The Architects' JOURNAL for June 12, 1958

THE ARCHITECTS' JOURNAL

standard contents

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

No. 3302] [Vol. 127

THE ARCHITECTURAL PRESS

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

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

IHVE	Institution of Heating and Ventilating Engineers. 49, Cadogan Square. Sloane 1601/3158
IIBDID	Incorporated Institute of British Decorators and Interior Designers. 100, Park Street, Grosvenor Square, W.1. Mayfair 7086
ILA	Institute of Landscape Architects, 2, Guilford Place, W.C.1. Holborn 0281
I of Arb	Institute of Arbitrators. Hastings House, 10, Norfolk Street, Strand, W.C.2. Temple Bar 4071
IOB	Institute of Builders. 48, Bedford Square, W.C.1. Museum 7179
IQS	Institute of Quantity Surveyors. 98, Gloucester Place, W.1. Welbeck 1859
IR	Institute of Refrigeration. Dalmeny House, Monument Street, E.C.3. Avenue 6851
IRA	Institute of Registered Architects. 47, Victoria Street, S.W.1. Abbey 6172
ISE	Institution of Structural Engineers. 11, Upper Belgrave Street, S.W.1. Sloane 7128
LDA	Lead Development Association. 18, Adam Street, W.C.2. Whitehall 4175
LMBA	London Master Builders' Association. 47, Bedford Square, W.C.1. Museum 3891
LSPC	Lead Sheet and Pipe Council. Eagle House, Jermyn Street, S.W.1. Whitehall 7264/4175
MAFF	Ministry of Agriculture, Fisheries and Food. Whitehall Place, S.W.1. Trafalgar 7711
MOE	Ministry of Education. Curzon Street House, Curzon Street, W.1. Mayfair 9400
MOH	Ministry of Health. 23, Savile Row, W.1. Regent 8411
MOHLG	Ministry of Housing and Local Government. Whitehall, S.W.1. Whitehall 4300
MOLNS	Ministry of Labour and National Service. 8, St. James' Square, S.W.1. Whitehall 6200
MOS	Ministry of Supply. Shell Mex House, W.C.2. Gerrard 6933
MOT	Ministry of Transport. Berkeley Square House, Berkeley Square, W.1. Mayfair 9494
MOW	Ministry of Works. Lambeth Bridge House, S.E.1. Reliance 7611
NAMMC	Natural Asphalte Mine Owners and Manufacturers Council. 94/98, Petty France, S.W.1. Abbey 1010
NAS	National Association of Shopfitters. 9, Victoria Street, S.W.1. Abbey 4813
NBR	National Buildings Record. 31, Chester Terrace, Regent's Park, N.W.1. Welbeck 0619
NCBMP	National Council of Building Material Producers, 10, Storey's Gate, S.W.1 Abbey5111
NEFMAI	National Employers Federation of the Mastic Asphalt Industry. 21, John Adam Street, Adelphi, W.C.2. Trafalgar 3927
NFBTE	National Federation of Building Trades Employers. 82, New Cavendish Street, W.1. Langham 4041/4054
NFBTO	National Federation of Building Trades Operatives. Federal House, Cedars Road, Clapham, S.W.4. Macaulay 4451
NFHS	National Federation of Housing Societies. 12, Suffolk St., S.W.1. Whitehall 1693
NHBRC	National House Builders Registration Council. 58, Portland Place, W.1. Langham 0064/5
NPL	National Physical Laboratory. Head Office, Teddington. Molesey 1380
NRDB	Natural Rubber Development Board. Market Buildings, Mark Lane, E.C.3. Mansion House 9383
NSAS	National Smoke Abatement Society. Palace Chambers, Bridge Street, S.W.1. Trafalgar 6838
NT	National Trust for Places of Historic Interest or Natural Beauty. 42, Queen Anne's Gate, S.W.1. Whitehall 0211
PEP	Political and Economic Planning. 16, Queen Anne's Gate, S.W.1. Whitehall 7245
RCA	Reinforced Concrete Association. 94, Petty France, S.W.1. Abbey 4504
RIAS	Royal Incorporation of Architects in Scotland. 15, Rutland Square, Edinburgh. Fountainbridge 7631
RIBA	Royal Institute of British Architects. 66, Portland Place, W.1. Langham 5533
RICS	Royal Institution of Chartered Surveyors. 12, Great George Street, S.W.1. Whitehall 5322/9242
RFAC	Royal Fine Art Commission. 5, Old Palace Yard, S.W.1. Whitehall 3935
RS	Royal Society. Burlington House, Piccadilly, W.1. Regent 3335
RSA	Royal Society of Arts. 6, John Adam Street, W.C.2. Trafalgar 2366
RSH	Royal Society of Health. 90, Buckingham Palace Road, S.W.1. Sloane 5134
RIB	Rural Industries Bureau. 35, Camp Road, Wimbledon, S.W.19. Wimbledon 5101
SBPM	Society of British Paint Manufacturers. Grosvenor Gardens House, Grosvenor Gardens, S.W.1. Victoria 2186
SE	Society of Engineers. 17, Victoria Street, Westminster, S.W.1. Abbey 7244
SFMA	School Furniture Manufacturers' Association. 30, Cornhill, London, E.C.3. Mansion House 3921
SIA	Society of Industrial Artists. 7, Woburn Square, London, W.C.1. Langham 1984/5
SIA	Structural Insulation Association. 32, Queen Anne Street, W.1. Langham 7616
SNHTPC	Scottish National Housing. Town Planning Council. Hon. Sec., Robert Pollock, Town Clerk, Rutherglen
SPAB	Society for the Protection of Ancient Buildings. 55, Great Ormond Street, W.C.1. Holborn 2646
TCPA	Town and Country Planning Association. 28, King Street, Covent Garden, W.C.2. Temple Bar 5006
TDA	Timber development Association. 21, College Hill, E.C.4. City 4771
TPI	Town Planning Institute. 18, Ashley Place, S.W.1. Victoria 8815
TTF	Timber Trades Federation. 75, Cannon Street, E.C.4. City 5040
WDC	War Damage Commission. 6, Carlton House Terrace, S.W.1. Whitehall 4341
ZDA	Zinc Development Association. 34, Berkeley Square, W.1. Grosvenor 663

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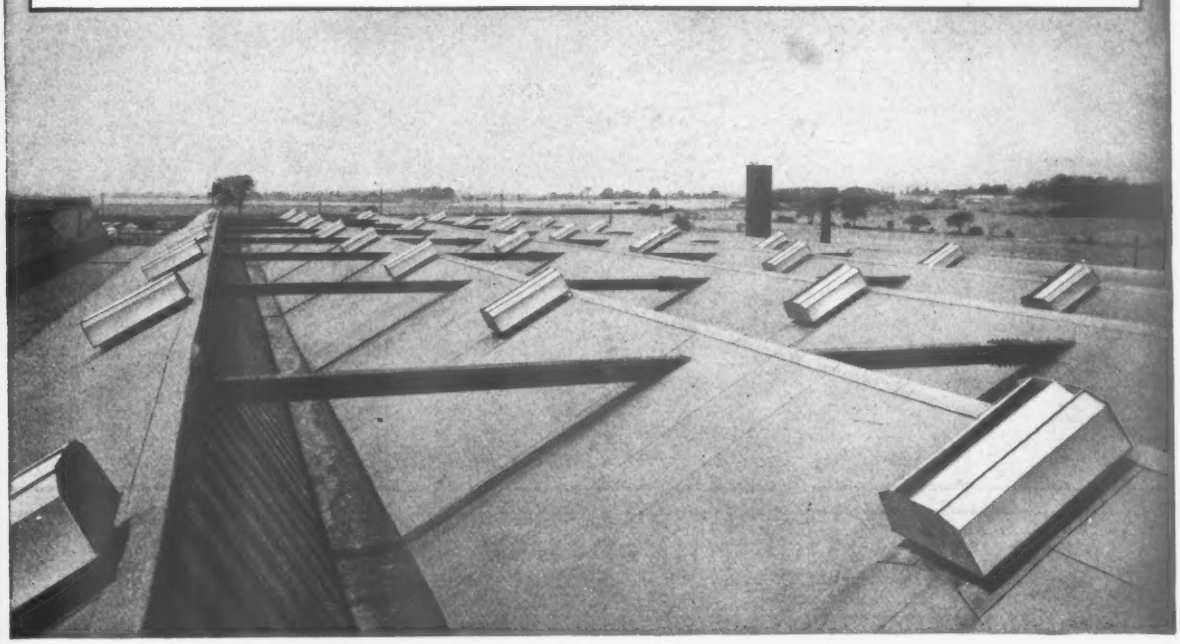

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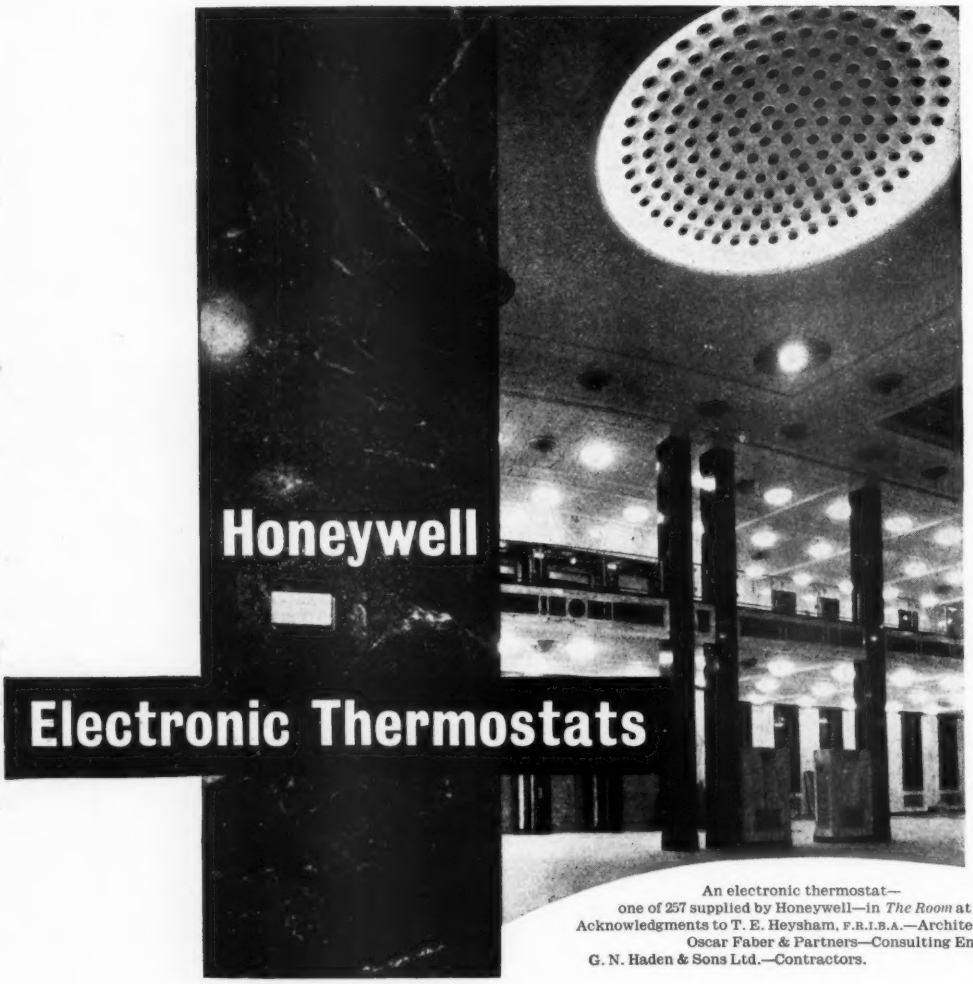

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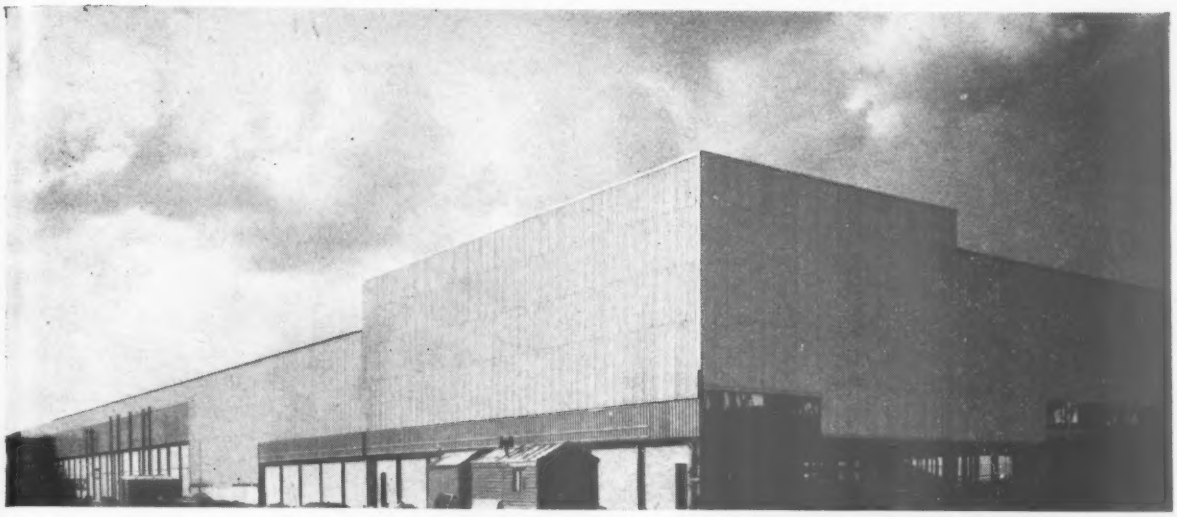

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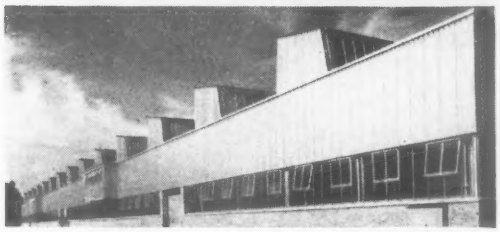

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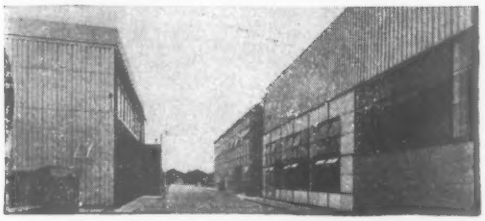

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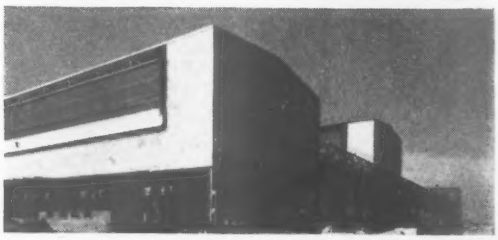

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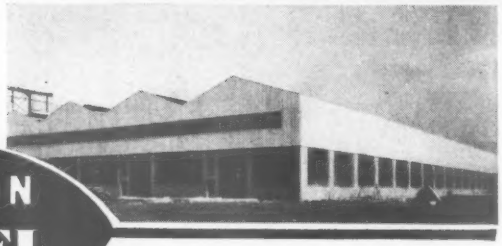

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Illustrations :

Top : Robertson Q-Panel, Type QSG, being erected at the Caterpillar Tractor Company, Tannochside. Architects : Wilson, Hamilton and Wilson, Glasgow.

2 : Robertson Q-Panel, Type QF, at the Rover Company, Solihull. Consulting Engineer : Thomas Bedford, A.M.I.C.E. Architects : Hasker and Hall, London.

3 : Robertson Q-Panel at the new Spare Parts Depot for The Ford Motor Company Limited at Aveley, Essex. Architects : E. R. Collister & Associates General Contractors : James Crosby & Sons Ltd.

4 : Robertson Q-Panel, Type QF, at the British Thomson-Houston Works at Larne, Northern Ireland. Contractors : Holland & Hannen and Cubitts, Ltd.

5 : Robertson Q-Panel, Type QF, at Metropolitan-Vickers Electrical Company, Manchester. Design by Metropolitan-Vickers Architects Department.

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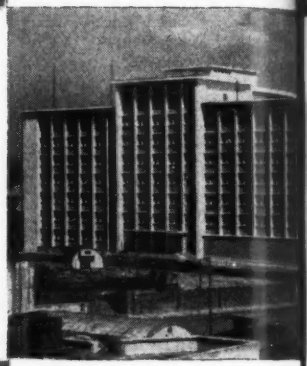

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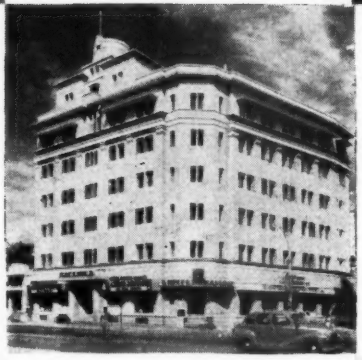

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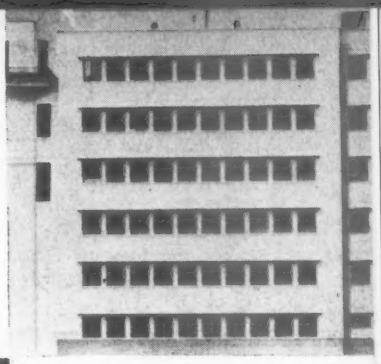

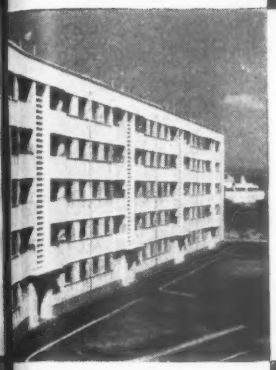

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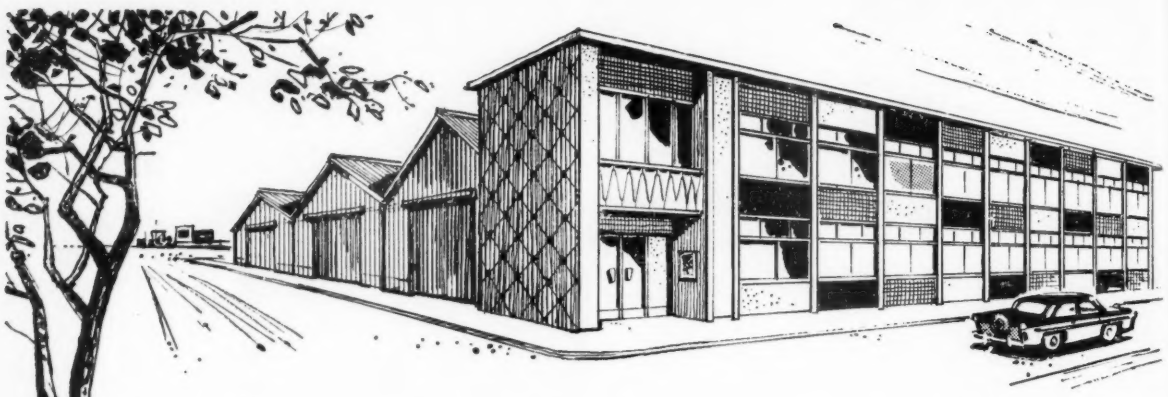

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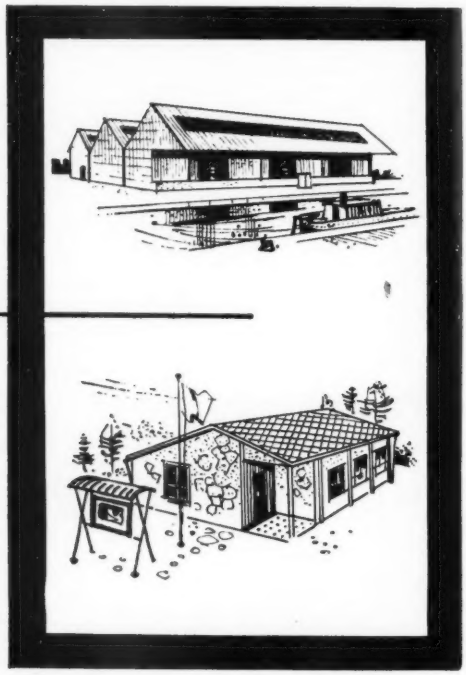

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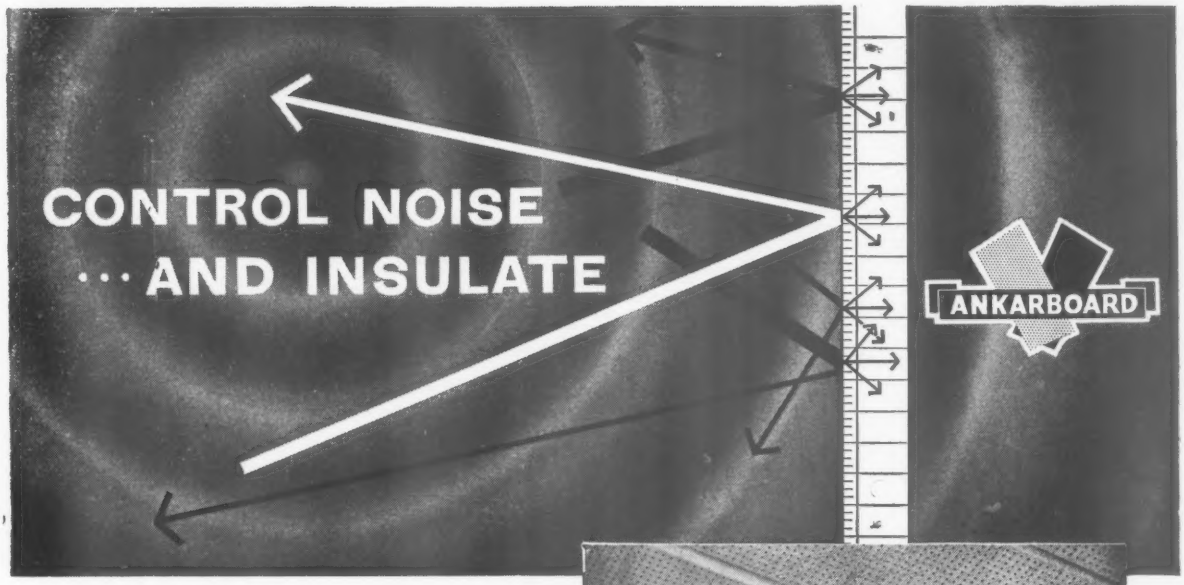

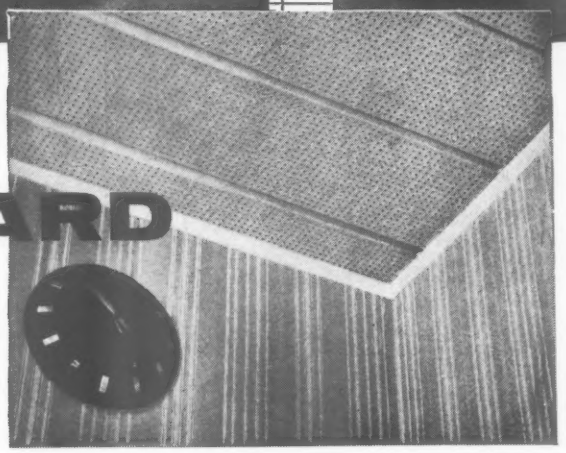

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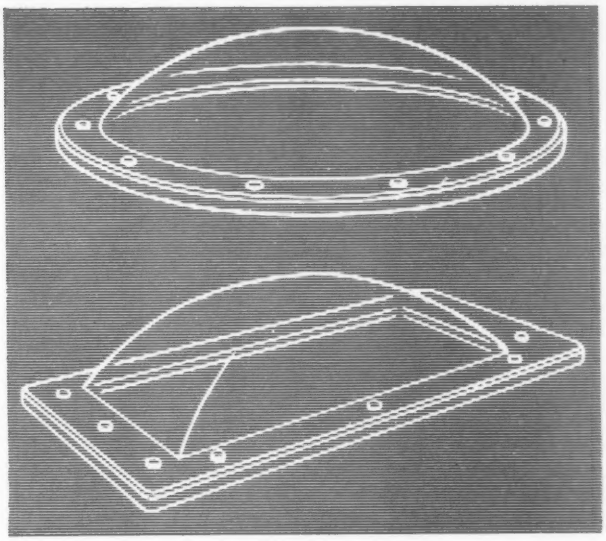

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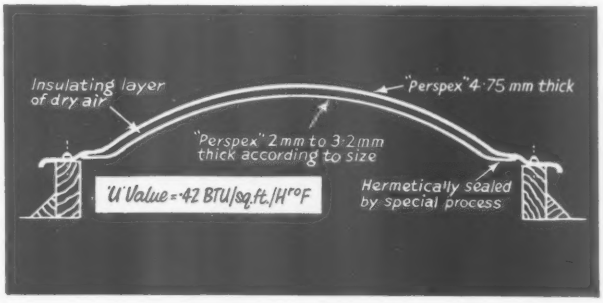

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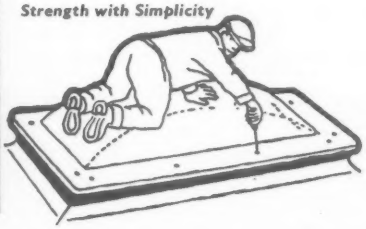

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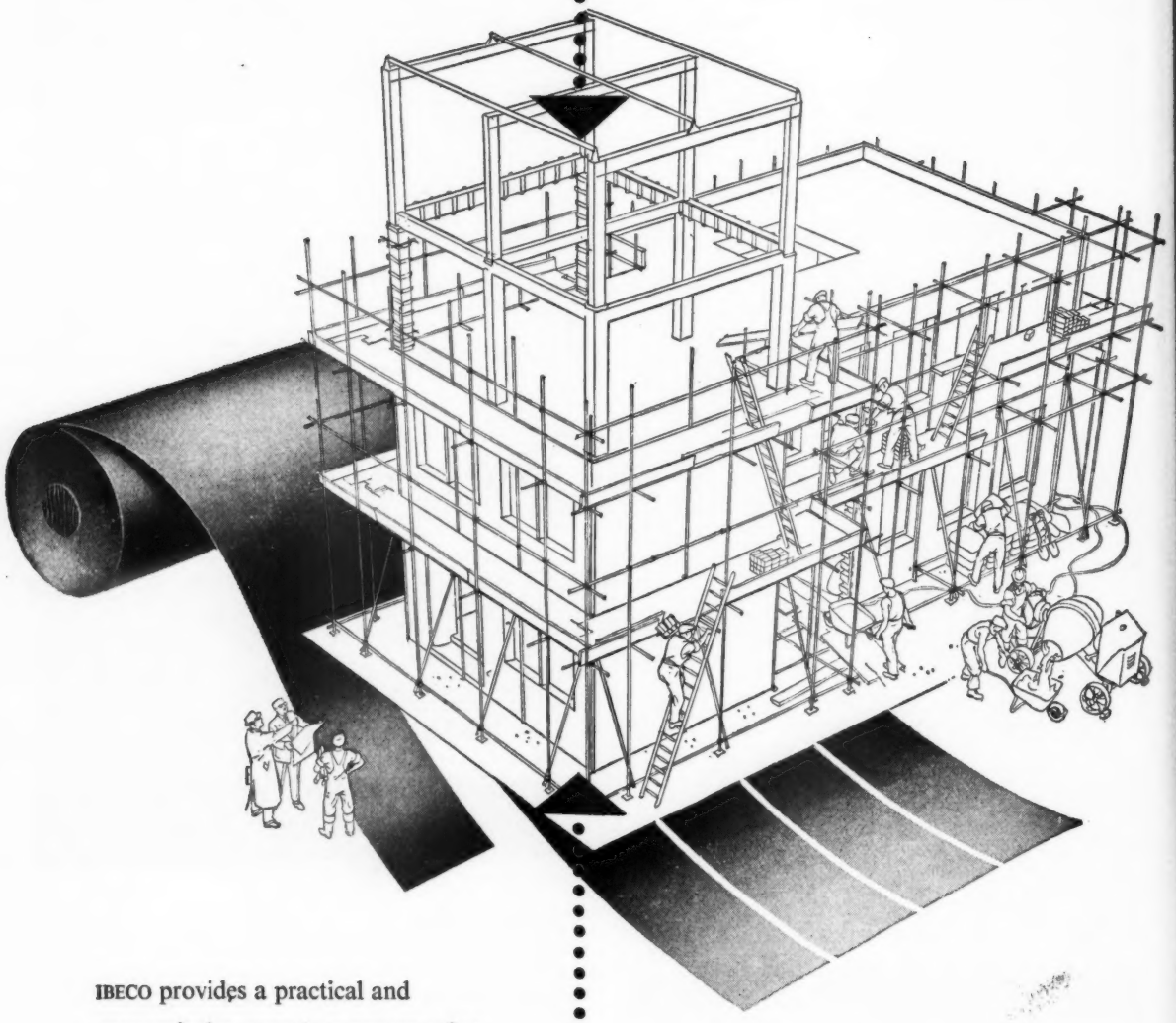
from the roof



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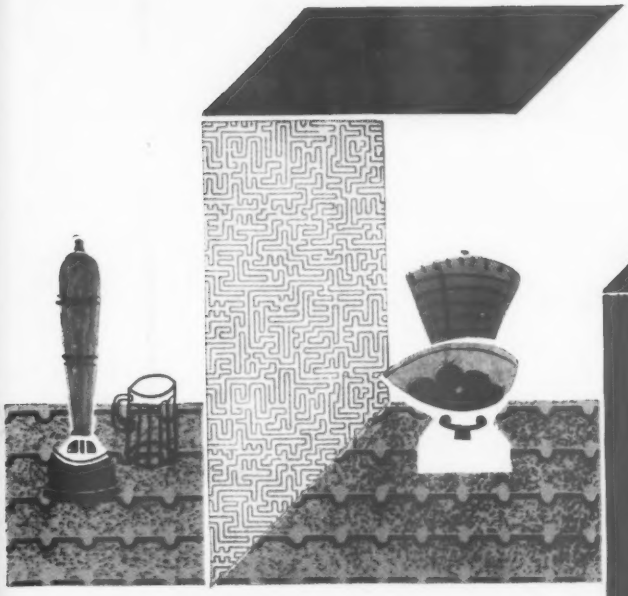

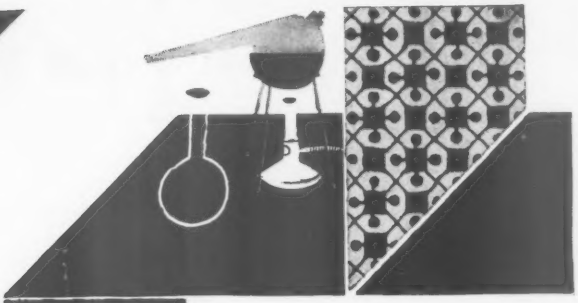

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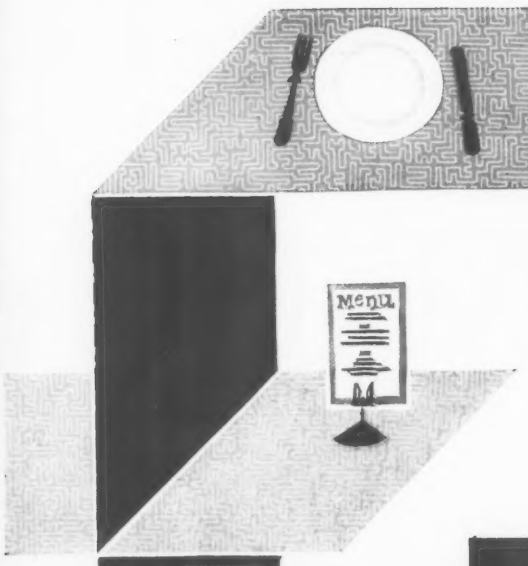

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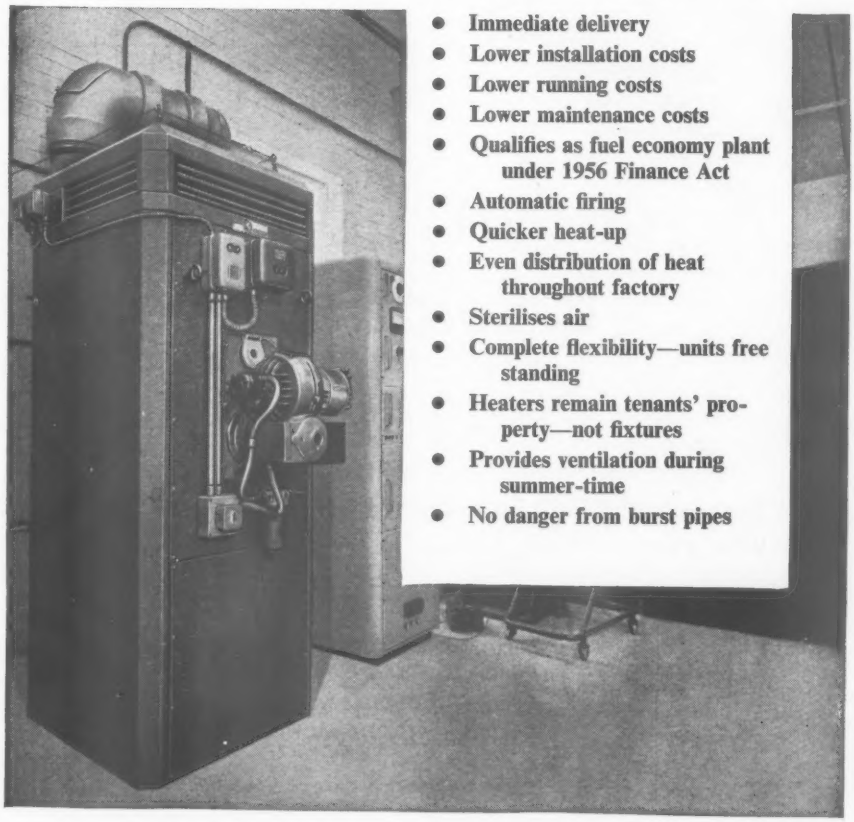

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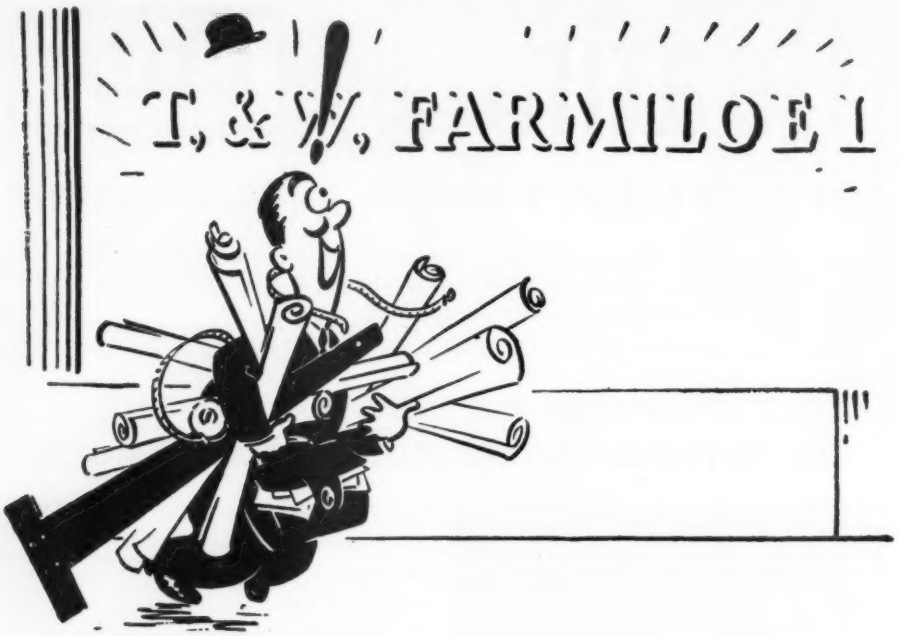

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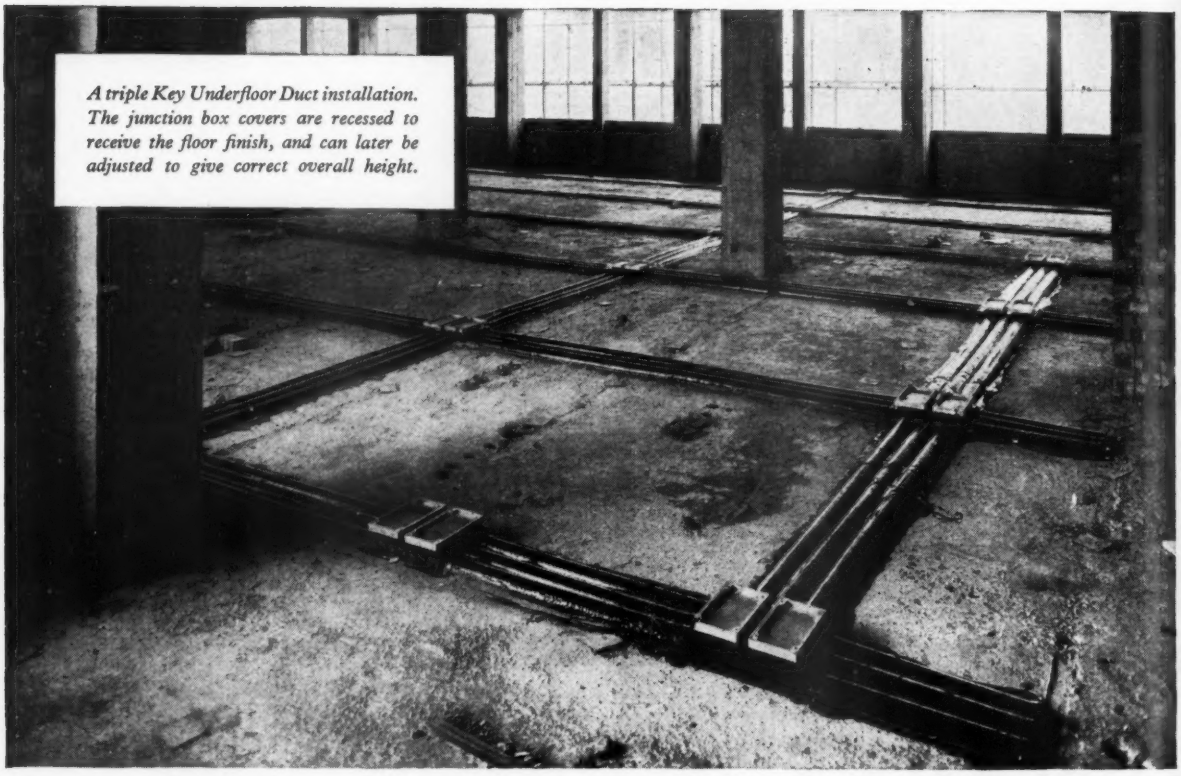

A triple Key Underfloor Duct installation. The junction box covers are recessed to receive the floor finish, and can later be adjusted to give correct overall height.

