

# THE ARCHITECTS' JOURNAL



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

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No. 3156 [Vol. 122]

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The Architects' JOURNAL for August 25, 1955

★ 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 I one week, I to Z the next. In all cases where the town is not mentioned the word LONDON is implicit in the address.

IGE	Institution of Gas Engineers.	17, Grosvenor Crescent, S.W.1.	Sloane 8266
IHVE	Institution of Heating and Ventilating Engineers.	49, Cadogan Square.	Sloane 1601/3158
IIBDID	Incorporated Institute of British Decorators and Interior Designers.	Drayton House, Gordon Street, W.C.1.	Euston 2450
ILA	Institute of Landscape Architects.	12, Gower Street, W.C.1.	Museum 1783
I of Arb	Institute of Arbitrators.	35/37, Hastings House, 10, Norfolk Street, Strand, W.C.2.	Temple Bar 4071
IOB	Institute of Builders.	48, Bedford Square, W.C.1.	Museum 7197/5176
IQS	Institute of Quantity Surveyors.	98, Gloucester Place, W.1.	Welbeck 1859
IR	Institute of Refrigeration.	Dalmeny House, Monument Street, E.C.3.	Avenue 6851
IRA	Institute of Registered Architects.	47, Victoria Street, S.W.1.	Abbey 6172
ISE	Institute of Structural Engineers.	11, Upper Belgrave Street, S.W.1.	Sloane 7128
LDA	Lead Development Association.	Eagle House, Jermyn Street, S.W.1.	Whitehall 7264/4175
LMBA	London Master Builders' Association.	47, Bedford Square, W.C.1.	Museum 3891
LSPC	Lead Sheet and Pipe Council.	Eagle House, Jermyn Street, S.W.1.	Whitehall 7264/4175
MARS	Modern Architectural Research Group (English Branch of CIAM).	Trevor Dannatt A.R.I.B.A., 71, Blandford Street, W.1.	Welbeck 4713
MOA	Ministry of Agriculture and Fisheries.	55, Whitehall, S.W.1.	Whitehall 3400
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, Victoria Embankment, W.C.	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.	Abbey 5111
NEFMAI	National Employers Federation of the Mastic Asphalt Industry.	21, John Adam Street, Adelphi, W.C.2.	Trafalgar 3927
NFBTE	National Federation of Building Trades Employers.	82, New Cavendish Street, W.1.	Langham 4041/4054
NFBTO	National Federation of Building Trades Operatives.	Federal House, Cedars Road, Clapham, S.W.4.	Macaulay 4451
NFHS	National Federation of Housing Societies.	12, Suffolk St., S.W.1.	Whitehall 1693
NHBRC	National House Builders Registration Council.	82, New Cavendish Street, W.1.	Langham 4341
N.P.L.	National Physical Laboratory.	Head Office, Teddington.	Molesley 1380
NSAS	National Smoke Abatement Society.	Chandos House, Buckingham Gate, S.W.1.	Abbey 1359
NT	National Trust for Places of Historic Interest or Natural Beauty.	42, Queen Anne's Gate, S.W.1.	Whitehall 0211
PEP	Political and Economic Planning.	16, Queen Anne's Gate, S.W.1.	Whitehall 7245
RCA	Reinforced Concrete Association.	94, Petty France, S.W.1.	Abbey 4504
RIAS	Royal Incorporation of Architects in Scotland.	15, Rutland Square, Edinburgh.	Fountainbridge 7631
RIBA	Royal Institute of British Architects.	66, Portland Place, W.1.	Langham 5721
RICS	Royal Institution of Chartered Surveyors.	12, Great George St., S.W.1.	Whitehall 5322/9242
RFAC	Royal Fine Art Commission.	22A, Queen Anne's Gate, 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
RSFH	Royal Society for the promotion 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
SCR	Society for Cultural Relations with the USSR.	14, Kensington Square, London, W.8.	Western 1571
SIA	Society of Engineers.	17, Victoria Street, Westminster, S.W.1.	Abbey 7244
SNHTPC	Scottish National Housing.	30, Cornhill, London, E.C.3.	Mansion House 3921
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.	8, Ashley Place, S.W.1.	Victoria 8815
TTF	Timber Trades Federation.	75, Cannon Street, E.C.4.	City 5051
WDC	War Damage Commission.	6, Carlton House Terrace, S.W.1.	Whitehall 4341
ZDA	Zinc Development Association.	34, Berkeley Square, W.1.	Grosvenor 6636

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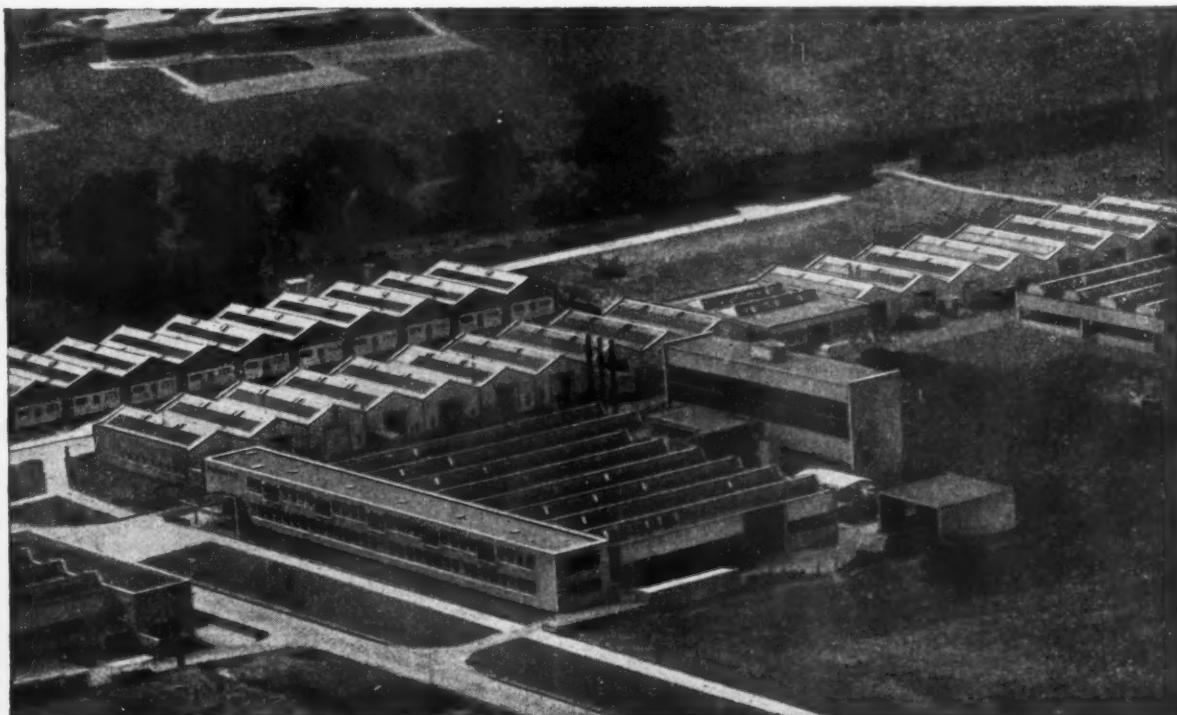






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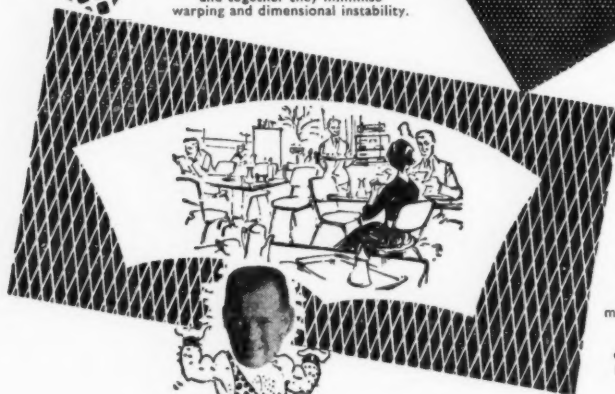
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Tretol Limited, in consultation with the Royal Institute of British Architects, have appointed Clifford Culpin, F.R.I.B.A. as Assessor in the competition. In order to simplify the competing architects' task, it has

been decided that drawings should be on one 40in. x 27in. sheet and should comprise the following:

- (a) Floor plans and one section to quarter inch scale.
- (b) Perspective sketch.
- (c) Elevations shown diagrammatically to  $\frac{1}{16}$  in. scale.
- (d) Site plan to  $\frac{1}{16}$  in. scale.

Drawings must be accompanied by a concise report on construction and the materials to be used and such information as cannot clearly be shown on the drawings.

The closing date of this competition is November 8th and all designs submitted will be exhibited at the 1955 Building Exhibition at Olympia, London, opening on November 17th, 1955, where the many members of the building industry and also the public visiting this large exhibition will have the opportunity of viewing them.

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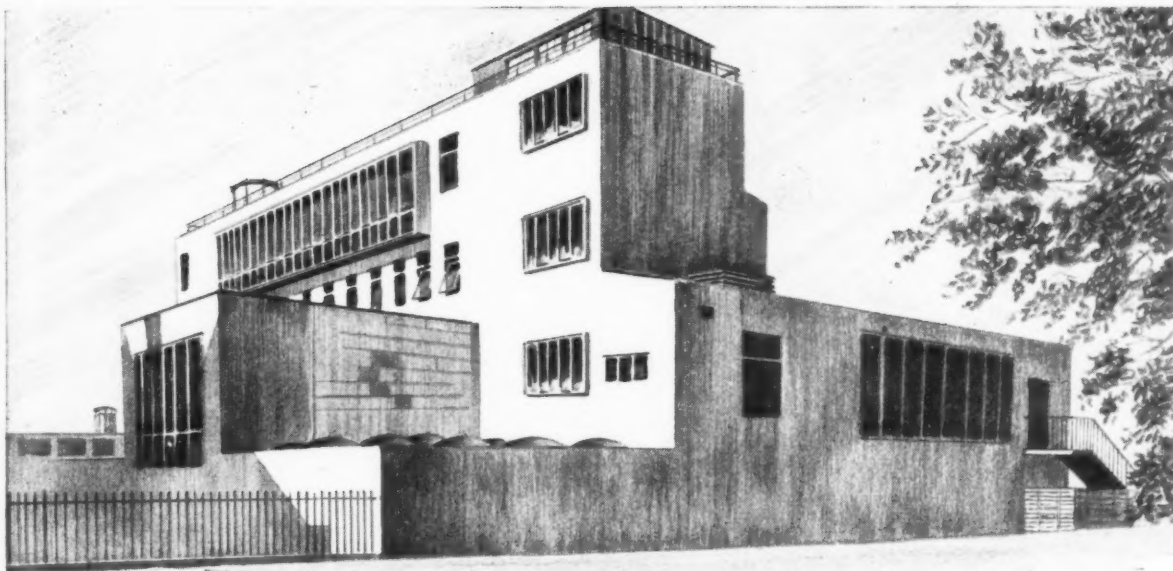
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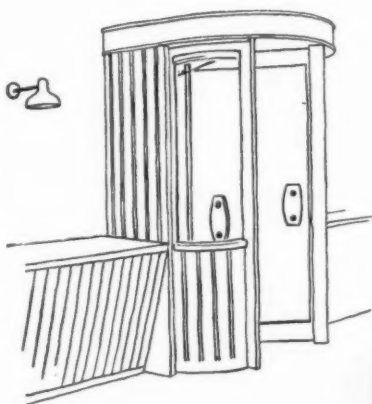




## REVOLVING DOORS BY

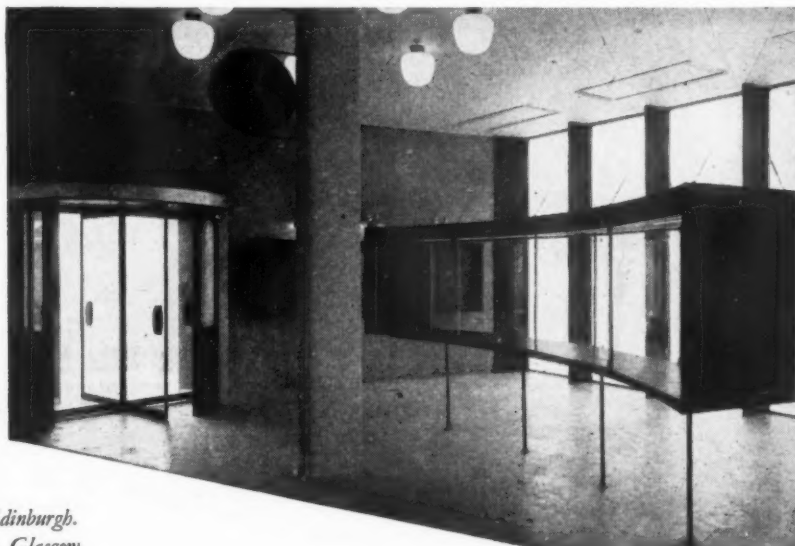
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View of main  
entrance Hall



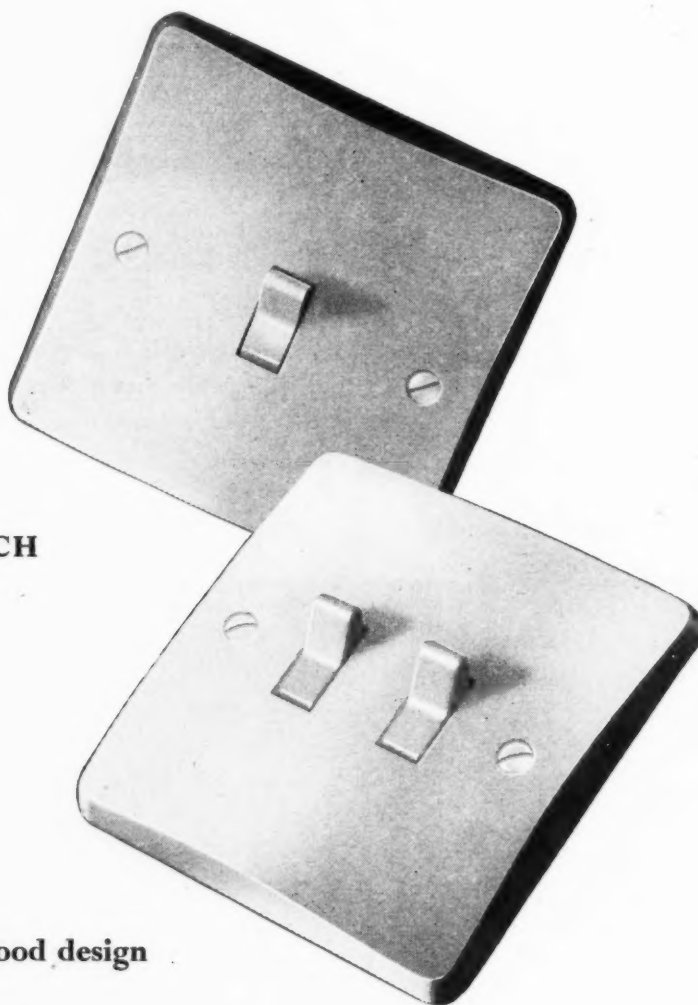
*Architects:—Basil Spence & Partners, Edinburgh.  
Contractors:—John Cochrane & Co. Ltd., Glasgow.*

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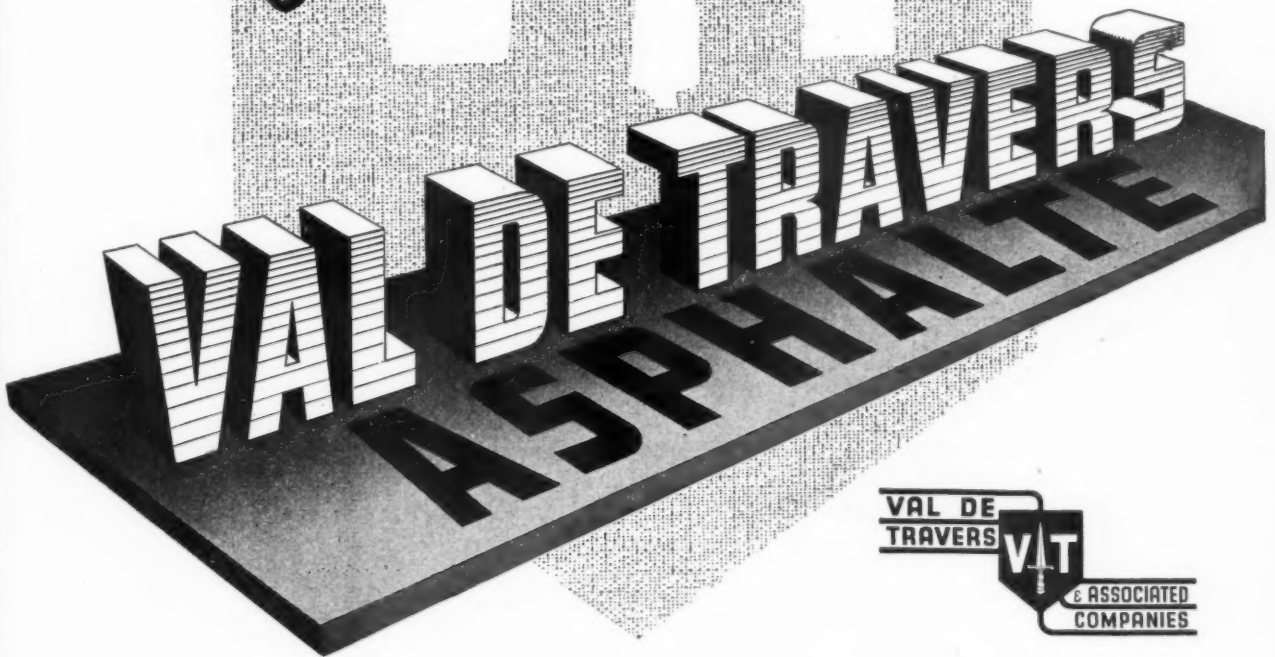
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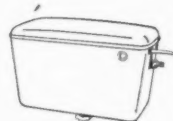
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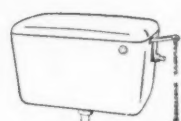
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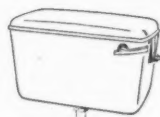
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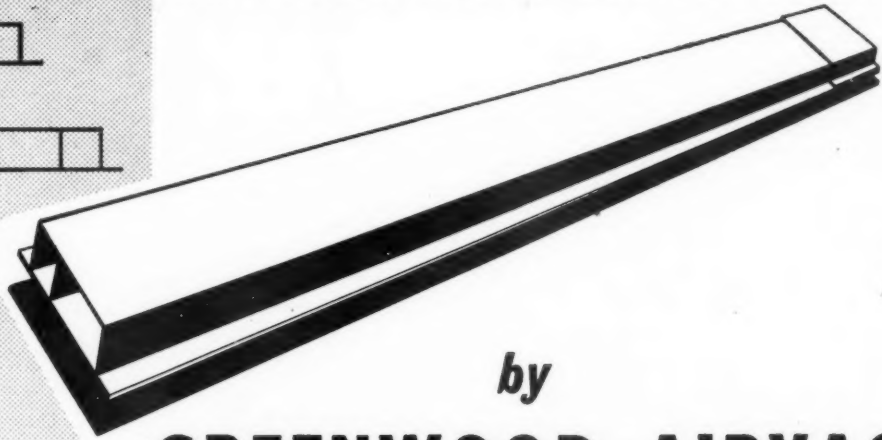
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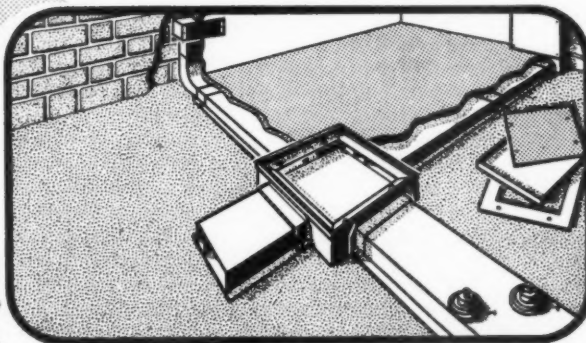
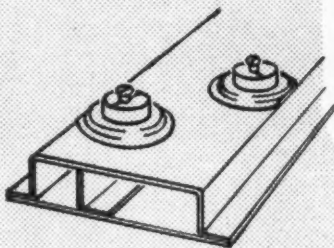
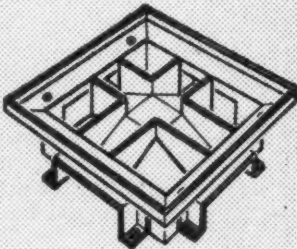
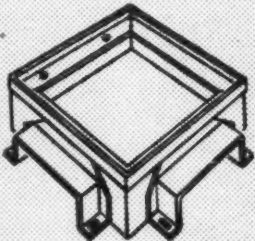
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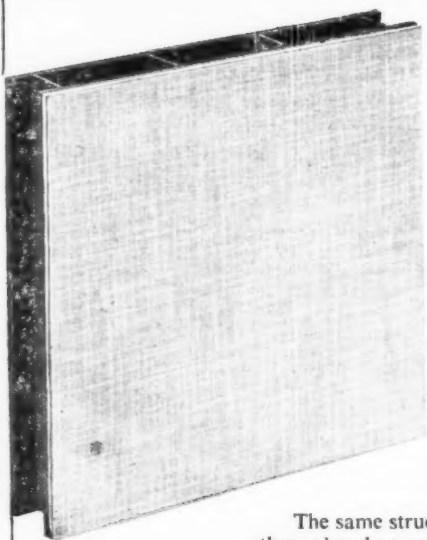
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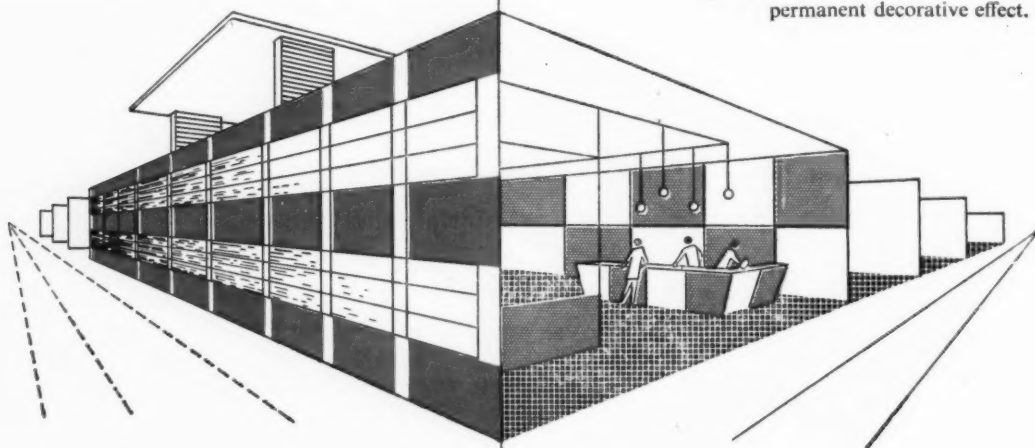
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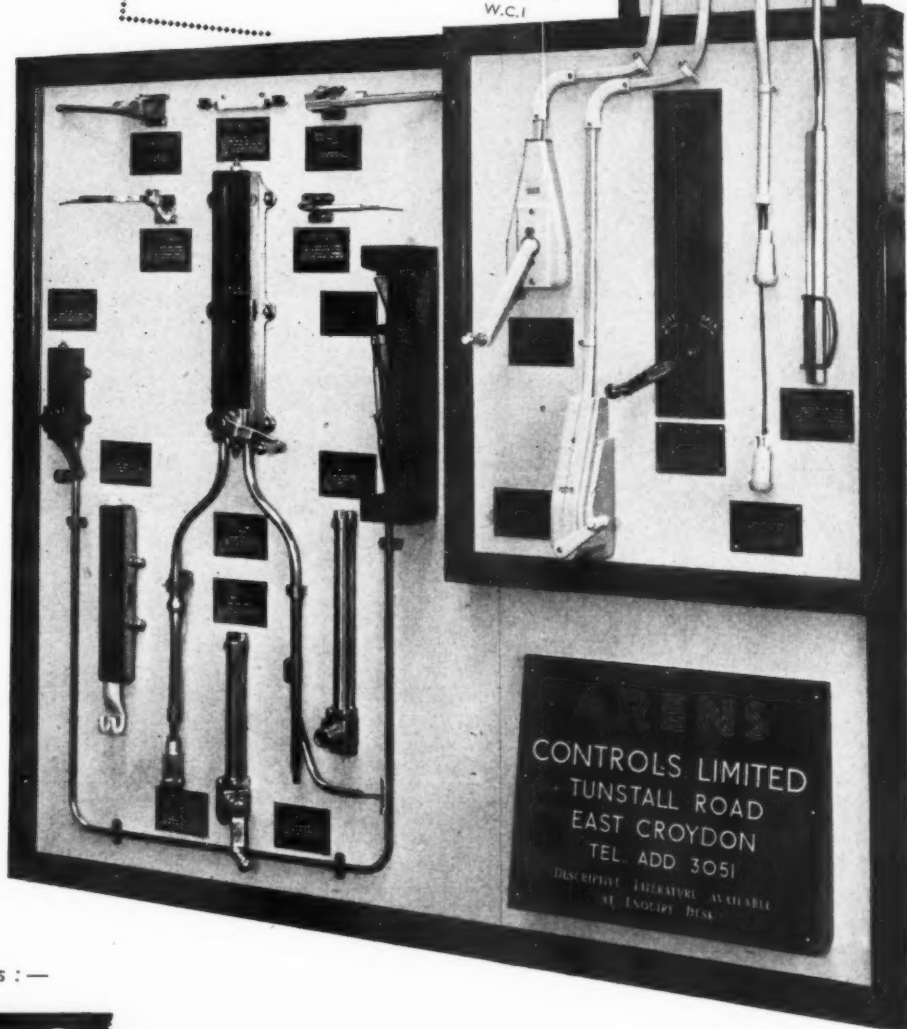
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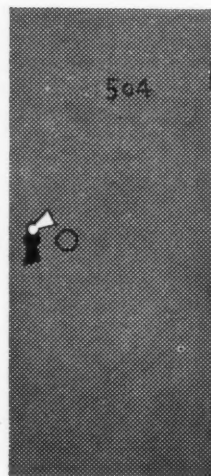


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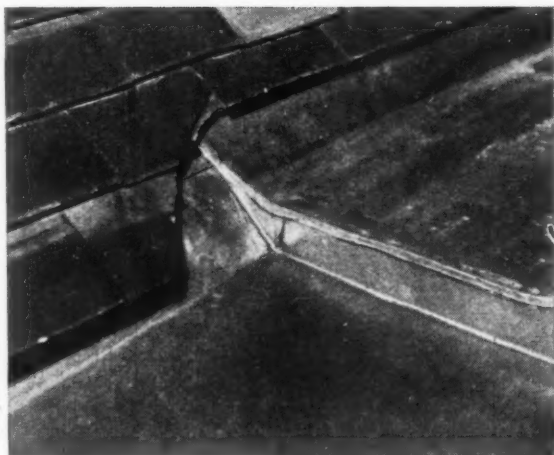


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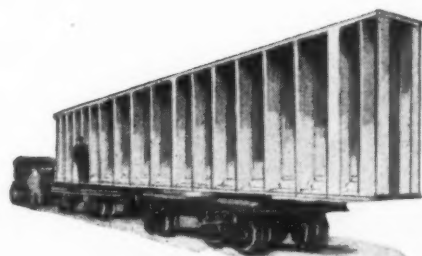


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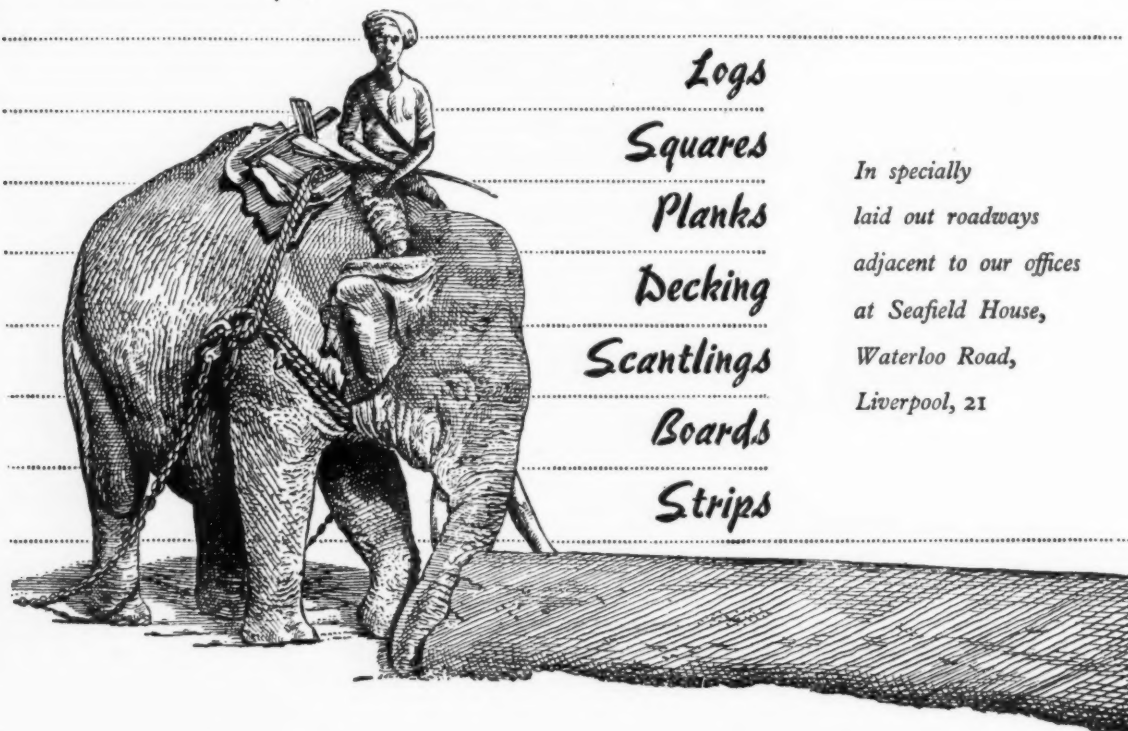
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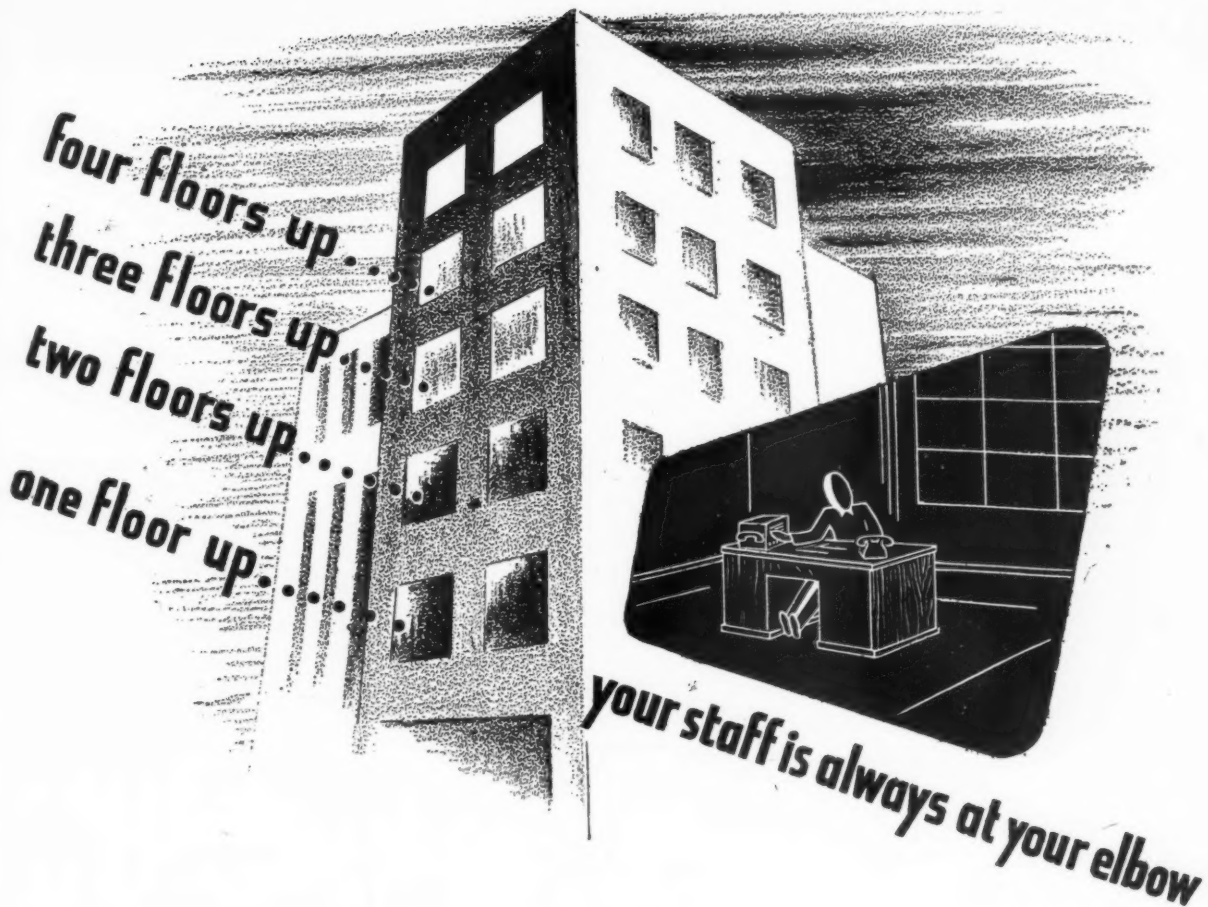
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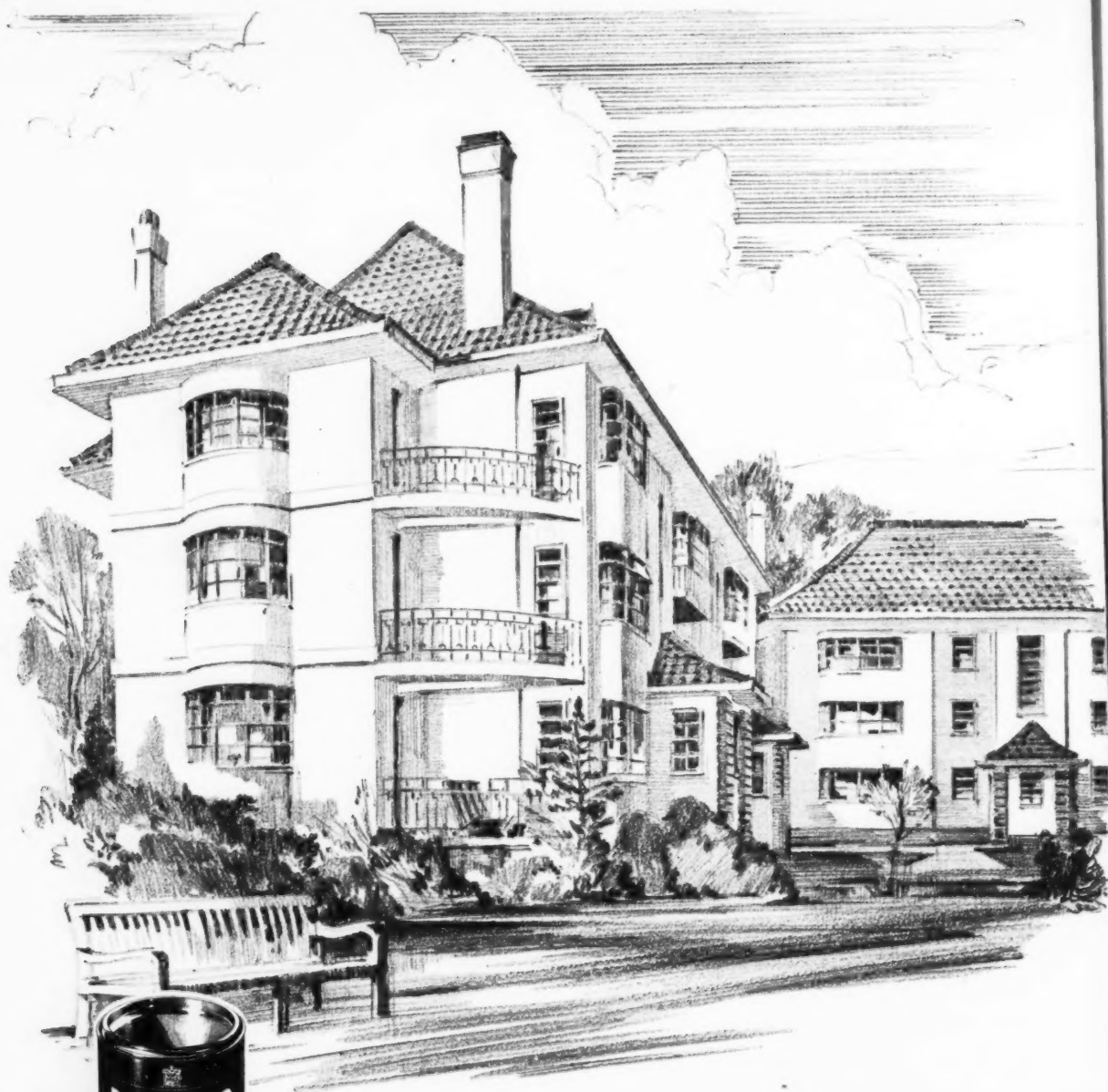
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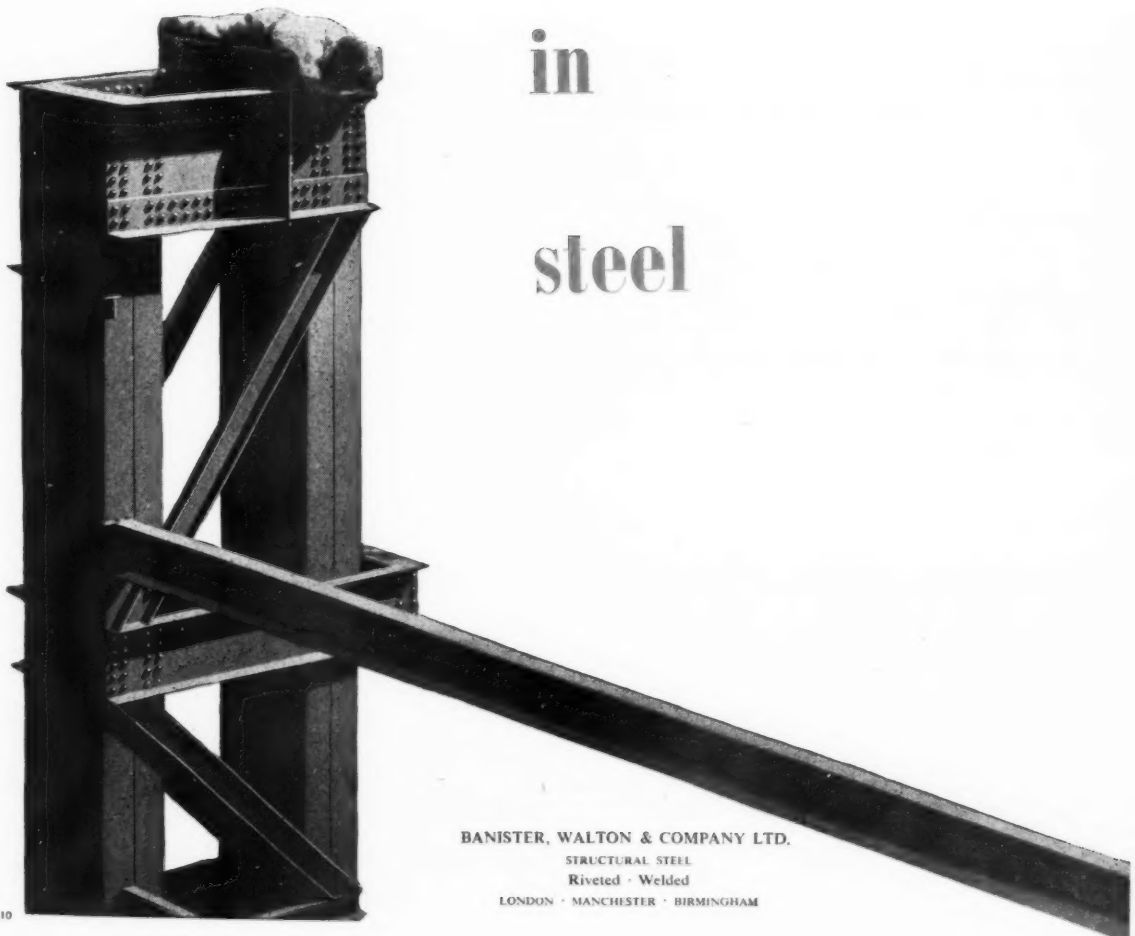


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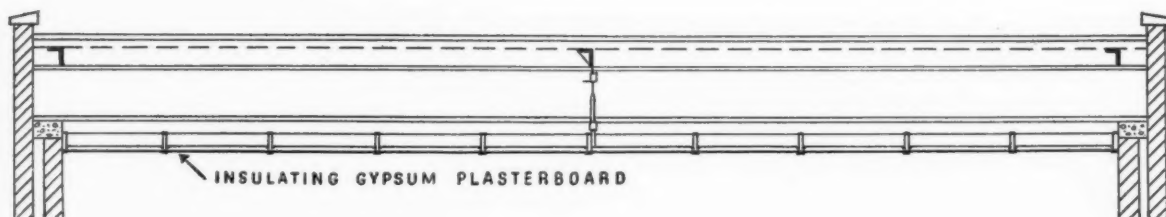
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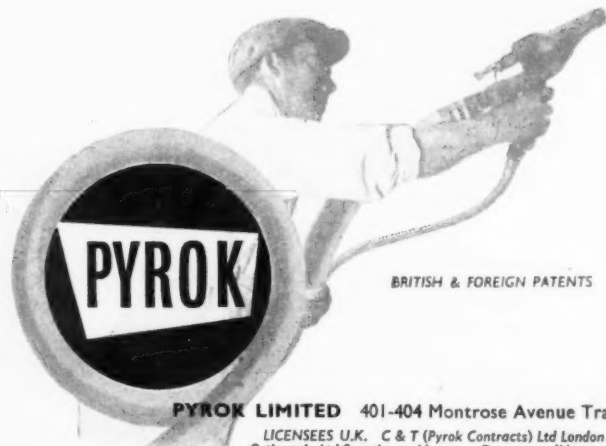
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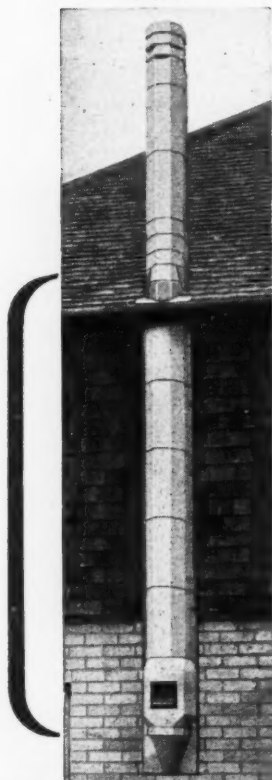


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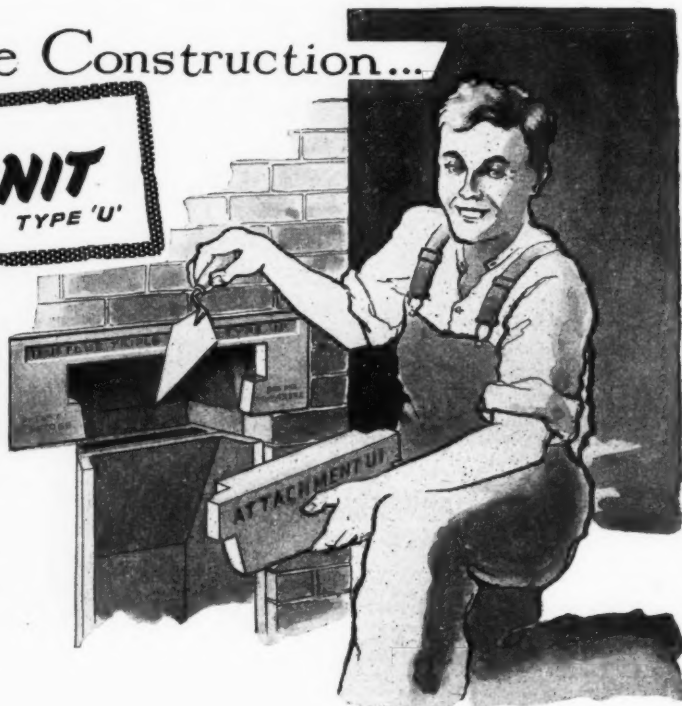
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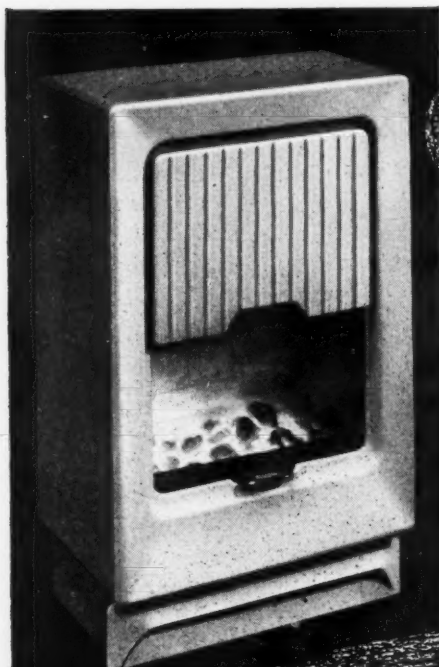
## HILLS Glass Curtain Walling

*Illustrated above: Catford County School. Architect to the London County Council: Dr. J. L. Martin, M.A., Ph.D., F.R.I.B.A. Schools Architect: Sidney Howard, L.R.I.B.A. Assistant Schools Architect: G. F. Horsfall, M.B.E., B.Arch., A.R.I.B.A. Architect in Charge: W. J. Smith, A.R.I.B.A.*

High Glass Curtain Walling as shown above has been developed for buildings designed on co-ordinated modular construction, and was used in the construction of Catford County School as reviewed in this issue. This type of cladding is economical, speedily erected and is now being widely adopted in this country and in Canada. Interested enquirers are invited to apply to the nearest Branch office for particulars of any of the Company's products.

