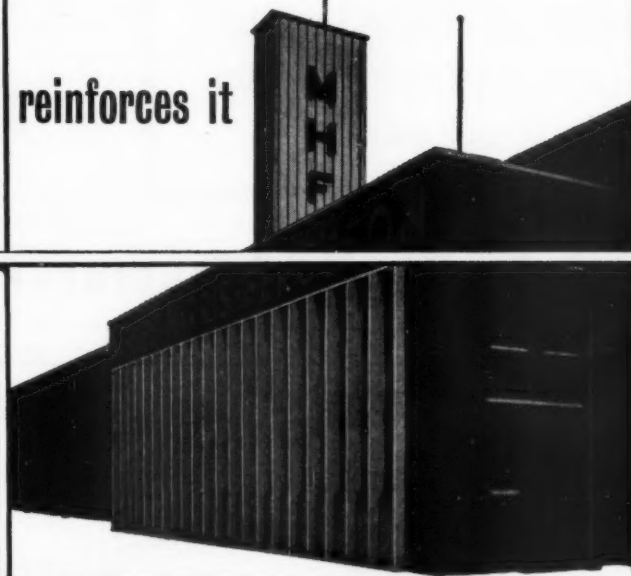
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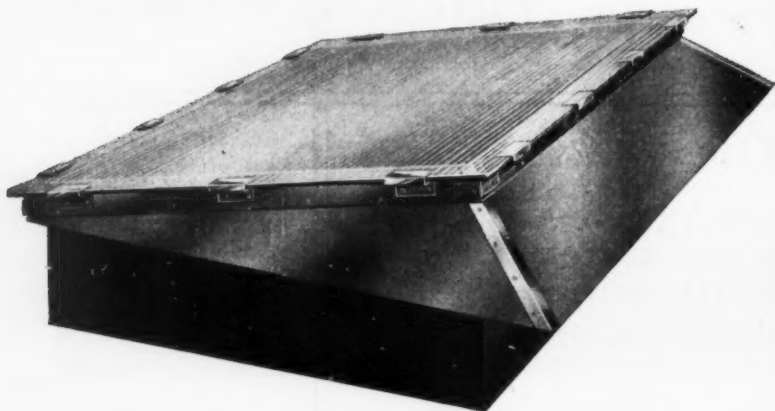
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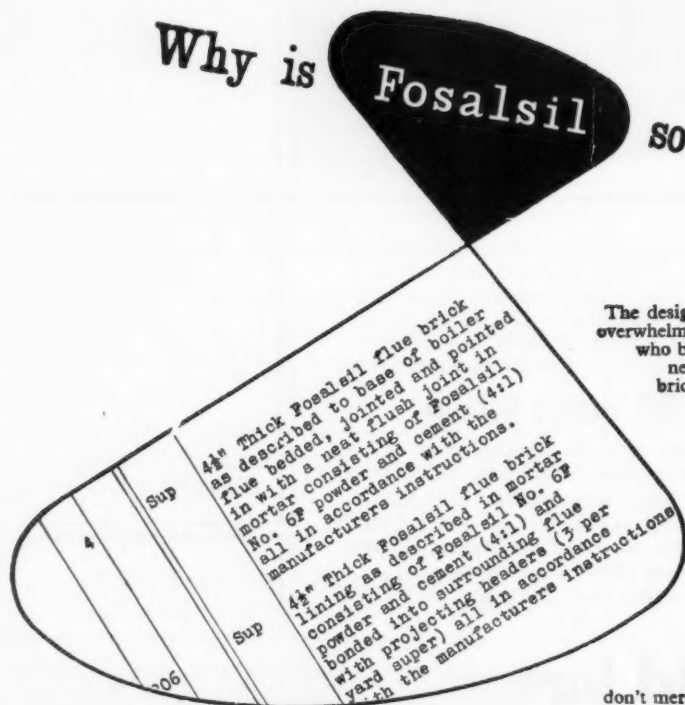
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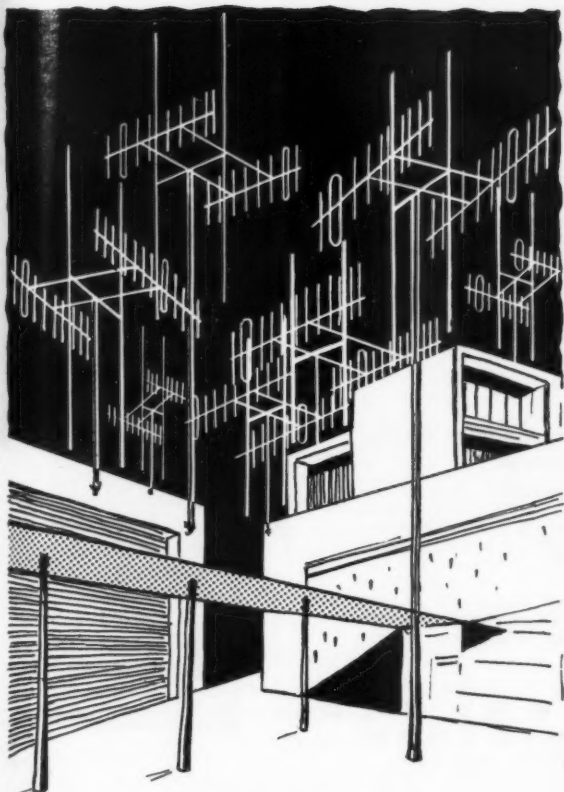
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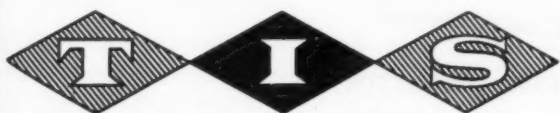
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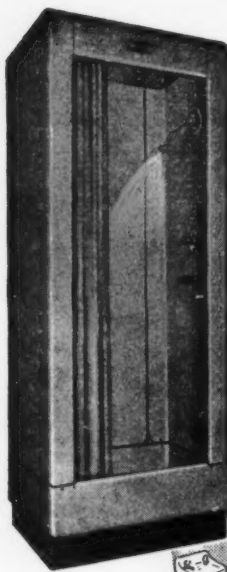
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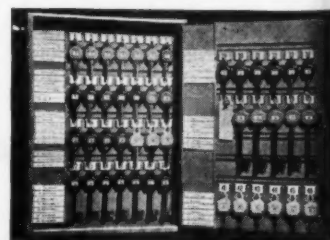
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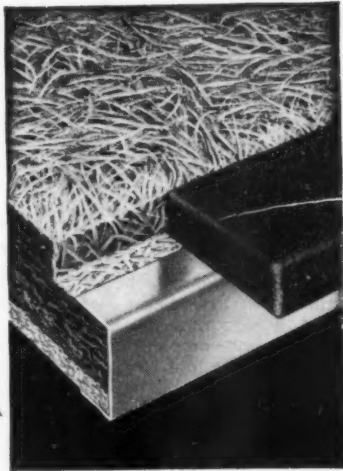


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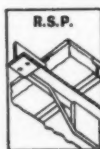
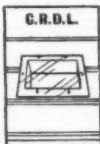
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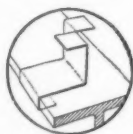
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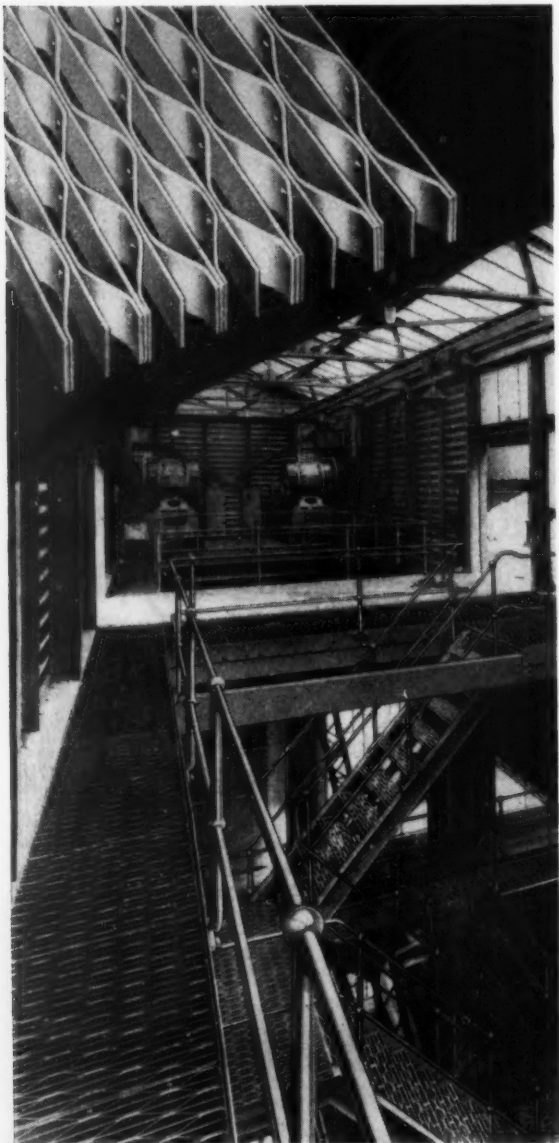
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Replies to Box Numbers should be addressed to "The Architects' Journal," at the address given above.

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

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BUILDING SURVEYORS
Architect's Department, L.C.C., has vacancies in Building Regulation Division and District Surveyors' Service for work in connection with applications under London Building Acts and bye-laws. District Surveyors' offices are located in Metropolitan Boroughs and work involves negotiations with developers and supervision of works in progress.

Up to £1,135, commencing according to qualifications and experience. Application form and particulars from Hubert Bennett, F.R.I.B.A., Architect to Council, EK/121/59, County Hall, E.C.1 (2628).

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- (c) ARCHITECTURAL ASSISTANTS (commencing salary up to £765). Applicants must be of intermediate standard with several years' experience.
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Only those keenly interested in progressive design need apply. Write for further particulars and form of application to The Surveyor to the University, Malthouse, Tidmarsh Lane, Oxford. 7447

LONDON COUNTY COUNCIL
A few vacancies exist in the Housing Division for unqualified ARCHITECTURAL ASSISTANTS with office experience. Preference to candidates desiring to qualify by evening study. Full programme offers valuable experience and opportunities for merit promotion. Starting salaries according to age and experience. Form and particulars from Hubert Bennett, F.R.I.B.A., Architect to Council, EK/121/59, County Hall, E.C.1 (2843).

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POINTMENT OF SENIOR ARCHITECTURAL ASSISTANT
Applications are invited from qualified persons for the above appointment which involves the design and carrying out of architectural works of major importance in the town, and the successful candidate will be offered a salary in the upper limits of the Special Classes Grade (£785-£1,010), in accordance with experience.

The National Conditions of Service and Local Government Superannuation Acts will apply and appointment will be subject to a satisfactory medical examination.

Housing accommodation is available if required. Applications, endorsed "Senior Architectural Assistant," together with the names of two referees, should reach me not later than Tuesday, the 19th January, 1960.

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Application form from Town Clerk, Town Hall, E.C. Closing date 25th January, 1960. 7526

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Houses to rent available if required. Medical examination under Superannuation Scheme. Application forms from Secretary and Legal Adviser, Glenrothes Development Corporation, Glenrothes, Fife, to be returned by 30th January, 1960. 7590

CRICKLADE AND WOOTTON BASSETT RURAL DISTRICT COUNCIL
ENGINEER AND SURVEYOR'S DEPARTMENT

Applications are invited for the appointment of ENGINEERING AND SURVEYING ASSISTANT to the Engineer and Surveyor, Mr. J. C. Grindley, A.M.I.C.E., A.R.I.C.S., M.I.Mun.E., A.M.T.P.I., in the Special Grade (£785-£1,070) at a commencing salary according to experience and qualifications.

Preference will be given to applicants who have had experience in housing, sewerage and sewage disposal works.

The appointment is superannuable, subject to one month's notice on either side. National Joint Council Service Conditions, and to the successful candidate passing a medical examination.

Applications endorsed "Engineering and Surveying Assistant," stating age, qualifications and experience, together with copies of not more than three recent testimonials, should reach the undersigned by the 13th January, 1960.

W. J. HOSIER,
Clerk of the Council.

Council Offices,
Manor House,
Wootton Bassett,
Swindon, Wilts. 7547

BOROUGH OF RAWTENSTALL
APPOINTMENT OF
JUNIOR ARCHITECTURAL ASSISTANT

Applications are invited for the above appointment at a salary within Grade A.P.T. I (£610 to £765 per annum). Applicants should have completed professional training.

The appointment is subject to the Local Government Superannuation Acts 1937-1953, the passing of a medical examination and to termination by one month's notice on either side.

The provision of housing accommodation will be considered.

Applications stating age, experience, etc., together with the names and addresses of two persons to whom reference can be made should be delivered to the undersigned not later than Saturday, the 16th January, 1960.

E. GRAHAM THOMAS,
Town Clerk.

Town Hall,
Rawtenstall,
Rossendale, Lancs.
18th December, 1959. 7508

BOROUGH OF RAWTENSTALL
APPOINTMENT OF
A BUILDING SURVEYING ASSISTANT

Applications are invited for the appointment of an Assistant on the permanent staff of the Borough Surveyor's Department. The commencing salary will be £905 per annum (within the upper part of the Special Class of salary scale), rising to £1,070.

Candidates should have passed the Final examination of the Royal Institute of Chartered Surveyors. Previous Local Government experience is not essential.