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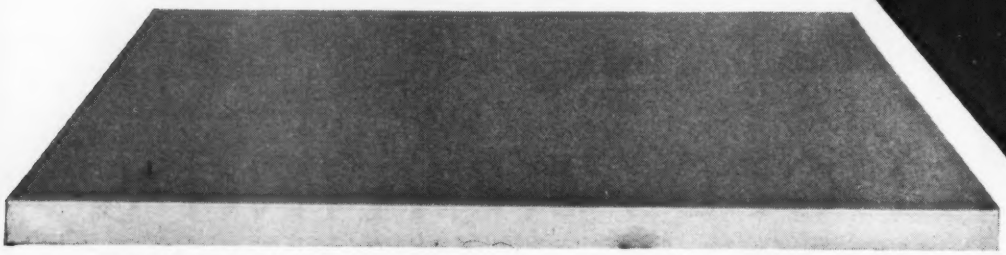

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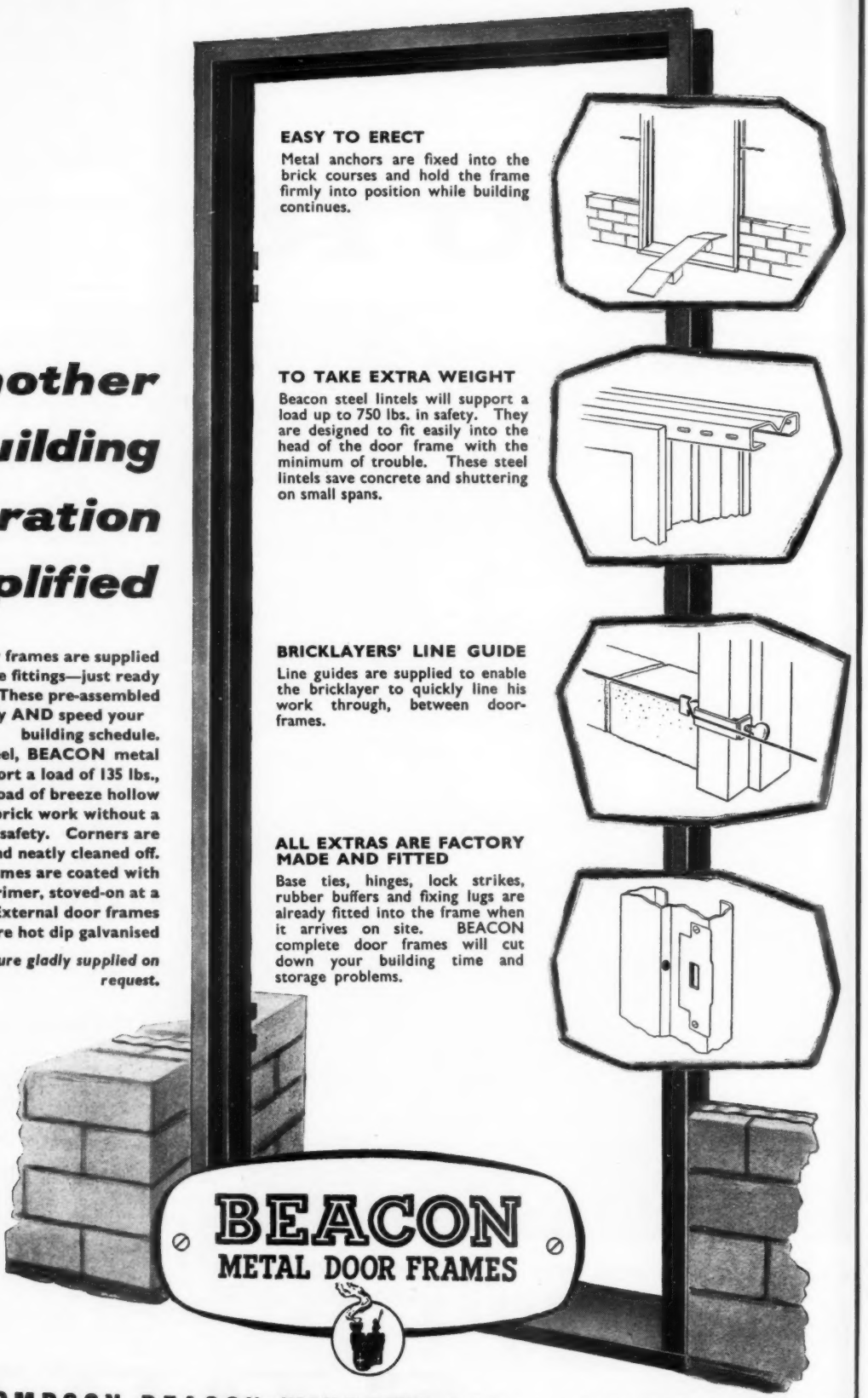

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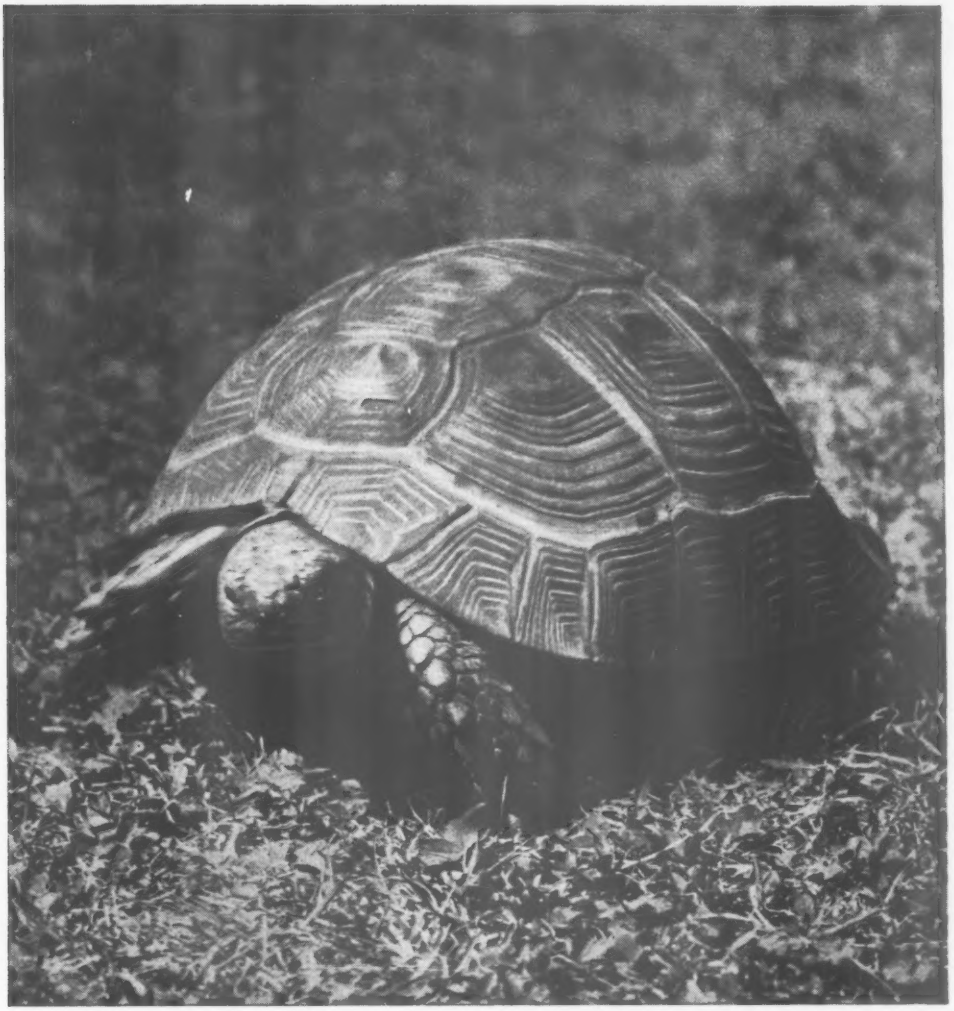

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May we give you a practical demonstration of the principles of natural ventilation with our portable demonstration unit? Ask our nearest Branch Office.

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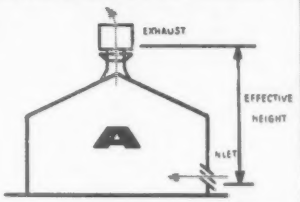
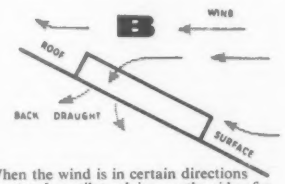
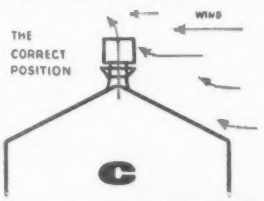


For maximum efficiency, natural ventilators must be sited as high, intakes as low as possible.



When the wind is in certain directions a natural ventilator lying on the side of a roof will probably backdraught.



A ventilator mounted on the ridge, as shown, with its outlet horizontal will give maximum, positive exhaust under all conditions of wind.

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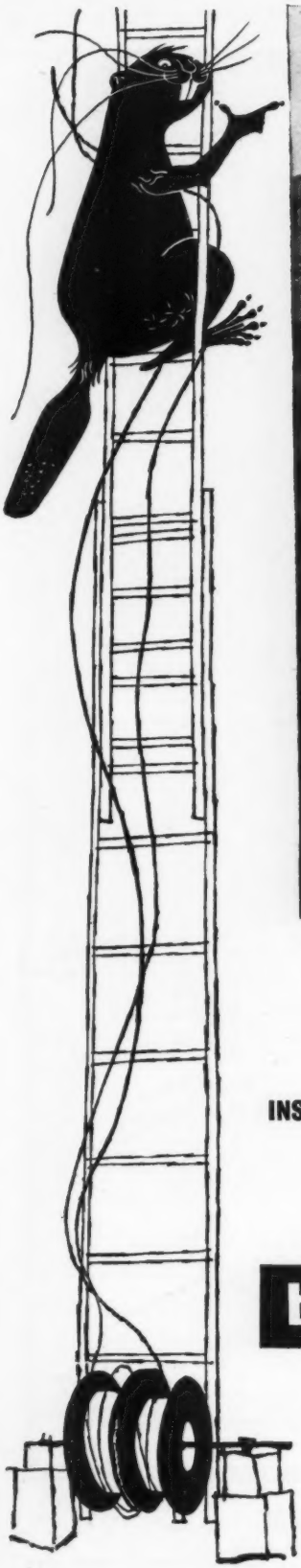

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Contractor: John Mowlem & Co.
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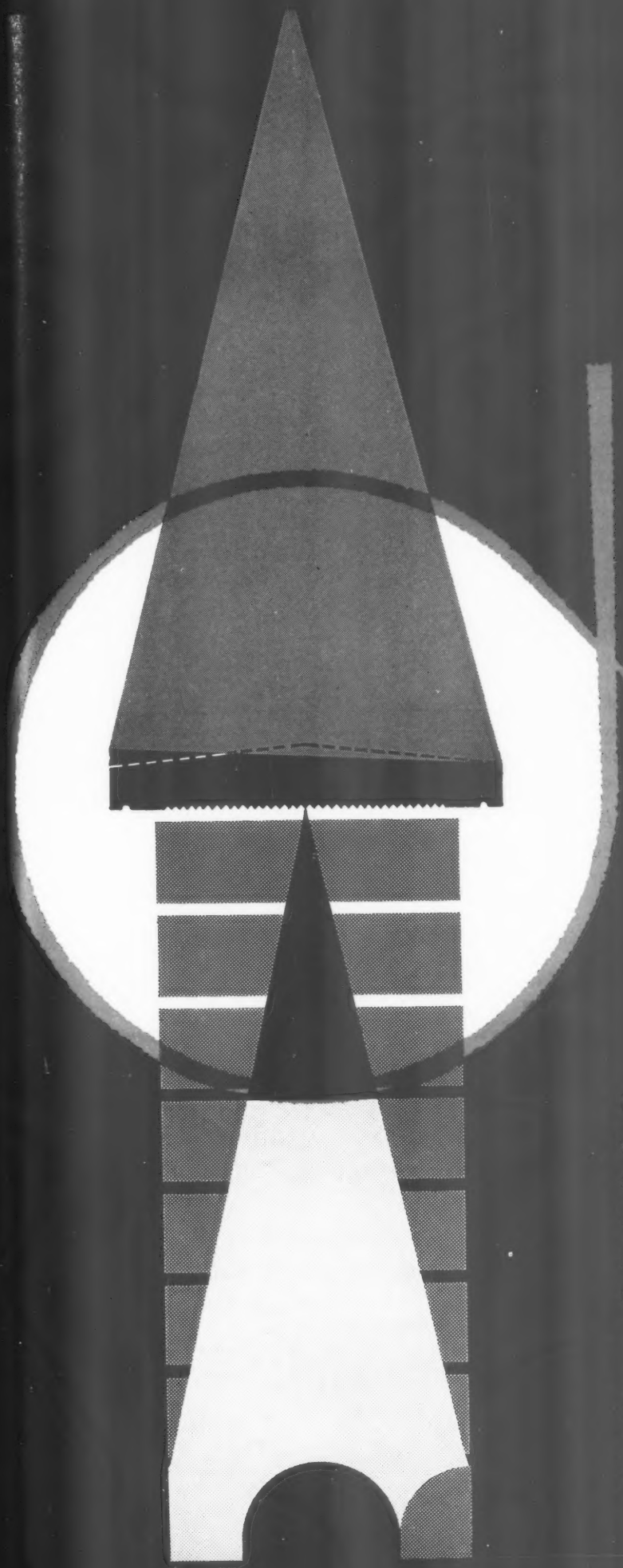

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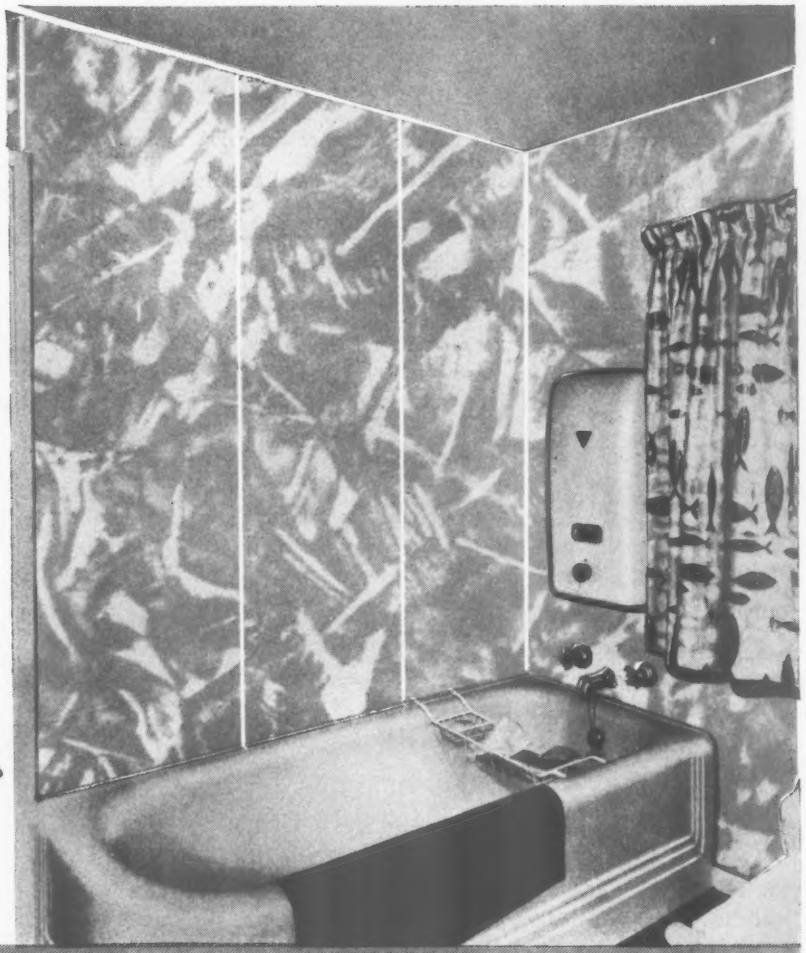

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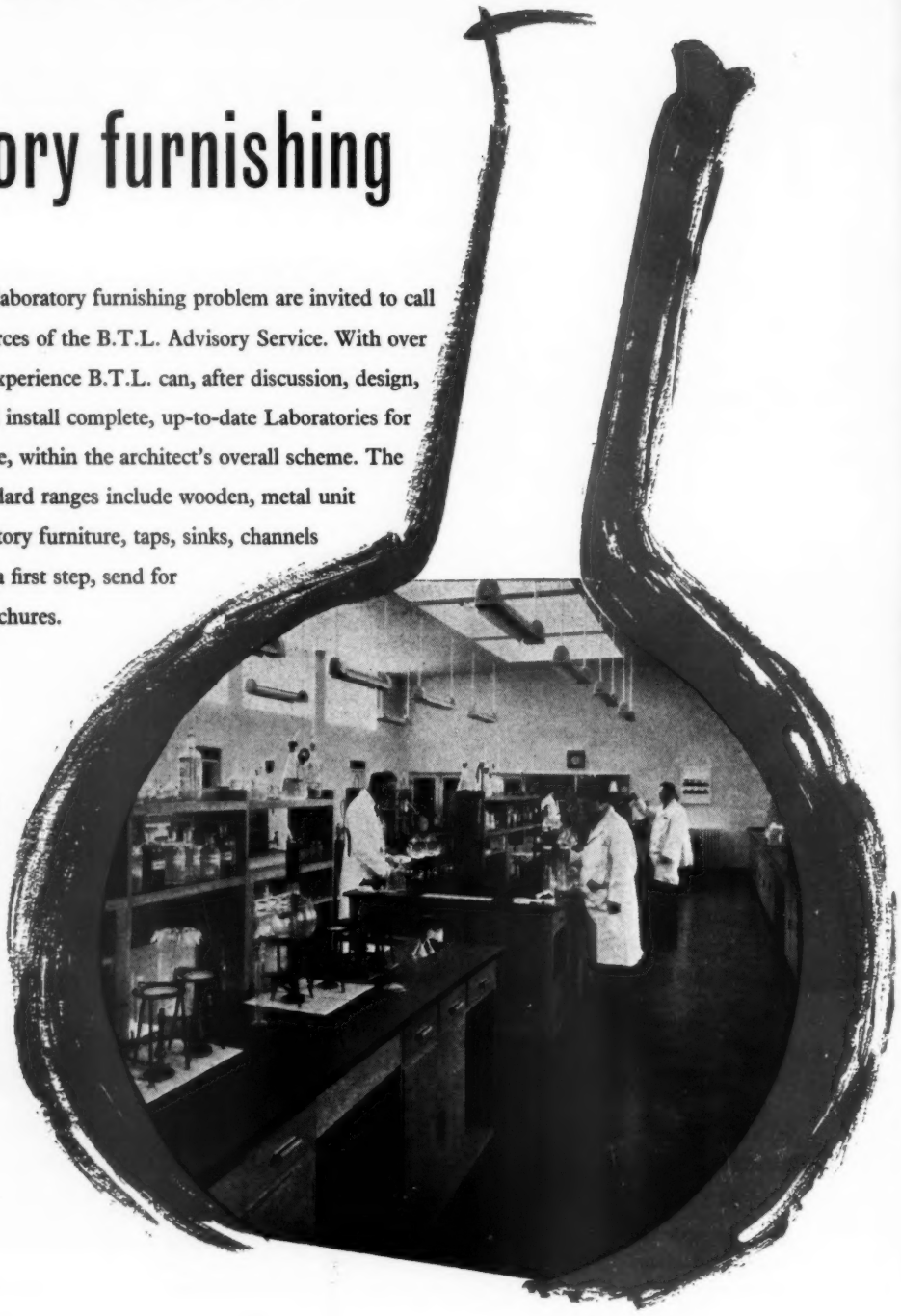

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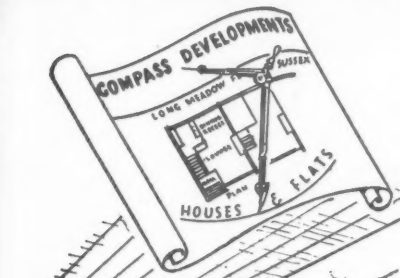
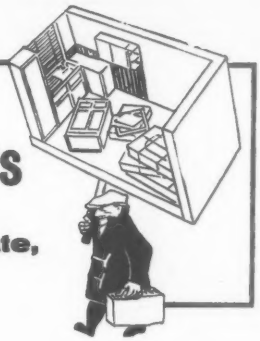
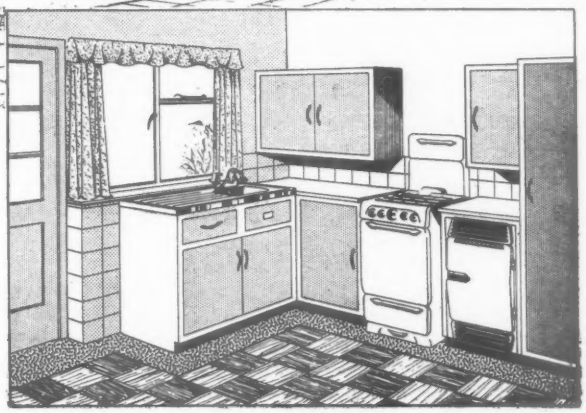




Architect: K. G. Higgs, A.R.I.B.A.



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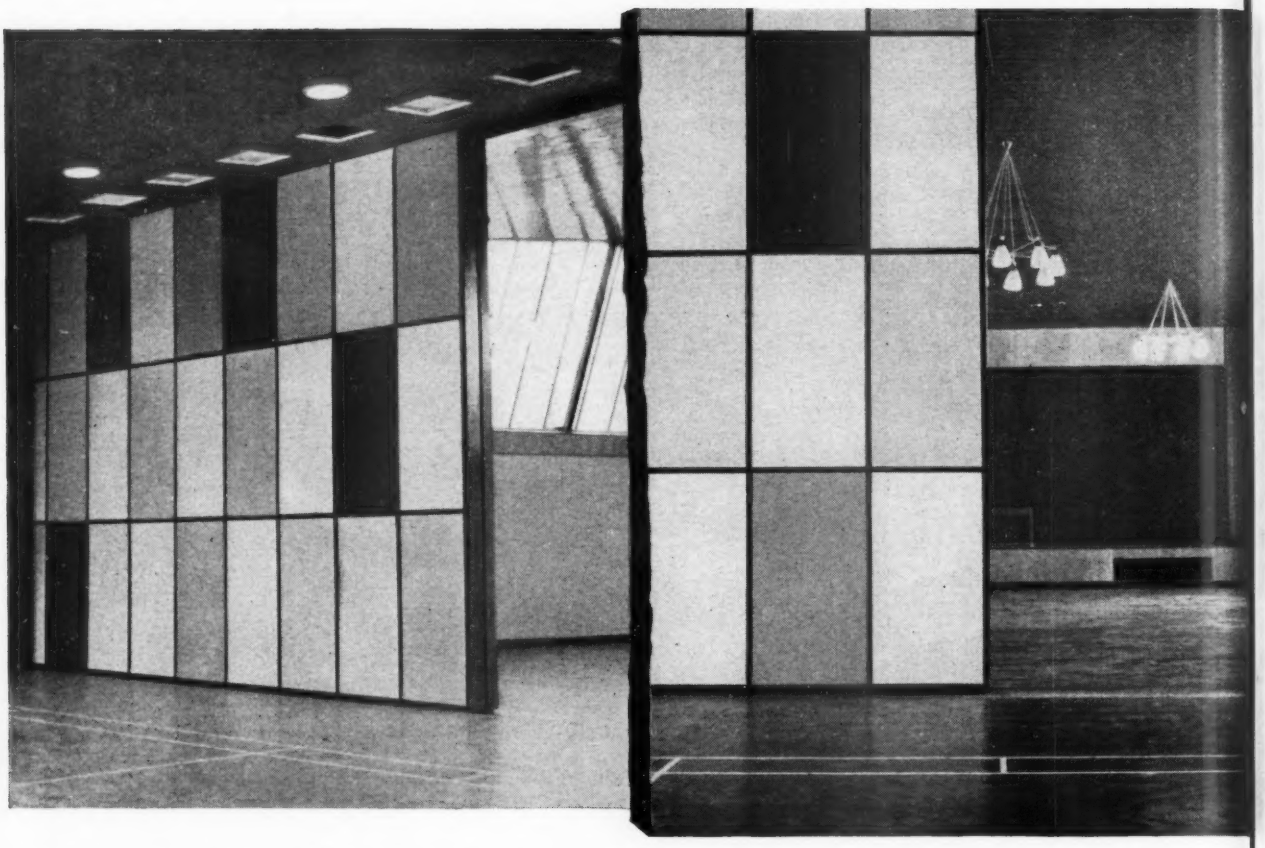

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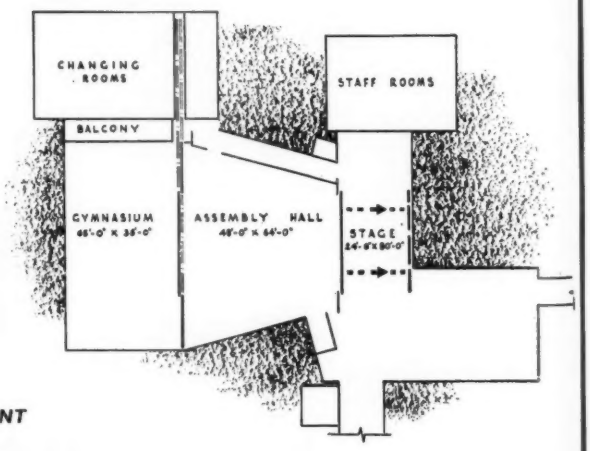

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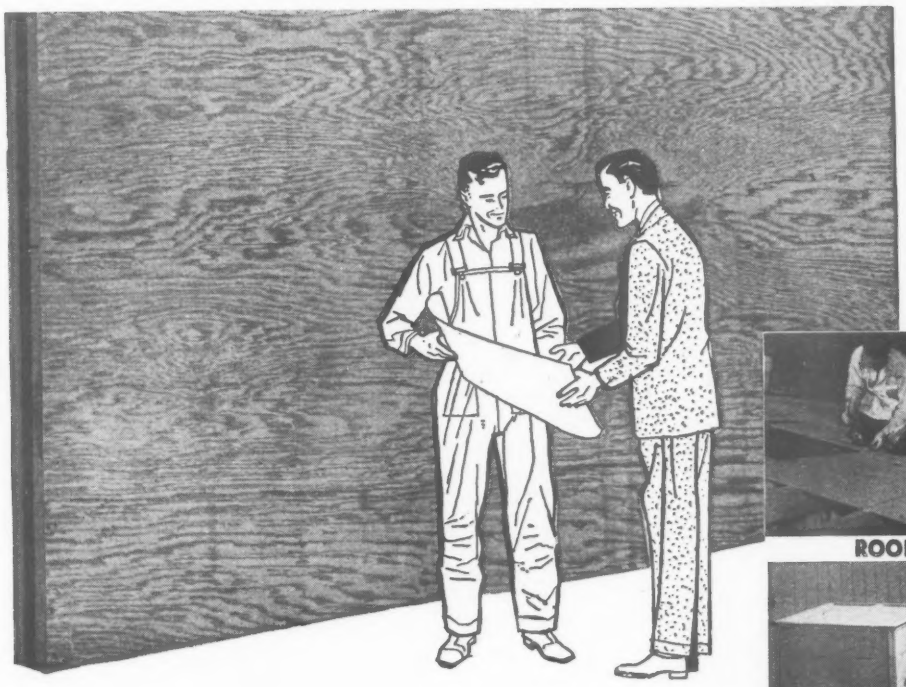

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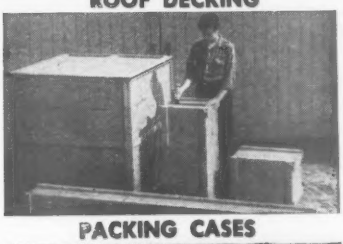

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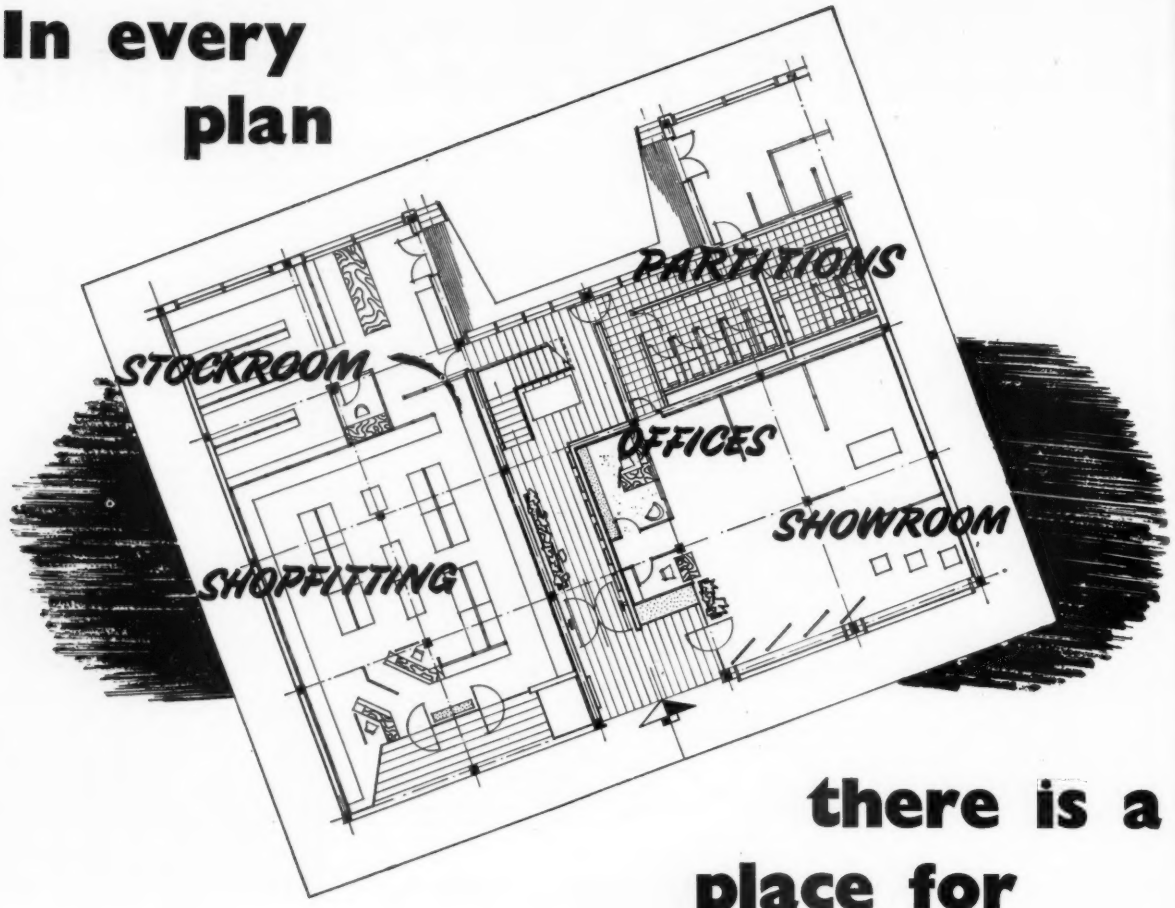

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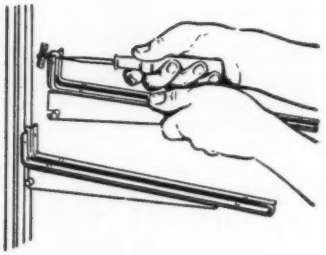

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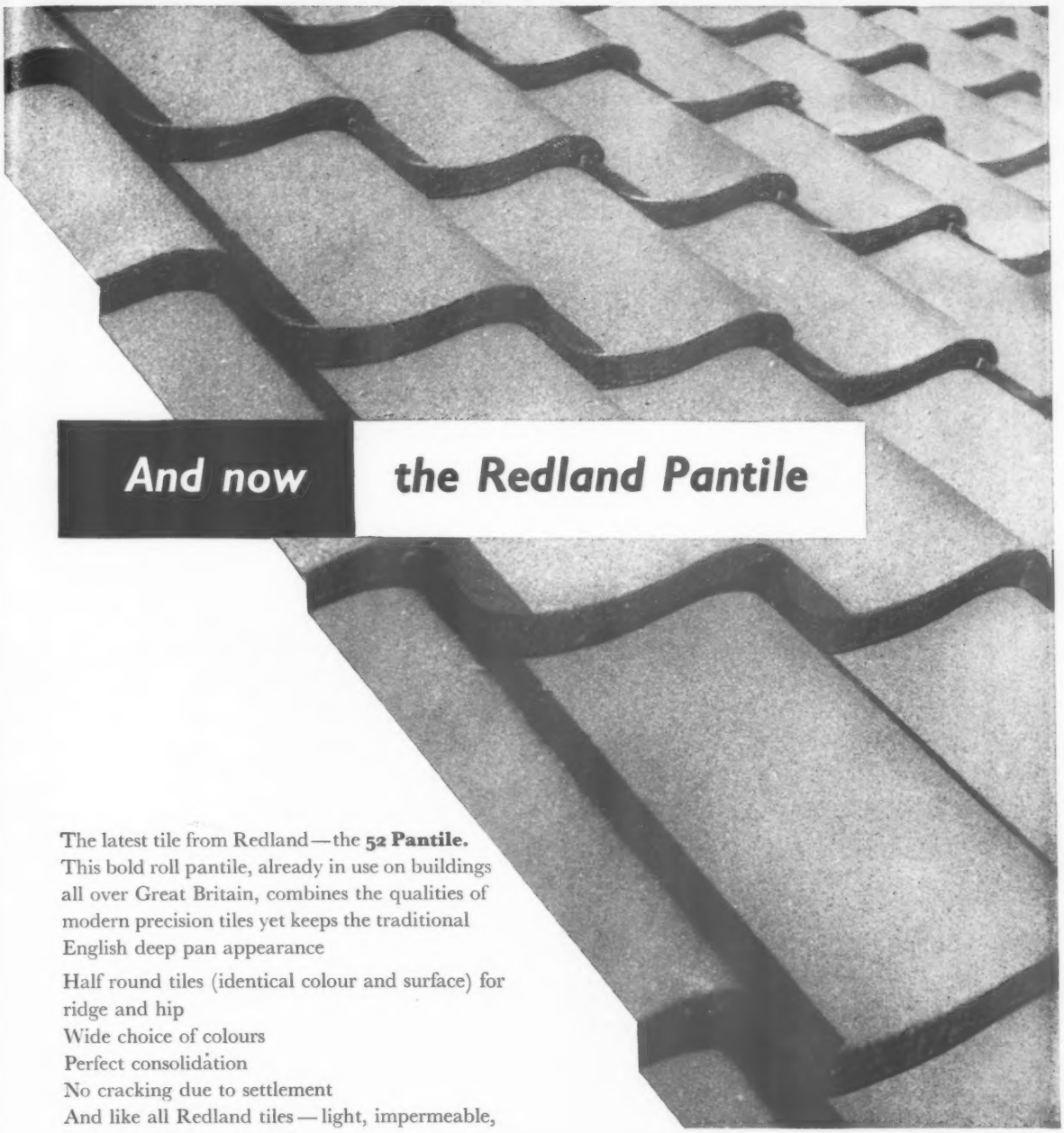

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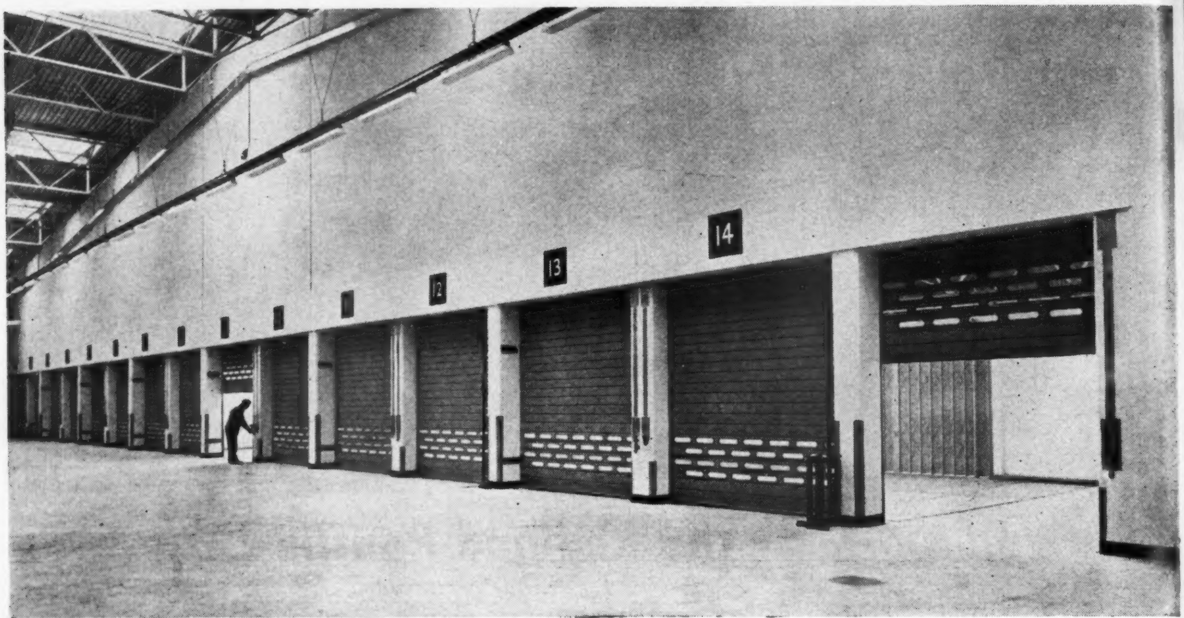

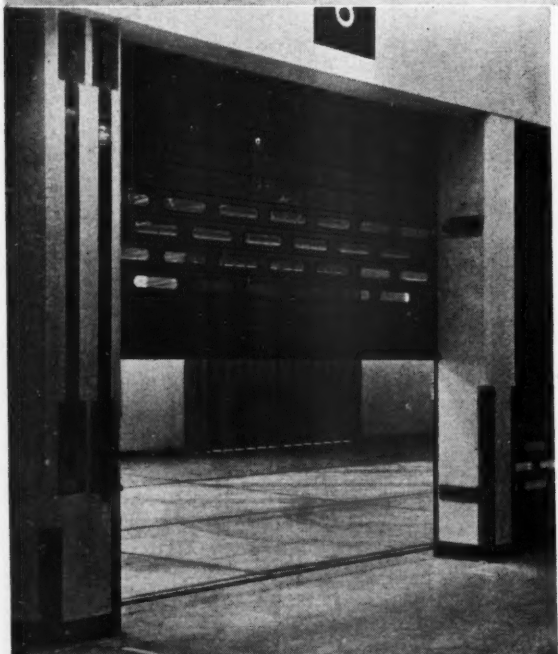

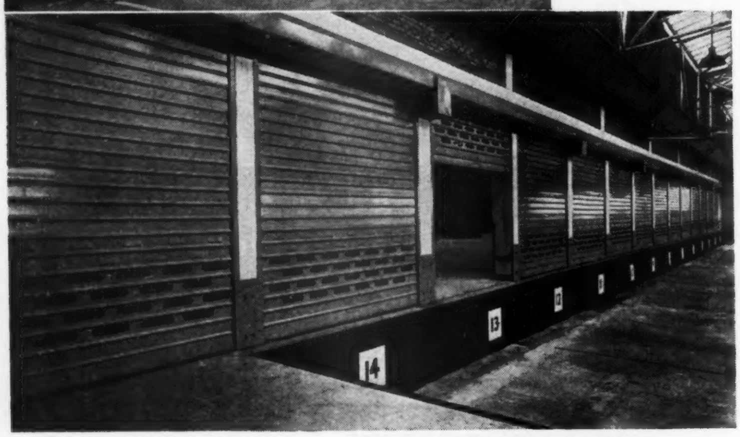

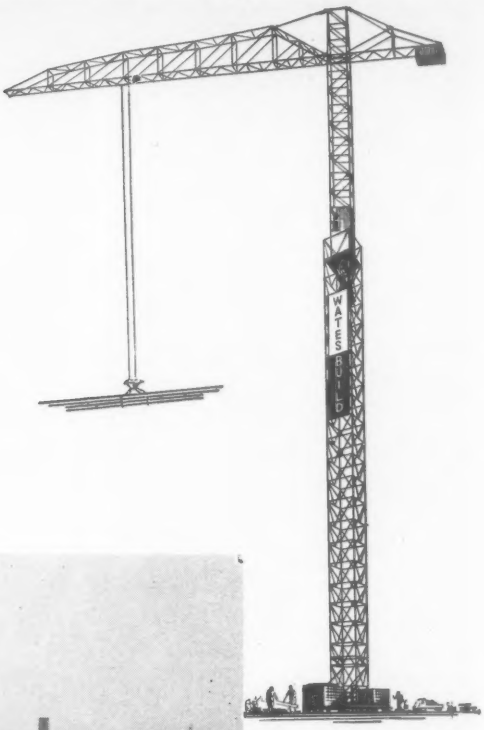

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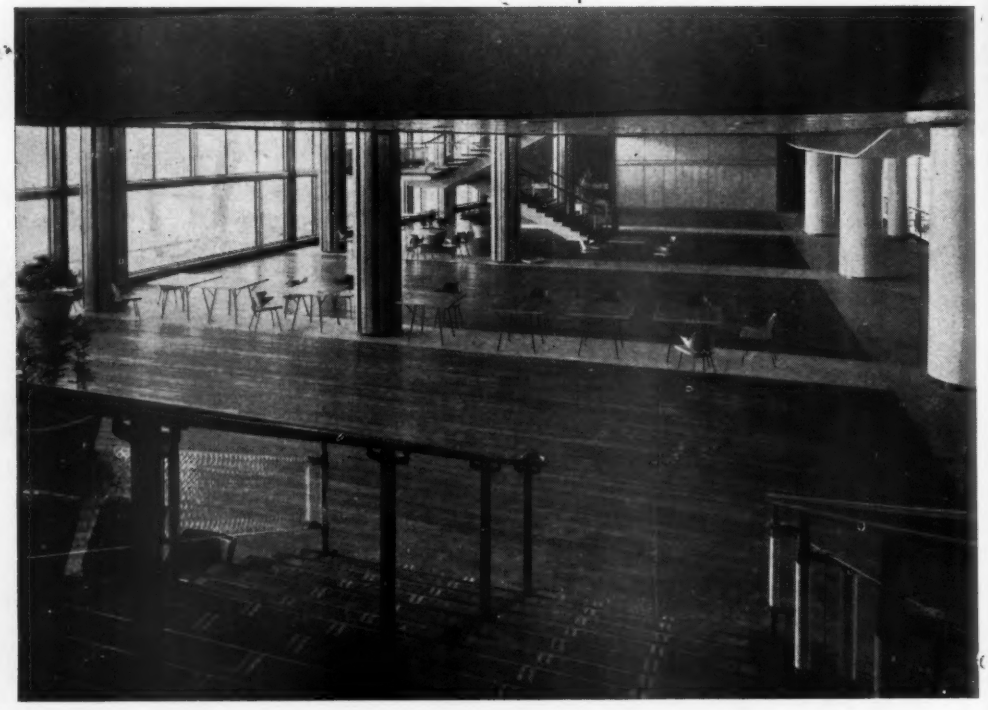

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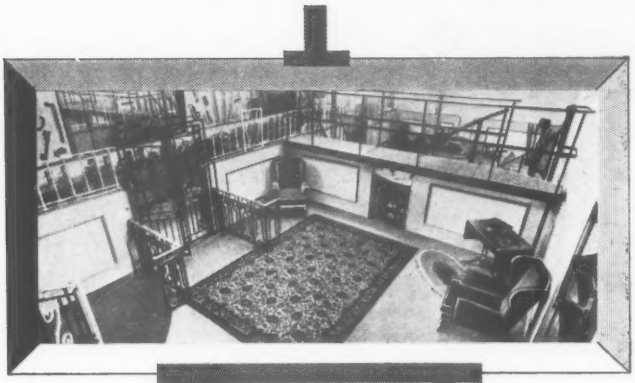

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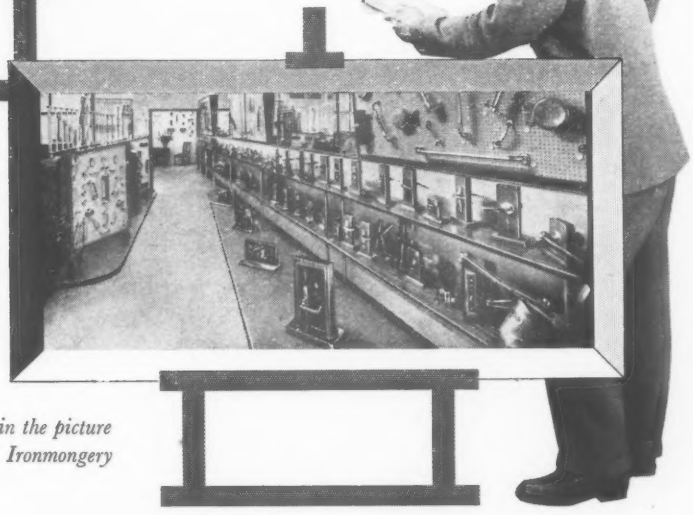