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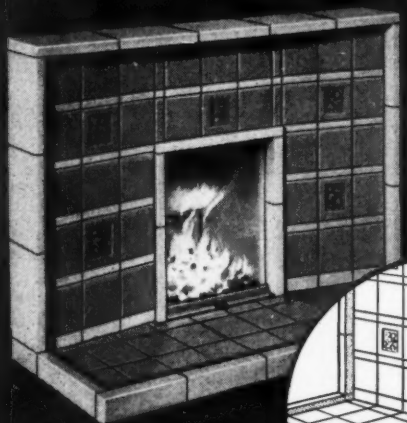
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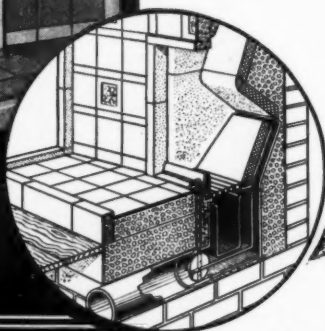
Air is drawn through a pipe under the floor, brought up behind the fire where it is heated and finally emitted through the horizontal slot at the back of the fire (see sectional diagram). This heated air ignites the waste gases thereby giving another source of heat in

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# PLIMBERITE

## in roof construction

at the new Radio Research Station at Datchet.

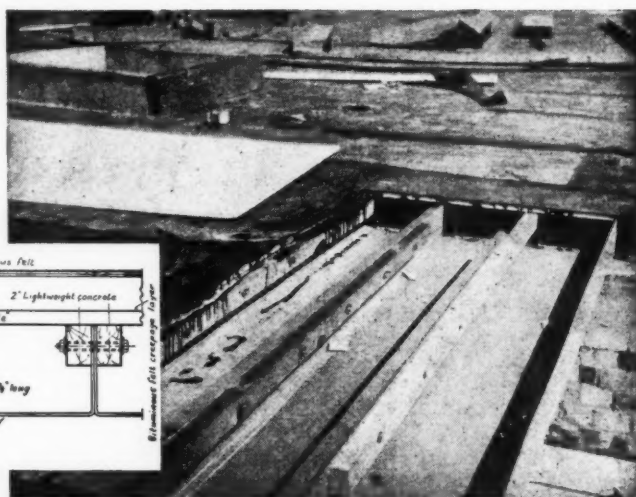
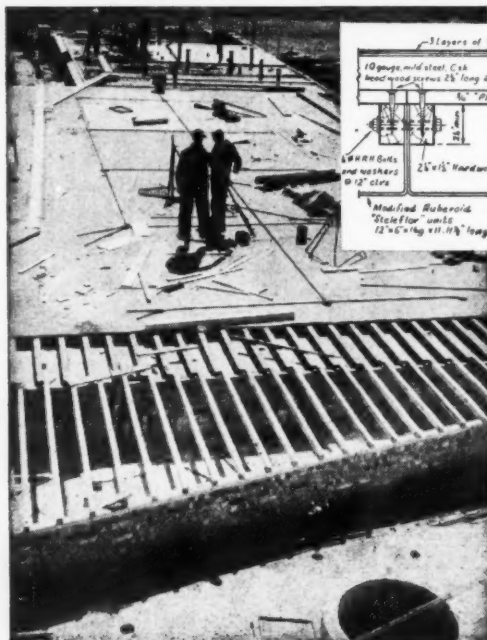
Designed by the Chief Architect's Division,  
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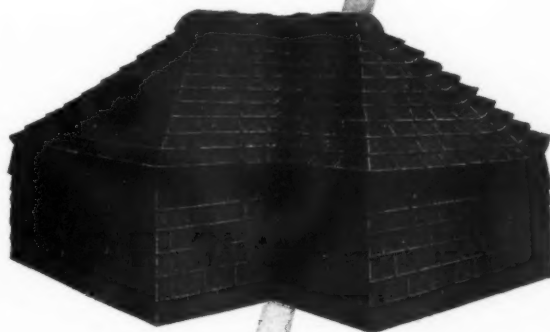


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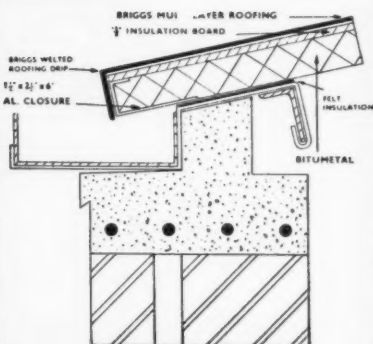
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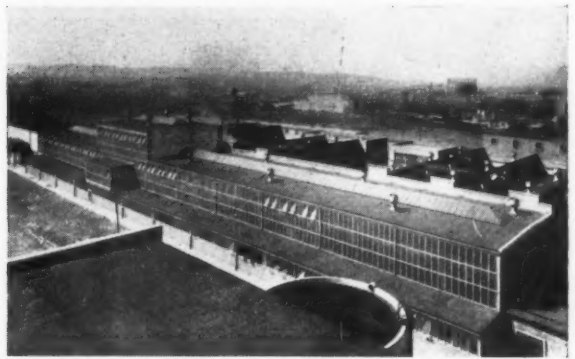






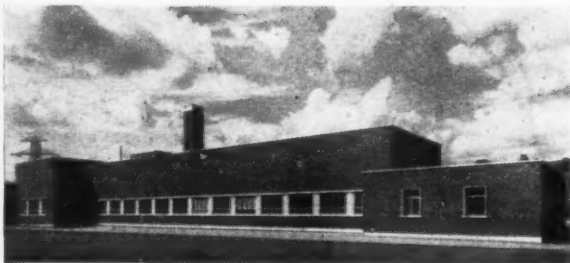


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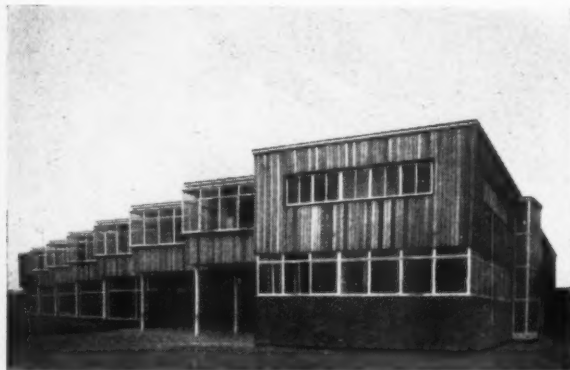
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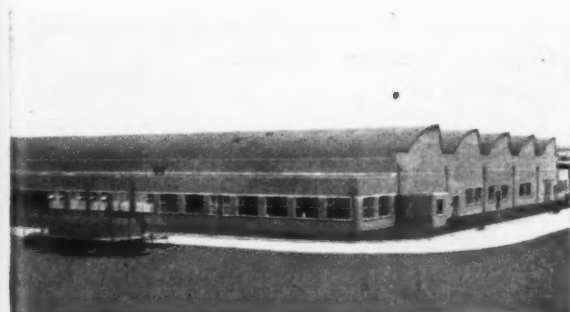
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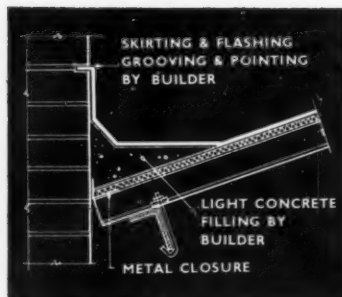
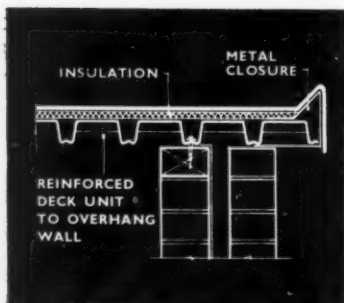
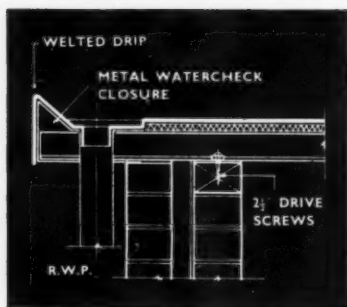
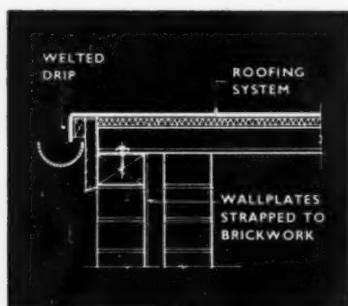
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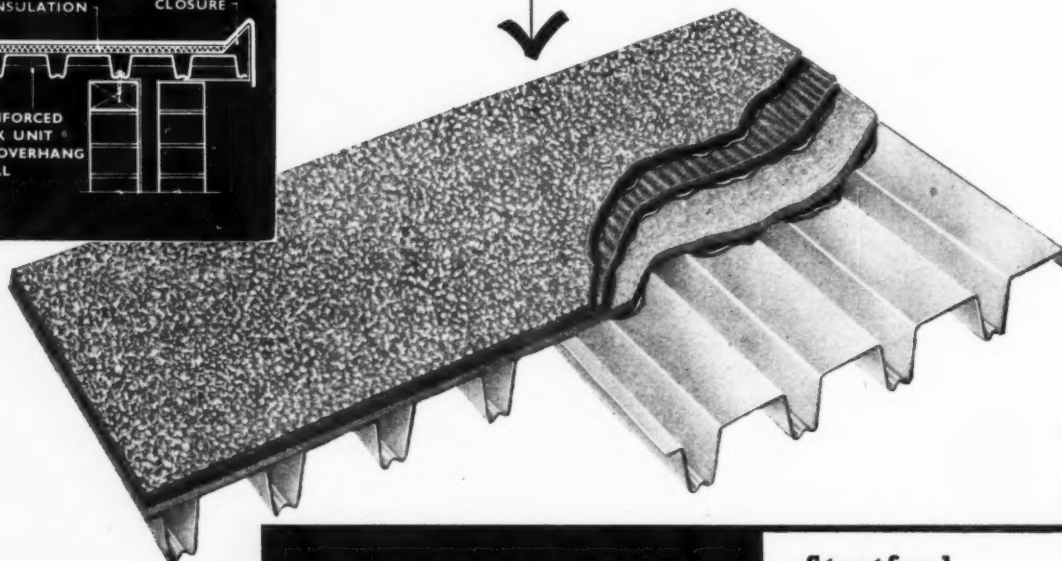
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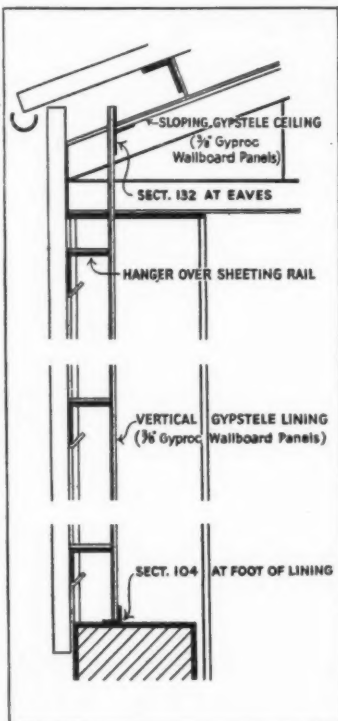
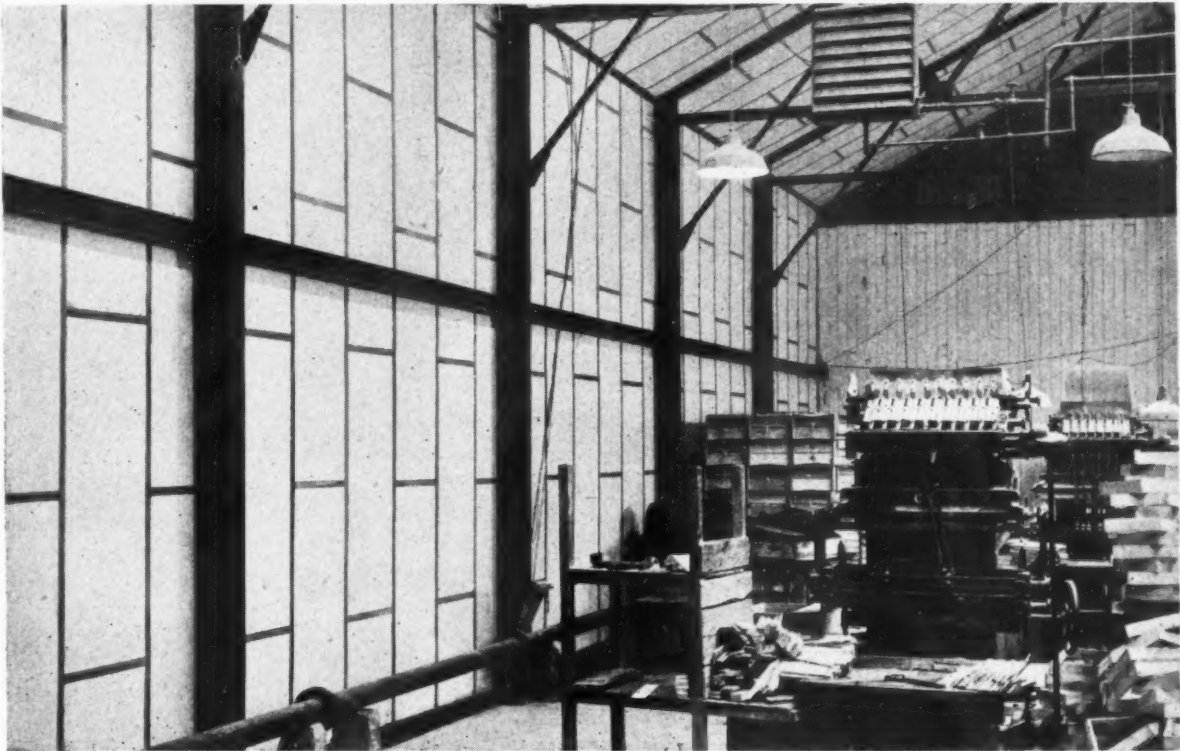


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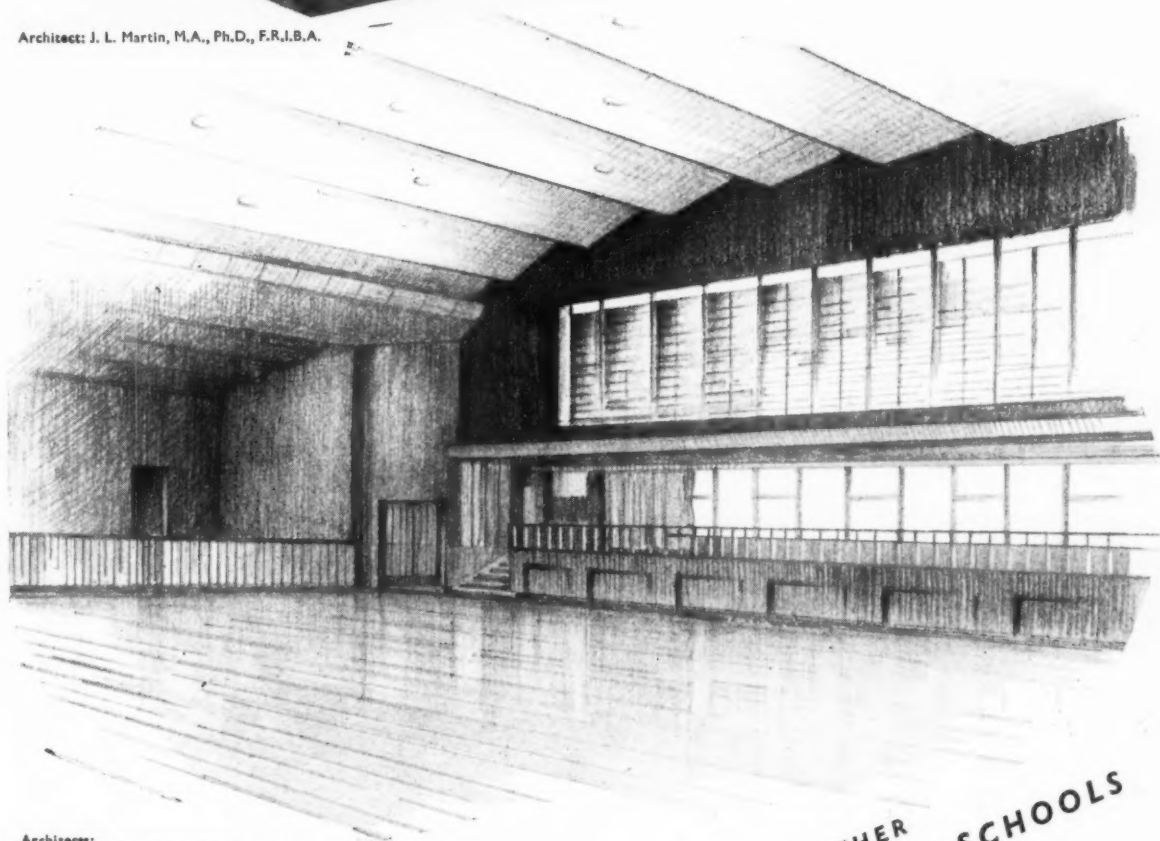
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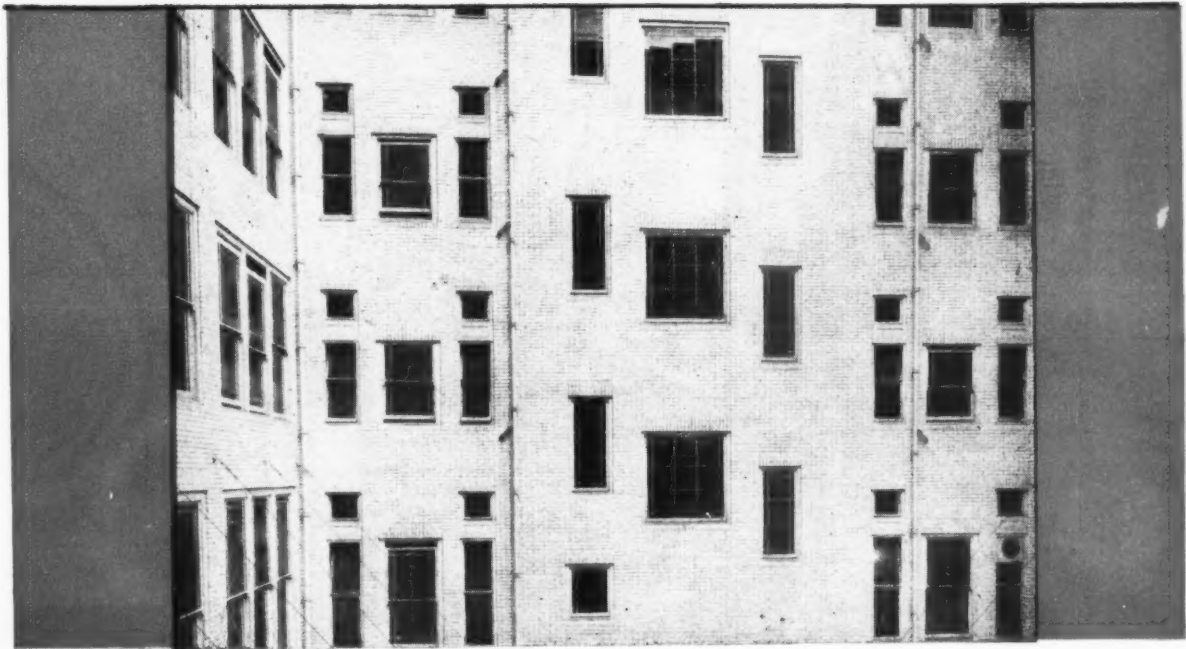
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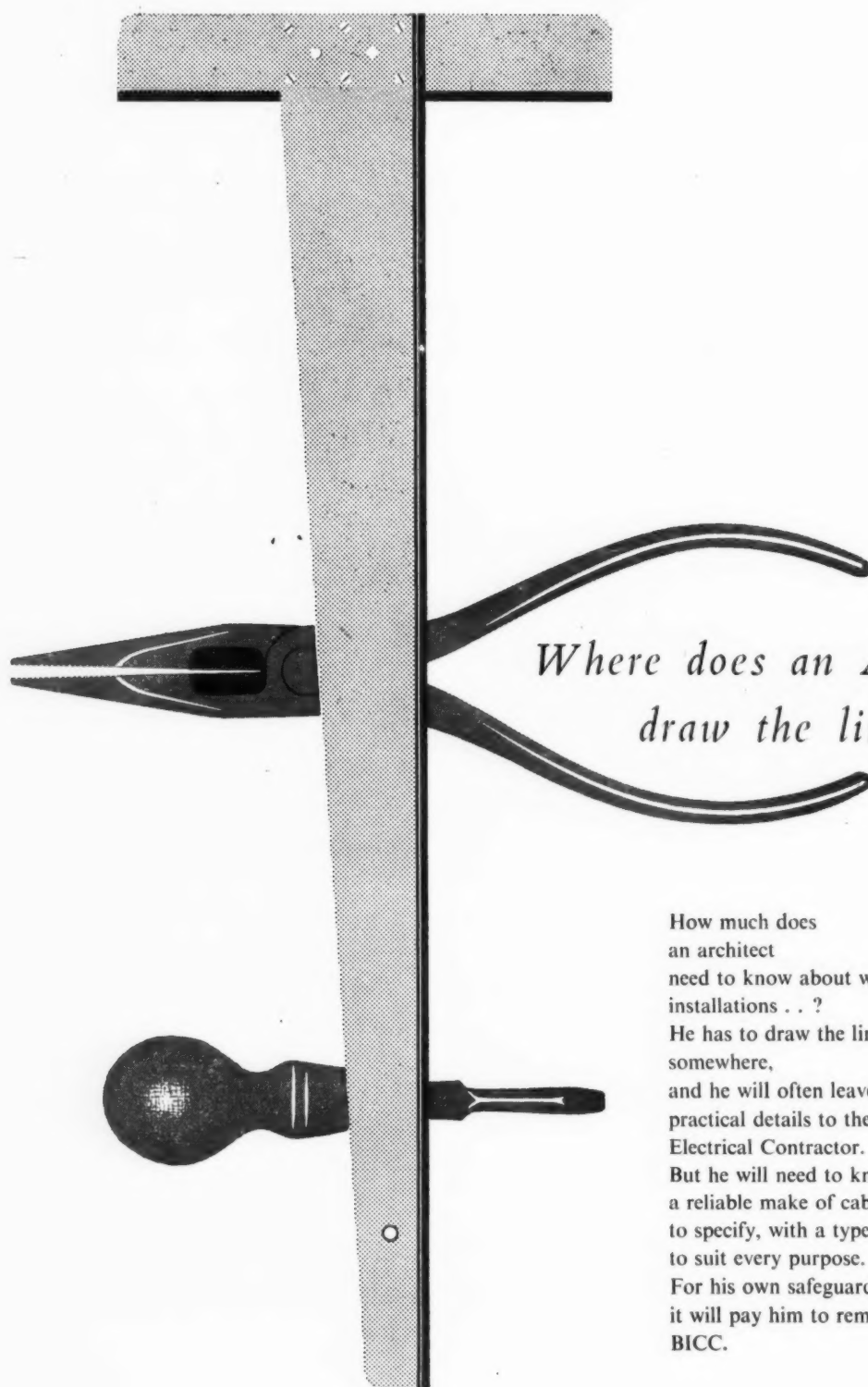
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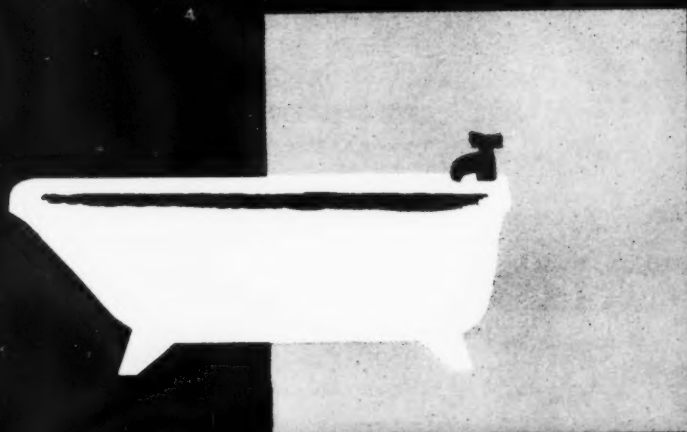


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No. 3156 August 25, 1955 VOL. 122

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## BUILDERS, BEWARE STUDENTS

Last Thursday's *Manchester Guardian* had two horrifying columns by an undergraduate who had spent six weeks as a labourer on a housing site near London. Some of his statements are a bit surprising: lintels weighing "nearly a ton" cannot be all that usual, and drainage trenches 18 ft. deep seem a bit unlikely, but if they are being dug in clay and left unstrutted—as the young man said—then someone is being criminal rather than stupid.

Even allowing for exaggeration, this is a sorry tale of incompetent site organization, slipshod workmanship, and large scale theft matched only by the contractor's own losses through leaving

cement uncovered and other stupidities. This was obviously a deplorably bad site from every point of view—it cannot be typical; but it would be interesting to know if it was no more than average bad. One would like to think of it as exceptional. But is it?

Now turn to page 243.

## HAM ON TELEVISION

Why did Michael Patrick choose one of Eric Lyons' Ham Common flats as the British exhibit for the Halsingborg Exhibition? How did his wife, Jo, furnish it—and why? What do the furnished interiors look like? And what, for that matter, is the exterior like?

Those were questions ASTRAGAL hoped to hear fully answered when Michael and Jo Patrick were interviewed in a television programme for women, one afternoon last week. But thanks largely to the interviewer (the lady editor of "a paper" which deals with interior designs") and an unreadable plan, viewers were unable to get much of an idea of the admirable layout of Mr. Lyons' flat and the intelligent furnishing of it by Mrs. Patrick.

The plan was, in fact, just legible enough for viewers to bring their full powers of concentration on to it, and thus, perhaps, to lose Mr. Patrick's opening remarks; but ASTRAGAL, who knows the Ham scheme well, overcame his annoyance with the plan just in time to hear Mr. Patrick say that the flat was laid out in a way that made it admirable as a walk-through exhibition. He was, of course, perfectly right, but any housewife who heard his descrip-

tion would surely be frightened by it, unless she was given a clear picture of the layout. And only one picture of one room was shown.

Why, by the way, did the programme producer go to the trouble of showing a mock-up of half the smallest bedroom? It was so inadequate that Mrs. Patrick had to try to fill in a little more detail for the viewer. And it merely served as a background to some carping criticisms from the lady editor, whose paper shall remain nameless if only because its name is so displeasing to the ear.

Black mark, BBC! And an even blacker one for allowing the sound to go dead during Mr. Patrick's assault on a chair chosen by his wife. It started off as a really spirited criticism of design, but the ever-watchful TV grem-lins were apparently not in favour of such strong comment. When, one wonders, is the standard of television programmes about architecture going to equal that of radio talks on the subject?

## UNFINISHED BUILDINGS

Ian McCallum's thoughtful Third Programme talk on interior design was even better than the normal run of broadcast talks on architectural subjects. Pretty well all the recent talks by architects have been about subjects that architects think architects *ought* to be interested in—planning, structure, the English Pioneers and so forth—whereas the McCallum thesis was that his was a subject architects felt no real compulsion to interest themselves in, even when they paid lip-service to it. Even the title of the talk—"On not finishing buildings"—rubbed in the point that not only do architects hand over the

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interiors to other agencies, but the interior is the place where they stop trying to visualize what the finished building will look like.

\*

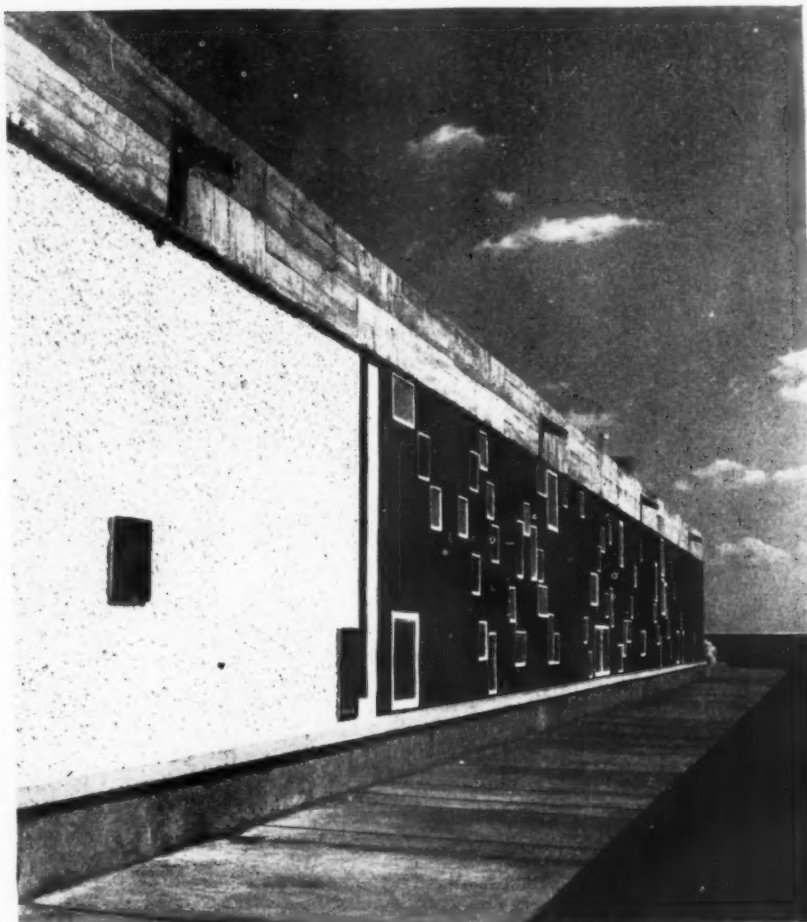
More collaboration, of a radical kind, with painters and sculptors, was one of the ways Ian McCallum proposed for recreating a flourishing type of Modern Movement interior in line with mid-century ideas, and shoe-shops and coffee bars received at this point a passing pat on the back. ASTRAGAL, who has recently seen *l'Auberge* at Richmond (see pages 242 and 246) would like to second this good word for coffee bars, because there one can see something which McCallum claimed went out with the Bauhaus—a real consistency between exterior architecture and interior decor.

#### FERNAND LÉGER

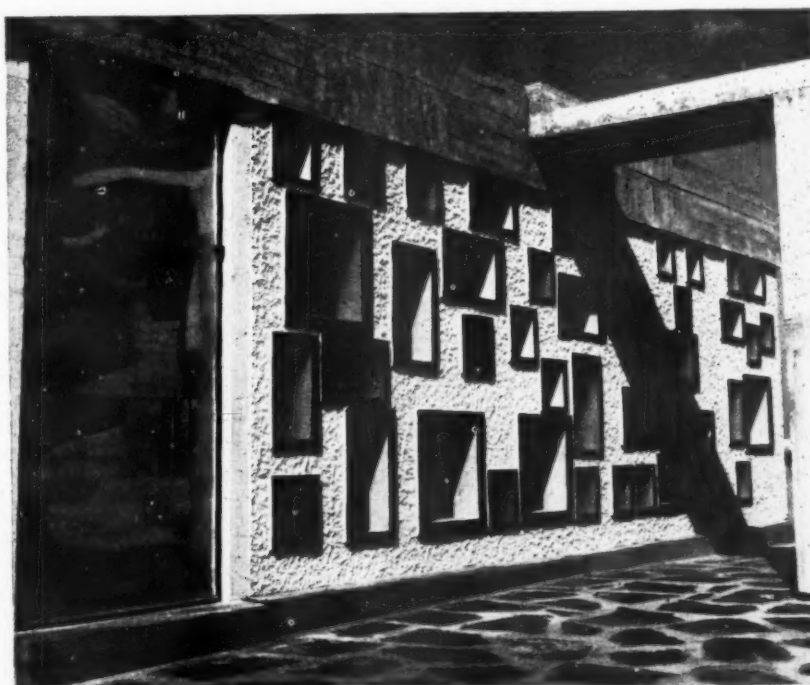
Fernand Léger, who died last week, was an architects' painter if ever there was one. A cubist with Picasso and Braque, before the first World War, he became the associate of le Corbusier after it. His description of his first sight of Corb is a classic; the serious, bowler-hatted figure with the brief-case, pedalling steadily forward on an upright bicycle and "scrupulously obeying the laws of perspective." Alone of the great painters of the school of Paris, Léger shared the enthusiasms of architects—geometry, machinery, and the idea of painting as part of an architectural composition. He exhibited in Corb's celebrated *Pavillon de l'Esprit Nouveau*, one of the few artists allowed to get in among the carefully chosen objects of non-art. He muralised in the UN Assembly Hall, and on the fabulous university campus in Caracas. And to judge from the content of his later canvases, he seems to have liked people in that large, vague, abstract and faintly sentimental way that architects so often do.

\*

Léger's last big series of paintings showed steel erectors at work on the structure of France's pioneer atom plant—a subject that was entirely *him*, skilled proletarians doing something large, comprehensible and pictorially exciting in an atmosphere of futurist technology. This sort of thing was the essence of the faith of the pioneers of the Modern Movement, and Léger is another pioneer taken from us.



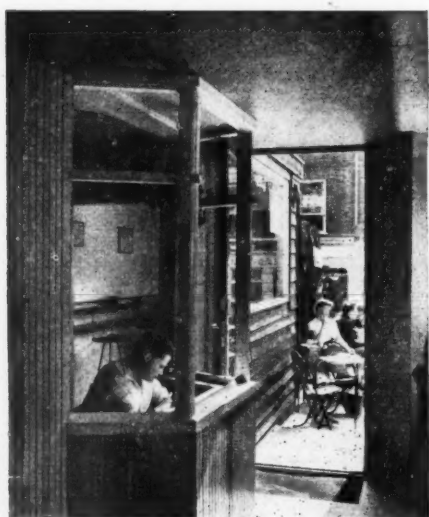
*Problem picture. Clue: this building with a nightmare quality is a great boon to dock-workers. ASTRAGAL will not add to your confusion by printing the solution to the problem upside down. The building is, in fact, a municipal nursery school on the top "street" of Corbusier's new block of flats for dock-workers at Nantes. Each pane of glass is a different colour, the object being . . . But that is enough for now. ASTRAGAL leaves it to the editors to explain this New Frivolity when they illustrate more of the Nantes scheme in a later issue.*







## Good Pull-up for Townscapes



With *l'Auberge* at Richmond, Surrey, the Coffee-Bar Age begins to leave its purely decorative phase, and enters the realm of architecture—and enters it in a manner deserving congratulations all round. This simple and unassuming building is a straightforward box of glass and brick, housing extra serving and eating space, added to a none-too-prepossessing wood-framed cottage. The design programme was one which might have resulted in a squalidly suburban house-to-café conversion, but for an enlightened client, enlightened architects (Gooday and Noble), and an enlightened planning authority. Between them they have produced a model solution of their problem. New work has been added to old in a manner which flatters both (because no futile attempt has been made to “keep in Keeping”); the new bar is related to the site in such a way as to provide needed covered space without sacrificing the paved court and the tree which are well-known features of Richmond’s townscape; one can eat or drink comfortably in the open air—a rare privilege in England—while enjoying the view of the bustling life in the High Street or on the bridge. And when weather does not permit, much of this view can still be seen from inside, because of the size and placing of the windows. The interior—further illustrated on page 246—shows the same sensibility as the exterior, for where old and new work meet (left) the original bay-window, which was a great feature of the old *Auberge*, has been retained as a piece of “interior landscape” in the new.

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## MONDRIAAN IN RETROSPECT

Brought up on the conventional histories of the Modern Movement, most of us nowadays belong to circles where it is fashionable to yawn when the name of Mondriaan is mentioned—"oh, yes, influence on the Bauhaus and all that, but *really!*"—and return to our New Realists and our New Brutalists, and what not.

\*

But such circles will get some nasty dents if they go down to Whitechapel and see the large retrospective exhibition of Mondriaan which has migrated there from the Hague by way of Zurich, for there is no doubt that Mondriaan emerges from this show as a tremendous artistic personality.

\*

The selection of pictures lays particular emphasis on his early development, and reveals not only that he practised a number of styles before he found his way to abstraction, but that he might have been a top-flight painter in any of them if he had wanted to, and had he stopped developing at the age when most painters settle for a mature style—between the ages of thirty and forty—he would have been a distinguished Impressionist, Expressionist, or Cubist.

\*

As for the abstracts themselves, far from being dull and repetitive when hung together in quantity, they show a continuing development within the apparently settled rectangular idiom, and one gets a remarkable sense of a painstaking and intelligent craftsman working steadily away at the refinement of his style. This is a strongly recommended exhibition—essential for all students.

\*

The extent to which squares and Mondriaan are out of fashion at the moment, however, is sharply pointed up by a wild and woolly sculpture exhibition at ICA, where among the shaggiest and most brutalist nudes ever let loose on the gallery-going public, there stand out a couple of the grid-and-pinboard constructions of John McHale, calm, rectangular and bright, like survivors from an age of innocence before the atomic anxiety set in.

\*

Or is it that, with a cold peace about to break out, they are the heralds of an age in which the shaggy-shanked brutalists are going to look old hat?

ASTRAGAL

## POINTS FROM THIS ISSUE

Walter Worboys, <b>COLD Chairman</b> , replies to JOURNAL's criticism .. .. .	page 244
Sir William Holford congratulates Gordon Cullen on <b>St. Paul's Churchyard</b> design .. .. .	page 244
Another multi-storey school in <b>modulor steel-frame construction</b> .. .. .	page 249
The Design and Practice of Joinery : Part VI. <b>The Design and Machining of Joints, 2</b> .. .. .	page 265

## The Editors

## DANGER, MEN AT WORK

**L**AST week we were told by the London Society of Private Architects that builders were worried: they were worried, it seems, by the disappearance of the private architect. This week they have something else to worry about: the appearance of an undergraduate on a building site. No one who worked with this young man for six months can have realised that he was going to splash his experiences over two columns in the *Manchester Guardian*.<sup>\*</sup> What, one wonders, would his workmates have thought of him, as they watched him digging drains "eighteen feet deep" and staggering about under lintels weighing "nearly a ton," if they had known he was going to record both their acceptance of the Bible as gospel and their ignorance about Britain's geography and America's government?

