

THE ARCHITECTS' JOURNAL



★ 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.

IHVE Institution of Heating and Ventilating Engineers. 49, Cadogan Square. Sloane 1601/3158
 IIBDID Incorporated Institute of British Decorators and Interior Designers. 100 Park Street, Grosvenor Square, W.1. Mayfair 7086
 ILA Institute of Landscape Architects. 2, Guilford Place, W.C.1. Holborn 0281
 I of Arb Institute of Arbitrators. Hastings House, 10, Norfolk Street, Strand W.C.2. Temple Bar 4071
 IOB Institute of Builders. 48, Bedford Square, W.C.1. Museum 7197
 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
 MAFF Ministry of Agriculture, Fisheries and Food. Whitehall Place, S.W.1. Trafalgar 7711
 MARS Modern Architectural Research Group (English Branch of CIAM). Secretary: Trevor Dannatt, A.R.I.B.A., 71, Blandford Street, W.1. Welbeck 4713
 MOE Ministry of Education. Curzon Street House, Curzon Street, W.1. Mayfair 9400
 MOH Ministry of Health. 23, Savile Row, W.1. Regent 8411
 MOHLG Ministry of Housing and Local Government. Whitehall, S.W.1. Whitehall 4300
 MOLNS Ministry of Labour and National Service. 8, St. James' Square, S.W.1. Whitehall 6200
 MOS Ministry of Supply. Shell Mex House, W.C.2. Gerrard 6933
 MOT Ministry of Transport. Berkeley Square House, Berkeley Square, W.1. Mayfair 9494
 MOW Ministry of Works. Lambeth Bridge House, S.E.1. Reliance 7611
 NAMMC Natural Asphalte Mine Owners and Manufacturers Council. 94/98, Petty France, S.W.1. Abbey 1010

NAS National Association of Shopfitters. 9, Victoria Street, S.W.1. Abbey 4813
 NBR National Buildings Record. 31, Chester Terrace, Regent's Park, N.W.1. Welbeck 0619
 NCBMP National Council of Building Material Producers. 10 Storey's Gate, S.W.1. 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
 NPL National Physical Laboratory. Head Office, Teddington. Molesey 1380
 NRDB Natural Rubber Development Board. Market Buildings, Mark Lane, E.C.3. Mansion House 9383

NSAS National Smoke Abatement Society. Palace Chambers, Bridge Street, S.W.1. Trafalgar 6838
 NT National Trust for Places of Historic Interest or Natural Beauty. 42, Queen Anne's Gate, S.W.1. Whitehall 0211
 PEP Political and Economic Planning. 16, Queen Anne's Gate, S.W.1. Whitehall 7245
 RCA Reinforced Concrete Association. 94, Petty France, S.W.1. Abbey 4504
 RIAS Royal Incorporation of Architects in Scotland. 15, Rutland Square, Edinburgh. Fountainbridge 7631
 RIBA Royal Institute of British Architects. 66, Portland Place, W.1. Langham 5721
 RICS Royal Institution of Chartered Surveyors. 12, Great George St., S.W.1. Whitehall 5322/9242

RFAC Royal Fine Art Commission. 5, Old Palace Yard, S.W.1. Whitehall 3935
 RS Royal Society. Burlington House, Piccadilly, W.1. Regent 3335
 RSA Royal Society of Arts. 6, John Adam Street, W.C.2. Trafalgar 2366
 RSH Royal Society of Health. 90, Buckingham Palace Road, S.W.1. Sloane 5134
 RIB Rural Industries Bureau. 35, Camp Road, Wimbledon, S.W.19. Wimbledon 5101
 SBPM Society of British Paint Manufacturers. Grosvenor Gardens House, Grosvenor Gardens, S.W.1. Victoria 2186
 SE Society of Engineers. 17, Victoria Street, Westminster, S.W.1. Abbey 7244
 SFMA School Furniture Manufacturers' Association. 30, Cornhill, London, E.C.3. Mansion House 3921

SIA Society of Industrial Artists. 7, Woburn Square, London, W.C.1. Langham 1984/5
 SIA Structural Insulation Association. 32, Queen Anne Street, W.1. Langham 7616
 SNHTPC Scottish National Housing. Town Planning Council. Hon. Sec., Robert Pollock, Town Clerk, Rutherglen.
 SPAB Society for the Protection of Ancient Buildings. 55, Great Ormond Street, W.C.1. Holborn 2646
 TCPA Town and Country Planning Association. 28, King Street, Covent Garden, W.C.2. Temple Bar 5006
 TDA Timber Development Association. 21, College Hill, E.C.4. City 771
 TPI Town Planning Institute. 18, Ashley Place, S.W.1. Victoria 8815
 TTF Timber Trades Federation. 75, Cannon Street, E.C.4. City 5040
 WDC War Damage Commission. 6, Carlton House Terrace, S.W.1. Whitehall 4341
 ZDA Zinc Development Association. 34, Berkeley Square, W.1. Grosvenor 6636

standard contents

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

NEWS and COMMENT

Astragal's Notes and Topics

Letters

News

Diary

Societies and Institutions

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Information Sheets

Information Centre

Current Technique

Working Details

Questions and Answers

Prices

The Industry

CURRENT BUILDINGS

Major Buildings described:

Details of Planning, Construction, Finishes and Costs

Buildings in the News

Building Costs Analysed

*Architectural Appointments
Wanted and Vacant*

No. 3202]

[VOL. 124

THE ARCHITECTURAL PRESS

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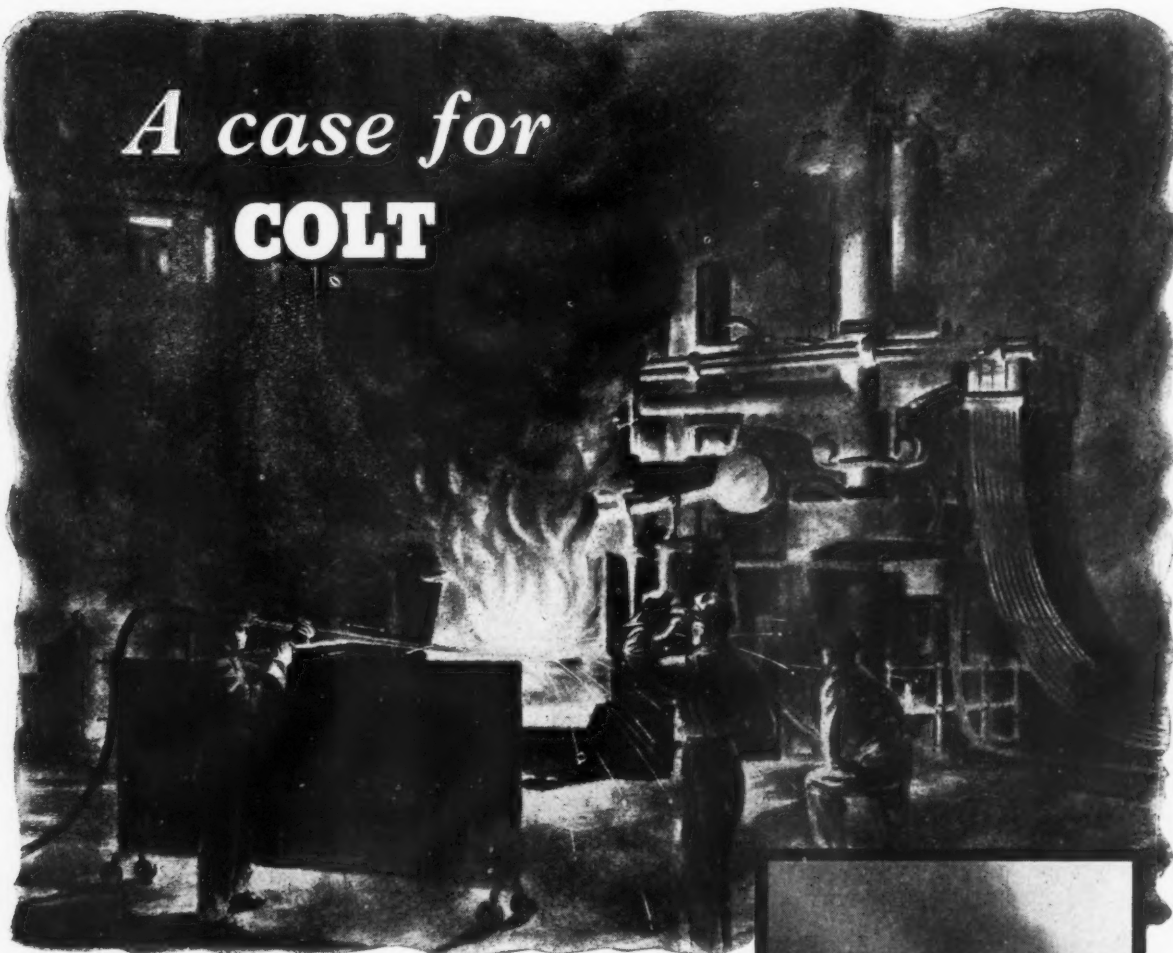
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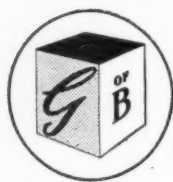
G 60

ARCHITECTURAL METALWORK

Craftsmanship



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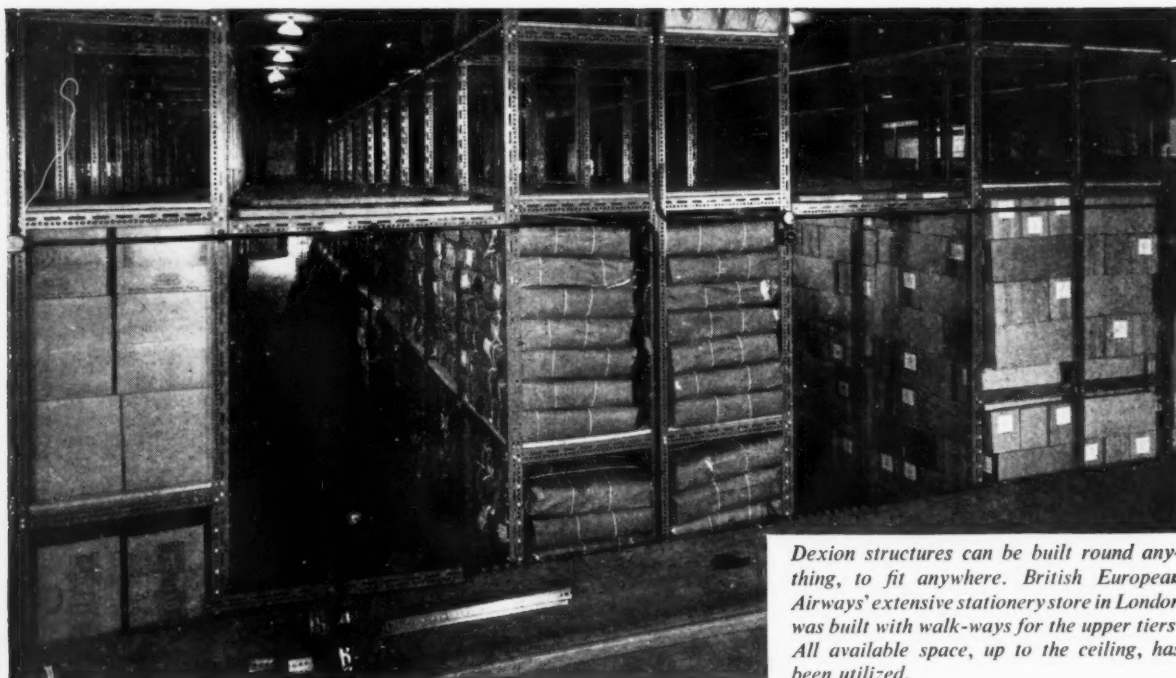
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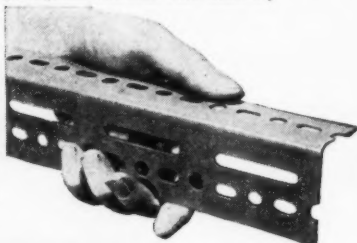
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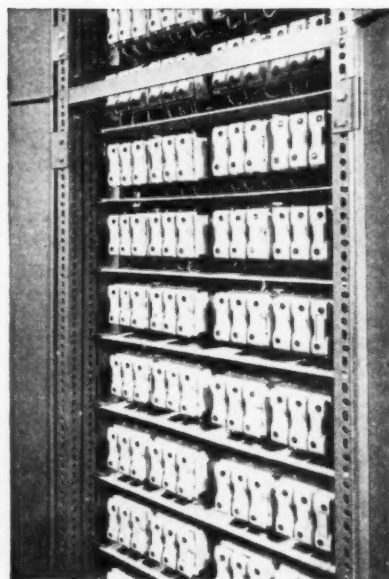
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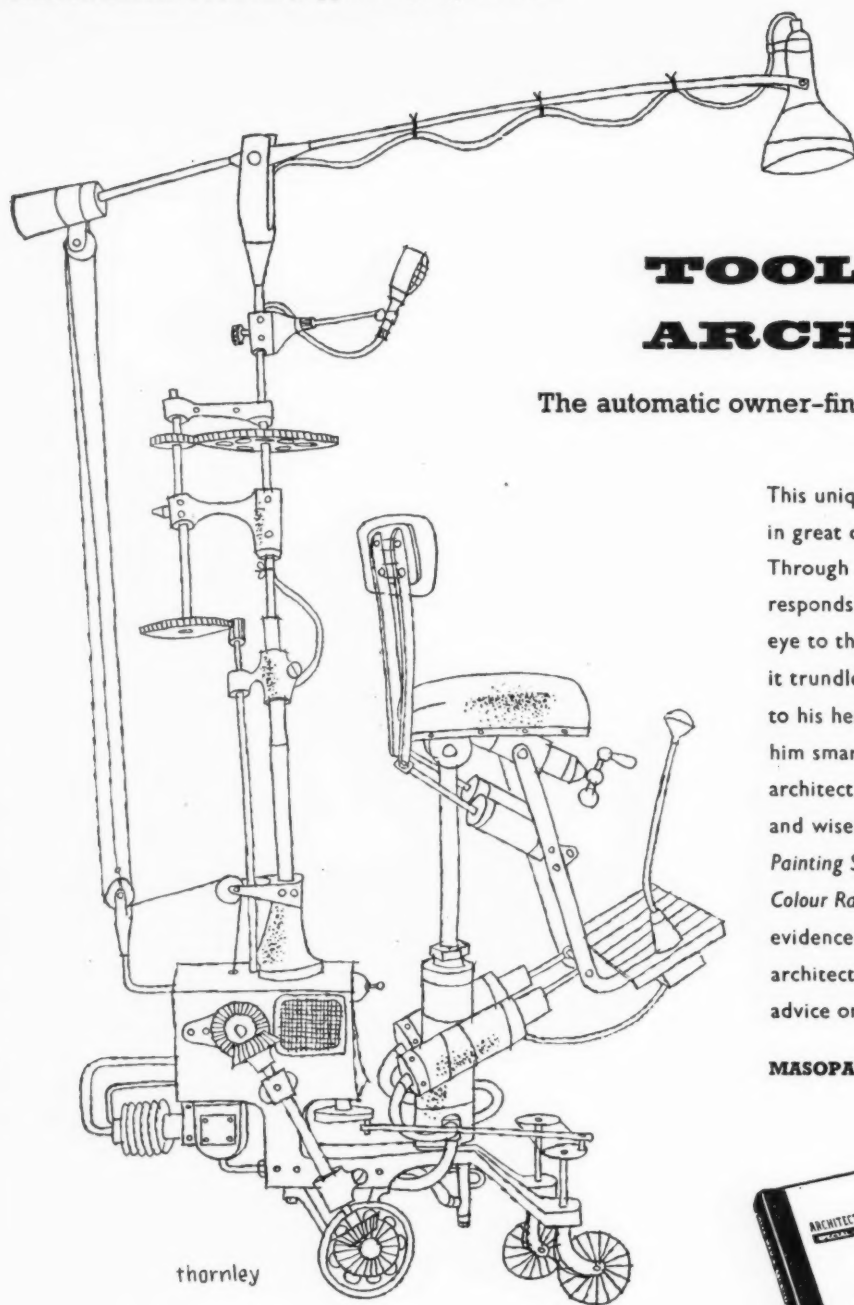
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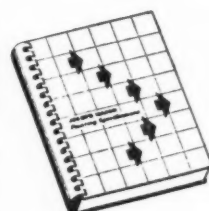
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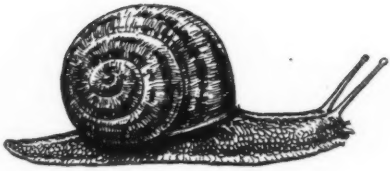
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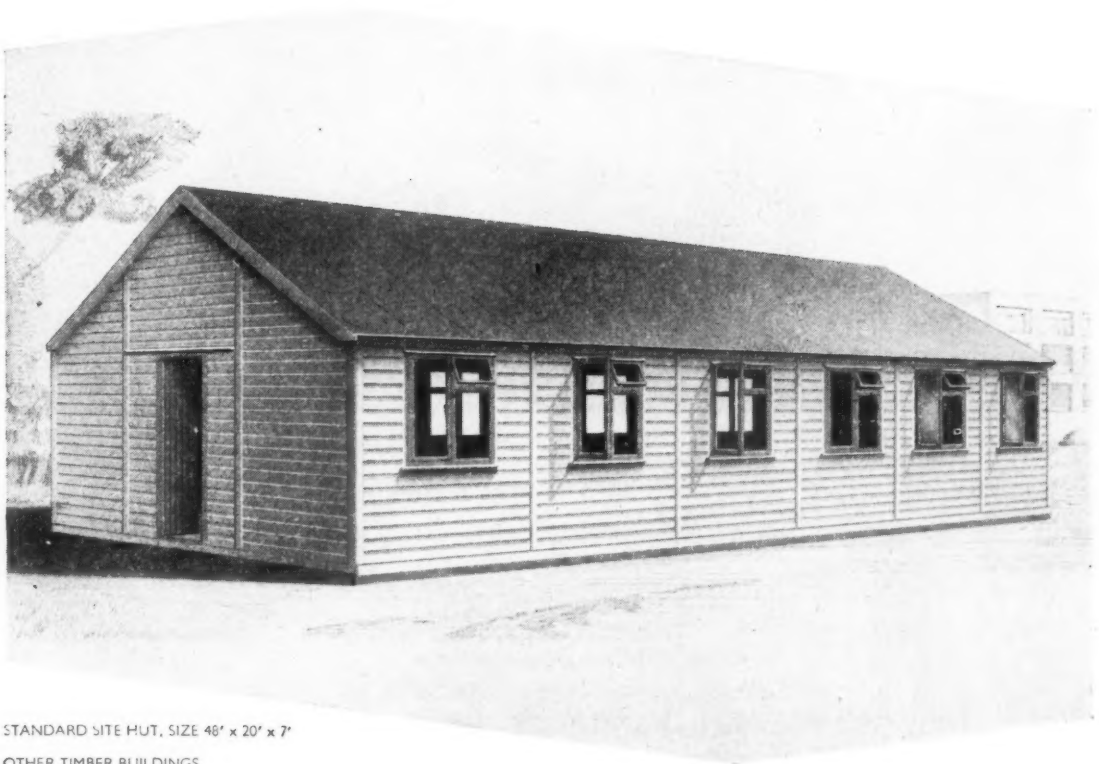
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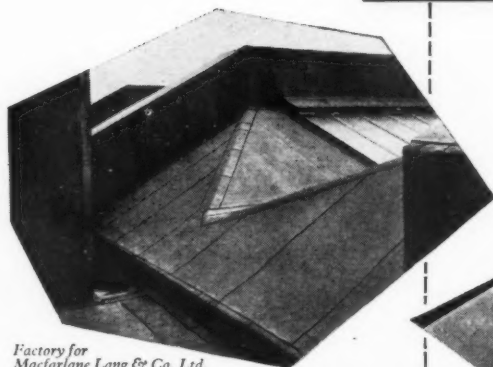