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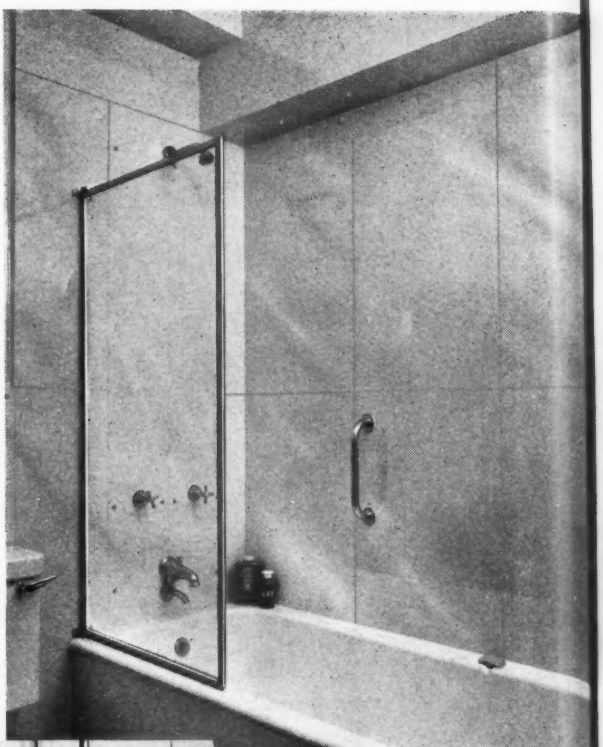

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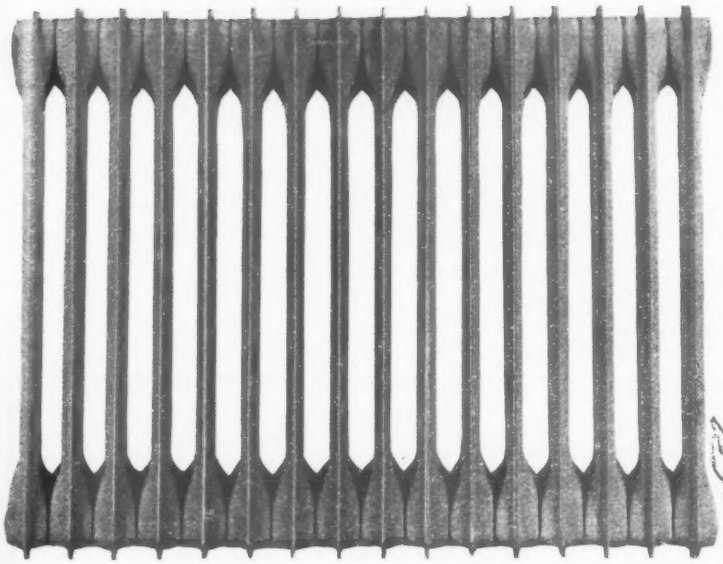

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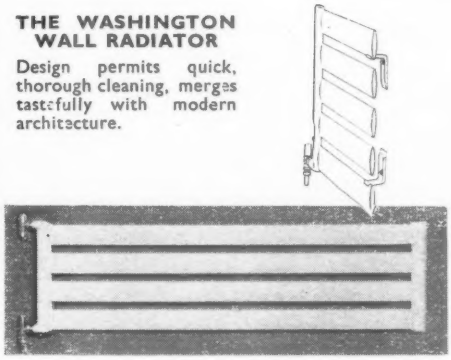

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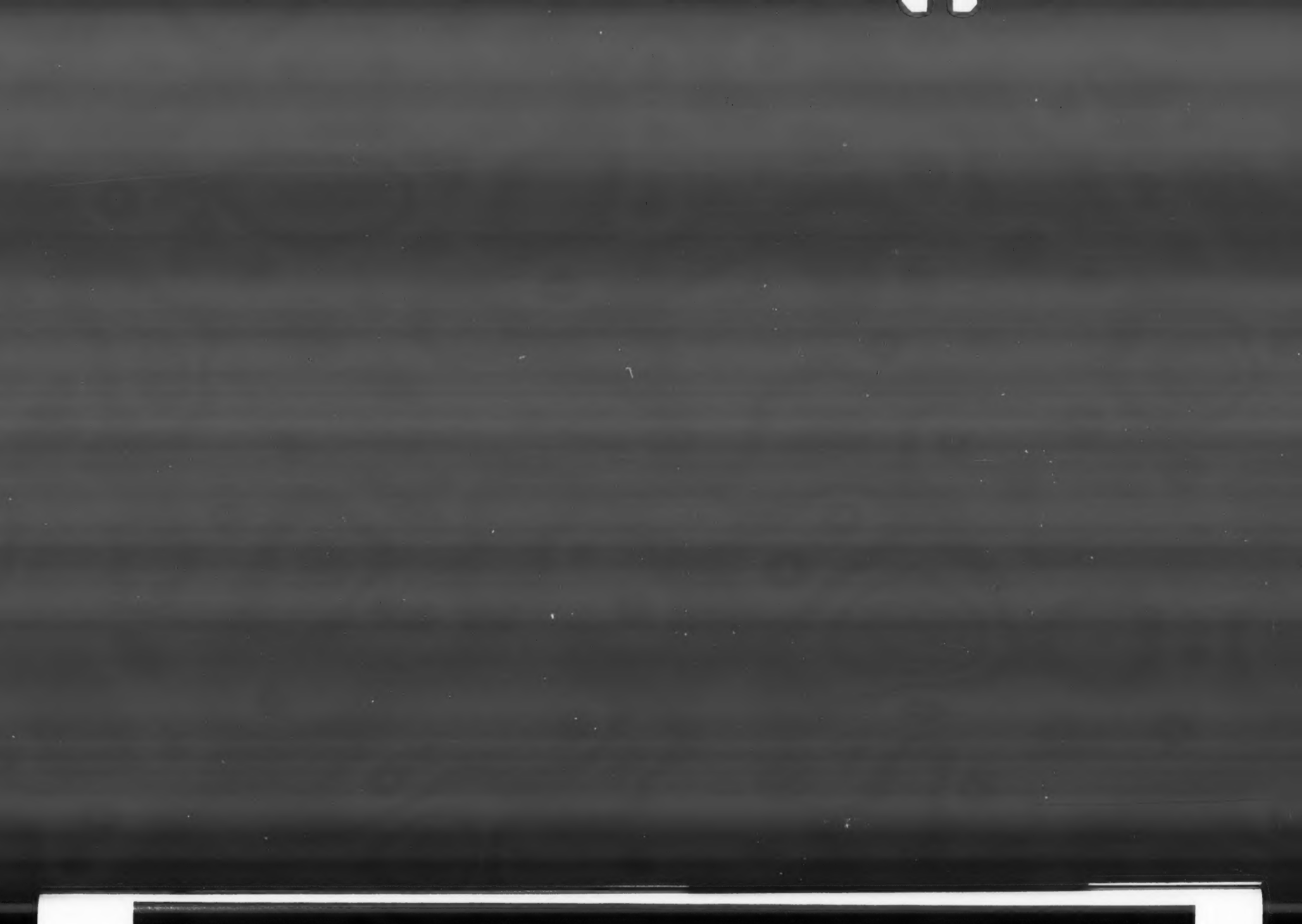

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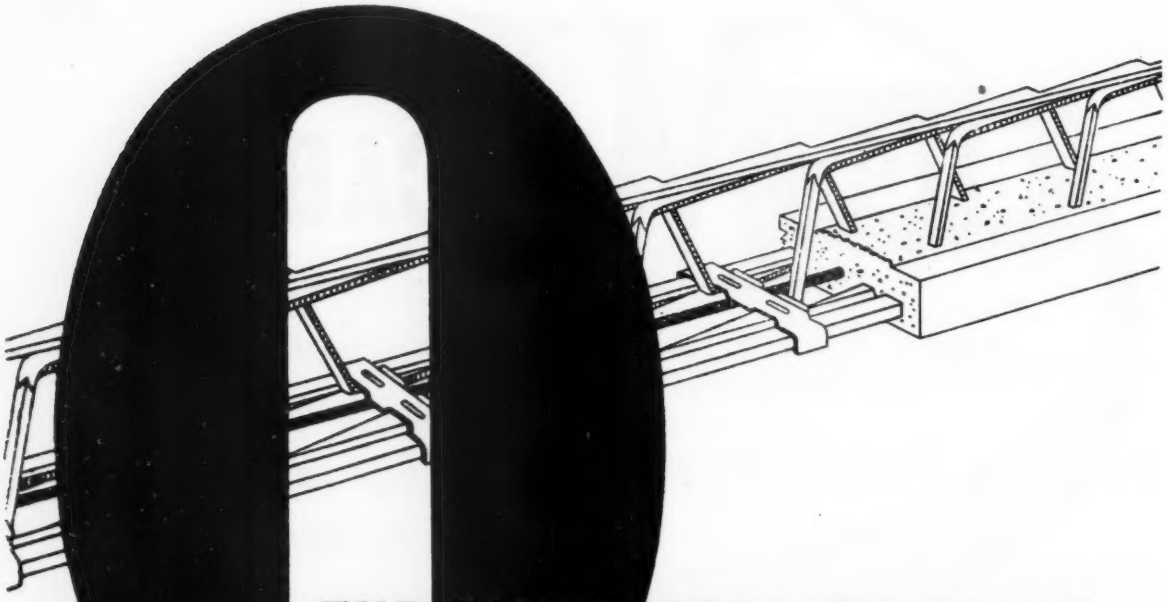

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THE ARCHITECTS' JOURNAL

No. 3302 Vol. 127 June 12, 1958

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NOT QUITE ARCHITECTURE

GG IN DUBLIN

A brig full of sentimental gentlemen from Stalin's homeland, Georgia (Skipper, Acworth, A.W.), put in at Dublin quay early in May. (What is the military equivalent of a Georgian Group captain? A lieutenant-Colonial?) Un-Pancraslike, the natives unfurled the Red . . . . Carpet.

*

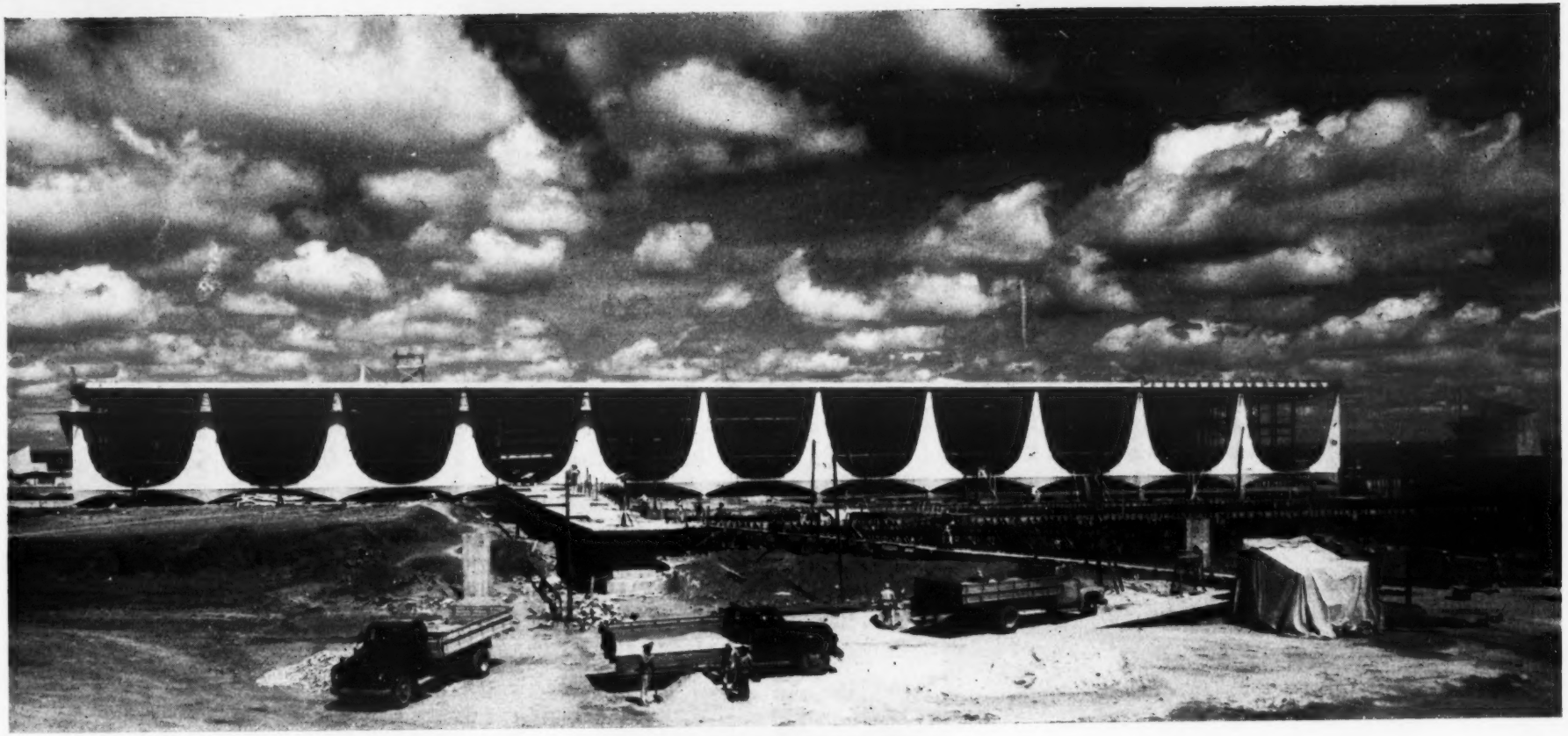
This Georgian Group, lords to a man, had come to appraise the quality of the Free-Stately homes of Ireland. A week later, following detailed inspection of Irelandshire, complete incl. hunting boxes, belvederes, and ha-has, the georgeous guests were complaining that they had seen it all before, last year, in Northern Italy—except *there* the joinery and plasterwork weren't so good. "It's Palladian!" they murmured, "you shouldn't, you know, call it Georgian! It's . . . . not quite architecture." This is sore embarrassment to the tenantry who in honour of these lords have invented a new stage-Irishman, Irish George—a kind of Hibernaphrodite!—and have founded in his honour (perhaps one should say for His Honour?) a new lodge, The Irish Georgian Society.

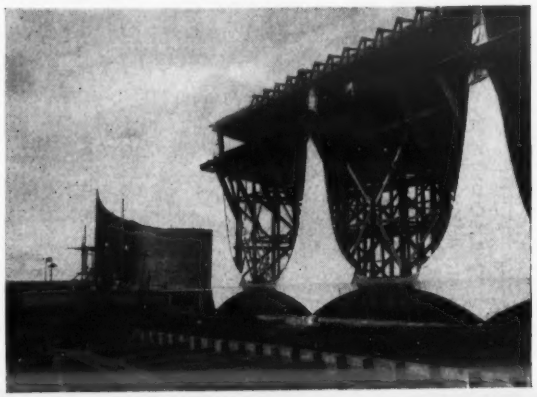
*

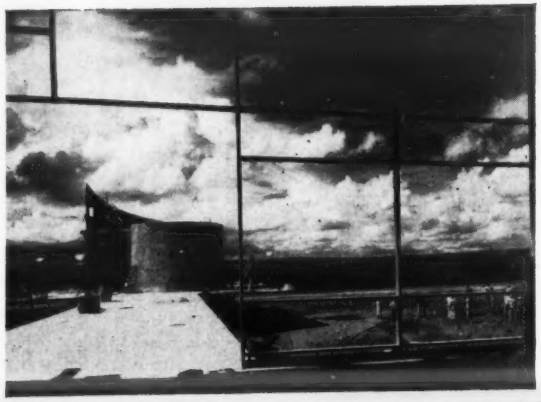
Press notices suggested that the Georgian Group's hosts were another rout of noblemen, the belted oils of Irish Shell, Ltd. Shell sponsored the very special brochure, designed for them and for the Irish Tourist Board, by Patrick Scott and John Diebel, but the Irish Tourist Board organized the tour and provided the inaugural luncheon at the Shelbourne hotel at which the Georgian Group were introduced to hospitable houseowning lords, and harangued by distinguished speakers.

*

Intoning the traditional *Céad Mile Fáilte,*







A Palace in Brasilia

The stimulating exhibition of the Brasilia project, now on view at the ICA, is not just the record of a handsome dream—Brazil's new capital city in the middle of nowhere is actually under construction, and these three pictures show the Presidential Palace in various stages of completion. Above is a view of the whole building, with Niemeyer's extraordinary structure finished and faced; at the far left, part of this concrete frame can be seen still awaiting a few facing slabs; and at the left is a view taken from the main floor slab after the internal scaffolding had been removed and the glazing bars were in, looking out towards the spiral-plan chapel. Work proceeds and the Palace is due to be opened at the end of this month.

Michael Scott, the well-known automobilist, said:

"The shadow of the restorer, working to a scale of 32 ft. to the inch—or worse, the dread spectre of the Georgian revivalist,—is more terrifying than his Gothic counterpart in the last century, firstly because that was 100 years ago and, secondly, because the clumsiest efforts at Gothic revival are never as devastatingly common as sham Renaissance . . . "

(A Georgian revivalist meeting! Would they have the Hallelujah Chorus?) Looking the religious mayonnaise full in the face, he went on:

"It is difficult to love beauty temperately and respectably and we are a lost civilization if devotion to the beauty of the past involves us in servitude to its ghost."

The *Irish Times* rewarded him with a full report, a sub-leader, praise and . . . complete misunderstanding of his fierce, lucid message.

*

Maurice Craig spoke easily, rapidly, learnedly and with affection about Dublin's special qualities, her stradal asymmetries, her riverine accent, her riparian attractions, her flat, brick terraces flanking the occasional piece of concert grand masonry, and off, in gilded chars (à bancs!), shot the Group to see its first Georgian building, the Royal Hospital, Kilmainham, A.D. 1685. (Which was the George that came before George 1?)

*

At the Tourist Board's request, The Royal Institute of the Architects of Ireland put on a special show of photographs of Irish Renaissance houses and of eighteenth and nineteenth century drawings, the work of Gandon, Cassels, Johnston, Adam, and Talbot, the drawings in particular being of such elegance and vitality as to fill the contemporary observer with despair, although if he's a Dublin architect he's filled with that stuff anyway. As a result, few local architects were presented to the members of the Group: the others must have failed the Tourist Board's historical screening test.

*

During their week, the Group were received by the President in his odd nineteenth century pavilion, by the Provost of Trinity College Dublin in his Palladian palazzo, and by the President of University College Dublin in his Vitruvian villa. The session ended on a typical Georgian note—on Sunday in the Gaiety Theatre Miss Rosalyn Tureck gave a wonderful performance of the work of that great Hanoverian composer, J. S. Bach.

NIALL MONTGOMERY.

The Editors

BON VOYAGE!

THE inaugural meeting of the Local Government Architects' Society which is to take place next Friday, does not signify that all is over in the struggle for salaries and status, bar the shouting. On the contrary a tough fight lies ahead before the Society, in partnership with the four existing associations of professional officers in local government, can produce measurable results. The interim executive, to be elected at the meeting, must be able to speak for all architects in local government. If there is at least one representative at the meeting from every local government office in the country, it will be a signal to all concerned that the Society too can make good its claim to be fully representative.

The Society's first task, after organizing itself, is to secure effective negotiating rights. Its relations with the National Association of Local Government Officers will be crucial in this respect. Architects would be making a sorry mistake if they regarded themselves and the other professions as being in any way in opposition to, or antagonistic towards, other local government employees. Nalgo, for its part, need not be jealous of the professions, for it is obvious that improvements won by the professions are bound to lead to improvements for other grades. There is in fact, if it is not always recognized, a sound basis for co-operation between the Society and Nalgo, without which it will be extremely difficult to secure negotiating rights from the employers. It is equally important for the Society to strengthen itself by maintaining strong links with the RIBA (which should, indeed, accord it a seat on its Council) and to avoid becoming a narrow clique.

The LGAS, with whose initials we shall soon be familiar, is embarking on a difficult voyage, but one which promises great returns. In wishing it bon voyage we have no doubt that it will successfully weather any storms it may encounter.

METRIC SYSTEM FOR BRITAIN?

The British Association is to investigate the problems of converting this country to the metric system for weights, measures and coinage (see page 893). In the architectural world this will interest those who are either keen on modular co-ordination, or those who are merely bad at arithmetic. There are presumably several possibilities: to adopt metres, grammes and litres complete; to decimalize English units

(10d. to the shilling and 10 in. to the foot) or to effect some "meshing" of English and continental systems (by making 1 ft. equal 30 cm. instead of 30.48) so that the duodecimal is preserved. Clearly, preference for one or other of the possibilities would be strongly influenced by the painfulness of the change over, but basic questions would have to be unravelled first.

Is 10 a better factor of division than 12? Is the centimetre a better unit of size than the inch? Modular studies have revealed no intrinsic superiority of decimal measure—indeed duodecimal measure allows greater flexibility of sub-division and is thus more sympathetic to our need for round figures. And it is based on human sizes—whereas the metre was derived from the earth's diameter—although the merits of this are not easy to elucidate. Its great disadvantages are the difficulties of calculation and conversion and the complications of international exchange and trade.

We can only await the BA committee's findings and hope they will pay due regard to the country's largest single industry—building.

GOOD, BUT HOW MUCH?

If you haven't yet been to the new Gatwick Airport (you can't miss it, as they say, because it sails majestically over the now-diverted Brighton road), you would do well to postpone your visit for a few weeks, when all the furnishing (Robin Day. Charles Eames, etc.) will be in place. When you do go you will find a really twentieth-century scene—rail, road and airport are planned to meet at one point in the landscape to bring circulation down to a minimum. The rolling curves of the first English flyover make an effective contrast to the severe rectangular building. The sketches of the 1940's have become reality.

*

The airport (by Yorke, Rosenberg and Mardall; engineers, Frederick Snow and Partners) was opened on Monday by the Queen. It is only 32 months since the building was commissioned, so this is quite a planning achievement. The scheme has the concrete boldness we associate with Perret, the steel precision of Mies and the "materials-as-found" approach last seen at Hunstanton. (It is said that one or two officials were rather nervous of the proposed brutality of the restaurant.) It could not be more different than London Airport in every way, including the planning technique (imported from the US) which enables aircraft to wait either side of a passenger "finger" projecting from the terminal building.

*

The JOURNAL editors tell me that next month they hope to publish an article about Gatwick. But don't expect to see a breakdown of costs: apparently the Ministry of Transport won't say how public money was distributed on this building. Why? Is it such a political hot potato? Or is the Treasury being pig-headed?

THE FULLER LIFE

What do *you* know about economic validity, psychological dispositions and the inherent universality of industrial principles? Nothing? Well, you obviously haven't been listening to Richard Buckminster Fuller, who has been talking relentlessly during the past week or so at the American Library, the RIBA, the ICA, and so on. This is the first time the developer of geodesic structures, the "champion of anticipatory-design science," has been over here, so everyone is taking the oportunity of getting him to talk—or rather to ensure that the steady flow of talk ("I'm just thinking aloud") is turned in their direction.

*

A massive audience heard Mr. Fuller give the RIBA's annual discourse, and many of them are looking forward to seeing the talk boiled down into plain English. (Those impatient and in doubt should get in touch with one of Mr. Fuller's interpreters, John McHale or Reyner Banham.) ASTRAGAL, who went along prepared to concentrate to the point of exhaustion, was rewarded by an occasional glimpse of some very lively thinking on the technique of building, some superb colour slides of recent Fuller domes and some good laughs.

*

Yes, really—laughs! Here is one of them. "Suppose," said Mr. Fuller, "that a doctor ran his practice like an architect's office. Mr. and Mrs. Jones come to see him; they are shown into a waiting room decorated with coloured pictures of some of his best operations . . . 'We have decided to have Mrs. Jones's kidney out, we've booked a room at the hospital and my niece—she's an anæsthetist—she's going to help. To save money we thought that while Mrs. Jones is under the anæsthetic we could have a couple of other things done as well. Mrs. Jones doesn't like her face very much'."

"In that case I'll have to have some

of my internes make some measured drawings of Mrs. Jones. . . ."

"And so they have the measured drawings made, and so on, and when they've got it all set up, they call in three local butchers to put in bids for the job. . . ."

*

It's a long time since we've had such laughter at the RIBA. Did some of us get the point, the whole point and not just the humorous comparison? Did we see why a doctor is a Comprehensive Anticipatory Designer, in Mr. Fuller's terminology, and why an architect is not?

GAUNT VIEW OF KENSINGTON

Kensington is one of the London boroughs that most often attracts the attention of the professional scribe. It has all the essential ingredients for popular success. . . . Infant Royalty (Kensington Palace); High Jinks in High Society (Holland House); Studio Gossip (the mansions of Melbury Road); Bohemia and Crime (Portobello Road and Christie's macabre scullery). William Gaunt—the latest chronicler* to plod his way along these well-explored avenues—doffs his hat to all the old familiars (Sydney Smith and G. K. Chesterton, Sir Henry Cole and Thackeray, Lord Leighton and G. F. Watts), exhumes the usual anecdotes and draws (if that's not too active a word) the attention of his readers to the principal monuments and the most picturesque corners. Nowhere does he succeed in conveying the look, feel and smell of Kensington. He is right in describing it as a Victorian creation, but wrong in supposing that "the Victorian interior has largely disappeared" (has he never been lucky enough to see inside, say, No. 18, Stafford Terrace?).

*

What about present-day Kensington —the Espresso bar philosophers, the matchboard kitchenettes of Hangover Square, the cats crouched watchfully like fakirs upon spiked railings, the dried-up cruets of boarding houses, the night-long streetlamp conversations of Spanish and Italian maid-servants, the launderettes and wheeled shopping baskets, the veteran cars and tot-crocodiles? To all these Mr. Gaunt seems blind, deaf and unaffectionate. Back to the Cromwell Road, Mr. Gaunt, and use your eyes.

* *Kensington* by William Gaunt. B. T. Batsford Ltd. 25s.

Seen in the mirror of the Bride of Denmark *one evening recently, are, reading clockwise from 9 o'clock; Buckminster Fuller, James Gowan, Bill Howell, Frank Newby (engineer), John McHale (organizer in chief of Mr. Fuller's visit to England), Mischa Black and Alison Smithson. In front of the mirror is Robert McLaughlan, Dean of the Architecture Department at Princeton, and one of Mr. Fuller's greatest supporters in the academic world.*

It's far more interesting than copying quotations out of a Greville diary or dates out of a gazeteer.

LORGNETTES AND VISUAL AIDS

ASTRAGAL, who is a tireless attender at the annual general meetings of worthy bodies, had an uncanny sensation the other day of being in two different meetings at the same time. After Robert Jordan had delivered an admirable talk on "looking at the town" to the Council for Visual Education, the discussion on it was about anything but it. The audience of maiden or elderly ladies and retired gentlemen rambled from a supposedly funny story about Buckingham Palace to the importance of pruning trees, and from the sad loss of thatched cottages in Dorset to the ravages perpetrated by hooligans in uninhabited buildings that ought to be preserved. And one lady from Coventry lamented that her father, were he to return from the grave, would no longer know his way about Coventry.

*

How far all this advanced the excellent cause of visual education was not at all clear. The Council, one gathered from Lord Euston, its enthusiastic president, was more or less destitute; it had no money even to send round the exhibition (exactly the same as last year's) that hung on the walls. The elderly ladies, who applauded furiously whenever the spirit moved them, discussed neither Jordan's talk nor how to put life into an organization that is clearly in the hands of preservationists. The CVE could surely make better use of its AGM.

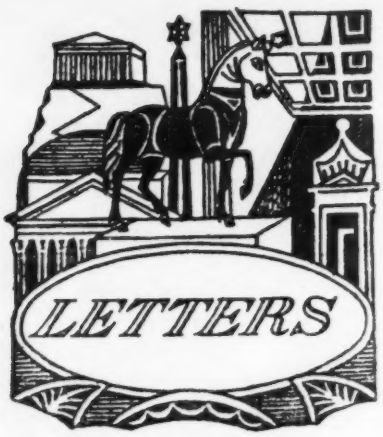
CULLEN AND HAWKSMOOR

ASTRAGAL sat decidedly up when one of Gordon Cullen's inimitable drawings appeared on the screen during a recent erudite lecture at the Courtauld Institute. The lecturer, Kerry Downes, showed the drawing to make a point about Nicholas Hawksmoor's plans for rebuilding Cambridge, for which no contemporary perspectives existed. Far from appearing suitably grateful to Gordon Cullen for having made good the omission, Mr. Downes took exception to his version of the obelisk in the centre of the proposed square in front of King's College. Hawksmoor, apparently, had objections to putting obelisks directly on the ground, and always slipped a pedestal under them.

*

Leaving such niceties aside, Mr. Downes' lecture on Hawksmoor's town planning schemes was fascinating, and augurs well for his volume on Hawksmoor which is scheduled for fairly early publication in the Zwemmer series of monographs on architecture.

ASTRAGAL



A. J. Gordon, S. H. Cox,
A/A.R.I.B.A.

Lionel Brett,
Chairman, Public Relations Committee of the RIBA

Christopher Gotch, A.R.I.B.A.

H. Owen Luder, A.R.I.B.A.

"Id"

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Britain At Brussels

SIR,—We have made quite independent visits to the Brussels Exhibition and gathered impressions about the British Pavilions which differ in some respects from those which might be formed from alone reading Press reports, both popular and architectural.

Externally the Crystalline Hall does admittedly lack scale, but the highlighting of representative symbols in the velvet obscurity of its interior is first class showmanship. This hall, which incidentally seems to defy true photographic record, makes a tremendous impact, comparing more than favourably with that of many other pavilions in the foreign section.

The boat on the lake is certainly an ugly one, the Annigoni and its position is undoubtedly unfortunate, but from the Press one might imagine that all we have to show are Crown Jewels, and symbols of tradition. The critics omit to mention that the Crystalline Hall represents only a small fraction of the total display and as one leaves the hall, the visitor is told in as many words "So for the past, what of the present and the future?" How well the question is answered and what a lot there is to be seen and to be proud of. Speak to a variety of impartial or even prejudiced foreigners, and they will tell you that there is more to enjoy and to attract interest in the British Pavilion than in almost any other. Nowhere else in the Exhibition do you see people queueing to get in.

The much criticized one-way circulation is, though perhaps a little strict, obvious and easy, and far preferable to the vague openness of other much praised pavilions. It is impossible with this system to miss an exhibit or approach them in incorrect order, and the Technology, Science, and British People's section depicting such diversities as "Zeta" and the "Salvation Army," "British Tea-time" and "underwater radar," is a triumph of display organization.

As to the buildings themselves, the most important fact is that they do their job in providing unobtrusive simple enclosures for the exhibits. This is before all their primary purpose and they are economical temporary structures yet employing more than adequately interesting structural methods and forms. A number of other pavilions in the Foreign Section have such dramatic structures that their exhibits are dominated into obscurity.

The British site alone in the whole exhibition shows an even control of landscape and circulation space. The experience gained at the South Bank and its influence is obvious, yet it is surprising that other nations have not followed suit. The British Section is alone in using successfully courtyard intimacy and surprise, piazza and water to unify landscape.

Those who visit the Exhibition can, by comparison, with many of the Pavilions in the Belgian section, realize how bad things might have been and see for themselves the headway that has been made in this country during these post-war years.

A. J. GORDON.
S. H. COX.

Cardiff.

"Why No Statement"

SIR,—Under the heading, "Why no Statement," R. Coombe (AJ, June 5) implies that no action was taken to counter the Lord Mayor of London's criticisms of the profession, reported in the *Daily Telegraph* on May 10.

It is perfectly true that no official rebuttal from the RIBA followed the Lord Mayor's attack, claiming that he was utterly mistaken. What Mr. Coombe evidently fails to realize, however, is that this kind of bald and unsubtle approach loses most of its effect simple because it emanates from a body with an obviously vested interest. Did he not notice in his *Daily Telegraph*, on the same day as the original criticism appeared, that "Peterborough" rose to the defence of the profession, and that a few days later a letter from John Gloag was published, a copy of which is printed below? The support of influential laymen on occasions such as this is surely a good deal more telling than a letter of protest from a professional institution.

LIONEL BRETT.

London.

This is the letter referred to by Lionel Brett:

Sir Denis Truscott is perfectly entitled to think well of County Hall and Waterloo Bridge and, by implication, much less well of the Festival Hall and other examples of the new Western architecture. Opinion, like choice and taste is free in a democracy, but it would be a pity if, in his address to the London Master Builders' Association, he is taken to be encouraging a cautious nation to demand mechanically and at all times the mixture as before.

Few architects would claim that they have yet evolved for us a universally acceptable and definitive interpretation of the mid-20th century; but that they should not be allowed to try is to frustrate imagination and guarantee a vapid mediocrtiy.

Adventurous experiment, a relish for new ideas and a judicious respect for the past are said to be, and indeed are, essential to the success of British industry, and are equally so in creating good architecture.

JOHN GLOAG.

Ridiculous Etiquette

SIR,—Quite apart from Cleeve Barr's splendid action at the RIBA's AGM which has rightly prompted the major declarations by candidates seeking election, it is most stimulating to find that most nominees also appreciate the vital importance of public relations.

Indeed one statement went so far as to welcome advertising. This is most refreshing despite all the obvious faults of such a method of making the public aware that architects exist.

Is it not time, that the ridiculous and outmoded etiquette of professionalism be revised drastically. What use for instance is a regulation restricting the display of an architect's name on a building site to 2 in. high lettering? In the days of horse traffic, there was time to decipher such microscopic signs but I defy anyone to read the standard RIBA nameboard from a car moving at average speed. The name of the architect ought to be clearly visible on every building site. Also, whenever a building is mentioned in the press it should be obligatory for the architect to be named. If the Royal Navy can insist upon a ship's Captain being named, so can the RIBA do likewise for architects.

If the architect is to regain his status in the community, that community must be made aware of his existence. We are in danger of petrifaction; so we must sell our services or cease to exist. Better public relations must be fostered otherwise at least seventeen of the eighteen thousand of us might as well commit hari-kari, observing due professional decorum, of course.

CHRISTOPHER GOTCH.

London.

Whose Fault?

SIR,—The remarks made by the Lord Mayor at the LMBA luncheon recently when he questioned the skill of British architects (though not, it may be noted, British builders) at a builders' luncheon must, I feel, be challenged.

Undoubtedly, there is a lot to be said for his comments regarding a greater study abroad in the imaginative use of modern building materials and æsthetic design. I am sure we can all agree that the City is not above criticism in this respect. But is it only the architects, I wonder, who are the cause for many to deplore the present redevelopment of the City as a crime against London and Londoners; as a perfect example for all to say, now and in the future—that is how not to do it. Is it the architects' fault that street widening schemes in such roads as, say, St. Andrew's Street, are hardly sufficient to cope with present congestion, let alone future? Is it the architects' fault that there are huge piles of monotonous office buildings, floor upon floor, set-back upon set-back, each with their ridiculous little underground garages, each with entries and exits that can only add to the confusion above?

No, if the architects are to be criticized, let's say that the unfortunate organization and control of planning in the City, with its lack of real cohesive planning and encouragement of sporadic piecemeal development, brings out the worst in our profession. Provide a stimulating atmosphere and background, and you will get stimulating and imaginative designs from the best architects.

What was really required was a comprehensive plan, not a series of compulsory purchase orders of land to be then leased to individual developers to play havoc as they wished within the prescribed limits set by the City Planning Office. A plan for excavating the whole of the City to a basement level, and using it for all goods,

circulation and car parking with generous ramps at intervals—not silly ramps to silly car parks. Three dimensional planning with a truly mixed use of buildings, creating a "live" City. After all, why should not flats be built over offices, offices over warehouses, and cinemas and theatres incorporated in the scheme of things? Why should not people live in the same building as they work, circulate vertically, where they can be organized, instead of horizontally in cars and buses, where they cannot?

Economics enter into this to the extent that a controlled density of at least twice the present maximum could be achieved without any difficulty, resulting in the greater effective use of land.

There can be little doubt that the future will say London lost its second chance of becoming a really great city architecturally in the 1950s. What a recrimination of our present system, of which the architects working on the City redevelopments are but a small part.

H. OWEN LUDER.

London.

Designers In Sweden

SIR,—ASTRAGAL should (like Lord Mayors) get his facts straight. Designers in Sweden are usually designers and have had an excellent design education in an industrial design school (Högre Konstindustriella Skolan, Stockholm, is one). If ASTRAGAL were to visit many of the Swedish architectural offices from which good industrial design emanates, he would find an inredningsarkitekt on the staff. This person is, of course, an interior and industrial designer, with a designer's training, and has status and responsibilities equal to an architect of equivalent ability and experience. The Swedes agree with Eames ("This 'Whole Man' business is a fraud, you must know at least one discipline right through").

Architects are in the fortunate position of being able to provide manufacturers with a guaranteed sale (with no design costs) for anything they design for their buildings. Great progress could be made in design if more architects would follow the Scandinavian example and rescue good industrial designers (school trained or not) from the bondage of all-too-often hidebound and oppressive industry: a few intelligent pioneers have actually done this already.

It is unfair to young architects to encourage the illusion that their training, though it is said to be inadequate for learning architecture, will at any rate fit them to be industrial designers. At least for the time being, industrial design is best learned the (very) hard way—in industry.

I regret that the expression of these views compels me to sign myself. . .

"ID."

Art And Achitecture

SIR,—There is little doubt that in the eyes of the British public, the status of the profession will be raised by having more University schools of architecture. However, there is a danger that the academic discipline of a University may not encourage genuinely creative student work. In solving the problems of architectural education, architects have the opportunity of bringing together the Universities, and Schools or Colleges of Art, that at present remain so far apart. Surely this is not a healthy state of affairs?

In Scandinavia, Italy, and Latin America, the artist-architect is considered to be an essential member of the community. In Anglo-Saxon countries, the artist remains suspect. If architects are to be trained separately from their fellow artists, it is a bleak outlook. The ideal must be that schools of architecture and schools of art should be integrated with the universities. I understand that at Edinburgh, architectural students can take advantage of both the University, and the College of Art.

Apart from the Corsham Summer School in 1950, organized jointly by the AA School of Architecture, and the Bath Academy of Art, I know of no case where young artists and architects have had an opportunity of working together on a variety of projects within an academic institution.

The proposals discussed at Oxford to raise the standard of entry to the profession, and to ensure that all potential architects are trained at recognized schools, are I think, sound. However, this does not go far enough. All recognized schools should be centres where planners, architects, builders and artists, are trained together in order to create a more human and enlightened environment. This is not so utopian as it sounds. Unless a school of architecture is genuinely comprehensive, it will be of little value to the community, be it situated in a university or any other type of academic institution.

Something of the spirit of the late MARS group must be infused into architectural education. There is nothing wrong with schools of architecture in themselves. (Alvar Aalto and Ero Saarinen are both school trained men.) What is important, is that the schools must be vital and sincere.

DEREK ABBOTT.

Liphook.

Educational Reform

SIR,—In the excellent outline report of the RIBA Conference on Architectural Education, it is recommended that a higher level of qualification is necessary for entry to the profession. The following belief was expressed as one of the advantages which would flow from this reform: "experience confirms that a good mind absorbs knowledge extremely rapidly. This fact would have repercussions on the length of theoretical training that is necessary, and might open the way to new developments in training."

This may be true of purely academic courses, where the absorption of knowledge may be a prime factor to success, but I think that it is a dangerous belief to apply to the training of an architect. Any reduction in the length of training in the architectural schools would need to go hand in hand with a comprehensive re-appraisal of the courses of instruction in the Grammar Schools.

A student on an architectural course is being trained for creative work, and the ability to design must be an essential aim. This is not to be learned only by absorbing knowledge, but follows rather a pattern of development gained from experience: a continual and advancing experience of design, with the student learning from example, trial and error.

It would be unwise to encourage a belief that this part of the training is capable of being short-circuited. In fact, unless there is a general reform of the Grammar School curriculum, it may be necessary to increase the length of the course which relates to this aspect of the work.

Generally speaking, "Art" seems to be considered as an expendable subject for the most capable and successful scholars in the Grammar Schools. The "top-stream" boys in the second year at these schools are engaged on a time-table which shows a curtailment of the time allotted to "Art." In the third year, these potential "state scholars" may be compelled (or officially persuaded) to "drop Art" altogether so that they, like so many embryo Platos, may get down to really important and earnest academic matters. If a top-level scholar decides at "A" level to become an architect (to the chagrin of his advisors who may consider him a certainty for a place at Oxford), he may well proceed to one of these newly constituted University-level architectural schools without having taken "Art" for perhaps five years.

This is a serious state of affairs, for it is not only the potential architect, but his potential client, who is being trained in an environment where the visual arts are down-graded to a secondary status. Experience shows too, that the most capable students are generally most capable in every respect. Their abilities are not necessarily out of balance and weighted on the academic side. A brilliant scholar may also be a brilliant artist or creator, but this attribute will not be served by our present educational system.

It would seem to be a matter which the RIBA could take up with the Ministry of Education, so that the visual arts could take their rightful place on the curriculum of the secondary education of our most capable pupils.

J. H. GARNHAM WRIGHT.

Hollingbourn.

Part-Time Training

SIR,—Of the six recommendations of the Conference on Architectural Education, nos. 5 and 6 are not recommendations at all. No. 1, raising the level of entry is so obvious and so long overdue that unless the RIBA Council and Education Board act on it *immediately* they will be guilty of the grossest negligence. It is to be hoped that the grounds for this recommendation are purely educational ones. As a means of limiting entry into the profession it would be both improper and ineffective. Control of the numbers entering the profession is a problem quite as important and as urgent as education, but quite separate from it.