The appointment is subject to the Local Government Superannuation Acts 1937-1953, the passing of a medical examination and to termination by one month's notice on either side.

Housing accommodation will be provided if required.

Applications stating age, experience, etc., together with the names and addresses of two persons to whom reference can be made should be delivered to the undersigned not later than Saturday, the 16th January, 1960.

E. GRAHAM THOMAS,
Town Clerk.

Town Hall,
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21st December, 1959. 7509

COUNTY BOROUGH OF GREAT YARMOUTH
SCHOOLS ARCHITECT'S DEPARTMENT

Applications are invited from Associate Members of the R.I.B.A. for a SENIOR ASSISTANT ARCHITECT within A.P.T. IV (£1,065-£1,220).

Candidates must have a thorough knowledge of school design, construction and contract administration with at least five years' experience.

Housing accommodation will be available to the successful candidate if married. Assistance with removal expenses may be made in suitable cases.

Full details of present and past appointments, age, qualifications and experience, together with the names of two referees should reach the Schools Architect, 22, Euston Road, Great Yarmouth, by January 22nd, 1960.

D. G. FARROW,
Chief Education Officer.
22, Euston Road,
Great Yarmouth. 7618

LINDSEY (LINCOLNSHIRE) COUNTY COUNCIL

COUNTY ARCHITECT'S DEPARTMENT
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N.J.C. Conditions of Service. Canvassing will disqualify. Candidates must disclose in writing whether to their knowledge they are related to any Member or Senior Officer of the Council.

Applications giving age, qualifications, experience, present post and salary, and the names of two persons to whom reference can be made to be sent not later than 26th January, 1960, to the County Architect, County Offices, Lincoln. 7528

BLETCHLEY URBAN DISTRICT COUNCIL
APPOINTMENT OF
CHIEF ARCHITECTURAL ASSISTANT

The Council is engaged on a large scheme of development under the Town Development Act, 1952, which will provide a wide variety of Architectural work, which is expected to extend over the next five to seven years, consisting of Housing, Factories, Shops and ancillary work.

Applications, preferably from persons who have passed the Final examination of the R.I.B.A., and who have had a wide experience of similar work, are invited for the above appointment, which will be in accordance with the N.J.C. for Local Authorities' Administrative, Professional, Technical and Clerical Services Scale of Salaries, A.P.T. Grade IV (£1,065-£1,220 per annum), and Scheme of Conditions of Service, and to one month's notice on either side.

Housing accommodation will be provided, and if the successful candidate uses his own car in connection with the duties, an allowance will be made on the Casual User Scale for a car not exceeding 1,014 c.c.

Applications, giving details of age, qualifications, experience, present and past appointments, with the names and addresses of two persons to whom reference may be made, should reach the undersigned by noon on Monday, 11th January, 1960.

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

Council Offices,
Bletchley, Bucks.
28th December, 1959. 7527

NEW ZEALAND MINISTRY OF WORKS
ENGINEERING STAFF

The New Zealand Ministry of Works invites applications for the following vacancies on the Permanent Staff. Positions, qualifications desired and salaries offered are as follows:—

Vacancy No. 1. CIVIL ENGINEERS.

Corporate Membership of the Institution of Civil Engineers, London, together with sufficient appropriate experience. Commencing salaries up to £1,225 p.a.

Vacancy No. 2. ASSISTANT CIVIL ENGINEERS.

A University Degree in Civil Engineering, or Graduate Membership of the Institution of Civil Engineers, London, with at least five years of practical experience since commencement of pupillage. Commencing salaries £870 up to £1,060 p.a.

Vacancy No. 3. MECHANICAL OR ELECTRICAL ENGINEERS.

Corporate Membership of the Institutions of Mechanical or Electrical Engineers, London, together with sufficient appropriate experience. Commencing salaries up to £1,225 p.a.

Vacancy No. 4. BUILDING SERVICES ENGINEERS.

Corporate Membership of the Institution of Heating & Ventilating Engineers, London. Commencing salaries up to £1,450 p.a.

Vacancy No. 5. ASSISTANT MECHANICAL OR ELECTRICAL ENGINEERS.

A University Degree in Mechanical Engineering, or Graduate Membership of the Institutions of Mechanical or Electrical Engineers, London, together with at least five years' experience since commencement of pupillage. Commencing salaries £870 up to £1,060 p.a.

Vacancy No. 6. ASSISTANT BUILDING SERVICES ENGINEERS.

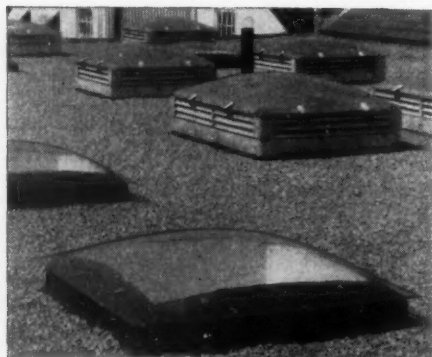
Graduate Membership of the Institution of Heating & Ventilating Engineers, London, with at least five years' experience since commencement of pupillage. Commencing salaries £870 up to £1,060 p.a.

Experience is necessary in the design and installation of services or equipment for one or more of the following: heating and ventilating, air conditioning, hot and cold water or sewerage services, laundries, kitchens, boiler-houses, lifts and other mechanical services in offices, schools, hospitals, hotels, telephone exchanges, printing works, defence establishments, etc. All appointees will be required to undertake work of this nature.

Applicants must be resident in the United Kingdom or Eire and have fulfilled National Service obligations.

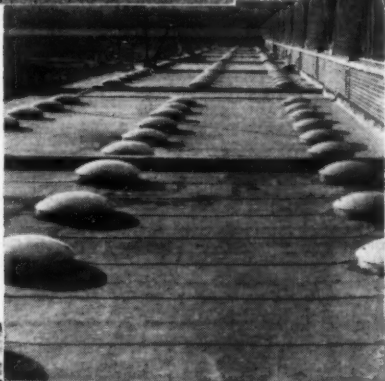
Enquiries, mentioning this publication and stating the Vacancy Number and the position sought, should be addressed to the High Commissioner for New Zealand, 415, Strand, London, W.C.2. Full details of duties, experience required, general information on the conditions of employment in the New Zealand and Public Service and application forms will then be supplied. 7500

COX DOMES FOR 1960

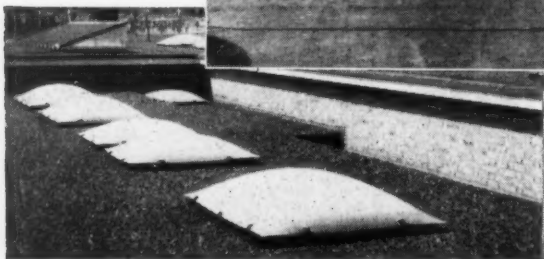


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in fact for every type of building



COX Domes for Added Light.

Virtually unbreakable, these roof lights are available in circular, square or rectangular shapes, in either clear "Perspex" (which has a light transmission of 92 per cent, as against 80 per cent. for glass), or in diffused opal for privacy and anti-glare.

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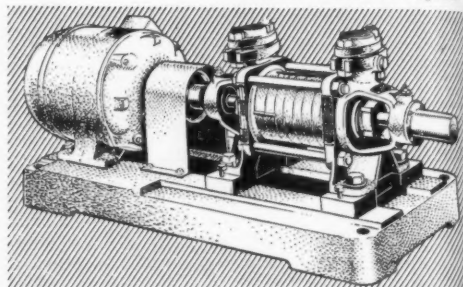
William J. COX (SALES) Ltd.

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Self-priming ..27ft lift... multistage booster pumps.....

They are robust, practical pumps, designed for economical operation and easy maintenance, built to give long service in industrial and agricultural installations. Available as self-priming or non-self-priming units in a range of sizes covering outputs from 115 to 50,000 g.p.h., and heads up to 1,000 feet, for hot or cold water, boosting, boiler feeding, etc., with all forms of drive or arranged for operation by your existing driving unit. Full details available on request.



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James Beresford & Son, Ltd.
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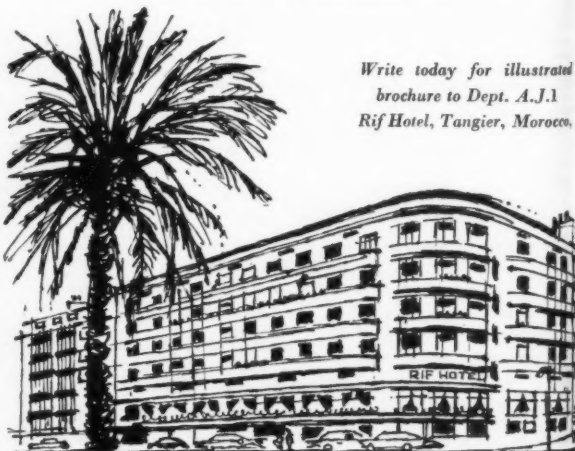
Telephone: STEchford 3081
(The Cornercraft Group of Companies)

We also make single stage pumps, portable pumps, cellar drainage pumps, submersible deepwell pumps, etc., and will be pleased to send you details of our range.

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brochure to Dept. A.J.1
Rif Hotel, Tangier, Morocco.



CITY OF CAMBRIDGE ASSISTANT ARCHITECTS

(Amended Advertisement)

Special Grade (£785-£1,070)

These posts are in the Architects' Section of the City Surveyor's Department and offer responsible earned and interesting work to architects with good practical Office experience, capable of carrying through projects from sketch plan to completion. A knowledge of design and construction of Multi-storey flats and/or Schools would be an advantage.

Applicants must be Associates of the R.I.B.A. and placing on scale will depend on experience. N.J.C. conditions of service apply and the Council may provide housing.

Application forms from the City Surveyor, the Guildhall, Cambridge, to be returned by the 1st February, 1960.

A. H. I. SWIFT

7566

UNIVERSITY OF ST. ANDREWS

Applications are invited for the post of DRAUGHTSMAN in the office of the Resident Architect to the University, to assist senior staff in general drawing office, duties, surveys, records, etc. Salary £600. Candidates should have reached intermediate standard and possess office experience. Applications, stating age, education, training, qualifications and experience, with the names of three referees, should be lodged with the Joint Clerk to the University Court, College Gate, St. Andrews, not later than 31st January, 1960.

7549

BOROUGH OF REIGATE

ARCHITECTURAL ASSISTANT required on Grade A.P.T. I (£610 to £765 p.a.) commencing salary according to qualifications and experience. Housing accommodation provided, if necessary, for married man. Facilities afforded for leave for study at recognised training establishment with view to obtaining appropriate technical qualification. Application forms obtainable from Borough Surveyor, Town Hall, Reigate, to be returned by 30th January, 1960.

HEBER DAVIES,

Town Clerk.

7631

Town Hall,

Reigate,

January, 1960.

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CITY OF WINCHESTER

Applications are invited for the post of ARCHITECTURAL DRAUGHTSMAN in the office of the City Engineer. Applicants should be neat and expeditious draughtsmen with a good knowledge of building construction. The appointment will be governed by the conditions of service of the National Joint Council for Local Authorities A.P.T. and Clerical Services. The post is superannuated and salary will be within the grades Miscellaneous I-V (£425-£715) according to experience and ability.

Applications to City Engineer, Guildhall, Winchester, not later than Friday, 22nd January, 1960, setting out full details and giving names of two referees.

R. M. McCALL,

Town Clerk.

Guildhall,

Winchester,

December, 1959.

7495

LONDON COUNTY COUNCIL ARCHITECTS' DEPARTMENT NEW SECTION FOR NEW TOWN DEVELOPMENT

A new section is being set up under John Craig, Oliver Cox and Graeme Shankland to prepare outline proposals for the L.C.C. New Town.

PLANNING ASSISTANTS with architectural, engineering or economics background required for short-term, original and interesting work. Later opportunities for careers for those interested. Up to £1,135 in accordance with qualifications and experience.

Application form, and particulars from Hubert Bennett, F.R.I.B.A., Architect to the Council, E.K.124/59, County Hall, S.E.1. (2872) 7503

LONDON COUNTY COUNCIL

ARCHITECTS (up to £1,135) required for Housing, Schools and General Divisions. Full and varied programme of new work including schools, multi-storey flats and Town Development. Starting salaries according to qualifications and experience.

Particulars and application form from Hubert Bennett, F.R.I.B.A., Architect to the Council, E.K.113/59, County Hall, S.E.1. (2630.) 7133

COUNTY BOROUGH OF SOUTHAMPTON requires under N.J.C. conditions of service:

(a) ASSISTANT ARCHITECT, Special Scale, £785-£1,070. Applicants must have passed Parts I and II of the R.I.B.A. final examination and have had experience in housing design and construction and estate layout, preferably with a municipal authority.

(b) ARCHITECTURAL ASSISTANT, A.P.T. Grade II (£765-£880). Applicants are required to have passed the Intermediate R.I.B.A. examination or its equivalent at one of the recognized schools of architecture, and preferably have had experience in local government housing.

Consideration will be given, if necessary, to the provision of housing accommodation.

Apply on application forms obtainable from the Borough Engineer and Surveyor, Civic Centre, Southampton, by Monday, 1st February, 1960. 7747

CRAWLEY URBAN DISTRICT COUNCIL

APPOINTMENT OF ASSISTANT ARCHITECT

Applications are invited for the appointment of an ASSISTANT ARCHITECT in the Engineer & Surveyor's Department at a salary in accordance with Special Grade (£785 to £1,070 per annum) plus temporary local weighting of £10 to £30 per annum according to age.