The workmen's opinion of this student would be nothing compared with that of their employers whom he accused of permitting criminal negligence in the men's working conditions, near-criminal wastage of materials on the site and gross mis-management of the work to be done, which resulted in a vast loss of valuable man-hours.

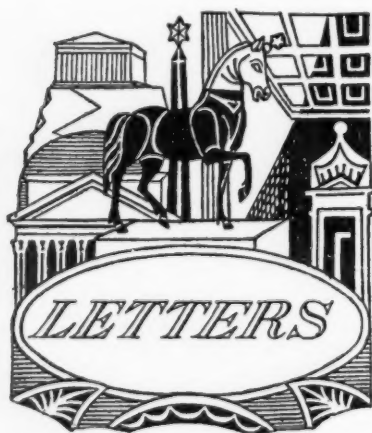
This young man's story was incredible. He complained that there were not enough picks and shovels to go round, that there were no blocks and tackle for haulage work and that no attempts were made to comply with safety regulations. But worst of all, he wrote, "was the standard of workmanship in every stage of building. Bricklayers, carpenters, pipelayers, plasterers, and electricians were all the same, lacking any pride in their work. The word 'slap-dash' best embodies their attitude. The houses themselves were of quite an attractive modern design, but they were simply being flung together: floors were uneven, and sometimes sloping; windows and doors were ill-fitting; plasterwork was patchy and shoddy, and several times I was told to concrete up the joinings of drainpipes before they had even been tested by flushing. I shudder to think of the repair bills on those houses in days to come."

The undergraduate-navvy also complained about dishonesty among his fellow-workers, but he went on to point out that

<sup>\*</sup> August 18.

"there was one thing which may well have made them feel less conscience about this, and that was the terrible—and tolerated—waste of materials on the site. Time and time again large piles of cement or lime were rendered useless for want of covering on a wet night; bricks, tiles, and pipes were broken by the thousand out of pure carelessness and thrown away; the cost of this wastage must have been vast. With so much indirect robbery going on around them, can one wonder some of the men felt that the odd bag of cement would not be missed?"

We have repeated here only a little of the shocking story this young man had to tell of his way of earning £120 in six weeks. *Guardian* readers will no doubt realize that the student could have worked for a better contractor than this—on a site where the hoisting was done mechanically, safety regulations were observed, and men were not switched about from job to job haphazardly. The site described is far below the average, but the *Guardian* is right in asking for better site-organization. Many people have been asking for that for some time. Indeed most of us have got past talking of the need for it: we are asking instead how it can be brought about. Next week our Guest Editors (Costs) will begin to answer that question in a new series of articles. They will describe the organization of a building firm which is far above average—a firm which, while not necessarily employing men with a better knowledge of politics and geography, would plan and conduct building operations in an orderly and humane manner.



Walter Worboys,

Chairman, COID.

Professor Sir William Holford,  
F.R.I.B.A.

"Aribian"

Morgan H. Davies

Development Officer, Fulmer Research Institute

J. N. Lowe,

Managing Director, Pre-stressed Concrete Co., Ltd.

W. M. Ladbrooke, Student R.I.B.A.

### The COID's Task

SIR,—Your critical leader of August 11 shows a limited appreciation of the job my Council is attempting to do and little knowledge of its approach to this job.

Certainly our task can be described as the selling of good design to mass-producers and mass-consumers, since a wide-spread improvement in British industrial design will come about only when manufacturers are convinced that there is a substantial market for well designed goods—a market, indeed, that they will lose unless their goods are well designed. To suggest, however, that this could be achieved by my Council making quality testing and market research its main activities is nonsense. Some elements of quality can certainly be tested—for example, durability and function (i.e., fitness for purpose)—but there are other elements of quality that are not readily assessed by physical testing. Market research, that is the assessment of possible markets for goods, can only be carried out by people who have at their disposal full knowledge of the particular manufacturing and distributive processes applicable to the products in question; that is by the manufacturers themselves or by somebody appointed by them. It cannot be done in isolation from this knowledge and it therefore could not be done by the Council of Industrial Design. This does not mean that the Council cannot help by providing British manufacturers with information on the requirements of particular markets for particular goods: it already does this to the limit of its resources and I hope it will be able to do much more in the future.

The Design Centre for British Industries, which will be opened in Haymarket House early next year, will be a "permanent and

constantly changing exhibition" of the best designed goods of current British manufacture—at the start mainly durable consumer goods. My Council feel that such an exhibition in the heart of London, which can be visited not only by the public and by manufacturers but also by wholesalers and retailers and by buyers from overseas markets, will do much to persuade manufacturers that "Good Design is Good Business." The goods exhibited will be chosen from Design Review. The selection of goods for inclusion in Design Review is a matter to which my council have given much thought and today selection is made by a panel which includes, in addition to some of the council's permanent staff, council members, outside experts and industrial assessors drawn from the industries in question, and these assessors are much concerned with the factors which I think you had in mind when you used the term "quality testing."

There must always be an element of taste, of personal feeling, in the approach to design. "Good design"—"well designed"—are terms which will continue to defy precise definition for a long time if not for all time. But we have only to look around us at home and abroad to see that people's appreciation of good and good-looking things is growing apace, and this will increasingly determine their buying habits.

About one-third of the members of the Council of Industrial Design are manufacturers, and the rest are men and women prominent in their respective fields of activity. They are trying to do a job of some national importance, and to describe them as "... a group of aesthetic snobs such as no democratic nation should be called upon to support," especially as this assertion is tied to a quotation which the Council has never made, is not justified and certainly not consistent with the dignity which I have always associated with your JOURNAL.

WALTER WORBOYS.

London.

[In raising the question whether the COID should not interest itself in market research, the JOURNAL had no intention of disparaging the work the Council is already doing in encouraging good design among manufacturers and consumers, work which has always had the JOURNAL's wholehearted support. The Design Centre for British Industries, to which the chairman of the COID refers, will be a most useful addition to the Council's armoury and it is good news that "quality testing" is one of the things with which the Design Review assessors are concerned.]

The JOURNAL did not describe the Council as aesthetic snobs, but expressed the view that if they gave the impression of despising the consumer's interest in quality they would deserve such a label. The chairman now makes it clear that they are well aware of the importance of quality testing. The words quoted were simply an opinion expressed verbally by a member of the COID staff to the JOURNAL's leader-writer, and it is regretted that they were quoted in the article in a way that suggested that they represented the published opinion of the Council itself.—EDITOR.]

### St. Paul's Churchyard

SIR,—I congratulate you, and Gordon Cullen, on your useful and stimulating article on St. Paul's Churchyard in the issue of August 17.

If I say that the proposals are not working drawings, i.e., drawings on which action can be taken directly, I hope you will regard this as the compliment it is intended to be. Before the end of the year such a working drawing will have to be prepared; but at this stage the discussion of principles and the many imaginative suggestions produced

by Gordon Cullen are certainly the most constructive form of criticism that has yet been made.

Some of the dimensions shown must, I think, be in the mind's eye rather than on the site (e.g., Fig. 33); but they do help to emphasize the extraordinary character and diversity of the spaces around the Cathedral, from the formal western forecourt (Fig. 26) to the very English treatment of the garden in the north-east corner of the Churchyard. (This is superbly illustrated in Fig. 31.)

I only hope that the photographs you will no doubt be taking in ten years' time will reveal some of the character and liveliness possessed by these drawings.

WILLIAM HOLFORD.

London.

## Poaching

SIR,—I refer to the letter (August 11) from A. E. Souter, who is obviously a Salaried Architect.

He criticizes "Poacher" for daring to accuse salaried architects of poaching.

In spite of what he says and believes he, too, has grasped the wrong end of the stick, very firmly indeed.

I would estimate that 95 per cent. of architects all have the wrong end of the stick. It is not a question of whether a salaried architect is able to carry out a commission (I would say they were very able) or whether (as Mr. Souter stresses) he should be allowed to do what he likes with his own time.

The point at issue is: should the state be allowed to usurp work which was previously in the sphere of the private architect (thereby reducing his pool of commissions by something like 66 per cent.). And having done this and having employed staff to carry out this nefarious work, then, is it ethical for members of that staff (whose salaries are paid in part by private architects) to use their own spare time to whittle away what remains of the 33 per cent? (I say what remains because it is well known that of this 33 per cent., approximately 66 per cent. is carried out by a small percentage of private practitioners.)

So the issue is—should architects paid by salary be permitted to use their spare time to earn pin money when, by so doing, they are stealing the very bread of the rank and file private practitioner, much of whose remuneration goes in taxes and overheads, anyway.

The issue has *nothing whatsoever* to do with architecture. It is one of economics and socialization of the profession.

Granted, that if all architectural work were carried out by architects, the need would not arise to the same extent but the fact remains that at the present time it is not so.

It is poor consolation to a man dying of thirst to say: "If only they had listened to me years ago, there would have been wells just here."

Private practitioners are not interested in mirages. They are concerned with and about the facts as they see them.

"ARIBIAN."

## Privately-Sponsored Research

SIR,—G. E. Bessey in his letter (June 23) rightly praised the research associations for their valuable services to industry. He omitted, however, to describe the sponsored research establishments (such as Fulmer Research Institute and Soudes Place Research Institute) which provide scientific and technical services to the individual or the corporate members of particular industries.

While research associations must investigate problems common to all or a large majority of their members, the sponsored research institute considers the direct interests of the sponsor of each of its individual projects. Each investigation is planned in con-

junction with the sponsor; the results obtained belong exclusively to him, as do any patents arising from them; furthermore, the sponsor pays only for the cost of work carried out directly on his behalf.

Investigations of a fundamental or an *ad hoc* nature, development work and a certain amount of routine testing and analysis are undertaken by the Fulmer Research Institute whose staff is comprised of Metallurgists, Physicists, Physical Chemists and Engineers. The sponsored research laboratory acts, during the period of sponsorship, as the private laboratory of the sponsor. The direct services it provides complete the pattern of industrial research organization in Great Britain.

MORGAN H. DAVIES.

Bucks.

## The Worthing School

SIR,—I have read your article on the Worthing Technical Secondary School in the August 4 edition of the JOURNAL and I think there are one or two points of interest and amplification that I can make.

First, it may not be completely clear how much work the contractors, Gilbert-Ash Ltd., put into this development. "Intergrid," for thus is the structure named, was developed not only by the Ministry of Education, the county architect, the borough engineer, and my company as consulting engineers, but also by Gilbert-Ash Ltd., who acted in a very different fashion from competing general contractors.

There are also a number of points which have arisen since Worthing was built. Since that time we have had the opportunity of working with a score of architects, both private and public. It has been a revelation and a joy to find that a precast system can assume so many different shapes and proportions.

This experience has given us further insight into the cost analysis and it may be useful to you if I cast about a few thoughts on the economics of Intergrid design.

You will understand that I cannot quote actual figures as many of the buildings are yet incomplete. I hope that others will write to you when the structures are complete and pass on their experiences, not only of cost, but of application of Intergrid. Your series of analyses of costs of secondary schools is most valuable.

Much of costing is tied up with circulation space and administrative rooms. It is also true of Intergrid that the old days of 20-ft. limits of floor spans and 30-ft. limits on roof spans are gone. It is now quite clear that if the architect can use square buildings as opposed to the long linear buildings, and if he will use the maximum spans for these square buildings then he can have a cheaper building.

Obviously a building 100 ft. long, 25 ft. wide and 10 ft. high has an area of 2,500 sq. ft., a circulation space of about 500 sq. ft., a wall area of 2,500 sq. ft., and a useful area of about 2,000 sq. ft. A building 50 ft. by 50 ft. and 10 ft. high has the same total area and probably a useful area of 2,125 sq. ft., and its wall area is 2,000 sq. ft. There is an obvious conclusion to be drawn from these points when an architect is planning his school.

Further, particularly as the contractors are so well used to this system, it is advisable to discuss the best shapes and storey heights with them before embarking upon a final layout. At Worthing there is a large proportion of single-storey work and there are a large number of elevational increments in the layout. The architects here have displayed the flexibility of Intergrid most successfully, both from the structural point of view and from the architectural point of view.

Other architects have shied completely away from this organic growth and have

selected very simple blocks of buildings. When the final costs of these buildings are complete I look forward to there being more information published on the costs of the various shapes and the varying storey heights.

You emphasize very rightly that a structure affects the cost of the internal work and you mention particularly electrical installation. There are many other savings which can be called into play—and particularly now that we have designed a Mark II Intergrid from our experience on Worthing—and these include fixings of windows, fixing of internal partitions and fixing of suspended ceilings. Columns are holed ready for the window fixings. Columns are holed to receive internal cladding and partitions. It is also worth noting that in suitable places in a building the false ceiling can be omitted. The structure is in no way ugly and, as everywhere, at Worthing the successful use of colour can both enhance appearance of the structure and save the cost of false ceilings.

The improvements that have been effected by the design of Mark II Intergrid since Worthing include increasing the spans, giving a wider range of gutter and eaves units, housing larger services, constructing stair-wells with the standard components and a wide range of stairways.

I hope that these thoughts will be of use to you. When more of these structures are complete and the pattern of cost and application becomes clearer, I hope to be able to give you more detailed information.

J. N. LOWE.

London.

## Architectural Elite

SIR,—If architecture is to command the respect and admiration of the layman, the profession must not lose sight of the basic design principles, and these principles must not be confused by architectural journalists who toss bouquets in the wrong direction.

I refer to the comments in the JOURNAL of August 4 on the result of the Ascot stand competition. The winning design was excellent; anyone who has seen the drawings and model would agree, but your comments continue, I quote, "... these included a refreshingly stark stand by Alison and Peter Smithson ..."; the profession badly needs progressives like the Smithsons, but their design in Ascot's competition was not worthy of a plaudit from an architectural critic and, in fact, I have never seen a design which so completely ignored the requirements.

I was sorry to see the sharp end of the profession blunted by such a small problem and amazed to see such an anaemic illogical solution given a mention in the JOURNAL.

Could it be that through the eyes of the journalist the architectural elite can do no wrong?

W. M. LADBROOKE.

Plymouth.

## DIARY

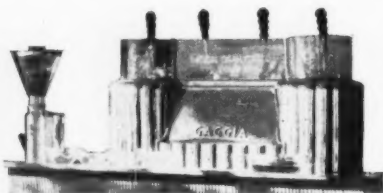
**Piet Mondriaan.** Talk by Dr. J. L. Martin on the current exhibition at the Whitechapel Art Gallery. On the BBC Third Programme. 7.35 p.m. SEPTEMBER 1

**Between Two Decades: Post-War Planning and Architecture.** Series of seven talks. First talk by H. Myles Wright. On the BBC Third Programme. 10 p.m. SEPTEMBER 1

**International Conference on Regional Planning.** At Bedford College, London. Registration fee £3. Information from Norman J. Hart, 45, Northcote Avenue, W.5. SEPTEMBER 29-OCTOBER 2



# BUILDINGS (FOR DRINKING-IN) IN THE NEWS



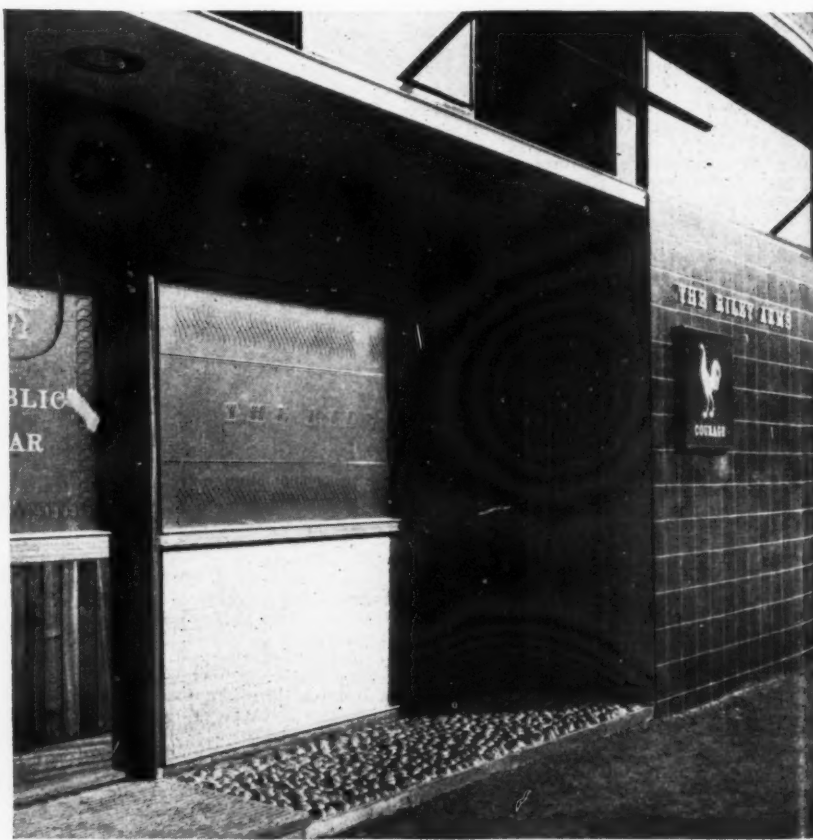
Coffee-Bar at Richmond

For some time now coffee-bars have been making news, because of their interior decor. This one, l'Auberge, at Richmond, is the first to make architectural news. The photographs on the opposite page—



Pub in Chelsea

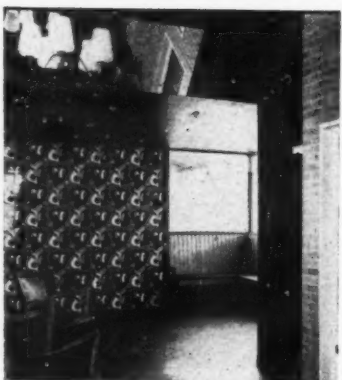
This public house in the King's Road, Chelsea, was designed for the borough of Chelsea (architects, Edward Armstrong and Frederick Macmanus; assistants, John B. Diamond, interior and frontage; D. J. Tricker, structures). The building, which is at the end of a row of shops and maisonettes on the King's Road frontage



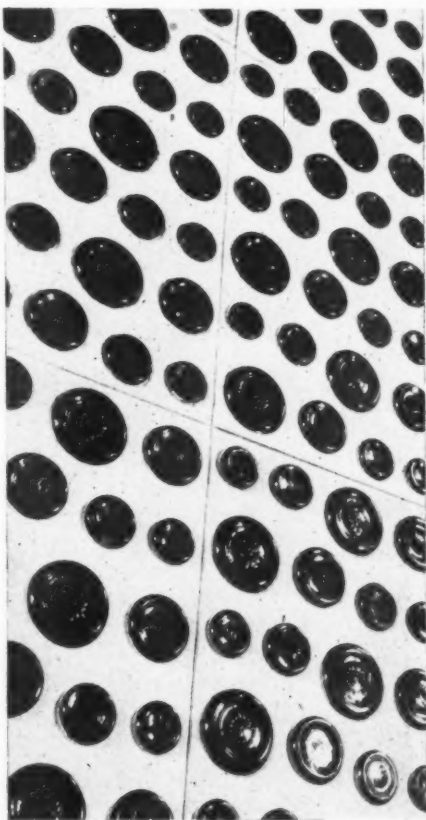




and the one used as a frontispiece—show how the architects, Gooday and Noble, have made use of some of the best features of the site: a low brick wall, a courtyard and a handsome tree. The photographs top left and below left show how the architects have brought the outside of the adjoining building (note the bay window) into the new extension. All fittings (not the furniture), as well as the bar itself (top right) were designed by the architects, who say they had no trouble at all in getting their scheme passed by the local authority. A pleasant feature of the structure is the contrast between the black-and-white exterior and the bright colours (sparingly used) inside. In the photograph on the left the ceiling is white, the dropped ceiling on the left is blue and the floor is grey terrazzo tiles. Exposed brickwork is buff Uxbridge flint. The wall on the left of the bar, top right, is bright red.



of the Cremorne Estate, has a composite load-bearing brick and reinforced-concrete frame, with in-situ concrete floors and staircases. Non-load-bearing walls are of cavity construction. The tiles on the exterior (see larger picture, opposite page) are dark blue. The panel below the saloon bar window (see smaller picture, opposite page) is faced with knapped flints. The fireplace surround (top left and right) in the public bar consists of bottle ends set in concrete, and was designed by the architect. The wall is partly panelled in  $\frac{7}{8}$ -in. t. and g. Douglas Fir boarding and partly covered with black and white patterned "strata" wall-paper, the ceiling is painted in mid-brown (archrome 12) emulsion paint and the floor has 6 shades of brown plastic tiles. The tiled mural in the saloon bar (bottom left), was designed by Gordon Cullen. Ronald Sandiford designed all decorated glass. Cost: preliminaries and sundries £1,226; public house £17,712; roads and external works £2,605—total £21,543.





## COMPETITIONS

### *Astragal Persuades Sponsors to Revise Conditions*

In last week's JOURNAL ASTRAGAL congratulated Tretol Ltd. on their competition for a "House for a Professional Man," but criticized the conditions. He asked: "How on earth can the assessor be fair when he is choosing between a house on a hill-top, a house on a cliff, a house squeezed into a suburb . . . and so on?" He went on to say that the size and nature of the site should be stated, "together with the client's requirements (size of family, etc.)."

The Editors have since received the following letter from Tretol Ltd., which will be of interest to anyone who has been deterred, by the inadequate conditions, from entering the competition.

"Following ASTRAGAL's comments on our competition 'The House for the Professional Man,' we have, in conjunction with the assessor, Clifford Culpin, clarified the following points:

"1. The size of the house is not stated in the conditions, though the maximum size will obviously be controlled by the stated cost and the minimum size by the likely requirements of a professional man. Although the conditions may not be clear on the point, the promoters had in mind a family residence and three or four bedrooms would therefore be required.

"2. The site should be taken as an open one, whether in town or country and in view of the comments in the technical Press it has been decided to limit the designs to those suitable for a flat site.

"3. In planning this competition it is the desire of the promoters and the assessor to allow competitors as much freedom as possible, which would enable them to prepare imaginative designs unhampered by too many rules and restrictions. The reference in the conditions to planning approval is not intended as an indication that a safe conventional type of design is favoured, but was merely inserted in order to exclude fantastic and impracticable designs which could never secure approval, even on appeal.

"You will be glad to know that the announcement of the competition in the AJ has already produced a very gratifying response from interested architects."

### *Improvements in Next Year's Eisteddfod*

When we announced the results of this year's competitions organized in conjunction with the Royal National Eisteddfod of Wales, we commented both on the small number of entries submitted and on the smallness of prizes offered.

Next year, we are told, the prizes will be bigger. A prize of £100 will be offered for the design of headquarters for the Welsh Tourist Board (assessors: T. Alwyn Lloyd and Lewis John).

A prize of £50 will be given for the replanning of the centre of Aberdare. And a similar prize will be given in a competition—for students only—for the design of a library and an exhibition hall. The assessors for

the first of these competitions will be W. Marsden and Alex Gordon: the second will be judged by Dr. H. W. Crowther Green and T. Alwyn Lloyd.

Full details can be obtained from the General Secretary, National Eisteddfod of Wales, Aberdare.

## BBC

### *Coming Talks on Architectural Subjects*

On September 1, H. Myles Wright, Professor of Civic Design in Liverpool University, will speak on the Third Programme about the failure to prevent urban sprawl, and "the revived interest in so-called Green Belts as a means of halting it."

Also on September 1, Dr. J. L. Martin, architect to the LCC, will speak about the Whitechapel Gallery's exhibition of paintings by Mondriaan—an exhibition which ASTRAGAL writes about on page 243.

On September 10, Robert Gardner-Medwin, Professor of Architecture at Liverpool University, will speak on the Third about the great opportunity afforded by bombing to redevelop city centres.

The New Towns will be the subject of a Third Programme talk by Colin Boyne, executive editor of the JOURNAL, on September 17.

Other architectural talks to come will be given by Lionel Brett (on housing), Michael Smith, of the Nuffield Architectural Research Unit (on schools), and Edward D. Mills (on factories and power stations.)

## CORRECTION

### *Course on Management and Productivity*

In our issue for July 21 (page 76) notice was given of a residential course to be held by Urwick, Orr & Partners. This implied that the course would be concerned primarily with Work Study, but in fact it will cover the whole field of management, of which work study is but one aspect.



The first flat in the City of London's Golden Lane Housing Scheme has been completed and above left we show the living-room, with its cantilevered pre-cast concrete staircase on the right, and the kitchen hatch beyond. Above right is part of the facade; the panels below the aluminium sliding windows are painted blue. The architects were Chamberlin, Powell and Bonn.

## SECONDARY SCHOOL

off BELLINGHAM ROAD, CATFORD, LONDON, S.E.6

for the LONDON COUNTY COUNCIL

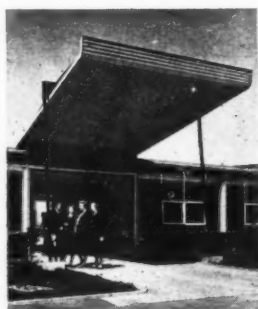
designed by J. L. MARTIN, architect to the LONDON COUNTY COUNCIL

S. HOWARD, schools architect; G. F. HORSFALL, assistant schools architect

W. J. SMITH, architect-in-charge; T. LLOYD, T. BLISS and M. LE PELL, assistant architects

R. A. HARWARD and PARTNERS, quantity surveyors

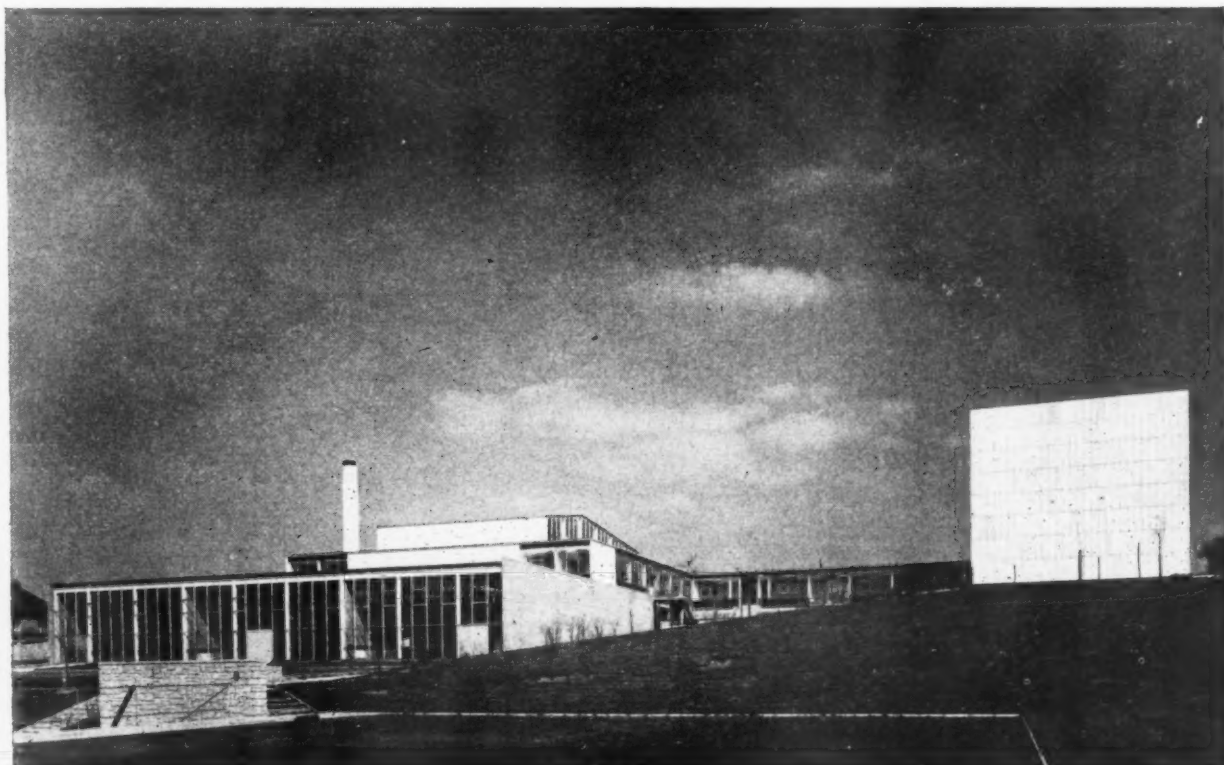
ROGER PRESTON and PARTNERS, heating consultants

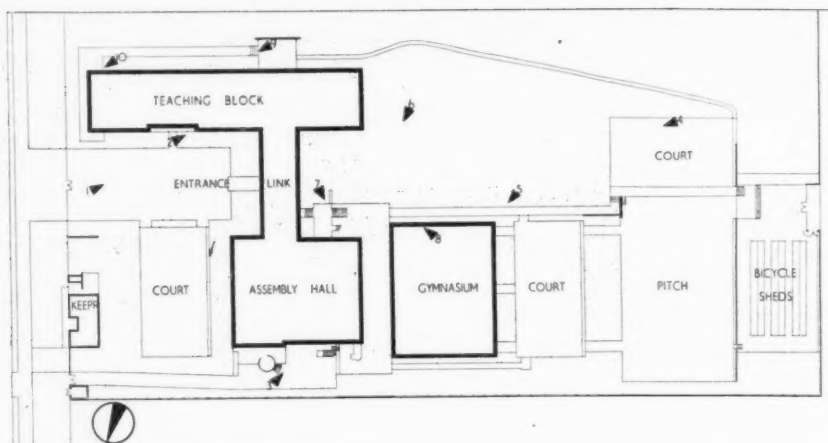


Canopy over main entrance doors.

Catford School is a county secondary school, designed, under the London Schools Plan, for 1,190 girls. The school is mostly constructed in dry pre-fabricated materials. Acceptance of the light steel frame as the load bearing component implied a light efficient cladding. Curtain wall glazing, which would remain clean in the London atmosphere, and have low maintenance costs, satisfied all requirements; the architects, however, were allowed to use this cladding only if its costs were comparable to a more traditional system. The general contractors were Thomas & Edge Ltd. For sub-contractors see page 272.

The school from the south-west. Viewpoint 4 on key plan overleaf.





Key plan showing photographic viewpoints

## SECONDARY SCHOOL AT CATFORD



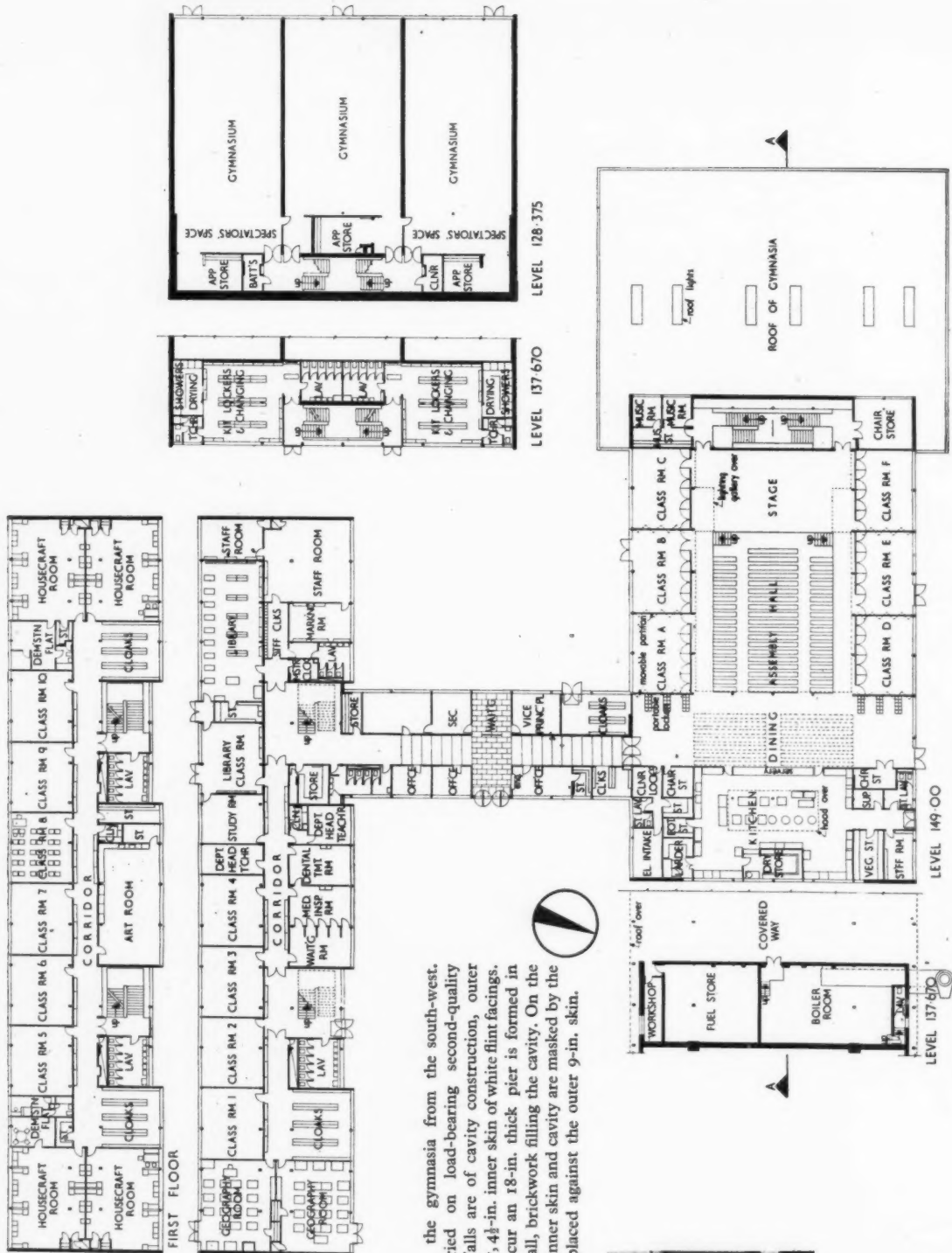
Viewpoint 1: from the north-east. The link and classroom blocks seen across the entrance courtyard from the access way off Bellingham Road. In the centre of the single-storey link is the main entrance with canopy. Vertical cladding bars are at 3 ft. 4 in. centres and opening lights can be placed where required. Rows of panels between windows are glass-faced. Behind the glass the darker bands indicate the perimeter beams, which have a sprayed vermiculite casing on expanded

metal. Above these beams are 3-in. woodwool upstands rendered and painted light blue. The panels to the left of the staircases are also of glass with colour applied on the rear face (dark blue), masking 3-in. brick on edge upstand walls to horizontal ducts carrying drainage and services to the hand-basins in the lavatories. A staircase and the wall cladding of the four-storey block and the entrance canopy will be illustrated as a Working Detail in a later issue of the JOURNAL.



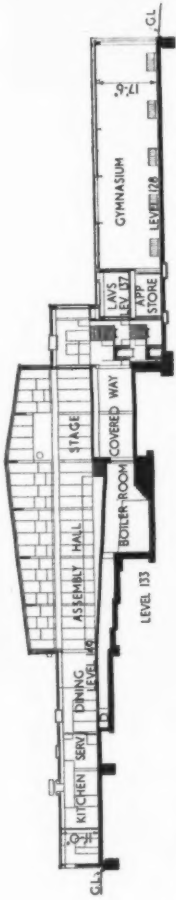


Above, viewpoint 2: detail of the staircase recess. Spread of fire to staircases from adjoining accommodation was guarded against by recessing the curtain wall glazing to the stairs to a depth of 3 ft. 4 in. from the general face of the glazing. The reveals thus formed are constructed of 4½-in. brickwork which is rendered and painted black. Left, viewpoint 3: assembly hall from the north-west. The staircase on the left leads to the kitchen. The cylindrical, hollow, brick drum contains the dustbins. The other staircase is from an emergency exit to the assembly hall. Behind the r.c. stack is the covered way, which passes under the assembly hall, from which there is access to the changing rooms at gymnasia mezzanine level. The boiler room and fuel store are accessible from this covered way, which is also used as covered play space.



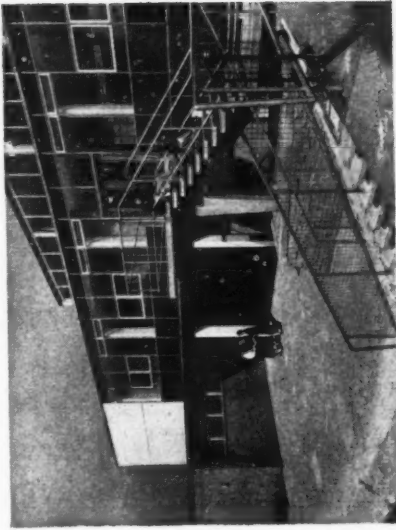
Below, viewpoint 5: the gymnasias from the south-west. Roof beams are carried on load-bearing second-quality stocks, unpointed. Walls are of cavity construction, outer skin 9 in., 4½-in. cavity, 4½-in. inner skin of white flint facings. Where roof beams occur an 18-in. thick pier is formed in the thickness of the wall, brickwork filling the cavity. On the window elevation the inner skin and cavity are masked by the perimeter stanchion, placed against the outer 9-in. skin.

Ground and upper floor plans, mezzanines and lower floor plan [Scale : 1/8" = 1' 0"]

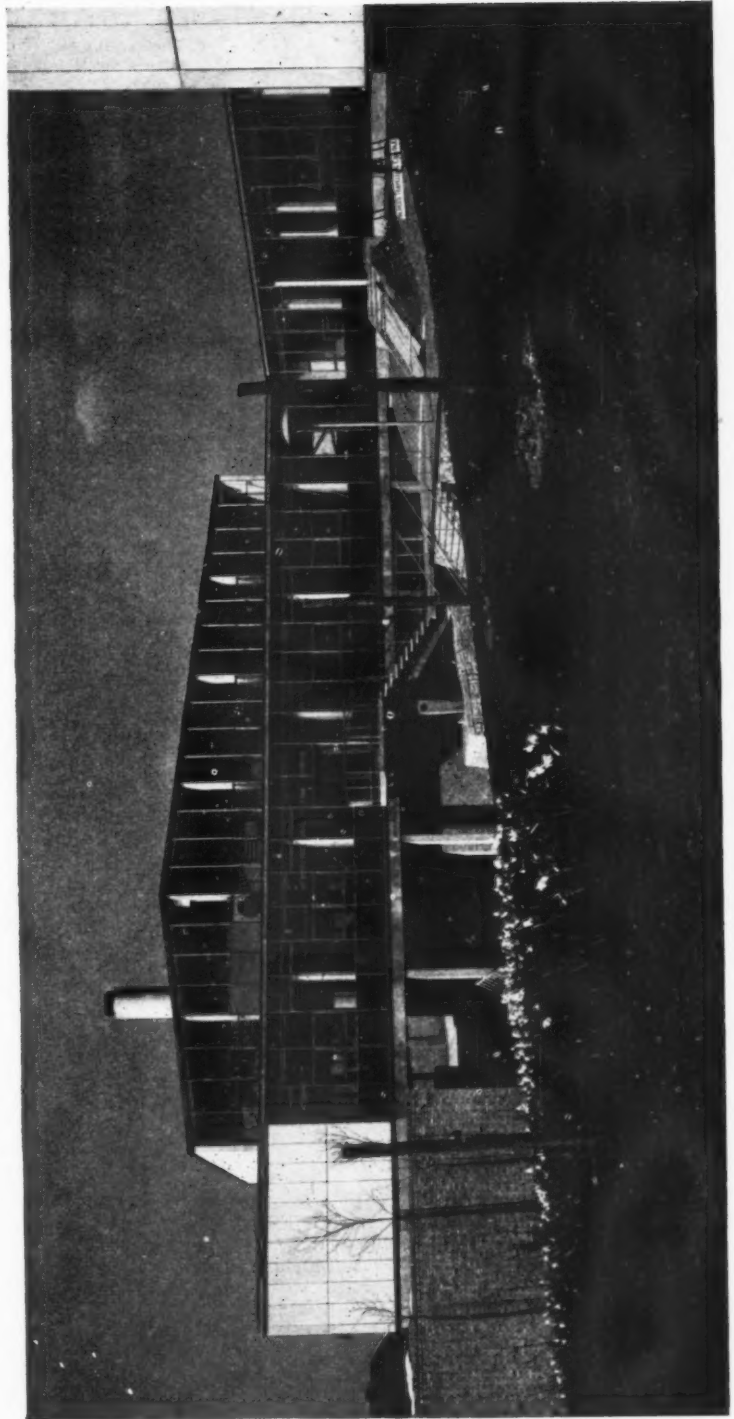


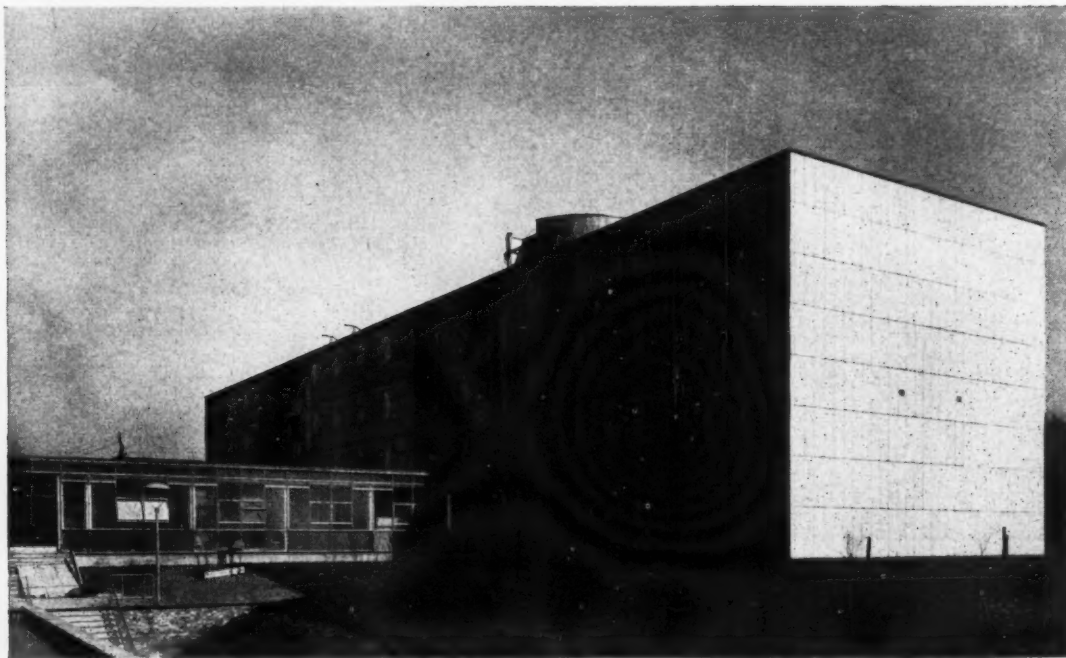
Section A-A

Below, viewpoint 6: assembly block from the south. On the extreme right is the solid cladding to the end wall of the teaching block. The raised, central, pitched portion of the roof covers the assembly hall proper. The flat, low-level roofs surrounding it cover, at the sides, three teaching spaces, and at the end with solid cladding, the music practice rooms and staircase down to the gymnasium and changing rooms. Right, viewpoint 7: emergency exit from the assembly hall through one of the three teaching spaces. The high level tube



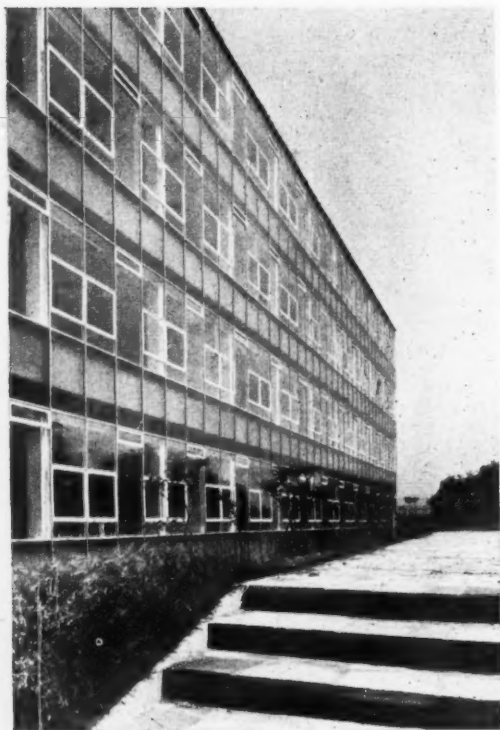
SECONDARY SCHOOL AT CATFORD





Above, viewpoint 8: the teaching block from the north-west. Windows are cleaned and replaced from travelling cradles. The cradles are suspended from rails 15 ft. long carried on two cantilevers which rest on splayed legs on the eaves. These cantilevers are bolted down to the roof behind by phosphor-bronze nuts fixed at 13-ft. 4-in. centres around the roof perimeter. The windows can then be cleaned in sections vertically and where recessed staircase windows occur the cradle can be pulled in to the window face when hanging 10 ft. below eaves. The tank room, containing two sectional

tanks of 6,545 gallons capacity, is constructed of a light angle and tee frame lined with 3-in. ordinary quality wood-wool and vertical Canadian cedar weatherboarding externally. Below left, viewpoint 9: south elevation to class block. Above the curtain wall glazing is the fair-faced concrete fascia to the 6-ft. 8-in. long pre-cast concrete eaves piece, against which the screed is finished with a 45-deg. fillet roofing felt carrying over this and being tucked into a pre-cast groove, which is then filled with mastic. The eaves to the assembly hall (see viewpoint 7) employ the same eaves piece but covered with a pressed metal fascia. Below, viewpoint 10: detail of the r.w. channel at the base of the curtain wall glazing. The glazing is carried on a 2½-in. by 2-in. by ¼-in. angle, which is behind the horizontal aluminium cover strip, and is itself supported by an angle cleat secured to the plinth, which is the edge of the ground floor slab. Bituminous d.p.c. is laid under the screed and passes vertically down the face of the plinth. The floor to the r.w. channel is the top of the ground beam which rests upon the structural stanchion plinth above the concrete bases. The side of the channel is finished with a pre-cast concrete curb, the top of which is at ground floor level. At door openings the channel is bridged by a pre-cast concrete step.