One implication of the remaining three recommendations is the abolition of part-time training. Referring to this as "Evening Classes" (an older term) might remind us that its original purpose was to provide an educational opportunity for those who literally could not afford to become full-time students. Many such people have been and will continue to be very gifted. Until the Welfare State completely eliminates the need for "Evening Classes" this will continue to be a very strong argument for retaining them.

PETER SCHER.

London.

Back-Door Entry

SIR,—At a time when so much is being said on the status of the architect, and the need for raising the standards required for becoming one, it may be worth reminding the profession at large that there is still the back-door admission of unqualified persons of no professional qualification whatsoever—as partners to architects and on an executive level in departments headed by an architect.

The Registration Acts specifically provide for partnerships with unqualified (and unregistered) persons, and it has long been the custom of the Institute not to object to it. There is then hardly a case against unqualified persons in executive positions, with the consequent anomaly of qualified ones being under their direction. They may not represent themselves as architects but the inference is there and they are accepted as such by the people that they meet.

No other self-respecting profession would condone such a state of affairs so detrimental to its standing. If it is to improve its status, it had better put its own house in order first.

G. C. BODKER.

London.

DESIGN CONTROL

The Minister's Views

Henry Brooke, Minister of Housing and Local Government, spoke on the control of design at the annual meeting of the County Councils' Association last week. He said:

"I discussed this recently with a number of representative architects, and it was an interesting and informing experience. It is clear to me that many of them believe that control can be so harmful to the improvement of standards of appearance that there should be no control on æsthetic grounds at all, at any rate where the proposed development is designed by an architect.

"Do not dismiss this as the protest of 'angry young architects.' They are not all young who think like that; and if they are angry, we should look into it and see whether they have reasons to be angry. I believe that their reasons are threefold.

"First, they believe that architects' designs are too often controlled by planning committees, or sub-committees who have no architectural advice whatever at their own call. Second, they say that the architects who produced the designs are seldom allowed to come and explain their ideas or answer questions, before the committee takes an adverse decision. Third, they maintain that while all this is going on, a great deal of dull work—and a fair amount of really bad work—gets given planning permission, and simultaneously some quite disruptive features of the scene are not subject to planning control at all—street furniture, for instance.

"Now in themselves these are reasonable and responsible views to express, and it is up to planning authorities to show that as criticisms they are not justified. Planning authorities can do something about each of them. They can either employ their own architectural advisers to speak on matters of design, or can retain the part-time services of consultants or can seek the help of the Central Panels Committee in the formation of a panel.

"They can make a practice of inviting architects who produce designs to which they have objections, to come and answer questions, not perhaps in every case but certainly in the bigger and more important ones.

"The third criticism—that a good deal of dull work goes on—presents more difficulties, because a general improvement in standards of design depends on a general improvement in standards of taste; and it must necessarily be a very long-term affair, and one going rather beyond the functions of planning authorities, to educate public opinion. But even the planning authorities can make their contribution to it—not simply by turning down the really bad designs, but also by being prepared to discuss proposals with applicants and explain why the proposals are faulty and how they might be improved.

"I suggest also that a planning authority might conduct an experiment in some one street of their area which is cluttered up with various types of unrelated street furniture, and see what improvement could be secured by introducing a co-ordinated design for all these objects, and what the cost would be. It would be well worth while to take the best advice available for a scheme like that, and to record the look of the street before and after, inviting the people who constantly use the street to express their opinions.

"You will agree that in local government we want members and officers of local authorities who will approach possibilities like these with imagination and initiative.

"What I know from my experience is that a good deal of uneasiness exists about the way that control of design is exercised; and this is something which planning authorities ought to think about, and to have discussions with architects practising locally to see what is felt about the results which planning is achieving."

The "finger" of Gatwick Airport, opened by the Queen this week. See ASTRAGAL'S *comment on page 888.*

RIBA

Discourse by R. Buckminster Fuller

R. Buckminster Fuller's discourse at the RIBA last week (writes a correspondent) is a tricky one to report. He spoke for nearly two hours without a note, and was clearly ready to speak for another two or twenty, dashing off his scientific epigrams and quips as they occurred to him, and speaking all the time in the specialized language which he has evolved. For about half the meeting he talked about his life and experiences, and for the second half he showed slides so fast that the operator (and the audience) was hard put to keep up with him, accompanied by a staccato commentary. It was in 1927, he said, having taken part in building 240 buildings in five years, that he decided to "peel off" and enter a period of research and development. He found that the lag between the invention of tools and their introduction into industry was 15 years in rail roads, four years in the aero industry, and approximately 42 years in building. At least, it took 42 years between the production of Portland cement as a by-product of steel production before anyone thought of putting a piece of steel into the concrete: the overall lag in building seemed to be 25 years.

To illustrate the changes in the environment effected by the "industrial equation," Mr. Fuller said that if a sphere 20-ft. in diameter represented the path around the earth of a man at walking pace, the path of man on a horse would be represented by a sphere 6 ft. in diameter, a sailing clipper by a basket ball, a railroad or steamship by a baseball, a DC7 by a ¼-in. marble, and air travel in 10 years' time by the size of a pea.

After a few more thoughts on the industrial equation, in which he dwelt on the importance of weight in the industrial equation "because everything went round the world." Everybody knew the weight of the Queen Mary, but, he asked rheortorically, "does anybody know how much this building weighs?" Nobody, apparently did, and the fact that weight was not considered in building showed, he said, how far it was removed from the industrial equation.

Building, and control over the environment, brought Mr. Fuller to the problems of putting structures on the land, in the sea and in the air. On the land it was comparatively easy. There were earthquakes, but men would hope to build in between them. In the sea men discovered "floatability," but they had to learn to design for seaquakes and hurricanes. Having learned, one asked if it was worthwhile going into this unfriendly element, and one found it was because one could float resources much greater than could be carried on the backs of animals. Performance per pound became the very essence of shipbuilding, whereas it had never been thought of in building. The first building was the fortress, where one wanted a lot of weight that couldn't be pushed around.

In the air, observed Mr. Fuller, there was no floatability. "You had to stay there on sheer intellectual capability. You can't stay up on a myth." Flight at six to eight times the speed of a hurricane was normal. When a great airliner moved at five times hurricane speed into a thermal, we said "it's very bumpy." But it was like taking the Queen Mary over the Niagara Falls and saying "it's very bumpy." The airframe industry had an extraordinary knowledge of the physical environment. But the airplane was now obsolete. It was the airframe industry, he thought, that would have to meet the structural challenge of enabling all men to enjoy the earth.

Local Government Architects' Society First Meeting

The inaugural meeting of the Local Government Architects' Society is to be held on Friday, June 20, at Portland Place, at 6.30 p.m. An announcement by the RIBA states:

All registered architects and corporate members of the RIBA employed in Local Authorities, New Town Development Corporations, Public Utilities and Hospital Boards are invited to attend.

The agenda will include the following:

1. Formal proposal to establish the Society.
2. Appointment of temporary Honorary Officers and Executive Committee.
3. Terms of reference for the temporary Honorary Officers and Executive Committee.
4. Fixing of the initial subscription or entrance fee.

There are several issues to be thrashed out in detail, which the meeting may want to refer to their Honorary Officers and Executive Committee. Typical of these issues are: the name of the Society; the range of members to be admitted to it; subscription rates; relationship with the RIBA; a draft constitution; negotiations with Nalgo and others for promotion of the suggested "Professions Panel"; periodical publication of news and keeping in touch with members; regional organization, if any, and means of stimulating interest in the provinces. Discussion on June 20 is, therefore, likely to centre upon item 3 of the agenda.

Architects concerned are particularly asked:

(*a*) To come to the meeting; and, if possible, to give notice of their intention to do so in advance so that the right accommodation for the meeting can be provided. (A collective answer from each office will do very well rather than individual letters.)

(*b*) To send in the names of any members whom they want to nominate as Honorary Officers. It should be borne in mind that the burden of work for these Honorary Officers is bound to be heavy in the early and formative stages of the Society.

(*c*) To agree with colleagues in their office upon one man whom the Honorary Officers can regard as their "contact" in that office over the next few months; and to send in his name.

In each case communications should be addressed to the Honorary Organizing Secretary, Local Government Architects' Society, c/o the RIBA.

Education Committee

The Board of Architectural Education of the RIBA appointed a Committee to draw up recommendations for implementing the proposals made by the Oxford Conference, and to prepare observations on those matters of Institute policy for which the Council are responsible. The members of the Committee are: Professor Sir Leslie Martin (Chairman), William Allen, G. Grenfell Baines, D. H. Beaty-Pownall (Chairman of the Board), Kenneth Campbell, F. Chippindale, Anthony W. Cox, Professor R. Gardner-Medwin, D. E. E. Gibson, R. Llewelyn Davies, Professor R. H. Matthew, Michael Pattrick, Robert J. Potter, E. M. Rice, Richard Sheppard.

METRIC SYSTEM

Use in Britain?

The British Association for the Advancement of Science has set up a committee to "report on the practicability, implications, consequences both international and domestic, and the cost of a change over to the metric system or the decimalization of weights, measures and coinage by the United Kingdom." The chairman is Sir Hugh Beaver.

COMPETITION

Monument in Montevideo

The IUA has approved the conditions of a competition for a monument to Jose Batlle in Montevideo, Uruguay. It will be in two stages. In the first stage, five competitors will be selected to compete in the second stage and will receive prizes of 8,000 pesos. The winner of the final stage will receive a prize of 20,000 pesos. The second and third prizes will be 10,000 and 5,000 pesos respectively. (The peso is worth 4s. 9d. at the official rate, 1s. 5d. on the free market.)

The jury of seven assessors includes a representative of the IUA and the International Association of Plastic Arts. The closing date for the despatch of projects for the first stage is December 15 for competitors living in Uruguay, Argentina, Brazil and Paraguay. For competitors elsewhere the closing date for the despatch of projects is December 30, 1958.

The conditions of the competition can be obtained from the promoters, the Comision Nacional Pro Monumento a Batlle, 25 de Mayo, esq., 1º de Mayo, Montevideo (Uruguay).

HC

Slum Clearance Conference

The subject of the Housing Centre's conference this year is "Redevelopment, Progress with Slum Clearance Schemes." It is to be held at County Hall, London, from Wednesday, July 2, to Friday, July 4. Max Lock is to review the progress of redevelopment and the form it is taking; Nathaniel Lichfield speaks on economic problems, and Cyril Sweett on building costs in relation to design and construction. A number of speakers will give examples of redevelopment with illustrations, from Birmingham, Canterbury, Sheffield, Cardiff, Stoke-on-Trent and Harwich. Conference fees are 30s. to Housing Centre members, £3 to non-members. Information from the Housing Centre, 13, Suffolk Street, Haymarket, London, S.W.1.

AA

Election Results

The result of the ballot for the election of the Officers and Council of the Architectural Association for the Session 1958-1959 is as follows:

President: D. Clarke Hall; Vice-Presidents: H. T. Cadbury-Brown, Edward Playne; Hon. Secretary: J. M. Austin-Smith; Hon. Treasurer: John Lacey; Hon. Editor: Peter Newnham; Hon. Librarian: J. Eastwick-Field; Past President: J. Brandon-Jones; Ordinary Members of Council: B. L. Adams, Neville Conder, Anthony Cox, L. De Syllas, G. Epstein, Gordon Michell, Edward Mills, J. M. Richards, John Smith, Hilton Wright.

BRUSSELS

A Correction

In our special issue on Brussels (May 29) page 794 we attributed the Netherlands Pavilion to van den Broek and Bakema, Boks, Peutz and Rietveld, our authority for this being the official catalogue. We are now informed that the name of Mr. Peutz should have been omitted from this list.

YORK INSTITUTE

Grant from Rowntree Trust

At the Annual General Meeting of York Academic Trust the Dean of York (The Very Rev. E. Milner White), who is Chair-

man of the Trust, referred to the continuing expansion of the York Institute of Architectural Study and the increasing recognition given to it both in this country and abroad. He then announced that the Joseph Rowntree Social Service Trust had made a grant of £35,000 over the four years 1958 to 1961 to enable the York Institute of Architectural Study to continue its work on a permanent basis from 1959 onwards. The Social Service Trust had also offered a further substantial sum to the Institute from 1962 onwards, provided that the Academic Trust was successful in raising elsewhere the balance required to maintain the Institute on this basis and provide the necessary endowment.

RICS

Annual General Meeting

In contrast to the heart-searching AGM of the RIBA, the corresponding event at the RICS (on June 2) was entirely serene. The retiring president, W. M. Balch, was able to congratulate the Institution on almost every aspect of the year's work. For example, he was glad to announce that as many as 28 members had entered in competition for the Institution's gold medal; that the inauguration of a ceremonial reception of newly elected members was one of the "best things the RICS had done" and that the new-style RICS Journal was a great improvement over the old. He thought also that it would "add to the status" of the Institution that, of those members asked to give evidence to the Royal Commission on Doctors' Pay, as many as 72 per cent. had responded. He felt that the Institution had been right to inaugurate, despite some criticism, an Annual Conference (the first one had been at Nottingham)—which was a great success and should command the support of all members in the future. Finally Mr. Balch commended "the thousands of good chaps—keen on their profession" in the RICS Junior Organization; paid tribute to the secretary, Sir Alexander Killick, and the RICS staff "down to the girls who make the tea." "The RICS climbs higher every year up the ladder of progress," he said, amidst applause.

It was, nevertheless, the next speaker, W. E. A. Bull, the Immediate Past President, who got the evening's biggest laugh. He said he had recently heard of a new educational toy, designed for the adjustment of children to present-day life. "Whichever way you put it together," he said, "it is wrong."

The annual report itself, which it was the purpose of the meeting to approve, offers none of the desperate appeal of the RIBA's similar document. Many of the headings, testimony to the wide scope of the surveying profession, are far removed from architectural concern—"Parliamentary," "Agriculture and Forestry," "Mining Surveying," etc.—but there is a comment in "Building and Quantity Surveying" about the disciplinary action against an architect who was also an F.R.I.C.S. practising as a house agent. His appeal against his unfrocking (as an architect) was allowed (see AJ: May 23 and 30, 1957). The Council of the RICS comment that "they had never accepted the proposition that the continuance of a long-standing association of house agency with architecture could constitute disgraceful conduct under the Architects Registration Acts." To soften the blow they do add that "the decision applies only to a diminishing class of persons."

It is announced with the report that the new president of the RICS is F. G. Fleury, whose practice includes "compensation, rating, valuation, land development, the management of urban and rural estates, and architecture."

Other items of possible interest to architects come within the section reporting the Quantity Surveyors' Committee. One is a note from the sub-committee on elemental bills of quantities which says that "there still appears to be very little demand for the elemental bill. . . ." To raise one's hopes, however, there is further on the announcement of a special sub-committee "to investigate and report on methods of measurement now in use throughout the world" which has already received a considerable amount of information from members overseas.

Just at the present time the RIBA might be tempted to envy the surveyors their clear horizons, but the future could possibly prove this to be a mistake.

FINANCIAL POLICY

Builders Seek Special Measures

C. P. Howells, President of the National Federation of Building Trades Employers, said at the half-yearly meeting of the Eastern Federation of Building Trades Employers, on June 3, that the National Federation had informed the Minister of Works of the problems being faced by builders in areas like East Anglia where the financial policy of the Government had had a severe effect on trade. They had pressed the Government, he said, to take steps to spread out the work more evenly between different types and sizes of building firms and between different parts of the country. Now that the Government had taken powers to deal especially with areas in which employment was high they hoped that East Anglia would see some improvement in the position.

BOOK REVIEW

Choose It Yourself

With the widespread use of self-selection, and more recently, self-service as a means of retailing, the publication of technical books on these subjects can be expected to increase. New operators attracted by increased turnovers create the demand and contingent experience is disseminated amongst those concerned with the building and equipping of special premises.

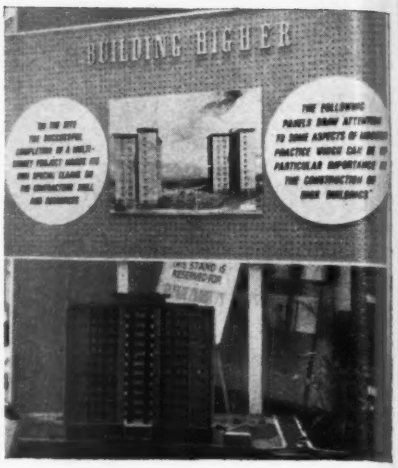
Mr. Lyon's book,* claimed to be a critical analysis of selling by self-selection, is unfortunately so abbreviated that it is hardly possible within the compass of the reading matter to state the principles and problems involved, and there is little opportunity for the author to pass on the benefit of his experience gained in the supply of specialist equipment to the trade. This lack of detail is likely to limit the book's appeal among serious enquirers, but for those requiring a résumé of the main aspects of the subject, the scope is covered in an analytical, though superficial, manner.

The value of the publication as a reference guide or handbook must therefore be judged by the 50 or so excellent photographs which illustrate various methods of displaying different types of merchandise. Thirty departments are dealt with.

The photographs are clear and informative but the value of the information they contain is reduced by the omission of any supporting technical data or drawings, and the resemblance to a catalogue is heightened by the fact that all the examples selected are the product of one manufacturer and, presumably, one design team. Some of the equipment is of a high standard but much of it is stereotyped and too conventional to be of interest to any but those seeking a ready-made solution.

B. R. ARCHER.

**Self Selection.* by Claude R. Lyon (Camford Press 42s.).



"BUILDING HIGHER"

A Scottish Exhibition

Unless more fundamental thought is given to the design of tall buildings, and the complex within which they are contained, the proponents of high density housing may suffer a Phyrric victory. This is one of the conclusions in this report by Michael Laird on the exhibition on "Building Higher" at the Scottish Building Centre. It was prepared by the Ministry of Works, the BRS, DSIR, and the Department of Health for Scotland.

This exposition of modern building practice was well conceived, well presented, and well worth while—particularly for those concerned in the project planning of multi-storey flats, with which it was primarily concerned. There are too few exhibitions which point clearly to some body of knowledge and so disseminate the material as to make it at once easily comprehensible and reasonably comprehensive. Nowadays one often has the impression there are too many exhibitions, yet there can be no doubt of the salutary effects of this one in leading scientific evidence to identify and explain the economic problem in terms of plan, structure, and site organization. In this way, it comes nearer to making a positive statement in support of architect-engineer-contractor co-operation than is represented by any of the high blocks actually built in Scotland so far.

It is quite clear from this exhibition that no single member of the building team can answer for all aspects of the exercise and that the architect has a really crucial responsibility of leadership in high flat projects. Is it because there is a lack of designers with the necessary characteristics that has caused important local authorities in Scotland to invite contractors to submit multi-storey designs? At any rate, the most serious misrepresentation was made on one screen where some of the first efforts in Scotland were illustrated (travesties of architecture in the main) alongside the caption "a good design is worth repeating, has all the effort put into these blocks been

wasted?" On the face of it, this seemed a silly question.

It is plainly necessary for the specialized technical experience of these "pioneer" projects to be so completely understood by right-minded private and official architects that they can recover their proper position in the building team, and recover something more valuable architecturally in the building which ensues. If these rampant piles of concrete are to proliferate in central redevelopment then it will be even more difficult to ignore their shortcomings æsthetically than in the diffuse network of Council "cardboard" housing they purport to supersede.

The feeling grows more and more that proponents of high density housing will suffer a Pyrrhic victory in the outcome of this too protracted controversy unless there is more fundamental thought given not only to the stylistic qualities of "point" and "slab" blocks, but also to the whole careful balance of the complex within which they are contained. A close-knit and varied network of housing types is in the best of Scottish traditions and the very unpredictable sequences of this human experience represent the essence of a real culture which was nurtured in these more vernacular housing developments. We should remember the wynds, the closes, the back greens, and the "stair heids," and ponder awhile on the lonely isolation of point blocks in perhaps too spacious swards. At the moment it does appear either that tall blocks should be considerably taller than built so far (for most reasons, including the economic), or else so reduced and made more intrisically flexible that a variety of heights and purposes may be served by similar constructions.

The benefits arising from a combination of these last two propositions make interesting speculation, but these considerations are of course beyond the scope of the DSIR exhibition. Nevertheless, the true technicality of this show emphasizes the apparently infinite range of tools and techniques of contrivance for art-culture concepts. However, the "isms" and ambiguities of this sort of thinking were absent from the exhibition itself, which was refreshingly articulate. We were shown how important was the pre-planning of main access routes on site with materials, compounds, and plant in their most advantageous positions for the building project as a whole, how extraordinarily variable in small and large firms of contractors was the loss of time due to frost last year in north Scotland, how "other countries are building higher"—and also better, one had to add.

Plan types were compared not only from the standpoint of structural suitability and differences in rent, and photographs with constructional detail drawings were excellently presented to amplify the lessons learned from the 14 blocks (six of which were one off jobs) already built in Scotland. It was also explained that of the 72 blocks surveyed in the U.K. 41 were one off jobs. Another useful idea was the display of many separate article reprints concentrating on technical problems intrinsic to the exercise.

The clear, concise, nature of the material shown provided a real stimulus to further research and perhaps the most encouraging aspect of patronage was the sponsorship of the Department of Health for Scotland. Hitherto, and apart from the contribution of the Department of Health for Scotland maisonettes at Muirhouse, the Department have been only tinkering with the overall problem, so that a rapid construction of the Department's own long-awaited pilot scheme for multi-storey housing is the more eagerly anticipated.

FURNITURE

American Designs Available

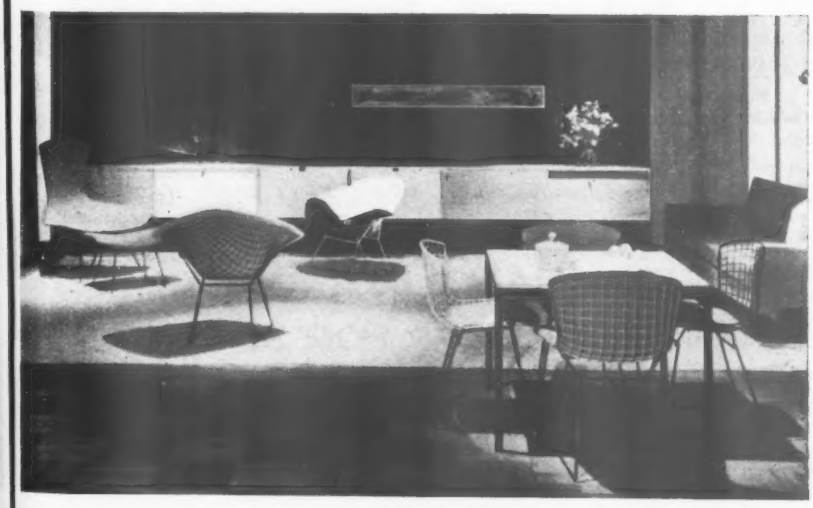
Only four months have elapsed since the collection of chairs designed by Charles Eames was shown to the public in England for the first time, and now with the formation of Knoll International Britain yet more famous chairs become generally available. Desks and tables also form part of the Knoll collection, but it is the chairs, designed by architect Eero Saarinen and sculptor Harry Bertoia, which are of greatest interest. No new pieces of furniture were included in the collection when it was introduced in London, which is a pity because, interesting as they are, most of the items were designed several years ago, and consequently the impact made by their arrival is lessened by familiarity. Their manufacture in this country makes a welcome extension of the furniture suitable for modern buildings, and it should also provide a stimulus for our own furniture industry.

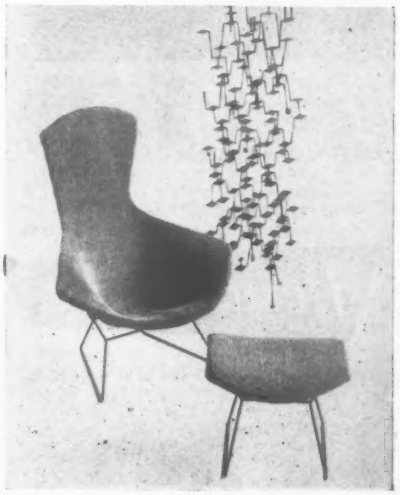
Harry Bertoia has designed a series of welded wire chairs including dining, easy and reclining chairs. The pre-formed steel wire frames are available finished black or white and also in polished chromium plate. The wire baskets are attached to the steel rod bases on rubber mounts to give resilience and some of the easy-chairs can be tilted. The moulded foam-rubber upholstery is detachable and is available in wool, cotton and plastic covers of varying texture and an exciting range of colours.

Also illustrated here are two chairs by Eero Saarinen. The well-known large easy chair has a moulded plastic shell upholstered in foam-rubber with two loose cushions for additional comfort and is large enough to curl up in. The base is in black steel rod and there is a matching foot-stool. The back of the dining chair is moulded plastic and the seat moulded plywood, both covered with foam-rubber. The legs are steel rod painted or plated, and all these chairs are available in a variety of interesting Knoll fabrics.

Chairs by Eero Saarinen: top, easy chair (price £67 in pure wool) and ottoman (£17 3s.); above, dining chairs (price £16 6s. each).

Chairs by Harry Bertoia: in the picture below left, the side chairs cost from £8 11s. to £11 3s. according to material and amount of upholstery; the small easy chair costs from £10 to £20 18s. The high back chair, seen in detail below (together with one of Bertoia's wire sculptures) costs £39 or £47 10s., the stool £12 7s. or £16 3s.





WHY THE STUDENTS ORGANIZED . . .

. . . *and What They Hope to Do*

The inaugural conference of the British Architectural Students' Association was reported in the JOURNAL *of May 8. In this article George M. Kassaboff, a student at the Architectural Association and honorary editor of the BASA, describes the sense of frustration among students that has led to its formation, and outlines the objects which it seeks to achieve.*

We architectural students are worried. When we begin training we believe that we are going to learn to make a unique contribution, which only we will be fully qualified to do: namely architecture, as the creation of the environment that men live in.

But it does not seem to work out like that. We do not have to be very observant to notice that this environment is growing in the most haphazard and life-negating way. Obviously all the forces acting upon its growth are not those that architects could, or even should, be able to control fully. However, even in the limited fields of town planning and architecture there is chaos and a very low standard of honest creative thinking. Apathy is ubiquitous and megalomania still hides behind the screen of such phrases as "responsibility to true architecture," always used with considerable, and one feels deliberate, vagueness. In consequence the profession is held in very low regard by the public. This reduces its influence, and that in its turn starts a vicious circle which ends logically with the extermination of the species "architect."

Nevertheless, we believe that there are problems which can only be solved by those who are architects. In this respect the RIBA *ad hoc* committee and the Oxford conference on education are heartening examples of rethinking. In the student's mind, however, they raise two questions. First: Why is it the status of the profession which is being considered and not the status of architecture? Is not the first inevitably dependent on the second? Secondly: Under what system of practice are the products of the proposed educational system intended to work?

One of the thunderbolts flung down during the storm at this year's RIBA AGM was the revelation that architects were responsible for a very small part of the volume of building in this country. Now superficially this fact relieves them of the blame for much of the mess. But when one considers why it is that architects design so few of the buildings, the only plausible answer is that the public either does not trust them or does not realize their value. This means that the profession has not proved itself competent and willing to solve all the environmental problems which appear. Is this only because of the education it has received or is the framework within which it works also to blame? For surely there is not a lack of talent?

As students we are still outside all this, in so far as we do not have any vested interests in job-getting, etc. In fact, we are the only ones who are truly in an objective position. Regrettably few others are, even when they have the inclination and ability. This situation makes us very much concerned that we should be adequately equipped by our education to deal with the problems we are best fitted for; and that we should be allowed by the profession and its clients to tackle these problems, once we have joined its ranks.

Many students experience an acute sense of frustration. They sense a lack of reality and responsibility in the approach to their education, which often only seems to lead to a narrow professionalism. This is aggravated by the almost complete cultural isolation of one student or group of students from another, whether in the schools or outside, so that good ideas cannot move about the country helping education and giving some common purpose.

From this unsatisfactory situation the idea of the British Architectural Students' Association was born. It has become an organization which will encourage students to be more thoughtful and articulate about their responsibility as architects, so that they may approach their education with more maturity, for it is never too early to search out the task that is to be accomplished. As such it is designed to become the forum for all architectural students in the country, whether full or part-time, and also for those practising architects who recognize that the accepted distinction between student and practitioner is not only short sighted but positively harmful, and who welcome the attitude which accepts that an architect never becomes essentially different from a student, even after official qualification.

Thus is was decided at the inaugural meeting in April, that there should be two classes of membership, one for students and the other for associates. On qualifying, students would naturally tend to become associates and so the interests of architecture and of the architectural profession (as something which grows and bears fruit and not as a stratified top heavy edifice) would inevitably be strengthened.

This membership would be kept informed by frequent bulletins, and these, together with general meetings and symposia would form the necessary medium through which to counteract the prevalent isolation. The ARCHITECTS' JOURNAL has promised to give space to students' news and views.

There are a number of other functions which BASA will perform. It has already secured representation on the NUS grants and welfare committee which can negotiate with the Minister of Education at a national level. It will ensure that a larger proportion of students will have an opportunity of hearing lecturers visiting this country from abroad. Also it will organize such activities as visits to places of interest and exhibitions of work between schools.

It is recognized that previous student organizations, such as the Architectural Students' Association, died because too much administrative work had had to be done by too few students. To overcome this, and to ensure continuity and effectiveness it seemed essential that the organization should employ a salaried permanent secretary acting purely in an administrative capacity. This would relieve the student executive of much unnecessary paper work and leave them free to determine policy.

There are two main obstacles which BASA must overcome before it can really live up to its name. The first is the difficulty of bringing in *all* architectural students into BASA and the second, related to the first, is the need for sufficient funds to launch the organization.

Of some 7,000 students scattered over the country, about 1,000 were nominally represented at the inaugural conference. Most of these were from the full-time schools, and understandably, part-time students were poorly represented. However, they are the ones who are most liable to benefit from such an association and it is important that every effort be made to bring them into BASA. Allied societies, through their junior sections, are being approached to help with this work; and the RIBA may assist by making contacts.

Every young organization of this nature is in the paradoxical position that it can do little until its potential members join it, and these potential members hesitate to join until it is fully effective. But it must be remembered that the membership makes up the association and so it is necessary that architectural students recognize the value of BASA and join it quickly so that this paradox may be short lived.

The second obstacle, that of finance, is obviously very much bound up with membership. As it is, the annual subscription has been fixed at 5s. for ordinary members and 1 guinea for associates. This is estimated to cover BASA expenses adequately. But subscriptions take some time to collect and therefore it has been decided to launch an appeal to start the association and ensure its continuity.

That is the situation. The problems are complex and require immediate attention from everyone. BASA has been founded by students to help solve these problems. It does not offer any immediate and universal panacea, but it has started from a sound basis and all that remains now is that every student and every live member of the profession, join this association, so that it may quickly become the truly representative and effective body which it promises to be.

Further information about the BASA can be had from the hon. secretary, John Crosby, 5, Mossley Hill Drive, Liverpool, 17. The next general meeting is to be held in October, when the scholastic year is under way.

DIARY

The Problem of Technical Information. Talk by Eric L. Bird. At the RIBA, 66, Portland Place, W.1. 6 p.m. JUNE 17

Discussion on a Scheme for a New Town. Members of SPUR and their guests are invited by the Department of Town Planning, University College, London, to attend a discussion on a scheme for a new town with 300,000 inhabitants by the Diploma Students. Chairman: Professor Sir William Holford. At Flaxman House, Flaxman Terrace (at the rear of St. Pancras Church). 6.30 p.m.

JUNE 17

Local Government Architects' Society. Inaugural meeting at the RIBA, 66, Portland Place, W.1. 6.30 p.m. JUNE 20

Redevelopment: Progress with Slum Clearance Schemes. HC Annual Conference at the Conference Hall, County Hall, S.E.1. Applications (HC members 30s., non-members £3) to the Secretary, HC Trust, 13, Suffolk Street, S.W.1.

JULY 2 TO 4

technical section

THE INDUSTRY

From the industry this week Brian Grant describes a new type of radiator, developments in curtain walling, asbestos cement sandwich construction, kitchen furniture and a magazine boiler.

Pressed steel radiators

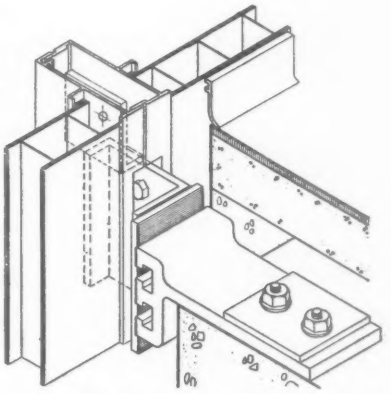
For a number of years Washington Engineering have been producing the conventional steel sectional radiator, and they have now introduced a type built up with thin elliptical tubes mounted one above the other and produced in lengths up to 20 ft. or more if required. The gaps between the individual tubes are wide enough to allow them to be easily cleaned at the back. The greater part of the heat emitted is by radiation, and water circulation is improved by baffles: long radiators remain efficient as the bottom tube serves as an adequate return pipe. A two tube radiator is suggested as an efficient form of skirting board heating. Heat emission tables for all types are obtainable from the manufacturers. (*Washington Engineering Ltd., P.O. Box No. 4, Washington, Co. Durham.*)

More curtain walling

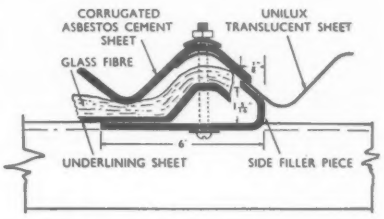
A new booklet from Holoplast describes their system of curtain walling, which makes use of the type 90 panel and a grid of aluminium alloy mullions and transoms. Each mullion is formed in two halves, the junction forming an expansion joint while vertical movement is allowed for by a spigot and sliding transom arrangement. When the cavities of the Holoplast panels are filled with Rocksil or Fibreglass the U value is 0·25, while if a glass facing with a ¼ in. air space is introduced in front of the filling panel the figure is improved to 0·20. The standard panels incorporate their own internal and external finish, and the fixing details at floors are designed to allow for any discrepancies which may occur in the building structure. (*Holoplast Ltd., New Hythe, Maidstone, Kent.*)

Asbestos cement insulating sandwich

Two new developments in asbestos cement sandwich construction have been evolved by Universal. Curved lining sheets can now be supplied for use with curved external sheets in standard six, super six and Watford tile profiles, which means that glass sandwich construction is now possible in curved as well as flat panels. The other new idea is a side filler piece for use with translucent roofing panels. Previously, the cavity has been exposed inside the building where the sides of the translucent sheet lap with the sandwich, and the filler now gives a neat finish (see section). The manufacturers also point out that with their asbestos cement

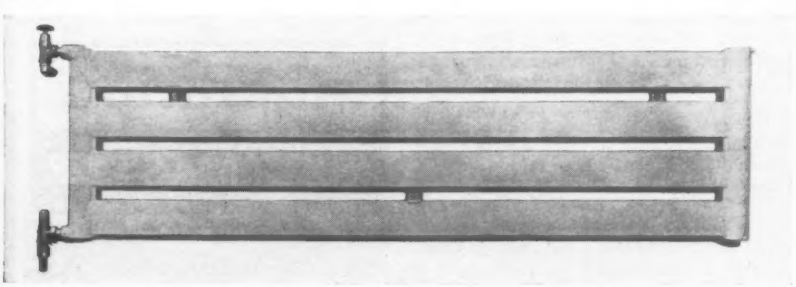


Detail of the junction of the mullion and panel in the Holoplast curtain wall system.



Section through roofing panels with an asbestos cement insulating side filler piece.

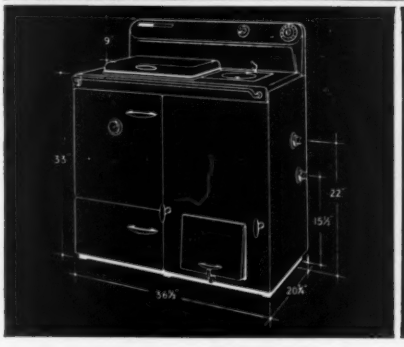
Below, one of the new Washington Engineering pressed steel radiators built up with thin elliptical tubes, shown in detail on the right.

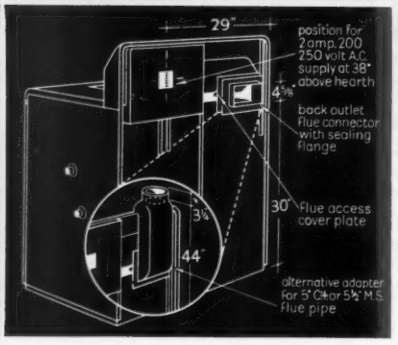


this new solid fuel cooker goes in uncommonly easily

It is delivered in one piece—ready assembled. There is no 'ex works' or delivery charge. Installation is quick and simple—it is done by the builder so you can save time on site.

RADIATION YORKMASTER





And makes a big impression because—

It has a **Radostat heat selector.** Variable thermostat control of oven and water-heating. Electrically operated air inlet valve with exceptionally quick response. 5-hour clockwork cooking timer on control panel.

Hot water—plus a towel rail. Over 24 hours, the L-shaped side-outlet boiler can produce 80,000 B. Th. U., raising approximately 90 gals. of water from 50°F to 140°F. This allows for heating a towel rail or small radiator.

It burns with full efficiency on the cheapest fuels. Updraught (for coke) OR downdraught (for burning cheap low-grade coal virtually smokelessly)—at the flick of a lever.

It has two porcelain lined ovens: the larger is 2 cu. ft., flueless and air-flow heated, with porcelain-enamel lining and removable grid-guides, a dial thermometer on the oven door, and temperature thermostatically controlled over a full cooking range. Separate lower oven for slow-cooking.

It has one big, quick-action hotplate, 17½" x 10½". The user can fry, boil and simmer at the same time.

It is easy to look after. The fire need never go out. Daily refuelling averages twice with coke—only once with coal. Sloping bottom-grate with shaker action for clearing ash, and dumper for removing incombustibles, both controls operated externally, with ashpit door closed.

It has clean lines. Enamel finish in white, cream or blue, with hob in black or grey.

It costs £125, list, assembled and delivered.

The Yorkmaster is a really modern solid fuel cooker

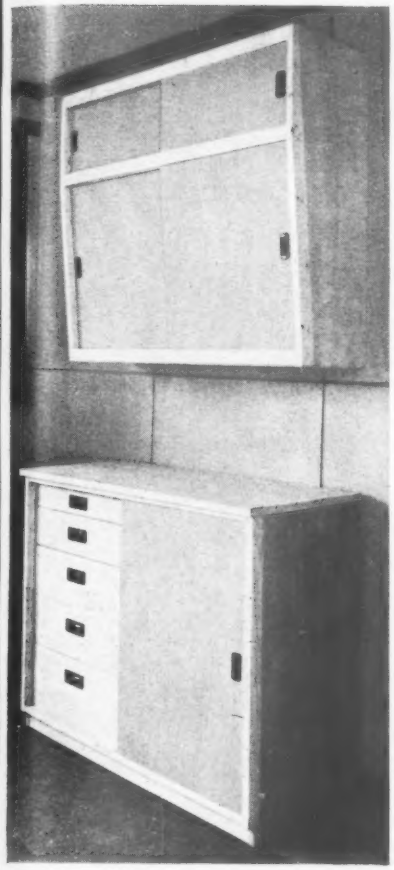
Connexions, etc.

Flue. Left hand rectangular back outlet spigot 8¼" wide x 4¼" high at 30" to underside. Adapter for standard 5" diameter sheet steel or cast iron flue pipe available. Recommended minimum height of chimney, 15 ft. above hearth.

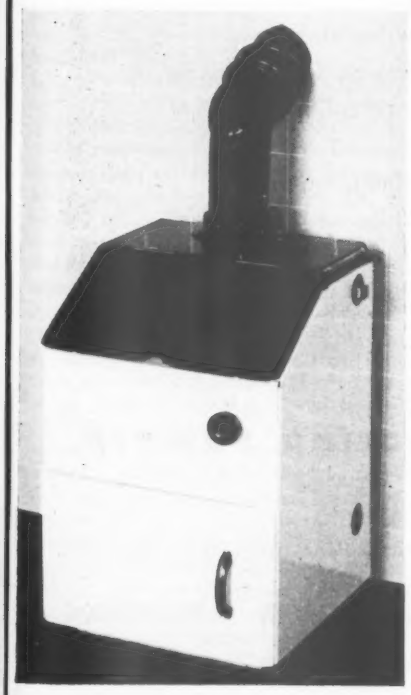
Boiler. 1" B.S.P. connexions at right hand side. Not 'handed' but left hand flow and return pipes can be passed behind the cooker in the space provided, if required. Cylinder should be about 30 gals. lagged. Flow and return pipes should not exceed 25ft. each. Water-jacker in steel-clad copper or welded steel, bower-barffed if required.

For Technical Information Sheet please write to Radiation Group Sales Ltd., Leeds 12.

Radiation
YORKMASTER



Above, wall and floor units of the "Scandinavian" range of kitchen fittings by Kingston (Architectural Craftsmen) Ltd. Below, the Redfyre thermostatically controlled magazine boiler.



glass fibre sandwich U values of 0·20 or better can be obtained for as little as 24s. a sq. yd. supplied and fixed, and they have just issued a bulletin showing the application of this roofing to different types of construction with tabulated U values. (*Universal Asbestos Manufacturing Co. Ltd., Tolpits, Watford, Herts.*)

Kitchen fittings

A "Scandinavian" range of kitchen fittings is now being produced by Kingston. The floor fittings consist of drawers and cupboards with sliding doors, and the wall units, which have canted fronts, have sliding doors and internal shelves. Construction is mostly in plywood, with blockboard doors and drawer fronts in 1-in. pine. The floor units are the BS height of 36 in., and the other dimensions are 42 in. by 20 in. deep, the wall units tapering in depth from 15 in. at the top to 12 in. at the bottom. All door and drawer pulls are flush fitting, and the tops of the floor units can be either softwood, hardwood or plastic. (*Kingston (Architectural Craftsmen) Ltd., Minster Works, Hull.*)

New magazine boiler

The photograph below left, shows the new Redfyre thermostatically controlled magazine boiler, which has an output of 20,000 B.Th.U. per hour and will provide hot water from a 30 gal. cylinder plus 60 sq. ft. of radiating surface. Price is £34, and the boiler will burn for 24 hours without refuelling. (*Newton Chambers & Co. Ltd., Thorncliffe, Sheffield.*)

INFORMATION CENTRE

A digest of current information prepared by independent specialists; printed so that readers may cut out items for filing and paste them up in classified order.