The appointment will be subject to the National Scheme of Conditions of Service for Local Authorities A.P.T., etc., Services, to the provisions of the Local Government Superannuation Acts and to the passing of a medical examination.

Details of the appointment and forms of application may be obtained from the Engineer & Surveyor, Goffs Park House, Horsham Road, Crawley, and must be returned to the Engineer & Surveyor by not later than Friday, 29th January, 1960.

The Council will assist in the provision of housing accommodation if required.

Canvassing directly or indirectly will disqualify applicants must disclose in writing whether they are related to any member or senior officer of the Council.

R. W. J. TRIDGELL,

Clerk of the Council.

7740

COUNTY OF ESSEX BOROUGH OF WALTHAMSTOW COMMITTEE FOR EDUCATION

Applications are invited for the following appointments in the office of the Education Architect:

(a) ASSISTANT ARCHITECT, Special Grade, £785 to £1,070 per annum.

(b) ASSISTANT BUILDING SURVEYOR, A.P.T. Grade I, £610 to £765 per annum.

London weighting of £30 (under 26 years of age £20) applicable to the appointments.

Commencing salary according to qualifications and experience.

For appointment (a) applicants must have passed Parts I and II of the Final Examination of the R.I.B.A. Experience in school planning and construction an advantage.

For appointment (b) applicants should be capable of preparing estimates, specifications, and supervising minor works of maintenance and alterations.

Forms of application to be obtained from and returned to the Borough Education Officer, Town Hall, Forest Road, Walthamstow, E.17, within two weeks of the appearance of this notice. 7711

BOROUGH OF WALTHAMSTOW

BOROUGH ARCHITECTS' DEPARTMENT

Walthamstow is a municipal borough within the County of Essex, population 114,000, rateable value £1,747,737. It is a progressive authority and there is a large programme of interesting architectural and redevelopment schemes to be undertaken.

Applications are invited for the undermentioned vacancies on the permanent staff of the Borough Architect:—

(1) FOUR ASSISTANT ARCHITECTS—A.P.T. I/II (£610-£880).

(2) ASSISTANT BUILDING INSPECTOR—A.P.T. I (£610-£765).

The above salaries do not include the London weighting allowance.

Applicants should have the appropriate qualification.

The successful candidate for post (2) will be required to assist in the examination of all plans submitted in compliance with Building Byelaws, and in inspection of work as required under the Byelaws.

The Council will make 100 per cent. advances to successful applicants for house purchase in this or adjoining boroughs.

Application forms may be obtained from the undersigned.

Closing date: 22nd January, 1960.

G. A. BLAKELEY,

Town Clerk.

Town Hall,

Walthamstow, E.17.

7698

BOROUGH OF EDMONTON

BOROUGH ARCHITECTS' DEPARTMENT

Applications are invited for the following appointments:—

(a) PRINCIPAL ASSISTANT ARCHITECT, Grade A.P.T. V—£1,220-£1,375, plus £30 London weighting. Candidates should have passed the Final Examination of the Royal Institute of British Architects or equivalent examination recognised by the Architects' Registration Council and should be experienced in construction of multi-storey flats and public buildings.

(b) QUANTITY SURVEYING ASSISTANT. Candidates should have passed the Final Examination of the Royal Institute of Chartered Surveyors or equivalent examination. Salary within the Special Grade £785-£1,070, plus London weighting £10-£30 according to age.

Applications on forms obtainable from the Town Clerk, Town Hall, Edmonton, N.9, must be delivered by 23rd January, 1960. 7657

BOROUGH OF LEYTON

(Municipal Borough in the County of Essex. Population approximately 100,000.)

BOROUGH ENGINEER'S DEPARTMENT

Applications invited for appointment of ASSISTANT ARCHITECT at a salary within the scale of £785 per annum rising to £1,070 per annum (plus London weighting) in accordance with the provisions of the National Scheme of Conditions of Service for Local Authority Staffs (Special Classes).

Housing accommodation will be made available to successful applicant if required.

Five-day week is operated.

Apply by letter to Borough Engineer, Town Hall, Leyton, E.10 (giving names of two referees), not later than Monday, 1st February 1960.

D. J. OSBORNE,

Town Clerk.

Town Hall,

Leyton, E.10.

7737

BOROUGH OF WATFORD

Watford is a pleasant, thriving town in South West Hertfordshire, in the Green Belt and with easy access to the open country. Although within easy reach of London it has a distinct civic consciousness and cultural, shopping, educational and transport facilities are excellent.

The Corporation has a large number of projects in hand and envisaged, including Swimming Bath, Library extensions, Multi-storey buildings, Flatted factories and housing and expansion of the Borough Engineer, Surveyor and Architect's Department is contemplated to handle these schemes.

Applications are invited from suitably qualified candidates for:—

(a) ASSISTANT ARCHITECTS. Salary within Grade Special + £70 per annum Special Responsibility Allowance. (Maximum salary £1,140 per annum.)

(b) ARCHITECTURAL ASSISTANTS. Salary within Grades II-III A.P.T. (£765-£1,065).

(c) ARCHITECTURAL ASSISTANTS. Salary within Grades I-II A.P.T. (£610-£880).

Applicants appointed to posts (a) will be Section Leaders for various projects and will carry a considerable amount of responsibility.

Commencing salaries will be commensurate with experience and ability and housing accommodation will be provided for those requiring it.

Applications to be sent to the undersigned not later than 27th January, 1960.

F. C. SAGE,

A.M.I.C.E., M.I.Mun.E., Reg. Architect.
Borough Engineer, Surveyor & Architect.

Town Hall,

Watford,

Herts.

7695

REDFORDSHIRE COUNTY COUNCIL

Applications are invited from suitably qualified or experienced persons for post of DRAUGHTSMAN (or woman)/TRACER in County Planning Department. Salary scale up to £765 p.a. according to experience. Application forms from Establishment Officer, Shire Hall, Bedford, to be returned by 23rd January. 7695

Town Hall,

Bedford,

7695

**STAFFORDSHIRE COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT**
Applications are invited for ASSISTANT ARCHITECTS on the following Grades:—

SPECIAL GRADE (£785-£1,070).
These posts are particularly suitable for recently qualified Architects. Good prospects of promotion to higher Grades.
GRADE A.P.T. IV (£1,065-£1,220).
Candidates must be Associates of the R.I.B.A., and be suitably experienced.

The appointments will be subject to:—
(a) The National Scheme of Conditions of Service.

(b) The Local Government Superannuation Acts and the passing of a medical examination.
The County Council are prepared to grant a lodging allowance of 35s. per week to married applicants maintaining a home outside the geographical County for a period of six months, also second class rail travel home every second month during the initial six months. The Council are also prepared to give consideration to the granting of financial assistance in appropriate cases towards removal expenses.

There is a possibility that housing may be made available in special circumstances.

Forms of application, which must be returned by 22nd January, 1960 may be obtained from the County Architect, Green Hall, Lichfield Road, Stafford.

T. H. EVANS,
Clerk of the County Council. 7659

BOROUGH OF SCUNTHORPE

(An expanding modern town of 61,000 population, 7,895 acres, R.V. £1,084,880)

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

ASSISTANT ARCHITECTS, A.P.T. III/IV (£880-£1,220 p.a.).

ASSISTANT ARCHITECTS, A.P.T. II (£765-£880 p.a.).

TOWN PLANNING ASSISTANT, A.P.T. II (£765-£880 p.a.).

Commencing salaries will be fixed according to qualifications and experience.

Housing accommodation is available if required. Fifty per cent. of approved removal expenses paid up to commencing salary of £855 p.a.

Applications giving particulars of age, experience, qualifications and appointments, together with the names of two referees, should be submitted to the undersigned not later than 21st January, 1960.

T. M. LISTER,
Town Clerk.

Municipal Offices,
34, High Street,
Scunthorpe.
2nd January, 1960.

7684

**COUNTY BOROUGH OF WEST HARTLEPOOL
APPOINTMENT OF SENIOR ASSISTANT ARCHITECT—Grade A.P.T. IV**

Applications are invited for the above appointment in the Borough Architect's Department at a salary in accordance with Grade A.P.T. IV (£1,065-£1,220 per annum), primarily for work in connection with a scheme for the new College of Further Education.

Candidates should be Associate Members of the Royal Institute of British Architects or hold equivalent qualifications.

The appointment is subject to the Scheme of Conditions of Service of the National Joint Council for Local Authorities' Administrative, Professional and Technical and Clerical Services and to the provision of the Local Government Superannuation Act. The appointment is subject to one month's notice on either side, and the successful candidate will be required to pass a medical examination.

The Council is prepared to assist with the provision of housing accommodation in suitable cases.

Applications, stating age, experience and qualifications, together with the names of two referees, should be addressed to the Borough Architect, Municipal Buildings, West Hartlepool, and received by him not later than Friday, 29th January, 1960.

ERIC J. WAGGOTT,
Town Clerk.

Municipal Buildings,
West Hartlepool.
4th January, 1960.

7668

BOROUGH OF LUTON

Applications invited for:—

(a) **SENIOR ARCHITECTURAL ASSISTANTS, A.P.T. IV (£1,065-£1,220).**

(b) **ARCHITECTURAL ASSISTANTS, A.P.T. I/Special (£610-£1,070).**

(c) **HEATING ENGINEERING ASSISTANT, A.P.T. III (£880-£1,065).**

Applicants for posts (a) must be A.R.I.B.A. and should have had considerable practical experience.

The grade and commencing salary for (b) will be within the range stated according to experience and qualifications.

The Corporation is undertaking a considerable development programme of varied and interesting work including Public Library, Baths Establishment, Cleansing and Transport Depots, and other civic schemes.

Consideration will be given to the provision of housing accommodation and payment of removal expenses in approved cases.

Application forms from Borough Architect, Town Hall, Luton, returnable by 25th January, 1960. Previous applicants need not apply again.

7680

**CITY OF CARDIFF
CITY ARCHITECT'S DEPARTMENT**

Applications are invited for the following appointments:—

(a) **SENIOR ASSISTANT QUANTITY SURVEYOR, A.P.T. Grade IV (£1,065-£1,220 per annum).**

(b) **MEASURING SURVEYOR, A.P.T. Grade II (£765-£880 per annum).**

(c) **ARCHITECTURAL ASSISTANT, A.P.T. Grade II (£765-£880 per annum).**

Candidates should possess the minimum qualifications and experience prescribed by the National Joint Council for Local Authorities for posts in the above mentioned grades.

The point of entry in the grades will be subject to qualifications, ability and experience.

General Conditions of Appointment may be obtained from the undersigned.

Applications, accompanied by the names and addresses of two referees, appropriately endorsed must be delivered to me not later than the 23rd January, 1960.

S. TAPPER-JONES,
Town Clerk.

City Hall,
Cardiff.
January, 1960.

7660

**WARWICKSHIRE COUNTY COUNCIL
DEPUTY COUNTY ARCHITECT**

Applications are invited for the post of Deputy County Architect. The salary will be £2,303 per annum, rising, subject to satisfactory service, by annual increments of £90, to a maximum of £2,573. The appointment will be subject to three months' notice on either side and to the conditions of service of the Joint Negotiating Committee for Chief Officers of Local Authorities.

Candidates must be members of the Royal Institute of British Architects and preference will be given to those having had experience under large public authorities.

The appointment will be subject to the provisions of the Local Government Superannuation Acts, 1937-1953, and the successful candidate will be required to pass a medical examination.

Applications must be made on forms obtainable from the undersigned and state the names and addresses of not more than three persons who have knowledge of the applicant's experience and work and to whom reference can be made. They should be addressed to the Clerk of the Council, Shire Hall, Warwick, in a sealed envelope marked "Deputy County Architect," and must reach me not later than first post on Monday, the 1st February, 1960.

L. EDGAR STEPHENS,
Clerk of the Council.

Shire Hall,
Warwick.
4th January, 1960.

7675

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positively withstands trucking
and will not dust up**

Illustration—Plasik being laid

Plasik

REGD. TRADE MARK

PLASIK is everything an industrial floor should be. Seamless, jointless, matt, it is rock-hard, withstanding the heaviest trucking. It is highly resistant to most chemicals and acids, completely grease-proof and will not dust up in any circumstances. It is quickly and easily trowel-laid. Its first cost is low, and its only maintenance cost is washing.

MANUFACTURED AND LAID BY
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**TEN PLEASING COLOURS
PLASIK IS THE PERFECT
FLOOR FOR HOSPITALS,
FATORIES, LAVA-
TORIES, SCHOOLS,
CANTEENS, OFFICES,
DAIRIES, MOTOR
SHOWROOMS,
Etc.**



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Technical advice gladly supplied.

VIGER BROS. LTD. LUDGATE BROADWAY, LONDON, E.C.4. CITY 2111-
AND AT BELFAST, EXETER, CARDIFF, BIRMINGHAM.

BOROUGH OF KETTERING APPOINTMENT OF ARCHITECTURAL ASSISTANT

Applications are invited for the appointment of an Architectural Assistant in the Borough Engineer and Surveyor's Department. The salary will be in accordance with the Special Grade for Architectural Assistants (£785-£1,070 per annum) or A.P.T. Grade I (£610-£765 per annum), according to qualifications.

Housing accommodation will be available if required.