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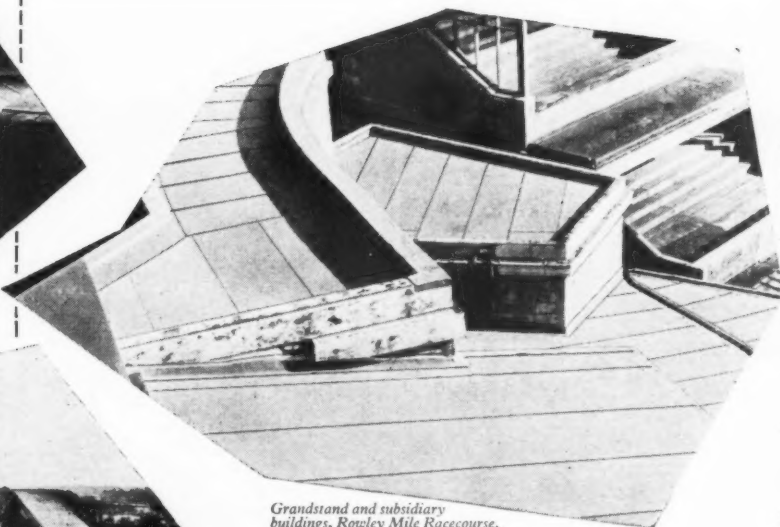
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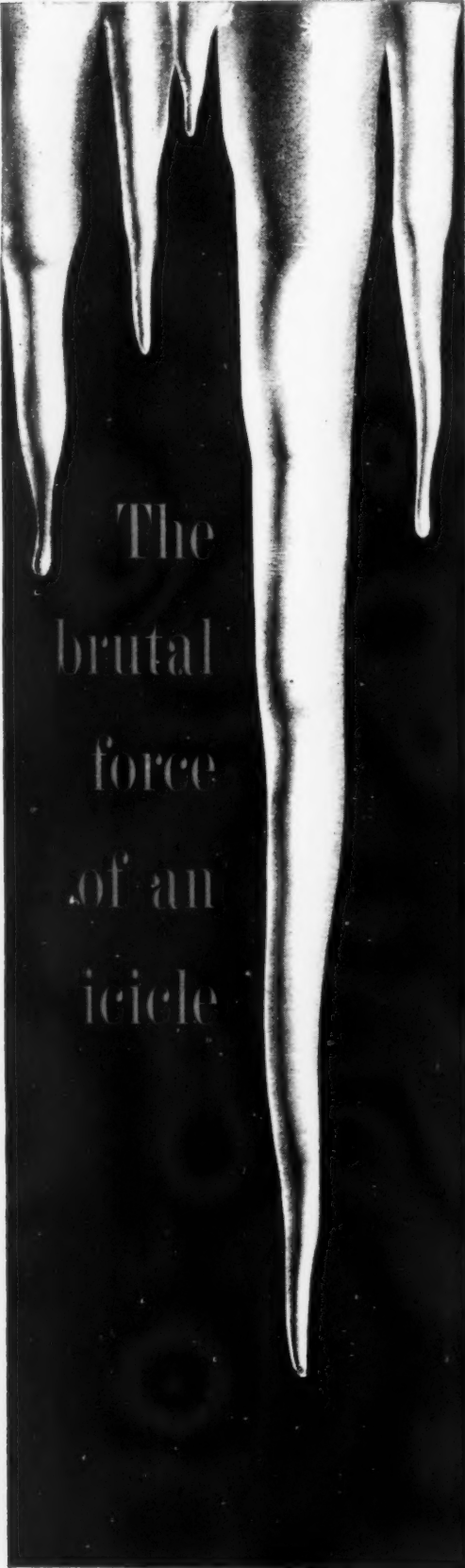
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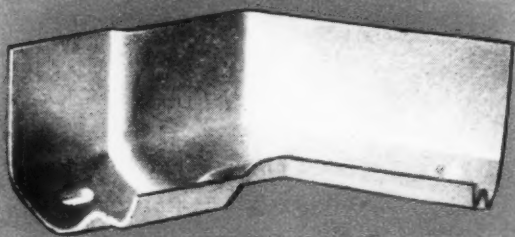
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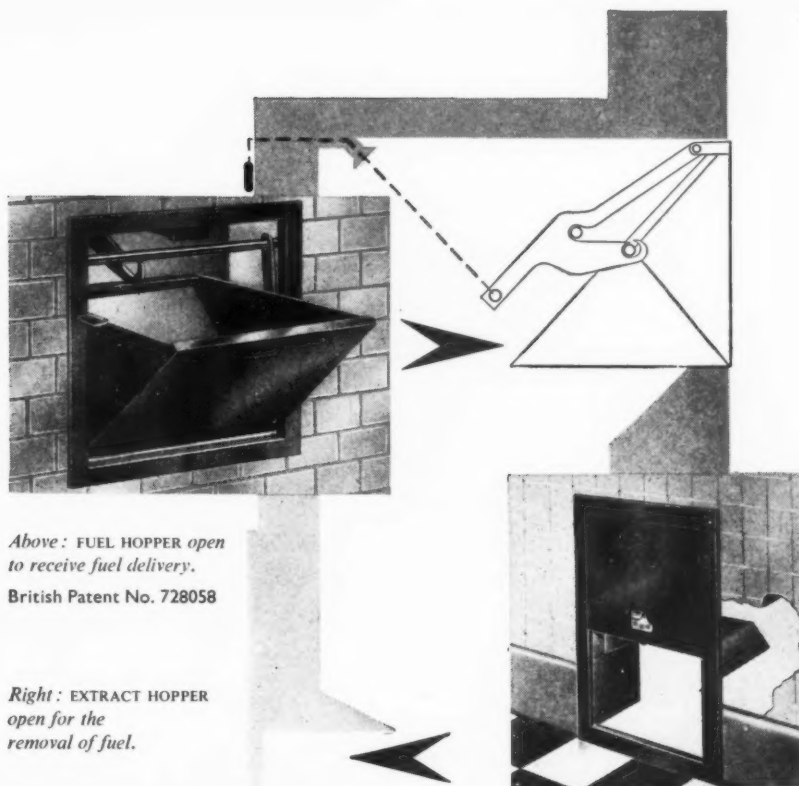
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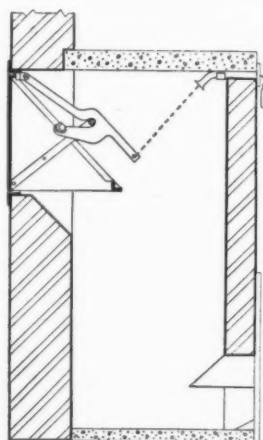
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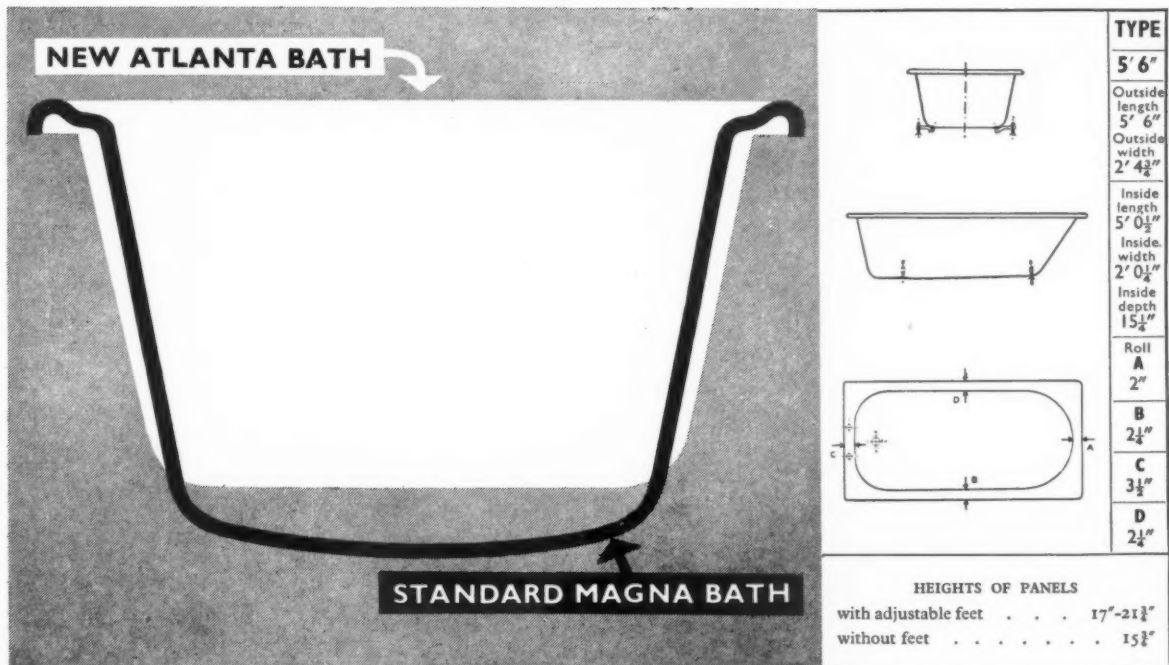
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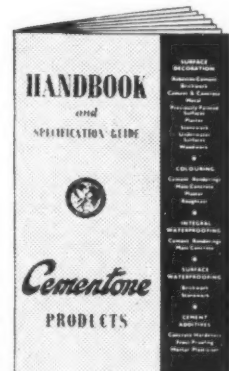
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Glazed & Floor Tile Manufacturers' Association • Federation House • Stoke-on-Trent



Happy client, happy architect

The building is finished, and 77 windows let in the light on all and sundry. And now the edifice faces its first big storm. Will the windows let in more than light? Are they sealed against the weather or will they leak? The architect has put his faith in Arbomast and Arbolite, and that is why he can afford to grin. Well, look at the facts:

ARBOMAST B.1 is a bedding mastic which bonds metal window frames to wood, concrete, brick and most other building materials with an absolutely watertight seal. Arbomast never bleeds, it never dries out, cracks or chips away. It is based on a scientific blend of oils reinforced with absorbent fillers and fibres.

ARBOLITE is the ideal glazing compound for bonding glass to metal. Arbolite has exceptional keying properties and forms a tight, tough joint which adds years to the life of metal windows. Arbolite is now specified on most important contracts simply because it **performs**.

Further details about these remarkable products from the makers:

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WOOD CHIPBOARD

SIZE: 8 ft. x 4 ft.
THICKNESSES: $\frac{1}{2}$ inch and $\frac{3}{4}$ inch.
DENSITY: 45 lbs. per cubic foot.

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REDUCED WEIGHT

BRITISH PLIMBER LIMITED announce all-round reductions in price for Plain, Plastic Surfaced and Shuttering Quality **PLIMBERITE**.

At the same time the density of **PLIMBERITE** in all grades has been reduced from 50 to 45 lbs. per cubic foot, without loss of quality in any respect.

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PATENT APPLIED FOR

Plastic Faced Plywood

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★ As featured on the B.B.C. Television programme "About the House."

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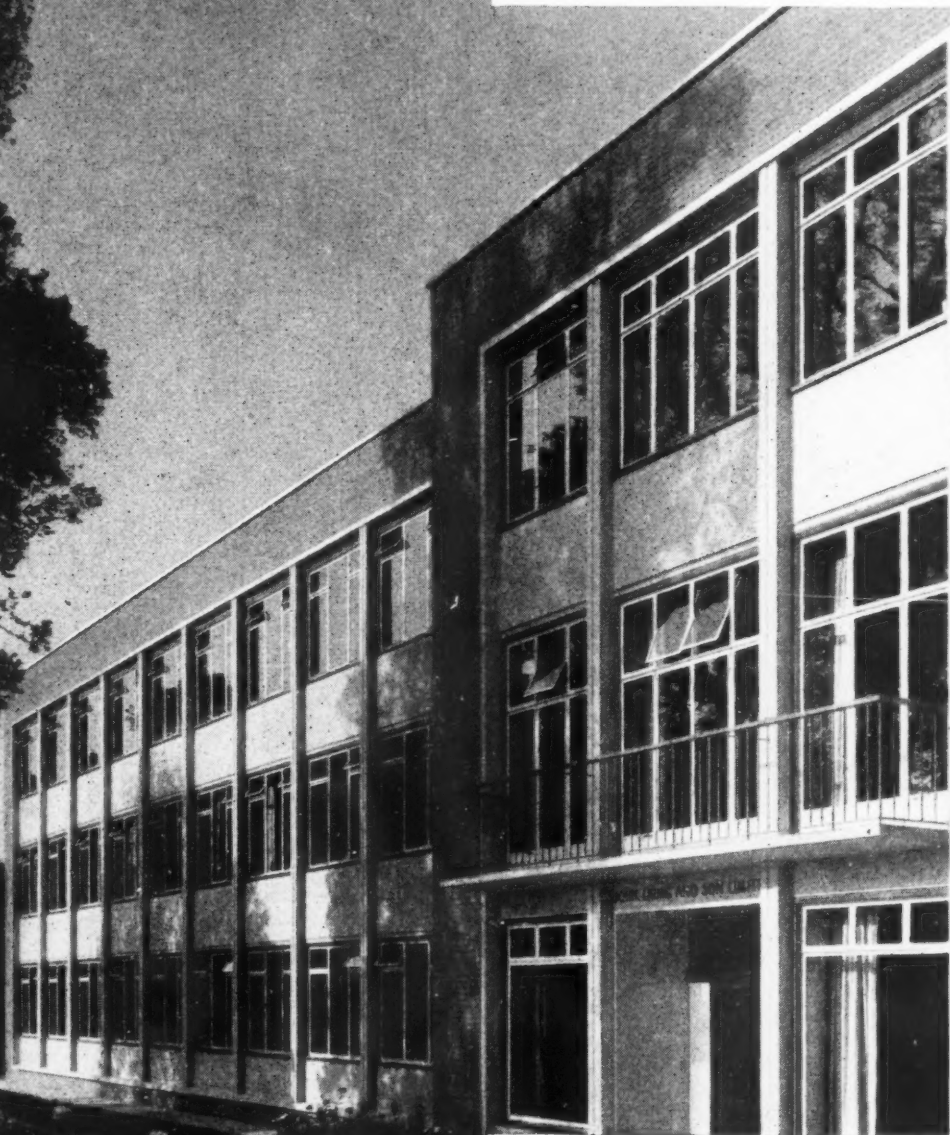
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CRITTALL PURPOSE-MADE UNIVERSAL CASEMENTS POSITIVELY RUSTPROOFED
by the hot dip galvanizing process.



In all of Crittalls' long experience in the making of windows no year has passed without some substantial advance in design or manufacturing technique. It is because Crittalls are never content to rest merely on past achievements; because tomorrow's methods, designs and conceptions of service must be anticipated today, that Crittalls' reputation has reached its high level.

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31" x 19"

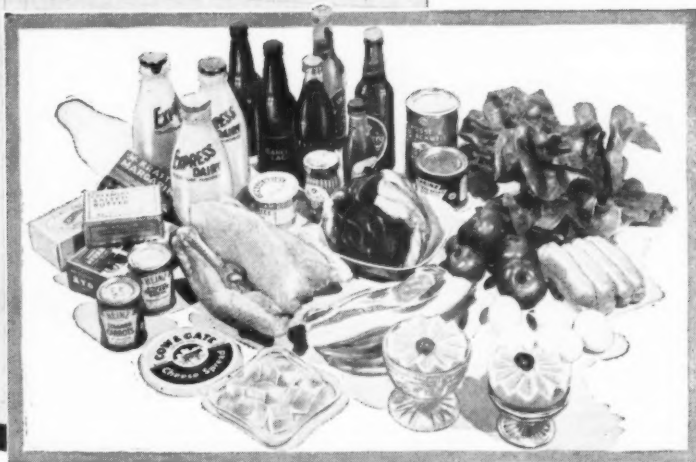
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MODEL M.170

- Compact modern design saves valuable kitchen-space.
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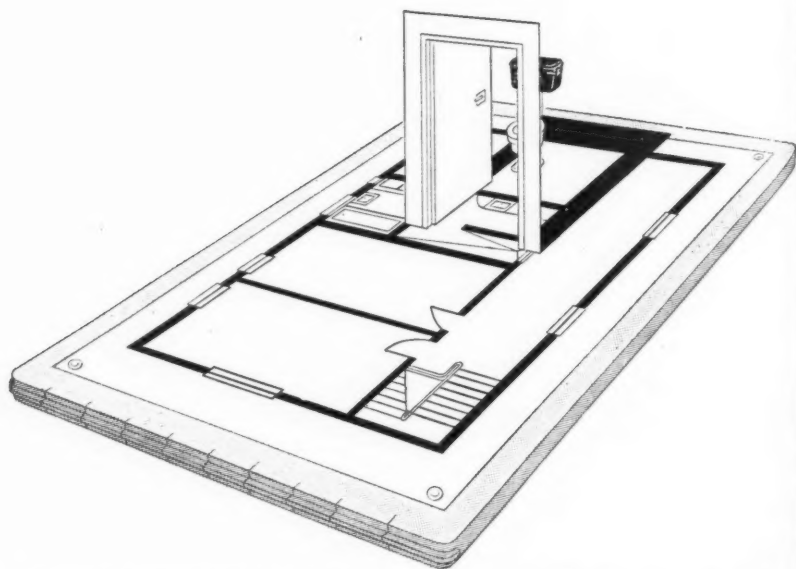
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Regent St., London, W.1.

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of Model M.170.

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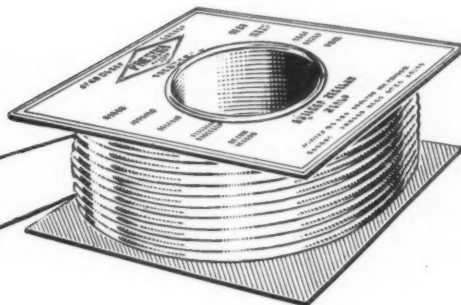
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Many permissible minimum weights greatly reduced

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for low pressure hot and cold water
distribution in buildings.**

**For this use,
the new permissible minimum weights
of $1\frac{1}{2}$ " , $3\frac{3}{4}$ " , 1" and $1\frac{1}{4}$ " bore B.S. 602 pipe
show an average saving of**

38%

Tables incorporating the new British Standards for Lead pipe to B.S.602 and B.S.1085 have been prepared and are available in a revised edition of "CONCISE INFORMATION ON LEAD PIPE" free on request.