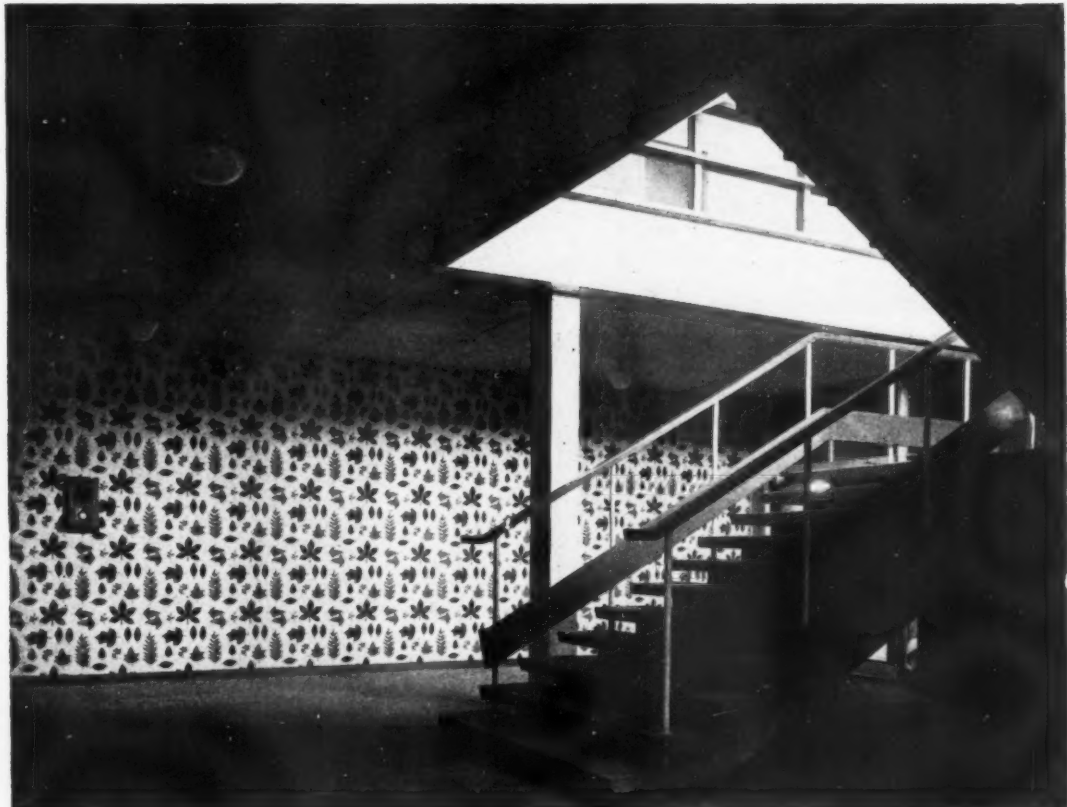
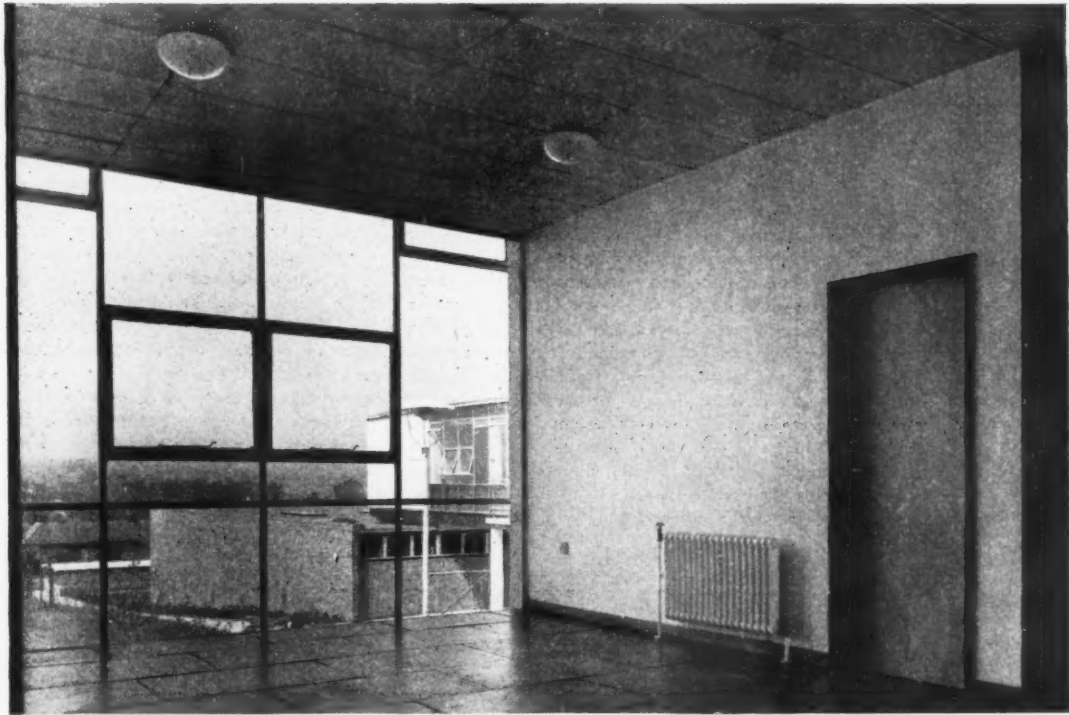


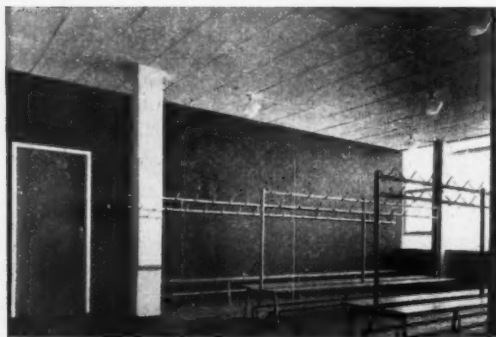


Top photograph: inside the main entrance in the link block. The flooring material is black concrete slab, polished after laying. The pre-cast vermiculite ceiling panels stop clear of the glazing, the gap being closed with a pressed metal blind box which is secured to the lower boom of the perimeter beam and returned to the horizontal glazing bar.

## SECONDARY SCHOOL AT CATFORD

Bottom: the staircase leading off the link block corridor in the teaching wing. Wallpaper, at 15s. a piece, was selected by the architects. The small box on this wall houses the speakers for combined schools broadcasts, class change and public address. It can be used to transmit to the headmistress's room only when converted by use of a special key. Below the speaker is the fire alarm push bell. There are hose-reels in all corridors in this block, served from wet mains; pressure of 50 lb. per sq. in. is maintained at each hose-reel point.

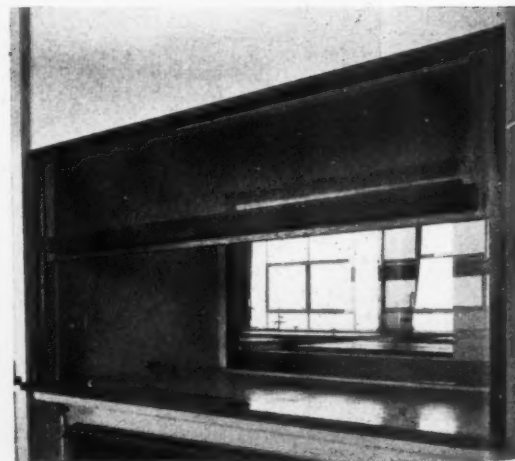
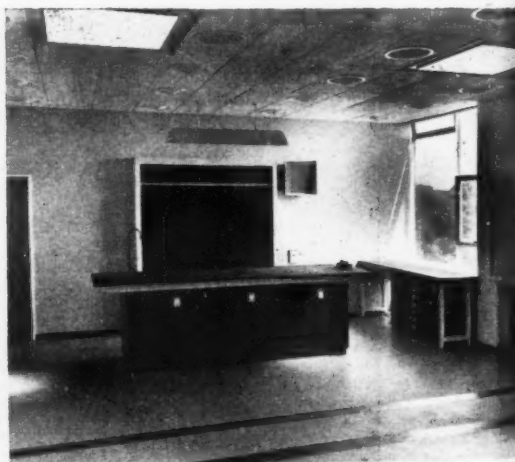
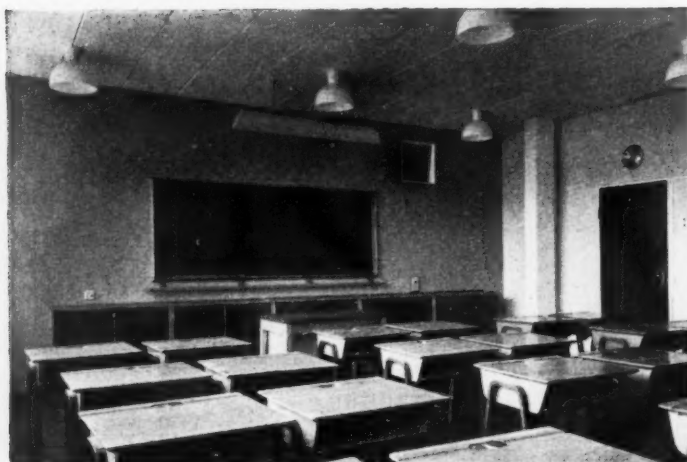




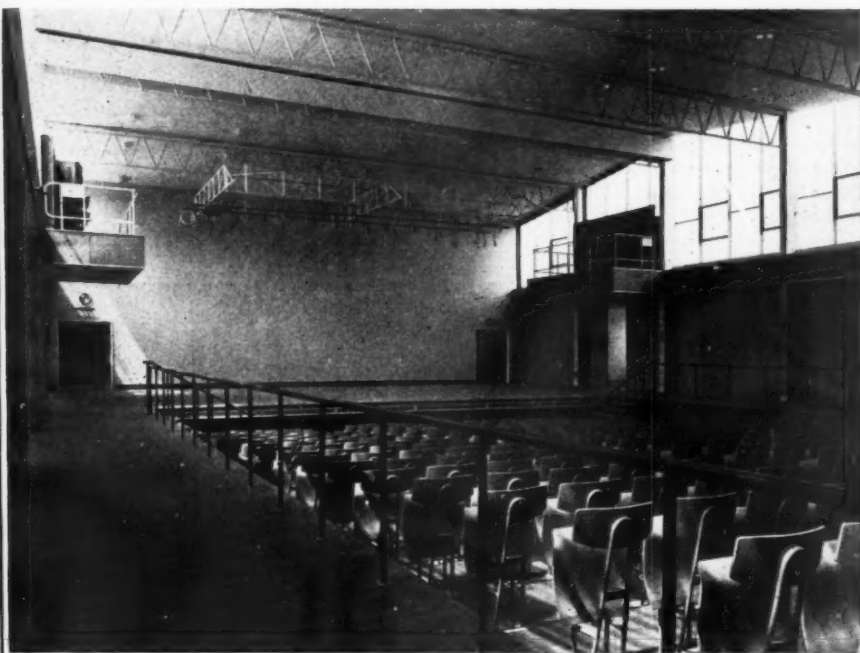
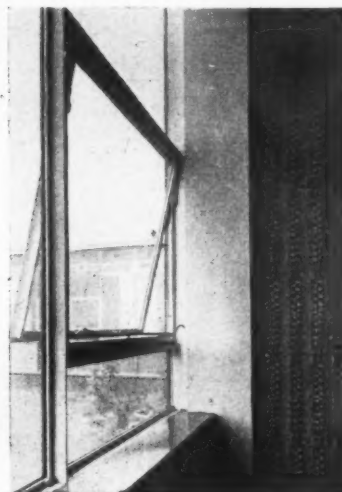
## SECONDARY SCHOOL AT CATFORD

Above: cloak area in the teaching block. 6-in. by 6-in. heather-brown quarry tiles are used here, rather than the resilient cork floor to the corridors. The end wall is a focal point for the whole of the corridor and is painted olive green (10.0GY 3/2) with white door frames and doors in primrose (2.5GY 8/6) (Archrome range). The architect states that quarry tiles were chosen for cloakrooms because of the likelihood of wet clothes and shoes being left to dry there, as the site is very exposed. These tiles are more impervious than the cork finish used elsewhere. The change in floor finish also denotes the change of use. Below, left: standard classroom in the teaching block. Light fittings, pupils' desks, storage cupboards and chalkboards are all standard LCC schools equipment. The chalkboard wall is light blue (7.5BG 6/2),

pin-up and inner wall (N.9) and the door light red (7.5R 4/16). Trouble has been encountered with the pre-cast vermiculite ceiling panels; these are 3 ft. 4 in. by 1 ft. 8 in. by 1½ in. thick and are hung on the bottom boom of the floor and roof beams by means of two clips, leaving a space of 3 in. between the top of the ceiling slab and the underside of the steelwork. When first placed in position they gave a perfectly uniform ceiling but warping took place after several months. Some of these panels will have to be replaced. The makers of these panels point out that costly research has been carried out to find the cause of the trouble encountered, which was due to moisture movement of the vermiculite. This trouble has now been overcome by subjecting the vermiculite to a waterproofing process. Where panels had buckled they have been replaced free of charge. Below right: third floor lecture room in the teaching block. There are two of these rooms, back to back, each connected to a preparation room which also serves as a laboratory. Natural lighting is by rooflight units with eggcrate louvres. Sparkle is added to the rooms by the use of a small area of wall glazing. Standard tiered seating (not shown in this photograph) is in laminated plywood. Flooring is light grey linoleum, walls are white, chalkboard wall off-white (N.8) and the door to the preparation room grey-green (2.5GY 6/2). Bottom left: work in county complementary schools is of a more practical character than usual work in a grammar school. The pottery and kiln room shown here are among a group of practical rooms in the block, including a weaving room, 4 housecraft rooms, 2 needlework, 1 office arts (commercial training). Bottom right: detail of double fume cupboard between chemistry and general science laboratories. Windows are sliding sash. There is a dished terrazzo floor. Ventilation is by electric extract fan through the roof.

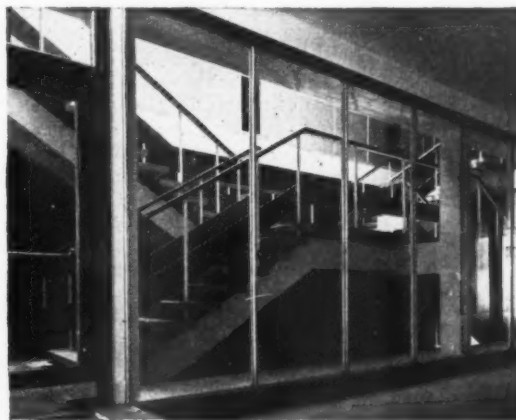
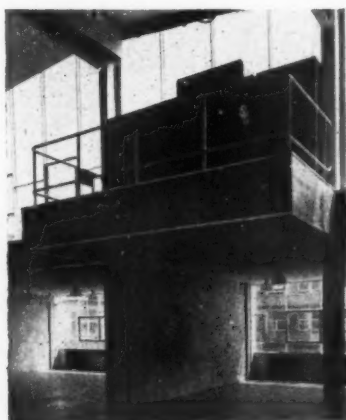


Right: where cross partitions stop against a perimeter stanchion or run into the curtain wall glazing between stanchions, the gap between the outside face of the stanchion and the curtain walling is closed by means of a pressed metal closure piece. Similarly the sill is composed of a pressed steel piece covering the rendered woodwool upstand and secured to the horizontal glazing bar. Internal partitions of pre-cast hollow gypsum plaster with a honeycomb core are set into pressed steel channels which are tap-screwed to the stanchion. The stanchions are rendered fireproof with 1-in. thick precast vermiculite concrete casings. These casings are delivered flat in 3-ft. lengths, and V-jointed to enable bending round the stanchion; joints are then grouted, and the casing fixed by means of binding wires cast in at 6-in. centres.

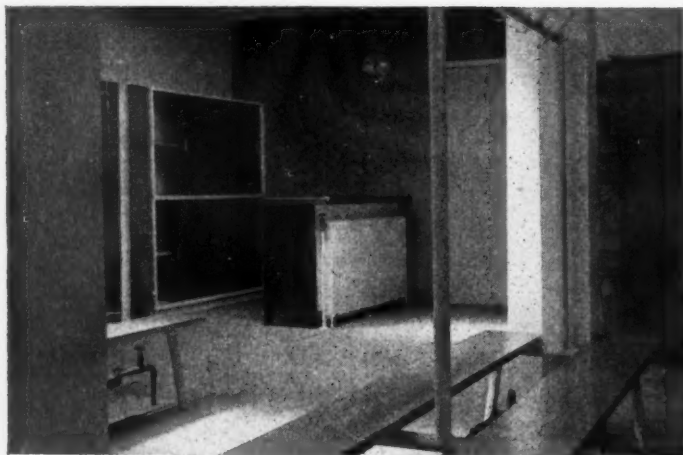


Above: the assembly hall from the dining area. The assembly hall complex was required to serve four functions: drama, assembly, some teaching space, dining space. Sliding folding partitions between the three classrooms on either side of the hall can be folded back to form two rooms or one large room, and the pivoted units forming the demountable screen separating these classrooms from the hall can either be opened up for the whole length to allow for free passage when required for dining purposes or they can be removed completely. Stage lighting is all carried by the tubular steel welded frame hung from the roof structure. Below left: detail of one of the flyboxes from which stage and hall lighting and curtains can be controlled, and from which the frame carrying

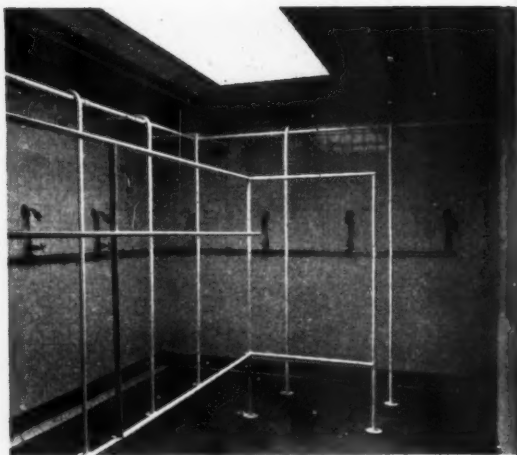
the stage lighting can be lowered. Access to these flyboxes is by retractable loft-ladders. The beam above the flybox is fitted with a pelmet on either side to conceal the curtain-closing mechanism. In this photograph the demountable partitions between teaching spaces and assembly hall have been removed. The sliding-folding partitions were not decorated at the time the photograph was taken. Below right: double staircase from the assembly hall down to the gymnasium, photographed from the covered way. Changing rooms are at this level. The same ground-granolithic tread-and-riser unit is used for all staircases; the carriage beams, internally, are formed by r.s. channels with vermiculite concrete casing. The spandrel soffit is plastered.



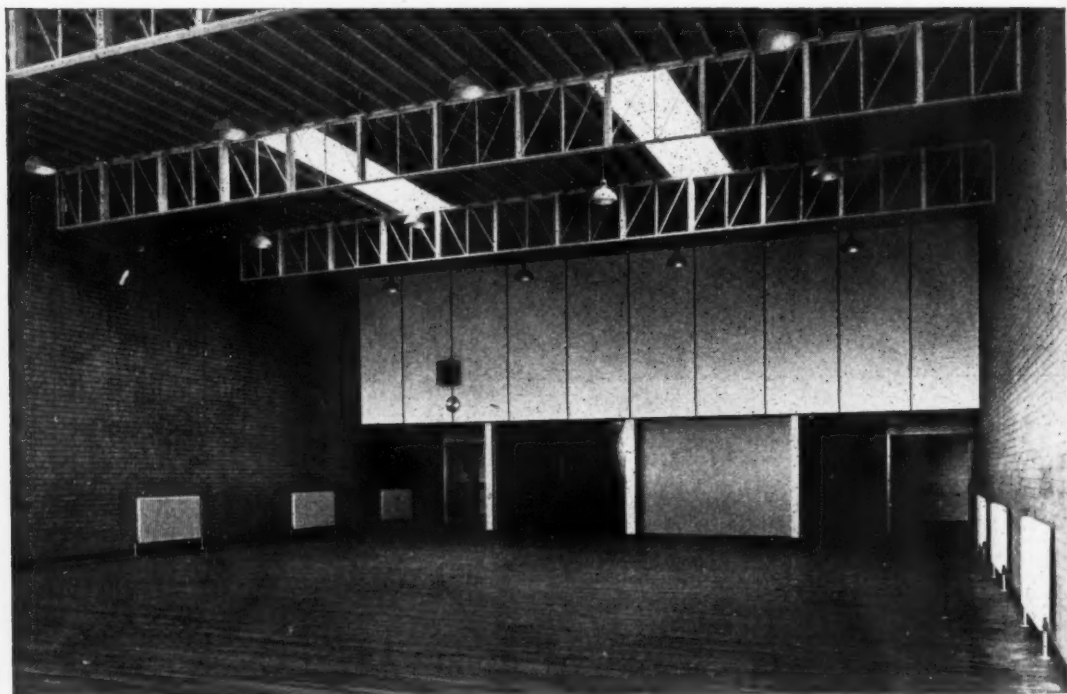




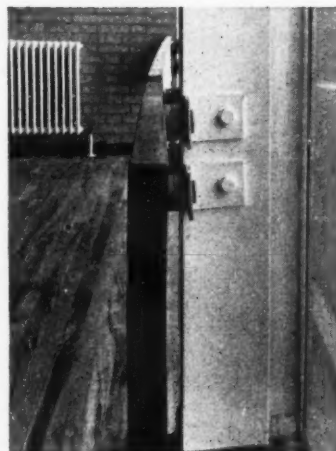
Above: changing rooms are equipped with a locker for each child and with cupboards and counter for towel storage and issue. Above right: floor to the shower rooms is in 6-in. by 6-in. heather-brown quarries, walls 4-in. by 4-in. white



glazed tiles. In this part of the structure pre-cast concrete tee beams are used as secondary beams. The ceiling between the white-painted ribs is fibreboard, distempered yellow-green (2.5GY 8/10).



Above: Above the centre gymnasium (there are three in all) is used for dancing and free activities, and therefore has no fixed equipment. The west wall to the gymnasium is completely glazed and this cannot be considered as an ideal solution for natural lighting for the function of the room. Even with the use of light materials and some roof lighting, bad contrast and sky glare conditions exist in a room where even light distribution without glare is essential. The architect points out that a very fine view is obtained from the west windows of the gymnasium and it would be a great loss if they were provided only with high level glazing. A thick line of catalpas has been planted, which will eventually cut off direct sunshine from these windows. Main steel roof beams in the gymnasium are strengthened to take hanging equipment. The apparatus store is located between the two entrance doors. Right: as a protective measure a crash-bar is placed in front of the Georgian-wired glazing in the gymnasium. Large sponge-rubber washers are used between fixings to give a cushion effect. Exit doors are solid.





**CLIENT'S BRIEF: his stated requirements**

A secondary school for 1,190 girls, to conform to the requirements of the Education Act, 1944, and in accordance with the schedule of accommodation provided by the Education Officer.

It was required that (a) the assembly hall should be multi-purpose, to provide for drama, assembly, dining and teaching space, and (b) high blocks should not exceed four storeys, to

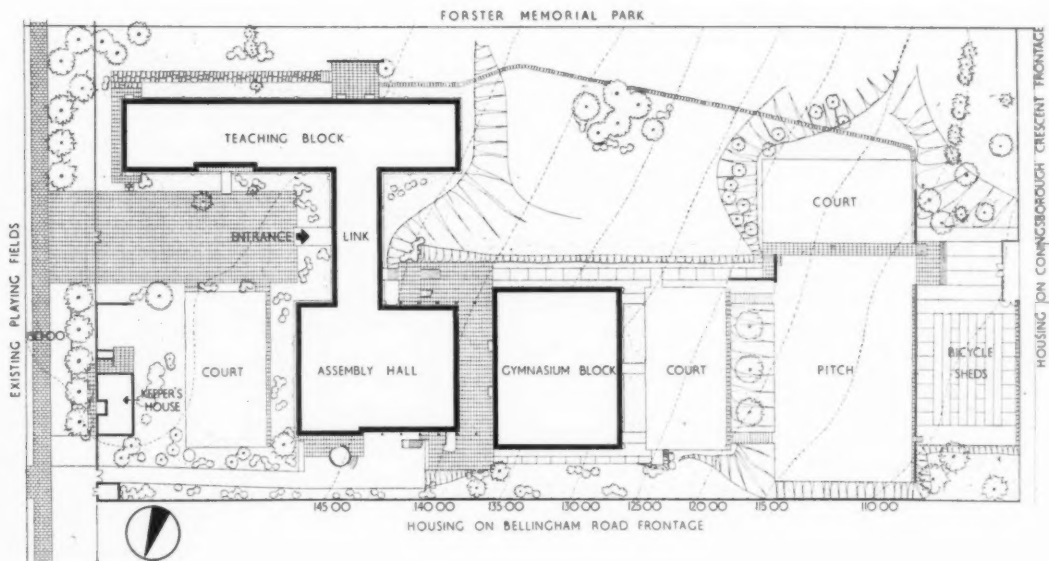
avoid the use of lifts. Close liaison was maintained right through design stage with the LCC specialist school inspectors regarding the layouts and relationships of rooms.

**SITE: topography, surroundings, access, planting**

The site is on fairly high ground, the south-eastern corner being level and falling away sharply to the west. The ground, which was formerly open land used for allotments, lies at the rear of typical inter-war suburban housing in the Bellingham Road on the north side and Conisborough Crescent on the west side. The southern edge is bounded by the well-wooded Forster Memorial Park, and on the east side are the playing fields of an existing

school on higher ground. The main access to the site is in the north-east corner by means of a 50 ft. 0 in. entry from Bellingham Road, which also serves the playing fields and the park; there is secondary access from Conisborough Crescent on the west side. Tarked playing areas are provided in accordance with the Education Officer's requirements, with the addition of a large paved entrance courtyard at the east end. There were few existing trees before

development, and extensive planting has been carried out over the remainder of the site in an attempt to integrate the wooded parklands on the south side with the school site. There are extensive views from the school; to the north and west across suburban Catford towards London; to the south and east, woods and fields in the foreground, with further suburban development beyond.



Site plan

**PLAN: general appreciation**

The school consists of two linked blocks: (a) Repetitive classroom units placed in a four-storey teaching block, sited on the south-east level corner of the site. (b) Large span, single-storey assembly hall and gymnasium using the sloping site, crossing the contours with a minimum of cut and fill.

The classroom block is double-banked, natural lighting for the central corridor being provided by the glazed staircase wells and the open

cloaks areas which occur on every floor. On the ground floor of this block are the communal staff rooms and medical inspection suite. The link block, connecting the two main plan units, contains the main entrance and further staff rooms. The general ground floor level of the multi-storey and link blocks is maintained in the kitchen and dining areas of the assembly hall, and carries round the ramped centre well to the stage. On each side of the centre well,

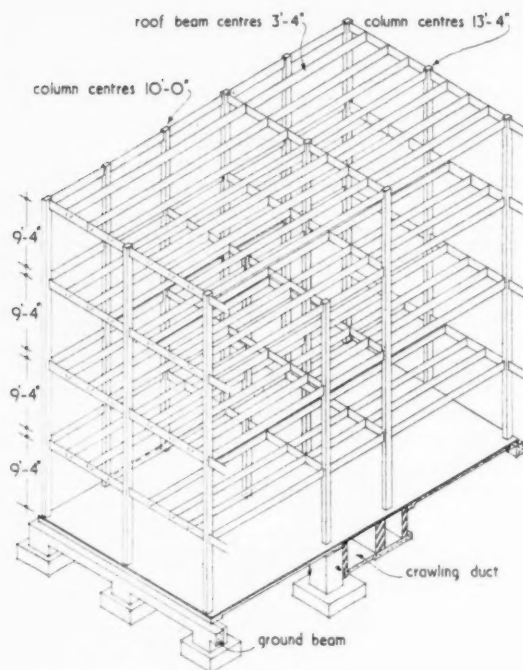
which has fixed seating, are placed three classrooms which can be used as part of the assembly hall when their demountable partitions are removed. Behind the assembly hall stage is a double staircase leading down to the gymnasium. Changing rooms are at mezzanine level, where there is also external access from a covered way passing underneath the assembly hall.

**MAIN CONSTRUCTION: general appreciation**

A light pre-fabricated, modular, steel frame is used throughout the school and is based on that used by the MOE Development Group for

their experimental school at Wokingham. It was developed by Messrs. Hills (West Bromwich) Ltd., in consultation with the LCC to

meet the requirements of a large four storey unit planned on a 40-in. module and finished externally with glass curtain walling.

Basic structure of Hills system [Scale:  $\frac{1}{4}'' = 1' 0''$ ]

## MAIN CONSTRUCTION

Load bearing element	Location	Beam spans	Column grid	Reasons and comments
(a) Box stanchions of 2 r.s. angles welded together to give 8½-in. by 4½-in. or 4½-in. by 4½-in. sections. Main beams and secondary beams of 16-in. welded steel lattice construction	Teaching block	Main perimeter beams 13 ft. 4 in. Floor beams 10 ft. 0 in. and 20 ft. 0 in. at 3 ft. 4 in. centres. Roof beams 20 ft. 0 in. and 30 ft. 0 in. at 3 ft. 4 in. centres	Multiple of the 40 in. module. Perimeter 13 ft. 4 in. by 10 ft. 0 in., 20 ft. 0 in., or 30 ft. 0 in.	Standardisation of structure leads logically to the standardisation of cladding. Both are light, pre-fabricated components, requiring the minimum of site work and giving a minimum erection time. Structural beams are of lattice construction, services above the suspended ceiling can run in either direction quite freely. In the link block and gymnasium, secondary roof beams were omitted due to a national steel shortage at the time of fabrication and pre-cast, reinforced concrete roof beams of a tee section were used spanning 13 ft. 4 in. between the main roof beams.
(b) As for (a) but using pre-cast reinforced concrete tee section secondary beams	Assembly hall (Centre pitched portion)	Perimeter beams 13 ft. 4 in. Roof beams 50 ft. 0 in. Steel purlins 13 ft. 4 in.	13 ft. 4 in. by 50 ft. 0 in.	
	Link block	Perimeter beams 13 ft. 4 in., roof beams 33 ft. 4 in., secondary beams 13 ft. 4 in.	13 ft. 4 in. by 33 ft. 4 in.	
	Kitchen	Perimeter beams 13 ft. 4 in. and 10 ft. 0 in. Roof beams 36 ft. 8 in. and 33 ft. 4 in. Secondary beams 13 ft. 4 in. and 10 ft. 0 in.	10 ft. 0 in. by 26 ft. 8 in., 13 ft. 4 in. by 26 ft. 8 in.	The high level portion of the assembly hall has a pitched roof constructed on the same principle as the teaching block, but the main steel roof beams and connections and also the steel purlins spanning between roof beams were specially designed for the larger spans and the thin roof construction
	Assembly hall (low portion)	Perimeter beams 13 ft. 4 in. and 10 ft. 0 in. Roof beams 20 ft. 0 in. Secondary beams 13 ft. 4 in.	13 ft. 4 in. by 20 ft. 0 in.	
(c) Load bearing brickwork. Other construction as for (b)	Gymnasium	36 ft. 8 in. and 40 ft. 0 in. at 13 ft. 4 in. centres. Secondary beams 13 ft. 4 in.		

Foundation type	Location	Sub-soil	Depth
Mass concrete pads with plinths to stanchion base. r.c. ground beams	Generally except gymnasium	Yellow clay. Bearing capacity 2 tons sq. ft.	5 ft. 0 in. minimum to the bottom of the foundation
Concrete strip	Under load-bearing brickwork to gymnasium		

<i>Outer wall type</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Curtain wall glazing	Generally throughout the school	Vertical galvanised steel bars at 3 ft. 4 in. centres, fixed at plinth, eaves and perimeter beam levels. Horizontal astragals fixed where required. Glass secured by aluminium capping piece	Rough cast Georgian wired, clear Georgian wired, obscured and clear glass ply	This school is one of a line of buildings where glass is exploited as an overall external cladding material. The slenderness of the structure called for a material light in weight, having maximum efficiency, to be economical and easily obtainable, and to conform to the main principle of dry pre-fabricated construction. Heat losses are no greater than in a normally clad building, insulation being provided below sill height in all rooms except gymnasias. Solar gain and sun glare are controlled on the south elevations by the use of Venetian blinds. Curtain wall glazing and concrete cladding are 8 in. in advance of the steel grid and this necessitates the use of pressed steelwork at the junction of the ceiling and curtain wall glazing in the form of a blindbox; a pressed steel sill to close the gap between the internal insulation wall and the wall glazing; and a closure piece between the cross partitions and the perimeter beams or vertical glazing bars. Glass walls are cleaned and panels replaced from cradles slung from booms secured at roof level
Pre-cast concrete cladding	Flank walls to teaching block	Concrete slabs 1 ft. 8 in. by 5 ft. 8 in. with Hopton wood stone aggregate	Ground to a smooth true face	
Brickwork	Load bearing walls to gymnasias	Second quality London stocks	Unpointed	
<i>Roof type</i>	<i>Location</i>	<i>Material</i>	<i>Finish</i>	<i>Reasons and comments</i>
Flat	Teaching block	6 ft. 8 in. by 1 ft. 8 in. by 2½ in. wood-wool slabs, spanning 3 ft. 4 in. 2-in. screed laid to fall	3 layers roofing felt covered with green granite chippings	Woodwool slabs give an extremely light, dry construction, providing good insulation
	Link block, kitchen, gymnasias	Screed laid direct on pre-cast concrete tee beams		
Pitched	Assembly hall			
<i>Floor structure type</i>	<i>Location</i>	<i>Material</i>	<i>Finish</i>	<i>Reasons and comments</i>
Solid	All ground floors	R.C. with waterproof membrane or bitumen tanking	Granolithic wood strip wood block, cork tile, linoleum, quarry tile, polished	The 3 ft. 4 in. by 1 ft. 8 in. pre-cast, reinforced concrete floor slabs are an integral part of the structure. They are light, easily lifted and of manageable size. No shuttering is required, and maximum service in both directions is maintained within the structural floor. Cork tile is used extensively in circulation areas to provide a quiet walking surface. Science rooms, assembly hall and gymnasias have wood block or strip floors; quarry tile in cloak areas, domestic science rooms and pottery room and linoleum in teaching areas
Pre-cast r.c. slabs	All upper floors, except roof	3 ft. 4 in. by 1 ft. 8 in. vibrated concrete slabs	concrete paving slabs, laid on screeds, thickness as required. Hardwood or quarry tile skirtings	
<i>Internal wall type</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
3-in. pre-cast hollow panels	Teaching block	Gypsum plaster 2-ft. by 10-ft. units with reinforced honeycomb core	Undecorated	A lightweight, easily erected partition with good sound insulating qualities. The pre-cast, hollow gypsum panels are built off the floor slabs, but to avoid any risk of cracking due to structural movement they are isolated from the steel frame by a 2-in. space at the top and ½-in. spaces at all vertical points of connection. The panels are clipped to the steelwork at the top at 6 ft. 8 in. centres and are contained in pressed steel channels at the sides which are tap screwed to the stanchions
Block	Link block, kitchen, changing rooms	3-in. clinker block	Plastered	Lower ceiling heights and the complexity of room shapes and sizes would make prefabricated gypsum panels uneconomical
Brickwork	Around staircases	4½-in. brickwork	Plastered	Fire protection
Woodwool	Between floor and sill levels generally	3-in. woodwool ordinary quality	Plastered	To increase thermal insulation
Removable and sliding folding partitions	Assembly hall	Timber frame and facing, woodwool core	Natural finish, polished	The sliding folding partitions were considered necessary for the conversion of the classrooms on either side of the assembly hall into one large room and with the removal of the side screens the whole space can be used in conjunction with the assembly hall

<i>Ceiling types</i>	<i>Location</i>	<i>Material</i>	<i>Finish</i>	<i>Reasons and comments</i>
Suspended	Teaching block and link	Prefabricated vermiculite slabs reinforced with asbestos cement. 3 ft. 4 in. by 1 ft. 8 in. by 1½ in.	Sprayed with water bound distemper	These slabs were chosen chiefly because of their fire resistant qualities for the protection of the structural steel. They also give easy access to services within the structural floor
Suspended	Assembly hall and kitchen	Hardboard, perforated or plain	Fire check paint	The main beams in the assembly hall carry the purlins above them, rather than all beams being within the same depth, as in the classroom block.
Fixed to soffit of concrete tee beams, ribs exposed	Gymnasia, changing rooms	Fibreboard	Distemper	To increase thermal insulation where concrete tee beams alone carry the screed

## ARTIFICIAL LIGHTING

<i>Source and fitting type</i>	<i>Location</i>	<i>Illumination level</i>	<i>Reasons and comments</i>
Mains A.C. electricity. Tungsten filament, plastic dispersal reflectors	Teaching block	12 ft. candles	Illumination is designed to comply with statutory requirements. Special strip illumination is given to all chalkboards in teaching rooms
Spun metal wall fittings	Staircases, gymnasia		
Bulkheads and lamp standards	All outside lighting		
Fluorescent, channel back fitting	Art and needlework rooms	20 ft. candles	
Cold cathode, special design of bare tubes	Assembly hall	8 ft. candles	Minimum of maintenance was required to the high level lighting

<i>Wiring and switching type</i>	<i>Location</i>	<i>Reasons and comments</i>
P.I.L.C. and S., and M.I.M.S. main and submain wiring	In main distribution ducts	Selected to suit the ambient temperature in the heating ducts
V.R.I. cables, enclosed in H.G.S.W. conduit. Sub-circuit wiring	In false ceiling voids, through hollow partitions	Robust installation, good mechanical protection and ease of re-wiring, consistent with economy
Wall type switches throughout		