The appointment will be subject to the National Scheme of Conditions of Service and the Local Government Superannuation Acts.

Applications, stating age, qualifications and experience (with particular reference to town planning), together with the names of three referees, should reach the undersigned not later than 20th January, 1960.

D. DUNSFORD PRICE,
Town Clerk.

Council Offices,
High Street,
Kettering. 7685

WESTERN REGION HOUSING CORPORATION IBADAN, NIGERIA

APPOINTMENT OF ARCHITECT

Applications are invited from qualified candidates for the post of Architect at the Western Region Housing Corporation, with Headquarters at Ibadan and Branch Office at Ikeja.

Appointment will be on contract for two years of 18-24 months residential service, with paid leave of seven days per month of residential service. The salary is £1,198 x £48 to £1,390 x £54 to £1,650. In addition an Inducement Allowance is payable to expatriate officers of £270 for salaries below £1,285 and £300 for salaries over. The point of entry will be determined by qualifications and experience. The successful candidate will be required to join the Corporation's Provident Fund, to which the Corporation and the officer each contribute a sum equal to 10 per cent. of the officer's basic salary.

First class passages by air will, on first appointment, be provided for the officer, his wife, and up to three children under 18 years of age. Free medical treatment will be provided for the officer and his family. A house with hard furnishings at rental will be made available if the successful candidate is recruited outside Nigeria. Conditions of service generally will be those applicable to Western Region Government Officers on contract.

Candidates must have wide experience and possess one of the following qualifications:—

(i) Associate Royal Institute British Architect.

(ii) Members of recognised Architectural Association within the Commonwealth.

Recent practical experience in tropical architecture and experience in Town Planning will be considered an advantage.

The successful candidate will be appointed to the Department of Architecture and Engineering and will be resident in Ibadan. The Corporation's works are carried out by contract and the duties of the post will comprise all phases of work from sketch design to preparation of final accounts, including supervision of construction. The Corporation is engaged at present in extensive Housing development of all types in a new neighbourhood in Ibadan, and an Industrial and Housing Development project at Ikeja, near Lagos.

Applications, stating age, academic and professional qualifications, previous experience, present appointment and salary, together with the names of two referees, should be sent by air-mail to reach the undersigned not later than 31st January, 1960. Interviews for overseas candidates will be held at the Office of the Commissioner for Western Nigeria, 178, Great Portland Street, London, W.1, during February, 1960.

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

Applications are invited for the following appointments:—

(a) TOWN PLANNING ASSISTANT—Special Grade.

(b) ASSISTANT ARCHITECT (Education Section)—Special Grade.

(c) ARCHITECTURAL ASSISTANT—A.P.T. Grade I.

(d) QUANTITY SURVEYING ASSISTANT—A.P.T. Grade I.

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

Housing accommodation may be made available if required.

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

Applications, stating age, education, qualifications, full particulars of training and experience, together with copies of two recent testimonials, should be sent to the undersigned not later than Monday, 25th January, 1960, in envelopes endorsed "Appointment of . . ."

A. NORMAN JAMES,
Town Clerk.

Town Hall,
Dewsbury.
1st January, 1960. 7649

HAMPSHIRE COUNTY COUNCIL

PLANNING ASSISTANT required for pensionable post in Area Planning Office at Fareham, A.P.T. I (£610-£765). Commencing salary according to qualifications and experience.

Candidates should preferably have passed the Intermediate Examination of the Town Planning Institute or of a related professional body and have had experience in the Planning Department of a Local Planning Authority. Assistance with removal and other expenses in approved cases. Applications, stating age, education, qualifications and experience, together with a copy of one testimonial and the names of two referees, should reach the Clerk of the County Council, The Castle, Winchester, not later than 30th January, 1960.

CITY OF BIRMINGHAM

Following a review of the Department's Establishment, the City Architect's Department is now in a position to invite applications from **QUALIFIED ARCHITECTS** for appointments at commencing salaries, according to experience and capabilities, within the following Grades:—

(a) A.P.T. V, £1,220/£1,375 per annum.

(b) A.P.T. IV, £1,065/£1,220 per annum.

(c) Special Scale, £785/£1,070 per annum.

A large new Exhibition Hall with multi-storey car park and other public buildings, forming part of the new Civic Centre plan, are included in a building programme which also comprises Schools, Technical Colleges, Colleges of Further Education, and Schemes of Comprehensive Housing Development, including tall blocks of dwellings, Shopping Centres and ancillary buildings.

A great opportunity exists for enthusiastic and imaginative Architects who wish to assist in work of such architectural importance.

Pension Scheme. Five-day week. Medical examination.

Applications stating appointment applied for, age, present position and salary, qualifications, experience and two referees, to reach the undersigned by 29th January, 1960.

A. G. SHEPPARD FIDLER,
City Architect.

Civic Centre,
Birmingham, 1. 7754

**GOVERNMENT OF UGANDA
ARCHITECT, PUBLIC WORKS DEPARTMENT**

For general architectural duties over a wide range of building projects under the supervision of the Chief Architect. Contract appointment for one tour of 30-36 months. Salary range £1,194-£1,863 a year. Gratuity of 13½ per cent. of aggregate emoluments payable on satisfactory completion of contract. Free passages.

Candidates must be A.R.I.B.A. and between 25 and 35.

Write Director of Recruitment, Colonial Office, London, S.W.1, giving full names, age, qualifications and experience, quoting BCD 112/9/012/E2.

**BOROUGH OF NEWCASTLE-UNDER-LYME
ARCHITECTURAL ASSISTANT**

Salary A.P.T. Grade I, £610-£765 per annum. Forms of application and further particulars may be obtained from the Borough Surveyor, Lancaster Building, High Street, Newcastle, Staffs., to whom applications must be submitted not later than Friday, 22nd January, 1960.

C. J. MORTON,
Town Clerk.

**BOROUGH OF SUTTON COLDFIELD
APPOINTMENT OF ASSISTANT ARCHITECT
GRADE IV (£1,065-£1,220)**

Applications are invited for the above appointment.

Housing accommodation if required. Applications stating age, experience, and the names of two referees to be sent to the Borough Surveyor, Council House, Sutton Coldfield, not later than January 21st.

J. P. HOLDEN,
Town Clerk.

Council House,
Sutton Coldfield. 7748

**EAST SUSSEX COUNTY COUNCIL
PLANNING ASSISTANT** required at Headquarters, Lewes, on N.J.C. Special Grade, £785-£1,070, for work on planning surveys and development plans. Commencing salary according to experience and qualifications. Recognised qualification in planning or alternative professional qualification or University Degree required. Further information and application forms from the County Planning Officer, County Hall, Lewes, Sussex. Closing date 8th February, 1960.

**CANNOCK URBAN DISTRICT COUNCIL
APPOINTMENT OF DEPUTY ARCHITECT
AND SENIOR ASSISTANT ARCHITECT**

Applications are invited for the following appointments in the Architect's Department of the Council:—

(a) DEPUTY ARCHITECT. Salary in accordance with Grade A.P.T. IV (£1,065 p.a.—£1,220 p.a.).

(b) SENIOR ASSISTANT ARCHITECT. Salary in the range of £785 p.a. rising to £1,070 p.a.

Housing accommodation available (if married). Further particulars may be obtained from the undersigned to whom applications should be submitted by Wednesday 27th January, 1960.

H. C. ALLEN,
Clerk of the Council.

Council House,
The Green,
Cannock Staffs.
1st January, 1960. 7661

NORFOLK COUNTY COUNCIL

Applications are invited for the following posts:
(a) **PLANNING ASSISTANT, A.P.T. Grade I** (£610-£765).

(b) **DRAUGHTSMAN, Miscellaneous Grades I-IV** (£425-£650).

Applicants for Post (a), which is in the Development Plan Section, should have experience in the work of a Planning Department and have completed the Intermediate Examination of the Town Planning Institute. Applicants for Post (b) must have cartographical draughtsmanship training, and experience in the work will be an advantage.

Both posts are at the Headquarters of the Planning Department, which is in Norwich. Applications, with the names of two referees, to be submitted to the undersigned by January 25th.

R. I. MAXWELL,
County Planning Officer.

41/43, Thorpe Road,
Norwich. 7739

MINISTRY OF EDUCATION requires ARCHITECTS and ASSISTANT ARCHITECTS in Architects and Building Branch, London.

(a) **DEVELOPMENT GROUP:** Work consists of study in principle and detail of design and construction of educational buildings and of their services, fittings and furniture; and the application of results to school projects.

(b) **TERRITORIAL GROUP:** Work largely consists of consulting with architects engaged in design of educational building projects for Local Education Authorities, and advising Ministry on suitability of these projects. Posts unestablished at first, but possibilities of permanency later. Appointment as Architect at minimum of London salary scale £1,325-£1,780. Assistant Architects starting salary according to age on scale £830-£1,300. Conditioned hours 42 five day week. Annual leave varies according to grade and length of civil service from 22 to 36 days. Forms from Ministry of Labour, Technical and Scientific Register, 26, King Street, London, S.W.1. Quoting J10/04 and appropriate post and group. 7760

**ISLE OF ELY COUNTY COUNCIL
COUNTY PLANNING DEPARTMENT**

Applications are invited for the following appointments:

(a) **SENIOR PLANNING ASSISTANT, A.P.T. Grade III** (£480-£1,065).

This is a new appointment and the successful candidate will be engaged on work in connection with the review of the County Map and Wisbech Town Map and the preparation of further Town Maps. Applicants must be corporate members of the Town Planning Institute or hold another qualification and have had previous planning office experience.

(b) **PLANNING ASSISTANT, A.P.T. Grade I** (£610-£765) or Grade II (£765-£885).

Applicants should have passed or be studying for the intermediate examination of the Town Planning Institute or other professional institute and have had previous experience in a planning department. The starting salary in both cases will be fixed having regard to qualifications and experience. National Conditions. Assistance towards removal expenses considered.

Further particulars and application forms available from the County Planning Officer, County Hall, March, to whom the completed forms should be returned by not later than 1st February 1960.

R. F. G. THURLOW,
Clerk of the County Council.

**COUNTY BOROUGH OF ROCHDALE
ARCHITECTURAL ASSISTANT** in the Housing Section on Special Grade (£785-£1,070 p.a.). The successful applicant if fully qualified will be offered, subject to conditions, housing accommodation.

Canvassing will disqualify. Relationship to any member or senior official of the Council must be disclosed. Appointment subject to medical examination.

Applications, stating age, qualifications, experience and names of two referees to Borough Surveyor, Town Hall, Rochdale, by 29th January.

K. B. MOORE,
Town Clerk.

METROPOLITAN BOROUGH OF SOUTHWARK

Applications are invited for the following appointments on the permanent establishment of the Borough Engineer and Surveyor's Department:—

ARCHITECTURAL ASSISTANTS—A.P.T. I (£640 to £795 per annum) or A.P.T. II (£795 to £910 per annum).

Vacancies in design groups dealing with mixed housing and other development. Applicants should possess Intermediate R.I.B.A. for A.P.T. II post.

The Council has a large programme of housing development on sites already available, or scheduled for clearance within the next ten years. In addition, a number of public building projects are envisaged, including new public baths within the Elephant and Castle Development Area.

Council's Conditions of Service of Officers and Superannuation Scheme apply. Medical examination. No housing. Canvassing will disqualify. Further particulars from the undersigned. Closing date 28th January, 1960.

E. J. PITT,
Town Clerk.

Southwark Town Hall
(near Elephant & Castle Underground Station),
Walworth Road, S.E.17. 7678

DERBYSHIRE COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT
Vacancies exist for ASSISTANT ARCHITECTS. Salary: £785 to £1,070 per annum. Applicants must be fully qualified. The Authority has a large and varied programme affording an opportunity for good experience, particularly in the use of modern methods of construction. National Joint Council Conditions of Service. Pensionable posts. Convancing disqualifies. Application forms from The County Architect, County Offices, Matlock. 7676

METROPOLITAN BOROUGH OF WOOLWICH
BOROUGH ENGINEER'S DEPARTMENT
JUNIOR ASSISTANT ARCHITECT required, Grade 1, £610-£765, plus London weighting. Candidates must have passed the Intermediate R.I.B.A. Examination. Medical examination. Superannuation scheme. Applications (stating age, qualifications and experience, and giving two referees) to Town Clerk, Woolwich, S.E.18, by 25th January, 1960. Convancing disqualifies. 7670

THE ROYAL INFIRMARY OF EDINBURGH
AND ASSOCIATED HOSPITALS
ARCHITECTURAL ASSISTANT
Applications are invited from candidates holding the Intermediate certificate of the R.I.B.A. and having practical experience. Varied and interesting work. Starting salary £525 to £595 per annum according to age and experience. Apply in writing to Personnel Officer, Royal Infirmary, Lauriston Place, Edinburgh, 3. 7647

ARCHITECTS FOR SCOTTISH DEPARTMENT
OF THE SECRETARY OF STATE
Architects are required in Edinburgh for the Chief Architect's Division which covers work on Hospitals, Housing, Schools, Colleges and other Institutions, and which includes development work and research. Salary range £395-£1,265. Starting pay according to age and experience. Five-day week. Four weeks annual leave. Prospects of promotion and permanency. Write for application form to T. A. Jeffries, Esq., A.R.I.B.A., A.H.T.P.I., Chief Architect, Department of Health for Scotland (Room 30), St. Andrew's House, Edinburgh 1. 7496

COUNCIL OF THE COUNTY OF ABERDEEN
COUNTY ARCHITECT'S DEPARTMENT
Applications are invited for an appointment as ASSISTANT ARCHITECT in the above Department. Salary £905 x £35-£1,185 per annum. Placing on the scale may be given according to experience. Applicants must be Associates of the Royal Institute of British Architects. The appointment is superannuable. Application forms and conditions of appointment may be obtained from the undersigned. Closing date 27th January, 1960. JAMES L. CRAIG, County Clerk. 7783

County Buildings,
22, Union Terrace,
Aberdeen. 7783

THE ROYAL BOROUGH OF KENSINGTON
ARCHITECTURAL ASSISTANT required, Salary £590-£910 p.a., according to age and qualifications. Applications, stating age, qualifications, experience etc., with names of two referees, to reach Town Clerk, Town Hall, W.8. by 25th January, 1960. 7787

Tenders Invited

METROPOLITAN BOROUGH OF STEPNEY
RATCLIFFE HOUSE HOUSING SCHEME
CONTRACT No. 778
Tenders are invited for the erection of two connected Blocks each of ten maisonettes four storeys high.