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corrugated
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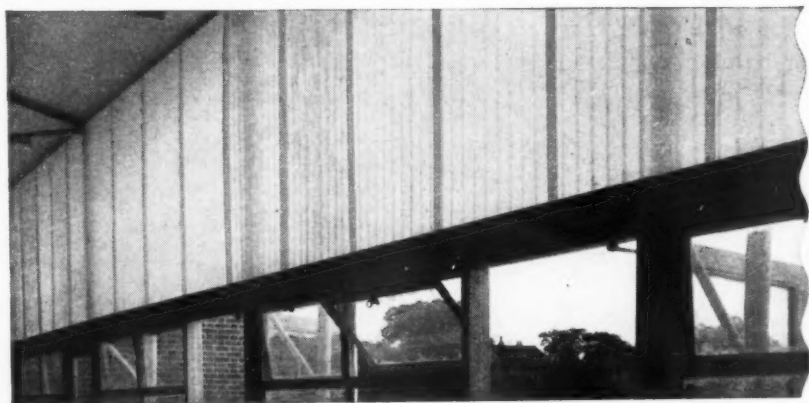
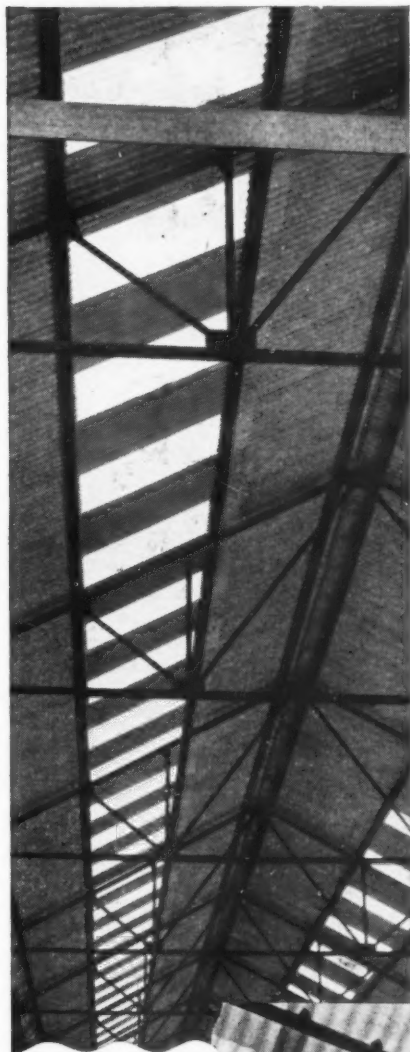
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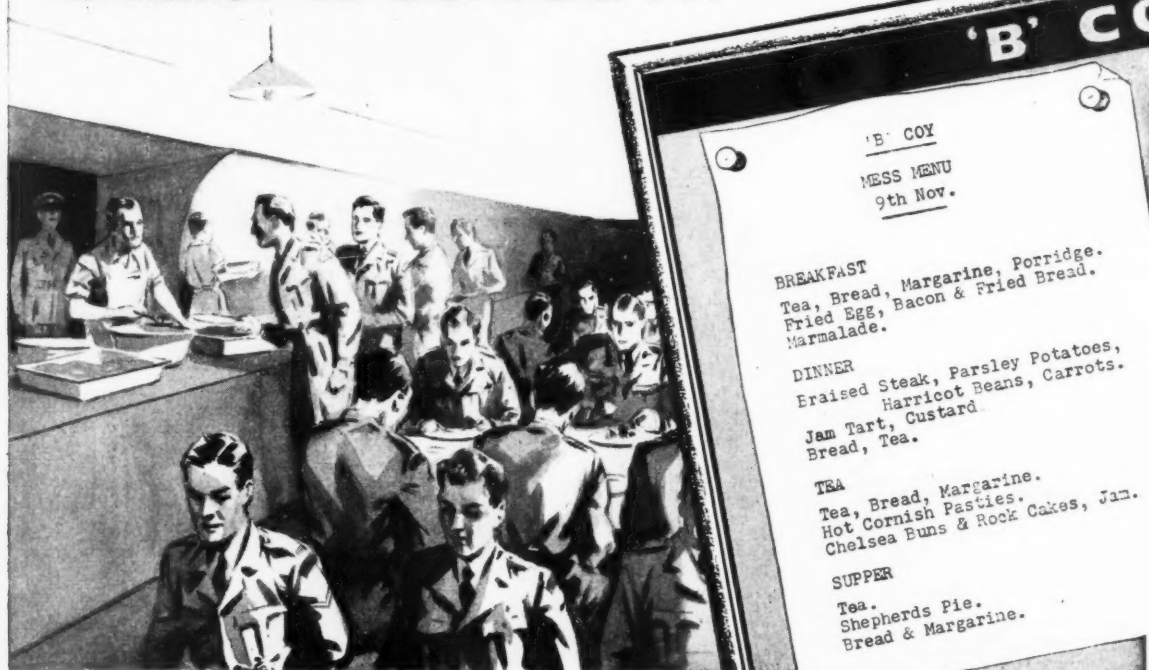
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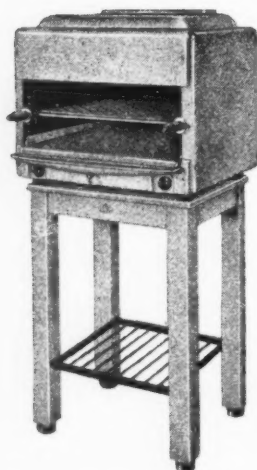
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The extensive range of Main large-scale gas and steam cooking appliances covers the specific requirements of every type of catering establishment. Highly efficient and economical in use, Main appliances are strongly constructed to withstand continuous heavy

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These gas heated ovens are available in single or double tier units with or without thermostatic control or thermometer.

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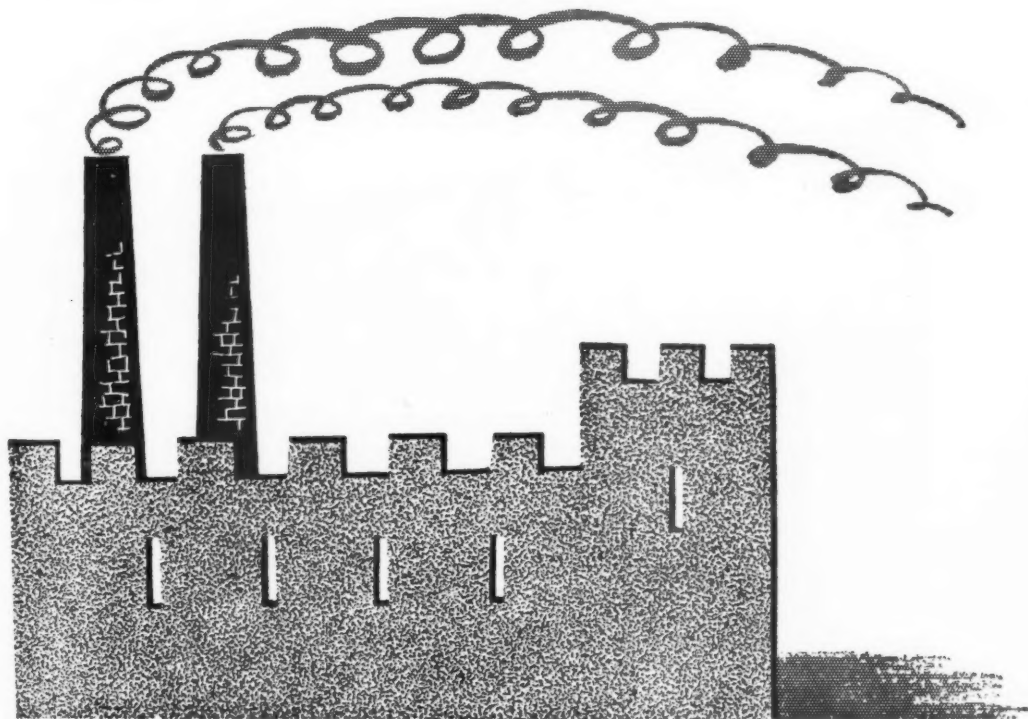
Steam Jacketed with Stainless Steel Inner and close grained cast iron Outer Pans—Pan covers are effectively counterbalanced. Supplied complete with Steam Stop Valve. Cold water filling cock with swivel arm and easy-clean full bore draw-off tap. Available in capacities from 15-60 gallons and in a variety of Exterior Finishes.

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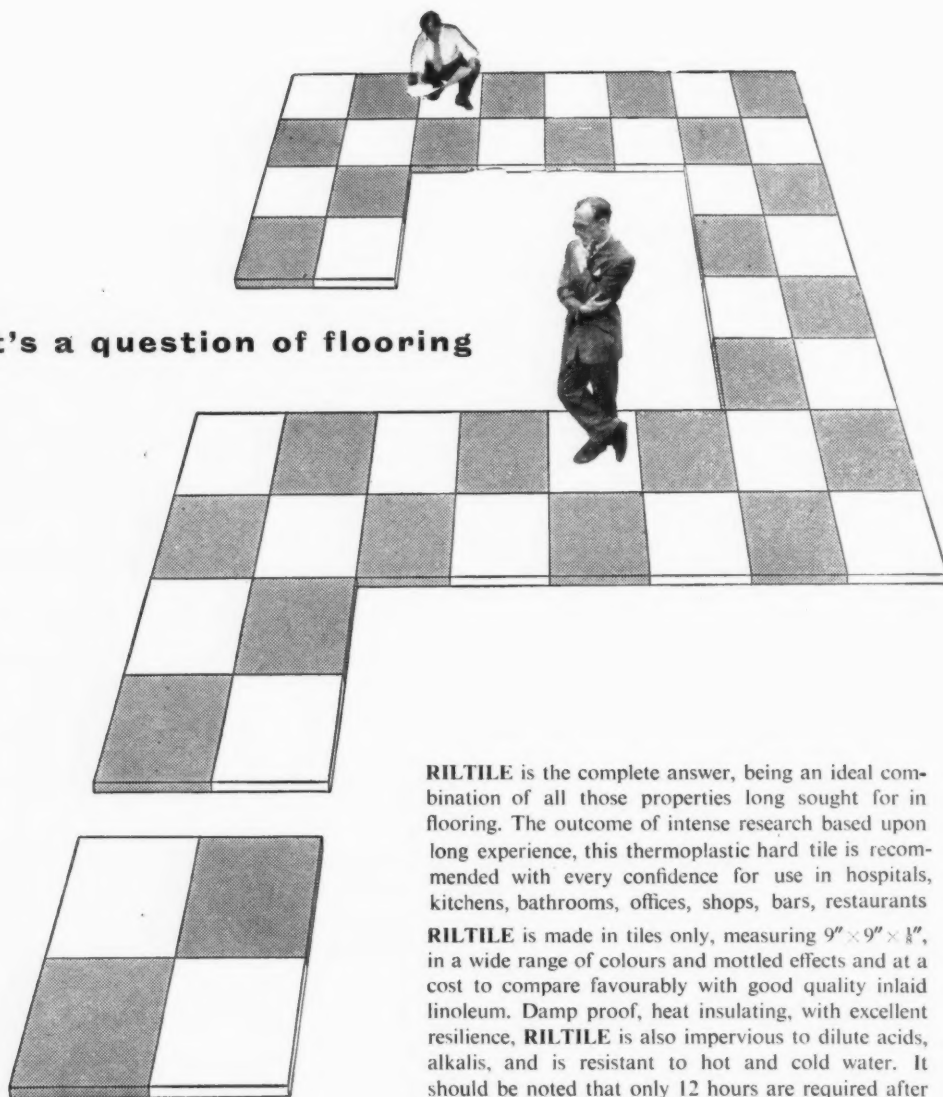
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Extremely hard wearing ☐ Easily and quickly laid
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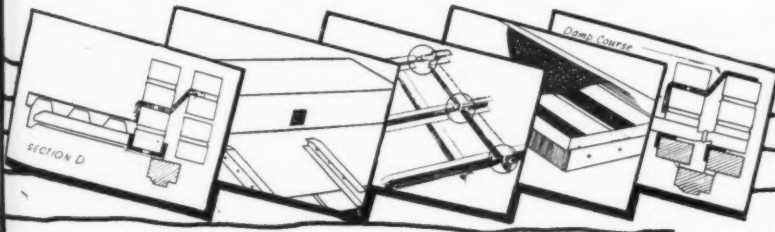
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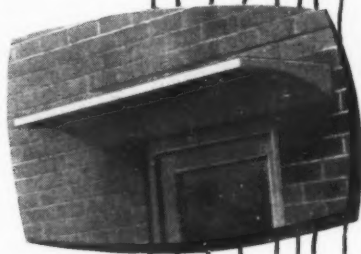
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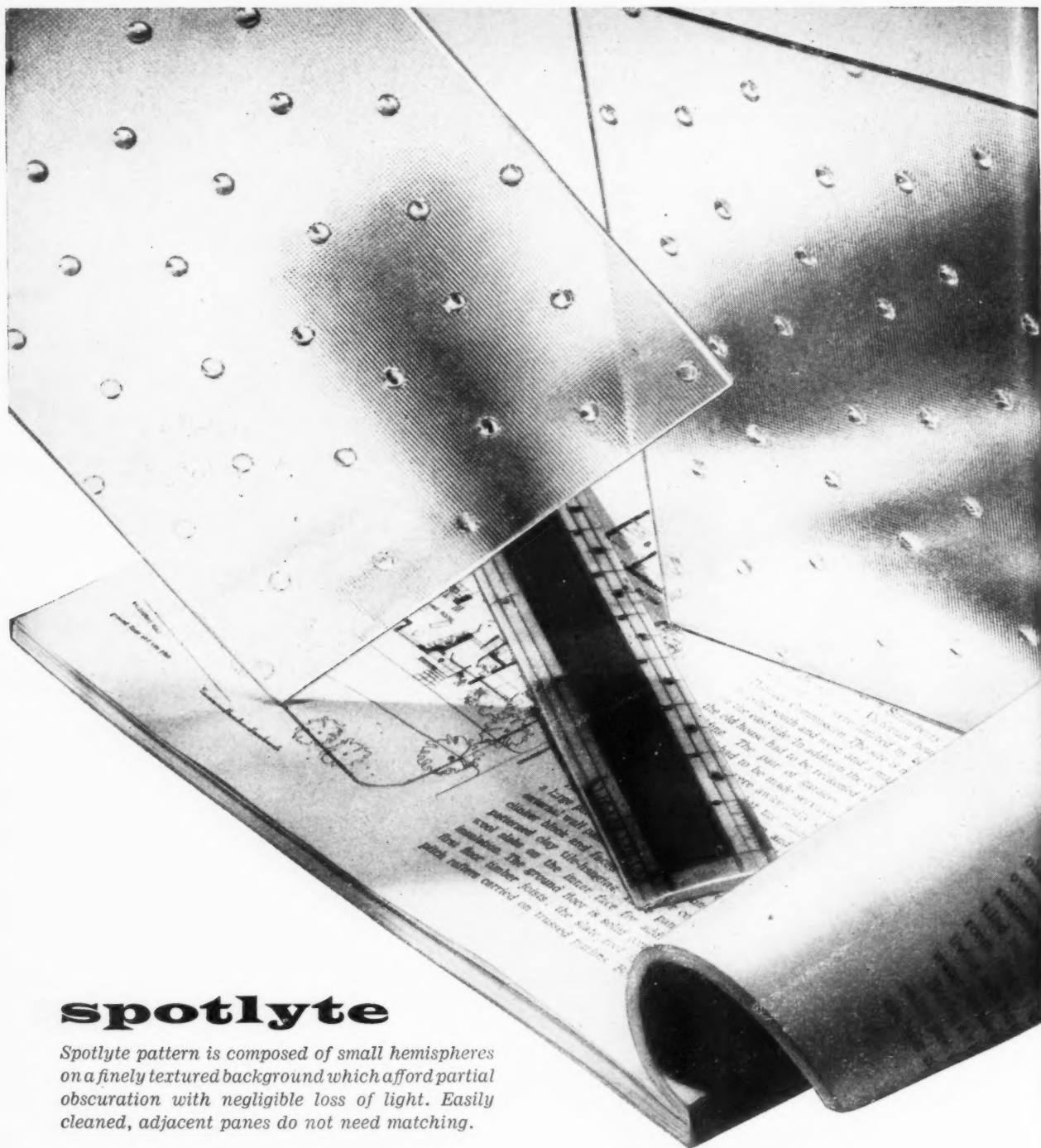
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Spotlyte pattern is composed of small hemispheres on a finely textured background which afford partial obscuration with negligible loss of light. Easily cleaned, adjacent panes do not need matching.

technical details

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Supplies are available through the usual trade channels



The attributes of beauty..

*"properties gracefully combined in an
object so as to please or attract
the senses, especially the eye..."
a true description of the Mark 12 Door.*



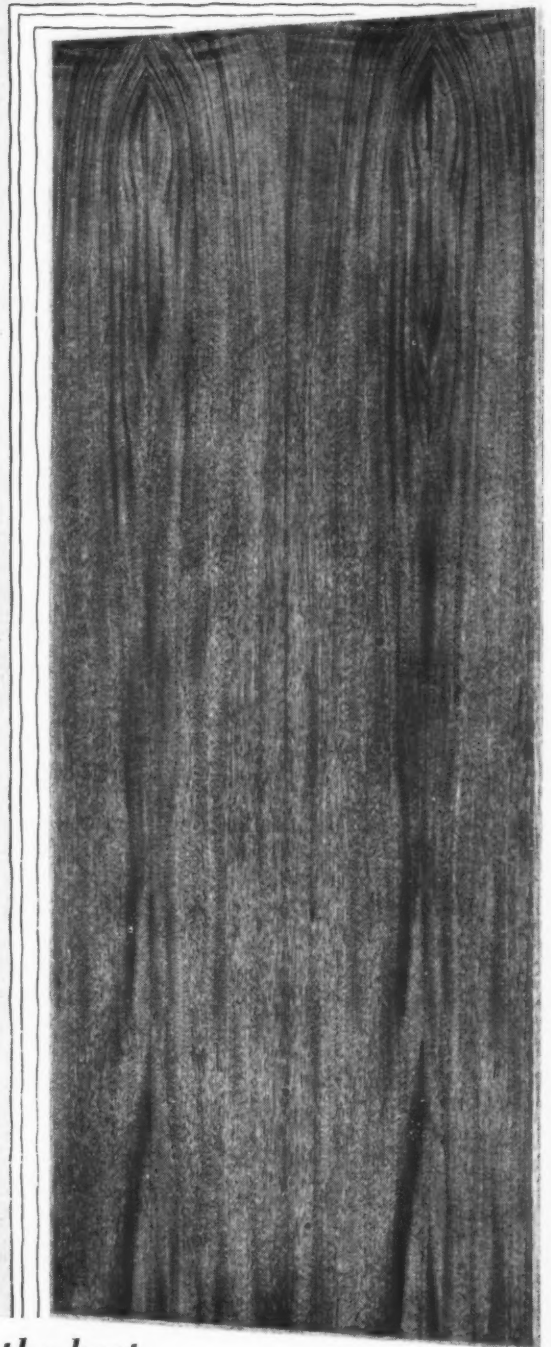
The Mark 12 lattice core
flush door has looks as well
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both sides with *West African
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edges.

*West African cedar . . .
produces superb veneer,
warm brown in colour;
the attractive figure
being fully brought out
by careful matching-up
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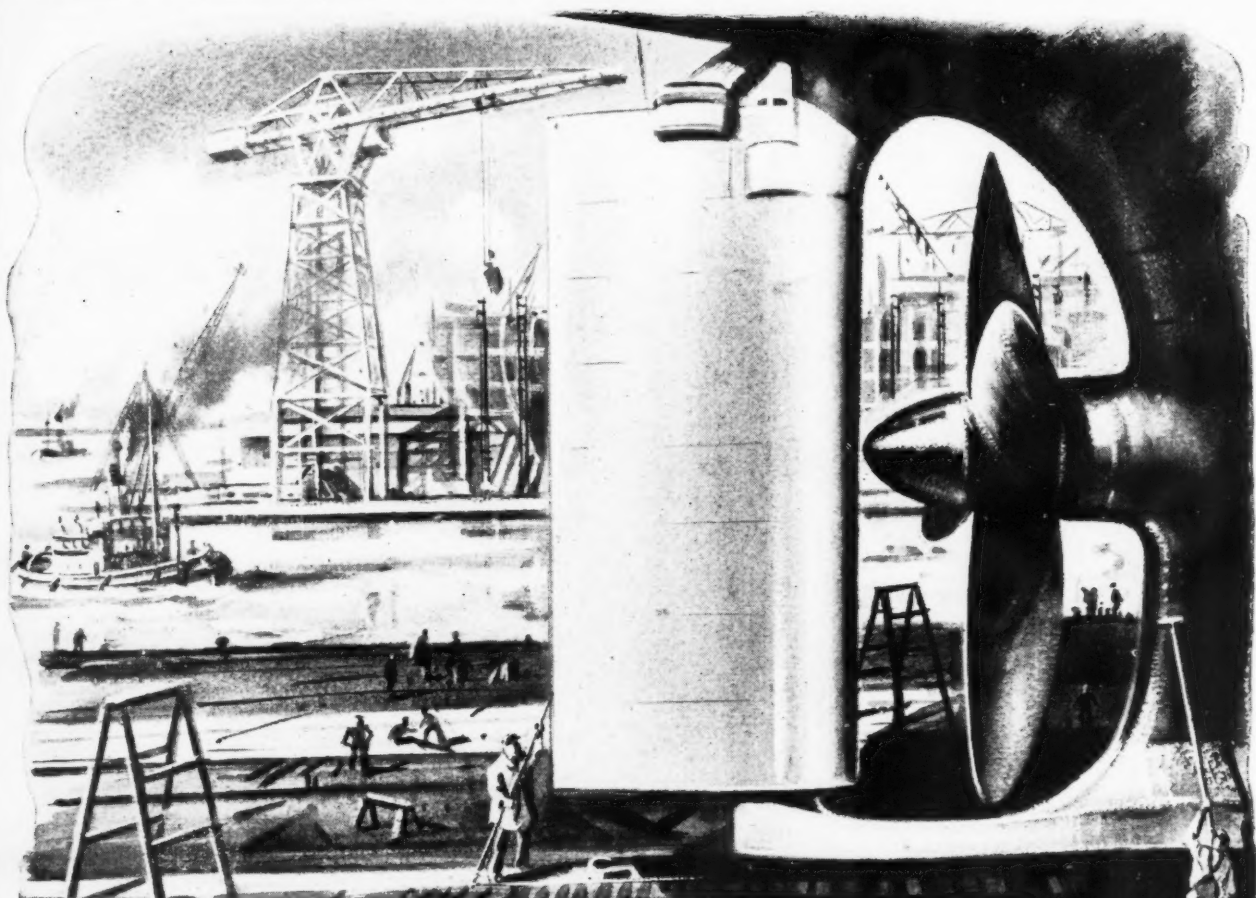
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Resident Architect : A. Merrill, A.R.I.B.A.
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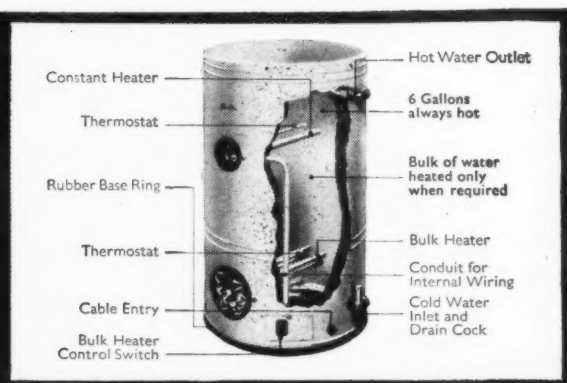
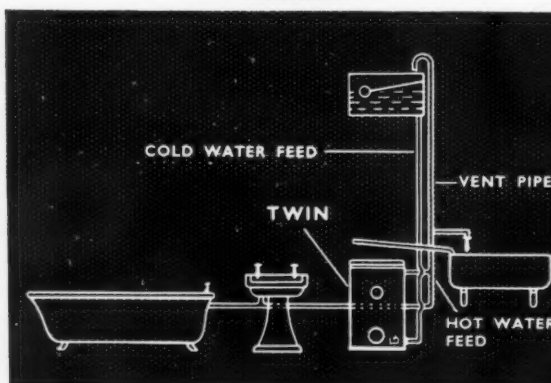
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LOWER RUNNING COSTS

WITH THE **B·N·E TWIN** WATER HEATER

The reduction of installation costs is one of the primary advantages of the B.N.E. 'Twin' water heater. The diagram below shows the simplicity of the plumbing—no independent hot water storage tank, and no flow and return pipes. The plumbing consists of a feed pipe from the cold water tank, another from the heater outlet to the hot water taps, and a vent pipe. The elimination of flues is another installation advantage that is perhaps of even greater importance in flats than in houses. Finally, the 'Twin's' compact size enables it to be tucked away under the draining board, where the pipe run to the kitchen sink is reduced to a minimum, removing one more of the problems associated with water heating systems.