7.67 practice

COST PLANNING

Planning the Cost. (The Chartered Surveyor. May, 1958.)

This is the title of the fourth in the series of papers being published by the Cost Research Panel of the RICS in their *Journal*. Its aim is to urge the need for cost planning and this it does with two main examples.

The first shows two alternative housing schemes for the same site at the same density (100 hab. rms. acre). One has 50 per cent of high blocks which costs £240 per dwelling more than the other (with mainly 4 storey blocks). These schemes were part of the MOHLG exhibit at the 1956 Public Works exhibition.

The second example shows a cost plan for 3 storey terrace housing—broken down into 23 headings (they are not elements in the AJ sense) each of which shows prices of alternative methods, *e.g.*— "External doors and sidelights": aluminium £198, steel £131, etc. . . .

Introductory paragraphs of the paper criticize local authorities who initiate housing schemes without first comparing the financial consequences of alternative modes of development; without setting cost limits or without providing their architects with adequate briefs. The paper admits that little information on economics exists, gently chides the MOHLG for not providing it and suggest that quantity surveyors should be appointed at an early stage in the design to estimate the cost of alternatives.

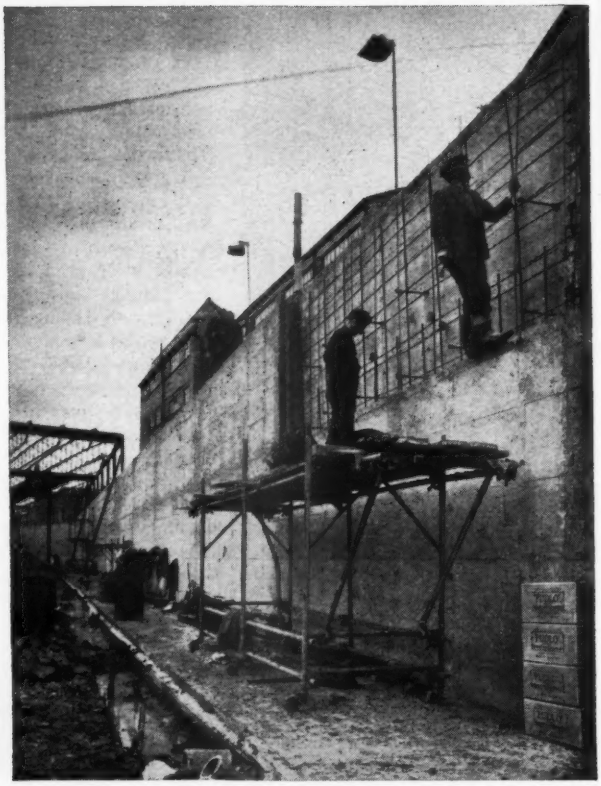
Later paragraphs explain the need for "careful study of plan arrangements; that spatial economy may not mean structural economy; that an economic structure may mean waste space; that the optimum solution will depend on the height and situation of the building; that r.c. columns and beams or load bearing walls or combinations of both "will be important alternatives" to cross walls. The report also commends the findings of the Simon and Robertson Committees and deplores excessive nomination of subcontractors.

All this is so uninformative and unexceptionable that it was hardly worth saying, but the real interest of the paper is the method of cost planning that it puts forward. It appears that the architect must first work out his design to a stage at which the quantity surveyor may price it on approximate quantities, including prices for alternative methods and materials. The architect then presumably, chooses between the alternatives in order to complete the working drawings. The paper says that the method "enables him to ensure that costs are rationally distributed throughout the building and that the total cost does not exceed budget limits"—but it does not explain how this is to be done. Any method of cost planning must surely have three essentials, first that it sets targets of cost *before* the bulk of the design work is done, and secondly that it relates costs to some yardstick of comparison, thirdly that it relates to the architect's mode of thinking.

The RICS method meets none of these requirements—it is really a method of approximate estimating, not of cost planning. The MOE method of cost planning, with which it invites comparison; by relating costs to floor area, by giving quantity factors and by giving the costs of *functions* rather than of particular methods of meeting them, is a far better tool. It enables cost targets to be set very early in the sketch design and can help to influence the form of the plan as well as the choice of material and method of construction. It also allows direct comparison between different buildings. Nor is the preparation of a cost plan a "costly and complicated process"—as the RICS admit theirs to be.

ARCHITECTS:—
Dodge & Reid,
Chartered Architects,
72 High Street,
Brentford, Middx.

CONTRACTORS:—
Howard Farrow Ltd.,
Bank Buildings,
Russell Parade,
Golders Green Road,
London, N.W.11.



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YARDS CUBE OF

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The retaining wall, which encloses the new building, has been constructed to support an embankment approximately 17′ 6″ in height. It was essential that this retaining wall should be completely watertight.
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technical section

One's conclusion in reading this paper is one of regret that the RICS Cost Research Panel have not followed their own advice and collaborated with architects to develop further a much better method of cost planning that already exists instead of attempting to invent a rival one.

13.140 materials: timber
JOINERY TEXTBOOK

The Design and Practice of Joinery. John Eastwick-Field and John Stillman. (Architectural Press. 42s.)

If every architect in the country were to follow all the advice in this excellent book, joinery firms would be astounded and the general standard of their products would show a marked improvement.

We may as well admit there is plenty of room for it. Joinery does not always get enough attention in the schools; newly-qualified assistants are given joinery detailing to do, but get scant guidance from harassed seniors; at the design stage, the tendering system stands between the architect and the technical expert in the joinery firm; specifications are loose; there is too much emphasis on cheapness, and not enough on value for money; the joinery industry is not well adapted for passing back its manufacturing experience to the designer—the pithy comments made on the shop floor never reach the ears of those who could most benefit from them.

There has been a breakdown in communications. In the old days, the experience of one generation was passed on to the next, mainly by means of typical details. These could be relied on to take care of the intractable behaviour characteristics of wood. As long as the details were acceptable, the reasons behind them did not matter so much. But with the change in our æsthetic ideas, the system has virtually collapsed and, if we are to avoid practical disasters from simple causes, we have no choice but to re-learn the basic principles.

John Eastwick-Field and John Stillman have done us the great service of restating these principles. In the chapters on the timber yard and on movement in wood, the essential data on the raw material are collected and presented with clarity. The discussion on design begins with a carefully reasoned analysis of construction which divides joinery into two basic elements, skeleton frames and flat areas of wood. The authors then describe the design and machining of sections and joints in detail. We are no longer dealing with a handicraft trade, and when our designs are made, many of the processes will be done on machines. These chapters trace the influences of the material, function, manufacture and æsthetics with great skill. The characteristics and uses of plywoods, boards and veneers are explained, and there is a most valuable section on writing joinery specifications. This makes the interesting suggestion that a new heading "Procedure" should be introduced, to deal with when, and where, certain processes are to be done, and how components are to be transported.

There are several useful appendices, including guidance on the choice of timbers and reference to British Standards. The book is well illustrated throughout. Some of the 213 illustrations are photographs, but the majority are beautifully clear drawings made by Robert Maguire.

The RIBA Text and Reference Books Committe did well to suggest that this book should be written, and the authors are to be congratulated on setting a new standard for works of this kind. Get a copy for the office library, or, if you are the principal of a school of architecture, don't rest until all your students have read it.

20.237 construction: complete structures
PRECAST CONCRETE ARCH BUILDING

Precast sections make a corrugated barrel roof. (Engineering News Record [U.S.A.] February 27, 1958, pp. 40, 41.)

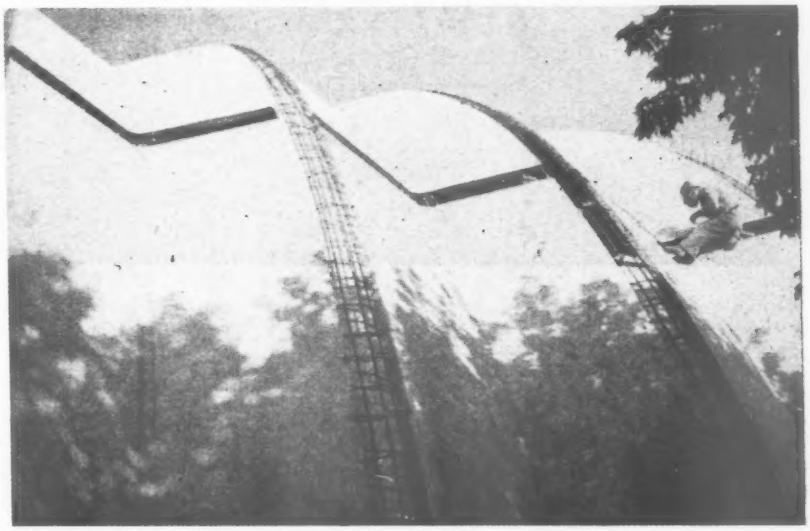
This barrel shaped reinforced concrete arch of corrugated form is of interest to architects and engineers.

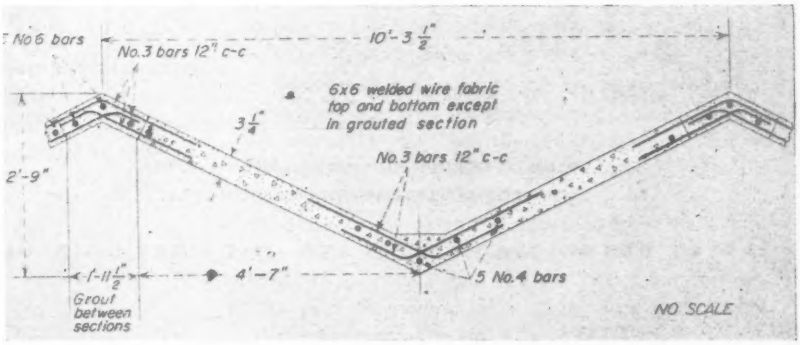
The arch provides a complete structure to a gymnasium in Colorado. In plan it is 133 ft. long and spans 115 ft. The 133 ft. is made up by 13 corrugated arches each 10 ft. 3½ in. wide which measure 158 ft. along the circular curve. The curve comprises five precast segments about 31 ft. long of 3½ in. thick concrete slabs folded to provide a corrugation 2 ft. 9 in. deep. The precast sections were cast at the site in five identical forms. Four two-bolt inserts were cast into each segment for lifting by crane. Reinforcement consists of a welded mesh in each face with extra rod reinforcement at the folds.

A steel scaffolding falsework was erected and five segments were placed in position upon it. Projecting bars between the segments were then welded together and the joints grouted pneumatically.

There are no columns or ribs stiffening the shell and the ends are closed by masonry walls each stiffened by columns.

The exterior of the shell was waterproofed by a sprayed-on plastic.

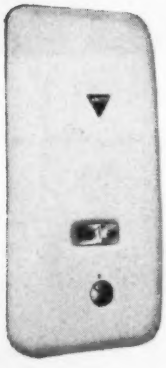




Above, close-up of the roof of a gymnasium in Colorado. Below, cross section showing typical reinforcement for a base section.

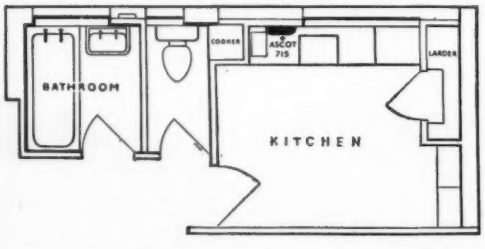
Tower Court Flats, Clapton Common

ASCOT IN NEW HOUSING (7)



Tower Court Flats, Hackney, is one of a number of schemes designed by different architects around the perimeter of Clapton Common for the Hackney Borough Council. Tower Court consists of 2 blocks of flats: a four-storey block containing 16 two and three-bedroom maisonettes, and a nine-storey block containing 51 flats of bed-sitting room, one-bedroom and two-bedroom design.

To provide an instantaneous hot water service throughout all the flats at Tower Court, Ascot 'balanced flue' multipoints were installed in the kitchens.



PLAN OF KITCHEN AND BATHROOM IN A TYPICAL TOWER COURT FLAT SHOWING POSITION OF ASCOT 715

RESPONSIBLE AUTHORITIES

Director of Housing Development: Geo. L Downing, O.B.E., M.I.C.E., M.I.Mun.E., A.M.I.Mech.E.

Architect: Harry Moncrieff, F.R.I.B.A., A.M.T.P.I. of Co-operative Planning Ltd.

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technical section

10 DESIGN: BUILDING TYPES
warehousing 3

Having discussed in his first article* the different types of equipment which have revolutionised our methods of storage, and in his second† the factors apart from storage which condition warehouse design, the author, A. B. Waters, continues by outlining how you prepare a scheme for palletization, illustrating his point by an actual example of an egg-grading station. The article ends by considering the problems raised by extra long or otherwise awkward types of load and by a description of the roller conveyor.

When the type and size of pallet to be used has been decided, the number of pallets required can be calculated. The height to which the goods are to be stacked will then determine the number of pallet spaces required. The next step is to select the truck to be used, when the width of gangways will be known. These factors provide the data for the layout of the stacking area. The method of loading, the number of vehicles to be loaded at one time and the method of laying out loads in the pre-assembly area enable this part of the warehouse to be planned.

Of equal importance to the storage of goods in planning the warehouse, is the movement of goods for intake and despatch and also within the warehouse when it is important to despatch goods in rotation. It has already been stated that cross-circulation within a warehouse should be avoided, so that material should come in at one side, or end, and leave by the opposite side or end. For this reason, it is sometimes recommended that the length of a warehouse should be two or three times the width, delivery and despatch being effected on the two long sides.

Example of an egg-grading station

The basic information required for a palletization scheme has been given above. The following example of the planning of an egg-grading station will show how this is applied in practice, in the selection of the size and type of pallet, in the selection of the type of fork lift truck, and from this, how the plan of the warehouse is derived.

Operation: Eggs are collected from farms in "long" boxes, 27 in. × 13 in. × 14 in. high. These are delivered to the station by lorry, and are stacked in the egg grading room. The boxes are then placed adjacent to the grading machines for inspection and grading. When empty the "long" boxes are returned to the box store for repair and delivery to the farms, when the lorry goes to collect full boxes. After grading, the eggs are packed in "standard" boxes 25½ in. × 12½ in. × 14 in. high, each containing 360 eggs per box, with a total weight of 72 lb. These boxes are also stacked in the grading room to await despatch to retailers. Ministry of Food regulations restrict the storage of full egg boxes to five high, making a stack 70 in. high. Empty boxes are returned by the retailers, and placed in store after any necessary repairs have been carried out. Before re-use the boxes have to be cleaned, old labels removed and new labels put on. In filling the boxes, layers of eggs are separated from each other by the familiar papier-mâché trays, which are known as "fittings." These are placed in the cleaned boxes before they are taken into the grading room, where they must be placed as required in positions convenient for the packers. Eggs are also packed in retail pack fittings each containing six or twelve eggs, in which they are sold to the consumer. Fittings are purchased in bundles 32½ in. × 12 in. × 12 in. high, and retail pack fittings in bundles 25½ in. × 12 in. × 12 in. high.

Quantities: "Long" and "standard" boxes were to be accommodated in a separate store when not in use, and are not referred to here, but provision was required for 10,000 boxes of both kinds. Quantities of boxes and fittings to be accommodated within the main building are as follows:

Grading room:

"Long" boxes of ungraded eggs	2,500
"Standard" boxes of graded eggs	1,250

Store:

Fittings	5,000 bundles
Retail pack fittings	5,000 bundles

Selection of pallet: The two types of material to be stored are filled cases of eggs and bundles of fittings. Since the height of stacks of filled cases is prescribed by regulation it is necessary to use a pallet which will transmit the load to be carried so that it does not come on the cases themselves. The bundles of fittings, wrapped in brown paper, do not make a stable stack. Some form of post pallet is thus required for both. It was felt that the most suitable type of pallet would be the tiering flat pallet (Fig. 1) consisting of a flat timber base unit with a conical base socket at each corner. The socket is designed to secure an upright tubular steel post terminating in an inverted cone which engages with the base cone of the upper pallet. This type of pallet has the added advantage that, if desired, the tiering tubes can be detached and the base used as an ordinary flat pallet.

The size of the pallet is determined from the size of the packages it is to receive. The boxes are 14 in. high, so that three high is a convenient number, and the plan dimensions make three on a plan a convenient number. The two sizes of boxes are so close to

* AJ April 24. † AJ June 5.

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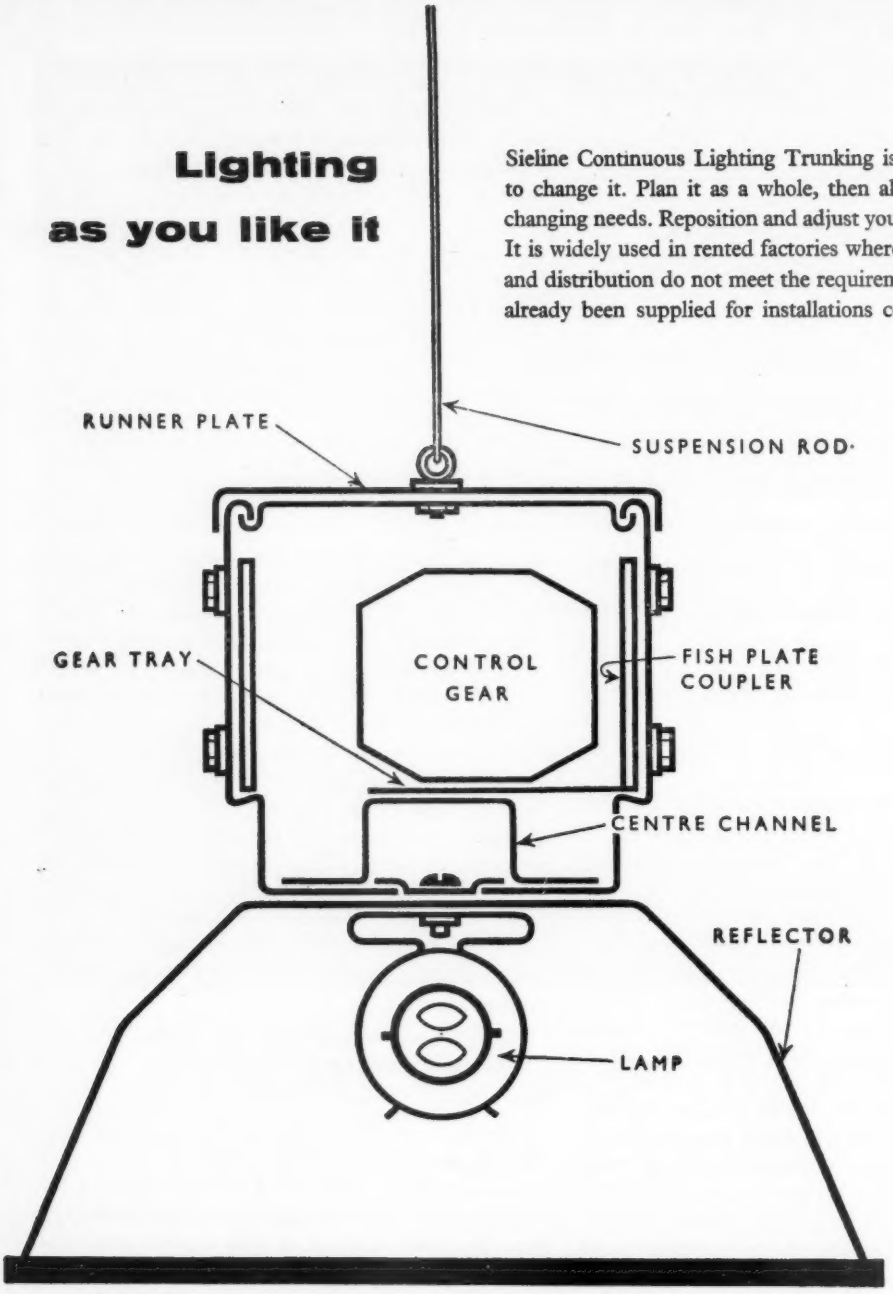

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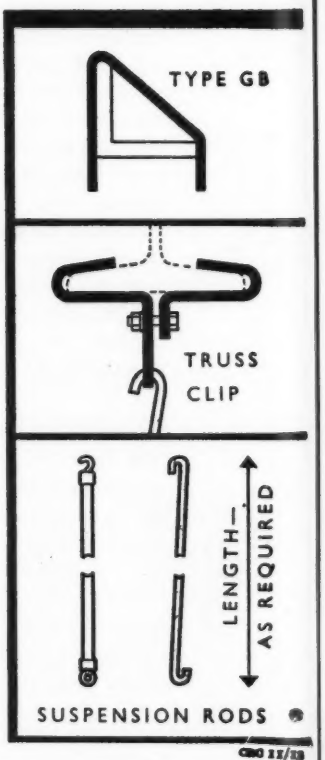

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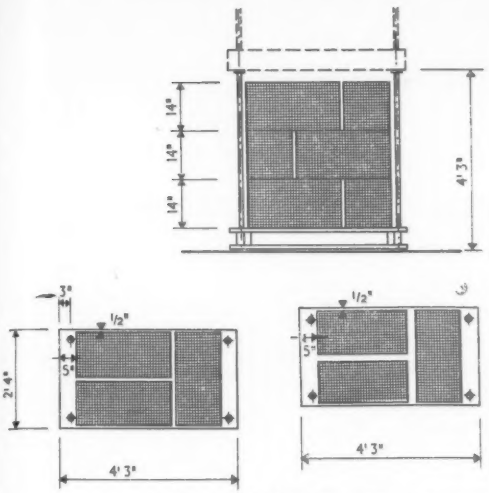


Fig. 1. Tiering flat pallets for two sizes of case. Cases 27 in. × 13 in. × 14 in. high. 9 per pallet. 27 cases per pallet space, stacked 3 pallets high. 2,500 ÷ 27 = 93 pallet spaces. Cases 25½ in. × 12½ in. × 14 in. high. 1,250 ÷ 27 = 47 pallet spaces.

each other as to make one size of pallet suitable for both, and plans and an elevation of the boxes on the size of pallet selected are given in Fig. 1. The bundles of fittings present a different problem. While the area of the retail pack fittings is somewhat similar to that of the "standard" box the height is less and it would be wasteful to put three packages with an overall height of 3 ft. on a pallet capable of taking a height of 3 ft. 6 in. Equally it is not worth while having a different type of pallet unless it will take all the fittings. This can be achieved by arranging with the supplier of the fittings to provide both kinds in bundles of the same size. (The use of palletization by some of the larger manufacturing firms, such as Unilever, has involved the re-designing of all their packaged goods so that they are packed in containers that will make a unit load that can be accommodated on a standard pallet.)

The second size of pallet is suitable for 12 bundles of "fittings," 4 high and 3 on plan, where again the 25½-in. × 12-in. bundle allows the alternate layers to be "bonded" to increase the stability of the unit load. This pallet is shown in Fig. 2.

The numbers of pallets required are:

"Long" boxes 2,500÷9=278 pallets.

"Standard" boxes 1,250÷9=139 pallets.

Case fittings 6,500÷12=542 pallets.

(The increase over 5,000 listed above is necessary

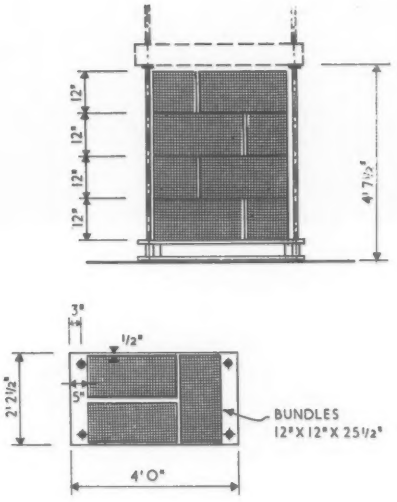
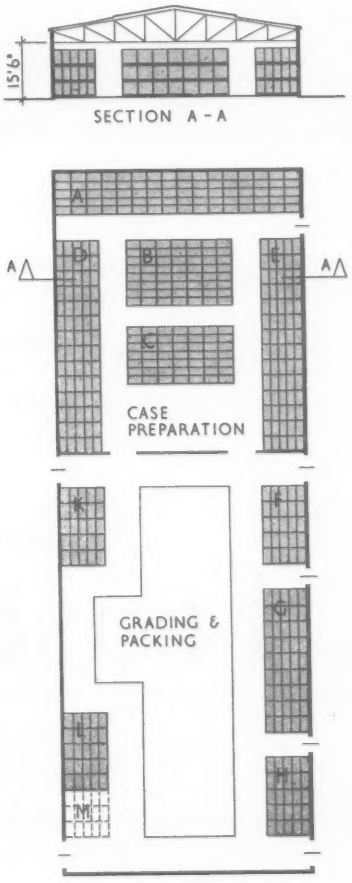


Fig. 2. Pallets for fittings. Retail pack fittings and adjusted bundles of case fittings, 25½ in. × 12 in. × 12 in. high. Stacked 4 high, 12 bundles per pallet. Stacked 3 pallets high, 36 bundles per pallet space. Retail pack fittings: 5,000 ÷ 36 = 140 pallet spaces. Case fittings: 6,500 ÷ 36 = 181 pallet spaces.



SCHEDULE

Case fittings
pallet space 4 ft. 4 in. × 2 ft. 4½ in.

A	16 × 5	80	pallet spaces
B	7 × 8	56	,, ,,
C	7 × 7	49	,, ,,
		185	,, ,,

Retail pack fittings

D	14 × 5	70	pallet spaces
E	14 × 5	70	,, ,,
		140	,, ,,

Long cases (ungraded eggs)
pallet space 4 ft. 7 in. × 2 ft. 6 in.

F	5 × 5	25	pallet spaces
G	9 × 5	45	,, ,,
H	5 × 5	25	,, ,,
		95	,, ,,

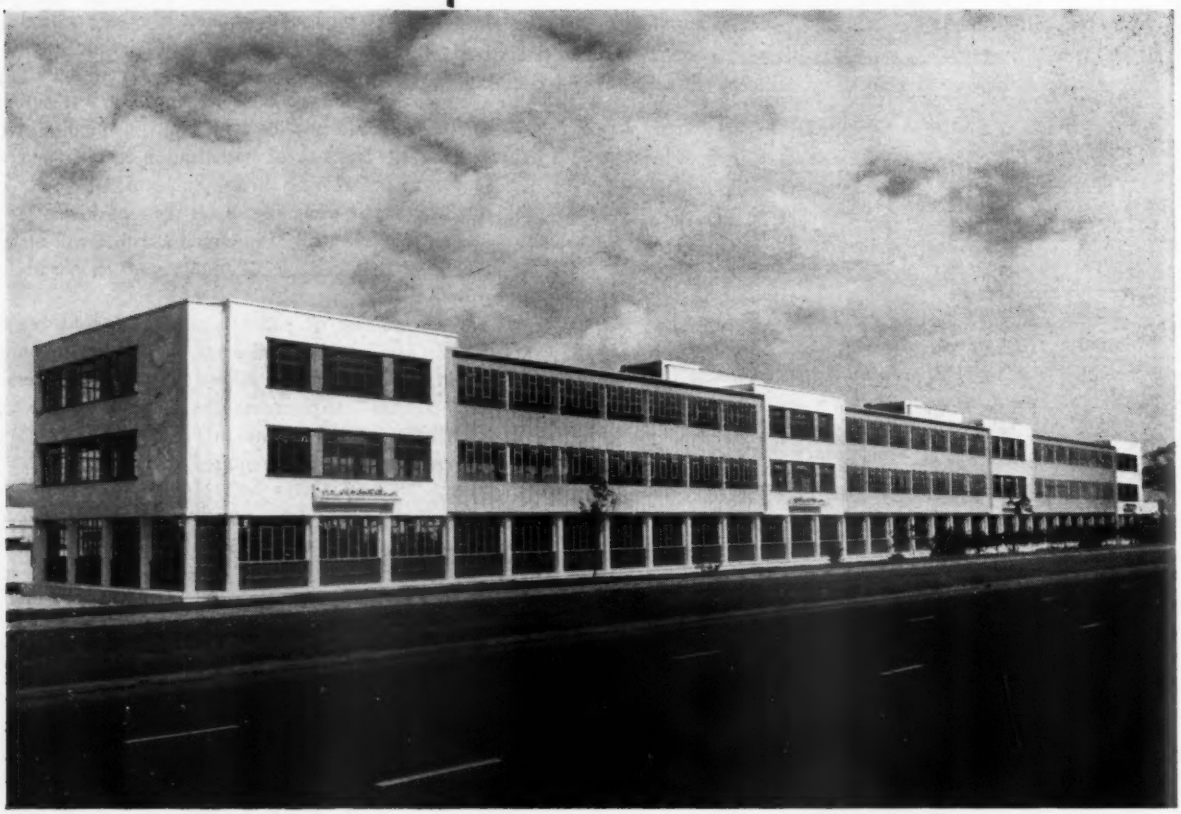
Standard cases (graded eggs)

K	5 × 5	25	pallet spaces
L	5 × 5	25	,, ,,
M	3 × 5	15	,, ,,
		65	,, ,,

Fig. 3 (right). Plan and section of egg-packing station. This relates only to the sections of the building used for egg-grading, packing, preparation of cases and storage of fittings.
[Scale: $\frac{1}{16}$" = 1' 0"]

Design Block, Hatfield,
for the de Havilland Aircraft Co. Ltd.
Monro & Partners, Architects & Engineers

Truscon Theorem 4



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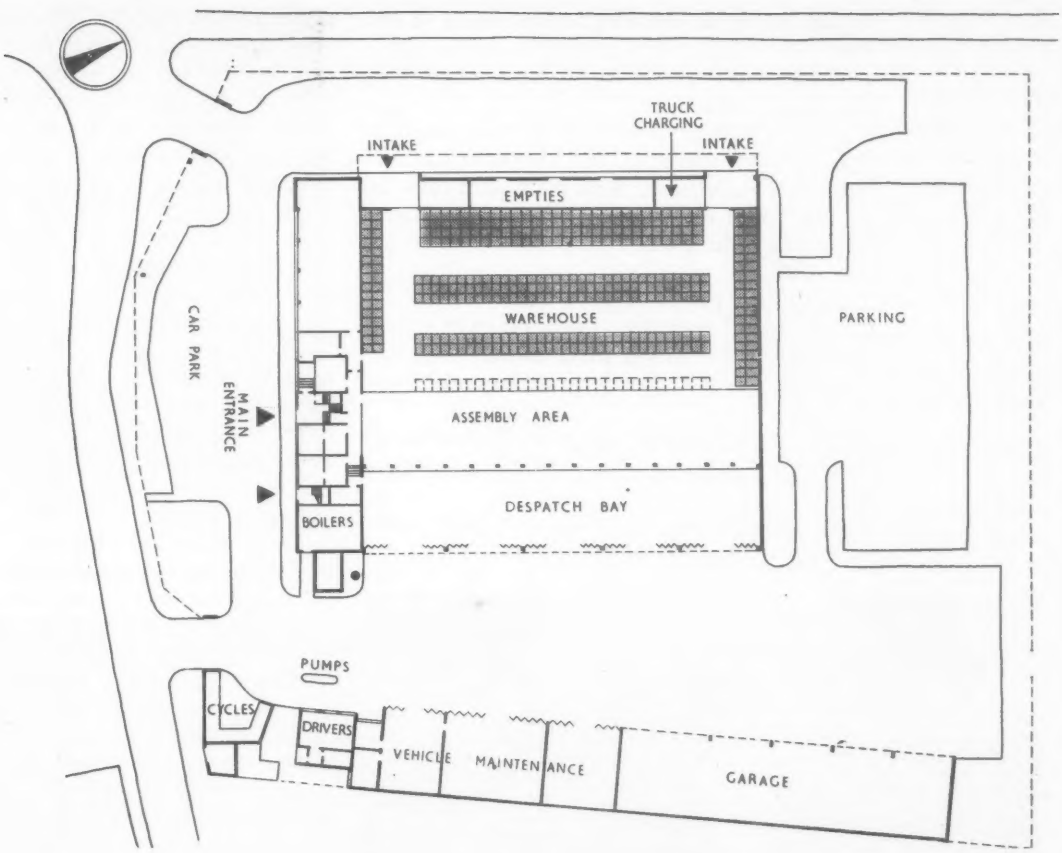


Fig. 4. Plan of Messrs. W. & R. Jacob (Liverpool) Ltd. Biscuit Warehouse and Distribution Depot, Belvedere. [Scale: 1/32" = 1' 0"]

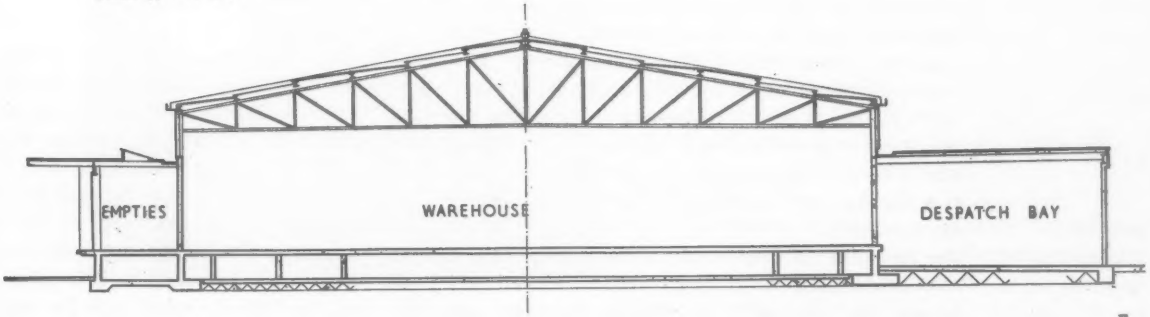
because the shortened bundle contains fewer fittings.)
Retail pack fittings 5,000÷12=417 pallets.
The layout of the resulting packing station is shown in Fig. 3. As will be seen the final numbers of pallet spaces are slightly greater than the calculations.
The weight of a pallet carrying nine full egg boxes is 800 lb. approximately.

Selection of truck: The next step is to select a suitable truck, which will determine the height to which pallets can be stacked. When the number of pallets in a stack is known, the number of pallet spaces can be worked out. The points to be considered in selecting a truck are:

1. The load to be carried. If two pallets can be handled at a time stacking time is reduced.
2. The dimensions of the pallet (which determines the position of the load centre).
3. The height to which it is desirable to stack (either determined by the materials to be stacked, or by the building height in an existing building).
4. Gangway width (this may be pre-determined in an existing building).

In the case now being considered it was suggested that the economy in gangway width afforded by a Reach Truck should be used (Reach Trucks are made by Lancing-Bagnall, Conveyancer and Hunter), and that

Fig. 5. Section of Belvedere Biscuit Depot. [Scale: 1/64" = 1' 0"]



technical section

a truck having the following features would be suitable:

Lifting capacity: 2,500 lb. (two pallets can be carried).
Lift height: 10 ft.
Load centres: (suitable for 51-in. × 30-in. pallet).
Gangway width with 51-in. × 30-in. pallet: 6 ft.

Number of pallet spaces: Since the selected truck has a lifting height of 10 ft. and the maximum overall height of a pallet is 4 ft. 7 in., pallets can be stacked three high.

The number of pallet spaces is as follows:

"Long" cases 9 per pallet. 27 cases per pallet space at three high. 2,500÷27=93 pallet spaces.

"Standard" cases 27 cases per pallet space. 1,250÷27 =47 pallet spaces.

Case fittings 12 bundles per pallet, 36 bundles per pallet space at three high. 6,500÷36=181 pallet spaces.

Retail pack fittings 36 bundles per pallet space. 5,000÷36 = 140 pallet spaces.

Fig. 6. British Straddle Carrier transporting sawn timber.

Height of building: It will be seen from Fig. 2 that the overall height of the pallets of fittings is 4 ft. 7½ in. so that the height of three pallets is 13 ft. 10½ in. Allowing a clearance of 1 ft. 6 in. above the top pallet the height required is 15 ft. 4½ in., or 15 ft. 6 in. as a simple dimension. See section Fig. 3.

Planning: The plan is divided into two parts, one where egg grading takes place, and the other in which the fittings are stored. Space must also be provided for preparing the cases prior to packing. The plan is shown in Fig. 3. The width is determined by the number of pallets in the end stack. With a pallet 4 ft. × 2 ft. 2½ in., and allowing 4 in. clearance to the side and 2 in. behind, the pallet space is 4 ft. 4 in. × 2 ft. 4½ in., requiring a clear width of 69 ft. 8 in., or 70 ft. as a convenient dimension. The overall length of the building is set out to suit 20-ft. bays of steel, so that the side stacks of pallets do not fit exactly to a 6-ft. gangway in front of the end stack, but the additional space at a doorway can be accepted. Elsewhere 6-ft. gangways are used.

The layout of the pallet stacks in the grading section must be related to the grading machines, where it will be seen that the pallets are arranged five deep, and adjacent to the receiving and despatch doors.

When the planning has been completed, a demonstration should be arranged with pallets and truck selected to ensure that there are no difficulties in handling.

Layout of stacks in relation to gangways: If the area of gangways, in relation to stacking areas, is small, there is an obvious saving in floor area, and therefore in building cost. This is not the only criterion. The plan in Fig. 3 shows very dense stacking, which is suitable in the example given, since there are only two kinds of materials to be stacked in the storage area, which do not deteriorate in storage, and which are bought in bulk. They can therefore be used in any order, the pallet spaces being left empty as the stacks are used up until it is necessary to re-order, again in bulk.

This is not a normal condition. It is more usual to find that there is a regular flow of goods into a warehouse and in the case of manufactured goods, particularly perishable goods like foodstuffs, it is important that they should be despatched strictly in rotation. It is generally found that goods that have been longest in storage are at the back of the stacks. There is no difficulty in collecting pallets from the back, but it makes more work for the fork truck, so that more time is involved in assembling loads for despatch. This may result in the need for a larger number of trucks, and it must also be remembered that a fork truck uses more fuel when raising and lowering goods than it does when travelling. The cost of additional fork trucks and their operation must therefore be set against the increased cost of a building designed to give a more open layout before a decision can be taken as to the most economical scheme. Figs. 4 and 5 illustrate a warehouse and distribution depot which permits easy despatch in rotation.

Where comparatively small quantities of a large number of varieties of goods are stored an open layout is desirable, so that all are visible from the gangway.

The problem of long loads

It will have been seen from the descriptions given earlier that, in normal circumstances, the width of the load carried by a fork truck is of the same order as that of the fork truck itself. To avoid excessive width of trucking aisles and door openings when long loads must be carried, a straddle carrier or a side-operating fork truck can be used.

The straddle carrier (Fig. 6), as its name implies, "straddles" the load, enabling it to be carried longitudinally. The load is assembled on bolsters, and the straddle carrier is driven over it. Lifting hooks fitted within the carrier engage with the bolsters, and are raised to lift the load. Loads up to 8 tons in weight and 50-60 ft. in length can be carried by this means.

The straddle carrier can also be fitted with a crane, which can be used in assembling the load to be carried and can, for example, be used for pipe-laying.

Side-operating fork lift trucks are of two kinds. The first has a retractable mast fitted in the centre of one side of the truck. In operation it is driven alongside the load, the forks are raised, and the mast is moved

technical section

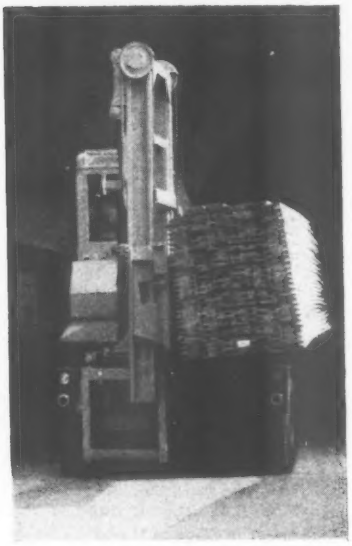


Fig. 7. Ransome & Rapier fork truck, with slewing mast.

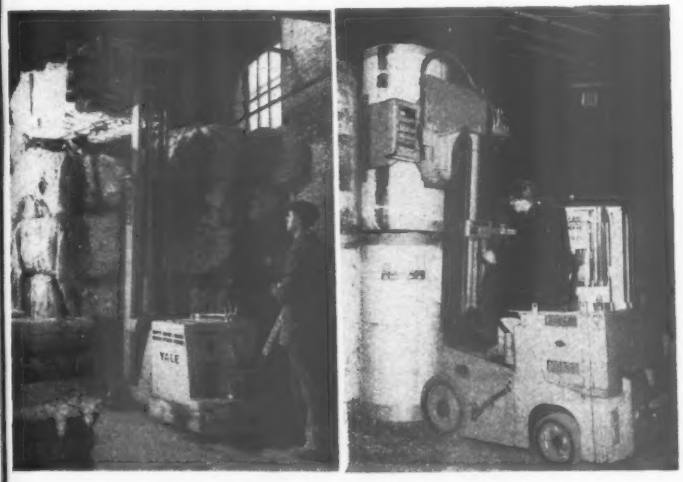


Fig. 8 (left). Yale Fork Lift Worksaver, fitted with squeeze clamp for stacking bales of cotton. Fig. 9 (right). Conveyancer Fork Truck, fitted with rotating reel clamp.

Fig. 10. Conveyancer fork truck adapted for "Skidstac" operation, with fibre-board pallet.

forward to pick up the load; the mast is then retracted and the forks lowered so that the load is carried within the wheel base of the truck.

The other type (Fig. 7) is fitted with a slewing mast. For loading, the mast is brought into position in front of the truck and operates as a normal fork truck. When the load has been lifted the mast is slewed round, bringing the forks and the load within the wheel base of the truck, which can then drive forward.