<i>Power supply type</i>	<i>How distributed</i>	<i>Comments</i>
3 phase, 415 volts, 50 cycles, A.C. supply	V.R.I. cables, enclosed in H.G.S.W. conduit	Circuit wiring to boiler house M.I.M.S. cable to withstand high ambient temperatures and corrosive fumes

## NATURAL LIGHTING

<i>Wall glazing type</i>	<i>Location</i>	<i>Reasons and comments</i>
Curtain wall glazing with vertical bars at 3 ft. 4 in. centres. Opening sashes and ventilators inserted where required	Generally throughout the whole school	The curtain wall glazing at the end wall to the three gymnasia has vertical members made up of two glazing bars welded together to provide the extra strength required for the 16 ft. clear height between fixing points
<i>Roof glazing type</i>	<i>Location</i>	<i>Reasons and comments</i>
Patent glazing on curbs to minimum falls	Lecture rooms	In lieu of wall glazing to give a very even distribution with complete lack of glare
	Art and weaving rooms	In addition to wall glazing to maintain the high lighting factor required
	Dining rooms, changing rooms, gymnasia	In addition to wall glazing to maintain light factor over large floor areas
		All top lights are fitted with eggcrate louvres internally

## HEATING AND VENTILATION

<i>Heat exchanger type</i>	<i>Location</i>	<i>Criteria temp.</i>	<i>Airchange rate</i>
3-in. hospital type radiators	Teaching areas, gymnasia, admin. rooms	62° F.	Natural ventilation
C.I. pipe coils	Corridors, cloak areas	62° F.	Natural ventilation
Fan convector units	Assembly hall	62° F.	3 per hour
<i>Ventilation type</i>	<i>Location</i>	<i>Airchange rate</i>	<i>Reasons</i>
Extract ventilation by means of electric fans	Kitchen	40 per hour	Boost to natural ventilation
	assembly hall	3 " "	
	lecture rooms	4 " "	
	changing rooms	3 " "	
	showers	10 " "	
	lavatories	15 " "	
	kiln room, bathrooms, fume cupboards	Used as required	Internal rooms, only means of ventilation



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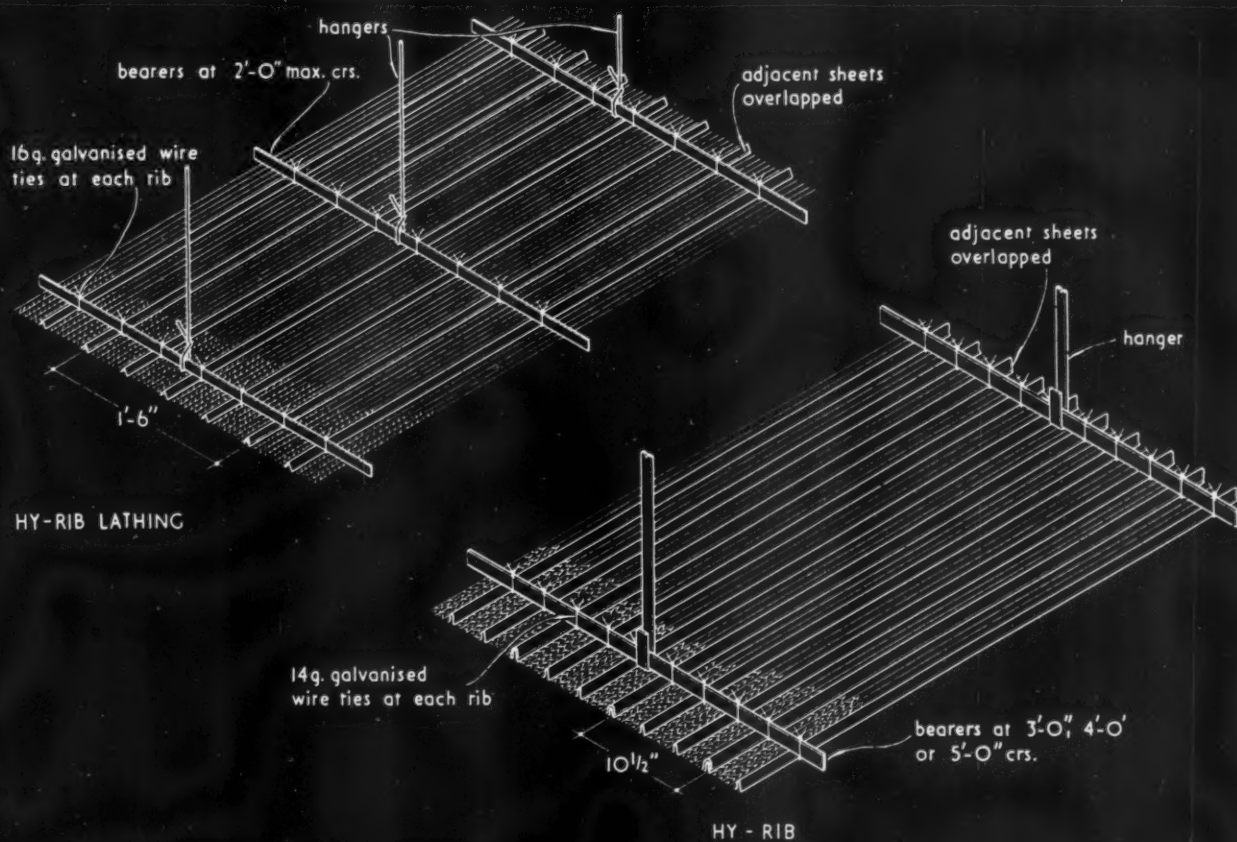
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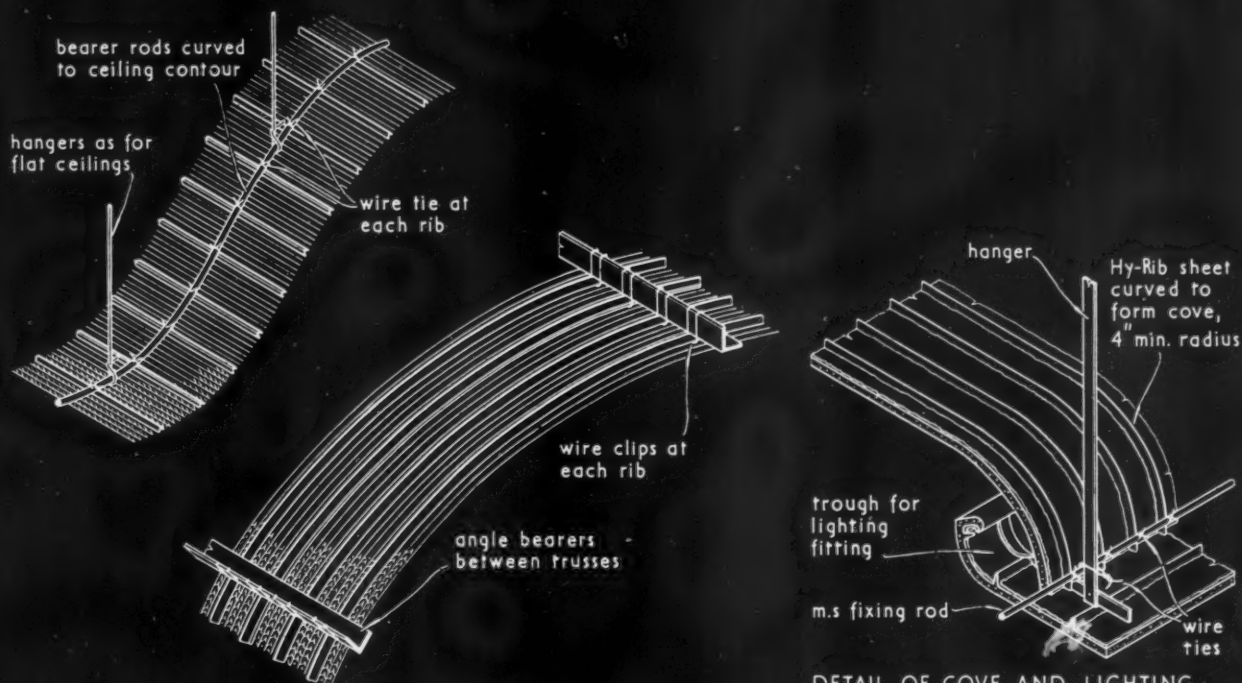
## CEILING | PLASTER

22.F3

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TYPICAL APPLICATIONS TO FLAT CEILINGS



TYPICAL APPLICATIONS TO CURVED CEILINGS.

DETAIL OF COVE AND LIGHTING TROUGH.

HY-RIB<sup>®</sup> RIBBED METAL LATHING: SUSPENDED CEILINGS.  
 Manufacturer: The Trussed Concrete Steel Co. Ltd.

## 22.F3 ·HY-RIB· RIBBED METAL LATHING : SUSPENDED CEILINGS

This Sheet describes the construction of suspended plaster ceilings using Hy-Rib and Hy-Rib Lathing.

## General

Hy-Rib is an expanded steel mesh stiffened integrally by longitudinal ribs  $\frac{3}{8}$  in. deep at  $3\frac{1}{2}$  in. centres. Hy-Rib Lathing is similar but of lighter construction, the ribs being  $\frac{3}{8}$  in. deep at  $4\frac{1}{2}$  in. centres. Ceilings using either can be hung from any type of floor or roof construction and the depth of suspension can be arranged to suit any requirements. Curved ceilings are easily formed.

The drawings on the face of the Sheet show typical applications of both types to flat and curved ceilings.

## Sizes

Hy-Rib sheets are manufactured from 24-, 26- or 28-gauge material in the following sizes:

24g.,  $10\frac{1}{2}$  in. wide by 6 ft. 0 in. to 13 ft. 0 in. long in 1 ft. 0 in. increments.

26g.,  $10\frac{1}{2}$  in. wide by 6 ft. 0 in. to 16 ft. 0 in. long in 1 ft. 0 in. increments.

28g.,  $10\frac{1}{2}$  in. wide by 6 ft. 0 in., 7 ft. 0 in. or 8 ft. 0 in. long.

Hy-Rib Lathing is manufactured from 26-gauge material in sheets 1 ft. 6 in. wide by 7 ft. 8 in. or 8 ft. 2 in. long.

## Fixing

Where steel rods or flats are used as ceiling bearers, these are supported in hooks formed in the suspension hangers and are securely wired into position. Sizes of bearers are given in the following table:

Type	Spacing of bearers	Sizes of bearers for hanger spacings of:			
		2' 0"	3' 0"	4' 0"	5' 0"
24g. Hy-Rib	5' 0"	—	—	—	$1\frac{1}{2}" \times \frac{1}{4}"$
26g. Hy-Rib	4' 0"	—	—	$1" \times \frac{1}{4}"$	$1\frac{1}{2}" \times \frac{1}{4}"$
28g. Hy-Rib	3' 0"	—	$\frac{3}{4}" \times \frac{3}{16}"$	$1" \times \frac{3}{16}"$	$1\frac{1}{2}" \times \frac{1}{4}"$
Hy-Rib Lathing	2' 0"	$\frac{3}{8}"$ dia.	$\frac{3}{8}" \times \frac{3}{16}"$	$1" \times \frac{3}{16}"$	$1" \times \frac{1}{4}"$

The side ribs of the sheets and the ribs forming the end laps are interlocked to give a true, continuous, keyed surface. The sheets are firmly secured to steel ceiling bearers with galvanised wire ties or to timber joists with galvanised clout nails.

## Plastering

Retarded hemihydrate gypsum plaster, prepared for use on metal lathing, is most suitable as a ceiling plaster on Hy-Rib. B.S. Code of Practice CP.211 (1949) *Internal Plastering* contains a detailed specification for this plaster.

Attention is drawn to Building Research Station Digest No. 69, *Avoiding Defects in Internal Plastering*, page 3, column 2: *Plastering materials range from the cement type that shrink strongly as they set and dry to the gypsum type that expand slightly on setting and subsequently shrink very little.*

*Mixes based on cement or lime may take weeks to dry, particularly in cold, damp weather. The application of further coats before full drying and shrinkage has taken place is a frequent cause of subsequent cracking or spalling.*

## Relevant British Standard

B.S. 1369 : 1947 *Metal lathing (steel) for plastering.*

## Further Information

The manufacturer maintains a technical advisory department available to answer questions and to supply preliminary and detailed drawings where necessary.

Compiled from information supplied by:

The Trussed Concrete Steel Co. Ltd.

Head Office: Truscon House, 35-41, Lower Marsh, London, S.E.1.

Telephone: Waterloo 6922.

Birmingham Office: 133, Edmund Street, Birmingham, 3.

Telephone: Central 2345/6.

Bristol Office: 17, Orchard Street, College Green, Bristol 1.

Telephone: Bristol 21861.

Glasgow Office: 10, India Street, Glasgow, C.2.

Telephone: Central 0157/8.

Liverpool Office: 3, Tithebarn Street, Liverpool 3.

Telephone: Central 5281/2.

Manchester Office: 50, Seymour Grove, Old Trafford, Manchester 16.

Telephone: Trafford Park 2766.

York Office: 56, Shipton Road, York.

Telephone: York 4594.

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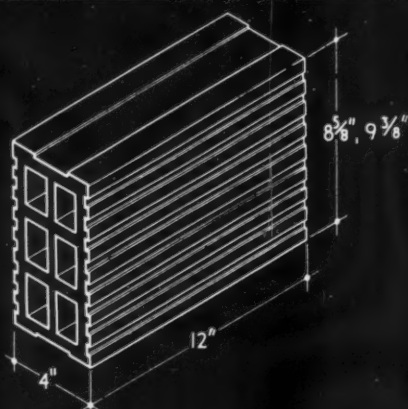




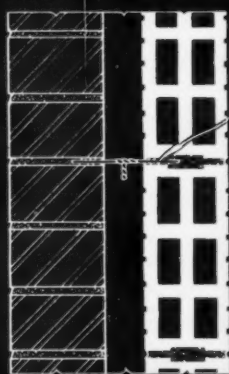


**BUILDING BLOCKS | HOLLOW CLAY | GENERAL DATA****14.B1**

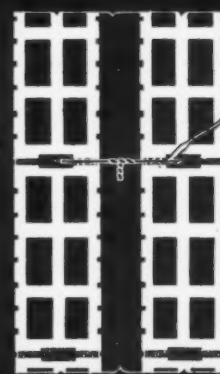
The Architects' Journal Library of Information Sheets 534. Editor: Cotterell Butler, A.R.I.B.A.



**STANDARD SIX-CAVITY BUILDING BLOCK.**  
(half blocks also available)

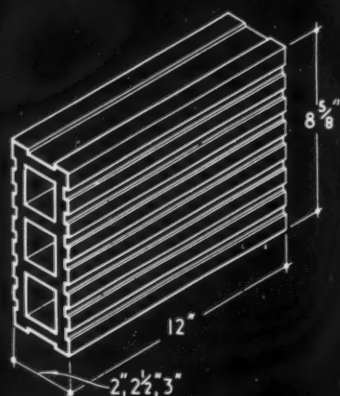


butterfly-type wire ties normally every third course of bricks

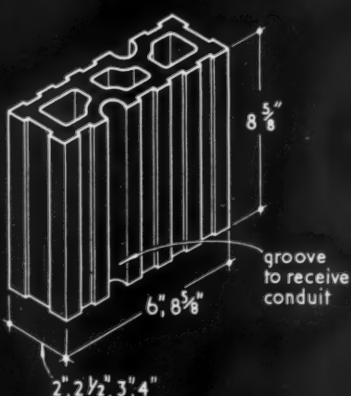


ties normally every second course

applications of six-cavity blocks

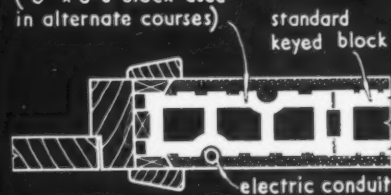


**STANDARD KEYED PARTITION BLOCK.**  
(half blocks also available)

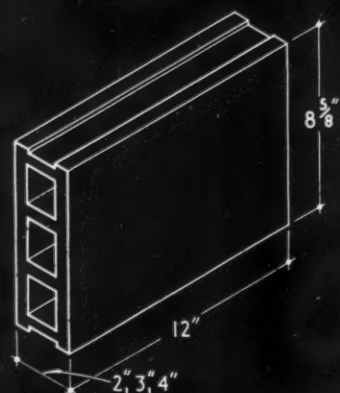


**CONDUIT BLOCK.**

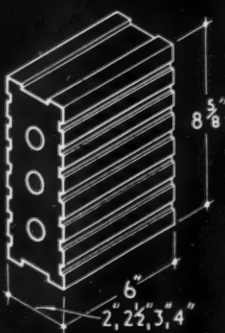
8 5/8" x 8 5/8" conduit block  
(6" x 8 5/8" block used in alternate courses)



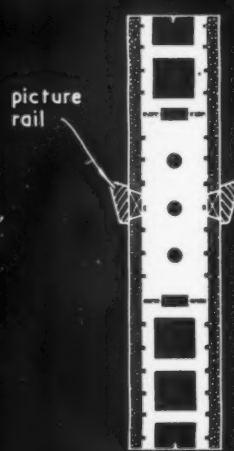
application of conduit blocks



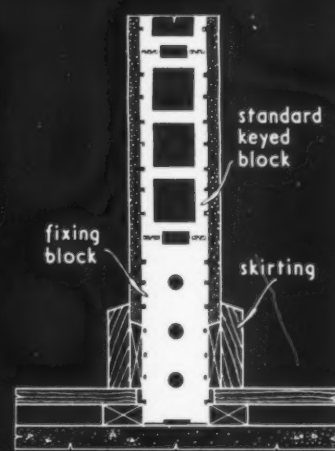
**STANDARD SMOOTH-FACED PARTITION BLOCK.**  
(half blocks also available)



**FIXING BLOCK.**



picture rail



standard keyed block

fixing block

skirting

typical applications of fixing block

## 14.B1 'PHORPRES' HOLLOW CLAY BLOCKS FOR WALLS AND PARTITIONS

This Sheet supersedes Sheet 14.B1 published 27.5.54 and describes Phorpres hollow clay blocks for walls and partitions. Sheet 14.B2 deals with the use of Phorpres blocks for forming walls and Sheet 14.B3, with floor blocks.

### Materials

Phorpres building blocks are manufactured from gault (buff in colour) and also weald clay (terra cotta in colour), the latter being a high-quality engineering clay.

The clays are extensively tempered and extruded into hollow blocks, which are then entirely mechanically handled throughout a strictly controlled drying and burning process. The clays are generally free from injurious particles of lime or salts and the burning process renders the material entirely inert, minimising the occurrence of shrinkage or cracking in the finished plastered surface. The finished product is uniform in size and shape and free from excessive winding and bowing (see B.S. 1190 : 1951 for tolerances) ensuring minimum laying and plastering costs.

### Sizes and Weights of Building and Partition Blocks (Keyed)

Type of block	Size	Wt. of blocks (lb. per sq. yd.)*		Yards per ton	
		Gault	Weald	Gault	Weald
Partition blocks	12" x 8½" x 2"	89	97	25½	23½
	12" x 8½" x 2½"	94	97	23½	23½
	12" x 8½" x 3"	108	116	20½	19½
	12" x 9½" x 3"	111 (11 blocks)		20½	
Building blocks	12" x 8½" x 4"	134	142	16½	15½
	12" x 9½" x 4" (6-cavity)	138 (11 blocks)		16½	

\* 12 blocks per sq. yd. except where otherwise stated.

### Crushing Strength

Average crushing strengths of individual blocks (weald and gault) tested on edge.

Type of block	Crushing strength (lb. per sq. in.)
Non-loadbearing partition blocks	2½"-3" .. 575 (B.S. requires 200)
	2" .. 1,100 (B.S. requires 200)
Loadbearing building blocks	4" (6-cavity) .. 600 (B.S. requires 500)

From routine crushing strength tests by the Technical and Research Laboratories, London Brick Company Limited.

### Strength of Walls

For the purposes of test, wall panels 9 ft. high x 4 ft. 6 in. wide were built in 1:3 rapid-hardening cement and the following results were obtained:—

Load tests on wall panels		
	2" blocks	3" blocks
Failing load—tons .. .. .	44.1	65.0
Failing load per ft. run—tons .. .. .	9.53	13.91
Failing stress—lb. per sq. in. .. .. .	890	866
Failing stress in wall of blocks—lb. per sq. in. .. .. .	57.2	55.7
Failing stress in wall of blocks—lb. per sq. in. .. .. .	1420	1890

### Thermal Transmittance "U" of Double-Skin Cavity Walling

4½ in. brick + 4 in. block (unventilated)\* = 0.25

4½ in. brick + 3 in. block (unventilated)\* = 0.30

4 in. block + 4 in. block (unventilated)\* = 0.25

\* Plastered internally

Preliminary results from full scale tests at the Technical and Research Laboratories, London Brick Company Limited.

It should be noted that the generally accepted standard "U" value for domestic housing is 0.30.

### Fire Resistance

3 in. block .. .. . grade C (2 hours)

Two skins 4 in. building blocks .. grade B (4 hours)

### Applications

**Walls and partitions:** Phorpres hollow clay blocks are adaptable building units for all types of partition work, internal linings to brickwork and party wall construction. They are manufactured to comply with the crushing strength tests laid down in B.S. 1190 : 1951, and can therefore take a full structural and loadbearing part in building construction. Their strength is combined with lightness in weight and high fire-resisting qualities.

The course heights of 8½ in. and 9½ in. enable the blocks to be bonded perfectly with 2½ in. and 3 in. brickwork respectively.

**Key for plaster:** The bond or physical adhesion of a rendering or plaster is dependent upon the inherent porosity of the backing material, and in this respect Phorpres blocks possess a balanced absorption or suction value. This is further assisted by the mechanical keying provided by grooves of definite dovetail form. This mechanical key is of first importance in the early stages of drying and setting, when cracking may result from vibration, inevitable during construction. Such vibration without the support provided by mechanical keying may also interfere with, or even prevent, the development of the necessary physical adhesion.

### Laying Instructions

The general practice is to lay Phorpres hollow blocks in 1 : 1 : 6 cement/lime/sand. This mix can, of course, be varied to suit particular conditions but too rich a mortar and thick joints should be avoided. Elasticity of joint is of great importance in all partition work and for this reason also partitions should not be pinned up too tightly under beams. The amount of water in the mix is reduced to a minimum owing to the texture of the material.

### Conduit Partition Blocks

These blocks have been specially designed to eliminate chasing for electrical conduits in finished work and to bond in with main partition walls.

The groove in each block coincides with that of the blocks above and below it to form a continuous channel. In this way a conduit can be provided for on one or both sides of the partition.

### Fixing Blocks

These are manufactured for use with the standard partition blocks, to be built in where fixings for skirtings, picture rails etc. are known to be required.

### Patents

**Conduit partition blocks:** The manufacturers are the patentees of these blocks.

This Series of Sheets on bricks and blocks covers general data on, and applications of, common, facing, cellular and keyed bricks, hollow walling, partition and floor blocks.

### Compiled from information supplied by:

London Brick Company Limited.

Head Office : Africa House, Kingsway, London, W.C.2.

Telephone : Holborn 8282.

Telegrams : Phorpres, Westcent, London.

### Midland District

Office : Prudential Buildings, St. Philip's Place, Birmingham, 3.

Telephone : Colmore 4141.

### South Western

District Office : 11, Orchard Street, Bristol, 1.

Telephone : Bristol 23004/5.

### Northern District

Office : St. Paul's House, St. Paul's Street, Leeds 1.

Telephone : Leeds 20771



<i>Water heater type</i>	<i>Location</i>	<i>Fuel type</i>	<i>Stoking method</i>	<i>Reasons</i>
One C.I. sectional H.W. boiler, 1,090,000 B.T.U.'s per hour	Boiler house	200 seconds oil	Automatic	As for boiler type
<i>Hot water storage type</i>	<i>Location</i>	<i>Materials</i>	<i>Capacity</i>	
Two calorifiers	Boiler house	Galvanised steel	600 gallons each	
<i>Pipes and jointing types</i>	<i>Location</i>	<i>Materials</i>		
Hot and cold water, galvanised tube with flanged and screwed joints throughout	Main horizontal pipe ducts. Main vertical pipe ducts	Galvanised steel Class "B"		
Heating, black tube welded and screwed	Floor construction voids	Black tube Class "B"		
<i>Cold water storage</i>	<i>Location</i>	<i>Materials</i>	<i>Capacity</i>	<i>Comments</i>
Sectional tanks	Tank room on top of teaching block	Pressed steel	6,545 gallons	Two sectional tanks with independent supply to each. Valved outlets to common header

### SPECIAL ACOUSTICAL TREATMENT

<i>Sound absorption material</i>	<i>Location</i>	<i>Absorption Coefficient</i>	<i>Comments</i>
Acoustic tile	Rear wall assembly hall		Used to correct reverberation in assembly hall
Rockwool behind perforated hardboard	Part of assembly ceiling, kitchen	Low 0.15, Medium 0.9, High 0.45	Used where ceiling joins high level windows, to absorb reflected sound
Pre-cast vermiculite slabs	Ceilings throughout teaching block		Good acoustical properties were only one of many requirements which are supplied by this material

### SOIL WASTE

<i>Type of system</i>	<i>Location</i>	<i>Materials</i>	<i>Method and comments</i>
Separate systems to separate sewers	In floor construction voids to vertical pipe ducts. Under ground floor slab to external drains	C.I. in and under building S.G.W.	Traditional but with over-size collection pipes to branch wastes to reduce anti-syphonage. Collection pipes trapped and ventilated before entering vertical stack

<i>Drain types</i>	<i>Location</i>	<i>Materials</i>	<i>Method and comments</i>
Acid collection and dilution	Laboratories	Combined sink and receiver with vulcanite stand pipe	Using the combined receiver and sink there is no need for any special pipe materials and drain runs

<i>Rainwater disposal type</i>	<i>Location</i>	<i>Materials</i>	<i>Comments</i>
Roof jumps	Top of all R.W.P's	Pressed steel lined with felt, to C.I. R.W.P's	All R.W.P's are located in internal vertical ducts
Gutters	Bottom of roof slope over assembly hall	Galvanised pressed steel, bitumastic paint finish	

### FIRE

<i>Structural precautions</i>	<i>Grade of Protection</i>	<i>Apparatus, Sprinklers, etc.</i>
1-in. pre-cast vermiculite casing to stanchions	2 hours	Hosereels generally, fed from fire mains. Fire warning bells
1-in. vermiculite on expanded metal	2 hours	
1½-in. pre-cast vermiculite suspended ceiling panels		

<i>Planning precautions</i>	<i>Means of escape</i>
Two private fire hydrants. Access for fire appliances along the main entrance from Bellingham Road	Two staircases to teaching block providing alternative means of escape. Emergency doors to assembly hall fitted with panic bolts. External doors to gymnasium. Alternative external doors to boiler room

### COLOUR

<i>Paint types</i>	<i>Where used</i>	<i>Paint types (continued)</i>	<i>Where used</i>
Emulsion	Walls generally	Two coats linseed oil	Vermiculite ceilings
Oilpaint (gloss)	Softwood joinery	Wallpaper	Selected walls
Clear plastic	Hardwood joinery	Fire check paint	Assembly hall ceiling
Wax polish	Hardwood skirtings	Two coats linseed oil	Bench tops

## TIME SCHEDULE

<i>Contract signed</i>	<i>Work commenced</i>	<i>Work completed</i>	<i>Type of contract</i>
November, 1952	November, 1952	June, 1955	Lump sum based on Bills of Quantities
<i>Comments</i> Time taken on drawings 10 months. October, 1951 to August, 1952			
Separate contracts for the supply only of components by Hills (West Bromwich) Ltd., which were fixed under sub-contract			

## SITE AND PLAN ANALYSIS

<i>Site accommodation</i>	<i>Area in acres</i>	<i>Per cent. of total</i>	
Building	0.838	15.0	
Hard playing area	1.035	18.5	
School garden	0.068	1.2	
Planting near building	2.632	47.1	
Roads	0.230	4.1	
Paths and paving	0.728	13.0	
Caretaker	0.057	1.1	
Total	5.588	100 per cent.	

<i>Plan accommodation</i>	<i>Area in sq. ft.</i>	<i>Per cent. of total</i>	<i>Area per place</i>
Hall and stage	6,444	7.90	5.33
Gymnasia and changing	10,473	12.80	8.73
Library	1,520	1.86	1.26
Stores, including schoolkeeper and cleaners	2,780	3.40	2.38
General and practical classrooms (including some storage)	28,510	34.90	23.76
Dining and kitchen	5,905	7.25	4.92
Sanitary accommodation	5,752	7.04	4.78
Staff rooms and administration	4,288	5.25	3.57
Service	2,857	3.50	2.38
Circulation	13,104	16.10	10.92
Total	81,633	100 per cent.	68.03

## COST ANALYSIS

Note: Gross costs = net cost plus external works.

External works include (a) drainage works beyond m.h.'s adjacent to buildings, (b) road paths and fencing, (c) site layout, planting, (d) caretaker's house, and (e) playing fields

No. of places	1,200
Floor area	81,633
No. of sq. ft. per place	68.03
Net. cost	£288,000
Net. cost per place	£240
External works	£35,339
Gross cost	£323,339
Gross cost per place	£269 9s.
Tender date	October, 1952

<i>Element</i>	<i>Cost per sq. ft.</i> s. d.	<i>Element</i>	<i>Cost per sq. ft.</i> s. d.
Preliminaries and insurance	3 3	Cloakroom fittings	7
Contingencies	2 3	Wall finishes	1 2
Work below ground floor level	6 11	Built in fittings	3 11
External walls and facings	11 8	Ironmongery	6
Internal partitions	2 4	Plumbing (external)	4
Frame	10 4	" (internal)	1 9
Upper floor construction and stairs	3 3	Sanitary fittings	6
Roof and roof lights	3 9	Electric installation	4 8
Floor finishes	4 0	Heating	6 0
Ceiling finishes	3 3	Drainage	11
Windows and doors (external) incl. glazing	4 3	Decorations	1 8
Doors (internal)	1 2	Playgrounds and paved areas	1 8
W.C. doors and partitions	6	Total net. cost per sq. ft. of floor	80 7

## COST COMMENTS

It is interesting to compare this analysis with that of Barnet Secondary School (AJ, February 24), especially as the tenders were submitted within a month of each other.

Note that the architect has been able to reduce the area per place from 75 ft. super. at Barnet to 68 at Catford. With a MOE target cost of £240 per place, the architect is thus in a position to increase the overall cost per foot super. by some 10%.

Even allowing for this increase the foundations at Catford are more expensive than at Barnet. It would be interesting to know whether this

was due to the increased loads imposed by the four-storey teaching block, the sloping nature of the site or compliance with more stringent byelaw requirements.

Before conclusions can be drawn between the two different forms of external wall construction, a little regrouping is necessary as the curtain wall glazing at Catford combines its own finish and decoration. In addition, the cost per foot super. of wall finish and decoration attributable to the inside face of the external wall must be known. The elements to group and compare would be: external wall, external

windows and doors, glazing, wall finish and decorations to the inside face of the external wall. It is also interesting to note that the cost element of 8 ft. 3 in. frame at Barnet and 3 ft. 4 in. frame at Catford are similar.

Useful conclusions might be drawn from a more detailed study of the cost of roof and rooflights, as the costs at Barnet appear greater than one would expect from the differing roof to floor area ratio.

A further breakdown and detailed study of these two schools might provide useful information on the effect of storey height on cost.

## TECHNICAL SECTION

*This week John Eastwick-Field and John Stillman continue their article (begun July 21, 1955) on the subject of the design and machining of joints. This section is devoted to critical notes on some of the remaining 80 important joints. Next week the article will be concluded with notes on the various fastenings used in woodwork, and several machines in common use for preparing joints will be illustrated. The drawings are by Robert Maguire. For purposes of classification, the series is numbered 15, Materials: Timber.*

Previous articles in this series appeared September 30, 1954; November 25, 1954; January 13, 1955; March 24, 1955.

### THE DESIGN AND PRACTICE OF JOINERY

by John Eastwick-Field and John Stillman

#### 6: THE DESIGN AND MACHINING OF JOINTS, 2

##### GROUP 2: FLAT SECTIONS JOINED AT RIGHT ANGLES TRANSVERSELY, AS IN CONSTRUCTION OF BOOKCASE

The joints in this group can be sub-divided into two categories: those designed to join the *ends* of two boards to form a right angle, and those designed to join the end of one board to another board which continues past it.

The three most common examples of the first category are the dovetail, whether made by hand or machine; the corner locking joint sometimes called a "box" joint; and the tongue and groove joint (Figs. 1, 3 and 11). Mitred joints in one form or another are also regularly used when the particular appearance which they give is required.

In the dovetail tongue and grooved joints, the two pieces of timber are held firmly together at least in one direction by

the way the pieces of wood are cut to form the joints: and in the corner locking joint they are held by the restraint of the glue which is spread over the extensive "lines" offered by the "teeth."

In the second category, the commonest joint is a simple housing (Fig. 12). There are variations of this joint which both improve the appearance and increase the strength, and seven of these variations are described later.

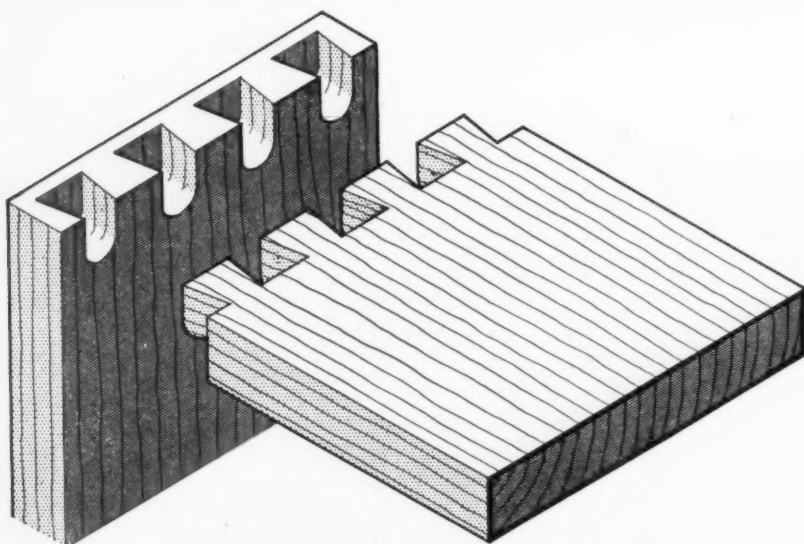


Fig. 1.

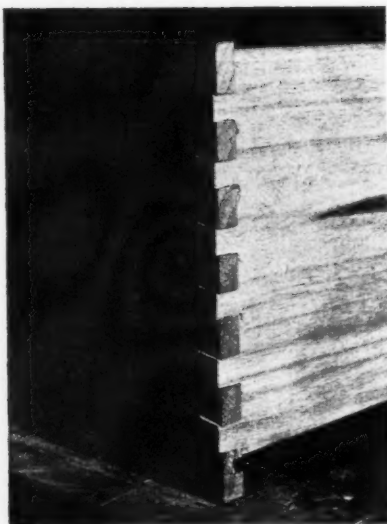
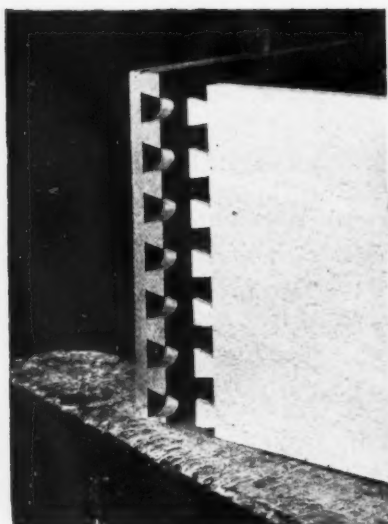


Fig. 1 (left). *Lapped or Stopped Machine Dovetail*: A useful joint made by machine and commonly used for drawer fronts. Its characteristics are that it is strong in tension, and that it is neat in appearance. Fig. 2 (below) shows how the two pieces of wood are held together for machining, the work being done on both pieces simultaneously. The two pieces are clamped at right angles into position in an attachment, then moved along the lines of a jig, producing the shape shown on the sketch. The rounded portion is one of the features of the joint which distinguish it from a hand-made dovetail, but when put together the appearance is similar to a hand-made joint except that the dovetails and the spaces between are equal in the machine-made joint whereas in the hand-made joint there are fewer dovetails and they are usually much thinner. The photograph extreme left, shows a dovetail joint which can be used when lapping is not considered of importance. It is made in the machine which we have been describing, but both pieces are clamped vertically and the cutter is carried through their full thickness.

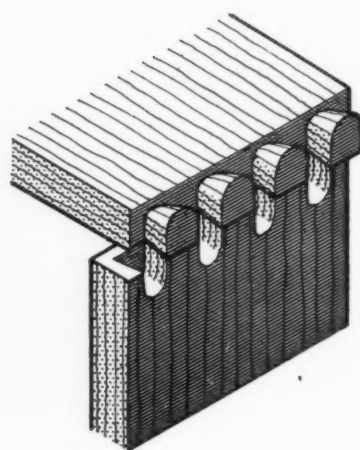


Fig. 2.

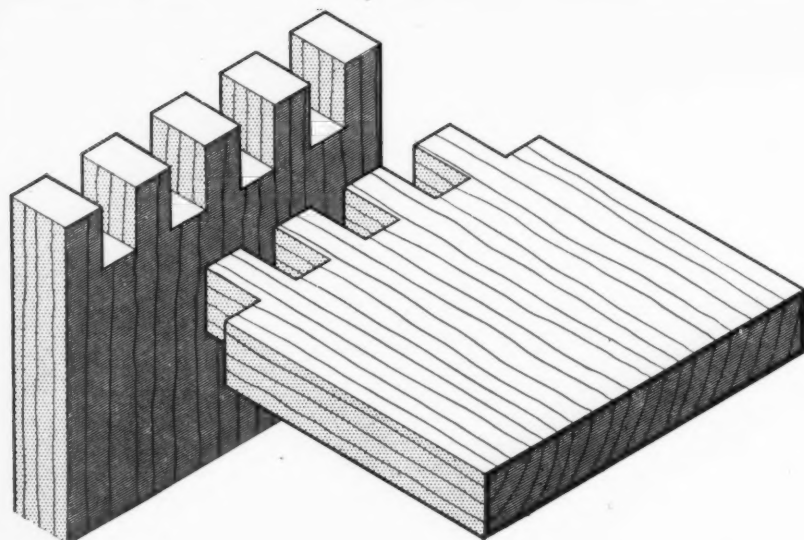


Fig. 3.

Fig. 3. *Corner Locking Joint*: This is essentially a machine-made joint, relying on glue for its strength, see right-hand photo. It is made on an attachment to a vertical spindle moulder, and although the machine is an expensive item, production is cheap and quick. It has been associated with the manufacture of boxes and instrument cases, and also with shop-fitting. It does not usually feature in builders' joinery, but provided its appearance were acceptable there seems no reason why it should not be used as a cheaper alternative to a dovetail joint.



# *Interior Partitioning?*

INSULATION BOARD CORE,  
FACED BOTH SIDES HARDBOARD

CORK CORE,  
FACED RESIN BONDED BIRCH PLY

RESIN BONDED  
PINE CORE BLOCK BOARD  
GABOON FACED

CORK CORE, BOTH SIDES ALUMINIUM  
—LIGHT WEIGHT ; FOR HEAT AND  
ACOUSTICS INSULATION

ASBESTOS CORE FACED BOTH SIDES  
WITH GALVANIZED STEEL  
APPROVED FIRE-PROOF PARTITIONING

## *Have you a problem?*

Can we help to solve it? We specialize in the manufacture of composite materials suitable for any type of partitioning. Our technical services are at your disposal.

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TIMBER AND VENEER MERCHANTS  
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LONDON, E.2

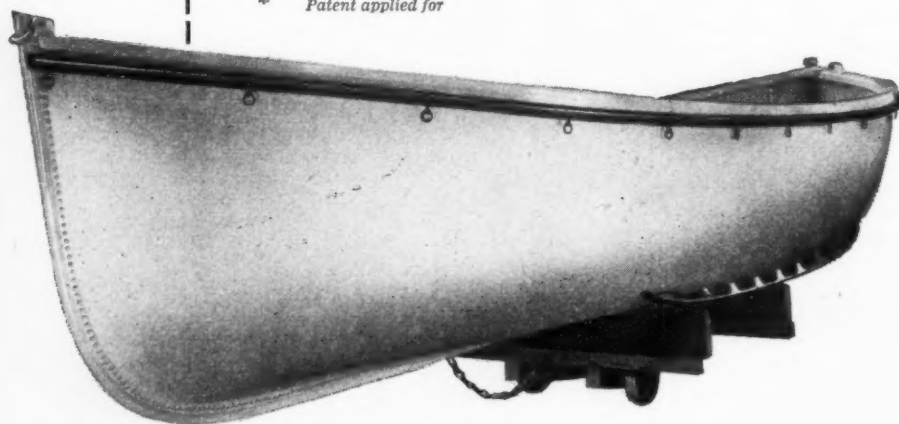
Telephone: Shoreditch 7654 (10 lines)

Telegrams: "Almoner," London

## Moulding the future...

Here is as tough a specimen as ever swung from a davit or dashed to the rescue. This Watercraft 24 ft. lifeboat\* is made of Fibreglass Reinforced Plastic, with gunwale, hull and seat supports moulded in one piece. No longer in the experimental stage, Watercraft lifeboats are being put into service by the Ellerman Lines and other prominent shipping companies. Let the surf fly, the nights freeze, the days swelter — nothing can rot, rust, warp or impair the strength of this impressive new evidence in favour of F.R.P. The Filabond polyester resin was supplied by Beck Koller & Co. (England) Ltd.

\* Patent applied for



**FIBREGLASS**  
TRADE MARK

the backbone of reinforced plastics

FIBREGLASS LIMITED, RAVENHEAD, ST. HELENS, LANCs. ST. HELENS 424. FACTORIES AT ST. HELENS, LANCs. AND POSSILPARK, GLASGOW

## GROUP 2: continued

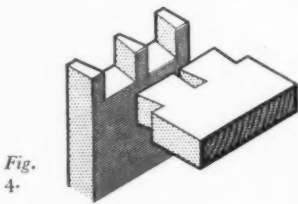


Fig. 4.