The reduction in running costs is achieved by the 'dual personality' of the B.N.E. 'Twin'. As shown below it incorporates two heaters, the upper one—with only a 500 watt element—is permanently in circuit, and being thermostatically controlled ensures that 6 gallons of really hot water are always available for normal needs at the sink or hand-basin. When larger quantities of hot water are required, the lower heater—consisting of five 500 watt thermostatically controlled elements—can be brought into circuit by the operation of a conveniently placed foot switch. In a short time the full contents, 20-30 gallons according to the model, are heated to scalding temperature. Thus the B.N.E. 'Twin' provides large or small quantities of hot water without the expense of keeping large quantities constantly heated.

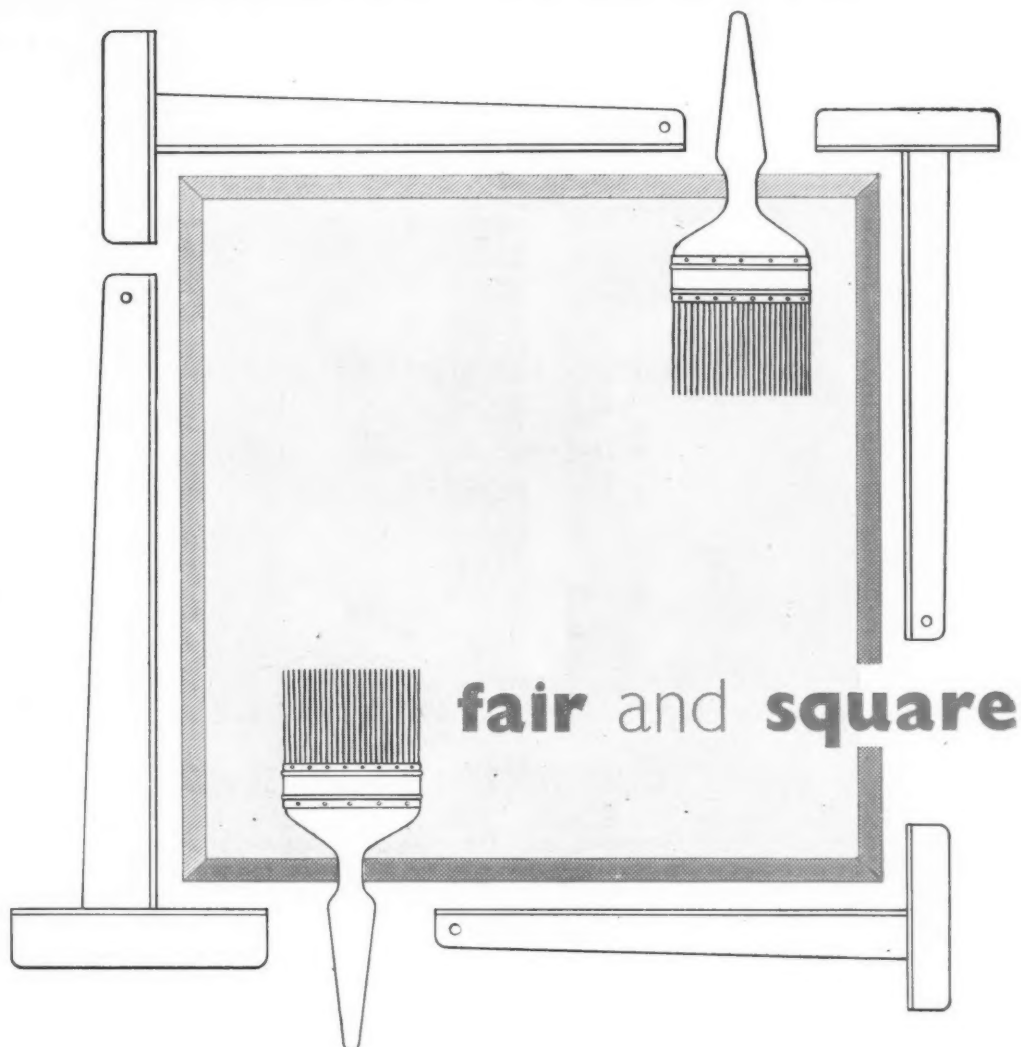


Send for further details to:

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When you first see a ceiling constructed with ASBESTOLUX ceiling panels you are struck by its crispness and accuracy. Years later, you will still admire it for the same reasons. The qualities of an ASBESTOLUX ceiling do not disappear with time: they are there, like the ceiling itself, for good—not forgetting that vital quality you cannot see, the ability to give up to 4 hours fire protection to floors.

ASBESTOLUX precision-cut ceiling panels have a fine, smooth surface, with bevelled edges. They are made to a tolerance of plus nil minus $\frac{1}{16}$ ", every one jig-checked for squareness before dispatch.

They are available in $\frac{1}{2}$ " and $\frac{3}{8}$ " thickness in the following sizes:

4' x 4' 4' x 2' 3' 4" x 2' 3' x 2' 2' 8" x 2' 2' x 2'



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non-combustible

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TA9081

Operation Rescue



Hull Housing Committee's Experiment

The Housing Committee of Kingston-upon-Hull recently decided to take advantage of the Housing Repairs and Rents Act, 1954, to effect improvements to a number of their older houses lacking modern heating and sanitary facilities.

An important factor was that the tenants were able to remain in their homes whilst the work was actually being carried out, and there was thus no need to provide temporary accommodation elsewhere.

In one instance an existing room is converted into a bathroom, whereas in the other houses the bathroom has been added as an external structure by converting the 'out-houses'. Each bathroom has been fitted with a "Standard" porcelain enamelled cast-iron bath, vitreous china lavatory basin, and closet with high-level cistern.

The old-fashioned fireplace has been replaced with an Ideal No. 2C Neofire. This provides the domestic hot water supply from an Ideal 'Indirect' Cylinder installed in an existing bedroom cupboard converting it into an airing chamber. In addition the Ideal Neofire provides 'Background' heating by means of Ideal hot-water radiators fitted into two other rooms.

The old-fashioned sink in the kitchen has been replaced with the more hygienic "Standard" porcelain enamelled cast-iron "Hostess" Sink.

The result is a new lease of life for the property, bringing increased happiness and comfort to the appreciative and delighted tenants at the cost of a small increase in rent which they are very willing to pay.

The Heating and Sanitary Equipment selected by the Hull Housing Committee for this experimental scheme was manufactured by

IDEAL BOILERS & RADIATORS LTD.

who were pleased to be given the opportunity of co-operating in this successful project.

A fully explanatory booklet is available on request.

IDEAL BOILERS & RADIATORS LIMITED · IDEAL WORKS · HULL



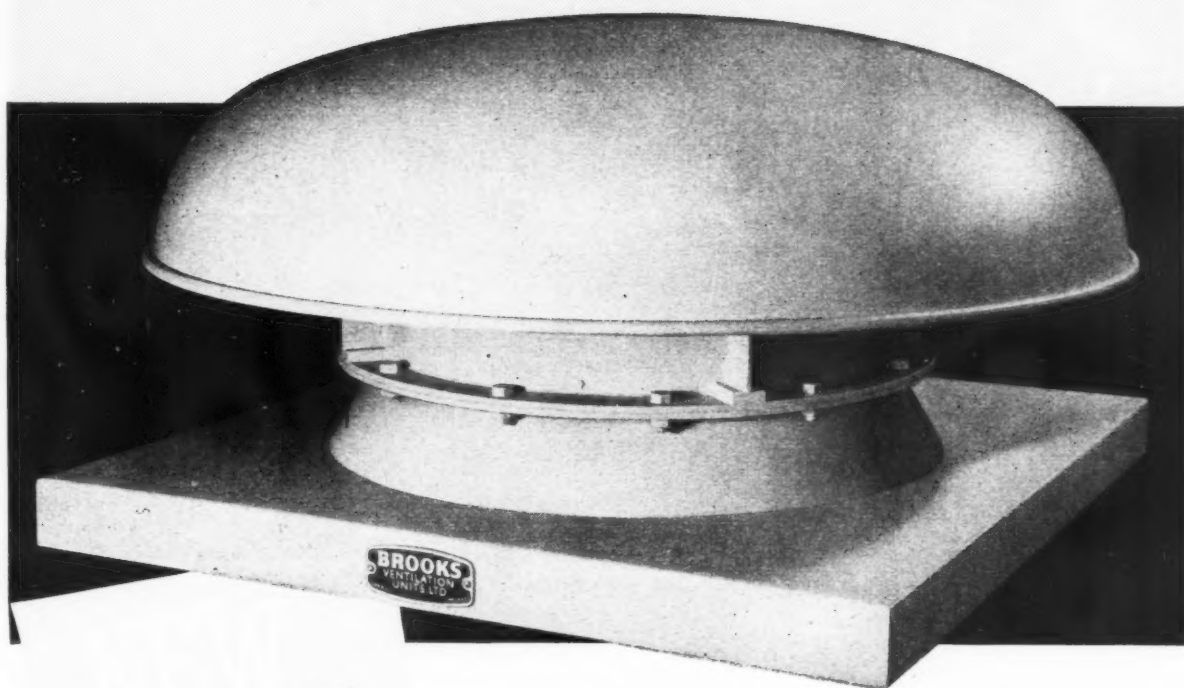
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Low Silhouette

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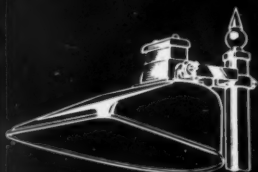
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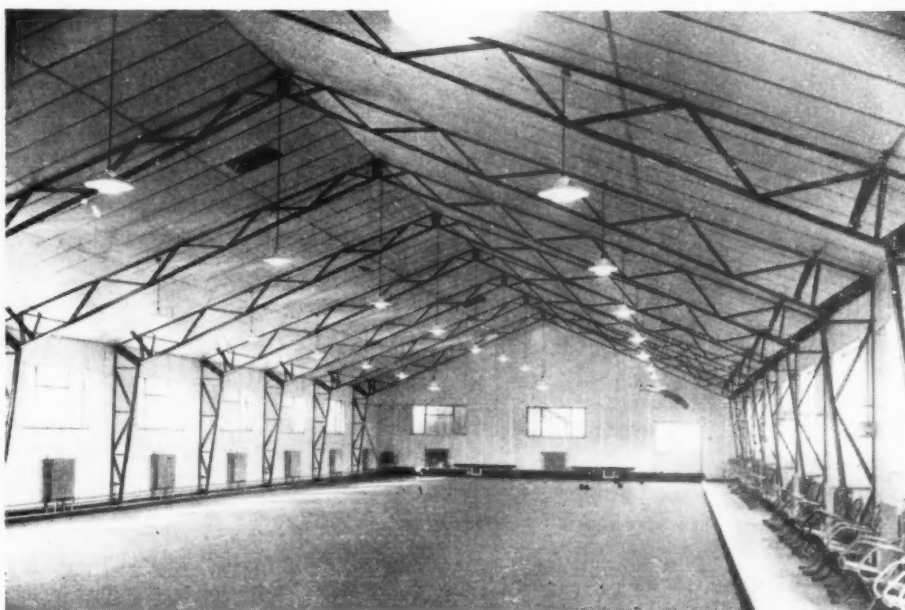