Attachments for fork lift trucks

A number of attachments are available which can be fitted to fork lift trucks for handling loads without pallets, or for carrying loads for which ordinary forks are not suitable.

In such cases the forks are normally detached and the special attachment takes their place.

1. *Squeeze clamp attachments* for handling boxes, bales and loads not requiring pallets. The principle of the squeeze clamp is that the load is supported by clamping pressure and arm friction only. Although the clamping device is common to all types, different forms of arms are available for use with cartons, bales (Fig. 8), drums and barrels, concrete blocks, etc.

2. *Rotary heads.* These are used for lifting, transporting and tipping loose bulk materials, swarf, liquids, etc. The rotary head can also be fitted with paper roll clamps, which permit rolls of newsprint to be transported and then stacked horizontally or vertically (Fig. 9).

3. *Drum-handling forks.* Specially shaped forks or fork sleeves can be used for transporting cylindrical loads which are to be stacked horizontally.

4. *Boom and crane jib attachments.* The boom is intended primarily for handling loads with a centre hole, such as coils of wire, tyres, etc. The crane jib is a similar device that is fitted with a crane hook, which converts the fork truck into a highly manœuvrable mobile crane.

5. *Stabilizing clamp.* Palletized loads made up of small components may be unstable during transportation and stacking unless secured in some way. Normally the load stabilizer must be designed to suit the particular job, but basically it consists of a large pad which is brought to rest on top of the load, on which it exerts a slight pressure, either by gravity or hydraulically.

6. *"Skidstac" attachment* (Fig. 10). This is used for handling expendable or fibre pallets. The forks are replaced by a steel plate, and above this is fitted a pusher frame with a gripper blade along its lower edge. When the frame is extended the gripper blade holds the edge of the pallet, which can then be pulled, with the load, on to the steel plate.

Roller conveyors

It is frequently necessary to transport unpalletized goods, both horizontally or in a downward or upward direction. Typical examples of this are in the loading of a vehicle from ground level, in which case the load must be raised, or in loading a van from a load-

technical section

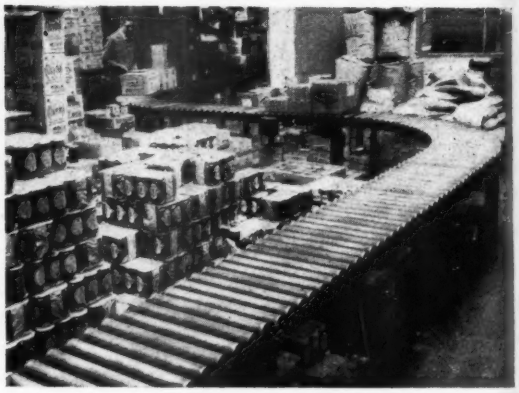
Fig. 11 (top). Off-loading BRS vehicle with gravity roller conveyor. Note how diverse loads can be made up into unit loads with box pallets. Fig. 12 (above). Loading sacks on to BRS vehicle with Lister power conveyor.

ing dock into a vehicle of which the deck is not of sufficient height to come level with the loading dock, when the load travels in a downward direction.

The gravity roller conveyor (Fig. 11) is the simplest example of this type of equipment. It consists of two side members into which are fitted the spindles of ball-bearing mounted rollers. Conveyors are made in widths of 12 in., 18 in. and 24 in. with rollers (1½ in. to 2½ in. diameter) at 2 in. to 8 in. centres, depending on the dimensions of the goods to be transported. Changes of direction can be made by the use of tapered rollers, and it is possible to connect a curved conveyor into a straight conveyor where two lines have to discharge at a single point. Portable roller conveyors are made in lengths of 10 ft. and are supported on adjustable trestles to give heights varying between 6 ft. and 1 ft.

Roller conveyors can be used for stacking goods to considerable heights, or for transporting goods in either direction from a lower to an upper floor. In such cases a power-operated conveyor must be used, with an electrically driven continuous belt, the type of belt being suited to the goods to be transported (Fig. 12).

An interesting example of the use of a roller conveyor is illustrated in Figs. 13 and 14. A provincial wholesale grocer had the problem of assembling orders which, although quite small, contained a greater variety of different commodities. The premises available were by no means ideal for the purpose, but, by installing a roller conveyor, it was possible to assemble the orders without the assistants moving about the warehouse.



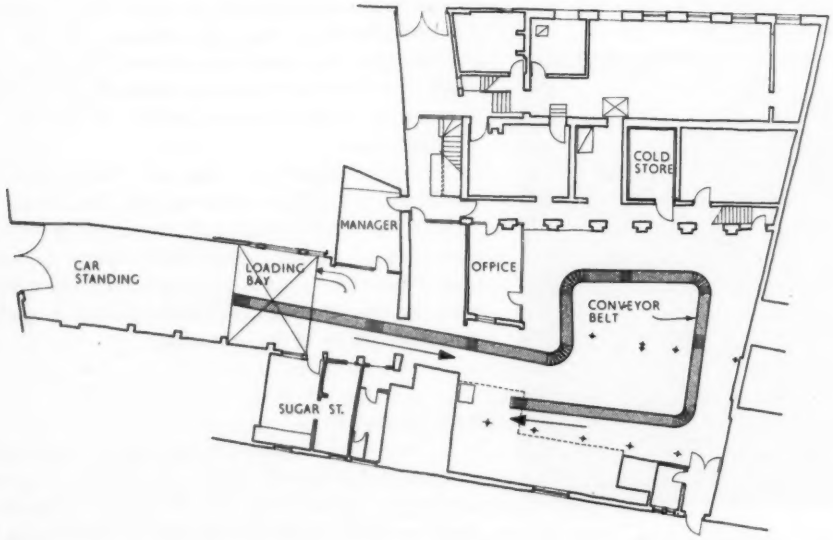


Fig. 13 (left). Plan of gravity conveyor in wholesale grocery warehouse (Messrs. Loach, Worcester).
[Scale: 1/16" = 1' 0"]

Fig. 14 (above). Gravity conveyor used in the assembly of orders in wholesale grocery warehouse.

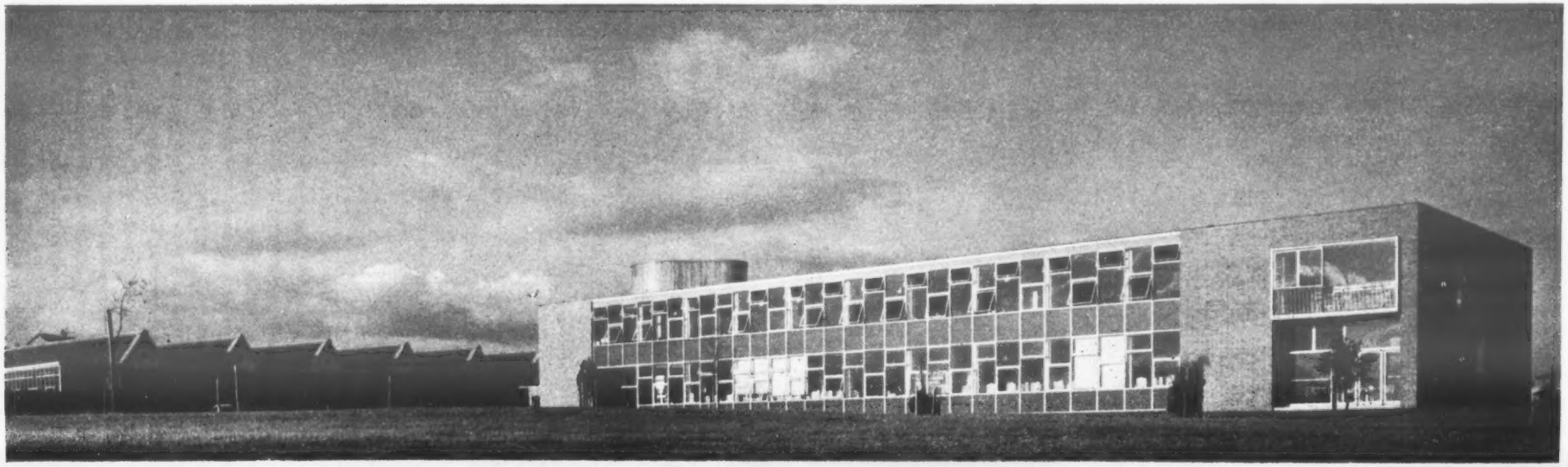
building illustrated

COLLEGE OF FURTHER EDUCATION

at OSWESTRY, SHROPSHIRE; designed by C. H. SIMMONS, county architect; ROGER BOOTH, assistant county architect; TREVOR FULLMAN, group leader; E. S. MINCHELL, assistant architect; quantity surveyors E. J. RABSON and MERCER and MILLER; consultants (structural) OVE ARUP and PARTNERS; (mechanical) A. M. LAWSON, chief engineer to county architect

Like most buildings of its type, the College of Further Education at Oswestry is being built in stages. The first instalment, illustrated and analysed here, comprises a two-storey teaching block and a single-storey workshop block. The second instalment, which will complete the scheme, will consist of an extension of the teaching block eastwards, and upwards as required, and an extra wing to the north to house an assembly hall, gymnasium and other communal rooms. For the moment some accommodation, such as the library, students' common room and administrative offices, is situated in rooms in the teaching block which are planned for other functions in the final scheme. The workshop block, however, is already in its final form; here great attention has been paid to the problems of services and noise transmission.

Viewpoint 1 : the two linked buildings from the south-east.



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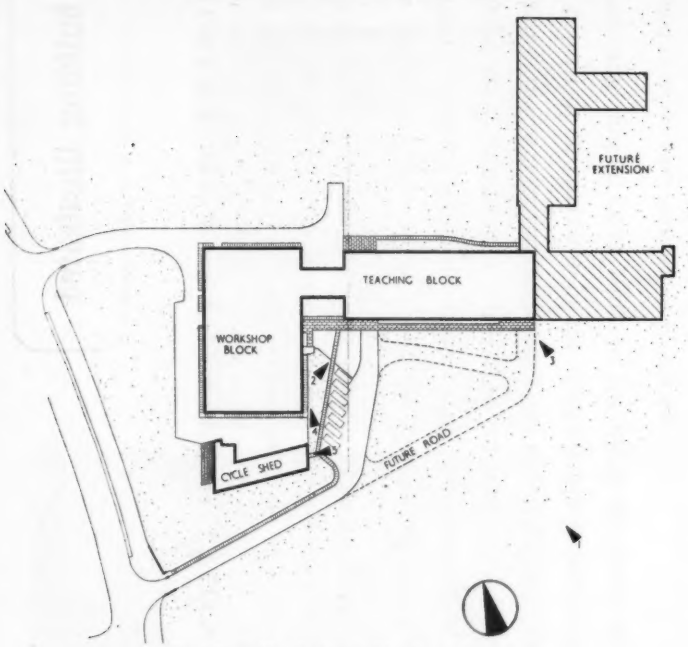


Site plan with photographic viewpoints

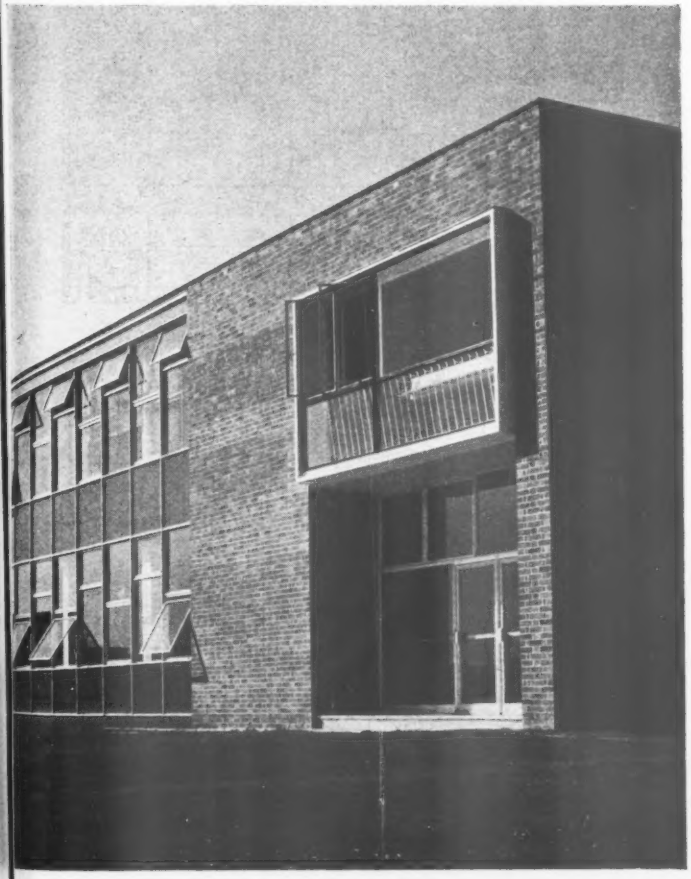
The site is large and open, occupying sixteen acres, and the buildings have been placed on the high ground in the northmost third, leaving the rest for playing fields. The teaching block is sited with its long sides facing north and south, and since it has a central corridor, one half of the teaching rooms have a north aspect. Some of these are drawing offices, where this may not matter or may even be desirable, but considering the freedom of the site it is difficult to understand this decision as far as the other rooms are concerned. At the east end of the building is the future main entrance hall and stair, at the other a subsidiary entrance, stair and cloak-rooms. The main entrance is at present used as a temporary students common room; when the College is completed it will be roughly in the centre of the block with an extension of the approach road to form a turn around.

Externally the building is treated in a way which is now a familiar formula in "contemporary" architecture. Rooms requiring a large window area (in this case the teaching rooms) are clad with curtain walling, consisting here of aluminium framing with apron panels of dark green self-finished cellular plastic. The ends of the curtain walls are "stopped" by solid brickwork in the nature of "book-ends." There are two frequently-used ways of doing this: one is to arrange the brickwork as a wall-plane at right-angles to the curtain walling, the other to organise the plan in such a way as to justify the use of solid blocks of building, i.e., to have some accommodation which requires little or no window area at these points. In the teaching block illustrated here, the architects have preferred the latter. Whichever course is adopted, however, there remains the problem which arises whenever the brickwork has to be punctured by embarrassing openings. One of the devices which have been evolved for

analysis

coping with this situation is the precast surround, which is used here but has led to difficulties of a kind too frequently seen. The west face of the teaching block, seen on the extreme left of viewpoint 2 (opposite), demonstrates such a difficulty. This end of the building contains cloakrooms on both floors, but on the ground floor the link to the workshop block also occurs. To afford some clerestorey lighting at this point, a strip window has been used on the ground floor, heavily puncturing the solid brickwork; a precast surround has been put around it and extended over the first floor windows, which are individual holes each with its own

surround. Then, in order to given the impression of panel infilling to the large wall areas enclosed by the surround, the brickwork has been rendered in dark grey with aluminium false



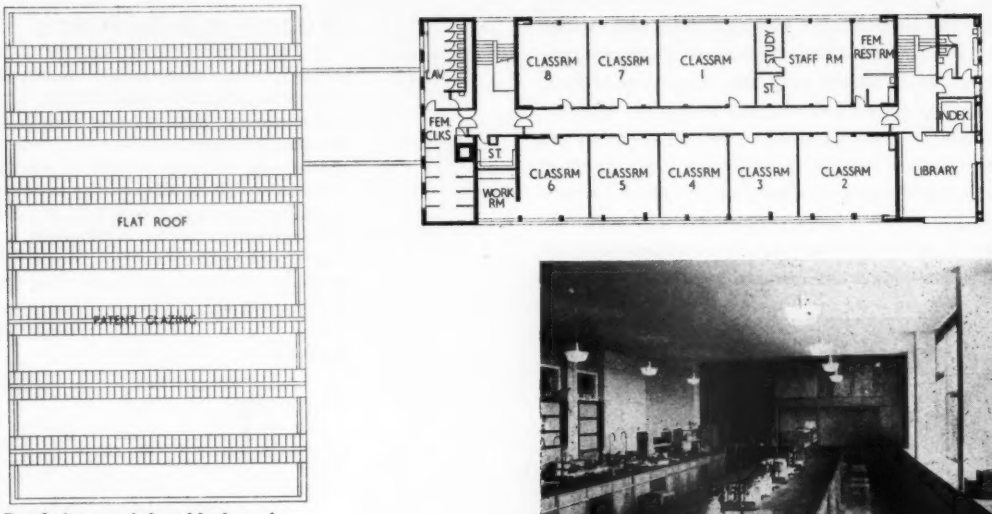
CLIENT'S REQUIREMENTS

A college with departments of engineering, building, commerce, domestic science and art, for a maximum student capacity of 862. The college is being built in two instalments, the first containing workshops and teaching rooms for engineering, building, commerce, science and general subjects, with a student capacity of 411, and the second including communal rooms, hall, gymnasium and the domestic science and art departments.

The workshop block was to be designed on factory principles of construction, with a large free floor space and demountable partitions to permit rearrangement of the various rooms. The building generally to be capable of extension.

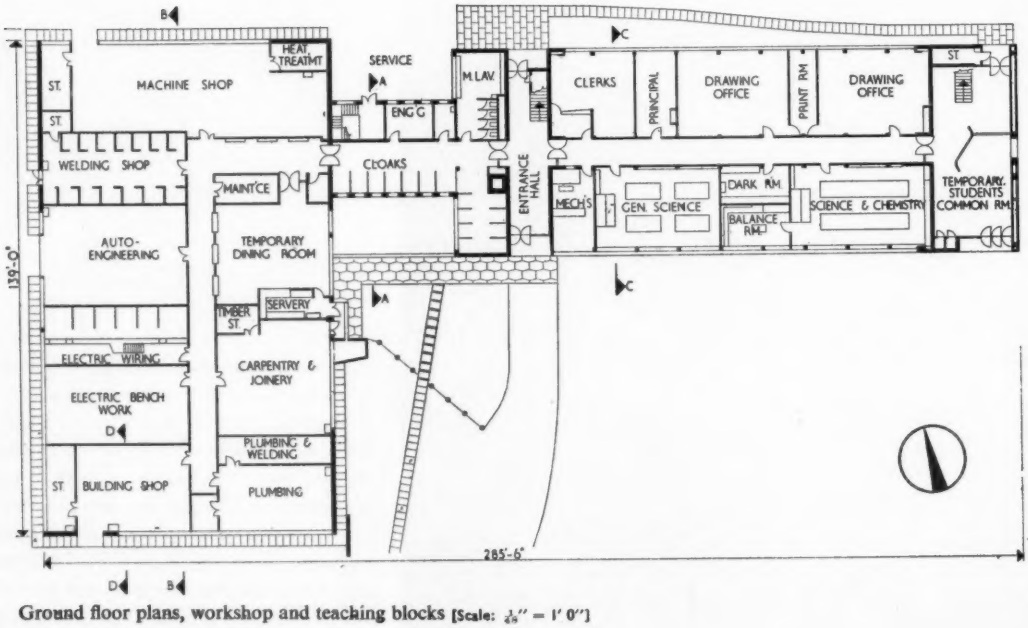
joints. The result is not only confusing but is an example of the architectural make-believe which results from aesthetic generalisations which cannot be consistently applied. At the other end of the building, viewpoint 3, left, the boxed-out window over the future main entrance shows a similar confusion; it reads against the upper half of the building as a pierced hole in a brick wall, and against the lower half as a self-contained room of the same width as the entrance opening, with the added uncomfortable impression that it may at any moment slide downwards into the space below. This first-floor space over the future main entrance will, on completion of the College, be a large landing for use as exhibition space; meanwhile it is a temporary library, seen above left. It has a fine view southwards over open country and the natural lighting has the interesting character which comes from different sized windows on two adjacent walls, character which will unfortunately suffer when the College is extended. The good feeling of comfort would have been increased still further if the floor had been warmer and less shiny.

building illustrated

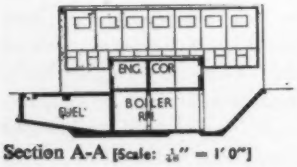


Roof plan, workshop block, and first floor plan, teaching block

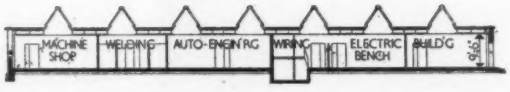
A chemistry laboratory. Cross-ventilation is obtained by means of the grille at high level on the wall opposite the windows; the grille opens into a corridor ceiling duct which is served by an extract fan at each end of the building. The ceiling is sprayed with acoustic plaster. The end wall is painted red (BS 1-023), the corridor wall green-grey (BS 5-059) and the side bench doors yellow (BS 4-056).



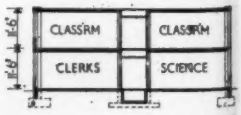
Ground floor plans, workshop and teaching blocks [Scale: $\frac{1}{16}$" = 1' 0"]



Section A-A [Scale: $\frac{1}{16}$" = 1' 0"]

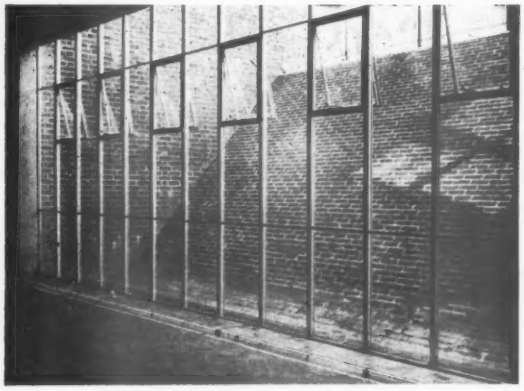


Section B-B

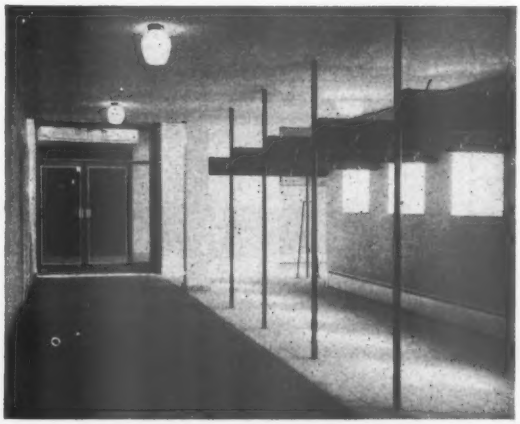


Section C-C

The link between the teaching and workshop blocks has a basement occupied by the boiler room. The boilers are themselves used as teaching aids, and it was desirable that they could be seen from outside. This requirement has been met by forming an external area and glazing the complete south side of the boiler room, and this has been done in a straightforward way to produce a robust and positive character. These two photographs show the sloping retaining wall of the area, above from external viewpoint 4 and, below, internally from the boiler room.



On the ground floor, the teaching block corridor continues through the link with a cloaks bay on its south side (photograph below) and runs into the workshop block to form a small entrance hall.



analysis

PLANNING AIMS

The plan was considered in two distinct parts: a workshop block and a teaching block, each having different functional and physical requirements. The spacious site, covering 16 acres, allowed the building to be arranged for the isolation of noise and easy circulation of traffic.

The first instalment of the teaching wing is a two-storey block: for the second instalment a timber penthouse will be added to this. Columns are sized to permit the addition of two additional storeys of solid construction if required at a later date. It was found necessary to place some drawing offices, classrooms and administrative rooms with a north aspect.

Two of the client's requirements led to difficulty at the planning stage: in the machine shop, welding and practical electric shops, the specified floor areas did not allow enough room for the machinery required, and the long span factory-type construction proved unduly costly when considered in relation to the amount of flexibility required, and special treatment to overcome noise transmission was also necessary. Care had to be taken in designing the workshop block to allow freedom for service runs.

The boiler room, from which both wings are heated, was to be designed as an educational part of the College, with boilers, etc. clearly visible from outside through a glass wall.

Teaching block

	s	d
Preliminaries, insurances and contingencies	2	10¾
Work below ground floor level	7	5½

R.c. foundation pads to r.c. columns, the columns sized for four storeys, although the present building has only two.

Subsoil conditions: mixed clay and sand, with running sand at the west corner of the boiler room, not revealed by 30 ft. deep screw trial borings.

Ground beams under curtain walls. Normal foundations under brick walls.

STRUCTURAL ELEMENTS

Frame or load-bearing element 1 0

R.c. frame of columns with an edge beam integral with the prestressed pot floor. Some *in-situ* r.c. spans next staircases and lavatories. Some panels of load-bearing brickwork.

External walls 4 3

Facing bricks in various 11-in. and 1 ft. 10 in. cavity walls. Dark green plastic spandrel panels with cavities filled with slag wool. Precast concrete casings round opening.

$$\text{Ratio: } \frac{\text{external walls}}{\text{floor area}} = \frac{0{\cdot}322}{1}$$

Windows 5 8

In brickwork and rendered walls, windows are galvanised steel. Inset windows in curtain wall are aluminium, sliding, projecting type.

$$\text{Ratio: } \frac{\text{windows}}{\text{floor area}} = \frac{0{\cdot}209}{1}$$

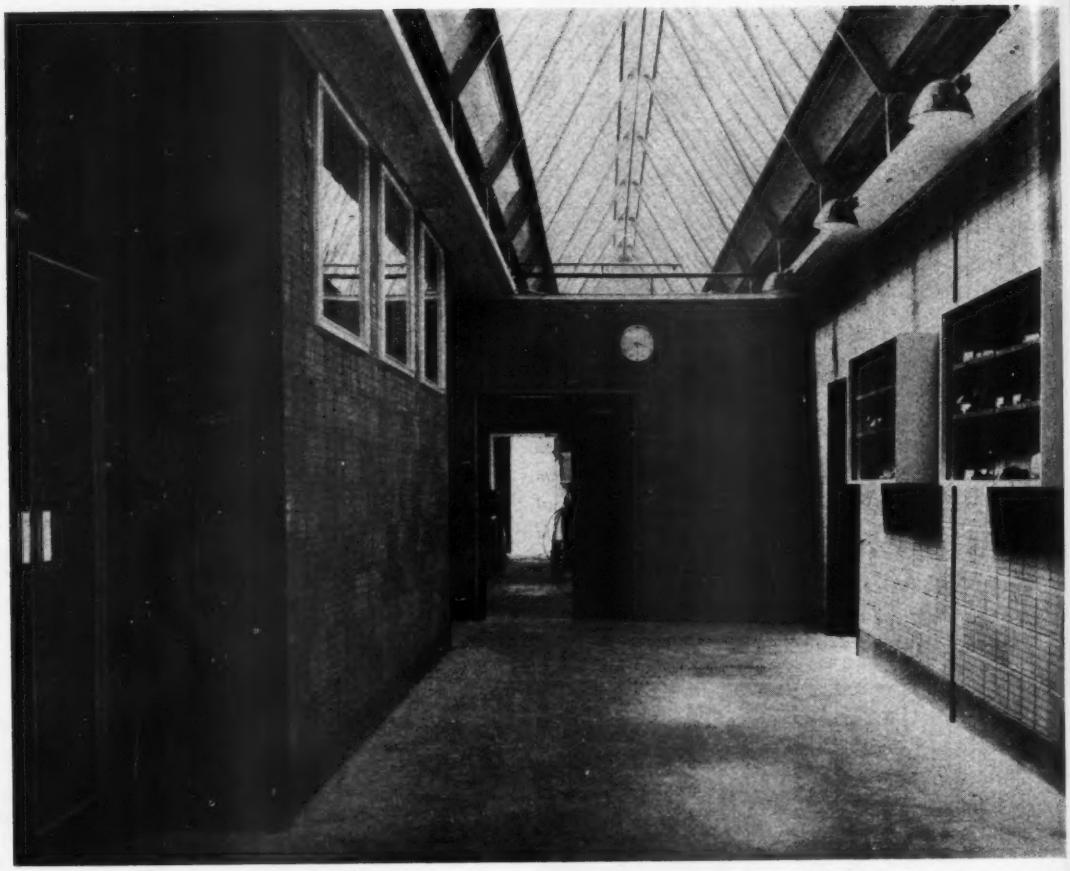
External doors

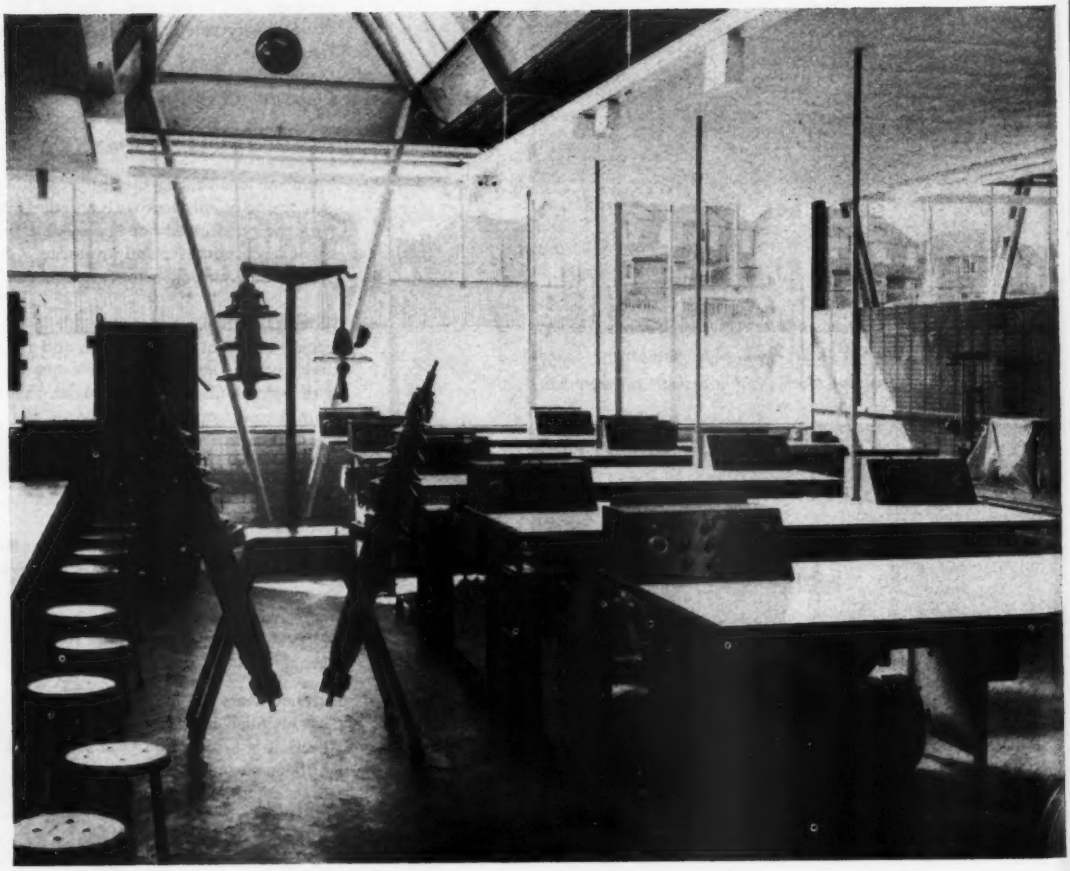
Cost included in windows.

Aluminium box section with toughened plate glazing and floor-springs.

$$\text{Ratio: } \frac{\text{external doors}}{\text{floor area}} = \frac{0{\cdot}011}{1}$$

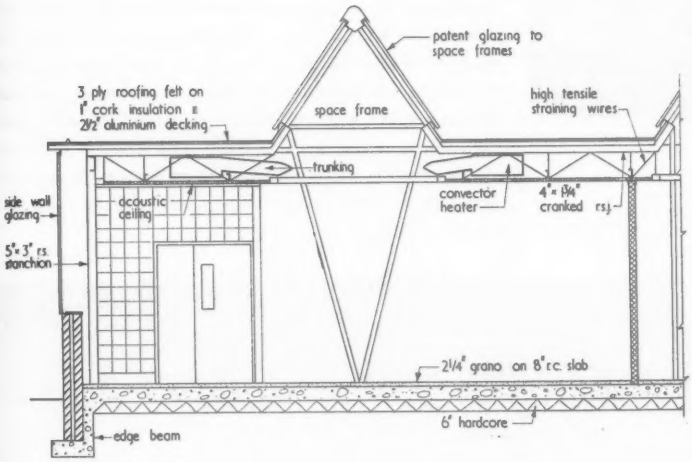
building illustrated





analysis

Opposite page, top: the 84 ft. steel tubular beams which span the workshop each consist of two inclined trusses rigidly connected at the top, thus obviating the need for horizontal ties between the bottom chords. The horizontal sections of the roof are of aluminium dovetail section decking covered with roofing felt. Below this decking is suspended a demountable ceiling of perforated metal trays filled with glass wool. All services run freely in the space between ceiling and roof. The internal partitions are made of specially designed self-finished 8-in. by 16-in. by 4-in. thick concrete blocks with ⅜-in. diameter by 1-in. deep holes. These holes, which have been provided for acoustic reasons, have also been found useful as plug holes for fixing wall-mounted apparatus.



SECTION DD

The photograph, opposite page, bottom, of the electrical workshop shows the V-shaped tubular steel stanchion frames which carry the normal and wind forces from the roof. The partitions are not carried up to the ceiling but there is little sound interference between rooms (except in one room where a lathe has been placed immediately below the roof glazing) owing to the effective acoustic treatment of the walls and ceiling. Stanchions are painted blue (BS 7-084), decking and upstand yellow (BS 4-055) and the ceiling white.

	s	d
Upper floors	3	2
Prestressed clay planks with structural topping, of 11 in. overall thickness, with span of 23 ft. Area: 5,200 sq. ft. Superloads: 60 lb. per sq. ft. plus partition load per 4 ft. centre. *In situ* r.c. spans varying from 8 ft. to 22 ft. Area: 3,322 sq. ft. Superloads: 60 and 80 lb. per sq. ft.		
Staircases		2¼
No. of staircases: 2. Width: 4 ft. 6 in. between handrails. Total rise: 11 ft. from floor to floor. Bulkheads, etc., are constructed for possible vertical extension.		
Roof construction	5	4½
Prestressed clay planks with structural topping, of 11 in. overall thickness, and vermiculite insulation. Designed as a future floor if required. Area: 5,200 sq. ft. Elsewhere, *in situ* and precast r.c. Area: 4,597 sq. ft.		
Roof lights		1½
3 lights in cast glass. Total area: 38 sq. ft.		
Glazing		3½
32-oz. glass in curtain wall. ½-in. plate in large windows.		
Total of structural elements	20	0½

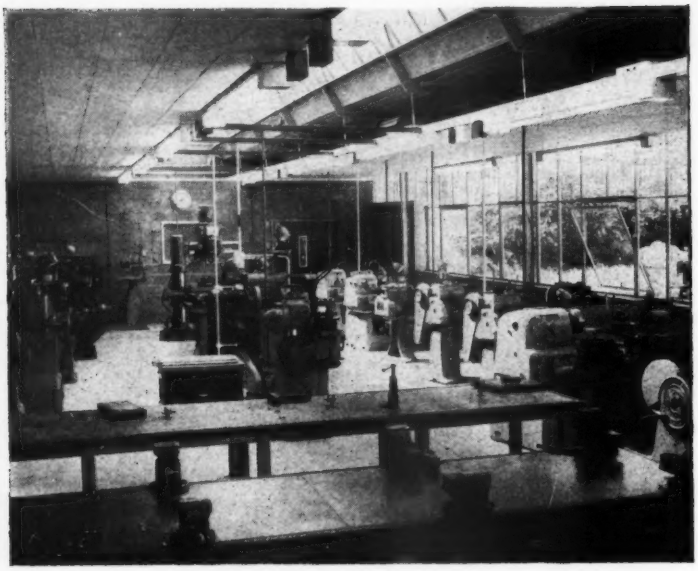
PARTITIONING AND FITTINGS

		s	d
Internal partitions		2	0½
Type of partition:	Self finish precast concrete block	4½-in. plastered brickwork	
Area of each type:	397 sq. yd.	550 sq. yd.	
Screens			2¾
Cost includes joinery, and w.c. partitions and doors. Students' common room, softwood stud with hardwood finish and glazed softwood frames.			
Internal doors			8½
Single: 38, plyfaced with semi-solid core. Double: 7 pairs, teak.			
Ironmongery			4¼
Aluminium, satin-chrome.			
Fittings		2	9
Benches, cupboards and fume cupboards, etc., of softwood with iroko finishes. (Island type laboratory fittings were provided under a separate contract.)			
Total of partitions and fittings		6	1

FINISHINGS

			s	d
Floor finishes			5	5¼
Type of finish	Area in sq. ft.	Price per sq. yd.		
Granolithic	945	1⅝-in., 10s. 9d. 2¼-in., 13s. 1d.		
Quarry tile	576	30s. 3d. to 31s. 6d.		
Thermoplastic tiles	3,627	3·2 mm., 18s. 0d. 4·5 mm., 23s. 0d		
Terrazzo	3,825	83s. 0d.		
Wood block	8,540	40s. 0d.		

building illustrated



The view of the machine shop, left, shows the end wall of the workshop block with the vertical stanchions which carry the last bay of the roof. The electric cables run in continuous steel trunking at the edges of the suspended ceiling. The trunking, which has removable covers, is used as a support from which are hung light fittings and other electric controls. The warm air heating outlets can be seen protruding from the space between the roof and ceiling.

The exterior of the workshop block, seen below, from viewpoint 4, has a clear, strong character as compared with the teaching block. Although this is due partly to the roof form, the walls and windows are also handled in a way which suffers less from inhibiting aesthetic concepts. The brick wall is simply stepped down in the same plane to cill level under windows, the latter running up to the underside of the structure. The temptation to break the plane of the wall, to make the piece of brickwork under the window look like a panel, or to make the window into a hole in the wall by running useless brickwork over the top, has been resisted here. Brick external walls were chosen to provide a suitable internal surface for fixing heavy apparatus. The gable ends are faced with super-purity aluminium painted yellow (BS 4-054). The aluminium patent roof glazing contains glare- and heat-reducing glass on the south faces.

analysis

	s	d
Wall finishes	2	5
Fair-face precast concrete blocks. Plaster ⅝-in. hard wall type. Tiling in lavatories.		
Ceiling finishes	1	9½
Vermiculite spray, self coloured. In boiler room area, fair-faced concrete.		
Roof finishes		
Cost included under roof construction. 3-ply felt roofing with white spar finish. 1-in. slate copings to perimeter.		
Decorations	1	5¼
Ceilings, self coloured (see above). Walls, two coats plastic emulsion paint. Concrete blocks sealed. Wood and metalwork, prime, 1 undercoat, 2 coats gloss paint.		
Total of finishes	11	1

SERVICES

External plumbing 1¾
Aluminium r.w.p.s.

Hot and cold water installation 2 2
Cold water, public authority mains. Hot water, calorifiers off heating boilers, with electric immersion heater for summer use. Isolated points have their own electric storage tank heaters. In boiler room, 2 solid fuel sectional boilers, each rated at 1,472,000 B.Th.U./hr. Firing by means of a patent bunker to boiler under feed stoker. Full thermostatic control.

Sanitary fittings 1 0

Type of fitting	No. of each type
W.c.s	13
Lavatory basins	19
Sinks	5 (not including laboratory sinks)
Urinals	8

Heating and ventilation 6 9
Low pressure hot water feeding radiators in classrooms and forced air convectors in laboratories. Extract ventilation with trunking at high level in corridors and extract fan at roof level. Internal temp.: 64 deg. F. Air change: two per hour. "U" of walls: 0·30. "U" of roof: 0·30.

Gas installation 1
No. of points: 75 (including two-way and four-way points, each way counting as a separate point).

Electrical installation 5 6
Electricity is supplied through a transformer station on the site. Orthodox conduit system.

Type of point	No. of each type
Power	100
Lighting	150

Lifts or other mechanical services 3
Ash hoist from boiler room to ground floor level.

Total of services 15 11

Drainage 2 5½

SUMMARY

Ground floor area: 8,641 sq. ft.
Total floor area: 20,474 sq. ft.
Tender date: October 1954.
Work began: November 1954.
Work finished: May 1957.
Tender price of foundations, superstructure, installations and finishes: £67,517 9s. 4d.
Tender price of external works and ancillary buildings for total job (both workshop and teaching blocks): £19,152 12s. 2d.
Total: £86,670 1s. 6d.
Shillings per sq. ft. of floor area:
£67,517 9s. 4d. (net cost excluding external works) = 65 11½
20,474 sq. ft. (floor area measured inside external walls)

Workshop block

Preliminaries, insurances and contingencies 2 11

Work below ground floor level 4 11½
Column bases and strip foundations to brick walls.

STRUCTURAL ELEMENTS

Frame or load-bearing element 6 4¼
Structural steelwork (welded tubular sections), not clad.