Forms of Tender with conditions, etc., obtainable from the Borough Engineer and Surveyor, Municipal Offices, 227/233, Commercial Road, E.1, upon payment of a deposit of Ten Guineas. Closing date for Tenders 8th February, 1960. WILFRED REEVE, Town Clerk. 7752

Architectural Appointments Vacant

3s. per line; minimum 12s. Box Number, including forwarding repeats, 2s. extra.

ERIC FIRMIN & PARTNERS require Senior ASSISTANTS for work on industrial and commercial projects. Five-day week. Lanchester vouchers. Salary by arrangement. Please apply to Holborn Circus, E.C.1. City 5811. 0894

OFFICE OF PATRICK GWYNNE requires a JUNIOR ASSISTANT with office experience for work on interesting modern houses and interiors. Homewood, Esher, Surrey. Esher 3310. 7426

ARCHITECTURAL ASSISTANTS required, Final and Intermediate standards, interesting and varied work. Good salary to suitable applicants. Apply giving full details to T. I. Frith, Newcastle Chambers, 45, Carlton Road, Workson, Notts. 7794

ASSISTANT ARCHITECT required with sufficient tact and "know how" to take charge of medium sized contracts for work of some variety. Contemporary outlook desirable. Apply Teatner & Hadfield, Mazda Buildings, Campo Lane, Sheffield, 1. 7795

ARCHITECTURAL ASSISTANT of Final standard required in Manchester office. Full details to Box 7793.

AMBITIOUS ARCHITECTURAL ASSISTANTS of Intermediate or Final standard should contact Ley, Colbeck & Partners, F.F.R.I.B.A., who have vacancies for men of initiative. Salary according to standing, pension scheme, L.V. and 5-day week. Apply 51, Bishopsgate, E.C.2. Tel: LON 7282. 7790

ARCHITECTS, London Office, have vacancies for a number of competent ARCHITECTURAL ASSISTANTS. Excellent opportunity for men with drive. L.V. 5-day week and pension scheme. Write Box JA/47, c/o 95, Bishopsgate, London, E.C.2. 7789

ARCHITECT required by established Property Development Company. Must be experienced shops, offices, etc. Able to attend to working drawings, Town Planning Bye-law consents, etc. Excellent salary. Write stating age and previous experience to Mr. Davies, 38, Upper Grosvenor St., W.1. 7788

YOUNG and enterprising team in new London orbit of Grenfell Baines and Hargreaves partnership seek ASSISTANTS who enjoy responsibility in varied modern jobs and competitions: up to £1,200. Write David Rock, 80, Duke Street, W.1. 7786

WANTED. Experienced ARCHITECT'S ASSISTANT to assist Principal and to take charge of small office in Midway Towns during his absence. Apply in confidence giving all particulars to Box 7785.

ARCHITECTURAL ASSISTANTS, Intermediate and Final standards, required in Architect's Department for work in connection with Flat, Maisonette, Shop and Housing developments throughout the country. Applicants must be competent draughtsmen with contemporary outlook. Good salary and prospects. Pension scheme in operation. Apply: Architectural Department, Davis Estates Ltd., 346/350, Kilburn High Road, N.W.6. 7784

POST INTERMEDIATE ASSISTANTS required in Architects' Office. Must be able to produce working drawings. Five-day week. Salary according to experience. Write or phone Ardin & Brookes, 129, Mount Street, W.1. Gros 7728. 7782

ARCHITECTURAL ASSISTANT, about Intermediate standard, required for general practice in North Devon office. Pension scheme. Box 7483.

ASSISTANTS required for busy Architect's City office; Laboratory and industrial projects. Intermediate standard or above. Apply to: Secretary, Fairtlough and Morris, Temple Chambers, Temple Avenue, E.C.4. FLE 6286. 0838

RONALD WARD & PARTNERS have immediate vacancies for ASSISTANT ARCHITECTS with initiative and some experience, for interesting, commercial, industrial and civic projects. Salaries commensurate with ability. Apply, 29, Chesham Place, S.W.1. BEL 6744. 0831

ASSISTANT ARCHITECTS are invited to apply for posts in the Architect's Department at Ericsson Telephones Limited, Beeston, Nottingham. Starting salary will be according to ability, qualifications and previous experience.

Only applicants with an enthusiastic approach to new ideas and progressive design, and willing to accept responsibility will be considered. The Department at present works a five-day week. Good canteen facilities are available. Participation in superannuation fund after qualifying period.

Please write, stating age and giving full details of training and experience, to the Personnel Manager. 7942

ARCHITECTURAL ASSISTANT at Final standard required by Buckinghamshire office. Interesting and varied work with scope for initiative and responsibility. State age, experience and salary required to Box 5871.

ARCHITECTURAL ASSISTANTS, Senior and Junior, required by firm in High Wycombe for commercial and industrial schemes. Scope for responsibility and experience. Five-day week. Write Box 6636.

TREHEARNE & NORMAN, PRESTON & PARTNERS, have vacancies for ARCHITECTS and ASSISTANTS with imagination and designing ability to assist with important new developments in the London area. Apply in confidence to 83, Kingsway, London, W.C.1 (HOL. 4071.) 6429

THREE qualified ARCHITECTURAL ASSISTANTS with office experience required for (a) Industrial Work, (b) School Contracts, (c) large housing scheme abroad. Assistants will be expected to take the responsibility of running and supervising these contracts. Salary according to age (limit 35) and experience. Apply to J. M. Austin-Smith & Partners, 29 Sackville Street, London, W.1. 6566

SENIOR ASSISTANTS urgently required for busy City office engaged in industrial and commercial work. 5-day week. Lanchester Voucher Salary up to £1,200 according to experience. Box 6554.

ASSISTANTS of Intermediate or equivalent standard, required for office in South Kensington. Interesting and varied work, offering scope for initiative, responsibility and opportunities for design. Commencing salary up to £800 per annum, according to qualifications. Five-day week. Apply R. Mountford Pigott & Partners, Kensington 1242. 6778

QUALIFIED ASSISTANT ARCHITECTS required, minimum three years' office experience, preferably in London. Minimum salary £1,000 according to ability and experience. Theo. H. Birks, 38, Portland Place, W.1. LAN 7236. 7126

INTERMEDIATE standard ASSISTANTS required, minimum two years' office experience. Minimum salary £750 according to ability. Theo. H. Birks, 38, Portland Place, W.1. LAN. 7236. 7122

ARCHITECTURAL ASSISTANTS, Intermediate standard, required in London Offices with varied practice. Interesting projects. Five-day week. Write giving particulars of age, experience, etc., to Box 903, c/o 7, Coptic Street, London, W.C.1. 7037

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My own axe head picked up on the screes below Pike o' Stickle many years ago looks exactly as if it was chipped out last week. There is not a sign of weathering on the lovely grey, green surface and the edges are still sharp enough to demand careful handling. Yet it had lain on this scree slope for something like 4,000 years and had been fashioned not many yards away by some hairy, prehistoric man 2,000 years before the dawn of Christianity.

from
'Leaves from a Lakeland Notebook'
by A. H. Griffin.

Our leaflet on this subject received RIBA/Building Centre Award 1958 and together with literature on other applications is available on request.

Limestone & Green Slate Slab Co. Ltd., Appleby Rd., Kendal

SENIOR ARCHITECTURAL ASSISTANTS, and JUNIORS up to about intermediate standard, required for varied industrial and commercial work in West End Office. Scope for initiative and advancement. Salary from £500 to £1,000 according to age and experience. Five-day week. Write, giving full details, to Box 7420.

ARCHITECTURAL ASSISTANT required, with at least two years' office experience. Apply in writing to Thomas Mitchell & Partners, Bedford Square, London, W.C.1. 7282

ARCHITECTURAL ASSISTANTS required up to intermediate standard. Medium sized, varied and progressive practice. Good salaries and prospects. Colcutt & Hamp, Architects, 86, Prince Albert Road, N.W.8. PRI 5157. 7451

ARCHITECTS and ASSISTANTS required. Minimum intermediate standard. Very large programme commercial, industrial and residential work. London office. Good salaries and bonus to right men. Five-day week. Box 7443

ARCHITECTURAL ASSISTANTS, preferably of intermediate standard, are invited to apply for posts in the Architects' Department at Ericsson Telephones Limited, Beeston, Nottingham, to work with group architects on a programme of modern industrial building. Starting salary will be in accordance with qualifications and previous experience but it will be helpful to know salary expected by applicants. The department at present works a five-day week. Good pension facilities are available. Participation in superannuation fund after qualifying period. Please state stating age and giving full details of training and experience to the Personnel Manager. 7443

SENIOR ARCHITECTURAL ASSISTANTS required in salary range £700-£1,000 to take part of varied and interesting jobs of all sizes. Experience in colour and design of interiors and fittings and good presentation draughtsmanship an advantage. Five-day week, excellent working conditions and holidays. Please write giving full details of experience and qualifications to Deacon & Laing, 65, Goldington Road, Bedford. 7422

SENIOR ASSISTANT required of intermediate/ final standard. Sound training, experience private practice. Accommodation difficult, single man therefore preferred. Busy private practice, Jersey, Channel Islands. Apply, stating salary required, when free, etc., to Box 7448.

ARCHITECT
A MULTIPLE GROCERY COMPANY WITH AN EXTENSIVE DEVELOPMENT PROGRAMME THROUGHOUT THE COUNTRY requires the services of a qualified architect with knowledge and experience in self service and supermarket planning. The successful applicant will be offered a permanent pensionable appointment. Applications in strictest confidence, giving details of experience, qualifications, age, present appointment and salary, to be addressed to Box 7489.

W. J. LEWIS AND SONS require an intermediate R.I.B.A. or above standard, for interesting and varied work in busy office, and with opportunities for future. Salary will be according to age and experience. Five-day week. Apply by letter to 68, Cranbrook Road, Ilford, Essex, or telephone Ilford 3589. 7490

ARCHITECTURAL ASSISTANTS required in London and Reading area. Five-day week. Full particulars and salary required to Box 7492.

ELIE MAYORCAS requires **SENIOR ASSISTANTS** with minimum of three years' office experience in this country. Write, giving particulars of architectural education and experience, and salary required, to: 13, David Lewis, Baker Street, W.1. 7497

ARCHITECTS ASSISTANTS of intermediate and final standard required immediately in a varied and interesting programme including Schools, Churches, Municipal Buildings, Housing, etc. Bonus and pension schemes in operation, voluntary overtime at good rate of pay. One Saturday in three off. Applications, giving full particulars and salary required, to: C. Prestwich & Sons, Bradshawgate Chambers, Lich Lane. 7510

QUALIFIED Architect required as **RESIDENT ARCHITECT** on Hospital project in West Africa. Site experience an advantage. Salary dependent on experience but about £1,800 plus or allowance. Contract of two years of 18 months in first instance. Generous home leave and free passages for self and family. Housing provided at low cost. Kit allowance. Apply, giving details of experience, to Box 7485.