Photo: Bowls Pavilion, Bexhill-on-Sea.
Architect: Kenneth G. Higgs. A.R.I.B.A.
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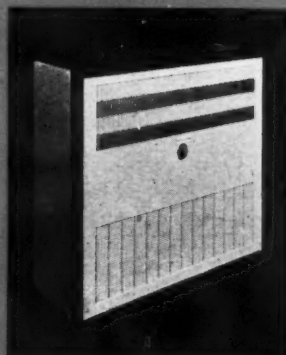
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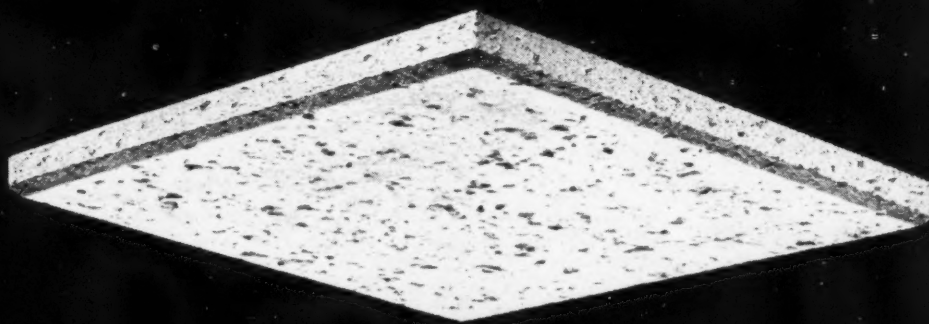
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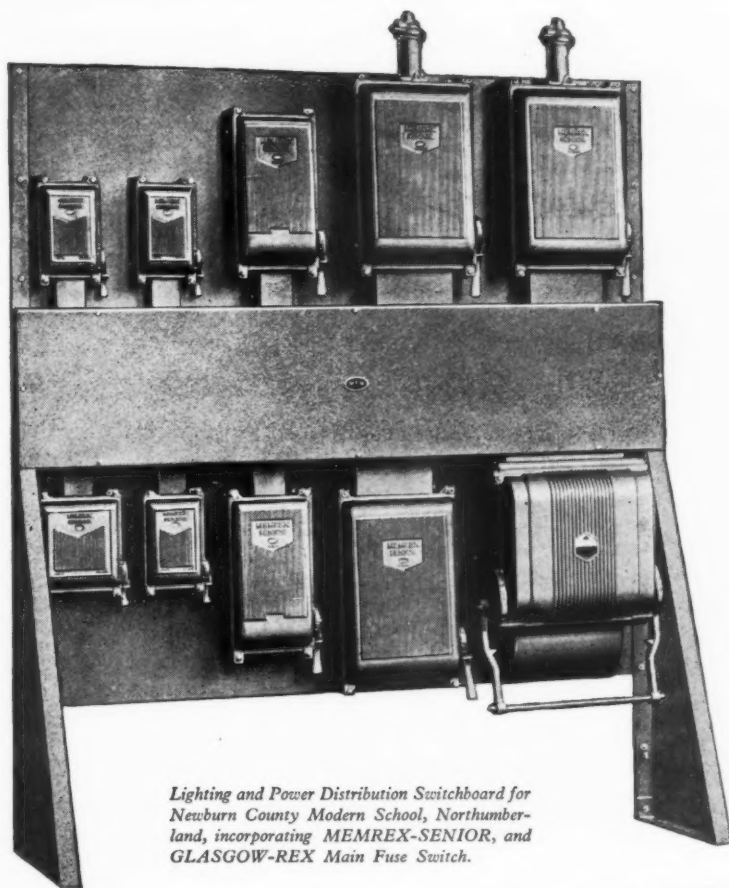
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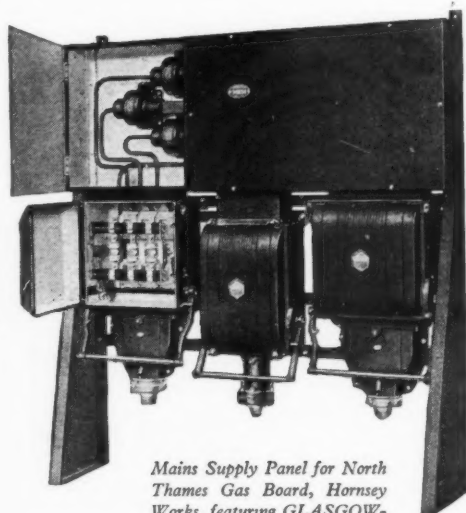
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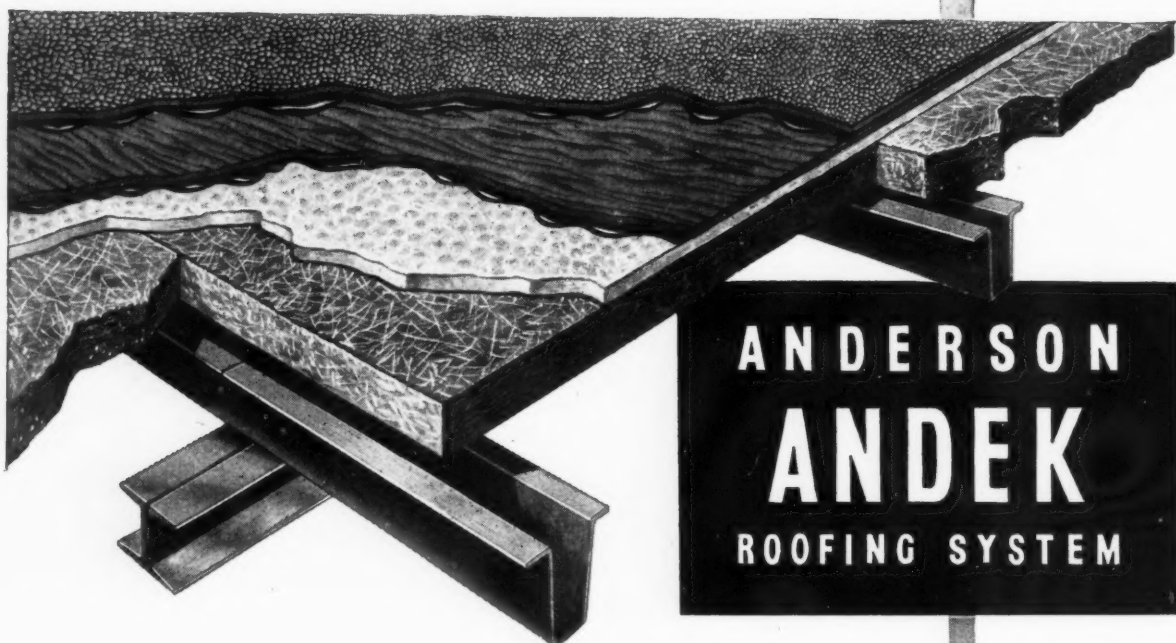
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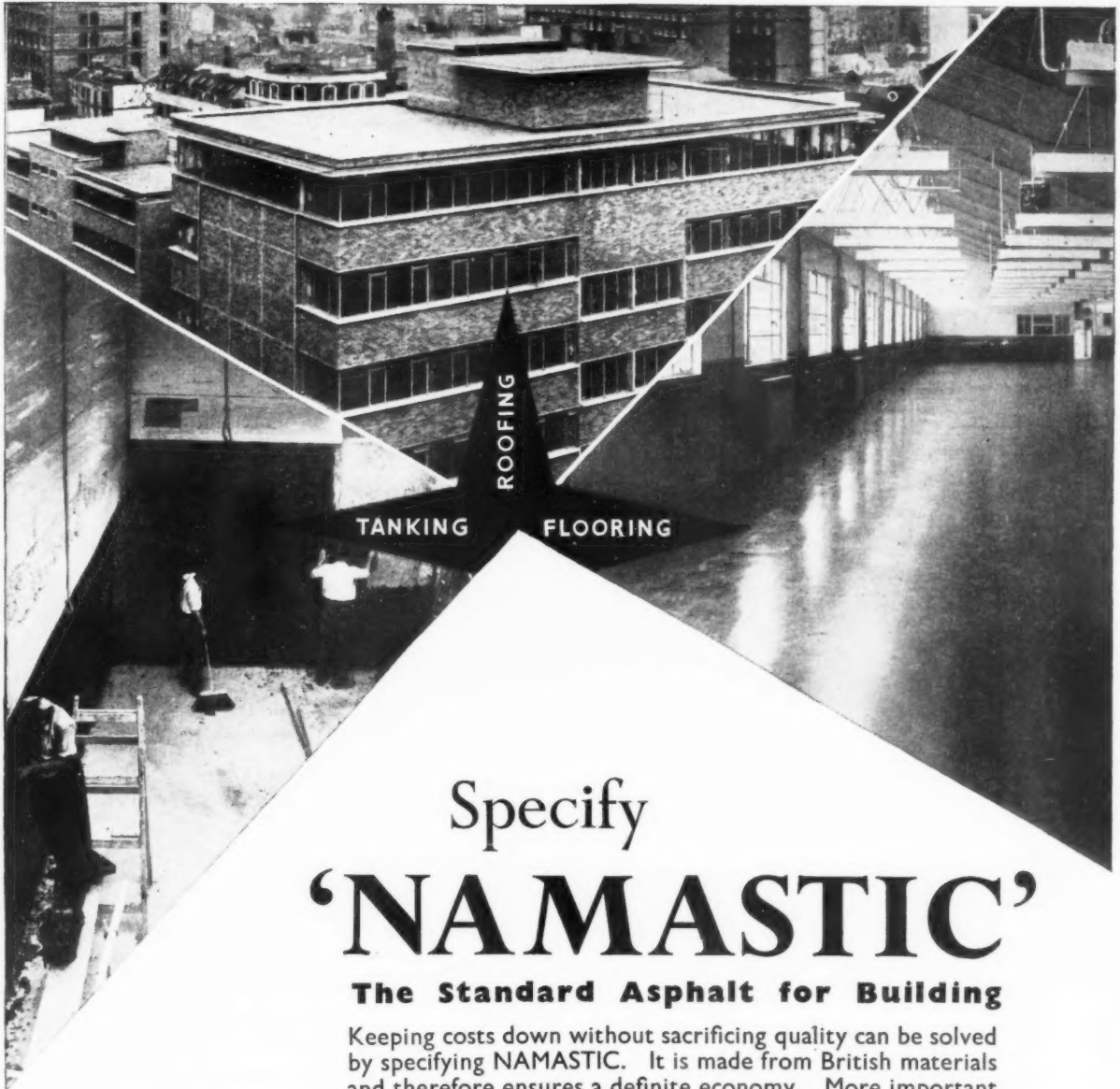
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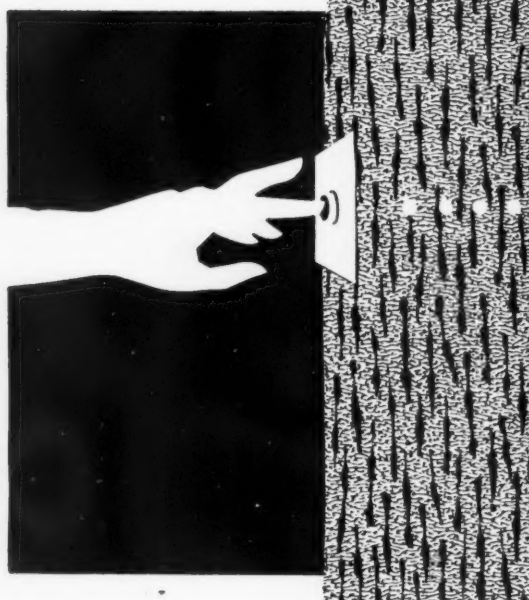
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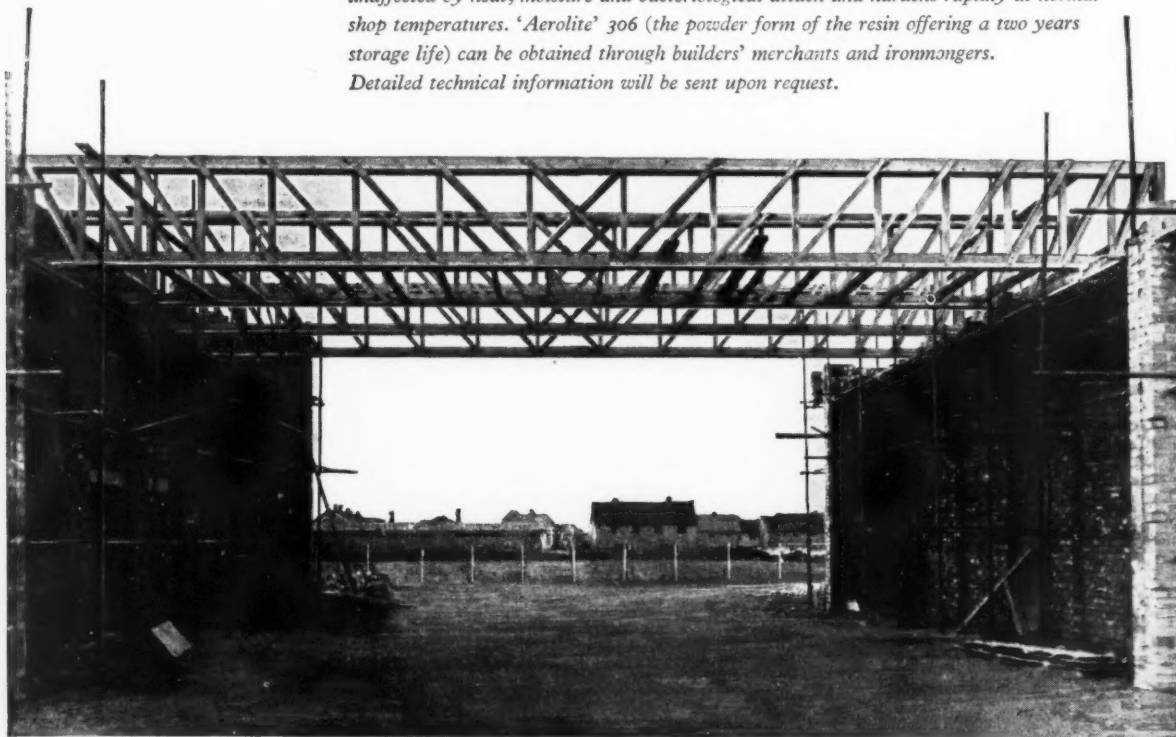
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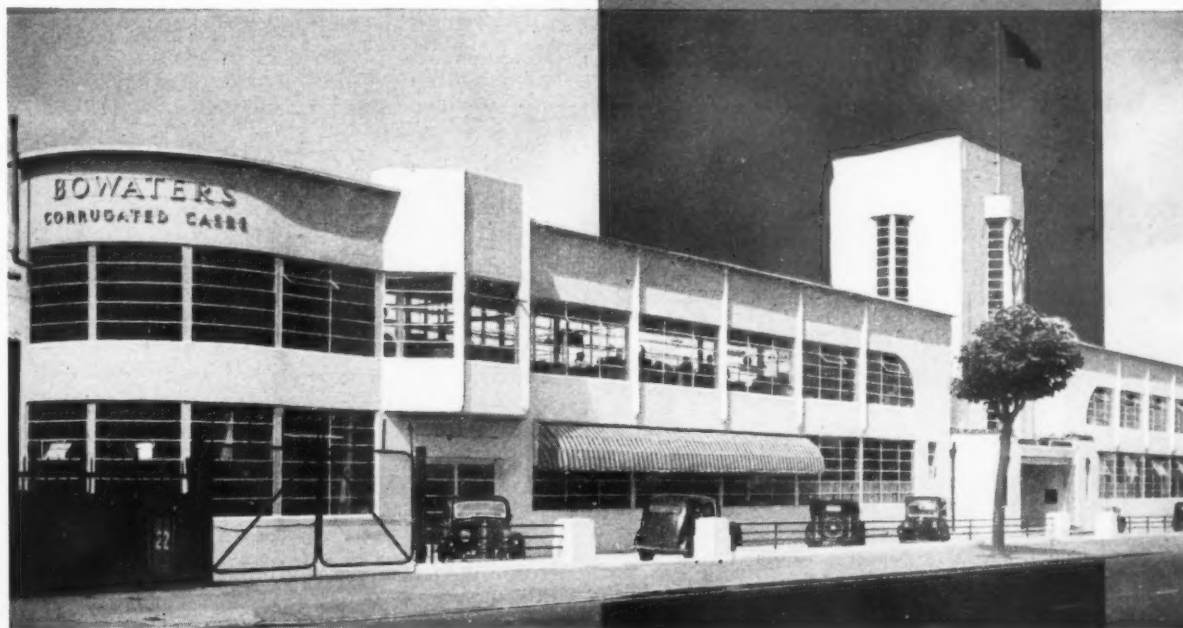
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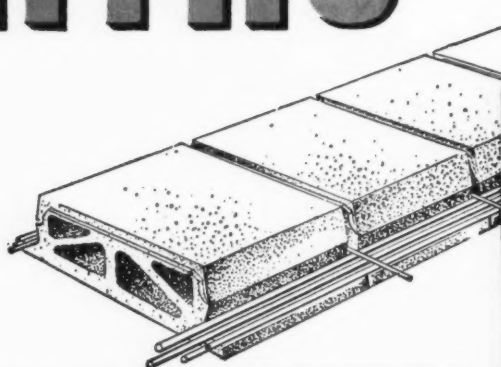
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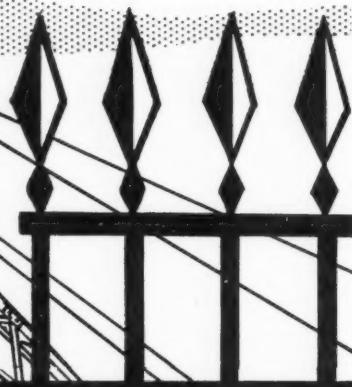
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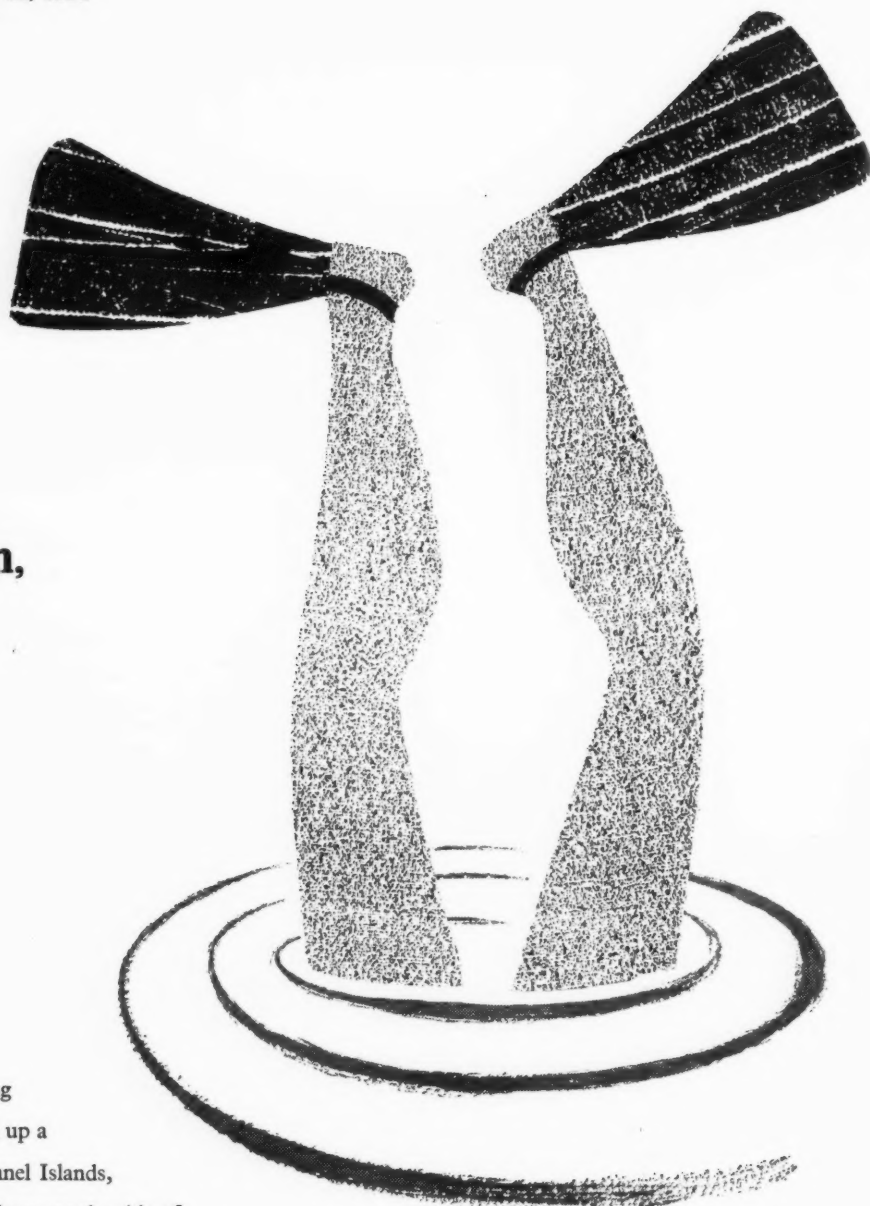
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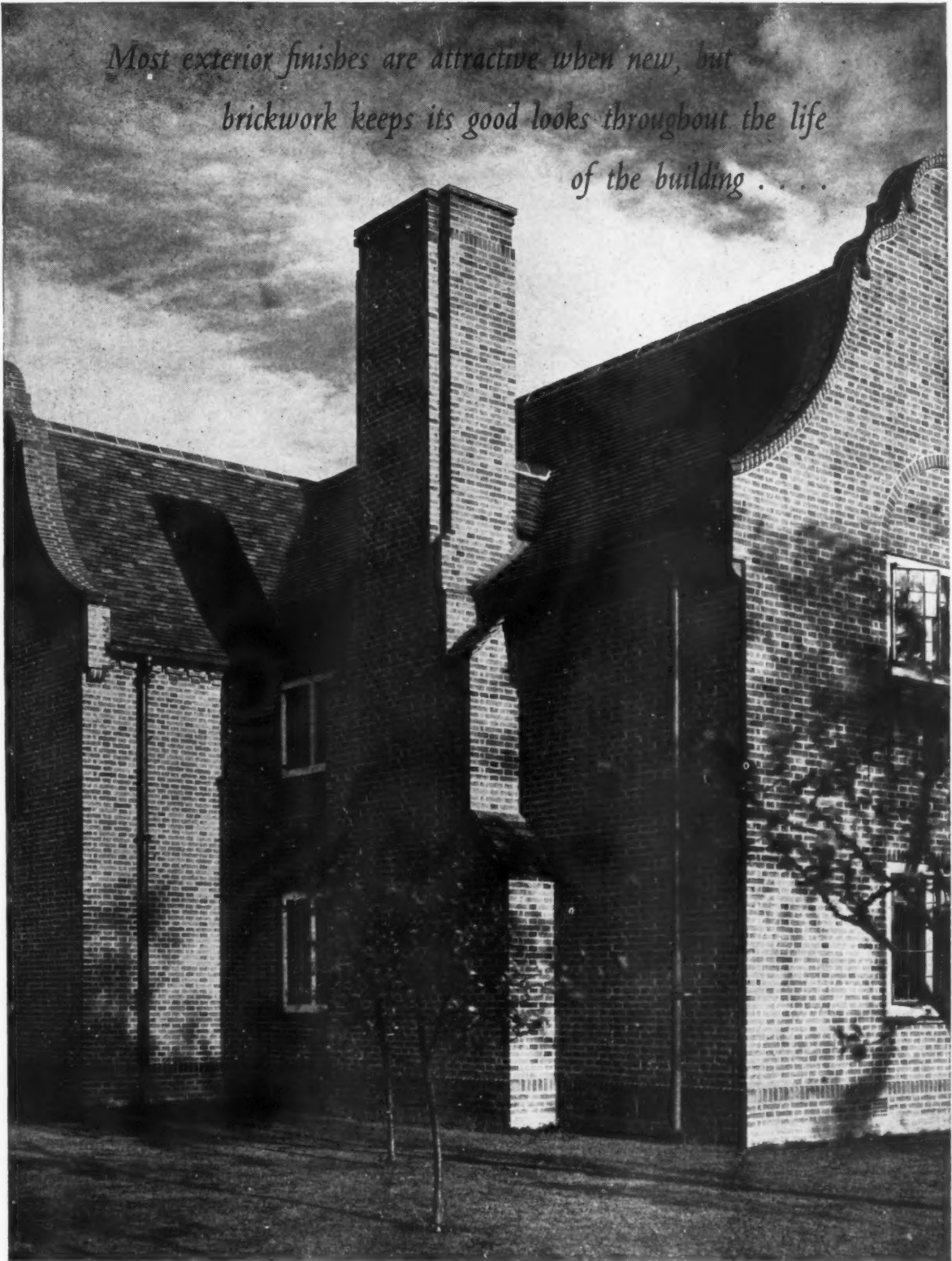
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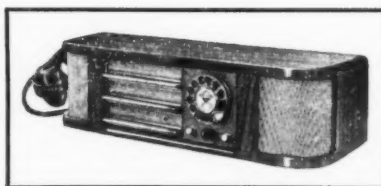
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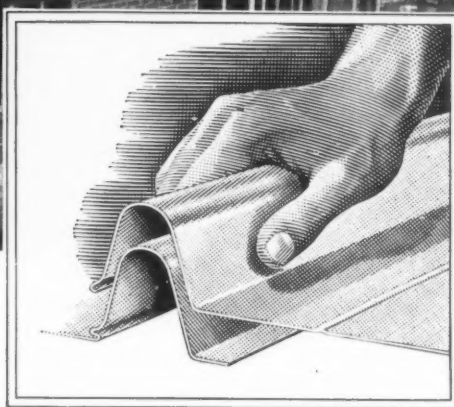
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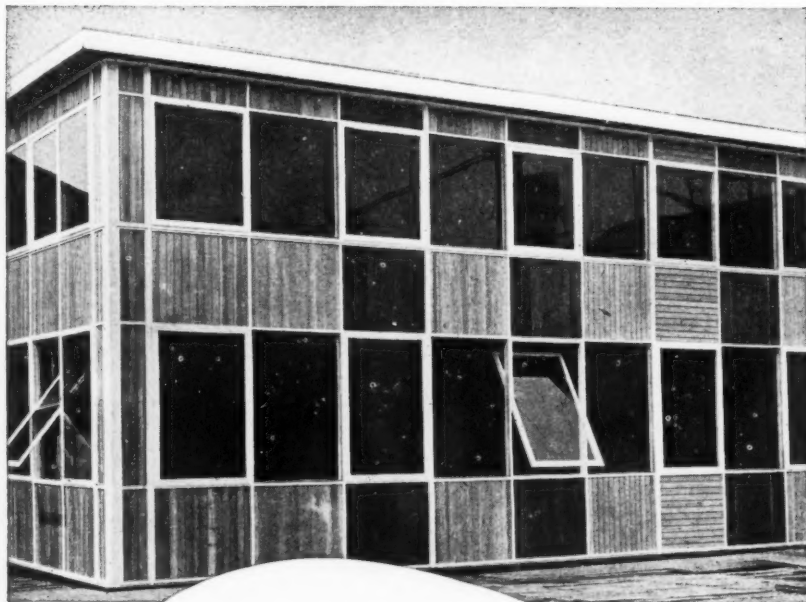
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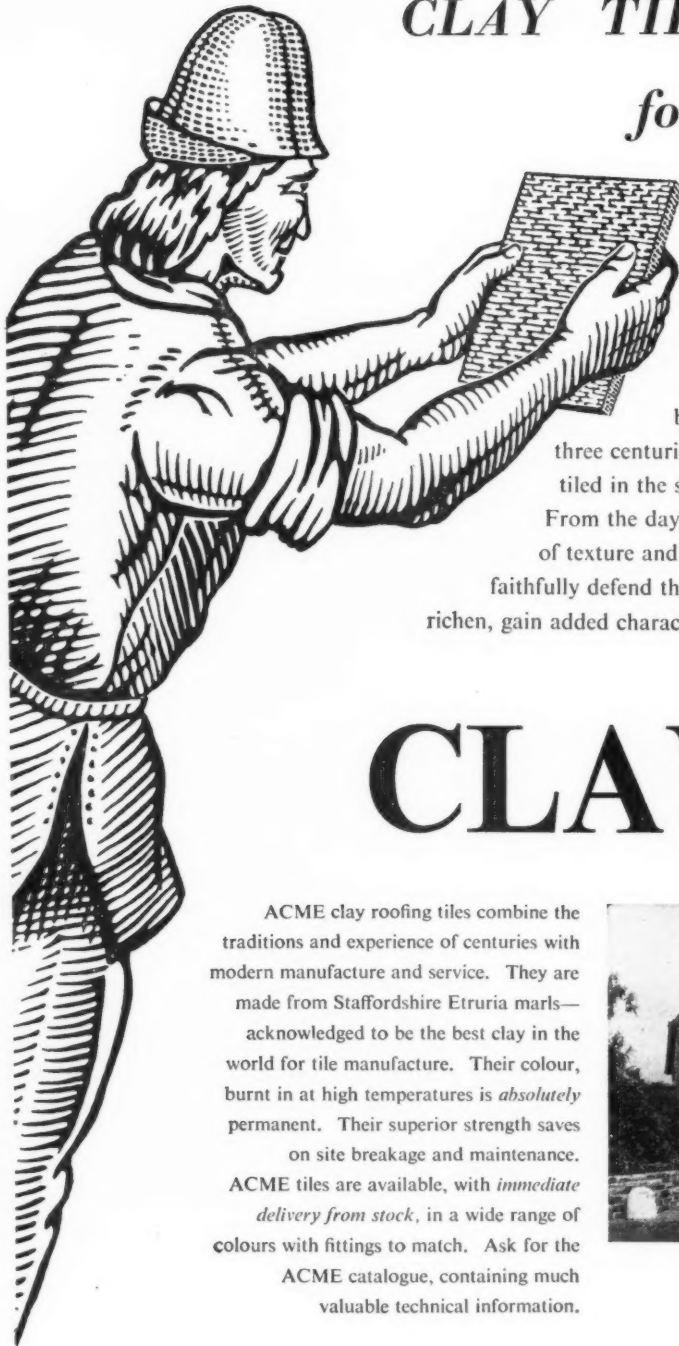
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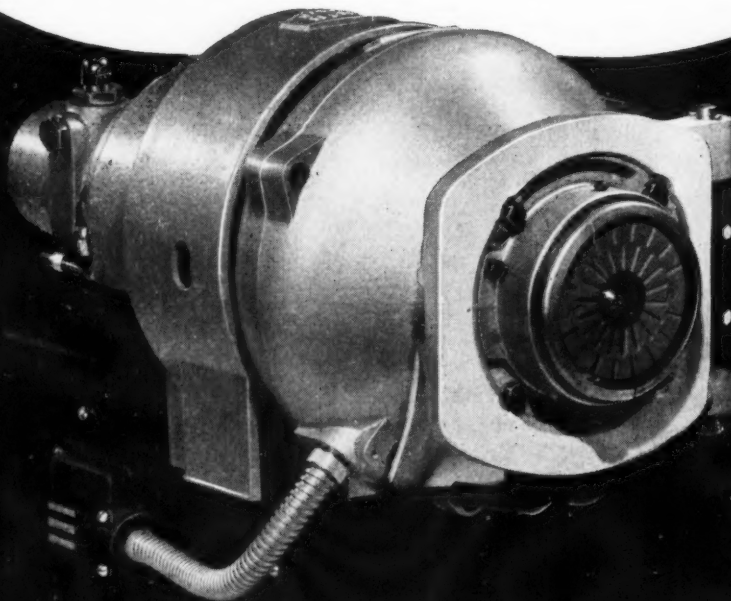
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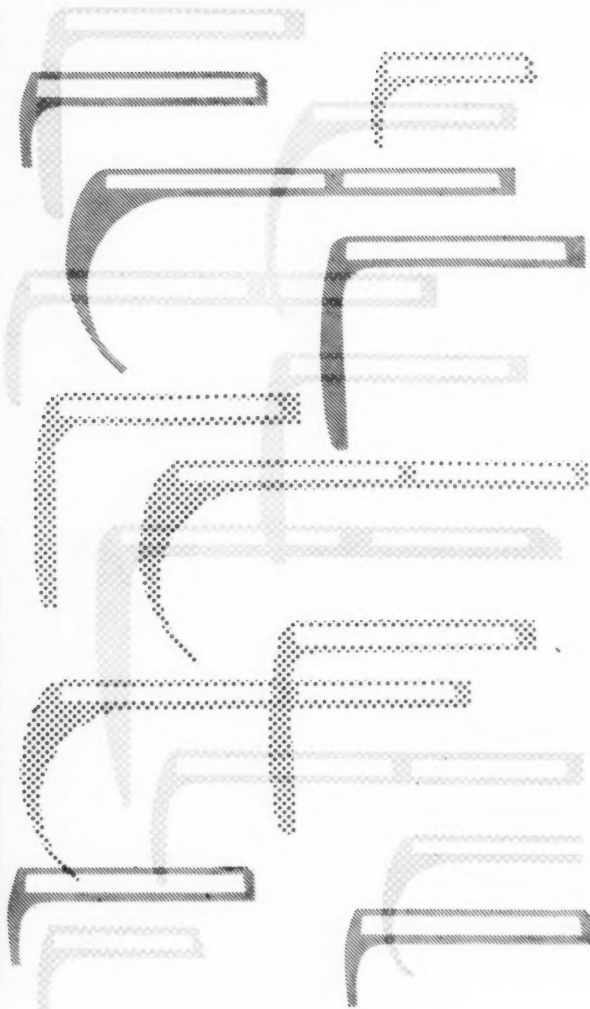
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Top illustration: Crown House, Aldwych, London.