External walls 1 3½
13½-in. and 11-in. cavity brickwork.
Ratio: $\frac{\text{solid wall}}{\text{floor area}} = \frac{0{\cdot}251}{1}$

Windows 10½
Aluminium purpose-made window opening lights inserted in aluminium patent vertical glazing
Ratio: $\frac{\text{windows}}{\text{floor area}} = \frac{0{\cdot}157}{1}$

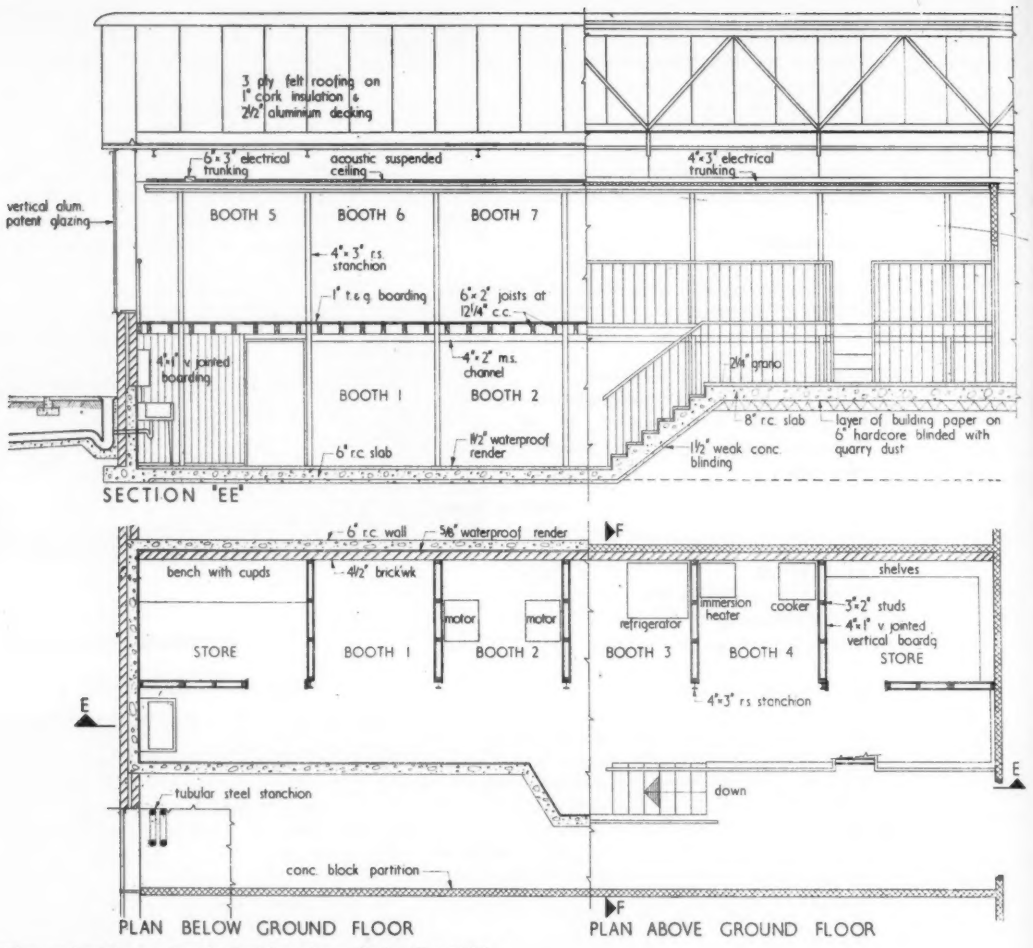
External doors 7
Steel shutters.
Zinc faced solid softwood core flush doors.
Ratio: $\frac{\text{doors}}{\text{floor area}} = \frac{0{\cdot}028}{1}$

Upper floors 2¾
Upper floor to wiring booths. Boards on wood joists.
Span: 8 ft. 9 in.
Area: 40 sq. yd.
Superload: 60 lb. per sq. ft.

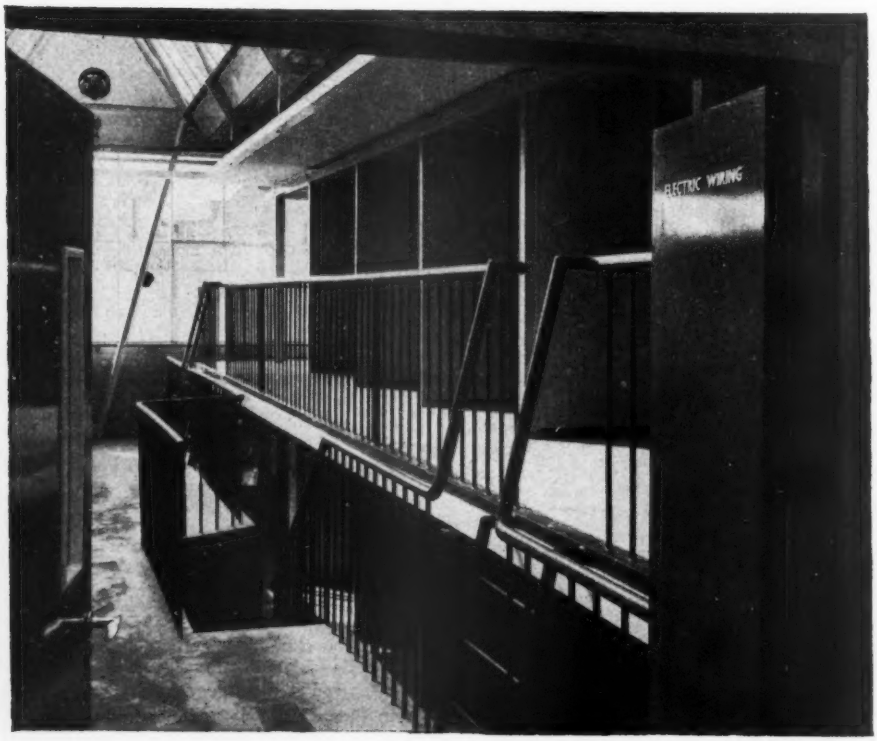
Staircases
Concrete steps to lower floor wiring booths, cost included in foundation work.

Roof construction 5 5
Welded tubular-steel space frames with alternate level areas of aluminium decking with 1-in. cork insulation, 3-ply felt and white spar finish.
Plan area: 11,690 sq. ft.

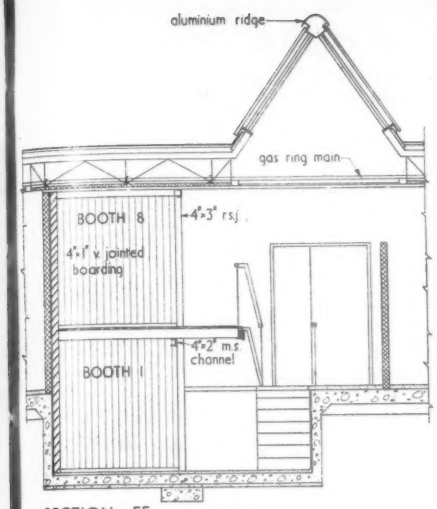
building illustrated



Plan and sections, electrical wiring shop [Scale: ⅛" = 1' 0"]



For the electric wiring shop, left, conditions simulating two-storey construction have been contrived within the single storey workshop construction. Boarded walls are painted grey-green (BS 5-059), balustrade handrails, red (BS 0-005) and balustrade verticals and doors, grey-blue (BS 9-098).



SECTION FF

The last photograph shows the cycle shed (viewpoint 5) which has a timber joisted roof, the centre portion forming a pergola.

analysis

	s	d
Roof lights	3	9½
Aluminium patent glazing to space frames. Wired cast glass, plus heat and glare reducing blue glass to south side of space frames. Total area: 3,430 sq. ft.		
Glazing		1½
32-oz. clear sheet.		
Total of structural elements	18	7½

PARTITIONING AND FITTINGS

Internal partitions	3	2¾
Specially designed precast concrete block. Area: 687 sq. yd.		
Internal doors	1	6¼
3 single doors, 16 pairs of double doors with unequal leaves. All zinc-faced solid core softwood except one pair of teak, fully glazed.		
Ironmongery		2½
Aluminium satin finish.		
Fittings	1	7½
Benches, softwood construction with beech tops; cupboard doors, 1-in. blockboard, painted. Some benches have steel-plate tops and angle-iron edging. (Note: island type benches not provided in this contract).		
Total of partitions and fittings	6	7

FINISHINGS

Floor finishes			2	2½
Type of finish:	Granolithic	Wood block		
Area in sq. ft.:	9,250	2,440		
Price per sq. yd.:	17s 10d.	40s 0d.		
Wall finishes				5¼
Facing bricks, fair-faced precast concrete blocks.				
Ceiling finishes			4	10½
Suspended metal tray acoustic tile.				
Roof finishes				
Cost and details included under roof construction.				
Decorations			1	5¼
Metal surfaces painted for protection.				
Total of finishes			8	11½

SERVICES

External plumbing	1¼
Galvanized steel r.w.p.s. Lead flashings.	
Hot and cold water installation	5
Cold water: public authority mains. Ring main runs outside building in ground, feeding into draw-off points. Hot water: sinks have their own local electric storage tank heaters.	

analysis

	s	d
Sanitary fittings 8 sinks.		1½
Heating and ventilation	4	1¾
Low pressure hot water feeds specially designed forced air convectors mounted above suspended ceiling. Ventilation: mainly natural. But extra provision has been made by installing reversible fans for use when necessary. Internal temp.: 62 deg. F.; air change: 1½ per hour; " U " of walls: 0·45; " U " of roof: 0·25.		
Gas installation 37 points. Ring main at high level.		9¾
Electrical installation Electricity supply through transformer on site. Cable tap system with overhead trunking and vertical drops to machines and fittings. 200 power points. 100 lighting points.	8	3
Total of services	13	10¼

Total per sq. ft. of floor area:
£33,230 4s. 6d. (net cost excluding external works)

11,690 sq. ft. (floor area measured inside external walls) = 56 10

Drainage 11¼

SUMMARY

Ground floor area: 11,330 sq. ft.
Total floor area: 11,690 sq. ft.
Tender date: October 1954.
Work began: November 1954
Work finished: May 1957
Tender price of foundations, superstructure, installations and finishes: £33,230 4s 6d.
External works, given under teaching block.

COST COMMENTS

The post-war population bulge, having passed through the primary schools into the secondaries, is now beginning to fill out the technical colleges. Our knowledge of the cost pattern of these building types is thus following a similar progress. Oswestry is the third technical college to be published in the *AJ* and therefore tempts tentative comparisons. (Previously published were Dartford, April 28, 1955, and Slough, May 8, 1958.) But the three buildings are markedly different in size, number of storeys, design, facilities provided, and not least in tender date. Hence, despite the fallacies of the method, we have converted the element group prices into percentages, to give a broad notion of where the money goes (in teaching blocks only).

Percentage of total cost taken by each element group

Element	*Oswestry*	*Dartford*	*Slough*
Prelims., insurances and contingencies	5	4	7
Work below ground	12	8	2
Structure	31	37	44
Partitions and fittings	10	18	11
Finishes	17	10	13
Services	25	23	23
Floor area	20,474	72,640	27,815
Number of storeys	2	4	6
Tender date	October 1954	October 1951	October 1955

Foundations: As one would expect, the proportion of total money drops smartly with increase in number of storeys (it should be noted that Oswestry foundations are for an eventual four floors).
Structure: Again it is no surprise that the proportion of cost taken by floors, frame, walls and roof increases as the building gets higher.
Partitions and fittings: Dartford differed from the other two in having relatively expensive demountable jack-fixed plastic partitions, which were self-finished. Hence, " finishes " costs for Dartford are less than the other two.
Services: These, by far the most expensive and complex part of a technical college, are notably constant at a quarter of the total cost—a good deal more than the proportion taken by the structural frame. This once more reinforces one's conviction that it is high time architects began to look more closely into the jealousy-guarded secrets of the services specialist.

CONTRACTORS

Clerk of works: Matthews Jones. *General contractor:* John Hughes (Contractors) Ltd. *Sub-contractors: Glazing (roof and walls) and curtain walls:* Williams and Williams. *Structural steelwork:* R. O. Wright of Banbury. *Roof decks and coverings:* Briggs (Bitumetal). *Acoustic ceilings:* John Dale. *Electrical installation:* Hartley Electromotors (Shrewsbury). *Heating installation:* Heaths (Shrewsbury). *Concrete partition blocks:* Johnson's (Dawley, Salop). *Folding steel doors:* Bolton Gates. *Other doors:* Hills (Stockton on Tees). *Wood block floors:* Hewetson. *Ironmongery:* A. G. Roberts. *Aluminium metal work to roofs:* Frederick Braby. *Heating unit blowers:* Biddles. *Stahlton prestressed pot floors:* R. Costain (Liverpool). *Curtain wall panesl:* Holoplast. *Domelight:* Twide. *Pyrok ceilings:* Decorators (Liverpool) Ltd. *Altro floors:* Adamite. *Accotile floors:* North Staffs Flooring Co. Ltd. *Terrazzo:* Art Pavements and Decoration Ltd. *Ash hoist:* Shorts Lifts. *Laboratory fittings:* Gallenkamp. *Sanitary fittings:* Shanks and Adamsez.

The Architects' Journal Library of Information Sheets 675. Editor: Cotterell Butler, A.R.I.B.A.

COLOUR-ANODISING OF ALUMINIUM FOR EXTERIOR WORK

This Sheet gives specification notes for the colour-anodising of aluminium for architectural applications, for exterior use, requiring to be weather-resistant and colour-fast. It covers the choice of materials and testing of performance of anodic coatings on aluminium and aluminium alloys for permanent exposure to outdoor conditions. It is based on the requirements of B.S. 1615 : 1958 where appropriate and includes additional requirements.
Recommended dyes for colour-fastness for exterior applications are given on the reverse of this Sheet.

SPECIFICATION NOTES

Materials

The materials, agreed between architect and contractor, are normally wrought materials 1B, N4, N21, H9, H10, H20 and H30 (B.S. 1470 to 1477: 1955) and casting alloys LM5 and LM18 (B.S. 1490: 1955). The specification notes apply particularly to these materials but there are others which are also suitable.
In general, the same material should be specified for components where good colour matching is required. Some variation in colour and appearance may be evident, after anodising, between different batches of the same material and between different forms of the same material. It should also be appreciated that anodic treatments accentuate any flaws or variations which may be present in the basis metal.

Appearance

When viewed at an agreed distance of not less than 3 feet in full daylight, the surface appearance should be uniform, without banding or streaking. This minimum viewing distance may be increased to 20 feet for surfaces to be used for upper storeys of buildings. The anodic coating should not be powdery.

Thickness of Coating

The anodic coating should normally be Grade A of B.S. 1615: 1958 (0·0010 in. minimum) on significant surfaces, i.e. the surfaces to be coated. For certain applications, e.g. on shop fronts, coatings may be specified Grade B of B.S. 1615: 1958 (0·0006 in. minimum). The choice of Grade A or Grade B coatings depends on several important factors including the anticipated life of the surface, the atmospheric conditions of the environment, and the frequency with which washing of the surface will be carried out.

Testing: Appendix A of B.S. 1615: 1958 describes a method of determining thickness and this should be used for arbitration in cases of dispute.
In routine practice, non-destructive methods that make use of eddy currents can be used, and the occurrence of a measured local thickness of 0·0008 in. (20 microns) can be permitted in a few individual measurements for Grade A coatings, provided the thickness in most places on the surface is not less than the specified minimum. Details of appropriate instruments and methods for non-destructive testing making use of eddy currents may be obtained from the Aluminium Development Association.

Colour and Texture

The colour and texture for satisfactory matching within specified limits should be agreed between the architect and contractor by means of treated samples prepared from the agreed batch of material and the dye, if any, that is to be used.
Only dyes known to be of satisfactory colour-fastness may be used. A limited number of specific dyes have been found by outdoor exposure tests to be of satisfactory colour-fastness when applied under optimum conditions of anodising, dyeing and sealing; details of these dyes and conditions are available from the Aluminium Development Association (see also *Recommended Dyes for Colour-fastness for Exterior Applications* on the reverse of this Sheet). Where dyes not so tested are used, the architect should satisfy himself that they will be adequate for his requirements.

Colour-fastness

The performance of the dyed material for exterior use must not be less than 8 on the textile scale (B.S. 1006: 1953, *Reference Standards*) when tested by the accelerated method described in B.S. 1615: 1958 Appendix E.
As with other building materials and coloured materials, some changes and fading of colour will occur in the course of time.
For evaluating colour-fastness of unproved dyes, only outdoor exposure is satisfactory. Accelerated testing is only suitable as a quality-control test on dyed anodic coatings where the colour-fastness of the dye has already been established by outdoor exposure tests. The fact that a dye gives a colour-fastness value of 8 by accelerated testing does not necessarily indicate that it is suitable for prolonged outdoor exposure.

Sealing

Efficient sealing is an essential part of the anodising process. Adequacy of sealing must be tested by a sulphur dioxide/humidity type of test. Several tests of this nature are available: these include a modified DEF 1053, Method 25 test and a modified C.R.L. beaker test. Inadequate sealing is indicated by the appearance on the test specimen of a white bloom. 24 hours is an adequate testing period.

Temporary Protection of Anodised Finishes

If required, a continuous coating of a suitable alkali-resistant, non-yellowing lacquer may be applied to anodised surfaces to prevent damage on the site through contact with plaster and cement. Certain methacrylate lacquers provide suitable coatings: other types of lacquer are being developed for this purpose. A suitable lacquer coating should prevent attack on the anodised surface as a result of the following test: a blob of wet cement mixture, consisting of 5 parts sand to 2 parts cement and 1 part water (all by weight), should be placed, freshly mixed, on the lacquered surface and left for a period of seven days.
For protection of anodised surfaces in transit, normal packing methods are satisfactory.

41.B2 COLOUR-ANODISING OF ALUMINIUM FOR EXTERIOR WORK

RECOMMENDED DYES FOR COLOUR-FASTNESS FOR EXTERIOR APPLICATIONS

Colour		Pigment (Inorganic)
On silver-anodised* surface	On grey anodised surface: aluminium-5 per cent. silicon alloy	
Silver	Grey	None
Gold	Brown	Ferric ammonium oxalate
Bronze	Dark brown	Cobalt acetate / Potassium permanganate } Successive dips
		Dye (Organic)
Yellow	Green	Kiton Yellow 7GF[1] / Quinoline Yellow A 200[4] } These dyestuffs are essentially identical
Green	Dark green	Aluminium Green GLW[2]
Blue	Dark blue	Sandoz Light Blue 1[3] / Oxanal Blue CB 150 per cent.[1] } These dyestuffs are essentially identical
Black	Black	Aluminium Black MLW[2]

* i.e., silvery appearance resulting from anodising, in natural colour, on pure aluminium and most alloys

The list above gives dyes and pigments which have been found to have sufficient fastness to light for exterior applications when tested both by external exposure for at least 5 years and by accelerated test. These few dyes only, out of several hundred tested, are recommended by the Aluminium Development Association at the present stage. As further dyestuffs and pigments are developed and tested, those found sufficiently colour-fast will be added to the list.

Maximum fastness to light of these dyes and pigments is obtained only when they are applied to an anodic film of appropriate thickness (see *Thickness of Coating* on the face of the Sheet) and quality, under suitable processing conditions.

The colours obtained by the use of the aluminium-5 per cent. silicon alloy represent the dye colour modified by the grey colour of the natural anodic film on this material. The colour will vary slightly on this material according to the thickness of the anodic film, e.g. 0·0010 in. or 0·0006 in.

Samples illustrating the available colours are held by the Aluminium Development Association for inspection.

The addresses of the dye suppliers are as follows:

Clayton Dyestuffs Co. Ltd.,[1] Clayton, Manchester 11
or C.I.B.A.,[1] Basle, Switzerland.

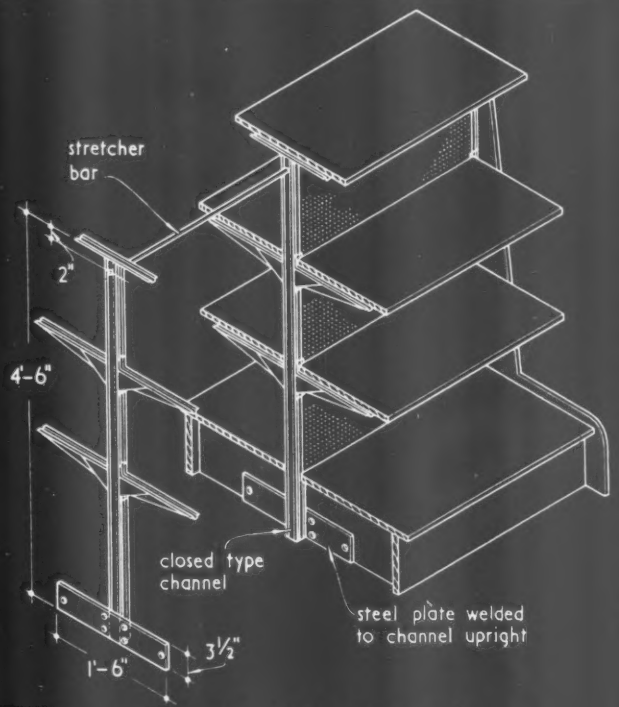
Bard & Wishart,[2] 26, Brown Street, Manchester, 2
or Durand & Huguenin,[2] A. G., Basle, Switzerland.

Sandoz Products Ltd.,[3] 152, Canal Road, Bradford, 2
or Sandoz AG.,[3] Basle, Switzerland.

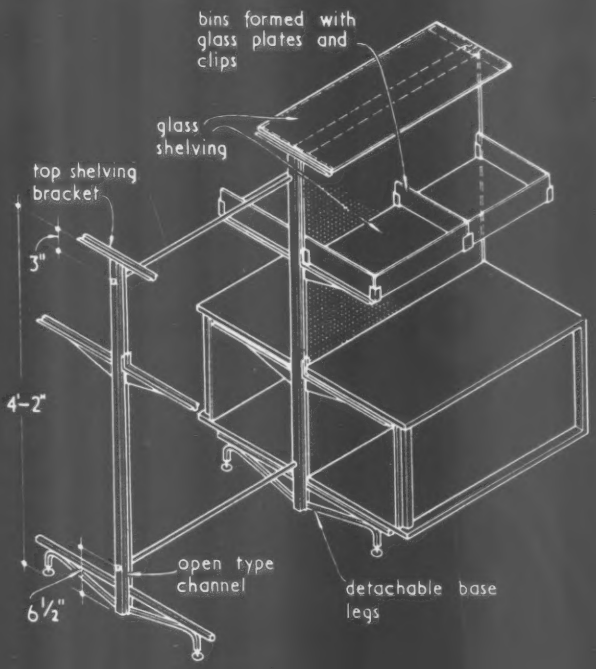
Imperial Chemical Industries Ltd. (Dyestuffs Division),[4]
P.O. Box 42, Hexagon House, Blackley, Manchester 9

Compiled from information supplied by:
The Aluminium Development Association
Address: 33, Grosvenor Street, London, W.1.
Telephone: Mayfair 7501-8.

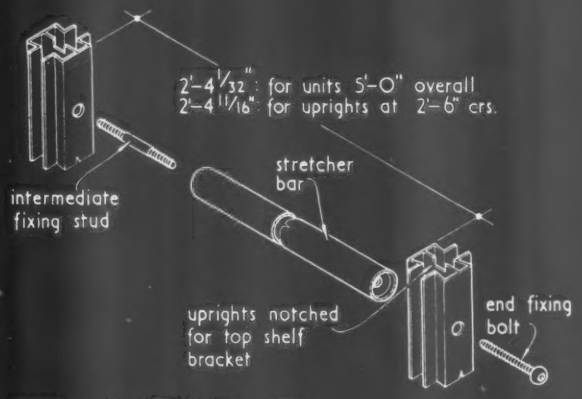
The Architects' Journal Library of Information Sheets 676. Editor: Cotterell Butler, A.R.I.B.A.



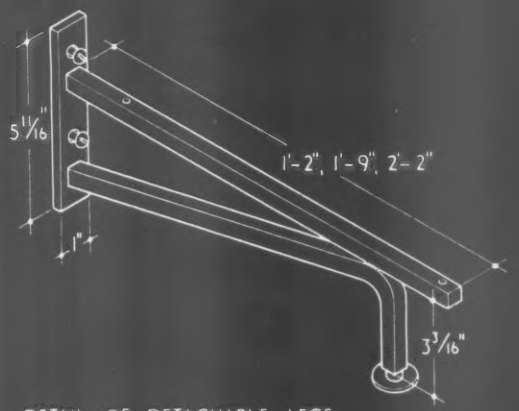
TYPICAL FLOOR UNIT (with welded plates)



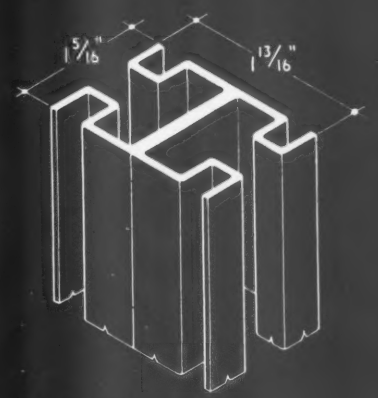
TYPICAL FLOOR UNIT (with detachable base legs)



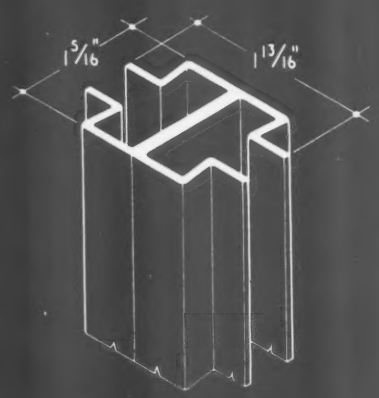
DETAIL OF STRETCHER BAR.



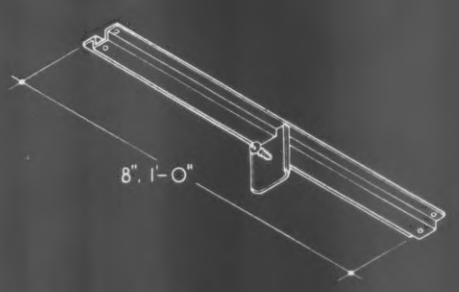
DETAIL OF DETACHABLE LEGS.



closed type
DOUBLE CHANNELS.



open type



DETAIL OF TOP SHELF PLATE. (centre type)

·VIZUSELL· DISPLAY FITTINGS: FREE STANDING. Manufacturer: Versatile Fittings (W.H.S.) Ltd

43.H2 ·VIZUSELL· DISPLAY FITTINGS: FREE-STANDING

This Sheet describes Vizusell free-standing fittings which, like the wall-mounted fittings described on Sheet 43.H1, are suitable for varied forms of display and are fully demountable.

Principle

The two types of channel section described on Sheet 43.H1 form the double channel vertical members illustrated on the face of this Sheet. They are used with differing types of base for all free-standing fittings. Patent fixings on the shelf brackets or other attachments can be fitted into the vertical channels at any point. In addition to the shelf brackets shown on Sheet 43.H1, the top shelf bracket illustrated on the face of this Sheet is available for use with free-standing units. The channels may be used to retain any type of ¼-in. building board, perforated board, mirror glass, etc.

Fittings

The drawings on the face of the Sheet show two typical fittings built up from the range of components available.

Floor units (*with fixing plates*): The uprights are double closed-type channels 4 ft. 6 in. long with flat steel plates welded to the base for fixing to timber floor members and are drilled at the top to take the stretcher bars. Uprights are available for double-sided displays, as shown on the face of the Sheet, or with half-plates at the base for single-sided displays. Uprights and stretcher bars for building floor units may be obtained in sets or separately.

Floor units (*with detachable base legs*): The uprights are double open-type channels 4 ft. 2 in. long. They are drilled top and bottom for stretcher bars, and notched at the top to accommodate top shelf brackets, as shown in the detail of the stretcher bar. The base legs lock into the bottom of the channel on both sides. They have thumb-screw adjustable feet and are available in three standard lengths, as shown on the face of the Sheet, but other lengths and heights are available if required.

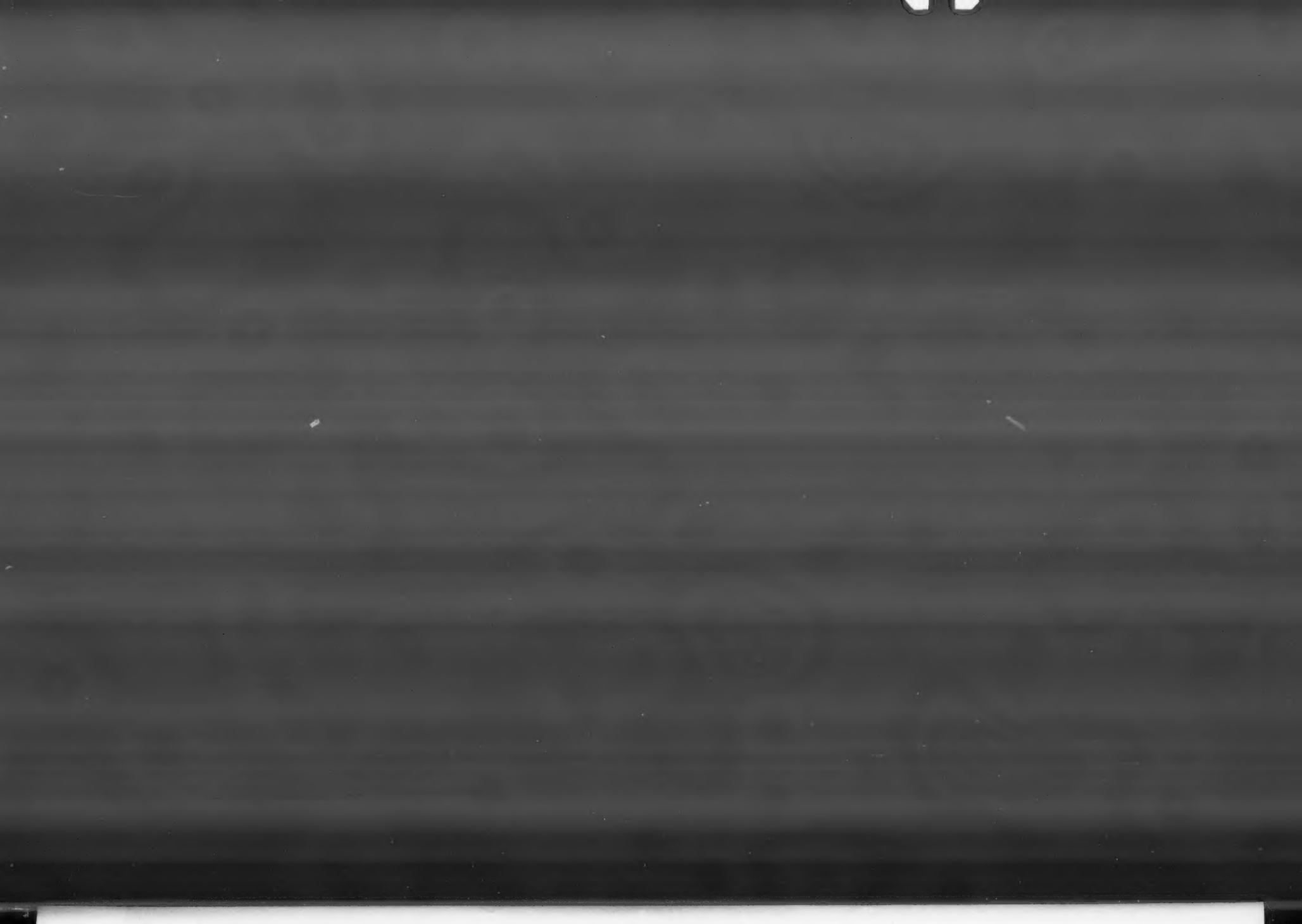
Finish

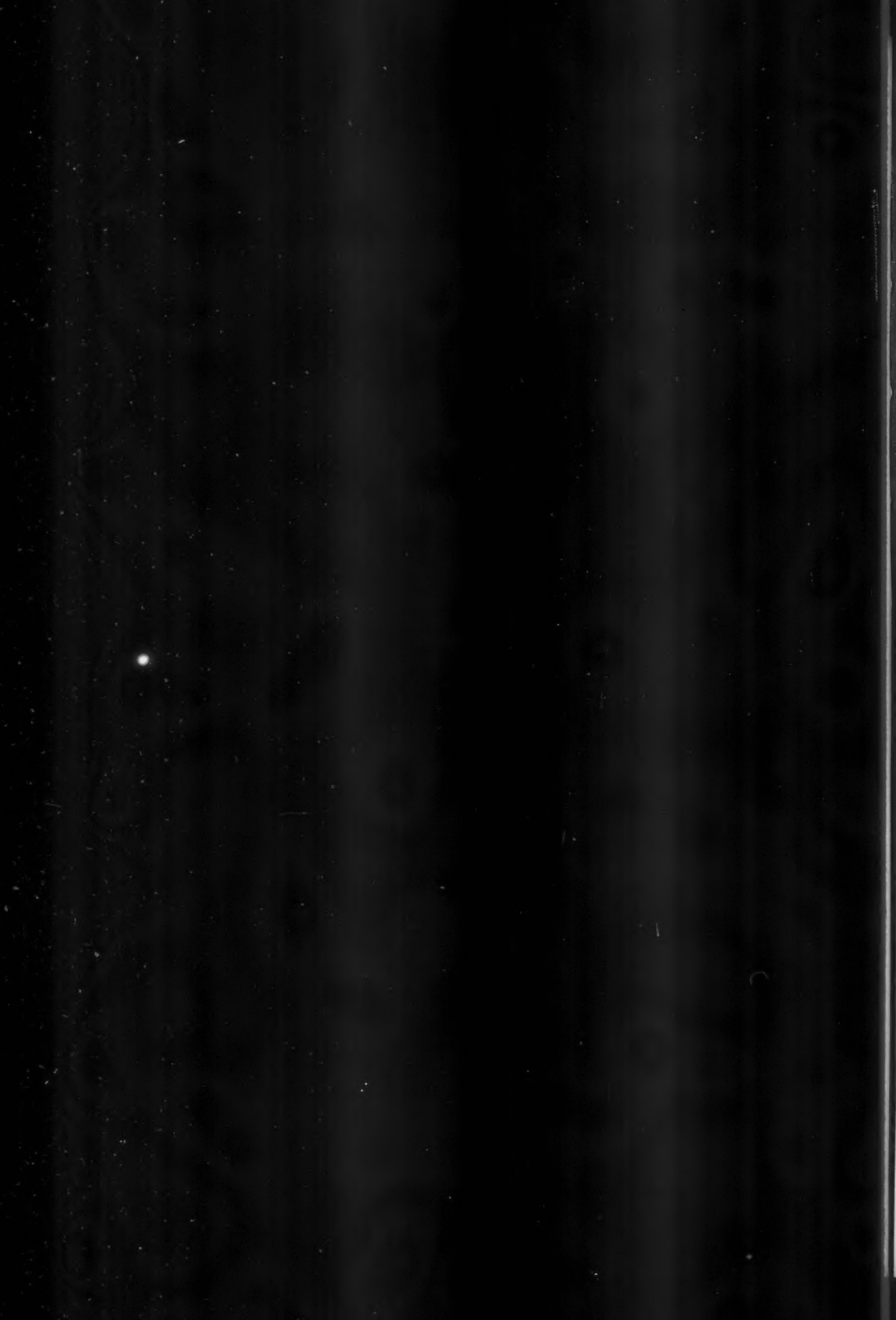
All components are cadmium-plated mild steel as standard but other plated finishes, including polished chrome, brown bronze, black bronze and brass, are available on request.

Compiled from information supplied by:

Versatile Fittings (W. H. S.) Ltd.
(A subsidiary of W. H. Smith & Son, Ltd.)

Address: 55, Fetter Lane, London, E.C.4.
Telephone: Fleet Street 6262.
Vizusell Showrooms: London, Manchester, Glasgow, Toronto, New York, Chicago, Los Angeles.

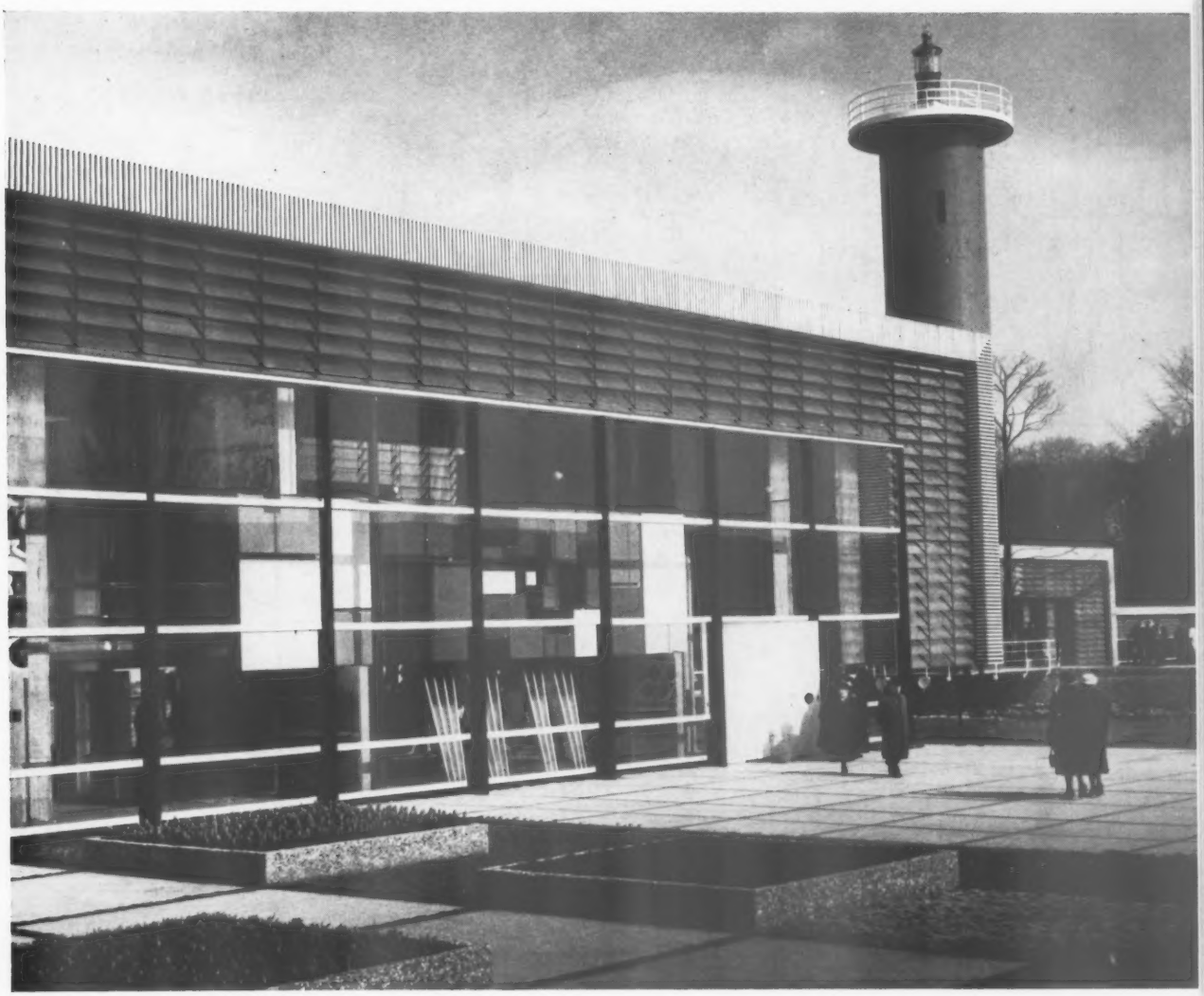




working detail

GLAZED WALL: NETHERLANDS PAVILION, BRUSSELS EXHIBITION

J. H. van den Broek, J. B. Bakema, J. W. C. Boks, F. P. J. Peutz and G. T. Rietveld, architects

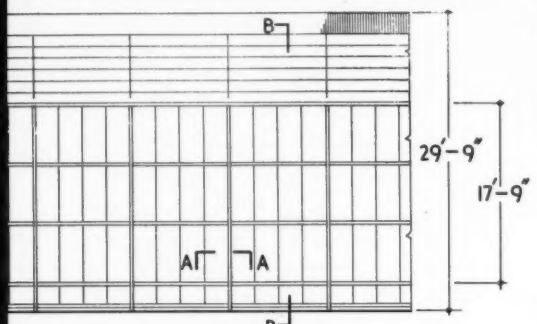


This glazed wall owes much of its quality to the clear differentiation between the glazing proper and the glass louvres and to the contrast between the bold pattern of the mullions and the transoms and the delicate patterns of the louvres and fascia. Note that the glass wall receives no support at the head from the surrounding structure, but is stiffened against windload by the thickening of the mullions towards the base.