ASSISTANT required for Resident Architect for University College of Ghana. Salary up to £1,600 according to experience. Free passages for self and family. Kit allowance. Accommodation provided. Apply in writing to Harrison Barnes & Hubbard, 2, Lord North Street, London S.W.1. 7486

ARCHITECTURAL ASSISTANT (Final standard) required in busy architect's office in Reading. Salary according to experience. Howell, Freeman & Batten, Chartered Architects, Reading. 7481

ARCHITECTURAL ASSISTANTS of Final and intermediate standard required for work on industrial buildings. Excellent opportunities in an expanding London office. Apply, stating age, experience and salary range, to the Chief Architect, Nuclear Civil Constructors, 52/55, Carnaby Street, London, W.1. 7480

ARCHITECTURAL ASSISTANTS of all grades required in busy London Office. Applicants must be prepared to work on their own initiative and be capable of producing working drawings and details for new contracts of contemporary designs. Pleasant working conditions, with a five-day week, 9.30 a.m.-5.30 p.m., and Luncheon Voucher scheme. Write stating experience, age and salary required to—W. Russell Orme & Partners, 55, Manchester Street, W.1, or Telephone HUNter 1498. 7571

SENIOR and JUNIOR ARCHITECTURAL ASSISTANTS required for an expanding organisation to develop the Company's commitments in the Liverpool area. Assistants will be based in Liverpool to carry out varied work on shop development, attractive salaries are offered and incentive schemes are in operation. Applications in writing, stating age, experience, qualifications and salary should be forwarded to The Building Manager, Lowton Construction Co. Ltd., Lowton St. Mary's, Nr. Warrington. 7611

DOUGLAS J. OLIVER & PARTNERS, Members of the Grenfell Baines Group of 10 St. Matthew's Street, Rugby, urgently require **ASSISTANTS** of R.I.B.A. intermediate and final standard. The positions are intended to be permanent and the work includes high building development, schools, public school work, good quality housing and a variety of interesting miscellaneous projects. Pleasant office conditions. Staff Superannuation Scheme. Salaries £800-£1,200 per annum according to ability. Applications should be made giving full details of experience to 10 St. Matthew's Street, Rugby. 7610

BOISSEVAIN & OSMOND will be pleased to hear from young architects of various grades, aged between 20 and 35, who possess drive and initiative and are capable of negotiating with clients and who are not afraid of hard work. Good educational background and previous experience of procedure desirable but a determination and an ability to succeed are more important. In return we offer good salaries reviewed regularly, interesting work and promotion on merit. Our principal office will be situated, to avoid London's congestion, in a new building in Epsom with excellent working conditions. Please apply in writing to the London office, 2 Field Court, Grays Inn, London, W.C.1. 7603

SENIOR ARCHITECTURAL ASSISTANT (Inter R.I.B.A. Standard) required to take charge of Company's new Liverpool office. This is an initial appointment with very great scope for an ambitious and competent young architect. A good starting salary will be paid to the right applicant who will also qualify for entry to the Company pension fund. Apply in writing to: LOWTON CONSTRUCTION CO. LTD., Lowton St. Marys, nr. Warrington. 7594

ARCHITECTURAL ASSISTANTS required. Salary £450-£900 according to experience. W. Leslie Jones & Partners, 8, Acresfield, Bolton. Lancs. Tel.: Bolton 10221. 7555

ARCHITECTURAL ASSISTANTS required, salary £450-£1,000 according to experience. W. Leslie Jones & Partners, 241a, High Street, Poole, Dorset. Tel.: Poole 2238. 7556

TRIPE & WAKEHAM, Chartered Architects, require **ASSISTANTS** with three to five years' office experience. Telephone WE1beck 7744 or write 16, Fitzhardinge Street, London, W.1, for an appointment. 7551

ARCHITECTURAL ASSISTANTS—Exceptional opportunity and rapid promotion exist in large modern firm of Contractors recently developing on a national scale an all-in building service. Work comprises mainly commercial and industrial projects and this is an ideal chance for ambitious young men. Applications, stating age, experience and salary required, should be forwarded to Box 7516.

ARCHITECTURAL ASSISTANT required, intermediate standard, with office experience, for small busy practice in West End. No Saturdays. Phone MUSeum 9693. 7519

SENIOR ASSISTANT required. Excellent salary and opportunity offered to suitable applicant. Five-day week. Superannuation scheme in operation. Write, giving full particulars of experience, to Sandon and Harding, A/R.I.B.A., 14, Lower Brook Street, Ipswich. 7522

ARCHITECTURAL ASSISTANTS—Final and intermediate—required with office experience. Opportunities for designing and taking responsibility in running and supervising contracts. Five-day week and bonus scheme. Apply in writing, giving age, experience and salary required, to: Shipley & Foster, Kingscourt, Bridge Street, Walsall. 7540

ARCHITECTURAL ASSISTANT, intermediate stage, required immediately. Salary according to experience. Excellent office conditions and permanent position offered to right man. Apply Chas. W. Fox, F.R.I.B.A., National Provincial Bank Chambers, Welwyn Garden City. 7631

ARCHITECTURAL ASSISTANTS for a wide variety of interesting projects in small Architect's Department of leading Building and Civil Engineering Contractors in the Manchester area. Latten facilities. Salary £850 to £1,050. Apply Box 7524.

DIAMOND, HODGKINSON & PARTNERS require experienced intermediate and qualified **ASSISTANTS** able to take responsibility for housing, flats and interiors. Salary £800-£900 p.a. 92, George Street, W.1. 7537

FEMALE ASSISTANT with experience required in Loughton Office to work mainly on own initiative. Salary by arrangement. Reply with particulars, Box 7559.

QUALIFIED ARCHITECTURAL ASSISTANT required by busy South Coast Architects whose practice is concerned mainly with multi-storey flats. Write, stating salary required and experience, to Kenneth Parker & Associates, 4, Liverpool Terrace, Worthing, Sussex. 7545

ARCHITECTS require two capable **SENIOR ASSISTANTS**. Commencing salaries £900-£1,000. Permanency and good prospects offered. Stephenson, Gillis and Partners, 2, Saville Chambers, North Street, Newcastle upon Tyne. 7546

WE require qualified and unqualified, experienced **SENIOR and JUNIOR ASSISTANTS**. Salaries by arrangement. After a qualifying period a Bonus scheme is in operation together with a non-contributory pension and life assurance scheme for Assistants. Telephone Chancery 3526 for an appointment. Appointments arranged for lunch hour if required. Woodroffe, Buchanan & Coulter, F/R.I.B.A., 5, Bedford Row, W.C.1. 7557

SMALL informal office requires responsible and enterprising **ASSISTANT**, about intermediate standard. Current projects include Theatre, Hotel, Hospital and Flats. Please apply to Verity & Beverley, 35, Doughty Street, W.C.1, for appointment. TER. 5301. 7558

SMALL office about to expand offers opportunity for advancement to **ASSISTANT** of intermediate standard. Must be good designer and able to take direct responsibility. Salary from £800. Telephone CENTRAL 5766 or write Box 7564.

CAPABLE ASSISTANT, good draughtsman, required for small, busy office, interesting and varied work. Five-day week. Apply to Ervin Katona, A.R.I.B.A., 23, Old Burlington Street, W.1. REG. 1945. 7570

ARCHITECTURAL ASSISTANTS (Senior and Junior) required in busy office handling a wide variety of interesting work including commercial, domestic, school and brewery projects. Please apply, stating experience and salary required, to: Portess & Richardson, Lloyds Bank Chambers, Peterborough. 7574

SENIOR and Intermediate standard ASSISTANT required for position which offers prospects of early advancement. Interesting work mainly on Department Stores and Ecclesiastical Buildings. Apply stating experience and salary required, to: George Baines & Syborn, A.R.I.B.A., 121, Victoria Street, Westminster, S.W.1. 7577

SENIOR ASSISTANT, A.R.I.B.A. or Final standard, required for London Architects' office. Interesting and varied practice. Salary £900 to £1,000 according to experience. Five-day week. Telephone WH1. 2552 or write Box 7578 for appointment.

ASSISTANT ARCHITECT, at least five years' qualified experience, required for busy practice in Brighton. Salary up to £1,000 per annum, three weeks' paid holiday, pension scheme, etc. Box 7612.

INTERMEDIATE standard ARCHITECTURAL ASSISTANT required immediately for work on exhibition and ancillary buildings. Write, giving details of age, training, and experience, if any, to Staff Architect, Olympia Limited, Kensington, W.14. 7626

CONTEMPORARY Office urgently requires enthusiastic **ASSISTANTS** willing to accept responsibility. Several vacancies are open and applications are welcomed from both qualified and student members. The office is in pleasant out of town surroundings and works a five-day week. Salaries by arrangement. Apply with details to Morrison and Partners, St. Almonds House, 103, Belper Road, Derby, or telephone DERby 42827. 7620

ASSISTANT ARCHITECT required to join an imaginative and busy Staff Architect's Department of a large Multiple Organisation with Head Office in Yorkshire. Numerous interesting projects throughout the country. Fair for shop design and detailing an advantage. Fully qualified or experienced intermediate-R.I.B.A. standard. Salary range £700/£1,000. Apply Box 7624.

ARCHITECTURAL ASSISTANTS (Intermediate and Final standard) required for **SOUTHAMPTON OFFICE and NEW FOREST BRANCH**. Lyndhurst. Administrative ability and car owner necessary for Branch Office appointment. Apply, stating age, experience and salary required, to: Hill & Altum, F.R.I.B.A., A.R.I.C.S., 21, Carlton Crescent, Southampton. 7605

BRIGHTON Architect requires semi-senior **ASSISTANTS**, preferably qualified but experience the main object. Salary up to £235 per annum. Box 7613.

VACANCIES for SENIOR GRADES on varied and interesting work. Good salary in accordance with experience. Five-day week. Fitzroy Robinson & Partners, CHANCERY 2111. Ref. G.W.J. 7601

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A NUMBER of competent Senior and Intermediate standard ASSISTANTS (qualified or otherwise) with contemporary outlook and enthusiasm for work, required to join keen design teams specialising in large programme of Hospital, College, School, Bank, Office, etc., projects in busy Leeds Architectural Practice. Salaries ranging from £650 to £1,000 commensurate with ability and experience. Apply in own hand writing, stating age, qualifications, experience, etc., with special reference to subjects referred to. Box 7622.

RICHARD COSTAIN LIMITED wish to appoint additional staff to their Architect's Department in London. There are vacancies for men recently qualified or near qualifying, and for qualified men who have done several years' practical work. The posts will appeal to architects who have, or are seeking experience, in the industrial field—factories, office blocks, laboratories, etc. Please write, stating age and details of training and experience to Personnel Officer, 111, Westminster Bridge Road, London, S.E.1. 7741

ARCHITECTURAL ASSISTANTS required for design groups to start new office in Bradford. Large programme of interesting modern projects. Salaries from £600 for Junior Grades and from £750 for Senior Grades depending on ability and experience. Enrolment week for interviews, January 25-29. Telephone or write to Shingler & Risdon, 47, Bedford Row, W.C.1 (CHA 2951). 7726

ASSISTANTS required, Senior and Junior, with experience in Industrial and Commercial schemes. Varied and interesting work; valuable experience; 5-day week. Apply in writing giving full particulars to Bostock & Partners, Central Hall Buildings, Station Approach, Southall. 7728

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ARCHITECTURAL ASSISTANT required for University laboratories and other buildings. Good draughtsman with knowledge of building construction. At least 5 years' office experience. Reply giving details of experience and salary desired to Caroe & Partners, 16, Great College Street, Westminster. 7731

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ARCHITECTURAL ASSISTANTS required by Hasker & Hall, L.F.R.I.B.A., for senior and intermediate positions. Good salary with scope for initiative and responsibility. Write to 13, Welbeck Street, W.1, or telephone WELBECK 0051. 7743

KEEN ASSISTANTS required, busy Belfast practice. Finals and Intermediate standard. Flat available. Apply in writing to: P. & B. Gregory, F.R.I.B.A., M.R.I.A.I., Chartered Architects, 5, Crescent Gardens, University Road, Belfast, 7. 7744

BURLES & NEWTON require ARCHITECTURAL ASSISTANTS in their London and Southend offices. Age 20-25. Intermediate/Final standard. Apply 26, Great James Street, W.C.1, or 36/38, County Chambers, Weston Road, Southend. 7775

SIR ROBERT TASKER & PARTNERS immediately require ARCHITECTURAL ASSISTANTS (Final and Intermediate) in office with varied practice. Write to No. 3, Field Court, Gray's Inn, W.C.1, or telephone CHANCERY 4913 stating salary required.

ARCHITECTURAL ASSISTANTS required in West End office. Should have good knowledge of building construction and several years' office experience. Box 7777.

DAVID STERN and PARTNERS require two able ASSISTANTS of minimum of three years' office experience and at least Intermediate standard. Lively office engaged on flats, offices, and factory developments. Keen design-sense and good draughtsmanship essential. Five-day week. Salary according to ability: £900-£1,000 p.a. Apply in writing to: 24, Gloucester Place, London, W.1. 7773

GRENFELL BAINES & HARGREAVES require school trained assistant, preferably with two years' experience, for small expanding office in Manchester with interesting variety of work. University buildings, Schools, Banks, etc. Considerable amount of freedom and responsibility given to person with good design ability and personal initiative. Pleasant country to live within easy commuting distance. Salary £900-£1,000 p.a. Apply: 423 Oxford Road, Manchester 13. 7774

A FIRST RATE LONDON PRACTICE in the Baker Street Area recommended by Senior Assistant to those considering a move. I will write to all who reply and give full details of our varied work, profit sharing and pension schemes, and a description of this progressive office. The partners are realistic about salaries and nobody stands still after joining us. Box 7736.

NORMAN & DAWBARN require experienced ARCHITECTS for interesting projects both here and overseas. Applicants should be good designers. Salaries from £900 upwards. Phone or write for an appointment to 7, Portland Place, W.1. 7745

ARCHITECT near London requires experienced and qualified EXECUTIVE ASSISTANT. Ability to undertake responsibility and hard work would be rewarded. Give details, commitments and age to Box 7755.