Below: Times Furnishing Co. Ltd., Bermondsey, London.



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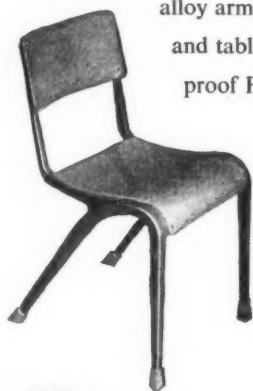
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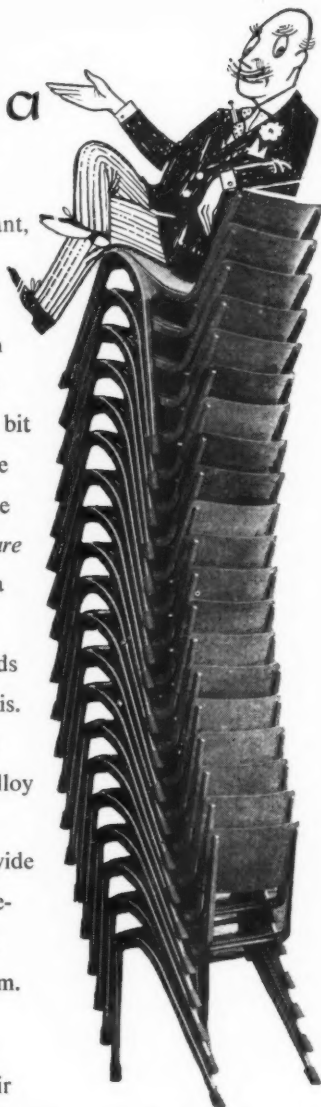
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THE ARCHITECTS' JOURNAL

No. 3202 Vol. 124 July 12, 1956

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NOT QUITE ARCHITECTURE

HIGH, WIDE AND HOMERIC

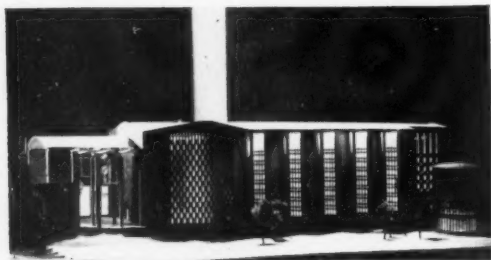
If bitten nails are any criterion, then the most suspenseful sequence lately visible on cinema screens (if wide enough) is undoubtedly the supersonic sleigh-ride in *Threshold of Space*. To anyone with a shred of mechanic sensibility—and that's most of us nowadays—the whole episode from the counted seconds before blast-off to the closing tableau of apprehensive tech-men watching their chief carried off on a stretcher, is a sustained agony of suspension between exultation and alarm.

*

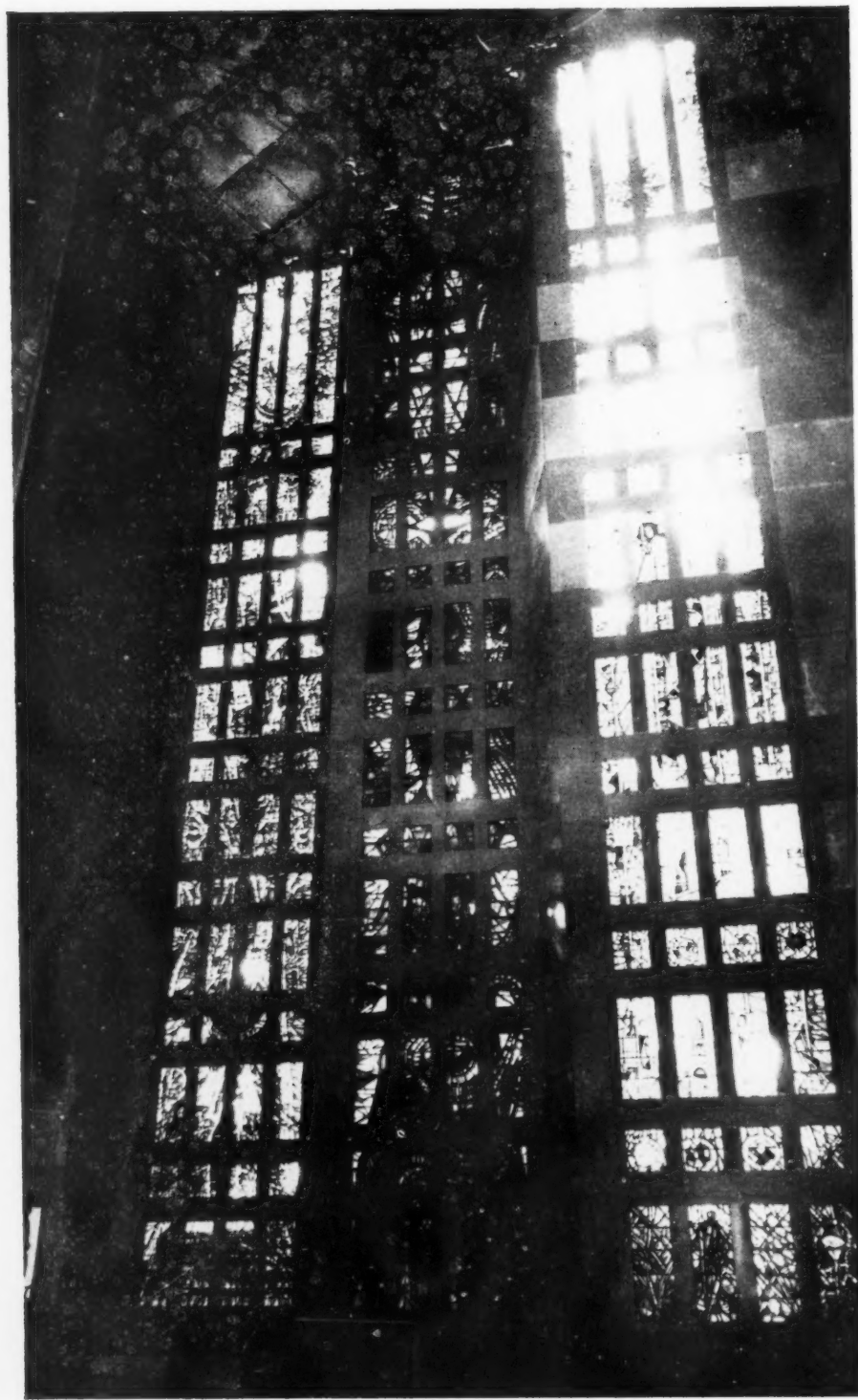
The exultation and alarm attach to the vehicle as much as to the man. The voice of common-sense insists that no such paleotechnic buckboard with a pillory amidships, a pack of rockets aft and not a shred of streamlining will ever get through any sound-barrier. But the voice of the starry-eyed science sucker who lurks within us all argues back that it will, it must—because the Major is wearing the right kind of helmet.

*

It's as simple as that. *Threshold* is a film that requires constant suspensions of disbelief, for the facts it narrates are from too far out beyond our comprehended experience—a thousand miles per hour horizontally, a hundred thousand feet vertically. We believe it where and when it touches experience that is already digested, and when the Major gets his helmet on we are suddenly in touch—for he becomes a figure we have seen before, the science-fiction hero of *Destination Moon* or *Conquest of Space*. The mind boggles at that sledge, but



Windows for Coventry



This photograph of three of the windows for Basil Spence's Coventry Cathedral is inadequate. No black and white photograph could convey the really tremendous effect of the exhibition of these and three other seventy-foot windows at the Victoria and Albert Museum. There was no need for the exhibition organisers to try to evoke feelings of awe and silent admiration by providing a recorded celestial choir. The windows themselves will do that. But will the effect created here be similarly reproduced when the windows are placed in the Cathedral? Obviously they will be further apart than this; and there will be about ten times as much light falling on them than is used here. But isn't the darkness in the exhibition hall deceiving? What will the effect be as one looks from the altar towards these windows (they are designed to throw light towards the liturgical east end)? Will the south light from the back of the church compete with them? More important still, how will the enormous wedge-shaped mullions affect the appearance of the stained glass? It is hard to judge the final stone fret in which these stimulating and brilliantly-coloured windows will be set from the hardboard mullions and transoms put up for the exhibition. Two very different effects would seem to be possible, as shown in the photograph, left. In the left-hand, multi-coloured window by Keith New, and in the right-hand golden window by Lawrence Lee, the mullions create a neutral black pattern in strong contrast with the bright glazing. In the dark, purple-blue, central window, by Geoffrey Clarke, however, reflected light emphasises the mullions so that they stand out as a superimposed and dominating grid. This is the first time that the designers have seen their work in 70-foot lengths. No doubt minor revisions will be made before the windows are fitted into Spence's interesting cathedral. In the meantime you have until September 30 to see the most breath-taking exhibition in London.

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immediately accepts the familiar figure in polythene rompers and perspex dome.

This is quite a situation, and it puts Science-Fiction where it belongs—up there with Homer, as not only the epic, but also the morale-maker of a fast-moving technocracy. For Homer was not only the top blood-and-thunder author of the Ionic world, but his writings codified and exemplified patterns of technology and social behaviour. So, too, with Science-Fiction. Not only does it lend an aura of mythology to science-fact, but it pioneers patterns of social acceptance that make technical development seem more like an orderly progression, and less like a rat-race.

But the science fact film, like *Threshold* or *Strategic Air Command*, has a further function, to pioneer personal, rather than social, responses. English Sunday paper critics have particularly loathed the grounded sequences of both films, and tried to brush them off as superfluous love-interest put in to satisfy the woman's angle. Perhaps they might have been less hostile if either film had been better served in its heroines (no names, no parachute drill) but even so they should have seen that the banalities of situation and dialogue were part of a studied attempt to give the human interest the utmost familiarity, and to impart to US wives a little lesson on how to be Penelope to a jet-age Ulysses—and here the Homeric parallel is almost exact, for the heroine of *Threshold* gets through some yards of knitting while waiting for her man to finish dangling around in a balloon on the yon side of the tropopause.

On the other hand, she doesn't have to keep on unpicking it in secret in order to fend off the local wolves, so manners and morals must have improved a bit in the interval between three-string lyre and three-track stereophonic sound.

REYNER BANHAM



FILE THIS WEEK

Information Centre. The bulk of the reviews this week are of new and revised BS publications, but worth checking against your bookshelves in order to ensure that out-of-date standards have been thrown out ... page 48

Heating and Ventilation. A small study of the running cost of heating detached houses by unconventional methods will help the reader to select heating systems by giving some indication of performance and running costs ... page 49

Wholesale Market, Coventry. This is the first market to be described, together with cost details, in the new format ... page 59

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* To preserve freedom of criticism these editors, as leaders in their respective fields, remain anonymous

The Editors

AN ARCHITECT FOR DUNROMIN

"YOU will not need an architect for the smaller type of house," writes Woodroffe Stacey in the immensely popular *Daily Express*. The leading members of the RIBA, while not entirely agreeing, would put it this way: "The larger type of architect does not need the smaller type of house." Nevertheless the house, however small, remains one of the most important factors in the architectural practice. For every architect it remains a complicated design problem on which he can—client willing—show his capabilities. It is still an essential ingredient for the assistant, or for the provincial architect, for building-up, and maintaining, a practice. The RIBA council, as announced in last week's JOURNAL, have approved a scheme produced by the public relations committee for the provision of standard RIBA designs for small houses. They further agreed to the setting up of a "designs executive committee" and the initiation of a competition for the production of these designs.

There have been rumours that the RIBA were endeavouring to launch some scheme to provide architect-designed houses for the spec-builder market for about the last two years—during which time private enterprise has put up well over 200,000 houses. The majority of these are of poor design and therefore, one presumes and trusts, not the work of architects. This year, private enterprise housing will probably equal, or top, local authority housing in numbers. For the RIBA scheme to be successful, therefore, speed is essential. There is, however, another rumour abroad. This is, that the RIBA's scheme was carried in the face of considerable opposition—opposition from the less wealthy private architects, who, largely on account of their small practices, are not well represented on the RIBA council.

If, contrary to the evidence of the Royal Victorian Institute of Architects (Australia), architects over here lose clients through this scheme, the advocates of it will not be known to the profession as financial martyrs and idealists, suffering for the public good. They will be seen as wealthy architects, well established in private practice, or public architects, well cushioned by security, selling a cut-rate service to spec-builders in return for easy publicity, and at the expense of their younger, or less wealthy, fellow architects.

To avoid such a charge and other even more serious ones, certain precautions must be taken. We list some obvious ones

here, in the hope that it is not too late for them to be considered, if they have not already been included in the proposed scheme.

(1) The house designs should be limited to below a certain size, or price, and should be selected not merely as the result of a competition—as announced—but as a result of collaboration and study between architects and builders.

(2) The scheme must be administered by a whole-time director and staff.

(3) The scheme must be controlled by representatives of the RIBA, and the allied societies, the Federation of Registered Housebuilders, the building societies, the RICS, the TPI and—if possible—the MOHLG.

(4) The designs must have been built, so that the public can be assured that the performance and price promised has been checked—and preferably guaranteed.

(5) The scheme should be run on a regional basis, preferably in association with the allied societies. Houses designed to be built of traditional materials should be designed to conform with local traditions (a restriction which need not apply to the non-traditional house).

(6) All the designs must have been approved by the MOHLG. The local Planning Officers must be persuaded to give planning approval without question to the designs agreed for their area. Their only exercise of planning control would be in the siting and layout of the houses and estates.

(7) The scheme must be accompanied, whatever the expense, by a national advertising and a publicity campaign, directed at the daily and weekly popular press and the women's journals.

To sum up, such a scheme, which is potentially excellent, must have the support of all the profession, the planning authorities, the building societies and the builders. This support will be encouraged if the public is loudly and constantly told, and shown, that they can get an "off the peg" house to fit their purse, family, and living standards more easily and with incomparably better value for money through this scheme than by any other method. Once the public have learnt this lesson everyone will support the scheme. But the first move is with the architects, and they will look pretty silly if they fail.



Two examples of speculative private building by large contracting firms. Left, houses at Stanmore, designed by S. Greenwood; contractors John and David Martin Limited. Right, an illustration from the July number of *Wimpey News* described as "typical of the attractive designs and layout of Wimpey-built estates in the Manchester area." No architect is named. There are 10 estates in the Manchester area being developed by Wimpeys with a total of over 1,500 houses. They are all inspected by the NHBC.



WHAT TO DO IN LONDON

The seasonal splurge of exhibitionism is welling up, the Masters are already on Parade—Paul Klee just finishing at the Hanover Gallery, Picasso's graphic works—fifty years of high seriousness and low comedy—recently opened at the Arts Council. See these, dear visitor to our shores, if you step off in town on your way to Ronchamp, the Biennale, the Dead Sea Scroll-rush or the Seychelles.