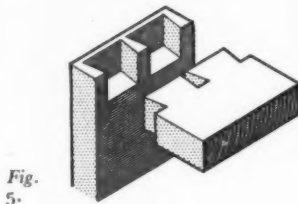


Fig. 5.

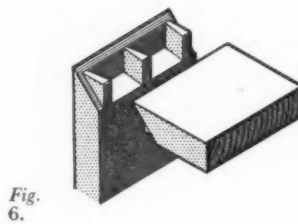


Fig. 6.

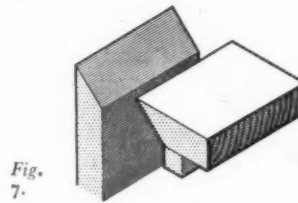


Fig. 7.

Figs. 4 and 5, Common and Lapped Dovetails: These are traditional hand-made joints requiring skill and time. They are expensive to make and can be justified only when their refined appearance is particularly desired. This would mainly apply to polished hardwoods. It is common practice to make the angle of splay of the dovetail 1 : 8 for hardwoods and 1 : 7 for softwoods.

Fig. 6. Mitred Secret Dovetail: A joint which is rarely used owing to its cost, and which can be made only by hand. It is seldom seen except in cabinet work, and as an exercise for joinery apprentices. Its obvious merits are that it combines the strength of a dovetail with the appearance of a mitre.

Figs. 7 and 8. Mitres, with Block and with loose tongue: It will be seen from the various illustrations that the visual effect of a "mitred" joint is quite different from that of dovetail and from other joints which do the same job: in the mitred joint the means of holding the joint together can easily be hidden and there is no visible end grain. Typical positions where this would be desirable are the corners of plinths and bookcases; also corners of picture rails and skirtings on site.

In Fig. 7 the joint is merely glued and possibly pinned, and the block can give either permanent or temporary reinforcement, and need not come to the face of the joint. Its chief function is to "position" the two pieces to be joined and to hold them during cramping.

Both these joints are difficult to cramp, especially in wide boards, and some difference of opinion exists as to whether the mitred joint with loose tongue is really satisfactory in practice. There are a number of ways of cutting a tongue on the solid as shown in the photograph (which also shows the cross tongue mitre). The best method is, however, the subject of much controversy.

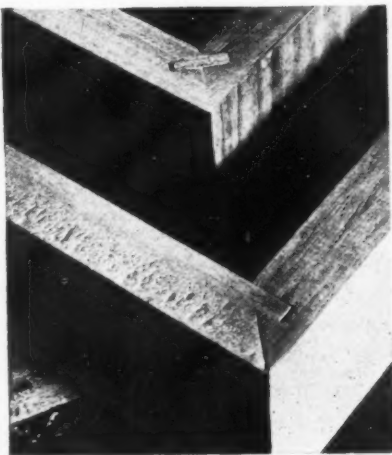


Fig. 8 the tongue, which likewise need not come to the face, also locates the two pieces as well as giving additional strength. To be of any value, the tongue must be of cross grained timber or of ply.

Fig. 8.

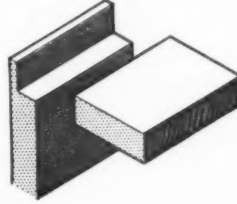
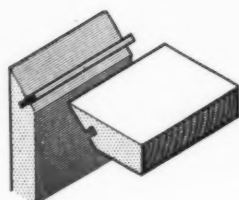


Fig. 9.

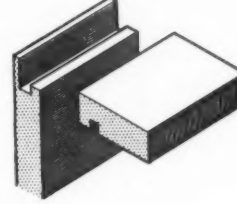


Fig. 10.

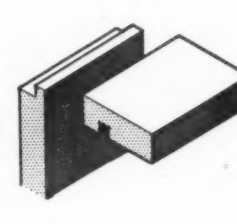


Fig. 11.

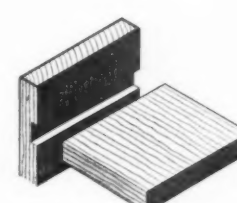


Fig. 12.



Fig. 9. Rebated Joint: This is a joint which can be cheaply made. It has little strength and is often fixed with pins or screws as well as glue. It is used in small cupboards, boxes and backs of cupboards. The purpose of the rebate is to help locate the two pieces to be joined, and to prevent the end grain showing on one face.

Fig. 10. Tongued and Lapped: This joint has the characteristics of the lapped joint with added strength given by the tongue. It is sometimes used as a cheaper alternative for drawer fronts. It is, however, not a very sound joint since the short grained end which laps over the tongue is narrow and therefore weak.

Fig. 11. Tongued Joint: This joint by comparison with Fig. 10 has a larger section of short grain lapping over the tongue and is correspondingly stronger, but the end grain is not hidden. It is frequently used for the junction of the head and jams of door linings where the end grain would in any event not be visible.

Fig. 12. Housed Joint: This is a simple joint which fixes the position of the two pieces of timber but does not hold them together mechanically. If accurately machined and glued it is quite satisfactory for such positions as the junction of the end of a shelf with a side member.

A form of housed joint is used universally in the construction of traditional closed string staircases where the treads and risers are jointed to the stringers. In this position the grooves are made wider at one end than the other and wedges are inserted to increase rigidity and to secure the members while the glue sets. (See photograph.)

Fig. 13. Shouldered Housing: A joint which is useful if there should be grooves or mouldings on the member which is shown horizontally in Fig. 13. It is more expensive than the simple housing, and it is questionable whether it has any advantages over it, except where there are mouldings.

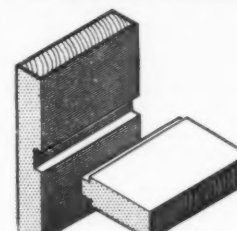


Fig. 13.

They have  
spoken...



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Fig.  
14.

Fig.  
15.

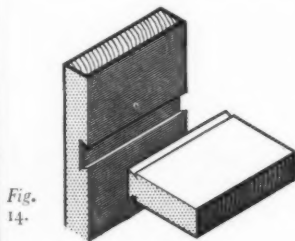
Fig.  
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Fig.  
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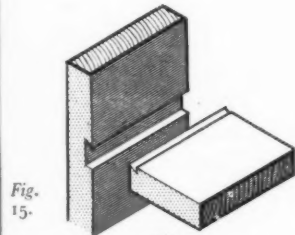
Fig.  
21.



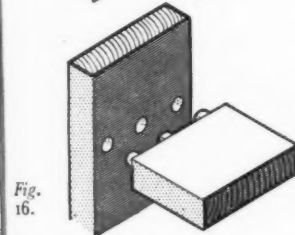
## GROUP 2: continued



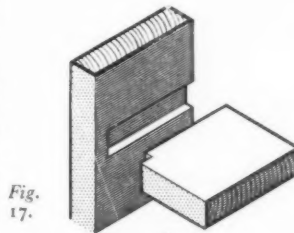
**Fig. 14. Double Dovetail Housing:** This is similar to the simple housed joint except that a dovetail is cut on the top side and bottom of one member to prevent the joint pulling out. Since the two boards have to be slid together the difficulty of making the joint increases with the length of the boards. It can, however, be made relatively easily up to 2 ft. 6 in. although it is of course more expensive than the simple housing. It is a useful joint for those positions where one member is liable to bow and requires restraint.



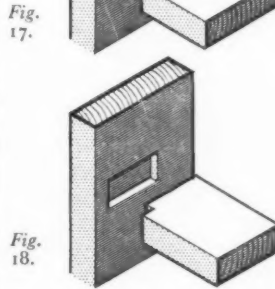
**Fig. 15. Single Dovetail Housing:** A similar joint to the double dovetail, but one which is more commonly used, though it is still relatively expensive by comparison with a simple housing.



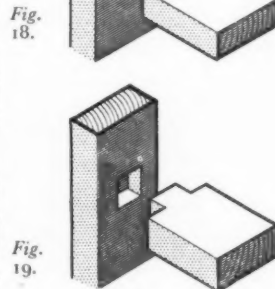
**Fig. 16. Dowelled Joint:** An alternative to the simple housed joint, at present more often used in furniture and cabinet making than in builders' joinery. One of its disadvantages is the danger of the joint opening and showing a crack. On the other hand, the holes for the dowels do not weaken the wood so much as a groove, thus avoiding any distortion which the groove might cause.



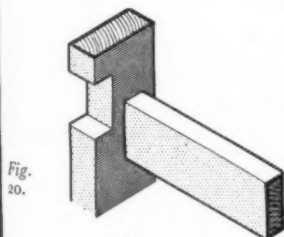
**Fig. 17. Stopped Housing:** This joint is similar to the simple housing shown in Fig. 12 except that the groove is "stopped" back from the front face so that the joint is concealed. It is frequently used in shelving.



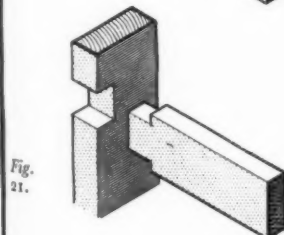
**Figs. 18 and 19. Stopped Housing for Rail and Double Stopped Housing:** Two other forms of stopped housing. They are applicable to the junction of rails with uprights, as would be found in the construction of a chest of drawers or in skeleton framing.



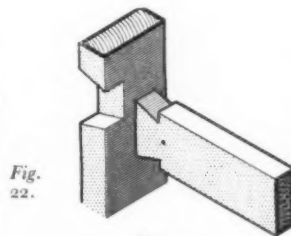
### GROUP 3: FLAT SECTIONS JOINED WITH DIRECTION OF GRAIN AND PLANE OF SECTION OPPOSED, ENCOUNTERED IN THE FRAMING OF FITMENTS



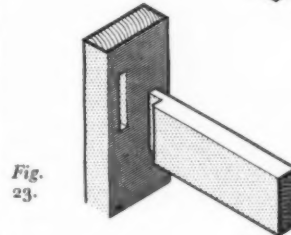
**Fig. 20. Face Housing:** A straightforward, cheap joint consisting of the housing of one member into the face of the other. It would have to be fixed by pins or screws. It is used commonly when the member shown horizontally in the sketch continues past the vertical member. It would normally be restricted to rough work or to concealed positions.



**Fig. 21. Shouldered Face Housing:** A slightly more elaborate joint than that shown in Fig. 20. If there are a number of housed joints required close together, it has the merit of taking less from the vertical member.



**Fig. 22. Single Dovetail Housing:** This is a stronger joint than those in Figs. 20 and 21, particularly in tension.

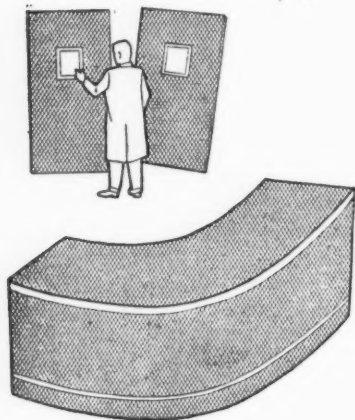


**Fig. 23. Bare-Faced Tenon:** A joint used often in fitments, particularly where the rails and uprights are flush, and when it is desirable to conceal the actual joint.

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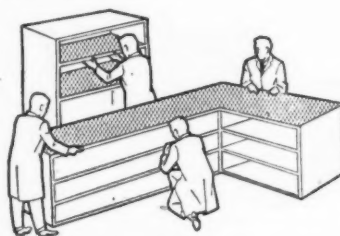
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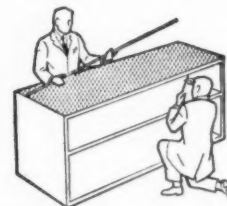
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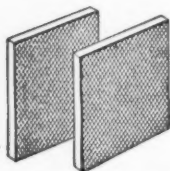
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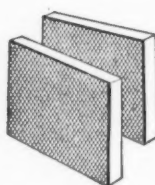
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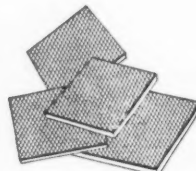
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# GROUP 4. BOARDS JOINED LONGITUDINALLY, AS IN WIDE SHELVING AND COUNTER TOPS, OR IN THE CASED FRAMING OF A SASH WINDOW.

## GROUP 3: continued

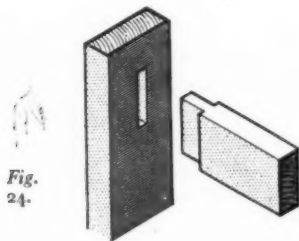


Fig. 24.

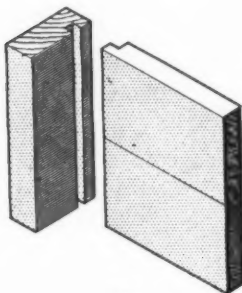


Fig. 25.

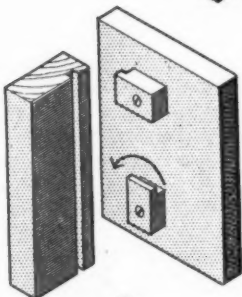


Fig. 26.

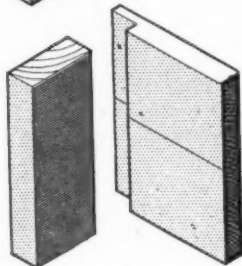


Fig. 27.

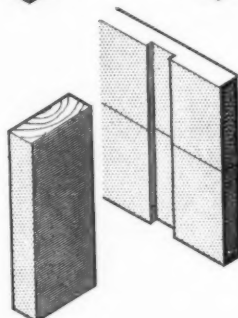


Fig. 28.

Fig. 24. Mortice and Tenon: When the rail can be set back to give greater room for the tenon, an ordinary double shouldered tenon is commonly used.

Figs. 25 to 28: The illustrations show the joints used where several boards forming a flat surface meet a member with the grain in the opposite direction.

Figs. 25, 27 and 28, of which 27 is considered inferior to 25, are used where the boards with the grain shown horizontally are to be glued to that with the grain shown vertical. It must be remembered that timber shrinks more across the grain than in its length, and if the total width of the boards shown horizontally exceeds 10 in. to 12 in. it will be necessary to allow for differential movement.

Fig. 26 shows one method of doing this. The wooden buttons are nowadays often replaced by metal straps or angle cleats, which when used, for instance, in a table would be fixed by two screws to the rail and one screw through a slot into the top.

Fig. 29.

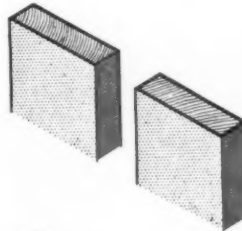


Fig. 30.

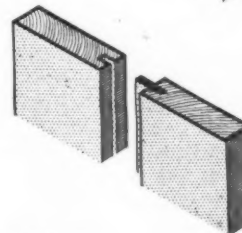


Fig. 31.

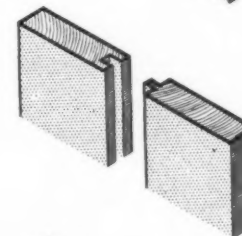


Fig. 32.

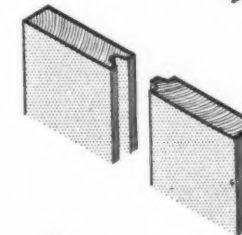
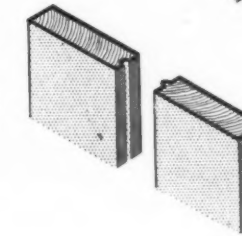


Fig. 33.



The tongued and grooved joints shown in this group are all glued and are not to be confused with those in Group 5, which are matching joints allowing movement.

Fig. 29. Square, Edge to Edge or Rubbed Joint: A traditional, cheap method of joining boards, which is quite satisfactory when accurately made and properly glued. It can be made by hand or by machine. Its limitations are the difficulty of aligning the boards in long lengths, and the danger of the single glue-line failing and leaving an open joint. In this respect, it would, for instance, be unsuitable for a draining board, where the boards are usually tongued, as shown in Fig. 30.

Some manufacturers consider the straight butt joint to be much improved by splaying and rebating; the profile on each board being complementary and made with the same cutter. The advantages of such a joint would not be worth the extra labour involved if it were made by hand, but, as with a number of the joints in this group, machines enable special profiles to be cut economically, and it will be found that different manufacturers show preferences for one or other method, depending upon the machine which they have installed. It would obviously be unreasonable for an architect to insist on any particular pattern of joint, unless he had some special reason for doing so.

Fig. 30. Cross (or loose) Tongued Joint: A very common and economical joint which is stronger than the joint in Fig. 20. The tongue should be cross grained (when the individual pieces making up the length are known as feathers) or of plywood.

When it is undesirable to see the tongue on the end of the boards it can be "stopped"; this however is expensive.

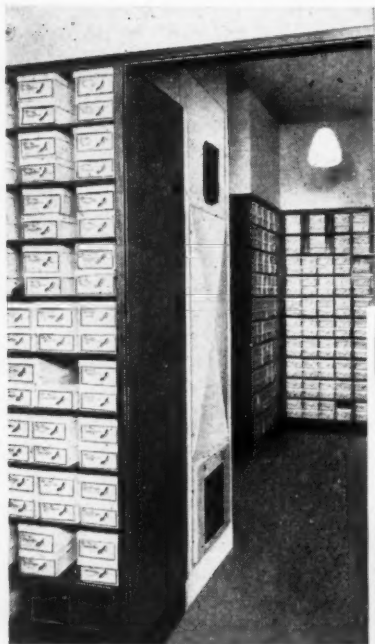
Figs. 31, 32 and 33. Tongued and Grooved Joints: Show versions of tongued and grooved joints whose purpose is to give alignment and greater glueing area. Fig. 31 is the traditional hand-made joint, largely replaced by the joints in Figs. 32 and 33.

The latter are more appropriate to machine production, and whilst they provide for good alignment, they are easier to glue and assemble than the square cut tongue.

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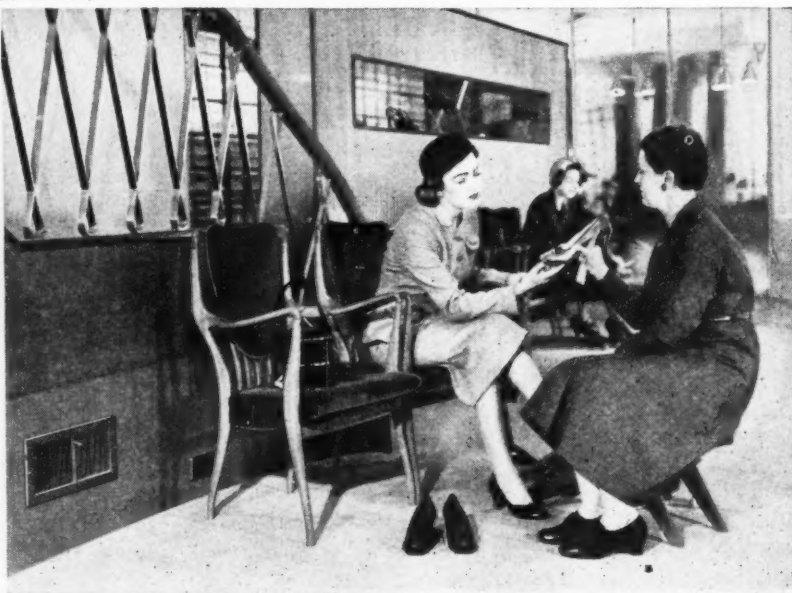


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## GROUP 4: continued

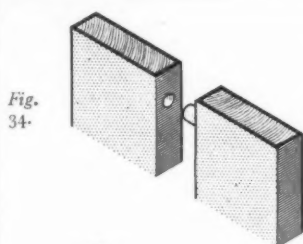


Fig. 34.

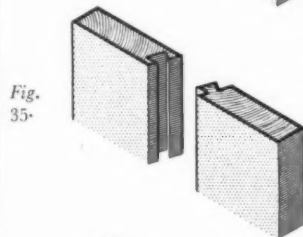


Fig. 35.

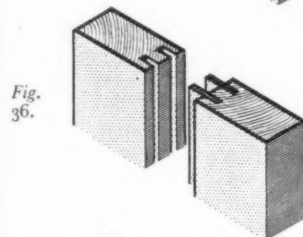


Fig. 36.

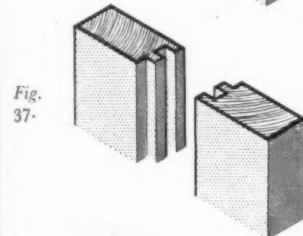


Fig. 37.

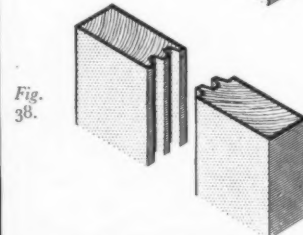


Fig. 38.

Fig. 34. Dowelled Edge to Edge joint: A joint which is not very often used: it would have to be made largely by hand, and is more likely to be found in furniture and cabinet work than in joinery. The dowels help to align the boards.

Fig. 35. The Lindermann Joint: This is a special tapered dovetail joint which can be made only on an elaborate machine. The cost of installation of the machine cannot be justified unless a great volume of work is required of it, and there are not many of them in this country.

The dovetail produces a mechanical locking of the joint, but it would obviously be difficult to assemble unless provision were made to overcome the friction in sliding long boards together. For this reason the dovetail is slightly tapered in its length, and assembly is done by machine. Although it is glued, no cramping is required, and the jointed boards can be handled straight off the machine. The maximum thickness of board normally worked is  $1\frac{1}{2}$  in.

Figs. 36, 37 and 38. Crossed Tongued, and Tongued and Grooved Joints: These are typical edge to edge boards similar to those shown in Figs. 31, 32 and 33, but used for boards having thicknesses over, say,  $1\frac{1}{2}$  in. The version shown in Fig. 37 can be made with one cutter, which avoids the need for two specially matched cutters.

It is often necessary to join boards along their length but at right angles to each other. The joints used are similar in principle to those we have just discussed, and may be compared with those in Group 2 where the ends of the boards rather than the sides are joined, and the grain is therefore in a different direction.

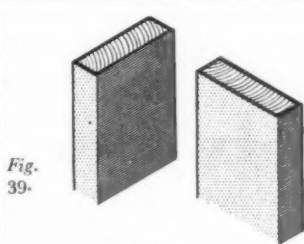


Fig. 39.

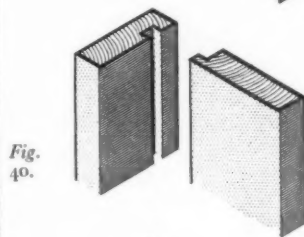


Fig. 40.

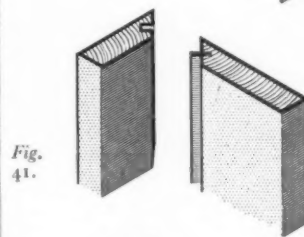


Fig. 41.

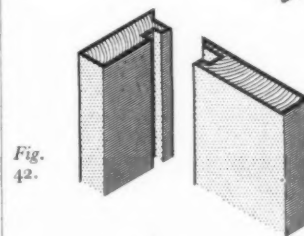


Fig. 42.

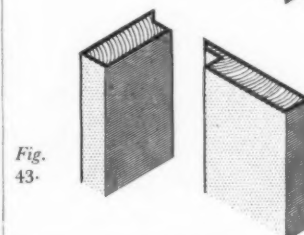


Fig. 43.

Fig. 39. Butt Joint: Whilst the edge to edge joint can be used very satisfactorily to join boards when they are flat, since it is then fairly easy to cramp them and to keep them from bowing, the equivalent joint shown here for boards at right angles is not so satisfactory. Nails, screws or blocks are necessary to overcome the likelihood of bowing and to hold the two pieces together whilst glueing, and in practice it is used mainly in backings.

Fig. 40. Tongued and grooved: One of the most common joints used in joinery: it should be compared with the joint in Fig. 11 (Group 2), which, though of similar pattern, is less strong since the grain is in the opposite direction and the bit which projects beyond the groove is more likely to break off.

Figs. 41, 42 and 43. Cross Tongued and Mitred, Tongued and Mitred and Lapped and Mitred: These are all designed to make the actual joint between the boards appear on the corner. The joint in Fig. 41 is difficult to cramp but is a good joint if carefully made. The joint in Fig. 42 is a good sound joint and is used for corners of fittings and cupboards and elsewhere where both faces are seen. The joint in Fig. 43 is not strong as that in Fig. 42, and required blocks, nails or screws. The lap is inclined to lift if it is made too thin.

## 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.

### 8.45 surveying and specification SURVEYING AND LEVELLING

Questions and Answers on Surveying and Levelling: R. H. Gould: Newnes 6s. 6d.

This is one of a series of "Q" and "A" books on various subjects from diesel

engines to radio. It is divided into seven sections—map projection and triangulation; chain survey and booking; instruments; traversing; levelling; contouring; elementary calculations and concludes with mathematical tables. The book is addressed principally to those who have studied the subject from textbooks but find practical experience difficult to come by. Thus the descriptions of procedure in the field are detailed—"First, unstrap your tripod," etc.

### 8.46 surveying and specification BUILDERS PRICE BOOK

Laxtons Builders Price Book: 128th Edition: Kelly's Directories Ltd 55s.

This latest edition of the famous price book has been brought up to date throughout and

includes the wage increase that occurred in April this year. The arrangement of the various sections remains the same; more than a thousand close-printed pages packed with information used by few architects, but irreplaceable no doubt for the many builders who price a bill in an afternoon and never examine their own costs.

To thumb through its pages is too long for a more rational and systematic method of pricing and measurement. Why are lead flashings priced per cwt. but aluminium per foot super or foot run? Why are lead pipes priced per ton, steel per foot run and copper per pound? The truth is that the building industry—abetted by the quantity surveyors—has got itself into an appalling muddle by trying to fit pricing customs that worked very nicely in Nicholas Barbon's day, to an utterly transformed industry. In this light, the compiling of Laxtons is a stupendous task—which ought never to have been necessary.

Readers requiring up-to-date information on building products and services may complete and post this form to the Architects' Journal, 9, 11 and 13, Queen Anne's Gate, S.W.1

## ENQUIRY FORM

I am interested in the following advertisements appearing in this issue of "The Architects' Journal." (BLOCK LETTERS, and list in alphabetical order of manufacturers' names please.)

Please ask manufacturers to send further particulars to:—

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ADDRESS .....

25.8.55

## Buildings Illustrated

Catford County Secondary School, Bellingham Road, Catford, London, S.E.6, for the London County Council. (Pages 249-264.)

Architects: J. L. Martin, M.A., PH.D., F.R.I.B.A., Architect to the LCC; S. Howard, L.R.I.B.A., Schools Architect; G. F. Horsfall, M.B.E., B.A.R.C.H., A.R.I.B.A., Assistant Schools Architect; W. J. Smith, D.I.T.P. (LOND.), A.R.I.B.A., Architect in charge; L. Lloyd, T. Bliss, A.R.I.B.A., and M. Le Pelley, A.R.I.B.A., Assistants. Heating Consultants: Roger Preston & Partners. Quantity Surveyors: R. A. Harwood & Partners. General Contractors: Thomas & Edge. Sub-contractors: tanking and roofing felt, Excel Asphalte Co. Ltd.; bricks (Flettons), Eastwoods Ltd. (Warnham Commons) Sussex & Dorking United Brick Co. Ltd., (stock) C. Burley Ltd., (white facings) McCarthy & Sons Ltd.; structural steel, Hills (West Bromwich) Ltd.; pressed steel door frames, Crittall Manufacturing Co. Ltd.; reinforced concrete flue, J. L. Kier & Co. Ltd.; lightning conductor, W. Larkins; partitions (Bellrock), John Kent (London) Ltd.; glass, Plyglass Ltd.; curtain wall glazing, Hills (West Bromwich) Ltd.; glazed hood in kitchen, Mellows & Co. Ltd.; hard wood block and strip flooring, Vigers Bros. Ltd.; patent flooring, Hollis Bros. Ltd.; waterproofing material, Tretol Ltd.; vermiculite ceiling slabs, Meta Mica Ltd.; central heating, ventilation and gas fitting, Rosser Russell Ltd.; electric wiring, Berkeley Electrical Co. Ltd.; cold cathode lighting, Courtney Pope Ltd.; stairtreads, Wates Ltd.; door furniture, Nicholls & Clarke Ltd.; casements and window furniture, Hills (West Bromwich) Ltd.; telephones, G.P.O.; electric heating, E. K. Cole Ltd.; plumbing, Rosser & Russell Ltd.; Building Installations Ltd.; extract fans, Brooks Air & Heat Systems Ltd.; sanitary

fittings, B. Finch & Co. Ltd.; plaster, W. A. Telling Ltd.; metal work, J. Salway & Sons Ltd.; flush floors, James Prepared Woodwork Ltd.; glazed wall tiling, quarry tile flooring, W. B. Simpson & Sons Ltd.; textiles, Primavera; wallpapers, A. Sanderson & Sons Ltd., J. Line & Sons Ltd.; loft ladders, Loft Ladders Ltd.; tar paving, A. C. W. Hobman & Co. Ltd.; external concrete paving, London Paving Co. Ltd.; terrazzo, Marriott & Price Ltd.; precast granite stairs, Wates Ltd.; precast coping to boundary walls, Enfield Stone Co. Ltd.; chain link fencing, Durafencing Co. Ltd.; stage equipment, Hall & Dixon Ltd.; shrubs and trees, John Waterer, Sons & Crisp Ltd.; landscape, St. Mary's Demolition & Excavations Co.; cloakroom fittings, Comyn Ching & Co. Ltd.; clocks, Synchronome Co. Ltd.; lagging to heating pipes, Kitsons Insulation Ltd.; radio equipment, supplied by Clark & Smith Ltd.; paint: glossy, Keystone Paint & Varnish Co. Ltd.; emulsion, Vitretex (England) Ltd.; clear finish, Pheno-glaze Ltd.



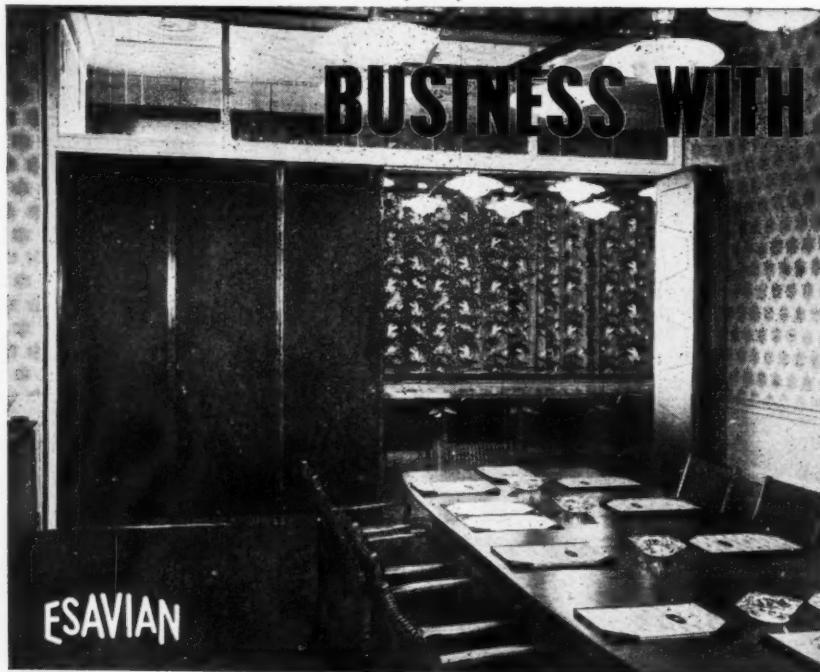
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SHEETS

## CANCELLATION

Sheet 14.B1 (published 27.5.54) has been cancelled and should be removed from collections. It is replaced by Sheet 14.B1 published in this issue.

Sheets 14.B2 (published 10.6.54) and 14.B3 (published 24.6.54) are also cancelled and will be replaced very shortly.

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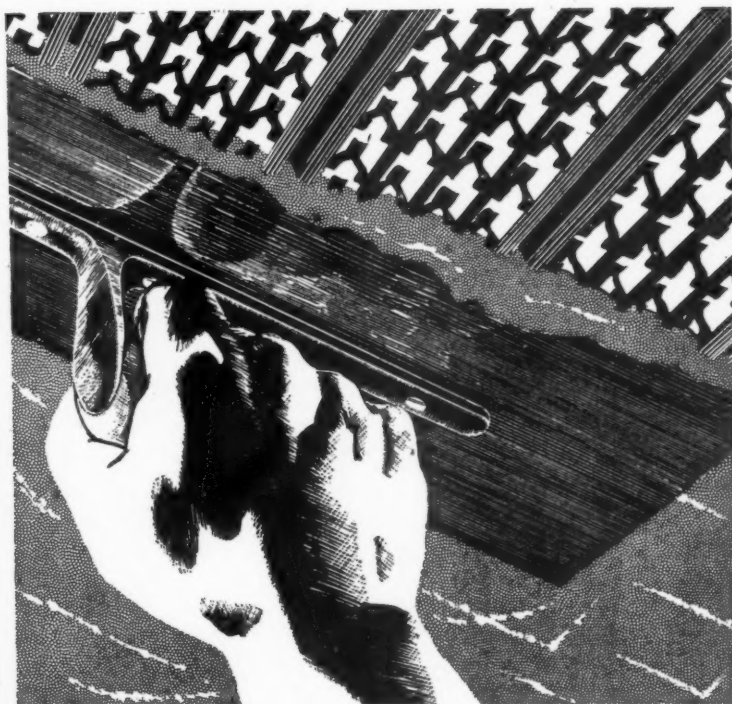
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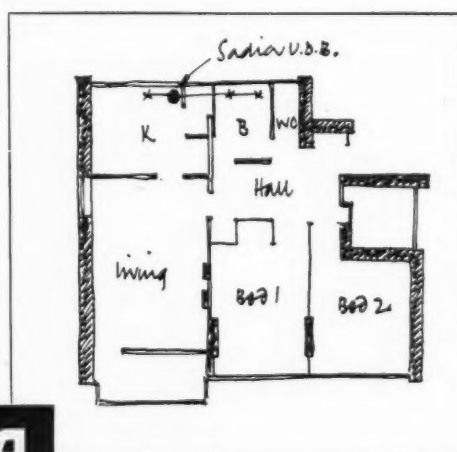
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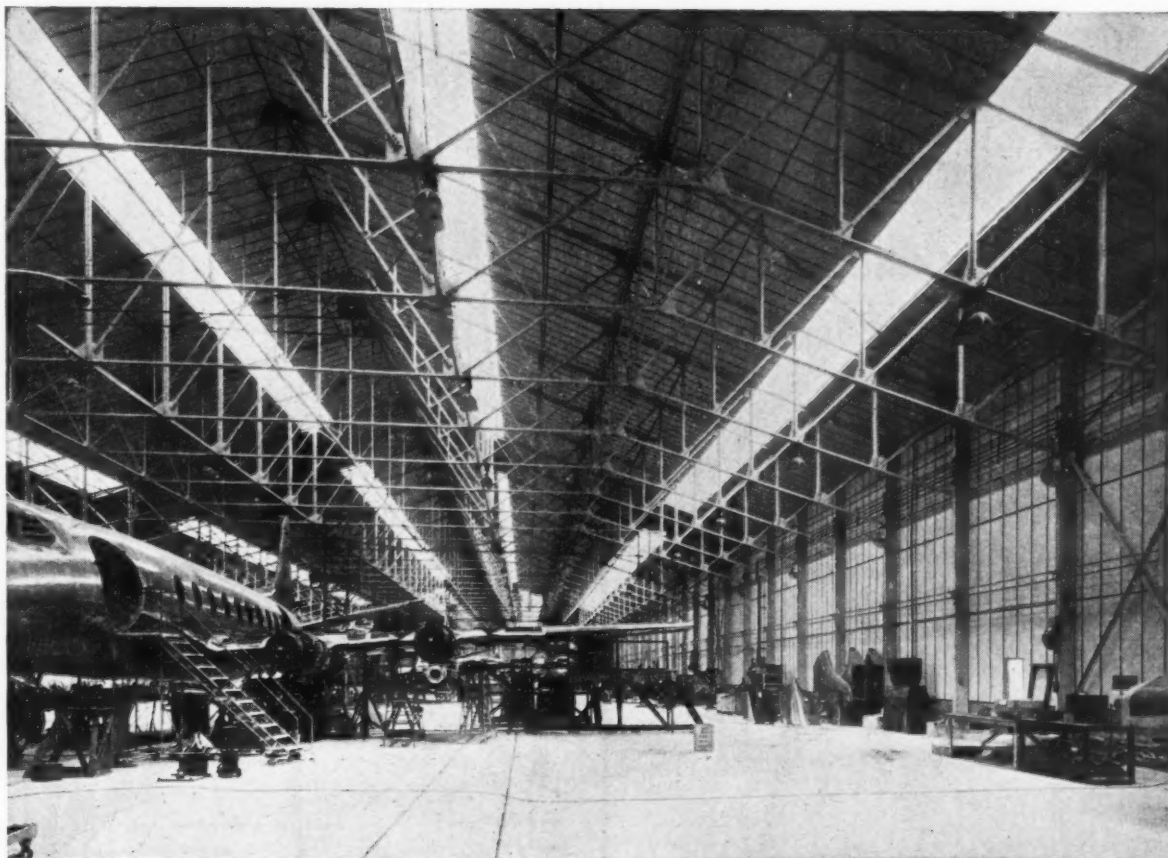
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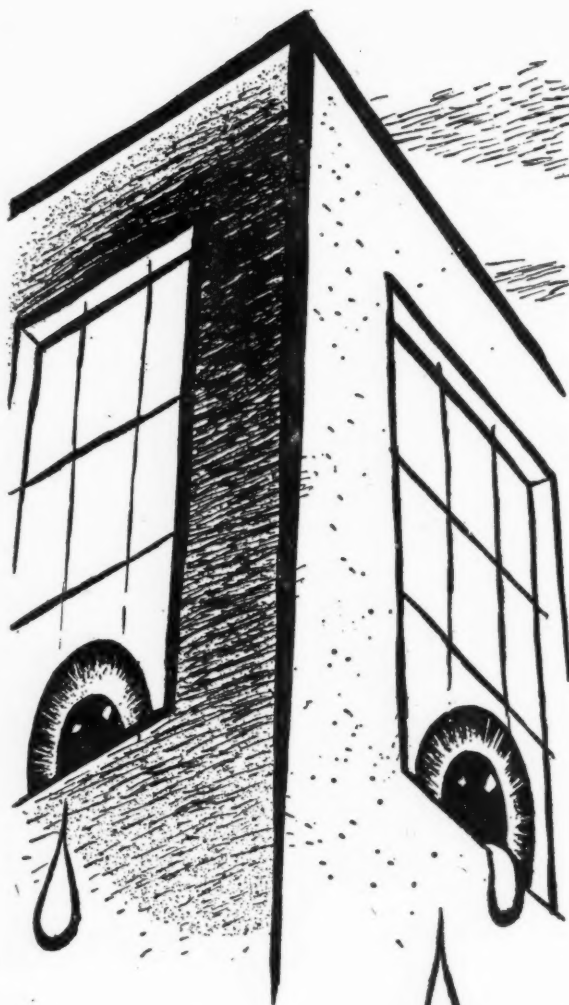
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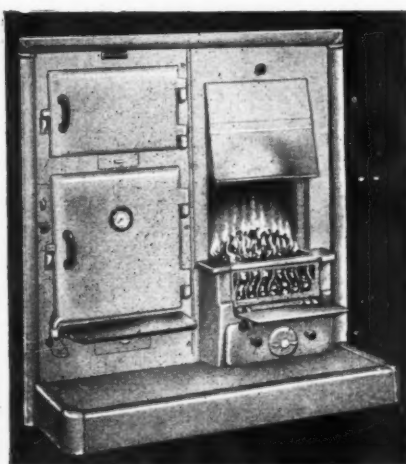
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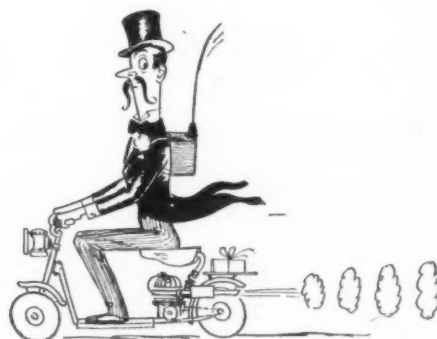