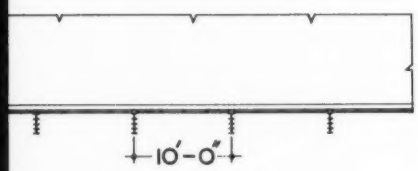
working detail

GLAZED WALL: NETHERLANDS PAVILION, BRUSSELS EXHIBITION

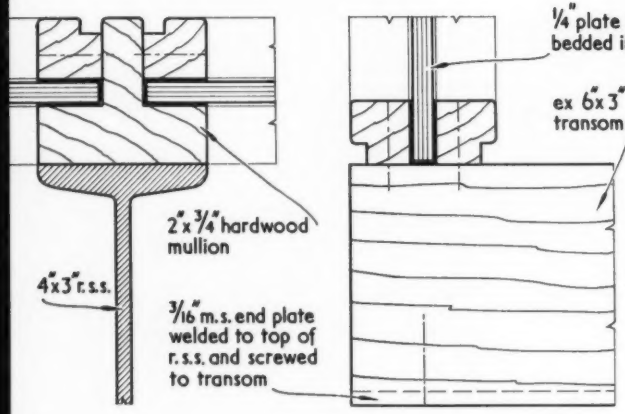
J. H. van den Broek, J. B. Bakema, J. W. C. Boks, F. P. J. Peutz and G. T. Rietveld, architects



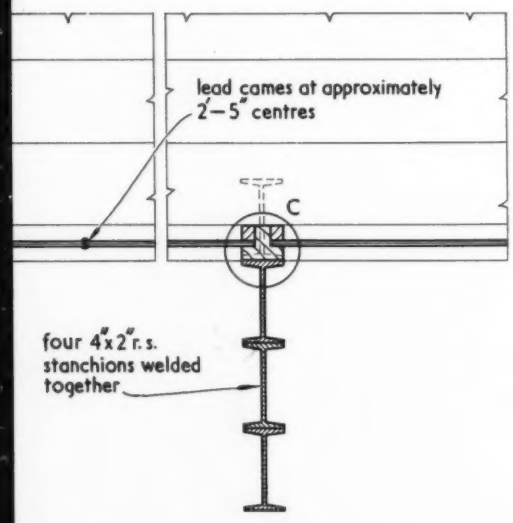
ELEVATION. scale 1/16" = 1'-0"



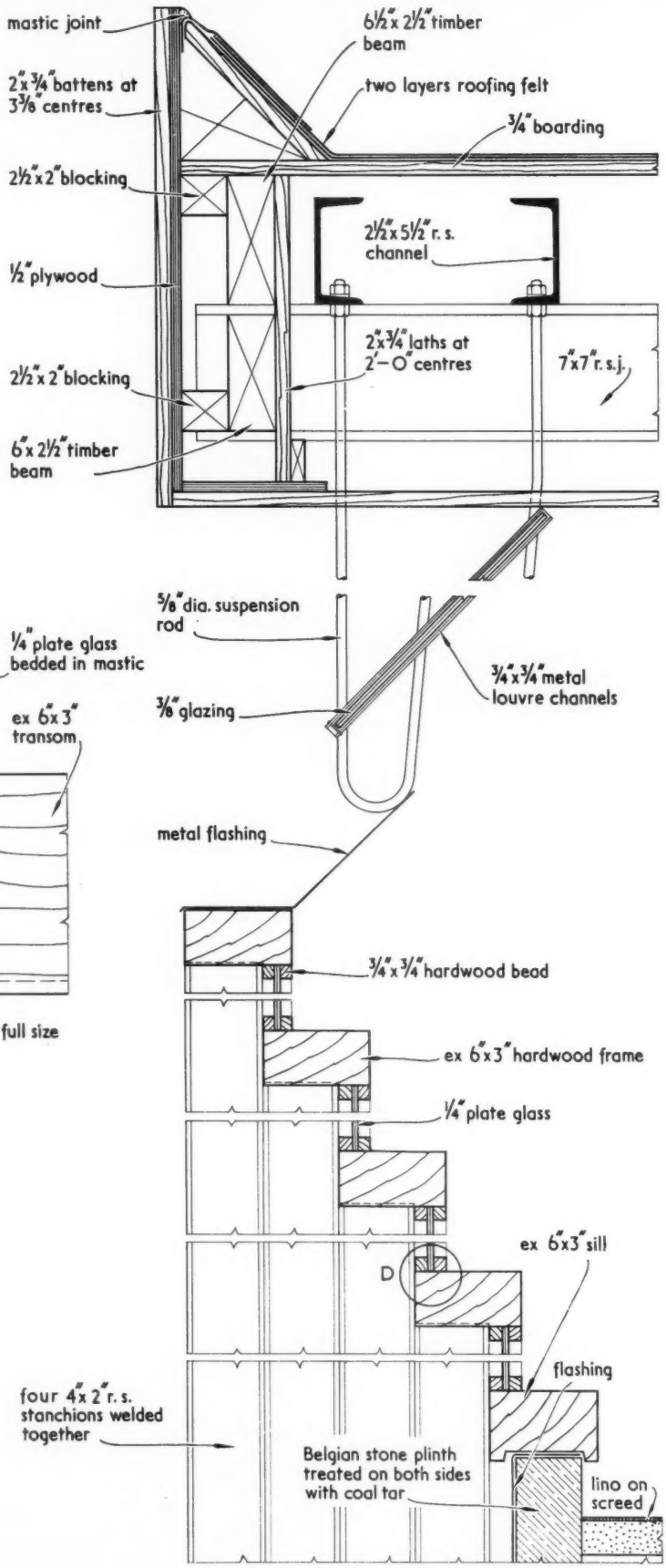
PLAN. scale 1/16" = 1'-0"



DETAIL AT C. DETAIL AT D. scale 1/2 full size



PLAN AT A–A. scale 1/8 full size



SECTION B–B.

note: figured dimensions in feet and inches are approximate

Flooring Contractors: THE LINO TILE COMPANY

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Nairn 'quality' linoleum made in two thicknesses
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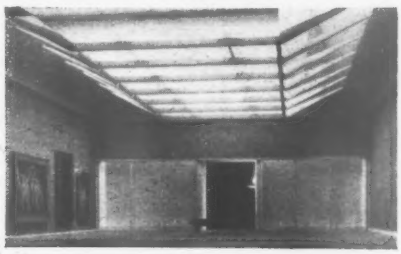
or telephone Birmingham Office: Midland 5989.
Manchester Office: Central 1417. Glasgow Office: South 1011.
Head Office and Works: Kirkcaldy, Scotland. Kirkcaldy 2011.

PLAN AT A—A. SCALE 76 FULL SIZE



Left, one of the rebuilt galleries in the Birmingham Art Gallery and, above, the original model prepared by John Bickerdike at the BRS from which it can be seen how faithfully his proposals have been carried through.

BIRMINGHAM

Restored Art Gallery

A correspondent writes:

Provincial art galleries can be disturbing places. Once under their heavy pediments and out of range from the starlings, you can never be sure whether you are supposed to enjoy looking at the pictures or to be overcome by a sense of local patriotism. In Birmingham, the all pervading Chamberlain tradition is not easy to shake off, but a succession of enlightened gallery directors has built up a splendid collection and the City took a notable step further when Princess Alexandra opened a suite of galleries (restored after bomb damage in 1945) which probably have better conditions for looking at pictures than any other provincial gallery in the country.

The daylighting design principles were evolved by officers of the BRS in close association with the architects, the basic research being carried out by John Bickerdike. Two main principles have been employed. In the larger galleries specially designed lay-lights have been used which give a maximum daylight factor at a height of 5 ft. 6 in. For artificial lighting a combination of fluorescent and tungsten reproduces comparable balanced conditions.

In the smaller galleries housing silver, china and water colours, artificial lighting is used exclusively and low ceilings combine with dark finishes to give a sense of intimacy and enclosure.

Of the lay-lights, the functional-looking one illustrated in but not flattered by the photograph seems highly successful, especially as it is used in the galleries whose walls are covered with brocade of strong colour—crimson, gold and pale blue. (Though in the blue gallery the heavy gilt Victorian frames seem to get more emphasis than the remarkable pre-Raphælite paintings inside them.)

The main gallery, intended not for the Birmingham collection but for exhibitions, has a different and less exciting lay-light and a drab noncommittal fabric on the walls. This may give every exhibition an even chance but there is an obvious danger that they may all look equally dull.

Designed by the City Architect, A. G. Sheppard Fidler, and executed by C. Bryant & Son, the gallery alterations will cost £91,709, all recoverable from the War Damage Commission.

Anyone who finds himself in the centre of Birmingham should resist the natural urge to escape on the next train and see this latest example of the city earning itself a reputation for enterprising architecture.

New headquarters for the Mersey Mission to Seamen were recently opened in Liverpool, near the Pier Head, where it has become a new landmark, especially at night when it is illuminated. The building, designed by Willink and Dod, has a reinforced-concrete frame, from which internal columns have been eliminated. Apart from the tall windows of the chapel on the first floor, the fenestration is of uniform hardwood windows with metal inserts between concrete columns. The building includes a chapel, clubrooms, a large second floor restaurant and kitchens, and office accommodation and resident superintendent's flat on the top floor. Half the site is intended for a residential hotel for seamen, but until the money for this is available, has been laid out as a car park. General contractors, Henry Boot & Sons Ltd. A cost analysis of this building will be published in the JOURNAL *shortly.*

Announcements

The Incorporated Association of Architects and Surveyors has now produced a Scale of Professional Charges for Building Surveying Services, a comprehensive scale of fees covering all aspects of the Building Surveyor's professional services. Copies of the booklet may be obtained (price 1s. each) from the General Secretary, IAAS, 29, Belgrave Square, S.W.1.

Nettle Accessories Ltd. have acquired additional premises at the following address: Nettle Accessories Ltd., Sales Division, Warren Street, Stockport (Stockport 7155). All correspondence relating to sales, orders, despatches and relevant matters should be forwarded to this address.

James Powell & Sons (Whitefriars Studios) have appointed as their agent in North America F. L. Stuart, 110, East 42nd Street, New York 17, N.Y.

The new address of High Duty Alloys' Area Sales Office for Scotland and Northern Ireland will be Atholl Avenue, Hillington, Glasgow, S.W.2 (Halfway 5274).

Frank Brinsley, Technical Service Manager for Radiation Ltd. retired from the firm on May 31.

J. Russell Hickmott, A.M.I.B.A.E., has been appointed London Manager for Messrs. Perkins C.M.E. Limited of Derby, who will shortly be opening showrooms in London for the display of oil fired domestic and industrial boilers. Mr. Hickmott will have temporary offices at 83, Cromwell Road, London, S.W.19 (Liberty 7222).

The virtue of pre-cast floors

lies primarily in their economy and in the speed with which they can be put into position. They are particularly suitable for industrial buildings where the traffic is unusually heavy.

The above sketch was made of a recent installation by Bradfords at Hays Wharf, London.

Other Bradford specialities

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PRE-CAST UNITS

GRANOLITHIC PAVING

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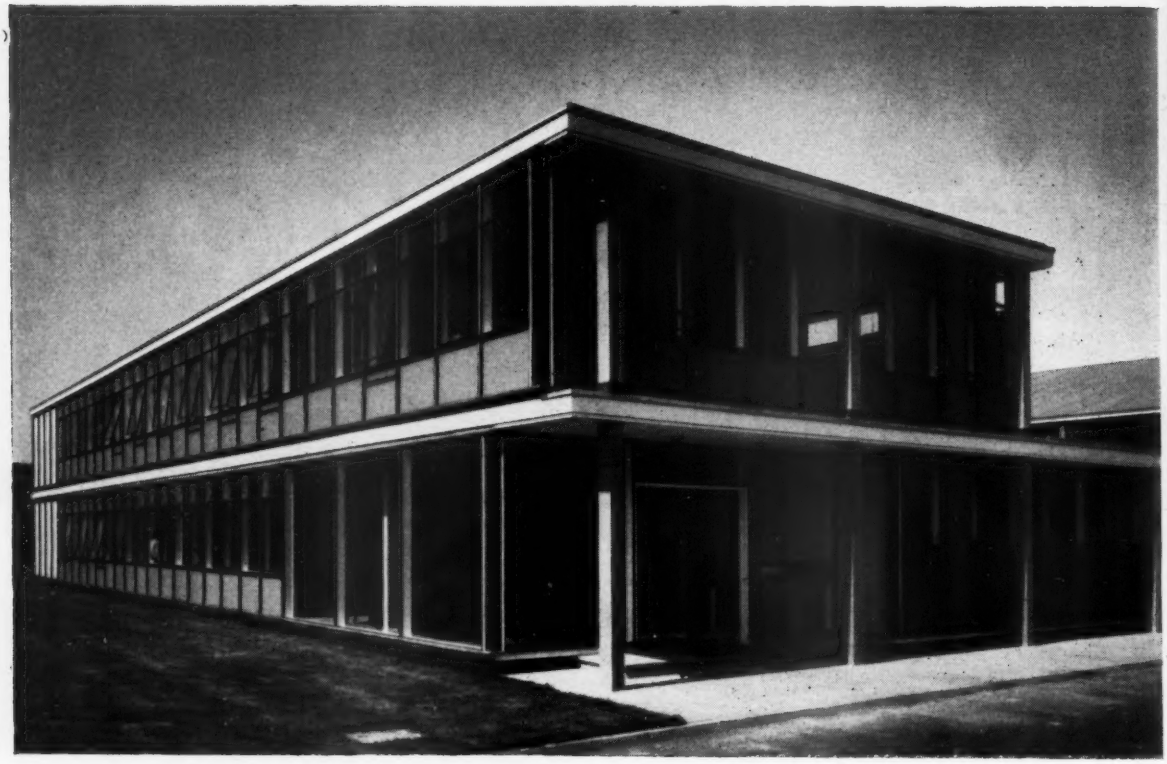

An example of Conder Steel construction is shown above — Offices and Factory, Camberley. Architect : John Bickerdike, D.A., A.R.I.B.A. Conder steelwork provides the Architect with a brilliant new design medium, including portal frames up to 150′ clear span and multi-storey frames. Conder complete erection service includes cladding and glazing. You are invited to send for the Conder Book. Illustrated with examples of Conder steel buildings, it gives useful data on roofing materials and insulation.

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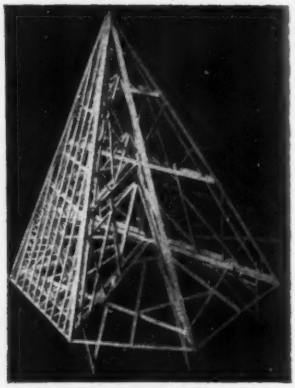
H-F/C.C

MAY

Ove Arup's house in Highgate, by the Danish architect Erhard Lorenz.

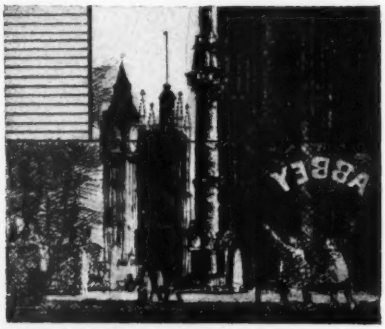
Street side clutter, such as will be imposed on any architect's ideal vision if it is built in a town; from Kenneth Browne's article *Streetscape with Furniture*, the street in this case being replanned Notting Hill Gate.



Great Gothic space-frame; Quentin Hughes' magnificent model to illustrate his article on roof of York Chapter House.

JUNE

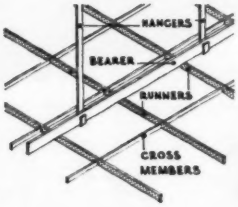
Town centre of Vallingby, above, and the market place of Harlow New Town, right; contrasts in animation from *Hubs Without Wheels*, a survey of two important new town centres.

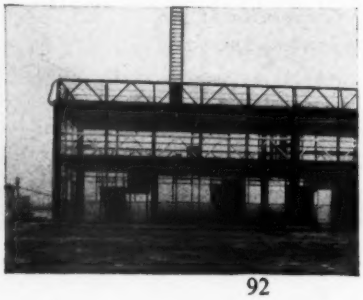


Building development in Victoria Street near the Abbey, touch off again the future of Westminster Precinct. This enfilade of the spires of Westminster highlights Gordon Cullen's proposals in *Westminster Revisited.*

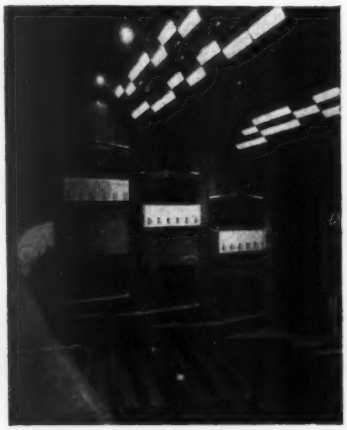
JULY

Right: overhead nomenclature; the designations of the parts of suspended ceilings, from the first of a number of articles on this new entrant in the field of prefabricated building elements. *Below:* Glass Cages at Gatwick; some of the new buildings at Gatwick airport are almost brutalistically solid, others are transparent glass and steel structures, all will be fully described in a special feature.





Below: Theatre in Coventry; a view across the auditorium of the newly-opened Belgrade Theatre. The interior of the National Film Theatre will also be given the full treatment in this issue.



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Trusses and beams built up of laminae can be of any span and dimensions, thus freeing the Architect from the restrictions of conventional materials. They are aesthetically pleasing, compare favourably in cost, dispense with the need for heavy lifting tackle and generally reduce site labour costs. R.T.E. timber trusses and beams are being used in many new schools and two examples are shown here:—

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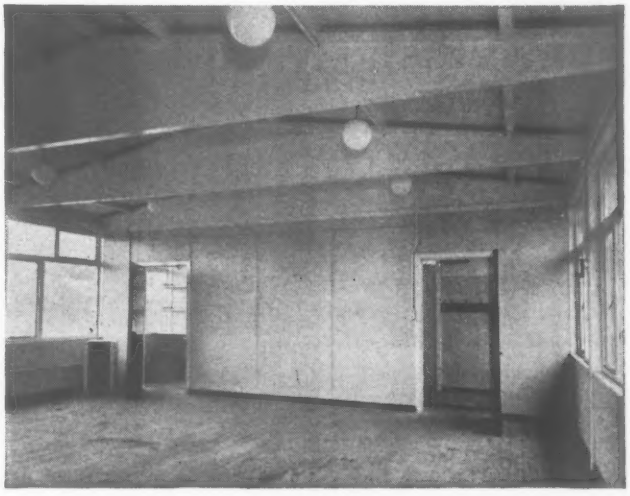
For the Assembly Hall, Dining and Entrance Halls and Cloakrooms of this school, R.T.E. supplied straight glued laminated timber beams, 20 in. deep by 3¾ in. wide, spanning up to 32 ft. 9¼ in.
Architect: F. B. Pooley, Esq., F.R.I.B.A., F.R.I.C.S., A.M.T.P.I., County Architect of Bucks County Council. Builders: Robert Marriott Ltd.

ST. HELEN'S AUCKLAND COUNTY SCHOOL, CO. DURHAM
Boxed trusses for classrooms. Laminated timber main members, with stressed skin plywood facing; painted finish.
Architect: G. R. Clayton, F.R.I.B.A., County Architect of Durham County Council. Builders: Wilson's, Spennymoor, Co. Durham.

For further information on R.T.E. Glued Laminated and Bolted & Connectored timber, send for illustrated brochure.



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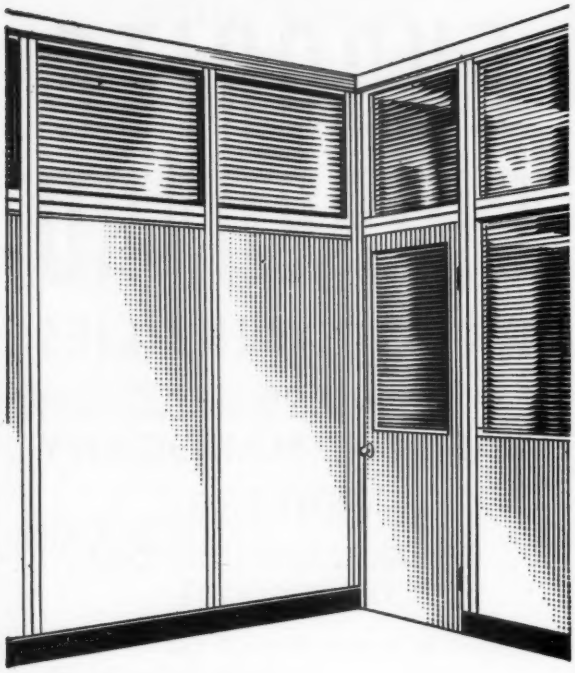

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For the same floor space Chatwood-Milner steel partitioning gives you more offices than you thought possible. Designed for flexibility, it is easy to install, and move, in every architectural surrounding. Chatwood-Milner partitioning offers great sound resistance, and the depth of its section ensures rigidity, fire resistance and freedom from drumming. Completely flush surfaces and a wide range of colours provide the liveliest of contemporary settings.

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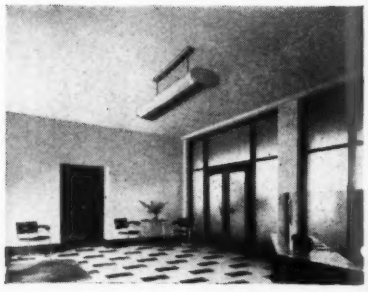
Step outside into sunshine from a normally heated room, you feel more comfortable don't you? That is because sun heat is RADIANT heat. Radiant heat and a low air temperature keep the body warm naturally, comfortably. Other types of heating systems can't do this, STRAMAX Radiant heating CAN.



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A Stramax system in the ceiling keeps the room surfaces warmer than the enclosed air—the ideal conditions for health and comfort. Stramax radiant heating scores from the design angle too. It's independent of the main building structure—doesn't need to be 'embedded'. Ceiling heating leaves the floor and walls entirely free from ugly pipes and heaters and it's suitable for any size of room. STRAMAX Radiant heating is easy on fuel as well, it warms up quickly, and is easier to control thermostatically.

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CLASSIFIED ADVERTISEMENTS

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

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

Public and Official Announcements

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

AIR MINISTRY WORKS Design Branch requires in LONDON and PROVINCES ARCHITECTURAL ASSISTANTS experienced in planning/preparation of working drawings and details for permanent and semi-permanent buildings. Salaries in LONDON up to £1,015 p.a. for men and £926 p.a. for women. Somewhat lower in PROVINCES. Starting pay dependent on age, qualifications and experience. Long-term possibilities with promotion and pensionable prospects. Five-day week, three weeks three days leave a year. Liability for overseas service. Normally natural born British subjects. Write stating age, qualifications, employment details including type of work done to any Employment Exchange quoting Order No. BOROUGH 100. 9535

GOVERNMENT OF NORTHERN IRELAND
ASSISTANT ARCHITECT CLASS II

Applications are invited for pensionable posts in the Chief Architect's Branch, Ministry of Finance. Candidates must be Registered Architects by examination, with at least two years' experience in an Architect's Office in the preparation of working drawings. Salary scale £780 (at age 25)—£1,055 (age 34 and over)—£1,215. Transfer of existing Pension rights may, in certain circumstances, be approved. Preference will be given to ex-Servicemen. Application forms may be obtained from the Secretary, Civil Service Commission, Stormont, Belfast. 9540

BUCKS COUNTY COUNCIL

Applications are invited for the appointment of a qualified STRUCTURAL ENGINEER in the County Architect's Department on A.P.T. V (£1,175×£50 (3)—£1,325 p.a.), commencing salary according to qualifications and experience.

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

Applications, on forms provided, must be returned by 14th July, 1958.

F. B. POOLEY,
County Architect.

County Offices, Aylesbury. 9572
(Amended Advertisement)

COUNTY BOROUGH OF BLACKPOOL

Applications (by 10 a.m., 17th June, 1958) are invited for the appointment to the post of CHIEF ASSISTANT (ARCHITECTURAL SERVICES) in the Borough Surveyor's Department.

Salary: Residual Scale C (£1,295 p.a./£1,515 p.a.).

Particulars and Forms of Application obtainable from the Borough Surveyor (Arthur Hamilton, B.Sc., A.R.I.B.A.), P.O. Box 17, Municipal Buildings, Blackpool.

ERNEST C. LEE,
Town Clerk.
9588

LONDON COUNTY COUNCIL
ARCHITECT'S DEPARTMENT

Vacancies for (1) ARCHITECTS, Grade III, starting salary up to £1,090 a year. (2) ARCHITECTURAL ASSISTANTS, starting salary up to £860.

Full and interesting programme of Houses, Flats, Schools and General Buildings.

Application form and full particulars from Hubert Bennett, F.R.I.B.A., Architect to the Council, The County Hall, S.E.1, quoting Ref. AR/EK/21/58. (799) 9375

STEVENAGE DEVELOPMENT CORPORATION

Applications are invited for the post of ASSISTANT LANDSCAPE ARCHITECT in the Chief Architect's Department on New Towns' salary grades A.P.T. III/IV, £679—£939 p.a., or A.P.T. IV/V, £753—£1,029 p.a., according to experience and qualifications.

The work entailed is of an interesting nature, and includes three new major projects—The Town Park, a Stadium, and the treatment of Radburn type housing development.

Candidates should preferably have passed the Final Examination I.L.A., and be experienced in the layout of open space in housing areas.

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

Applications, giving full details and names of two referees, to be sent to the Chief Administrative Officer, Aston House, near Stevenage, Herts., not later than Monday, 16th June, 1958. 9615

HOLLAND COUNTY COUNCIL invite applications for the appointment of an ARCHITECTURAL ASSISTANT, salary grade A.P.T. II, £725—£845 per annum. The appointment is subject to N.J.C. Conditions and a medical examination. The Council are prepared to contribute to the cost of removal.

Forms obtainable from the County Architect should be returned to the Clerk of the County Council, County Hall, Boston, Lincs, by 30th June, 1958. 9667

MONMOUTHSHIRE COUNTY COUNCIL
APPOINTMENTS OF ARCHITECTURAL STAFF

Applications are invited for the following posts in the County Architect's Department under the N.J.C. Conditions as follows:—

THREE ARCHITECTURAL ASSISTANTS, special grade for Architectural Assistants at a salary from £830 to £1,030 per annum; applicants to be appointed on the grade according to ability.

TWO ARCHITECTURAL ASSISTANTS, Grade A.P.T. II, salary £725 to £845 per annum.

FOUR ARCHITECTURAL ASSISTANTS, Grade A.P.T. I, salary £575 to £725 per annum.

Applications, together with details of experience and qualifications to be forwarded to the County Architect, Queen's Hill, Newport, Mon., not later than Wednesday, 25th June, 1958.

VERNON LAWRENCE,
Clerk of the Council.

County Hall,
Newport, Mon. 9648

METROPOLITAN BOROUGH OF BATTERSEA

Applications are invited for the permanent appointment of ASSISTANT BUILDING SURVEYOR, Grade A.P.T. III—£845 to £1,025 per annum plus London Weighting (£30 per annum at age 26 and over).

The commencing salary will be according to qualifications and experience. Preference will be given to Associate Members of the Royal Institution of Chartered Surveyors (Building Sub-Division). The successful applicant will be engaged on the improvement and supervision of house property.

The appointment is subject to the Local Government Superannuation Acts, 1937-53. Further particulars and forms of application obtainable from the Borough Engineer and Surveyor, Town Hall, S.W.11. Closing date 18th June. 9647

COUNTY BOROUGH OF BIRKENHEAD
PLANNING DEPARTMENT

PLANNING ASSISTANT, Grade A.P.T. III (£845/£1,025 per annum) in the Borough Engineer & Surveyor's Department.

Candidates must be qualified in accordance with the recommendations of the North Western Provincial Council for Local Authorities A.P.T. Services.

The appointment offers scope for varied and interesting work in a busy office in connection with Development Control (50/60 applications per month) and Development Plan review, Redevelopment areas, etc.

Application to be made in acordance with instructions to be obtained from the Borough Engineer & Surveyor and Planning Officer, Municipal Offices, 3, Conway Street, Birkenhead.

Closing date for applications: 27th June, 1958. 9668

CANNOCK URBAN DISTRICT COUNCIL
APPOINTMENT OF ARCHITECTURAL ASSISTANT

Applications are invited for this vacancy in the Architect's Department at a salary within Grade A.P.T. II (£725—£845) per annum, the commencing point to be fixed according to qualifications and experience. Housing accommodation available for married applicants. Further particulars and forms of application are available from the undersigned. Closing date, 30th June, 1958.

H. C. ALLEN,
Clerk of the Council.

Council House,
Cannock, Staffs.
4th June, 1958. 9670

WARWICKSHIRE COUNTY COUNCIL
ARCHITECT'S DEPARTMENT
APPOINTMENT OF SENIOR ASSISTANT ARCHITECT

Applications are invited for the appointment of a Senior Assistant Architect on grade A.P.T. III—IV (£845—£1,175). Applciants must be members of the Royal Institute of British Architects and be competent designers with a good knowledge of modern methods of construction. They must also be capable of handling large building projects from sketch plan to completion. The appointment is on the establisfied staff and subject to the Scheme and Conditions of Service of the National Joint Council for Local Authorities and the Local Government Superannuation Acts, 1937-1953. The Council is unable to offer housing accommodation but consideration will be given to the granting of financial assistance towards the payment of removal expenses. The commencing salary to be determined upon the successful applicant's ability and experience.

Applications are to be on forms which can be obtained from G. R. Barnsley. F.R.I.B.A., County Architect, Shire Hall, Warwick.

L. EDGAR STEPHENS,
Clerk of the Council.

Shire Hall,
Warwick. 9669

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD

ASSISTANT ARCHITECT required. Good experience of design and construction necessary, preferably in hospital work. Applicants must be Associate Members of the R.I.B.A.

Salary scale £700 × £25 (3) × £30 (1) × £35 (6)—£1,015, plus £20—£50 London weighting. Commencing salary above minimum may be paid according to relevant practical experience, appropriate to the post. Whitley Council conditions, superannuable.

Apply, stating age, qualifications (with date) and experience, with names of two referees, to Secretary, North West Metropolitan Regional Hospital Board, 11a, Portland Place, W.1, by 26th June. 9662

SOUTH OF SCOTLAND ELECTRICITY BOARD

Applications are invited for the following superannuable appointment: SECOND ASSISTANT ENGINEER (ARCHITECTURAL), Generation/Construction Section—Chief Engineer's Department.

Candidates must have extensive experience in the design, planning, erection and maintenance of such buildings as offices, workshops, stores and housing. Some experience in reinforced concrete design would be an advantage.

The Generation/Construction Section is at present located at 168, Broomhill Drive, Glasgow, W.1, but will be transferred to Cathcart, Glasgow.

Salary—£1,145/£1,375 per annum in accordance with Class AX/DX, Grade 4 of Schedule "B" to the National Joint Board Agreement.

Apply, quoting Reference No. E14/58 on standard form AE.6, available from the Secretary, P.O. Box 173, 351, Sauchiehall Street, Glasgow, C.2, not later than Friday, 27th June, 1958. 9685

BOROUGH OF SCUNTHORPE
ASSISTANT ARCHITECT

Applications are invited for the appointment of ASSISTANT ARCHITECT, to work under the direction of the Chief Assistant Architect in the Borough Surveyor's Department.

The salary payable will be in accordance with the Special Grade (£750—£1,030 per annum), and the commencing salary will be fixed within the Grade according to experience and qualifications. Candidates should be qualified by Parts I and II of the R.I.B.A. Final Examination.

The work will be of an interesting and varied character in an expanding town with a population of nearly 60,000.

Housing accommodation will be available if required.

Applications, stating particulars of training and experience, and giving the names of two referees, should reach the undersigned not later than Wednesday, 25th June, 1958.

T. M. LISTER,
Town Clerk.

Municipal Offices,
34, High Street,
Scunthorpe.
31st May, 1958. 9640

CITY OF SHEFFIELD EDUCATION COMMITTEE
COLLEGE OF TECHNOLOGY
DEPARTMENT OF BUILDING

Applications are invited for the full-time post of LECTURER IN STRUCTURAL ENGINEERING, to teach Theory and Design of Structures in Sandwich courses and Higher National Certificate courses. Industrial experience and membership of an appropriate professional body are desirable.

Salary scale: £1,200×£30—£1,350 per annum.

Forms of application may be obtained from the undersigned (s.a.e.) at P.O. Box 67, Sheffield, to whom they should be returned within two weeks of the appearance of this advertisement.

STANLEY MOFFETT,
Director of Education.
9664

CUMBERNAULD DEVELOPMENT CORPORATION

Applications are invited for the following post in the Department of the Chief Architect and Planning Officer:—

ASSISTANT QUANTITY SURVEYOR (Grade B), Reference Q.S.3. Salary scale A.P.T. VIII (£1,139—£1,366). To take charge of a project from pre-planning stage to final account, working in close co-operation with the Group Architect. A.R.I.C.S. required.

Salary scale is that of the Whitley Council for New Towns Staff, and the appointment may be made above the minimum of the scale. The Corporation will endeavour to give, in an approved case, assistance in the provision of living accommodation.

Write (quoting reference number of post) for application form to the General Manager, Cumbernauld House, Cumbernauld, by Glasgow, to whom completed application forms should be returned not later than Saturday, 21st June, 1958. 9663

CITY OF BRADFORD
CHIEF TOWN PLANNING ASSISTANT

Applications are invited for the superannuable appointment of CHIEF TOWN PLANNING ASSISTANT (Post No. 7), at a salary in accordance with Grade A.P.T. V (£1,175—£1,325); *commencing salary in accordance with experience and qualifications.*

The successful candidate will be in charge of the Town Planning Section of the City Engineer and Surveyor's Department, and should have experience in the control of current development, a sound knowledge of the Town and Country Planning Acts and Regulations, and experience in preparing evidence in connection with Appeals. He should be A.M.T.P.I., and preference will be given to candidates who, in addition, are A.M.I.Mun.E./A.M.I.C.E.

Candidates should have completed their National Service. No housing accommodation can be provided by the Corporation.

Applications on form to be obtained from the City Engineer and Surveyor, Town Hall, Bradford, 1, together with three testimonials, must be received by the undersigned by 30th June, 1958.

W. H. LEATHEM,
Town Clerk.

Town Hall,
Bradford, 1. 9638

SHEFFIELD REGIONAL HOSPITAL BOARD
Applications are invited for the whole-time post of SENIOR ASSISTANT QUANTITY SURVEYOR. Salary scale £1,010×£30 (5)×£35 (1)—£1,195. Applicants must hold or have held Corporate Membership of the Royal Institution of Chartered Surveyors. The appointment is subject to the Whitley Council terms and conditions of service, to the National Health Service (Superannuation) Regulations, and to one month's notice on either side. Applications, stating age, qualifications, and previous appointments, together with the names of three referees, should reach the Secretary to the Board, Fulwood House, Old Fulwood Road, Sheffield, 10, by 27th June, 1958. 9665

GLAMORGAN COUNTY COUNCIL require a TECHNICAL ASSISTANT in the Furniture Section of the Supplies Department. Must be a competent draughtsman and experienced in the inspection of furniture and the preparation of designs and specifications. Salary £725—£845. Application forms and further particulars from County Supplies Officer, County Supplies Department, Queen's Road, Industrial Estate, Bridgend. Closing date: 21st June, 1958.
RICHARD JOHN,
Clerk of the County Council. 9666

EAST LOTHIAN COUNTY COUNCIL
PLANNING ASSISTANT
Applications invited for post of PLANNING ASSISTANT (next County Planning Officer) in small office with progressive planning policy. Salary £765—£820. Superannuation. Applications with details, qualifications, etc., and names of two referees, to County Clerk, County Buildings, Haddington, by 30th June, 1958. 9639

DEVON COUNTY COUNCIL require ARCHITECTURAL ASSISTANT, A.P.T. I (£575—£725). Particulars and application form, returnable by 23rd June, 1958, from County Architect, 97, Heavitree Road, Exeter. 9683

Architectural Appointments Vacant

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

ASSISTANT, passed Intermediate, required for interesting and varied work with fair measure responsibility. London practice. Box 9510.

SENIOR ARCHITECTURAL ASSISTANT, capable of making site surveys, preparing sketch plans and working drawings and supervising work in progress. Knowledge of shop fitting an advantage.—Applications, stating age, experience, qualifications and salary required, to R. E. Akerman, F.R.I.B.A., Chief Architect, United Dairies, Ltd., 31, St. Petersburgh Place, W.2. 9421

QUALIFIED ASSISTANT required. London private practice, varied work, prospects. Box 9509.

TREHEARNE & NORMAN, PRESTON & PARTNERS have vacancies for ASSISTANTS. Salary according to experience and qualifications.—Apply: 83, Kingsway, W.C.2 (HOL. 4071). 9550

ASSISTANT required. Passed Inter. standard, with office experience of at least 5 years. Good draughtsman, capable of detailing and general routine, required for small busy office in W.C.2 district dealing mainly with Houses and Flats. Prospect of advancement for a keen, capable Assistant.—Full particulars, stating education, training, and past experience, present salary and salary required, Box 9546.

ARCHITECTURAL ASSISTANT (A.R.I.B.A.), seeking long term employment and capable of handling large and small projects, is required on the Architectural Staff of Guest, Keen & Nettlefolds (Midlands), Ltd.—Applications, stating age, previous experience, and approx. salary required, to Men's Employment Officer, Box 24, Heath Street, Birmingham, 18. 9545

H. C. JANES LTD. have vacancies in their Planning Department for the following:—
1. ARCHITECTURAL ASSISTANTS of Intermediate and Junior standards.
2. A LAND SURVEYOR experienced in field work, he should be a neat and accurate draughtsman. Also a JUNIOR to assist Surveyor.
3. A CIVIL ENGINEERING ASSISTANT experienced in the preparation of drawings for drainage and roadworks.
The work consists of large scale estate development together with industrial and commercial buildings. A staff pension scheme is available. Apply in writing to H. C. Janes Ltd., Builders, 183, High Town Road, Luton. 9610

RONALD WARD & PARTNERS require ARCHITECTURAL ASSISTANTS with contemporary outlook, and willing to use own initiative. Salary range £600 to £900. Congenial working conditions; five-day week. Apply 29, Chesham Place, Belgrave Square, S.W.1. Telephone Belgravia 3361. 9614

QUALIFIED ASSISTANT ARCHITECT required for appointment to Bank Premises Department at Birmingham. Able to use initiative as member of small team with progressive ideas. Box 9671.

ASSISTANT required in busy practice in West End in early twenties. Intermediate R.I.B.A. standard. Excellent opportunities for gaining all-round experience. Box 9673.

ARCHITECTS
CHARTERED Architect has vacancies, Belfast Office, for SENIOR and INTERMEDIATE ASSISTANTS. Very interesting work carrying opportunities advancement. Apply, confidential, giving detailed particulars including salary. Box 9613.

ARCHITECTURAL ASSISTANTS
TOOLEY & FOSTER, Chartered Architects, have vacancies for the following:—
1. Experienced ASSISTANT ARCHITECTS, willing to take responsibility on housing and general work and also for work on school projects.
2. DRAUGHTSMAN with experience of detailing for smaller projects.
3. JUNIOR TRACER.
Five-day week and superannuation scheme offered. One self-contained flat available for senior post. Apply by letter to Midland Bank Chambers, Buckhurst Hill, Essex. 9677

W. H. WATKINS, GRAY & PARTNERS require ASSISTANTS for interesting hospital work, pension scheme in operation. Write or phone, 57, Catherine Place, S.W.1. Victoria 7761. 9672

ARCHITECTURAL ASSISTANTS required by Sir William Halcrow & Partners for Architects' Department. Intermediate and Final standard. Salary arranged according to age and experience. Apply giving particulars of age, qualifications and experience to E. J. D. Mansfield, A.R.I.B.A., Sir William Halcrow & Partners, 47, Park Lane, London, W.1. 9674

PART-TIME day or evening assistance required by expanding contemporary practice at Brentwood, Essex. Preferably qualified with good all-round experience. Reply with usual details to Box 9675.

CHARTERED ARCHITECTS with small but very busy practice in Guildford require immediately experienced ASSISTANTS accustomed to the preparation of working drawings and specifications with the minimum of supervision. Messrs. Stevens & Peck, 15, Friary Street, Guildford 66363. 9676

ARCHITECTURAL ASSISTANT required for small office, Intermediate standard, good draughtsman and good office experience, for principally estate development and private domestic work. Please reply stating briefly age, salary required and general experience. Booth & Booth, Leighton House, Potters Bar, Middlesex. 9678

ARCHITECTURAL ASSISTANT required of Intermediate/Final standard. School, hospital and general work. Write giving full particulars of age, experience and salary required to Lumb & Walton, Chartered Architects, 19, Clifton Street, Blackpool. 9682

COVELL & MATTHEWS require SENIOR ARCHITECTURAL ASSISTANTS of final standard—salary by arrangement. Work is varied and interesting; 5-day week. Apply in writing to: 34, Sackville Street, Piccadilly, W.1. 9684

INTERMEDIATE/FINAL ASSISTANTS required immediately. Schools, public houses, etc. Five-day week. Salary by arrangement. Write brief details to Musman & Cousens, 12, Upper Berkelev Street, W.1. 9606

ARCHITECTS' ASSISTANTS required immediately. Intermediate/Final standard. Salary according to experience. Five-day week. Staff Pension Scheme. Application in writing, giving full details of age, experience and salary to Personnel Department, British Home Stores, Ltd., 129, Marylebone Road, London, N.W.1. 9589

CO-OPERATIVE WHOLESALE SOCIETY LTD.
ARCHITECT'S DEPARTMENT, MANCHESTER
APPLICATIONS are invited for the appointment of ASSISTANT ARCHITECTS with experience of work on commercial and industrial projects, capable of preparing working drawings from preliminary details. Five-day week in operation. Applications stating age, experience, qualifications and salary required to G. S. Hay, A.R.I.B.A., Chief Architect, Co-operative Wholesale Society Ltd., 1, Balloon Street, Manchester, 4. 9585

LANCHESTER & LODGE urgently require ASSISTANTS. Interesting and varied work. Five-day week and Luncheon Vouchers. Write full particulars 10, Woburn Square, W.C.1. 9583

TWO busy partners require their first ASSISTANT. Salary to be arranged. Excellent prospects of advancement as the practice expands. Holiday arrangements respected. Ring HOLborn 5101 for appointment. 9579

YOUNG SINGLE ASSISTANT of about Intermediate standard required for Housing Act Improvement Grant Schemes in Country Architect's Office. Car driver. Reply to Box 9612.

INTERMEDIATE ARCHITECTURAL ASSISTANT required by City Firm, capable of controlling small contracts of industrial character. Salary £600—£800. Box 9571.

RCHITECTURAL ASSISTANT required for small busy office mainly commercial and industrial. Must have office experience and capable of preparing sketch schemes, working drawings and details but not necessarily qualified. Permanent position for man able to cope with responsibility. Salary £750 p.a. Write full details to A. F. Hare, F.R.I.B.A., 24, Baker Street, London, W.1. 9686

APPLICATIONS are invited for the appointment of ARCHITECTURAL ASSISTANT at a commencing salary of £850 to £950 per annum. Minimum qualifications: Intermediate R.I.B.A. or H.N.C. (Building), plus five years' office training.
Only candidates who are accustomed to the design, planning and preparation of working drawings of industrial buildings and offices, and who are competent to make necessary site surveys, should apply.
The appointment is permanent and pensionable.
Assistance with housing will be given if necessary.
Excellent canteen, sports and welfare facilities.
Please send curriculum vitae to Mr. A. C. McCombie, Michelin Tyre Co., Ltd., Stoke-on-Trent, quoting Ref. ACM/3/AJ. 9625

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.
Successful applicants will work with Group Architects on a programme of modern industrial building.
Only applicants with an enthusiastic approach to new ideas and progressive design, and willing to accept responsibility, will be considered.
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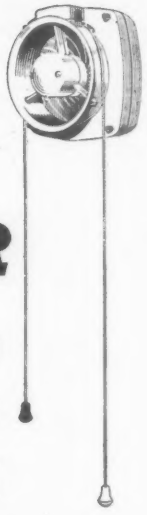

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Editorial illustrations engraved by THE ENGRAVERS' GUILD LTD., Windsor House, 23/26, Cursitor Street, London, E.C.4.