*

If you are stuck in England for the summer, however, with the prospect of golden evenings spoiled by failures in Artmanship, the exhibitions you must cover are those at the ICA and the Tate. At the latter are Wyndham Lewis and the Vorticists, a grand, well-documented, carefully - researched memorial to an English attempt to go it alone, and to be jolly modern without taking orders from foreigners like Marinetti and Picasso. The overall effect is so dated that we must soon have a new musical about it, but even so this is a strange, touching exhibition, a tribute to a gallant, wrong-headed attempt to stop the Flag drooping.

*

Corb fanciers, incidentally, will not only find works by Frederick Etchells, pioneer translator of the Master into English, but will also see some fairly

patent cribbing of Peinture Purists in some of the pictures.

*

The ICA has Georges Mathieu, who contributes a valuable goon-show element to current jolly-modern art. Given to cross-gartering, Royalism and crash-helmets, he drives a crumbling Rolls around Paris, and cares terribly about the Middle-Ages—walking backwards for Christendom, near enough.

*

His thoughts about chivalry and the Angevins are transferred to wall-sized canvases in a special, non-reading-type arm's-length calligraphy, executed, for tidiness sake, within the exact hours of the day occupied by the battle, sermon or what-have-you that touched them off—all the same, two hours for the fifteen-foot *Battle of Hastings* in this show, makes even William of Normandy look an old slow-coach.

*

The top-dressing of these knock-about performances is a rich mulch of direct squeezings from the tube that looks, colour-wise at least, more like the Chelsea Flower Show than 1066, and ASTRAGAL, while admiring the energy of M. Mathieu and the fine fog of ploy-words with which his work is surrounded, cannot really feel that he rates very high among the big-boys of action painting like Jackson Pollock.

LONDON LITERATURE

Books about London never stop coming out, and there is no harm in that if they add something to what can be found in the existing books, for London as a source of information and opinion is inexhaustible. On my desk are two new ones, one of which certainly passes this test; the other barely does so.

*

The first* is about Chelsea, and is obviously written with real knowledge and devotion. It is brief and to the point, consisting mostly of historical and descriptive notes on every significant street and square, listed alphabetically. I suppose it is unfair to the author to recall that he happens to be chairman of the town-planning committee of the LCC, and to look for comments on the effect current planning schemes will have on Chelsea—he is very guarded, for example,



Trollopes, one of the oldest decoration and furnishing firms in London (established 1778) have decided to design and make modern furniture as well as reproductions of period styles. The result is shown, in part, above, together with modern furniture from abroad, in their re-styled showroom in West Halkin Street, Belgrave Square. Top left, a settee in black Tibor fabric, designed by architect John Wright for Trollopes and costing £97 10s. 0d. On either side are Trollope coffee tables, with tops in heat-proof plastic, costing £16 16s. 0d. In the foreground is a Norwegian occasional table in teak with two drawers and brass-tipped legs, for £29 2s. 6d. In contrast in price, the occasional table in the background, top right, together with the free-sliding cabinet, in teak and elm, is made by Trollopes and costs £97 10s. 0d. On the left is a Danish chair and stool, covered with blue and black fabric and costing £26 and £11 11s. 0d. respectively. The elm-framed Norwegian settee, above, in contrast with the more luxuriously finished Wright settee, costs only £45. The Danish teak and oak table costs £21 15s. 3d. Bearing in mind transport costs and import duty the Scandinavians are to be congratulated on the cheapness of their furniture. While it is admirable that Trollopes should endeavour to produce modern furniture, it is perhaps a little unfortunate that they should fall so far behind Scandinavian work in price as well as in appearance. Many of the exhibits (not shown here) were of a rather poor quality of design. Nevertheless Trollopes deserve praise for their enterprise.

about the effect on Cheyne Walk of the proposal not only to rebuild Albert Bridge but to create a traffic roundabout at the end of it; also about the scheme, fortunately postponed indefinitely, to build an arterial road across Chelsea Bay. But I wish he had been more free with his opinions and judgments generally.

*

In nearly every entry, though the historical detail is wonderfully complete,

there is little in the way of visual impression—you can look up one entry after another without getting any idea of what the street looks like. There are drawings by Dennis Flanders—scratchy but adequate representations of the scenes they depict.

*

The other new London publication* is a picture-book, consisting of about 120 beautifully taken photographs of the more hackneyed London subjects,

* Chelsea. By Richard Edmonds. Phene Press. 12s. 6d.

* London. By Martin Hürlimann. Thames and Hudson. 25s.

together with six colour photographs which (except for one close-up in Westminster Abbey) have the defects of most colour photographs. The captions (and the historical notes that supplement them at the end) are not very adequate and contain several mistakes.

*

When is someone going to produce a critical and discriminating book about the London scene?

AC2

What have the Fishponds of Kremsermunster, Bedford Primary School, and Corb's little villa at Mathés in common? Give up? Thought you would. Well, they all appear in a quarterly magazine called AC2, and before you get completely lost in nostalgic dreams of wads, char, and Naafi pianos, let me hasten to add that AC stands for asbestos-cement, and the 2 simply means that this is the second number.

*

AC2, in fact, is a very high-pressure trade journal, published by Girsberger of Zurich, telling the story of Eternit the world over, and the three buildings mentioned above are all in it because they have asbestos cement roofs—though it should be admitted that at Kremsermunster this can hardly have been the architect's intention, since he was Prandtauer, and has been dead now some . . . er . . . er . . . (oh well, South German Baroque and all that). Anyhow, high praise to AC2 and Eternit-Werke for a useful and a handsome periodical with a line on architecture that is certainly different.

THE GOOD BOOK

ASTRAGAL never thought of the building site as a particularly bookish place, but it is fast going that way. A month or two ago BSI put all their Standards relating to housing into a handsome maroon-coloured quarto, which is hardly distinguishable from a Bible, for use on the site. Now the London Master Builders' Association, with the same end in view, have pasted all the MOW Advisory leaflets into a green buckram folder which, as their handout says, "would not disgrace any office bookshelf." The implication is, presumably, that "the office" is one stage nearer gilt-backed leather bindings than "the site." This invasion of the site by books of reference is a portent,

and it threatens to change site relationships. You can imagine the young chap fresh from his Secondary Modern interrupting the foreman with "... but the book says ..." and it does not take a great effort of the imagination to think of him doing the same to the architect, who, we fear, may stand in even greater need of it. But it is an excellent thing thus to carry the writ of BRS in to the front-line trenches: more strength to BSI, LMBA, and the other tireless pedagogues.

LCC ON VIEW

The LCC's annual reception—held last week—is almost unreportable—there is no other occasion, so far as ASTRAGAL can recall, when so much entertainment is provided. In addition to at least seven rooms serving food and drink there was dancing, which was enlivened at twenty minute intervals by all-too-short demonstrations of Spanish, Scottish, Estonian, Irish and Israeli dances. For those with more serious musical leanings there was a half-hour piano recital and two performances of Mozart's Clarinet Quintet. There were six small exhibitions and two special trips, one to the record room in the basement and one to a platform on the roof which amply demonstrated the marvellous position the South Bank holds as a site from which to survey the London skyline. The LCC's platform was at a mere hundred and ten feet, ASTRAGAL was told. Even so, the view was impressive.

*

The basement exhibition, which ASTRAGAL spotted as being certain to appeal to his critical faculty, as it contained "a display of everyday equipment selected and designed for the Council's services," was, alas, spotted too late—the evening ended at a mere eleven o'clock. One was left to wonder whether it compared with the quality of the work of the housing division of the LCC's architect's department, or with the quality of the furniture and articles on view on the first floor which were made by the students of the LCC's schools and colleges. Of the latter, the furniture was very competent, particularly an armchair (save for the usual fault of providing no lumbar support), and there were attractive, if derivative, knives and forks; adequate silver, and impractical pottery.

The *pièce de résistance* for many, judging by the animated interest it invoked was the enormous model of Holford's St. Paul's precinct. This was surrounded by drawings showing other proposals for the area, and plans of St. Paul's with St. Peter's, Rome, and the Sancta Maria del Fiore, Florence, superimposed—useful stuff, but rather familiar to ASTRAGAL who had a happier time superimposing never-carried-out nineteenth-century plans on to present-day London. These were on view in the exhibition next door, titled, according to the Editor of a most distinguished architectural weekly—"Planning in London, Now and Then." Among the exhibits was Colonel Trench's (a forefather of Peter (Bovis) Trench?) arcaded and colon-naded embankment, designed to view from Westminster Bridge to London Bridge, and George Dance's proposed improvements, with two bridges, and two piazzas, to the Port of London. Not least of the exhibitions was a display of the LCC's flowers and pot plants, of which *Humea Elegans* gave a rather surprising air of sanctity to the whole reception by filling the corridors with the smell of incense.

ONE MORE HOUSE

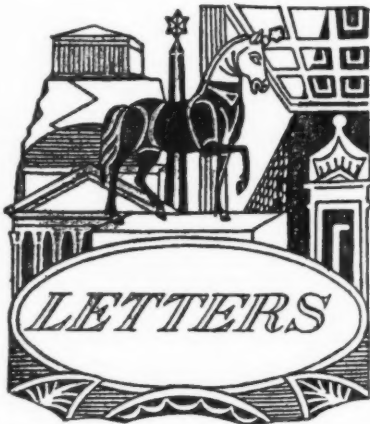
The *Daily Mail's* house competition would seem to be just one more of the usual kind. The house (not to exceed 1,750 sq. ft. and £5,500) is for a business man earning between £2,000 and £3,000. He has a piano-playing wife; a daily help; two children, their pets, a car, golf clubs and visiting friends and relations who stay the night. The object of the competition is to obtain a house "representing the best possible value for money in planning, construction and fittings." The design "should, if possible, be lifted out of the ordinary by some imaginative ideas."

*

Now books and magazines for years have shown that there are dozens of imaginative ideas which architects have thought up for medium-priced houses. There must be more variety, in detail, of this type of building, than of any other, anywhere. Do we need any more? Well, it will, perhaps, be useful for the general public to see some better designs than are usually on view at the Ideal Home Exhibition (where the winning house may be built unless, "in the opinion of the assessors, it is considered unsuitable"). The opinion of the assessors . . . here is a possible

snag. The assessors are: L. E. W. Stokes-Roberts, organiser of the exhibition, Clifford Culpin and Arthur Kenyon. The architect members were approved by the RIBA. Now Culpin assessed the not unsuccessful Tretol house competition, but neither of the architects are widely known as designers of modern houses, and Kenyon's record as an assessor (remember the Dover flats competition?) will not encourage *avant-garde* designers to enter. But perhaps that is what the *Mail* really wants, something cosy, in stockbroker's contemporary.

ASTRAGAL



Mrs. J. Greenwood

John Gloag

Johns, Slater and Haward,

F.A.R.I.B.A.

"Herts Architect"

Vivian Levett, A.R.I.B.A.

Hugh Weeks, Deputy Chairman, Trussed Concrete Steel Co., Ltd.

"Jack"

Hugh Krall, A.R.I.B.A.

P. A. Kreamer, Technical Representative, Thermallite, Ltd.

Boxgrove Houses

SIR.—This scheme, especially as publicised in the *Manchester Guardian*, seems to me to do nothing but harm to the architectural profession. When well known architects sell themselves to projects of this kind and evidently endorse the sentiment that an architect is a luxury then something is wrong with a profession which allows it. I consider that any scheme which aims to "spare the client the cost of employing an architect" should be deplored.

However, the plan is justified by the statement that the professional architect is unlikely to complain of this scheme as the designing of small houses hardly pays him. Eminent members of the profession who are assured of big contracts and a life income

from buildings in the process of erection invariably choose to ignore the young struggling architect. I know of many who would welcome with open arms any client or clients wishing to have houses built to the value of £4,000.

I would very much like to see official disapproval of this scheme in the *Manchester Guardian*: unfortunately it hardly seems likely.

(MRS.) J. GREENWOOD.

Yorkshire.

What, No Astragal?

SIR.—Please don't do that to me again. I was so distressed to find that ASTRAGAL was missing from your issue of June 28, that I had to ring up to make certain that this was only a temporary arrangement. Without saying anything derogatory about domestic heating or the technicians who have contributed so many dramatic, exciting and generally stimulating articles on the subject, I do not think that they should have been allowed to push ASTRAGAL's column out. The A J without ASTRAGAL is like a lake without water, an egg without salt, a wood without trees, and—and—well, I will not go on in case I might become coarse. Please don't do it again.

JOHN GLOAG.

London.

Guarantees for Asphalte and Built-up Roofing

SIR.—Architects and building owners with experience of asphalte and built-up roofing will view with concern the joint statement of the National Federation of the Mastic Asphalte Industry and the Felt Roofing Contractors' Advisory Board announcing a reduction in the period of guarantee from twenty years to one year.

They will find it difficult to accept the explanation that the product has now reached such a state of perfection that a guarantee has become superfluous; on the contrary, experience leads to the conclusion that the step has been taken to avoid a liability which has proved to be too onerous.

Architects should in their own interests make it quite clear to their clients that they cannot shoulder the liability for defects, possibly very serious, which the manufacturers and contractors for these types of roofing themselves now cease to guarantee for any useful period.

JOHNS, SLATER and HAWARD.

Ipswich.

The Professional Man's Losing Struggle

SIR.—Your correspondents, "13 Essex Architects" (AJ, June 21), have certainly gone right to the root of the problem when they state that "the profession is fundamentally divided in respect of remunerations and conditions for its members." In fact, it is humbug to pretend that no such division exists.

Qualified salaried assistant architects form the majority of RIBA members, yet any attempt on their part to take steps to improve their status and salaries is immediately derided by both private and official principal architects as "unprofessional."

Next year we shall be paying nearly 7 gns. in "professional" subscriptions (including registration), and I, for one, find it a poor consolation to be reminded that I am a "professional man" when I find it a losing struggle to keep up with my (trade-union) working-class neighbours.

"HERTS ARCHITECT."

Herts.

A Shave For The AJ

SIR.—Please don't change the AJ page size as John Brunton suggests (June 7), but if anything, merely shave $\frac{1}{4}$ in. off the width, to give $11\frac{1}{4}$ in. \times $8\frac{1}{4}$ in., which, if any of the interested few don't know, is precisely (enough) the International, as distinct from parocnial, standard A4 paper size, 0.297 \times 0.210 metres.

The appendix (or apologia) to BS 1311 argues in justification of 11 in. \times $8\frac{1}{4}$ in. that this is "near enough" to the A4 size, which with an unfortunate British standard of accuracy, it quotes as $11\frac{1}{4}$ in. rather than $11\frac{1}{2}$ in. long. The wide lack of interest in BS 1311 may well be due to its almost complete lack of any convenient, not to mention logical, relationship to the usual printing, writing, photographic, drawing or tracing paper sheet, roll or book, as well as the available file cover, binder, or filing drawer sizes.

This anarchy is felt and complained of by visiting architects as well as business men from civilized countries. Much of the rest of the world, I believe, has long accepted and enjoyed the delight of the halving and doubling 1: $\sqrt{2}$ constant proportion series.

We have been bleating long enough, with little success, to secure general acceptance of BS 1311. Let the hopeless exhortations be stopped, let this purely insular Standard be forgotten, and let this now join foolscap, quarto, half crown, crown, double crown, double elephant, and the rest in going to the limbo already happily containing rods, poles, perches, hogsheds, and other archaisms.

Let us then look forward, if not at once to the millennium and entire salvation, at least to a time when correspondence, notes, quotations, specifications, bills, folded drawings and, not least, the cribs from the AJ, will all sit tidily together on desk, shelf, drawing board, or in portfolio or file.

Thus, to the greater glory of Queen Anne's Gate, the AJ will be the nucleus or spearhead of yet another great reform. Let not the AR fail to toe the line.

VIVIAN LEVETT.

London.

Concrete, Not Steel

SIR.—I feel that the following extract from the fifth report of the Select Committee on Estimates deserves a wide circulation. The building referred to is the new block of offices in Whitehall Gardens.

"37. The cost of the building was estimated in 1948-49 at £3,532,000. Your Committee note that major economies have been made on that estimate in two directions. First, a change in the design in the second part of the building from steel frame to reinforced concrete saved about £150,000. For repetitive work, when the shuttering can be used many times, reinforced concrete is cheaper than structural steel. Your Committee do not gather that there would have been any considerable structural advantage in using steel. They, therefore, recommend that attention be given at an early stage in the planning of public buildings to the possibility of using reinforced concrete rather than steel."

HUGH WEEKS.

London.

In Defence Of The Brave Unqualified

SIR.—Your correspondents, Messrs. Giddens and Gregory (June 14), have issued the obvious prescriptions to the unqualified assistant.

Giddens, of four years standing as a student, disputes the type of experience gained by the unqualified 30 plus. A survey of the work performed by such men directly

after and ever since the war would no doubt prove that they had to forego personal advancement to re-establish a long-lost security by getting on with the job, and to keep the profession alive to await the glorious exit of Government-assisted architects from various channels, men, whose professional careers had not been upset by war service, due to what can by now be called architecturally favourable ages.

Mr. Gregory, no doubt a genius, lacks consideration of the 30 plus, void of his mental capacity, and proceeds to emphasize the value to be given by a court of law upon his qualified submission, presumably in preference to that of his Senior.

Whilst disagreeing with "Architectural Assistant" of April 5, and avoiding the "Ex-serviceman's harp," I would venture to state, Mr. Gregory, with possibly, due respects, that during your year of entry into the Institute, the unfortunate 30 plus called up for war service mid-way through "Articles" had already served four or five of their six years' war service. The proviso in your last paragraph is, however, appropriate and acceptable.

"JACK."

Portland Stone

SIR,—ASTRAGAL should be disabused of the impression that Portland stone remains toffee-coloured (June 14) unless affected by smoke. In fact, the stone is usually white by the time it reaches the site.

Portland stone has the unique virtue of being self-cleaning where exposed to rain. The additional whiteness acquired in exposed positions may, in part, be due to the action of rainwater in which sulphur dioxide has been dissolved, and the complete cleaning of boiler-house fumes (though not contemplated at the moment) would remove the sulphur compounds together with the unburnt carbon. It is possible, however, that even so, rainwater would remain sufficiently acid to produce the sparkling whiteness of exposed Portland stone.

Portland stone should, as an external facing material, be for us what marble is for the Brazilians and Italians. It is, admittedly, expensive compared with brickwork, rendering or precast concrete; not so compared with curtain-walling, slate, or polished granite. Its use is made more expensive by the conservatism of District Surveyors and the two major quarry owners, none of whom encourages its use in thin slabs. The latter, in particular, show extraordinary apathy in developing or applying economical hanging techniques for thin slabs, and virtually no research has been done into reasonable minimum thicknesses.

The use of Portland stone should also be investigated as a load-bearing element in exposed columns and beams where the tensional forces would be taken by prestressing steel as in the "Stahlton" terracotta tile plank, in this way making use of its excellent weathering qualities and high resistance to compression.

HUGH KRALL.

London.

Domestic Heating

SIR,—We should like to take this opportunity of congratulating you on your most informative edition of June 28. We were naturally particularly interested in those parts which concern themselves with thermal insulation.

We would, however, like to question the methods and costs given by Messrs. Broughton & Nash for improving the "U" value of external walls to 0.15. Taking the cost figures from their recent publication "Thermal Insulation of Buildings," it is already possible to obtain a "U" value of

0.17 by using 4-in. suitable lightweight concrete blocks as inner leaf, for a total extra cost of 11d. per yd. sup., i.e., a total of £4 6s. 2d. in the dwelling discussed.

.15 is also obtainable by using 3-in. lightweight concrete blocks for inner and outer leaves at an extra cost, again interpolating from the cost figures in the same publication, of approximately £6 10s. including rendering. Even for larger dwellings where the inner leaf below first floor level had to be increased to 4-in. blocks, the extra cost would still only be of the order of £20.

Both these figures include rendering costing approximately 7s. 6d. per yard.

It seems a pity now that the weather-resistant cavity wall is more or less accepted, to revert to a solid wall by suggesting the doubtful practice of filling the cavity with a loose fill insulant.

In conclusion, we think it worth reiterating that insulation is paid for once but fuel bills are always with us.

P. A. KREAMER.

Reading.