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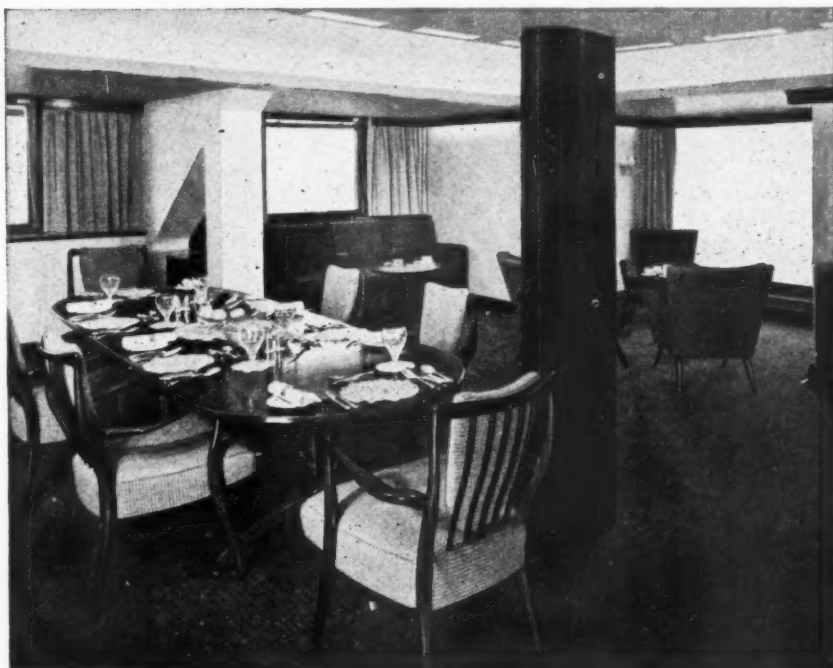
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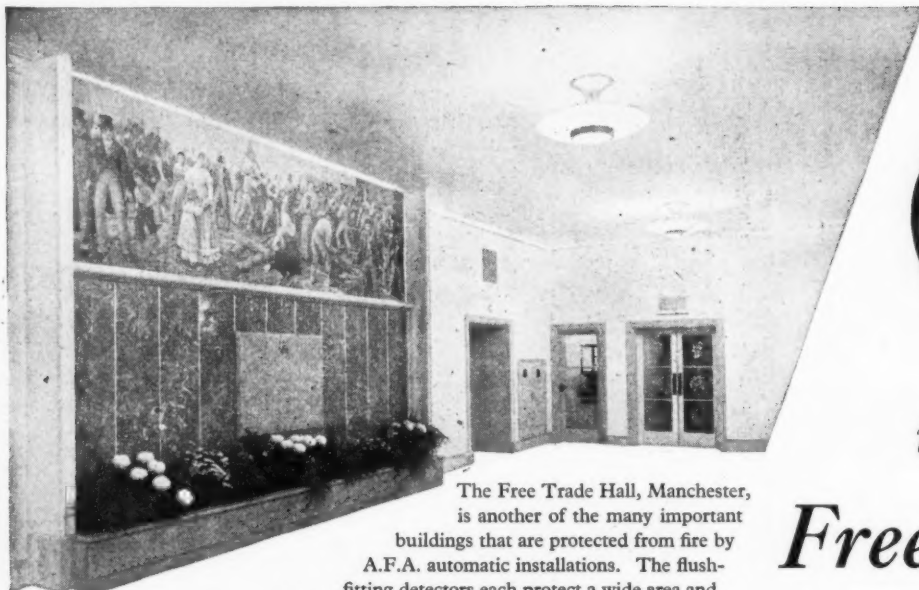
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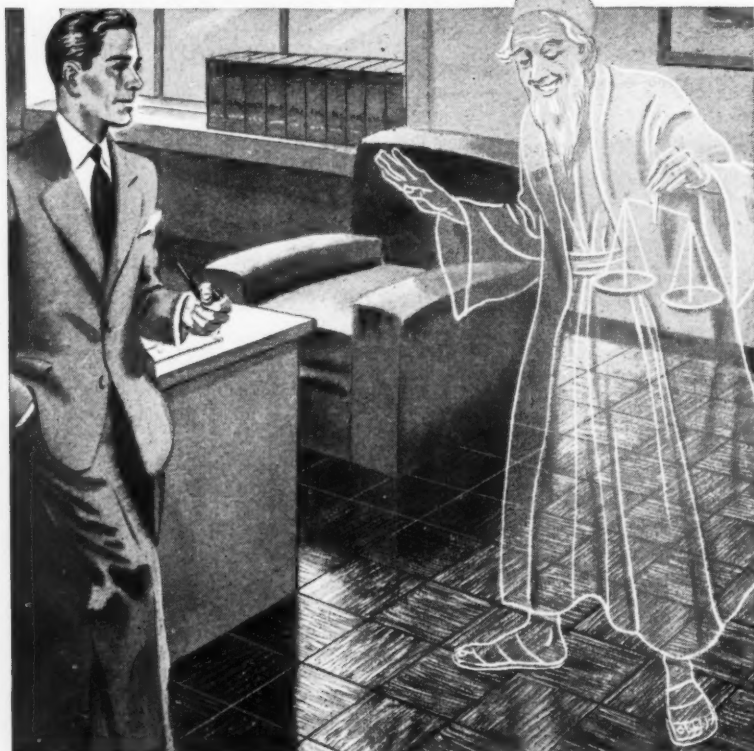
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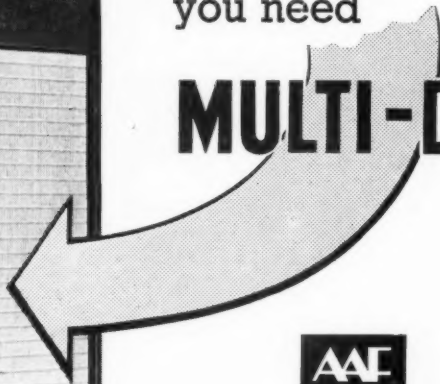
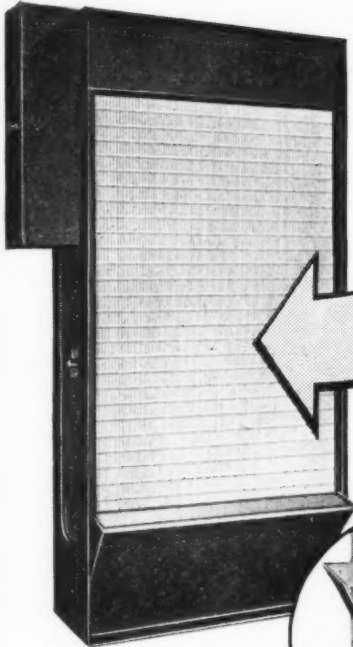
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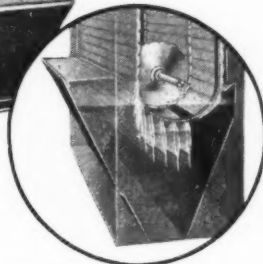
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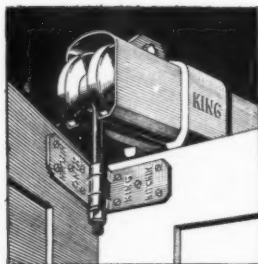
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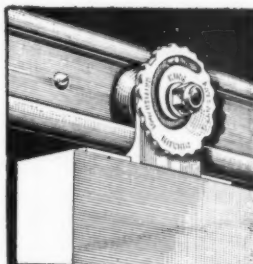
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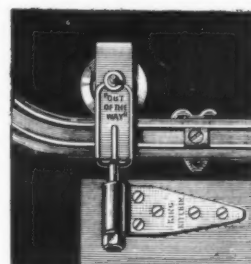
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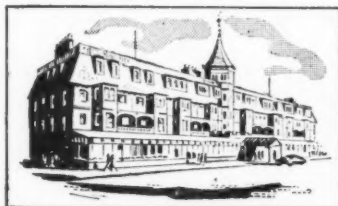


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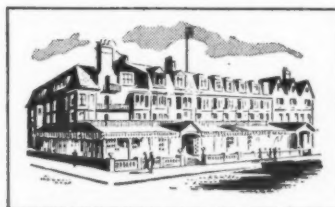
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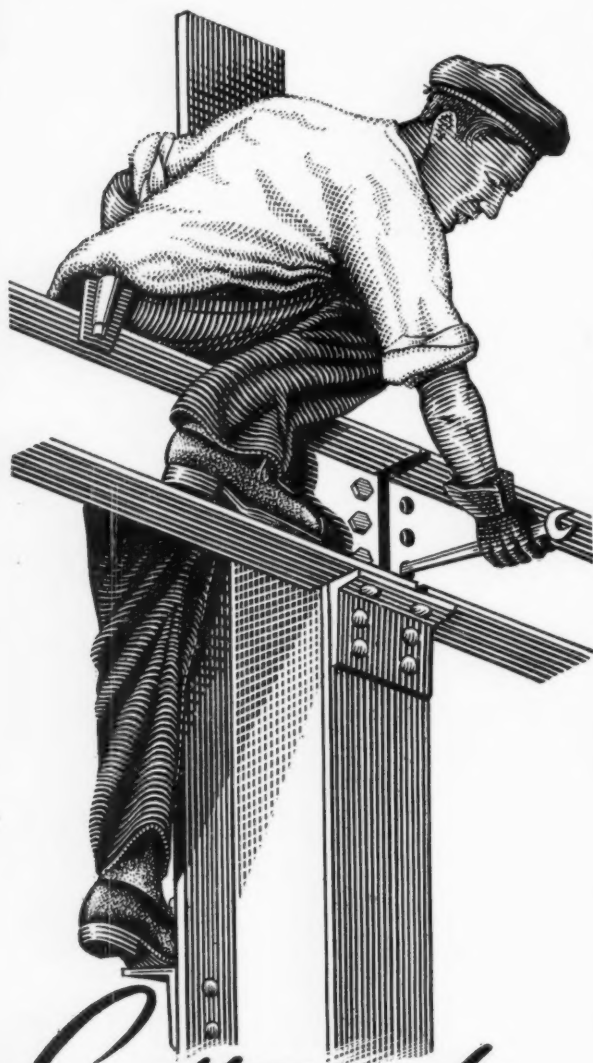


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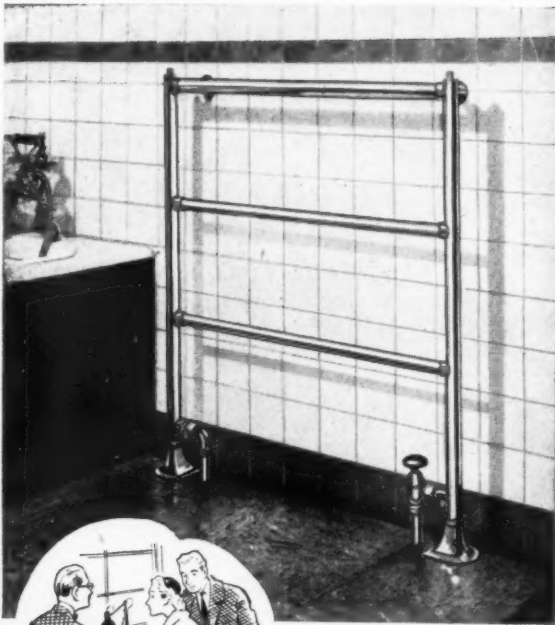
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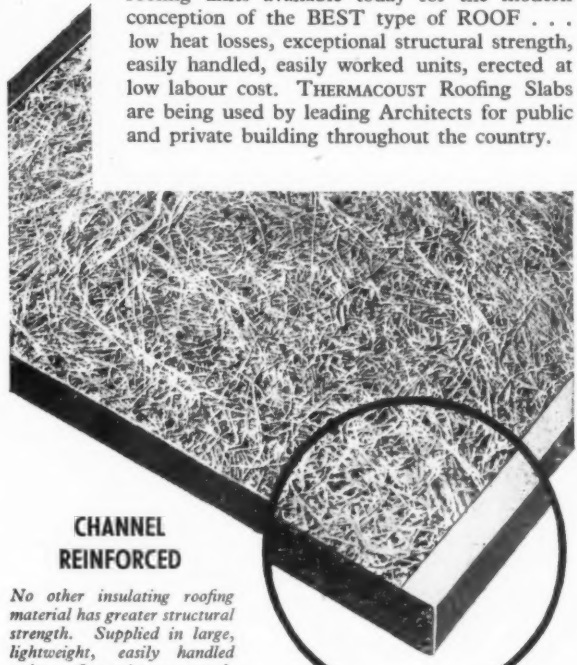
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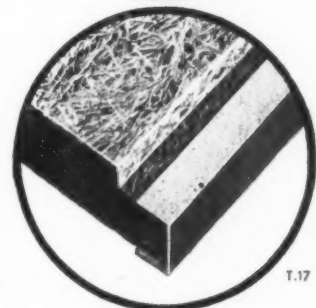


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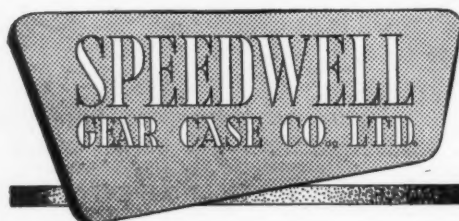
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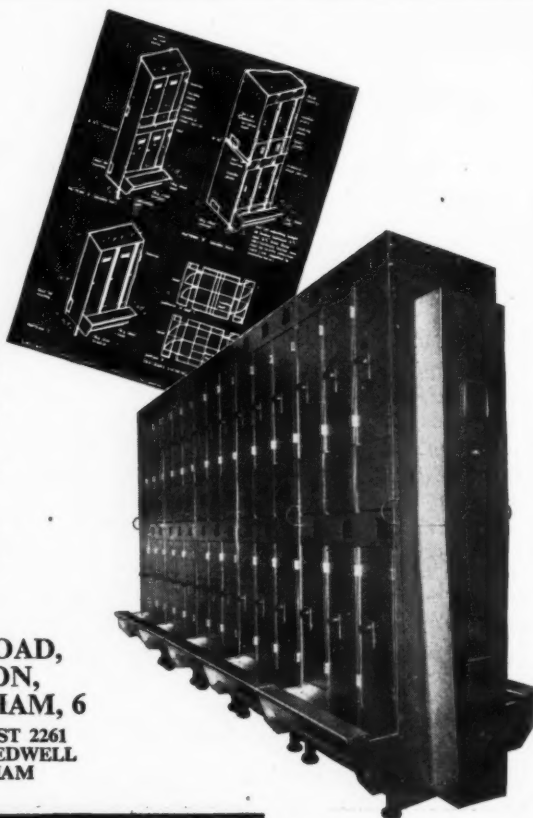
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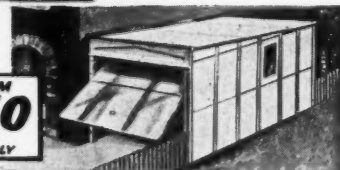
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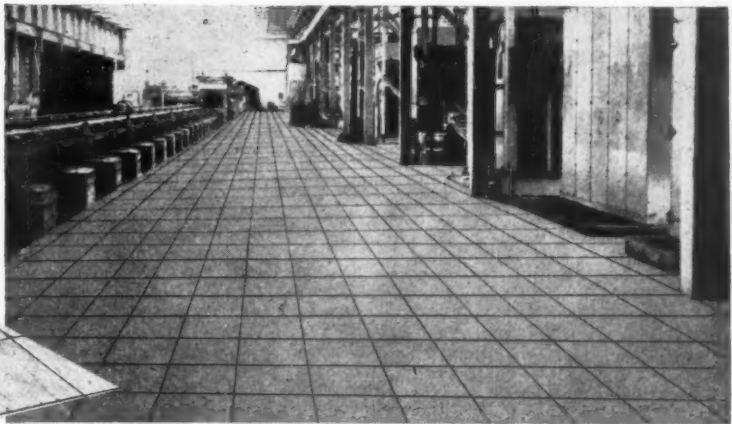
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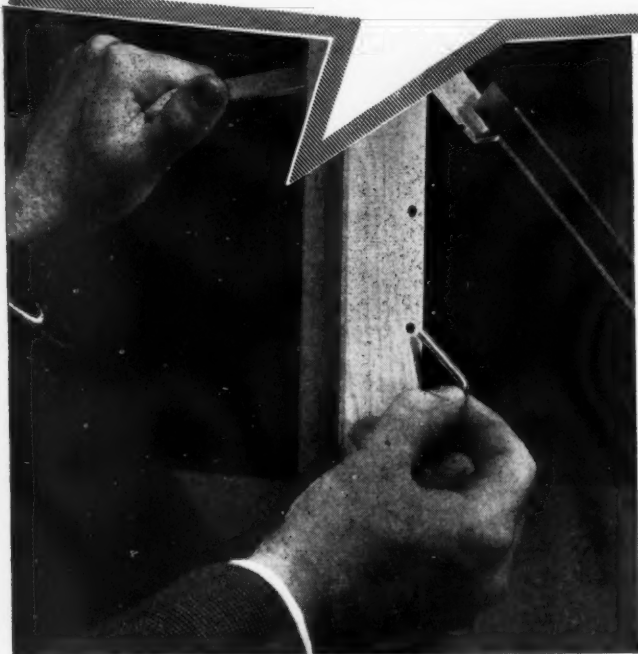
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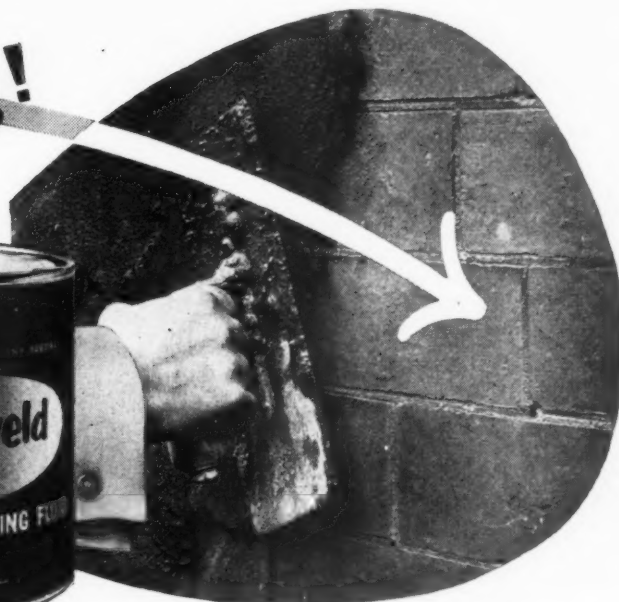
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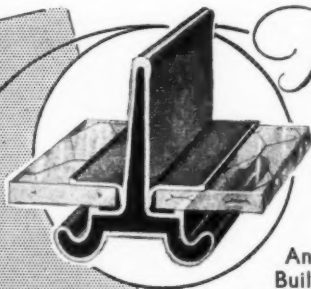
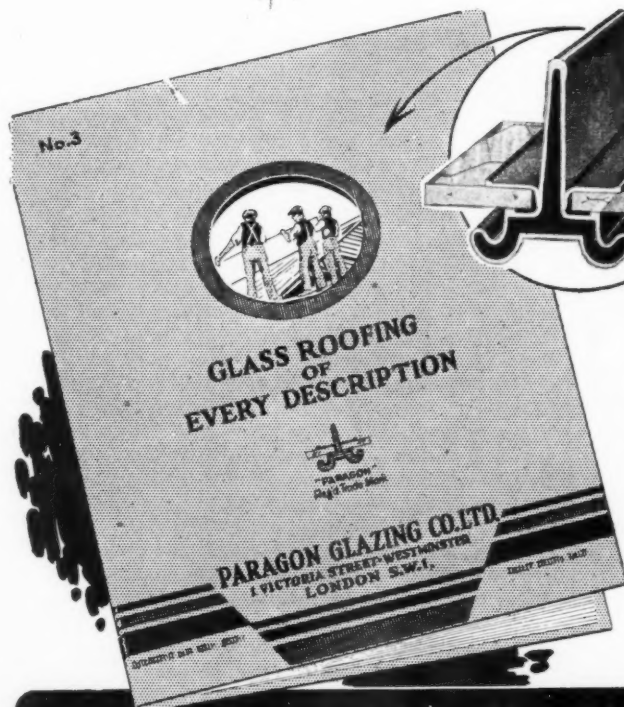
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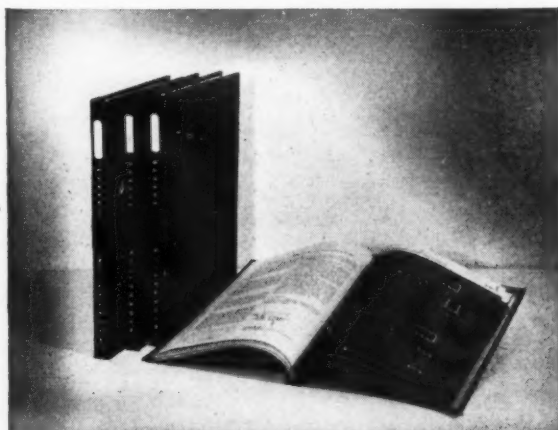
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## BEDFORDSHIRE COUNTY COUNCIL.

ASSISTANT QUANTITY SURVEYORS.  
Applications are invited from suitably qualified persons for the following vacancies on the permanent establishment:—

- (a) ASSISTANT QUANTITY SURVEYOR, A.P.T., Grade IV (£675—£825 per annum).  
(b) QUANTITY SURVEYOR'S ASSISTANT, A.P.T., Grade II (£560—£640 per annum).

Application forms can be obtained from the County Architect, Shire Hall, Bedford, and should be returned to him as soon as possible.

2133

## COUNTY BOROUGH OF SOUTHEAST-ON-SEA.

BOROUGH ARCHITECT'S DEPARTMENT.  
Applications are invited for the following established posts:—

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ASSISTANT ARCHITECT. Salary: £600 × £25—£725.

ARCHITECTURAL ASSISTANT. Salary: £560 × £20—£640.

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MAINTENANCE SURVEYOR. Salary: £560 × £20—£640.

(With practical knowledge of building construction and experience in measuring and estimating for repairs and maintenance work).

The appointments will be subject to the provisions of the Local Government Superannuation Act, 1937, and the N.J.C. Scheme of Conditions of Service so far as adopted by the Council. Medical examination.

Applications, stating age, qualifications and experience, with the names of two persons to whom reference can be made, should be submitted to the Borough Architect, 30, Alexandra Street, Southend-on-Sea, forthwith.

ARCHIBALD GLEN, Town Clerk.

2176

## CITY OF SALFORD.

## TECHNICAL STAFF.

Applications are invited for the under-mentioned appointments to the permanent establishment of the City Engineer and Surveyor's Department:—

- (a) TWO ARCHITECTURAL ASSISTANTS, A.P.T., Grade IV (£675 to £825).

- (b) ONE ASSISTANT QUANTITY SURVEYOR, A.P.T., Grade IV (£675 to £825).

Candidates should possess qualifications as under:—

- (a) Professional Associates of the Royal Institute of British Architects, and have had good experience in the design and construction of schemes for houses, flats, schools and public buildings.

- (b) Professional Associates of the Royal Institution of Chartered Surveyors (Quantities Section).

The appointments are pensionable and subject to the passing of a medical examination.

Applications, stating age, qualifications and experience, together with names and addresses of two referees, should be addressed to the City Engineer and Surveyor, Town Hall, Salford, 3, appropriately endorsed, and be delivered not later than Wednesday, 7th September, 1955.

Applicants must disclose, in writing, any known relationship to members or officers of the Council.

R. RIBBLESDALE THORNTON, Town Clerk.

2220

## NATIONAL COAL BOARD.

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## VACANCY FOR ASSISTANT ARCHITECT.

A vacancy has occurred for an ASSISTANT ARCHITECT, in the office of the Divisional Architect, at Gosforth, Newcastle-upon-Tyne, 3, for work of interest and variety in large reconstruction schemes. Current projects include workshops, laboratories, offices, pithead baths, fire stations, farms and housing.

An assistant at intermediate stage or recently qualified is required; the commencing salary will be between £525 and £750 per annum, according to qualifications and experience; applications stating age, training and experience, together with details of salary in past and present appointments should be submitted to J. C. Spooner, Esq., A.R.I.B.A., A.R.I.C.S., Divisional Architect, Ashfield Tower, Kenton Road, Gosforth, Newcastle-upon-Tyne, 3, by 31st August, 1955.

2366

COUNTY BOROUGH OF EAST HAM.  
ARCHITECTURAL ASSISTANT—HOUSING DEPARTMENT.

Applicants should have had experience in housing work of a local authority. Salary £650 × £25—£775 per annum, plus London Weighting.

Further details and form of application (returnable by 7th September, 1955), from the Town Clerk, Town Hall, East Ham, E.6.

## THE CORPORATION OF GLASGOW.

## ARCHITECTURAL AND PLANNING DEPARTMENT.

## PRINCIPAL ASSISTANT ARCHITECT.

Applicants are invited for the above position from suitably qualified persons who have had wide housing experience and have administrative ability. Applicants must be members of R.I.B.A. Salary scale £930 to £1,005 per annum. The appointment will be superannuable, subject to medical examination.

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

A. G. JURY,

City Architect and Planning Officer.

2320

## COUNTY BOROUGH OF EAST HAM.

## HOUSING DEPARTMENT—SENIOR ARCHITECTURAL ASSISTANT (A.P.T. IV).

Applicants should have had experience in housing work of a local authority. Salary £675 × £30—£825 per annum, plus London Weighting.

Further details and form of application (returnable by 7th September, 1955) from the Town Clerk, Town Hall, East Ham, E.6.

2357

## CORPORATION OF THE CITY OF ABERDEEN.

## TOWN PLANNING DEPARTMENT.

Applications are invited for the following posts:—

- (a) PLANNING ASSISTANT—salary scale £565—£715. Placing according to qualifications and experience.

- (b) PLANNING DRAUGHTSMAN—salary scale £515—£560.

Further particulars may be obtained from the Director of Town Planning, 5, Bon-Accord Crescent, Aberdeen, by whom applications should be received on or before 5th September, 1955.

J. C. RENNIE,

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Town House, Aberdeen.

2304

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Salary within the range of £580—£650 per annum according to qualifications and experience. Housing accommodation in approved cases.

Applications stating age, education, qualifications, present and previous appointments, with salary and experience in precise terms, and giving the names of two referees, should reach the General Manager, Basildon Development Corporation, Gifford House, Basildon, Essex, by Wednesday, 31st August.

2362

## COUNTY BOROUGH OF CARLISLE.

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

- (a) ASSISTANT ARCHITECT, A.P.T. IV, commencing salary £765 × £30—£825.

- (b) ASSISTANT ARCHITECT, A.P.T. IV £675 × £30—£825. Commencing salary according to experience.

Applicants for the above should be A.R.I.B.A.

(c) ASSISTANT ARCHITECT, salary scale £665—£775. Applicants to have passed R.I.B.A. final examination or equivalent at recognised School of Architecture and to have at least five years' experience, including period of training.

The above appointments are being made for carrying out the Authority's Educational Building Programme.

- (d) BUILDING SURVEYOR, A.P.T. III, £600—£725, or special grade £650—£775, salary according to appropriate R.I.C.S. (Building) or equivalent qualification and experience. Applicants should be capable of handling minor building works, alterations, additions, etc.

Housing accommodation available if required. Forms may be obtained from the City Surveyor, 18, Fisher Street, Carlisle, to whom they should be returned not later than 8th September, 1955.

H. D. A. ROBERTSON,

Town Clerk.

Town Clerk's Office, 15, Fisher Street, Carlisle.

2371

## VACANCIES FOR ARCHITECTS.

## TEMPORARY ASSISTANT ARCHITECTS (2)

in the Office of Public Works. Rate of pay: Man: £11 19s. 7d.—£16 3s. 6d. a week; Woman: £9 13s. 7d.—£13 2s. 7d. a week, with higher starting pay in certain cases. Maximum age limit: 40 years with extensions in certain cases. Application forms and further particulars from Secretary, Civil Service Commission, 45, Upper O'Connell Street, Dublin. Latest date for accepting completed application forms: 16th September, 1955.

2463

## EAST RIDING OF YORKSHIRE COUNTY COUNCIL.

Applications are invited for the following permanent appointments on the staff of the County Architect:—

- (a) ASSISTANT ARCHITECTS, Grade V (£750—£900). Must be Associate Members R.I.B.A.

- (b) ASSISTANT ARCHITECT, Grade II (£560—£640).

- (c) ASSISTANT ARCHITECT, Grade I (£500—£580).

- (d) STRUCTURAL ENGINEER, Grade IV (£675—£825). Should be Associate Member of the Institute of Structural Engineers, or have a similar professional qualification.

- (e) ASSISTANT HEATING AND ELECTRICAL ENGINEER, Grade III (£600—£725).

- (f) ASSISTANT CHIEF BUILDING SURVEYOR, Grade III (£600—£725).

- (g) ASSISTANT QUANTITY SURVEYOR, Grade II (£560—£640).

The appointments are superannuable and subject to the passing of a medical examination.

Applications, giving particulars of age, training, qualifications, experience, past and present appointments stating salaries, together with the names of three referees, should be addressed to the County Architect, County Hall, Beverley, and must be received by him not later than Friday, 9th September, 1955.

THOMAS STEPHENSON,

Clerk of the Council.

County Hall, Beverley.

August, 1955.

2302

## NORFOLK EDUCATION COMMITTEE.

Applications are invited for the following posts:—

- (1) SENIOR ASSISTANT ARCHITECT—Grade A.P.T. V. Salary £750 to £900 per annum. Applicants must be suitably qualified and have experience in the planning and erection of large buildings.

- (2) JUNIOR ARCHITECTURAL ASSISTANT—Grade A.P.T. I. Salary £500—£580 per annum.

Applicants should have at least four years' experience in an Architect's office or equivalent. Forms of application from Chief Education Officer, County Education Office, Stracey Road, Norwich, to be returned not later than 1st September, 1955.

2393

## COUNTY BOROUGH OF SOUTH SHIELDS.

## APPOINTMENT OF PROFESSIONAL STAFF.

The Council is proposing to carry out a Development Programme which envisages a variety of major works in both Building and Civil Engineering.

Additional staff is required in the Borough Engineer's Department and applications are invited from suitably qualified persons for the following appointments:—

- (a) TOWN PLANNING SECTION—

One Chief Assistant, £1,108—£1,228 per annum.

One Principal Assistant, £825—£1,000 per annum.

- (b) ARCHITECTURAL SECTION—

Two Principal Assistants, £825—£1,000 per annum.

- (c) ENGINEERING SECTION—

Two Principal Assistants, £825—£1,000 per annum.

- (d) QUANTITY SURVEYING SECTION—

One Principal Assistant, £825—£1,000 per annum.

The appointments are permanent and the Conditions of Service are those as adopted by the National Joint Council for Local Authority Staffs.

Successful candidates will be required to pass a medical examination for superannuation purposes and housing accommodation will be made available if required.

Application forms obtainable from the Borough Engineer, Town Hall, South Shields, should be returned to him not later than 10 a.m. Monday, 19th September, 1955.

R. S. YOUNG,

Town Clerk.

2397

## THE UNIVERSITY OF LIVERPOOL.

Applications are invited for the following posts in the School of Architecture:—

- (a) LECTURER AND STUDIO INSTRUCTOR in Building Science and Construction.

- (b) LECTURER AND STUDIO INSTRUCTOR. Post (a) is primarily concerned with the teaching of the application of structural detail and of building science; post (b) is concerned with general problems of planning and design. There are opportunities in both posts for research and for guiding post-graduate studies and limited architectural practice is encouraged.

The initial salary for each post will be within the range of £650—£1,200 per annum, according to qualifications and experience.

Candidates should have had either at least three years' experience of office practice or building research, or responsibility for the design and site supervision of at least one major building project.

Applications, stating age, academic qualifications and experience, together with the names of three referees, accompanied if possible by drawings or photographs of work, should be received not later than 5th September, 1955, by the undersigned, from whom further particulars of the conditions of appointment may be obtained.

STANLEY DUMBELL,

Registrar.

2390

**COUNTY BOROUGH OF TYNEMOUTH.**  
**BOROUGH SURVEYOR'S DEPARTMENT.**  
Applications are invited for the following posts:—

**SENIOR ASSISTANT ENGINEER, Grade IV,** £675-£825.  
**ASSISTANT ENGINEERS, Special Grade,** £650-£775.  
**ASSISTANT ENGINEERS, Grade I and II,** £500-£580, £560-£640.  
**ARCHITECTURAL ASSISTANT, Grade II,** £560-£640.

**QUANTITY SURVEYING ASSISTANT, Grade IV,** £675-£825.  
**QUANTITY SURVEYING ASSISTANT, Grade II,** £560-£640.

**SENIOR TOWN PLANNING ASSISTANT, Grade IV,** £675-£825.  
**TOWN PLANNING ASSISTANTS, Grade I and II,** £500-£580, £560-£640.

Application forms together with conditions of appointment should be obtained from D. M. O'Herrill, Esq., B.Sc. (Eng.), M.I.C.E., 16, Northumberland Square, North Shields, and returned before the 1st September, 1955.

The Corporation may be prepared to assist in the provision of housing accommodation in the case of appointments above £650 per annum.

F. G. EGNER,  
Town Clerk. 2394

**LONDON ELECTRICITY BOARD.**  
**STRUCTURAL ASSISTANTS**  
**AND STRUCTURAL DRAUGHTSMEN.**

Applications are invited for the above positions in the Construction Branch of the Chief Engineer's Department in Central London.

Applicants for the positions of Structural Assistants in the Civil Engineer's Section should have experience in the design and detailing of either reinforced concrete or steelwork structures. Applicants for the positions of Structural Draughtsmen should have a knowledge of building construction requirements and some experience in detailing reinforced concrete or steel structures.

The posts are graded under Schedule "D", National Joint Board agreement, as Grade 5-£572 to £777 and Grade 6-£535 to £610, 10s. 0d. to £661 10s. 0d. per annum respectively, inclusive of London Allowance. Commencing salaries will be dependent on qualifications and experience.

Application forms obtainable from Personnel Officer, 46/7, New Broad Street, London, E.C.2, to be returned completed by 2nd September, 1955. Please enclose addressed envelope and quote ref.: V/2003/A. 2422

**COUNTY BOROUGH OF BARNSELY.**  
**BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT.**

Applications are invited for the following appointments:

(a) **SENIOR ASSISTANT QUANTITY SURVEYOR, A.P.T. Grade IV** (£675-£825), commencing salary to be fixed within the grade, according to qualifications and experience.

(b) **ARCHITECTURAL ASSISTANT, Special Classes, A.P.T. I** (£500-£580)-**A.P.T. II** (£560-£640)-**Special Grade** (£650-£775), commencing salary to be fixed within the appropriate grade according to qualifications and experience.

Applicants for appointment (a) should be suitably qualified and have had considerable experience in preparing Bills of Quantities and settling Contractors' accounts.

For appointment (b) applicants should have passed at least the Intermediate R.I.B.A. Examination and previous experience on municipal housing and buildings will be an advantage.

Housing accommodation will be provided if necessary and consideration will be given to the payment of 50% of removal expenses in approved cases.

The appointments will be subject to (i) the Scheme of Conditions of Service for A.P.T.C. Staff (ii) any other general conditions of employment in operation within the Corporation from time to time (iii) one month's notice on either side and (iv) to the Local Government Superannuation Acts for which purpose the successful candidates will be required to pass a medical examination.

Applications, stating age, present and previous appointments with dates, qualifications, experience, etc., together with the names of two persons for reference, should reach the Borough Engineer, Town Hall, Barnsley, not later than Wednesday, 14th September, 1955.

Canvassing will disqualify.  
A. E. GILFILLAN,  
Town Clerk. 2423

Town Hall, Barnsley.  
August, 1955.

**SALOP COUNTY COUNCIL.**

Applications are invited for appointment of **PLANNING ASSISTANT, Grade II**, £560-£640 p.a. Applicants should have passed the Intermediate Examination of the Town Planning Institute or equivalent and have had experience in a Planning Office. The post is subject to National Joint Council conditions and is pensionable.

Applications, giving full particulars and names of two referees, to County Planning Officer, County Buildings, Shrewsbury, by the 5th September, 1955. Canvassing disqualifies.

G. C. GOBER,  
Clerk of the Council. 2425

Shirehall, Shrewsbury.

**HOLLAND COUNTY COUNCIL.**  
**COUNTY ARCHITECT'S DEPARTMENT.**  
Applications are invited for the appointment of an **ACCOUNTS CLERK** on the permanent establishment of the above Department. Salary grade A.P.T. II, £560 × £20-£640 p.a. N.J.C. Conditions applicable.

Applications stating age, qualifications and details of experience, together with copies of two recent testimonials to be submitted to the undersigned by 31st August, 1955.

H. A. H. WALTER,  
Clerk of the County Council.  
County Hall, Boston, Lincs. 2398

**BOROUGH OF KEIGHLEY.**  
**BOROUGH ARCHITECT'S DEPARTMENT.**

Applications are invited for the appointment on the permanent staff of a **QUANTITY SURVEYING ASSISTANT, Grade A.P.T. I**, Salary scale £500-£580.

Applicants for the position should possess general quantity surveying experience obtained in the office of a Quantity Surveyor or Architectural Department, and have a sound practical knowledge of measuring and valuation work for interim certificates and final measurement in connection with Housing Contracts.

Applications to be made upon the prescribed form to be obtained from the undersigned, to whom same must be returned, accompanied by copies only of two recent testimonials, not later than first post, Tuesday, 13th September, 1955.

E. G. FELGATE, A.R.I.B.A.,  
Borough Architect.  
Borough Architect's Department, College Street, Keighley. 2494

**MONMOUTHSHIRE COUNTY COUNCIL.**  
**APPOINTMENT OF ARCHITECTURAL STAFF.**

**2 SENIOR ARCHITECTURAL ASSISTANTS, Grade A.P.T. V**, commencing salary £780 to £900 per annum.

**3 ARCHITECTURAL ASSISTANTS, Grade A.P.T. IV**, commencing salary £765 to £825 per annum.

**3 ARCHITECTURAL ASSISTANTS, Grade A.P.T. III**, salary £600 to £725 per annum.

**4 JUNIOR ARCHITECTURAL ASSISTANTS, Grade A.P.T. II**, salary £560 to £640 per annum.

**1 JUNIOR QUANTITY SURVEYING ASSISTANT, Grade A.P.T. II**, salary £560 to £640 per annum.

Forms of application, particulars of post and conditions of service can be obtained from the undersigned.

Applications, together with copies of three testimonials, must be forwarded to the County Architect, Queen's Hill, Newport, Mon., not later than Saturday, the 10th of September, 1955.

VERNON LAWRENCE,  
Clerk of the Council.  
County Hall, Newport, Mon. 2467

**BOROUGH OF TAUNTON.**

Applications are invited for the post of **ARCHITECTURAL ASSISTANT, salary (A.P.T. Grade II) £560-£640 p.a.** in the Borough Housing Architect's Department.

Preference will be given to applicants who have passed the Intermediate Examination of the Royal Institute of British Architects, and the appointment will be subject to the National Scheme of Conditions of Service and the provisions of the Local Government Superannuation Acts.

Consideration may be given to housing accommodation if required.

Applications together with the names of two referees should be submitted to C. Bacon, F.R.I.B.A., Borough Housing Architect, Flook House, Station Road, Taunton, not later than August 31st, 1955.

L. ATWELL,  
Town Clerk. 2485

**CITY OF NOTTINGHAM.**

**ASSISTANT ARCHITECTS, Grade A.P.T. V** (£750-£900 per annum).

Applications are invited from Associates of the Royal Institute of British Architects for the above position in the City Engineer's Department. Commencing salary will depend on experience. Housing accommodation may be made available in suitable cases. Application forms from R. M. Finch, O.B.E., M.I.C.E., City Engineer and Surveyor, Guildhall, Nottingham, returnable by 14th September, 1955. 2487

**COUNTY BOROUGH OF WEST BROMWICH.**  
**BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT.**

Applications are invited for the undermentioned appointments:

**PRINCIPAL ASSISTANT ARCHITECT: Salary Grade A.P.T. V** (£750-£900).

**ASSISTANT ARCHITECTS: Salary Grades A.P.T. II** (£560-£640), **III** (£600-£725) and **IV** (£675-£825).

**TOWN PLANNING ASSISTANTS: Salary Grades A.P.T. II** (£560-£640) and **IV** (£675-£825).

**ASSISTANT BUILDING INSPECTOR: Salary Grade A.P.T. II** (£560-£640).

N.J.C. Conditions of Service.

Applications, naming two referees and stating appointment applied for, should be sent to Borough Surveyor, Town Hall, West Bromwich, by 10th September, 1955. 2466

**UNIVERSITY OF MANCHESTER.**

The Next Session commences on Thursday, 6th October, 1955. 2408

Applications are invited for the post of **SENIOR ARCHITECT, Public Works Department, Government of Pakistan.**

Pay-Rs. 1,400-1,800 p.m. plus allowances. Starting point according to qualifications and experience. Qualifications-A.R.I.B.A. or equivalent + 10 years' practical experience. 1R = 1/6d. approximately. Pakistanis and candidates under 40 preferred. 1st Class return passages provided.

Application forms and further particulars from the Recruitment Officer, Education Division, Pakistan High Commission, 39, Lowndes Square, London, S.W.1. 2457

**BOROUGH OF ERITH.**  
**THIRD ARCHITECTURAL ASSISTANT.**

Applications are invited for the appointment of **THIRD ARCHITECTURAL ASSISTANT, Grade A.P.T. II** £560 × £20-£640 per annum plus London weighting.

Applicants should hold appropriate qualifications.

Applications stating age, qualifications, previous appointments and experience, together with the names and addresses of two referees should be sent to the Borough Engineer & Surveyor, Town Hall, Erith, Kent, not later than Monday the 12th September, 1955.

The Council is unable to assist in the provision of housing accommodation.

J. A. CROMPTON,  
Town Clerk. 2414

**COUNTY BOROUGH OF DUDLEY.**  
**APPOINTMENT OF CHIEF ASSISTANT ARCHITECT.**

Applications are invited for the appointment of **CHIEF ASSISTANT ARCHITECT** on Grade VI, £825 to £935 to £1,000, the commencing salary to be fixed according to experience.

The person appointed will be directly responsible to the Borough Architect. National Joint Council Conditions of Service apply. The successful applicant will be required to pass a Medical Examination.

Applications, together with the names of two referees, to reach me not later than Friday, the 9th September, 1955.

P. D. WADSWORTH,  
Town Clerk. 2494

The Council House, Dudley.

16th August, 1955.

**BOROUGH OF HARROW.**  
**BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT.**

Applications are invited for the undermentioned appointment in the Department of the Borough Engineer and Surveyor (Mr. J. H. Melville Richards, A.M.I.C.E., M.I.Mun.E.):—

**SENIOR ARCHITECTURAL ASSISTANT, A.P.T. Grades III/IV.** Salary commencing £650-£825, plus London "Weighting."

Candidates for appointment should have passed Parts I and II of the R.I.B.A. final or special final examination, or equivalent, and to have had at least five years' experience.

The appointment will be subject to the provisions of the Local Government Superannuation Acts, the passing of a medical examination, and the National Joint Council's Scheme of Conditions of Service.

The Council are unable to assist in obtaining housing accommodation for the successful candidate.

Forms of application may be obtained from the undersigned, to whom they should be returned not later than Monday, the 12th September, 1955.

D. H. PRITCHARD,  
Town Clerk. 2452

Council Offices, Harrow Weald Lodge, Harrow, Middlesex.

**CENTRAL ELECTRICITY AUTHORITY.**  
**EAST MIDLANDS DIVISION.**

Applications are invited for the following position within the Division:—

**SENIOR DRAUGHTSMAN (MECHANICAL),** Generation (Construction) Department. (Vacancy No. 144/55/A.J.)

Candidates should have experience on one or more of the following:—

(i) Design and layout of Power Station equipment, including turbo-alternators, boiler plant, coal and ash plant, and general station auxiliaries.