ARCHITECTURAL ASSISTANT with experience in Schools, Light Industrial work and Housing, required immediately. Permanent position to suitable applicant. Write in own handwriting to Scales & Howard Bradford, National Provincial Bank Chambers, Terminus Road, Eastbourne. 7761

HENRY C. SMART & PARTNERS require experienced ASSISTANT for School and other projects. Write stating age, experience and salary required to 120, Moorgate, London, E.C.2. 7759

HITCHIN ARCHITECT'S ASSISTANT urgently required. Intermediate standard or under. Small progressive firm. Apply Martin Priestman, One Churchyard, Hitchin 2844. 7756

ARCHITECTS' CO-PARTNERSHIP requires a qualified and nearly qualified ASSISTANT with some experience for university work, teachers' training college. Write to 44, Charlotte Street, W.1, or phone LANGHAM 5791. 7763

ARCHITECT'S DEPARTMENT in City requires an ASSISTANT of about Intermediate R.I.B.A. standard with some office experience. Salary £700-£750 and work of an interesting and varied nature. Secure future for suitable applicant. Write giving particulars of age, experience and salary required. 7766

PRE-FINAL ASSISTANT required in small private practice. Varied work with opportunity to gain all-round experience. Geoffrey Shires, A.R.I.B.A., 69, Walton Street, Chelsea, S.W.3. Tel. KNIGHTSBRIDGE 8677. 7767

THREE ASSISTANTS required for long established Architectural practice in Yorkshire on public and private work. Must have contemporary outlook and be able to work on own initiative and preferably be car drivers. Housing accommodation will be provided. Apply giving full particulars and salary required to Box 7768.

ARCHITECTURAL ASSISTANT required. Intermediate standard with at least three years' office experience. Five-day week. Salary according to ability and experience. Phone Secretary, Hyde Park 2051. 7769

RAGLAN SQUIRE and PARTNERS require Intermediate / Final ARCHITECTURAL ASSISTANTS for projects home and overseas. Please write only, stating age, experience and salary required to 3, Hobart Place, S.W.1. 7770

GRENFELL BAINES & HARGREAVES require SENIOR ASSISTANTS with at least four years' experience for interesting variety of work in their Manchester office. Salary about £1,200 p.a. Please apply to: D. A. Cobb, 423, Oxford Road, Manchester 13. 7771

ARCHITECT'S Department of City Development Company still requires at least two Intermediate Standard ASSISTANTS to deal with interesting redevelopment work. Excellent salaries paid to capable staff. Please ring Monarch 6238 for an appointment. 7765

POWELL & ALPORT require ASSISTANT in their Croydon office. Salary according to experience in range £600-£850, plus bonus. Write stating age, experience and salary required. 7659

ARCHITECTURAL ASSISTANTS (2), Senior and Intermediate standard, required for expanding office. Varied and interesting projects with scope for initiative and responsibility. Apply to Mr. Donald Bradshaw, F.R.I.B.A., 10, Dale Street, Liverpool, 2. 7660

ARCHITECTURAL ASSISTANTS required, all grades, for busy office engaged in widely varying projects. Salary by arrangement. Apply Essex, Goodman & Suggitt, 21, Waterloo Street, Birmingham, 2. Telephone MID 7871. 7661

ARCHITECTURAL ASSISTANTS required. R.I.B.A. Intermediate standard with some office experience. Varied and interesting work. Five-day week. Good salaries for keen and competent people. William Crabtree, F.R.I.B.A., 1, Robert Adam Street, W.1 (WELBECK 9909). 7662

LEWIS SOLOMON, KAYE & PARTNERS rapidly expanding practice require ARCHITECTS and ASSISTANTS with initiative and competence to work on major design projects in the London area. These projects include Comprehensive Development Schemes, Hotels, School Offices, and Luxury Flats. Good salaries according to ability and experience, luncheon vouchers five-day week, and excellent working conditions. Write 5, Holborn Circus, Thavies Inn House, E.C.1, or telephone CITY 8811, quoting SLB in both instances. 7768

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ARCHITECTURAL ASSISTANT wanted immediately. Must have passed Intermediate examination of the R.I.B.A. or equivalent, and be a quick and accurate Draughtsman. Starting salary will be between the range of £11 per week at the age of 21 and £13 15s. per week at the age of 27. Candidates should preferably be within these age limits.

Candidates for either of these positions should immediately submit an application giving full particulars in chronological order of education, training, posts held, and salary of the last one to: The Chief Engineer, Arthur Guinness Son & Co. (Dublin) Ltd., St. James's Gate, Dublin; also, if asked to attend for interview at Dublin, all expenses will be paid.

ARCHITECTURAL ASSISTANTS. Due to our continued expansion, an extensive building development programme is in progress covering a variety of interesting projects throughout the British Isles. Vacancies exist of particular appeal to young men who have reached Intermediate R.I.B.A. standard or equivalent. They will be given every encouragement to exercise initiative and acquire wider experience in a well-established department. A salary of £850 p.a. upwards will be paid depending on experience. A five-day week is in operation, and Staff Life Assurance and Pension Scheme. Applicants should apply in writing to: Employment Manager (Ref. AA/2/AJ), Littlewoods Mail Order Stores Ltd., Spinney House, Church Street, Liverpool X.

PICK, EVERARD, KEAY & GIMSON invite applications from qualified ARCHITECTS and ASSISTANT ARCHITECTS who have passed the R.I.B.A. Intermediate examination. The work is varied, covering commercial, industrial, hospital, local authority and domestic schemes. Assistants are encouraged to accept full responsibility for jobs from their inception to completion. Assistance will be given with housing if required, and car allowances are available. Salaries offered are commensurate with experience and ability. Applications should be made in writing, giving details of qualifications and experience, to: 6, Millstone Lane, Leicester.

ASSISTANT required, Intermediate standard. A State experience and salary required. R. J. A. Wilson, Chartered Architect, 15, King Street, Hereford.

ROBERT MATTHEW & JOHNSON-MARSHALL have vacancies in their Edinburgh and Dundee offices for ASSISTANTS at salaries from £800 upwards; wide variety of University, Hospital and Housing projects. Applications should be marked "Confidential" and addressed to 31, Regent Terrace, Edinburgh 7.

ASSISTANT required for interesting work in London and the Provinces. Good prospects for ambitious young man. Write stating age, experience and salary required to Westmore & Partners, 121, Cheapside, E.C.2.

OLIVER LAW & PARTNERS, 36, Ebury Street, S.W.1, require experienced ARCHITECTURAL ASSISTANT, full qualifications not essential but must be good draughtsman able to prepare working drawings, etc.

SENIOR AND INTERMEDIATE ARCHITECTURAL ASSISTANTS required in Company's Architectural Department in Nottingham working on prefabricated systems and the design and construction of traditional buildings. Qualifications desirable but not essential. Varied experience and enthusiasm required. Please write to Staff Architect, W. J. Simms Sons & Cooke Ltd., Building and Civil Engineering Contractors and Prefabricators, Haydn Road, Sherwood, Nottingham.

ARCHITECTURAL ASSISTANTS and **DRAUGHTSMEN** with initiative for interesting and varied work. Speed and attention to detail with minimum of supervision necessary. Apply in writing, stating experience, qualifications, age and salary required to Chief Surveyor, 22, King Street, St. James's, London, S.W.1.

ALISTER MACDONALD & PARTNERS require in their Bedford Street, Strand, office ARCHITECTURAL ASSISTANTS for varied and interesting work. Must have sound knowledge of construction and be good draughtsmen. Medium-sized office with congenial atmosphere. Five-day week and luncheon vouchers. Salary according to age, experience and ability. Phone Temple Bar 3785 for interview.

ASSISTANTS of Intermediate and Final standard required immediately in busy Yorkshire office. Interesting and varied work giving scope for design and responsibility. Salary by arrangement. Apply to Foster-Smith, Wallis and Anderson, A./A./A.R.I.B.A., 37, Hall Gate, Doncaster.

SMALL London office with general practice requires ASSISTANTS with some experience to assist in administration of contracts. Write experience and salary required to Box 1105.

RUSH & TOMPKINS, LTD. require ASSISTANT of about Intermediate standard at Sycup, Kent, Head Office. Telephone roots Cray 4411 Extn. 18 for appointment.

JOHN WRIGHT ASSOCIATES require an ASSISTANT for their West Indies office. Please write to 7, Cromwell Place, London, S.W.7.

ARCHITECTURAL ASSISTANTS of all grades required by the Architect's Department of a Major building Company based upon Liverpool. The successful applicants will join the groups responsible for the design and development of multi-storey offices and flats, housing, shops and industrial buildings. Applications with full particulars and salary desired to Box No. G298, Lee & Nightingale Ltd., Liverpool.

TAYLOR & CROWTHER, Chartered Architects of Truro, Cornwall, require qualified, preferably school trained ASSISTANT. Work will be of an interesting modern nature and the applicant will have to prove his real interest, efficiency, acceptance of responsibility and awareness, in his application. Age limit 28.

ARCHITECTURAL ASSISTANTS required in busy Provincial Office carrying out work on Office Buildings, Schools, Factories, Housing and other varied works. Bonus and Pension Schemes in operation. Salary according to experience and qualifications. Apply giving full particulars to: Needham, Thorp & White, 5, High Petergate, York.

ASSISTANT ARCHITECT (A.R.I.B.A.) for varied work including housing, churches and community buildings. Good working conditions, pension scheme, salary range £900 to £1,100, according to experience. Apply Selby J. Clewer, F.R.I.B.A., Bournville Village Trust, Birmingham 30.

QUALIFIED ARCHITECT'S ASSISTANTS required for work on a large office development in Morden and on flats. Five-day week. Salary according to experience and capability. Ring LANGHAM 5051 for appointment or write to A. Green, A.R.I.B.A., 23, Fitzroy Street, W.1.

BASIL SPENCE & PARTNERS require qualified and experienced ARCHITECTS to fill positions of responsibility in a major building programme. Write to 48, Queen Anne Street, W.1, stating experience and salary required.

SENIOR ASSISTANT ARCHITECT required for interesting and varied work, salary according to experience and qualifications. Apply: Ian Fraser & Associates, Chartered Architects, 30/31, Barton Arcade, Manchester, 3. Telephone: Deansgate 4233.

BIRMINGHAM ARCHITECTS require **SENIOR AND JUNIOR ASSISTANTS** for large industrial work and also general practice. Five-day week. Good salary according to experience. Box 7718.

ASSISTANT required. Maidstone. Interesting and varied work. Must be neat draughtsman with Inter. Write stating age, experience, salary, when available. Box 7719.

FARMER AND DARK require experienced ARCHITECTS, all levels, offices, laboratories, factories, schools, etc. Apply in writing stating salary required. Romney House, Tufston Street, S.W.1.

ARCHITECT required by north-west Brewery. A knowledge of reconstructions and development of licensed premises would be an advantage, but applicants with wide experience in architects' general practice considered. Applicants, not over 35, should apply stating age, qualifications, experience, past and present appointments and salary required, to Box 7721.

ASSISTANT ARCHITECT required for British Transport Hotels and Catering Services, located London. R.I.B.A. qualifications or equivalent degree preferable. Salary according to qualifications and experience. Apply in writing, giving full personal details to Officer for Personnel and Catering Services, St. Pancras Chambers, London, N.W.1.

ARCHITECTURAL ASSISTANT required for private practice. Five-day week. Please write, stating age, training, experience and salary required. Alexander Graham, Chartered Architect, 15, The Wytham, Worcester.

ARCHITECTURAL ASSISTANTS required. Final and Intermediate standard. Churches, schools and general practice. Opportunity for experience and responsibility. State age, qualifications, experience and salary required. Apply Sandy & Norris, 134, Newport Road, Stafford.

ARCHITECTURAL ASSISTANT urgently required for work of general domestic character. Final or Intermediate standard. Experience in design, supervision and preparation working drawings and specifications essential. Annly giving details of education, experience, salary and age to: J. S. Whitehead & Whitehead, 51A, South Street, Chichester.

ARCHITECTS with offices in City and at Loughton, Essex, require **SENIOR ASSISTANT**. Ability in design and able to work on own initiative. Salary £900 to £1,000 according to experience. Apply: Kenneth Linay, Joseph Hill & Partners, 24, St. Mary Axe, E.C.3.

ARCHITECT'S Department Schwepes Group require ASSISTANTS of Intermediate to Final standard to work in new offices on factory extensions, new depots, offices and canteens. Assistants will be required to undertake full administration of contracts. Survey knowledge is an advantage. Salary by arrangement, canteen facilities available. Please telephone AMB 1212, extension 326, or write to the Architect, Schwepes Limited, 50, Eastbourne Terrace, Paddington W.2.

A.R.I.B.A. wanted immediately, school trained, minimum five years' post-graduate experience, with design and administrative ability to take charge of London office of provincial firm. Minimum starting salary £1,200 p.a. with prospect of association after two years. Apply in writing to Messrs. Muncie & Kennedy, 34, Seymour Street, London, W.1.

VERNER REES, LAURENCE & MITCHELL require ASSISTANTS for work on University projects. Please telephone PARK 3900 for interview or write to 38, Holland Villas Road, W.14.

BIRMINGHAM CO-OPERATIVE SOCIETY LIMITED, ARCHITECTURAL ASSISTANT required. Intermediate to Final standard. Some experience in modern shop fitting would be an advantage. Salary by arrangement. Apply giving full details of qualifications, age, experience to Personnel Officer, Birmingham Co-operative Society Ltd., Castle Street (off High Street), Birmingham, 4.

ARCHITECTS. Vacancies offering excellent opportunities for those interested in non-traditional as well as traditional building. Design ability is important. Please give full details of age, experience and salary to Box 7677.

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THE NEWLY ESTABLISHED ARCHITECTS DEPARTMENT

of a large Contracting Organisation requires, in London,

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at all levels up to Group Leaders in charge of projects, for design work on an anticipated programme of major developments of varying types, and for the subsequent preparation of working drawings and supervision of works on site.

Great scope for advancement is available to competent men.