(ii) H.P. and L.P. steam and feed pipework. Condensing plant and feed heating systems.

(iii) Conveyor plant, coal handling systems, and material handling of station auxiliary equipment.

Salary will be in accordance with Grade 5 (£640 × £20-£740 per annum) or Grade 4 (£750 × £20-£850 per annum) of Schedule D of the National Joint Board Agreement.

Closing date for receipt of applications: 13th September, 1955.

This appointment will be pensionable within the terms and provisions of the Central Electricity Authority and Area Boards Superannuation Scheme.

Applications should be submitted on the official form AE6/ACT, which may be obtained from the Divisional Establishments Officer, Central Electricity Authority, P.O. Box 25, Barker Gate, Nottingham, and should be returned to the undersigned by the date stated. Please quote Vacancy Number.

L. F. JEFFREY,  
Divisional Controller. 2491

19th August, 1955.



# METROPOLITAN BOROUGH OF CAMBERWELL DEPARTMENT OF DIRECTOR OF HOUSING AND BOROUGH ARCHITECT.

(a) ASSISTANT ARCHITECT, A.P.T. III/IV (£630-£865 inclusive of £30 London weighting). Qualification required: A.R.I.B.A. (b) JUNIOR ARCHITECT, A.P.T. II (£590-£670 inclusive). Qualification required: R.I.B.A. Intermediate Examination or its equivalent followed by a minimum of one year in an architectural office. Work of department includes design and construction of public buildings, housing estates including multi-storey construction. No housing provided. Application form from Town Clerk, Town Hall, S.E.5. Closing date 14th September, 1955. 2409

**HAMPSHIRE COUNTY COUNCIL.**  
**ASSISTANT COUNTY PLANNING OFFICER.**  
Applications are invited for the post of ASSISTANT COUNTY PLANNING OFFICER, on Scale A (£1,060 15s.-£1,228 15s. per annum), in the County Planning Department. The principal duties of the post will relate to the architectural and amenity aspects of Town and Country Planning, and applicants must, in addition to being Corporate Members of the Town Planning Institute, be also Corporate Members of the Royal Institute of British Architects. Previous experience in a similar capacity in a Government or Local Government Planning Department would be an advantage, but the primary need is for a qualified architect-town-planner.

The appointment is pensionable and subject to a satisfactory medical report. The officer appointed will be required to keep a car and will receive travelling allowance on the County scale for the time being in force.

Applications stating age, education, qualifications, previous experience and present position, together with a copy of one testimonial and the names of two referees, should reach the County Planning Officer, Litton Lodge, Clifton Road, Winchester, by the 24th September. 2435

**BOROUGH OF BARNES.**  
Applications are invited for the following appointments:—

(a) QUANTITY SURVEYING ASSISTANT. Special Grade £650 x £25-£775.

Applicants should possess the Final Examination of the Royal Institution of Chartered Surveyors and have several years Quantity Surveying experience.

(b) TEMPORARY ARCHITECTURAL ASSISTANTS. (i) Special Grade £650 x £25-£775. (ii) A.P.T. III. £600 x £25-£725. Applicants should be good draughtsmen and have had experience in the preparation of plans and details for general architectural work.

The above appointments carry, in addition to the salaries shown above, London Weighting Allowance of £10 to £30 according to age.

Applications, giving the names of three persons to whom reference can be made, should be sent to the undersigned not later than Saturday, 3rd September, 1955.

The Council cannot provide housing accommodation.

W. R. SHEPHERD, A.M.I.C.E., F.R.I.C.S.,  
Borough Engineer & Surveyor.  
Municipal Offices, Sheen Lane, S.W.14.  
15th August, 1955. 2437

**CITY OF WINCHESTER.**  
Applications are invited for the post of ARCHITECTURAL ASSISTANT in the City Engineer's Office. It is essential that the applicant should be a neat and accurate draughtsman and should have had previous experience in an architect's office. Salary will be within Grade II of the National Scales, and the appointment is subject to the Local Government Superannuation Act.

Applications stating age and details of experience, together with the names and addresses of two referees, should be addressed to the undersigned, and reach this office not later than WEDNESDAY, 14th September, 1955. Canvassing, either directly or indirectly, will disqualify.

R. H. McCALL, Town Clerk.  
Guildhall, Winchester.  
16th August, 1955. 2438

**LANCASHIRE COUNTY COUNCIL.**

**DIVISIONAL PLANNING OFFICER** required at WIGAN. Salary £1,307 10s. 0d. rising by increments of £52 10s. 0d. to £1,517 10s. 0d.

The appointment is superannuable and subject to a medical examination. The successful candidate will be responsible to the County Planning Officer for the planning of that part of the Administrative County which is bounded on the North by Leyland, on the West by Ormskirk and on the East by Bolton, and which surrounds but does not include the County Boroughs of Wigan and Warrington. Candidates must be members or associate members of the Town Planning Institute, and have one or more of the following qualifications: a University degree in Civil Engineering, Architecture or Estate Management, A.M.I.C.E., A.M.I.Mun.E., A.R.I.B.A., A.R.I.C.S. They must also have had wide experience in the preparation and administration of planning schemes and possess a sound knowledge of the various Acts and Orders dealing with Town and Country Planning. Applications giving age, qualifications, experience, present appointment, etc., and two referees to U. Aymer Coates, Esq., County Planning Officer, East Cliff County Office, Preston, by 12th September, 1955, in envelopes endorsed "Wigan D.P.O." 2442

# NATAL PROVINCIAL ADMINISTRATION. VACANCIES FOR FOUR TOWN PLANNING OFFICERS.

Applications are invited for appointment to the post of TOWN PLANNING OFFICER in the office of the Provincial Town and Regional Planner, at a salary on the scale £540 x £48-£1,020. Commencing salary will be determined according to qualifications and experience. In addition to the above salary, temporary cost of living allowance at the prevailing Public Service rates is payable, amounting at present to £234 for married officers only.

Applicants should have an up-to-date knowledge and preferably some experience of town and regional planning practice, and should be corporate members of the Town Planning Institute, or hold a recognised town planning qualification.

Successful applicants will be reimbursed to cover the personal transport expenses of themselves and their immediate families, incurred in taking up their appointment in Pietermaritzburg, and will be paid at a rate equivalent to their basic salary during the period of the voyage. They will be required to enter into a contract to serve the Administration for a period of either 3 or 5 years on the satisfactory conclusion of which period their return transport expenses will be defrayed. During the period of the contract, officers may be offered a permanent appointment in the South African Public Service.

The Provincial Town and Regional Planner is responsible for:

(a) the preparation of regional surveys and plans for both developed and undeveloped regions.

(b) the preparation of town planning schemes for the smaller local authorities including detailed layouts for residential and industrial areas.

(c) the preparation of reports on town planning schemes submitted for approval by the larger local authorities.

(d) investigating all appeals lodged in terms of the Town Planning Ordinance.

(e) investigations and research required for the formulation of a planning policy for Natal. Forms of application and further information on the scope of the work, conditions of employment and living conditions in Pietermaritzburg may be obtained from the Staff Clerk, Room 302, South Africa House, Trafalgar Square, London, W.C.2.

Applicants will be interviewed in London on or about the 3rd October, 1955, by the Provincial Town and Regional Planner.

Application forms must be completed and returned, together with copies of not more than three testimonials, to the above address not later than 21st September, 1955. 2392

# COUNTY BOROUGH OF GREAT YARMOUTH. APPOINTMENT OF TWO SENIOR ASSISTANT ARCHITECTS.

Applications are invited for the above appointments in the Borough Engineer's Department. Applicants should be A.R.I.B.A. with wide administrative experience in the handling of large contracts appropriate to a senior post.

Housing Accommodation will be available.

Forms of application giving details of salary and conditions of appointment may be obtained from the Borough Engineer, Town Hall, and should be returned to me in an envelope endorsed "Senior Assistant Architect" by not later than the 5th September, 1955.

FARRA CONWAY, Town Clerk.

Town Hall, Gt. Yarmouth.  
15th August, 1955. 2428

# URBAN DISTRICT OF FELTHAM. ARCHITECTURAL ASSISTANT.

Applications are invited for the appointment of an ARCHITECTURAL ASSISTANT on the Council's unestablished staff at a salary within the National Scales, according to qualifications and experience, up to the maximum of Grade A.P.T. IV, plus London "weighting".

Forms of application, obtainable from the undersigned, must be returned accompanied by copies of two testimonials, not later than 5th September, 1955. Canvassing directly or indirectly will disqualify and applicants must disclose, in writing, whether to their knowledge they are related to any member of or the holder of any senior office under the Council.

M. W. COUPE, Clerk of the Council.

Council Offices, Feltham, Middlesex. 2430

# URBAN DISTRICT OF EBBW VALE. ARCHITECT'S DEPARTMENT.

Appointment of ARCHITECTURAL ASSISTANT, Grade II, £560-£640. Applicants to be Inter R.I.B.A. or Inter R.I.C.S. Further details and Form of Application from Clerk to the Council, Council Offices, The Walk, Ebbw Vale. 2407

# PADDINGTON BOROUGH COUNCIL.

require ARCHITECTURAL ASSISTANT A.P.T. II (£590-£670 inclusive). Candidates should have Inter R.I.B.A. and be used to preparing working and detail drawings; be good draughtsmen and been engaged on and interested in the best contemporary architecture. Write age, qualifications, experience, present and past appointments and names and addresses of three referees to the undersigned by 30th August, 1955 (Quoting A.233). W. H. BENTLEY, Town Clerk.

Town Hall, Paddington Green, W.2. 2384

# EAST ANGLIAN REGIONAL HOSPITAL BOARD.

Department of the Regional Architect (Guy Aldis, A.R.I.B.A., A.A.Dipl.) for planning of a scheme for the major development of a General Hospital which the Board is about to undertake.

(1) ASSISTANT ARCHITECTS—Candidates must be qualified and registered architects and possess good general experience in design, construction and specification writing. Knowledge of hospital work desirable. Salary £840-£930 per annum.

(2) SENIOR ASSISTANT ENGINEER (Mechanical)—Candidates to be experienced in design and installation of heating, ventilating, steam boiler plant and services, etc., and must be A.M.I.Mech.E., or equivalent. Salary £920-£1,095 per annum.

(3) ASSISTANT ENGINEER (Mechanical)—Candidates to be experienced in the work at (2) and should be A.M.I.H.V.E. or Graduate Members of the I.H.V.E., or equivalent. Salary £840-£930 per annum.

(4) ASSISTANT ENGINEER (Electrical)—Candidates to be experienced in design and installation of electrical engineering services and should be A.M.I.E.E., or Graduate Members of I.E.E., or equivalent. Salary £840-£930 per annum.

(5) ENGINEERING ASSISTANTS—Candidates to be experienced in work described above and possess Ordinary National Certificate (Mechanical or Electrical). Salary £480 (at age 21 or over)-£670 per annum.

(6) DRAUGHTSMEN (Engineering)—Candidates to have had suitable training and experience. Salary £390 (at age 21 or over)-£580 per annum.

Additional increments within the scale based on experience and age may be granted in respect of posts (1), (3) and (4). Commencing salary for post (5) may be fixed at point above minimum but will not exceed £560 per annum.

Applications indicating appropriate post and stating age, qualifications, experience and details of present position with names of three referees to Secretary of Board, 117, Chesterton Road, Cambridge, by 9th September, 1955. 2472

# COUNTY BOROUGH OF WEST HAM. BOROUGH ARCHITECT AND PLANNING OFFICER'S DEPARTMENT.

There are vacancies on the permanent staff for:—

(a) SENIOR ASSISTANT ARCHITECT—A.P.T. V (£750 x £30-£900).

(b) ASSISTANT ARCHITECTS—A.P.T. IV (£675 x £30-£825).

(c) ARCHITECTURAL ASSISTANTS—A.P.T. I/II (£500 x £20-£580); (£560 x £20-£640).

(d) SENIOR ASSISTANT PLANNING—A.P.T. IV (£675 x £30-£825), plus London allowance.

Point of entry in salary scale dependent upon qualifications and experience.

Applicants for posts (a) and (b) should be A.R.I.B.A. or Registered Architect; (c) should be Inter. standard with office experience; and (d) should be Architect/Planners.

There is an extensive programme of redevelopment and the architectural work includes Housing, Schools and Public Buildings.

Application Forms from Borough Architect and Planning Officer, Thomas H. North, O.B.B., F.R.I.B.A., Dist. T.P., 70, West Ham Lane, Stratford, E.15 (returnable by 6th September, 1955). 2345

# COUNTY COUNCIL OF ESSEX. COUNTY PLANNING DEPARTMENT.

Applications are invited for the post of SENIOR PLANNING ASSISTANT A.P.T. Grade IV (£675-£825) at Romford.

Applicants must have had considerable experience in the preparation of Development Plans and in detailed planning, design and layouts. They must be Corporate Members of the Town Planning Institute or other comparable professional Institute.

Appointment subject to Superannuation and medical examination.

Application forms from County Planning Adviser, Broomfield Place, Broomfield, Chelmsford, to whom they should be returned as soon as possible. Canvassing disqualifies. 2369

# GLOUCESTERSHIRE COUNTY COUNCIL.

ASSISTANT ARCHITECTS required. Qualified Members of R.I.B.A. Grade IV (£675-£825), Grade III (£600-£725: £560-£775 if at least five years' experience). Also ARCHITECTURAL ASSISTANTS, Grade II (£560-£640). Inter. R.I.B.A. Appointments open to both male and female candidates. N.J.C. Conditions of Service. Medical Examination.

Apply giving age, experience, present position, salary and date of appointment, previous appointments, names and addresses of two persons for references, County Architect, Shire Hall, Gloucester, by 31st August, 1955.

GUY H. DAVIS, Clerk of the County Council. 2303

# LONDON COUNTY COUNCIL. ARCHITECT'S DEPARTMENT.

Vacancies for ASSISTANTS (Structural Engineers or Building Surveyors) in the District Surveyor's Service.

Commencing salary up to £783, according to experience and qualifications.

Particulars and application form, returnable by 20th September, from Architect (AR/EK/DSA/5), The County Hall, S.E.1. (1293) 2446

**BOROUGH OF CHELMSFORD.**  
BOROUGH ENGINEER, SURVEYOR AND  
ARCHITECTS' DEPARTMENT.  
ASSISTANT ARCHITECT (Special Grade  
£650-£775 p.a.).  
ASSISTANT ENGINEER (Special Grade  
£550-£755 p.a.).  
ENGINEERING ASSISTANT, Grade A.P.T. I  
(£450-£590).

Applications are invited for these appointments,  
further particulars of which can be obtained from  
the Borough Engineer, Surveyor and Architect's  
Department, Municipal Offices, Chelmsford.  
Closing date 9th September, 1955.

B. A. FRANCIS,  
Town Clerk. 2385

DEVON COUNTY COUNCIL invite appli-  
cations for the following posts:

SENIOR ASSISTANT ARCHITECT, A.P.T. V.  
ASSISTANT ARCHITECT, A.P.T. IV.  
ARCHITECTURAL ASSISTANTS, A.P.T. II.  
Particulars and application forms returnable by  
26th September, 1955, from the County Architect,  
97, Heavitree Road, Exeter. 2424

COUNTY BOROUGH OF BLACKBURN.  
ASSISTANT QUANTITY SURVEYOR.

Applications invited for the above permanent  
appointment in the Borough Engineer's Depart-  
ment: Salary Grade IV: £275-£325. Applicants  
must be experienced in preparation of bills of  
Quantities, Specifications, Estimates, and settle-  
ment of final accounts. Preference given to  
Professional Associates of the Royal Institution  
of Chartered Surveyors. Provision of housing  
accommodation, if required, will be given con-  
sideration. Applications, stating age, qualifica-  
tions, experience, and past and present appoint-  
ments, with names of two referees to the Borough  
Engineer, Town Hall, by September 9th.

CHAS. S. ROBINSON,  
Town Clerk. 2493

CITY AND ROYAL BURGH OF EDINBURGH.  
ARCHITECTURAL ASSISTANT, A.P.T. IV/V.  
£615-£715, must be member of the R.I.B.A. by  
examination and have had a good general ex-  
perience. Applications, stating age, qualifica-  
tions, experience, present position and salary,  
together with the names of two referees should  
be lodged with the undersigned not later than  
fourteen days from the appearance of this  
advertisement. A. Steele, A.R.I.B.A., City  
Architect, City Chambers, Edinburgh, 1. 2410

LANCASHIRE COUNTY COUNCIL.  
There is a vacancy for a SENIOR ASSISTANT  
ARCHITECT requiring new experience on School  
building. Salary Scale £750-£900. Application  
forms from the County Architect, P.O. Box 26,  
County Hall, Preston, to be returned by Monday,  
12th September, 1955, quoting Ref. A/AJ. 2412

BOROUGH OF ROMFORD.  
Applications are invited for the appointment of  
ARCHITECTURAL ASSISTANT in the Borough  
Engineer and Surveyor's Department in Grade  
A.P.T.I. of the National Salary Scales (£500-  
£580 per annum). The commencing salary will be  
fixed according to qualifications and experience.

Particulars and Conditions of the appointment  
are obtainable from the Town Clerk, Town Hall,  
Romford, to whom completed applications must  
be forwarded not later than 5th September, 1955.  
2463

BOROUGH OF REDCAR.  
APPOINTMENT OF ARCHITECTURAL  
ASSISTANT, GRADE II.

Applications are invited for the above appoint-  
ment on the staff of the Borough Engineer.

Applicants must have had a good general ex-  
perience and be qualified in accordance with the  
N.J.C. Conditions of Service.

Application forms may be obtained from the  
undersigned to whom they must be returned, not  
later than Monday, 12th September, 1955.

The provision of housing will be considered, if  
necessary.

Canvassing will disqualify.  
HUGH CALDWELL,  
Town Clerk. 2451

COUNTY BOROUGH OF BURY.  
Applications invited from suitably qualified  
persons for the appointment of ARCHITECTURAL  
ASSISTANT, Borough Engineer's  
Department, Special Grade (£550-£775).

Applications, stating age, details of training,  
qualifications and experience, together with  
names and addresses of two persons to whom  
reference may be made must reach me not later  
than 3rd September.

EDWARD S. SMITH,  
Town Clerk. 2469

17th August, 1955.

CITY AND COUNTY OF KINGSTON UPON  
HULL City Architect's Department.-Applications  
are invited for the following posts:- (a)  
ASSISTANT QUANTITY SURVEYOR, Grade V,  
£750-£900 per annum; (b) ARCHITECTURAL  
ASSISTANTS (S.C. (b) (c)), £500-£640 per  
annum, according to experience.

Housing accommodation will be provided for  
successful married candidates.

Forms of application may be obtained from  
the undersigned and should be returned com-  
pleted not later than 9th September, 1955.

A. RANKINE,  
City Architect. 2481

Guildhall, Kingston upon Hull.

HARLOW DEVELOPMENT CORPORATION.  
Architect Planner: Frederick Gibberd, C.B.E.,  
F.R.I.B.A., M.T.P.I.

Executive Architect: Victor Hamnett, B.Sc.,  
A.R.I.B.A., A.R.I.C.S., A.M.T.P.I.

ASSISTANT ARCHITECTS, GRADE V(b),  
£565 x £30-£715 per annum for New Town  
work. Minimum standard Intermediate R.I.B.A.  
Superannuation. Accommodation available in due  
course in suitable cases.

Detailed applications with names of two refer-  
ees to General Manager, "Terlings," Harlow,  
Essex, within 14 days.

ARCHITECTURAL DRAUGHTSMEN  
are required by the Victorian (Australian) Govern-  
ment in the Department of Public Works,  
Melbourne, for the Preparation of Contract draw-  
ings, details and specifications for all types of  
Government works.

Salary ranging from £786 to £1,366 per annum,  
according to qualifications.

Further particulars may be obtained from The  
Agent-General for Victoria, Victoria House,  
Melbourne Place, Strand, London, W.C.2. 2492

METROPOLITAN BOROUGH OF  
HAMPSTEAD.

Applications are invited for a TEMPORARY  
ASSISTANT ARCHITECT, A.P.T. IV (£675 to  
£825, plus London Weighting). The successful  
candidate will be a member of a team engaged  
on housing and flat schemes and gain valuable  
experience both in an Architect's office and on  
the site. Applications to the Town Clerk, Town  
Hall, Haverstock Hill, N.W.3, with the names of  
three referees, by 12th September, 1955. 2470

## Architectural Appointments Vacant

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

The engagement of persons answering these  
advertisements must be made through a Local  
Office of the Ministry of Labour or a Scheduled  
Employment Agency if the applicant is a man  
aged 15-64 inclusive or a woman aged 15-89  
inclusive unless he or she or the employment is  
excepted from the provisions of the Notification  
of Vacancies Order, 1952.

ASSISTANT required in busy practice in West  
End, in early twenties, about Intermediate  
R.I.B.A. standard. Excellent opportunities for  
gaining all round experience. Box 1942.

ASSISTANT wanted-apply Skinner, Bailey &  
Lubetkin, 58, Queen's Gardens, W.2. PAD  
1637. 2344

RAMSEY, MURRAY & WHITE have a vacancy  
for ARCHITECTURAL ASSISTANT, about  
Intermediate standard, preferably with office ex-  
perience. Salary according to qualifications.  
Apply 32, Wigmore Street, London, W.1, or tele-  
phone WELbeck 1409. 2923

ARCHITECT'S ASSISTANT required in West  
End Office. Salary £700 to £800. Write stat-  
ing age and experience to Box K531, Willings,  
362, Grays Inn Road, W.C.1. 2340

ARCHITECTURAL ASSISTANTS, Intermediate  
and Final standard, required immediately  
in busy established Architect's office, North of  
London. Varied work of contemporary character  
comprising industrial, commercial and housing  
projects. Please reply, giving details of experience,  
qualifications, when available and salary required,  
to Box 2243.

DUKE & SIMPSON urgently require SENIOR  
and JUNIOR ARCHITECTURAL ASSIS-  
TANTS, with office experience. Progressive posts.  
Weeks' paid holiday if satisfactory after two  
months' probationary period. Phone LANGham  
7317 for appointment at 6/7, Great Castle Street,  
Oxford Circus, W.1. 2376

IMPERIAL CHEMICAL INDUSTRIES  
LIMITED, WILTON WORKS.

CIVIL MECHANICAL ELECTRICAL  
PERMANENT STAFF APPOINTMENTS are  
available for young ENGINEERS with  
Honours Degrees.

Wilton Works is a modern factory which  
provides opportunities for young men of ability in  
many fields of engineering; the organisation is  
continuously expanding and offers training towards  
higher management.

Wilton is situated in the North Riding of York-  
shire near the coast, has first class working con-  
ditions, five-day working week, Pension Fund,  
Profit Sharing Scheme and excellent internal  
recreation facilities.

Out of pocket expenses are paid for applicants  
invited for interview and after joining the staff  
married men will receive a refund of removal  
expenses up to £50 together with rail travel  
expenses. Schemes for assistance in housing are  
available, and for house purchase facilities exist  
for loans and advances for legal charges.

Write for application form to Staff Manager,  
Imperial Chemical Industries Limited, Wilton  
Works, Middlesbrough, quoting reference ICI/X/  
252/d. 2490

SENIOR ARCHITECTURAL ASSISTANT re-  
quired in office in Charing Cross District.  
Must be experienced. Write stating age, expe-  
rience and salary required to Box L533, Willings,  
362, Grays Inn Road, W.C.1. 2241

ARCHITECTURAL ASSISTANT required,  
Intermediate to Final standard, with office  
experience, for small busy practice. Shaw &  
Lloyd, F.R.I.B.A., 74, Gt. Russell Street, W.C.1.  
MUSeum 9933. 2145

SENIOR ASSISTANT ARCHITECTS required  
for medium sized but busy West End Office,  
capable of controlling schemes throughout and  
working mainly on own initiative. Works in  
hand include Housing, Offices, Churches, etc..  
Apply stating qualifications, experience, age and  
salary required, to Box 2221.

ARCHITECTURAL ASSISTANTS of R.I.B.A.  
Final or Intermediate Standard (or equiva-  
lent) required immediately for busy private prac-  
tice, 50 miles London. Salary is in accordance  
with age and experience. Assistance given with  
accommodation if required. Please send full  
details to Box 2229.

ARCHITECTURAL ASSISTANTS required for  
Coventry and London. All Grades. These  
positions offer excellent experience in wide  
variety of work, with salaries closely related to  
capabilities and reviewed September annually.  
Pension Scheme available. Travelling expenses  
paid to applicants selected for interview. W. S.  
Haitrell & Partners, 4, Queen's Road, Coventry,  
and 14, Hanover Square, London, W.1. 2211

SENIOR ASSISTANT required for University  
and Hospital Work. Good salary, depen-  
dent on experience. Non-contributory pension  
scheme in being after probationary period. Three  
weeks holiday a year, and five day week. Reply,  
stating age and experience, to: Thomas  
Worthington & Sons, 178, Oxford Road, Man-  
chester, 13. 2209

LEWELLYN SMITH & WATERS invite appli-  
cations from (a) QUALIFIED ARCHITECTS  
to take charge of large industrial projects. Expe-  
rience of job management and knowledge of  
present-day constructional forms is essential.  
(b) QUALIFIED and UNQUALIFIED SENIOR  
and JUNIOR ASSISTANTS to work on these and  
other projects. (c) In Worcester Office, ASSIS-  
TANT of R.I.B.A. Inter. Standard with three  
years' office experience. Preferably with expe-  
rience of job supervision and specifications.  
Salary according to experience and ability.  
Write 103, Old Brompton Road, S.W.7. 2198

ARCHITECTURAL ASSISTANT with at least  
three years' drawing office experience re-  
quired by City firm. Knowledge of industrial and  
commercial buildings an advantage. Good salary  
and prospects. Box 2195.

WESTWOOD, SONS & HARRISON,  
W.F.R.I.B.A., urgently require a SENIOR  
ARCHITECTURAL ASSISTANT, A.R.I.B.A.  
standard, with office experience; also JUNIOR  
ASSISTANT. Apply in writing, giving qualifica-  
tions, to 46, Baker Street, W.1. 1958

ARCHITECTURAL ASSISTANT required for  
work in the City. State age, experience, and  
salary required, to Clifford Strange, 5, London  
Wall Buildings, E.C.2. 1910

ARCHITECTURAL ASSISTANT required by  
Major Oil Company undergoing expansion,  
for its Sheffield Office. Applicants should be of  
Intermediate standard, and must be capable of  
carrying out work on the design and re-modelling  
of service stations. Social Club, Pension and Life  
Assurance scheme, generous sickness benefits.  
Write, giving full details of experience, age and  
salary required, to Box 9252, quoting Ref. A.A. 588.

RONALD WARD & PARTNERS require  
several capable ARCHITECTURAL ASSIS-  
TANTS, with contemporary outlook and willing  
to use own initiative. Salary range £400 to £800.  
Interesting and varied work, home and abroad.  
Congenial working conditions. Apply 29, Chesham  
Place, Belgrave Square, S.W.1. Telephone:  
Belgravia 3561. 2135

WANTED-Capable Intermediate standard  
ASSISTANT in City Office, varied prac-  
tice, congenial working conditions. Please phone  
Avenue 5629 or 4430 for appointment. 2380

SENIOR ARCHITECTURAL DRAUGHTSMAN  
required for Southampton Architects. Good  
draughtsmanship and sound constructional know-  
ledge essential for a varied practice. Write giving  
full details, age, experience and salary required  
to Box 2349.

JUNIOR ARCHITECTURAL ASSISTANT, in  
early stages of training for full time employ-  
ment, required for office giving opportunity for  
varied experience. Ring Thomas F. Ford &  
Partners (VIC 4853) for appointment. 2342

ARCHITECTURAL ASSISTANT required in  
busy private office in Surrey-Intermediate  
standard-write stating age, experience and  
salary required to Box 2282.

ARCHITECTURAL ASSISTANT (Intermediate  
standard) required at once for varied  
practice in City office. Write, stating age, expe-  
rience, and salary required, to Henry C. Smart &  
Partners, L.R.I.B.A., 120, Moorgate, E.C.2. 1611

ARCHITECT'S ASSISTANT required for the  
London office of a firm of Architects with  
interests throughout the country, must be of  
Intermediate to Final R.I.B.A. standard. Super-  
annuation scheme. Apply in writing to Messrs.  
Cotton, Ballard & Blow, 133a, Wembley Park  
Drive, Wembley, Middlesex. 1763

JUNIOR ASSISTANT required by Industrial  
Design organization to work with architect  
and designers on varied projects. Must be experi-  
enced and good draughtsman. Write giving full  
details and salary required. Box 2464.

FREDERICK GIBBERD requires Inter-  
mediate ARCHITECTURAL ASSISTANT,  
with office experience. Please apply in writing  
stating experience and salary required to: 8, Percy  
Street, London, W.1. 2404



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

APPLICATIONS are invited for the following permanent and supernumerary appointments. Superannuation rights under Local Authority Schemes are transferable.

S.V. 442—ARCHITECTS GRADE II.—Salary £600 × £25—£650 × £30—£900.  
Candidates should be Corporated Members of the R.I.B.A.

S.V. 443—ARCHITECTURAL ASSISTANTS, GRADE I.—Salary £525 × £25—£650 (exceptionally to £800).

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

S.V. 444—ARCHITECTURAL ASSISTANTS, GRADE II.—Salary £440 × £20—£540.  
Candidates should have passed or be studying for the Intermediate Examination of the R.I.B.A.

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

The point of entry into the salary scales of the respective grades will depend on the qualifications and experience of the applicant.

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

The Secretary, National Coal Board, East Midlands Division, Sherwood Lodge, Arnold, Notts.

Envelopes and applications should be marked with the appropriate "S.V." reference number. Original testimonials should not be sent. 2426

CHESTER Architect with small busy practice, requires ASSISTANT, Inter. R.I.B.A. standard or recently qualified, seeking good experience. Previous office experience not essential. Please apply in writing stating age, experience and salary required, to Ronald S. Biggins, Richmond House, 123, Boughton, Chester. 2465

AMBITIOUS JUNIOR ASSISTANT required in busy "young" office. Capable of working on varied industrial, commercial and domestic schemes under seniors. Ability and experience main criterion; salary £350—£450 p.a. David Stern, 24, Gloucester Place, Portman Square, W.1. HUN 0451. 2448

TWO really capable ASSISTANTS required in active young office. Common sense and experience more important than qualifications. Salary by agreement. "Phone Hunter 0451 or write Box 2495.

FIRST ASSISTANT required for new London practice. Preferably office trained with several years' experience. Good opportunity for energetic man. Salary by arrangement. Write full particulars, Box 2460.

ARCHITECTURAL ASSISTANT required by Braddock & Martin-Smith, A/R.I.B.A. Type of work in progress: schools, offices, flats, churches. Type of office: small and busy. Long term engagement preferred. Opportunity to control jobs. Five-day week. Environment unusually pleasant. Write to the above firm at The East Gallery, St. John's Church, St. John's Wood, N.W.8, giving age, experience and salary required. 2459

ARCHITECTURAL ASSISTANTS required for Birmingham Office and for Site Office in Shropshire. Interesting work, attractive salary. C. Howard Crane & Partners, 367, Hagley Road, Birmingham, 17. 2398

FREDERICK GIBBERD requires an ASSISTANT interested in design, school qualified. Salary £700 p.a. Please apply in writing to: 8, Percy Street, W.1. 2403

ARCHITECTURAL ASSISTANT required by leading firm of Building and Civil Engineering Contractors for their Regional Office in Manchester. Interesting Commercial and Housing work. Please reply, stating salary required, experience and qualifications. Box 2405.

ARCHITECTURAL ASSISTANT required by city office; Final or Intermediate Standard, with office experience. Write full details Box 2383.

AN Architect running a small contemporary Mayfair office, celebrating its second anniversary, having too much work for one and not enough for two, would consider joining hands with another in a similar position. Telephone Mayfair 3506 or write Box 2386.

ARCHITECT'S ASSISTANT required. Able to take charge of jobs from sketch plans to completion. Salary according to experience. Apply: Imrie, Porter & Wakefield, 35, Market Place, Warminster, Wiltshire. 2389

CHIEF ASSISTANT required by private firm of Architects in Westminster. Varied practice. Experience and good references essential. Salary £1,000. Apply Box 2433.

ARCHITECTURAL ASSISTANTS (2) required in City Office with a wide and comprehensive range of commissions. Salary range £559—£832. Seely & Paget, Central 0521. 2266

HALLWOOD LINGARD & WILLIAMS B.A./A.R.I.B.A., require a young school-trained ASSISTANT for their North West Wales Offices. Rapidly expanding practice with interesting rural contemporary work. Salary up to £750 per annum. Box 2443.

TWO SENIOR and two JUNIOR ASSISTANTS are required for a progressive office (10-12 Assistants), with a mixed bag of work, including shops, offices, alterations, factories and interiors. Assistants are encouraged to show initiative and assume responsibilities in accordance with their ability. More than adequate salaries by arrangement and according to experience. Apply to: C. J. Epril, F.R.I.B.A., & Associates, 55, Pall Mall, S.W.1. Telephone number W11tehall, 1182. 2447

LONDON Brewery Architect requires capable ASSISTANT with special experience on working drawings and specifications. Good opportunity for right man. Age, salary and details to Box 2445.

ARCHITECTURAL ASSISTANTS required for commercial practice, West End area; vacancies for two ASSISTANTS of Intermediate Standard; Apply Brian L. Sutcliffe & Partners, 5, Manchester Square, W.1. Telephone Welbeck 9237. 2450

ARCHITECTURAL ASSISTANTS interested in the field of Building for Atomic Energy could be employed by private consultants in London and should apply to Box 235, Glovers Advertising, 351, Oxford Street, London, W.1. 2453

ASSISTANT required, aged about 25 years, or up to Intermediate Standard for industrial and domestic work. C. W. Shrimplin, A.R.I.B.A., Prudential Chambers, Upper George Street, Luton, Beds. 2456

BRISTOL ARCHITECTS require ASSISTANT with at least three years' office experience of Intermediate or near Final Standard. Apply, giving details of experience and salary required, to Box 2416.

CLIVE PASCALL, F.R.I.B.A., 124, Victoria Street, S.W.1 (Victoria 0994) requires ARCHITECTURAL ASSISTANT, about Inter. R.I.B.A. Standard, aged 22-30 years, for medium-sized practice dealing with contemporary work of considerable variety, industrial, commercial and domestic. Salary £6 to £10 per week, according to age, experience and ability, plus Luncheon vouchers. 2411

VACANCY for ARCHITECTURAL ASSISTANT Grade I, salary £325 × £25 to £650: Headquarters in Glasgow. A.R.I.B.A. qualification not essential but of considerable advantage. Apply to Area Secretary, Central West Area, National Coal Board, 36, Robertson Street, Glasgow, giving full details. 2413

ARCHITECTURAL ASSISTANTS required, Intermediate standard. Excellent scope for use of own initiative, and varied experience in practice including hospital, ecclesiastical, industrial, domestic and general work. Good draughtsmanship essential. Apply, giving full details, including salary required, to: H. Anthony Clark, F.C. Roberts & Partners, Chartered Architects, 41, Regent Street, Wrexham. 2415

ARCHITECT'S ASSISTANTS required immediately, as follows:—  
Mombasa. Two ASSISTANTS of Final R.I.B.A. Standard, preferably unmarried. Salary, £900 to £1,200 per annum, according to experience and ability.  
Kampala. SENIOR ASSISTANT, Salary according to ability and experience. Apply R. S. Cobb, F.R.I.B.A., Mill End, Kidlington, Oxon. 2396

JUNIOR DRAUGHTSMAN required by a multiple shop company in their Architect's Dept. Five-day week, pension scheme, canteen and social facilities. Write stating age, experience and salary required, to Box 2418.

EDINBURGH Office of David Carr & Stuart Matthews requires SENIOR and JUNIOR ASSISTANTS. Seniors must have considerable experience in running contracts, general design, planning and construction. Juniors should have good practical office experience and/or school qualifications. For interview write, giving brief particulars and salary required, to above firm at 14, Lynedoch Place, Edinburgh. 2395

ARCHITECTURAL ASSISTANT with some 2½ years' experience required in city office, for work on several important modern buildings. Sound knowledge of construction essential. Write giving full particulars including salary required to Campbell Jones & Sons, 72, Cannon Street, E.C.4. 2419

ARCHITECTURAL DRAUGHTSMAN required in busy city office for work on large modern buildings. Salary according to experience. Apply to Campbell Jones & Sons, 72, Cannon Street, E.C.4. 2420

NORFOLK Architect offers job in his small growing office to really keen ASSISTANT. Pleasant surroundings. Must be able drive, preferably own car. Capable dealing with surveys to final accounts. Good draughtsman with initiative. Permanent, good prospects to right man. Petrol allowance. Write experience, age, salary, to Box 2427.

ARCHITECTURAL ASSISTANT required with sound knowledge of design and construction of industrial-type buildings also necessary surveying and levelling. The post is permanent and pensionable. Applicants must state age, past experience, salary required, and when at liberty. Staff restaurant available. Reply within ten days to Chief Architect, Bleachers' Association Ltd., Blackfriars House, Manchester, 3. 2405

A JUNIOR and a SENIOR ARCHITECTURAL ASSISTANT required. Old established practice. Industrial, Domestic and Hospital work. Apply in writing, stating age, experience, training and salary required, to: William Palmer & Partners, Chartered Architects, 8, The Town, Enneld, Middlesex. 2483

NATIONAL COAL BOARD—N.W. DIVISION ARCHITECTURAL ASSISTANT GRADE II required for Divisional Architect's Office, experience in preparation of working drawings under supervision with good standard of draughtsmanship necessary, preference given to applicants working for R.I.B.A. Intermediate examination. Salary according to qualifications and experience within scale £440 to £540. Applications stating age, education, qualifications, experience, present employment to Establishment Officer, 40, Portland Street, Manchester 1, within 14 days. 2482

TWO ASSISTANTS.—A SENIOR with administrative in addition to architectural ability, possession of a car an advantage; and a JUNIOR with drawing office experience. Salaries in the £1,200—£1,500 and £500—£750 ranges, respectively, according to experience and qualifications. Interesting work, large scale housing, Schools, Hospitals, etc. Five-day week. Write or phone William Crabtree, 8, Robert Adam Street, W.1. Welbeck 6918. 2480

ASSISTANT ARCHITECTS are required by Wornum and Playne, 19, Queen Anne's Gate, Westminster, S.W.1, in the salary range of £500 to £1,000 p.a. for work on various projects. Please apply in writing, giving only brief details of experience. 2478

REQUIRED, QUALIFIED ASSISTANT, general practice. Knowledge School and Church work an advantage. Fry, Paterson & Jones, 28, Waterloo Street, Weston-super-Mare. 2477

JUNIOR ASSISTANT, competent to make measured surveys and prepare working drawings, required by Wallis & Smith, Chartered Architects, 6a, London Street, Basingstoke. Apply by letter, stating salary required. 2476

CLIFFORD CULPIN & PARTNER require two additional ASSISTANTS. Salary approximately £650 to £750, according to experience. Apply in writing to 3, Southampton Place, W.C.1. 2475

TAYLOR WOODROW HOMES LIMITED require an ARCHITECTURAL ASSISTANT (Intermediate Standard) for large scale housing development. Must be capable of producing full working drawings. Pensionable post. Write, giving full details of experience, etc., to Personnel Manager, Ruislip Road, Southall, Middlesex. 2474

ARCHITECTURAL ASSISTANT required in West End practice, having passed Inter. and had office experience. Write stating full particulars and salary required. Box 2473.

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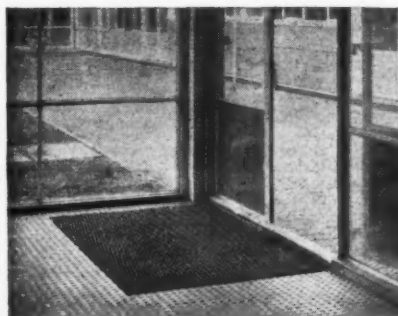
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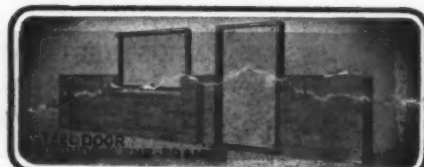
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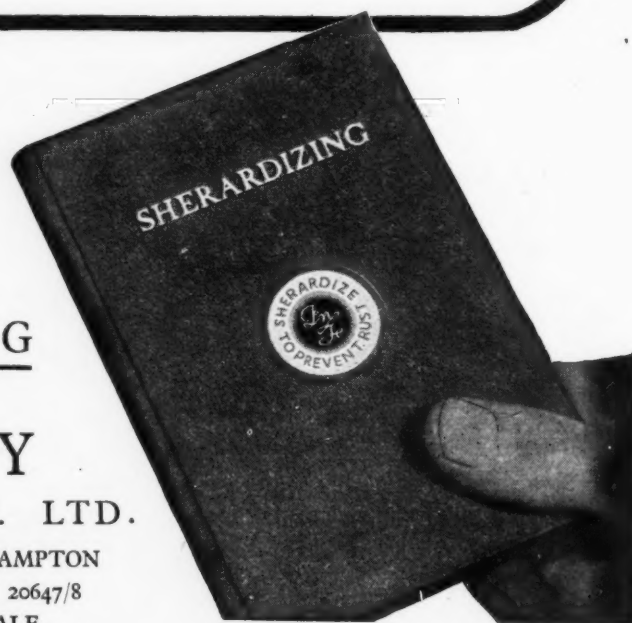
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# You've saved money by specifying **Brolac** AND **MURAC P.E.P.**

SAYS PAINTER BILL



The use of BROLAC high gloss finish and MURAC P.E.P. (p.v.a. emulsion paint) effects considerable economies. BROLAC—based on Hankol, world-famous for its waterproof properties—is the *toughest* high gloss finish. Retaining its superb gloss for years it cuts repainting costs many times over.

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*The new Research and Development Centre at Boreham Wood, Hertfordshire, opened recently by The Rt. Hon. Nigel Birch, O.B.E., M.P., Minister of Works*

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