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All communications will be acknowledged and treated as confidential.

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Permanent appointments, with good salaries and covering a wide range of experience, are immediately available at Head Office.

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ARCHITECTURAL ASSISTANT required in busy City office. Assistants should be capable of carrying through schemes from sketch stage to final construction. Mainly Office and Residential buildings in London area. Varied and interesting projects. Long-term engagement to right person. £1,300 per annum, plus Luncheon Vouchers, and car expenses. Five-day week. Applicants must be capable of producing sketch schemes of contemporary buildings, and preparing working drawings. Box 7667.

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Projects in hand include:
Major Commercial developments.
Industrial projects including factories.
Laboratories, etc.
Multi-storey dwellings.
Schools.
Housing.
Proprietary systems.
Staff are also required to work with the development Architect in the Research and Development Division.

The office offers opportunity for advancement and for close collaboration with all other branches of the building industry. Applicants should apply in the first instance to Personnel Manager (Mr. A.M.), John Laing and Son Limited, Building and Civil Engineering Contractors, London, N.W.7. 7630

REGIONAL ARCHITECT required to cover the Lancashire and Yorkshire Area. The person appointed will deal with negotiations, site surveys, sketch designs and supervision of contracts in conjunction with the Head Office of a National Composite Design and Construction Firm. Qualified Architects with all-round ability and personality, and with Local Authority experience an advantage, are invited to apply in confidence to Box 7643.

SENIOR ARCHITECTURAL ASSISTANT required, must be qualified and good draughtsman, with at least seven years' practical experience; commence soon as possible, excellent prospects for anyone really keen and efficient. Salary £1,000 p.a. upwards according to ability, with annual bonus. Light and spacious London offices. Write full details of experience, age, and when available to Box 7655.

AN excellent opportunity for two qualified **SENIOR ARCHITECTURAL ASSISTANTS** to join immediately small but long established London firm to become Associate Architects in near future due to present reorganisation of firm. Previous experience in private practice, good draughtsmanship and keenness essential. Ability, accuracy and speed of execution will determine future salary and share of profit, but good salary from start. Practice covers general work in London and Home Counties. Write full details to Box 7656.

ASSISTANT required. Final standard, for a varied practice in Kingston office of Barber, Bundy & Greenfield, F./A./A.R.I.B.A. Salary by arrangement. Reply to 5, Apple Market, Kingston-upon-Thames. 7637

EXCELLENT opportunity for **SENIOR and INTERMEDIATE ASSISTANTS** in a permanent and progressive appointment with Midland firm of Architects who are working on large projects of an advanced type of design, including comprehensive development schemes, multi-storey office buildings, multi-storey flats, shopping centres, schools, banks, public houses and industrial projects. Apply Box 7638.

JOHN H. D. MADIN, Chartered Architect, 85/85, Hagley Road, Birmingham 16, has further vacancies for **SENIOR and INTERMEDIATE ASSISTANTS**. Suitable senior assistants would be required to take full responsibility for large scale interesting projects. 7639

CROYDON. Experienced and competent **ARCHITECTURAL ASSISTANT** required. Write stating fullest particulars to Graham Crump & Denis Crump, F./A./A.R.I.B.A., 43, George Street, Croydon. 7640

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MAIDSTONE. Kent, vacancies for **ARCHITECTURAL ASSISTANTS**, five-day week, non-contributory pension. House assistance scheme. Three weeks holiday after first year. Box 7646.

ARCHITECTURAL STAFF urgently required for Intermediate standard in busy office at Cuckfield. Bonus and Pension schemes in operation. Write stating experience and salary requirements to Mr. H. H. Blackburn, A.A.R.I.B.A., Broadway House, Crackenedge Lane, Dewsbury. 7648

ARCHITECTURAL ASSISTANT with contemporary outlook required immediately for a wide variety of work. Should be qualified, sound knowledge of construction, with experience and ability to manage jobs. Five-day week. Salary range £800-£1,000. Write giving full particulars to James H. Cox, A.R.I.B.A., 12, Rickfords Hill, Temple Square, Aylesbury, Bucks. Tel. Aylesbury 4531. 7652

NOTTINGHAM Architects require **ASSISTANTS** in expanding practice for Hospitals, Garages, Public Houses, Banks, Shops, etc. Salaries according to ability and experience, £750 to £1,000 and bonus. Apply for an appointment to Eberlin and Partners, 3, College Street, Nottingham. 7653

ARCHITECTURAL ASSISTANTS, Intermediate and Qualified, for medium sized varied London West End practice. Interesting contemporary work, opportunity to exercise initiative. Salary range £700 to £1,200. Apply Box 7654.

ARCHITECTURAL ASSISTANTS, Assistant Architects and Intermediate grade Assistants, required by Wates Limited for housing and commercial work. Salaries according to experience and qualifications. Permanent and progressive positions. 5-day week, pension and bonus. Write, stating age, experience and salary to: Personnel Manager, Wates Limited, 1260, London Road, Norbury, S.W.16. 7780

EXPERIENCED ASSISTANT required for Private Practice on South Coast. Knowledge of hospital work an advantage. Apply with particulars of experience and expected salary. Box 7779.

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3s. per line; minimum 12s. Box Number, including forwarding replies. 2s. extra.

ASSISTANT, 27, experienced in running small contracts, wants to work with forward-thinking private architect. Go anywhere for right environment—home or abroad. Box 7587.

ASSISTANT (36), general experience including housing and flats, stores, schools and alteration work. Box 7715.

ARCHITECT, school trained, with 10 years' London experience, seeks another top-level position where initiative and enthusiasm welcomed. Experienced in design and administration over a wide field including large London contracts. Box 7772.

ARCHITECT with 12 years' varied experience London, wishes to join small provincial office, South or Midlands. Prospects important. Car owner. Box 7765.

ABLE and experienced **ASSOCIATE**, 32, at present resident in Sussex, requires senior position with progressive minded firm. Box 7791.

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ARCHITECTURAL ASSISTANT, Parts I & II R.I.B.A. Final, seeks evening and/or week end work in central London. Box 7732.

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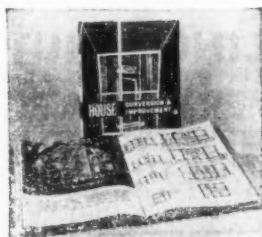
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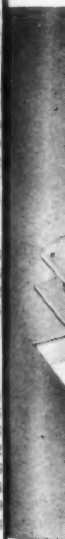
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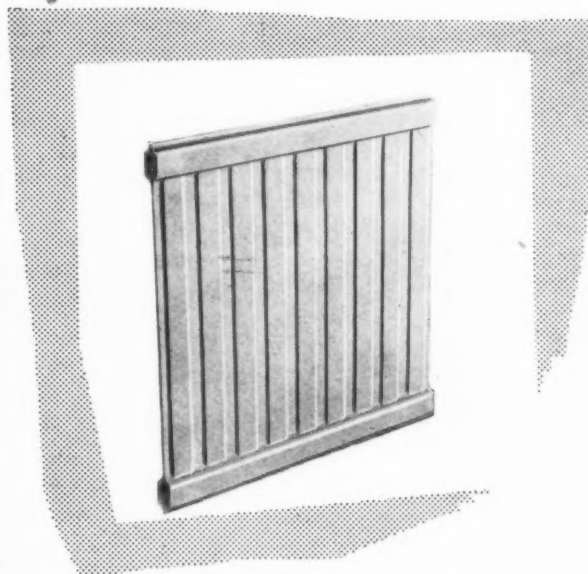
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EVERYBODY KNOWS A STELRAD!



What a Corker!

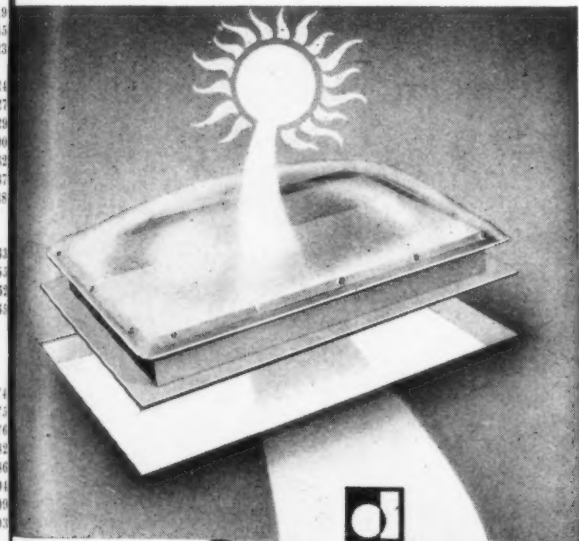


In the building programme of New Zealand Stelrad radiators are prominently featured. They have been specified for many different buildings, and include both wall and column types. The Stelrad range covers every building need from angled wall radiators to column radiators curved for bay window fixing. The dimensions and heat emissions of each type and size are clearly set out in our catalogue to assist you in your calculations. May we send you the latest edition?

**STEEL RADIATORS
LIMITED**

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DOMELIGHTS

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Duplus Domelights in Perspex—weatherproof and shatter resistant. Special turn-down edge gives additional strength and better weather proofing.

Circular up to 70" diameter.
Rectangular up to 106" x 70".

Prefabricated curbs available. Full details sent on request.

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A Bilston ATLANTA

will be perfect...



NOW WHICH SIZE?

It's no problem! Whether the plan allows for a small or large bathroom, there is a Bilston Atlanta that will fit. Selected for the Design Centre, the Atlanta is made in five sizes. Every home owner will enjoy the bath that has the famous Bilston finish and durability, and the skilful design that makes the Atlanta the safest, most comfortable bath of all. The Atlanta costs no more than an ordinary bath.

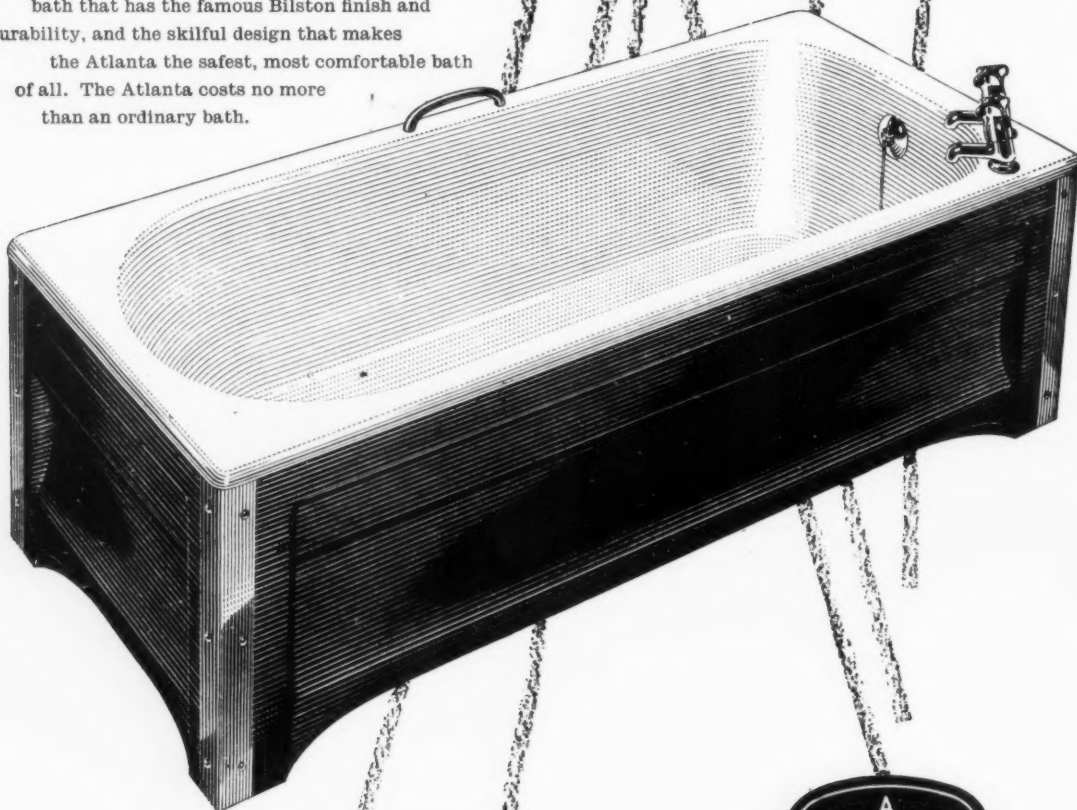
54"

60"

66"

61"

72"



All this with the ATLANTA-

Fiat bottom

the Atlanta flat bottom helps to prevent slipping... ensures comfort. Particularly suitable where a shower is to be fitted.

Safety

the low sides make the Atlanta safer for young and old. It can be fitted to give an overall height of only 16".

Taps

can be fitted centrally, or on either corner to facilitate installation and maintenance.

Fittings

the Atlanta is supplied with or without overflow... with or without hand grip. The feet can be adjusted to accommodate all types of trap, including the Bilston "Wasteflo" pre-fabricated waste, trap and overflow unit. Also available with the Bilston O.P. Hand Grip specially designed to meet the needs of the elderly or infirm.

Colours

the Bilston range includes white or the exact colour required for any decorative scheme.

A
BILSTON
BATH

- Atlanta
- Magna
- Cresta
- Marina
- Mermaid
- Bermuda

**BILSTON—the bath
SPECIALISTS**

Bilston Foundries Ltd. Bilston, Staffordshire. Illustrated literature is available on request