RIBA

Appointments

PUBLIC INTERVIEWS FOR PUBLIC APPOINTMENTS. The RIBA Council consider that the publication of the names of a short list of candidates is invidious. This arose from a report of the Salaried and Official Architects' Committee on a recent case in which a short list of candidates had been interviewed for appointment by a public authority. The full discussions of the selection committee which had interviewed the candidates were allowed to be published in the Press with consequent embarrassment to the unsuccessful candidates. The Council agreed to make representations to the County Councils' Association and the Association of Municipal Corporations with the suggestion that local authorities be advised that the discussion of candidates' qualifications, personalities and aptitudes should not be allowed to be printed in the public Press.

Appointment of Honorary Officers for the Session 1956-1957

Harold Conolly, having been appointed Chairman of the Allied Societies' Conferences, becomes a Vice-President under the provisions of Bye-law 28. Dr. J. Leslie Martin was re-appointed a Vice-President. Leonard C. Howitt and Thomas E. Scott were appointed Vice-Presidents. Professor Basil Spence was appointed Honorary Secretary, and E. D. Jefferiss Mathews was appointed Honorary Treasurer.

National Consultative Council of the Building and Civil Engineering Industries: RIBA Representatives.

Michael Waterhouse and E. D. Jefferiss

Mathews were nominated for re-appointment by the Minister of Works.

RIBA Architecture Bronze Medal: The Sheffield, South Yorkshire and District Society of Architects and Surveyors: RIBA Representative to Serve on the Jury.

Norman H. Fowler, President, West Yorkshire Society of Architects.

British School at Rome: RIBA Representation.

D. H. Beaty-Pownall in place of P. G. Freeman. (Note: The second representative, R. E. Enthoven, continues in office until June, 1958.)

Plumbing Trades National Apprenticeship Council.

E. M. Price in place of W. A. Guttridge.

British Road Federation: RIBA Representative at Conference on Urban Motorways.

Arthur G. Ling.

RIBA Representative on BSI Committee: Natural Stone Quarry Products Industry Standards Committee.

F. H. Heaven in place of Howard Sadler.

Christmas Holiday Lectures for Young People.

G. Grenfell Baines has accepted the Council's invitation to give two lectures for young people at the RIBA during the Christmas Holiday period, 1956.

COMPETITION

Cologne Redevelopment

Planners are invited to enter for an international competition for the redevelopment of the area around Cologne Cathedral. The City of Cologne will not only award four prizes (of 20,000 DM, 14,000 DM, 10,000 DM and 6,000 DM), but will also buy five entries at 2,000 DM each.

The assessors will be Herr Kelter, of Cologne; Herr Riphan, of Cologne; Professor Hillebrech, of Hanover; Herr Steiner, of Zurich; Professor Weyres, of Cologne; Professor Baader, of Bonn; Herr Pecks, of Cologne; Professor Leibbrand, of Zurich; Herr Schüssler, of Cologne, and Dr. Adenauer, of Cologne.

Designs must be sent off by August 31. Conditions (deposit 100 DM) can be obtained from Städtebaudamt der Stadt Köln, Stadthaus, Gürzenichstrasse.

BUILDING

Research Symposium

A symposium on the direction of research establishments will be held at the National Physical Laboratory, Teddington, Middlesex, from September 26 to 28. The symposium, which is being organized by E. S. Hiscocks, secretary to the National Physical Laboratory, will include a paper by Dr. F. M. Lea (Director of Building Research, DSIR) and one by H. A. Snow, A.R.I.B.A. (the MOW's Superintending Architect). The first speaker will talk about "What is Required," and the other will speak on "Design, Construction and Layout of Laboratories."

MOE

New Chief Architect

Appointed

S. A. W. Johnson-Marshall, Chief Architect to the MOE, will resign from the Civil Service on July 14 to go into private practice.

Anthony Pott, Principal Architect and at present in charge of the Ministry's Development Group, has been appointed in his place, with effect from July 16. Mr. Pott joined the MOE in 1949 from the BRS, where he was in charge of the Architects' Section.

HOUSING

Figures for May

The number of permanent houses completed in Great Britain during May was 25,845, compared with 24,934 in May 1955.

128,663 houses were completed in the first five months of the year.

HOUSING CENTRE

Conference on Slums

More than one hundred and fifty local authorities were represented at the Housing Centre's recent annual conference in County Hall. Delegates heard some excellent papers (writes a correspondent) on "Slum Clearance and Re-development—The Present Opportunity." Amongst the sprinkling of architects was Percy Johnson-Marshall, who appeared in his long celebrated role of client-protagonist for truly comprehensive planning, craftily disguising the architectural ends in a welter of planning devices, to deliver the most stimulating paper of the conference in his illustrated lecture on "Re-building in Central Areas." After claiming his paper as "the long-haired job" of this occasion Mr. Johnson-Marshall won over his audience by talking at a respectable level in a respectful way and with such splendid material in his colour slides as to make this the highlight of the three-day event.

In dealing with the problem broadly and sympathetically he took some pungent precedents for this "intractable problem" of central area re-development in his examples from Rotterdam ("a tough merchants' city"), Rio de Janeiro and Sao Paulo ("where high flats too often appear as low ones blown up by a bicycle pump"), New York (full marks to Lever and UN slabs for articulating their own spaces so successfully), and horrid Chicago ("well—I just don't know what to say about Chicago").

The audience was also shown some new and most enterprising re-housing schemes in Paris, where the lecturer had just come from with some "hot" slides, and where high densities are being developed in the suburbs *après Londres*.

In the course of what was incidentally an object lesson in architectural public relations, Mr. Johnson-Marshall scored several decisive points in favour of:

1. Really comprehensive planning—where the architect and planner are at one together.
2. The importance of physical effects and of thinking in broad terms ("look at it from 100 years hence").
3. The setting of standards on the international rather than the local level.
4. The place of trees and sculpture as fundamental elements in townscape.
5. The broadly-imaginative conception—where pedestrians and motor cars are often separated by levels rather than by lines.

It was interesting to note that a summing up of the conference by one of the organizers was that this year's theme attracted much more lively interest than last year's conference, which was on expanded towns policy. Everyone—from large and small towns and rural areas—seemed to have something to say or contribute: slum clearance seemed to be a problem they understood in principle.

This attitude augurs well for the growing drive towards starting up slum clearance schemes. Though the conference produced perhaps little in the way of new ideas, one had the impression that people were getting down to practical matters.

Many of the points raised at the conference will be commented on in a forthcoming series of articles on slum clearance and re-development to be published in the JOURNAL.



Sir Patrick Abercrombie presenting his master-plan for Addis Ababa to the Emperor Haile Selassie. The ceremony took place at Addis Ababa last month, at the end of a six-week visit to Ethiopia by Sir Patrick, during which he completed his plan, which has been formally approved by the Emperor. It replaces the grid pattern laid down by the Italians by a radial plan, divides the city into neighbourhoods and defines it by a green belt and a further belt of agricultural land containing satellite towns. Sir Patrick Abercrombie was assisted by Gerald Dix, formerly lecturer in town-planning at Manchester; now architect-planner to the municipality of Addis Ababa.

AA

Annual Exhibition

The AA School of Architecture's annual exhibition of work, which is being organized this year by the students, will be held at 34-36, Bedford Square, W.C.1, from July 14 to August 1. (Weekdays, 10 a.m. to 6 p.m., Saturdays, to 2 p.m.)

The exhibitors will try to show "both the ideas and principles governing present-day design together with the doubts and strong positive feelings found in student work."

YORK

Townscape and Conversions

A six-day course on housing improvements and conversions will be held by the York Institute of Architectural Study, Micklegate, York, from September 6 to 11. A six-day course on townscape will be held from September 13 to 18.

The tuition fee for each course will be five guineas. Members will be responsible for their own hotel expenses.

Full details can be obtained from the secretary, J. P. West-Taylor.

ZURICH

Landscape Conference

The Swiss Federation of Landscape Architects is holding an international congress for landscape and garden architecture in Zurich from August 20 to 26. Enquiries should be addressed to the IFLA Congress Secretary, c/o E. Graf, Landscape Architect BSG, Romerhofplatz, Asylstrasse 58, Zurich 7/32.

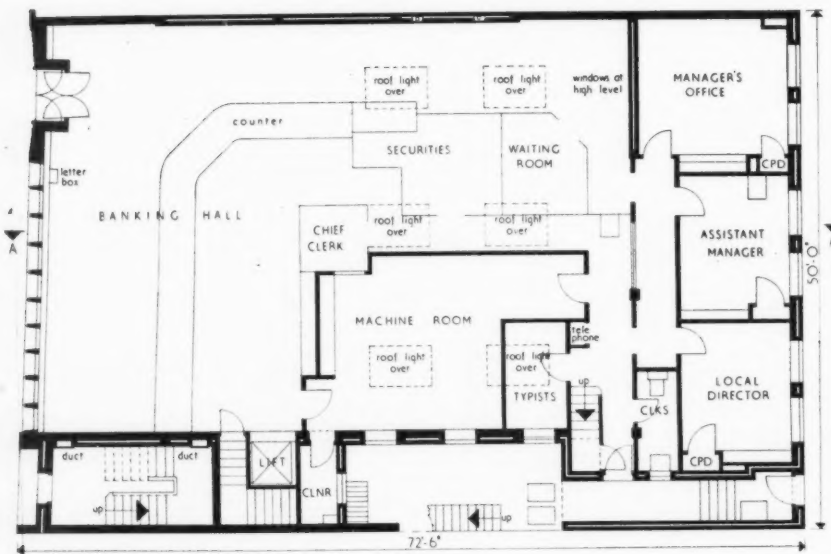
DIARY

AA annual prizegiving and exhibition of school work. Professor Sir Patrick Abercrombie. At the AA, 36, Bedford Square, W.C.1. 3.30 p.m. JULY 13

Presentation of Diplomas. By Sir Howard Robertson. At the Northern Polytechnic, Department of Architecture, Surveying and Building, Holloway Road, N.7. 7 p.m.

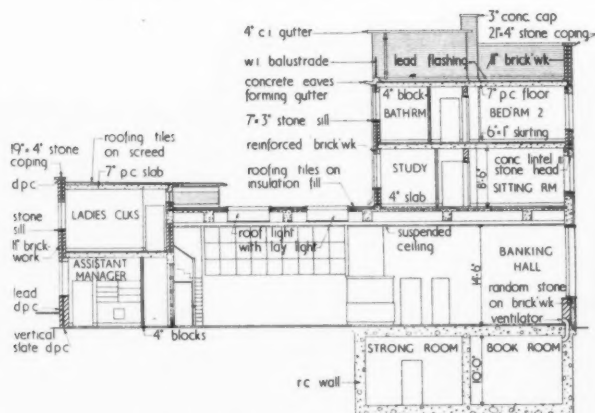
JULY 18

RE-BUILT BANK FOR BARCLAYS IN THE CITY

Ground floor plan [Scale: $\frac{1}{8}'' = 1' 0''$]

These new premises for Barclays Bank Ltd., in St. George's Street, Canterbury, form part of the development plan for the city and replace the original bank, which was destroyed by enemy action. The architects were Willan, Stewart and Waite and the quantity surveyors, Harry Trinick and Partners. Above right, the main facade seen from St. George's Street; below right, one of the desks in the banking hall; opposite page, part of the main counter. Site investigations showed that the sub-soil consisted of mediaeval made-up ground to a depth of about 10 ft. The foundations were designed as a r.c. box for the basement area, which contains strong rooms, stores and boiler house. These rooms are at the front of the site. Piles and ground beams were used for the remainder of the foundations, with a r.c. ground floor. The r.c. frame is designed to avoid internal columns and supports a diagrid first floor. The upper two floors,

which contain a maisonette, are built of traditional load-bearing brick walls with precast concrete floors, built straight off the top of the diagrid. The main beam over the banking hall window takes the front edge of the diagrid plus the main front wall of the building and is supported at each end by columns 27 in. by 9 in. To overcome the eccentricity and slenderness ratio, the columns are capped with copper plates with dowels passing through the plates from the columns into the soffit of the beam. There is no rigid connection, therefore, between beam and columns. The street elevation is faced with $1\frac{1}{2}$ -in. thick Ancaster stone above the main window, fixed with copper cramps to the outer $4\frac{1}{2}$ -in. skin of the cavity wall. Sills and copings are in blue Woodkirk York stone; the banking hall window and entrance door jams are in Roman stone and the panel below the ground floor window is of pitch-faced random-coursed York

Section A-A [Scale: $\frac{1}{4}'' = 1' 0''$]

RE-DEVELOPMENT AREA, CANTERBURY

stone. Flat roofs are covered with built-up roofing felt and insulating asbestos-base tile decking to provide roof fibre (for acoustic insulation) and heating pipes. Bank gardens. The high-level roof is surrounded on three sides fittings and furniture are in black bean and mottled



by a 5-ft. high parapet wall. On the remaining side, where there is a view of the Cathedral, there is a wrought-iron balustrade. The public space has a Travertine marble floor with Levanto marble skirtings. The ceiling consists of perforated aluminium panels backed by glass fibre (for acoustic insulation) and heating pipes. Bank fittings and furniture are in black bean and mottled

COST ANALYSIS

Total ground floor area of superstructure	3,280 ft. super
Total floor area (excluding basement)	6,470 ft. super
Total floor area of basement	1,450 ft. super
Storey heights of basement	10 ft.
Total depth of basement below ground level	13 ft.

Tender date, March 1954

Tender cost of superstructure installations and finishings	£33,666
Tender cost of reinforced concrete foundations and basement, frame to superstructure, suspended floors, roof and staircases	£14,270
Gross total cost	£47,936
Cost per ft. super of floor area including basement	61s. 0d.
Cost per ft. cube including basement	8s. 1d.

Additional items not included in elements, right :
Demolition and asphalt tanking, builders work to heating installation and fire escape. Roof coverings, staircase finishes. Artificial ventilation and sound insulation. Borrowed lights, sculptured panel and internal screens.

Total 18s. 4d.

Element	Cost per sq. ft. s. d.
Preliminaries and insurance	5 2
Contingencies	5 0
External walls and facings including stone facings and dressings	17 1
Internal load bearing walls	1 6
Internal partitions	1 3½
Reinforced concrete basement, frame, floors, roofs and staircases	33 6
Roof lights	1 1
Floor finishes	6 6
Windows and doors (external)	3 0
Doors (internal)	1 10
Wall finishes	2 6
Ironmongery	1 0
Plumbing (external)	2 8
Plumbing (internal)	1 1
Sanitary fittings	0 10
Electric installation	2 2
Heating	8 9
Drainage	1 1
Glazing	1 3½
Decoration	3 10
Lift (excluding shaft and motor room)	1 6

Interior Partitioning?

RESIN BONDED
PINE CORE BLOCK BOARD
GABOON FACED

INSULATION BOARD CORE,
FACED BOTH SIDES HARDBOARD

CORK CORE,
FACED RESIN BONDED BIRCH PLY

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
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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.

8.51 surveying: specification

GLOSSARY OF BUILDING TERMS

Glossary of Terms applicable to Roof Coverings. BS 2717: 1956. (BSI 5s.)

This is the first of a new series of Standards which has as its object to cut down and give an agreed meaning to terms used in building. This must be clearly understood: the weird and out-of-the-way will not be found in it since all but the Scottish regional terms have been excluded.

12.64 materials: metals

LEAD PIPES

Lead Pipes for other than Chemical Purposes. BSS.602, 1085: 1956. (BSI. 6s.)

Two revised Standards are here lumped together: the old lead pipe Standard of 1935 and the Standard for the wartime substitute for lead pipe, silver-copper-lead-alloy of 1943, a product which was found so useful that its production has been continued. The chemical aspect of these Standards is beyond architects: of conceivable interest to them are the tables giving the correct weights for different pipe sizes to withstand different pressures of water and classified according to their uses, i.e. underground, above ground, hot water, cold water, soil, gas, etc.

14.82 materials: concrete

CONCRETE TILES

Concrete Plain Roofing Tiles and Fittings. BS 473: 1956. (BSI 6s.)

Concrete Interlocking Roofing Tiles BS 550: 1956. (BSI 5s.)

These are reviews of two Standards which

were published in 1944 and 1945. Changes relate chiefly to methods of testing, but there are more sizes and types of interlocking tile. Points of interest are that it is no longer obligatory for the colour in coloured tiles to penetrate the whole of the tile and that, owing to the excellent resistance of this type of tile to frost damage, it was thought unnecessary to prescribe a test for this quality: instead, the tiles have to show a low limit of permeability, which should offer a sufficient guarantee against frost trouble.

14.83 materials: concrete

PRECAST CONCRETE FLAGS

Precast Concrete Flags. BS.368: 1956. (BSI. 3s.)

The main point of this revision (the Standard was first published in 1929) is to include references to the various British Standards for aggregates. Flagstones are standardized in thicknesses, 2 in. and 2½ in., and in four sizes, viz.: 1 ft. 6 in. by 2 ft., 2 ft. by 2 ft., 2 ft. 6 in. by 2 ft., and 3 ft. by 2 ft. The permitted tolerance for all dimensions is $\pm \frac{1}{16}$ in.

15.138 materials: applied finishes and treatments

ASPHALT FLOORING

Mastic Asphalt Flooring (Limestone Aggregate). BS.1076: 1956. (BSI. 3s.) *Coloured Mastic Asphalt Flooring (Limestone Aggregate).* BS.1451: 1956. (BSI. 3s.)

These are both revisions. There is nothing new in either of them of which the architect should take notice: except perhaps to note with satisfaction that the standardised products are somewhat refined and, presumably, improved. The Standards rehearse the important sections in the Code of Practice CP.204, *In-Situ Flooring*, which do concern him.

16.123 materials: miscellaneous

PLASTICS

Plastics in the Service of Man. E. G. Couzens and V. E. Yarsley. (Penguin Books Ltd. 3s. 6d.)

This is a revised and immensely expanded version of the first Pelican "Plastics" book published 15 years ago. Part I explains the basic chemistry and describes the raw materials, manufacture and manipulation of plastics. Part II is called "Plastics Applied" and surveys the exceedingly diverse uses, concluding with a statistical survey of plastics production.

The authors believe that the mysteries of plastics chemistry are accessible to the layman, and they describe with refreshing simplicity the "chain molecule" which gives plastics their distinguishing properties. Under chemical-name headings they describe the numerous kinds of plastics, including adhesives and paints, giving the trade names so that readers may link the explanations with common experience, and under "Manufacture" they describe industrial production, with flow sheet diagrams for each process. There is far more here than could be digested at one reading, but a full index, a glossary of trade names and technical terms, and tables of physical properties make the book into a work of reference.

Part II, "Plastics Applied," is not as good as Part I: it sets out to tell the reader what plastics are used for, and is more generalised and journalistic.

16.124 materials: miscellaneous

ASBESTOS CEMENT RAINWATER GOODS

Asbestos Cement Rainwater Pipes, Gutters and Fittings. BS 569: 1956. (BSI 10s.)

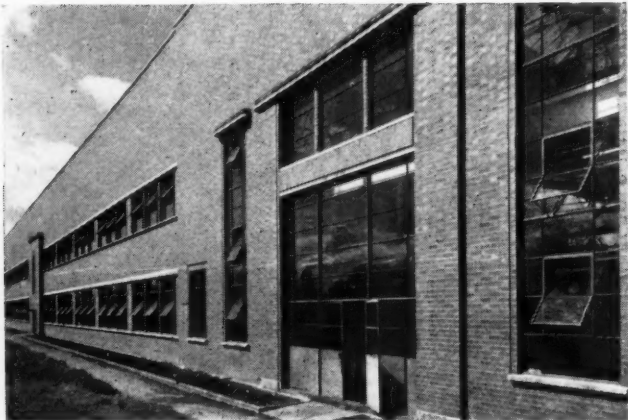

Such as is new in this revision is almost wholly confined to testing and therefore of interest chiefly to manufacturers. Architects should note diagrams in appendix showing methods of making joints.

23.220 heating and ventilation

OIL BURNING INSTALLATIONS

Recommendations for Installations Burning Liquid Fuel with a Flash Point not below 150° F. (Fire Offices Committee of the Fire Protection Association. Free.)

Reissue of an important little pamphlet which outlines the views of insurance companies on oil-fired installations. Differs little from last revision (1935). A "service tank" which formerly could not contain more than 150 gals. can now hold up to 200 gals. but should "preferably be fitted with an overflow pipe capable of returning oil to the storage tank." A storage tank must be encased in 9 in. brickwork or 5 in. concrete (the earlier version said 6 in. for walls, 4 in. for roof) and should be contiguous to an outer wall. A new warning for those fitting oil-burning equipment seems onerous: namely, flues should not be connected to the same chimney as flues from apparatus burning solid fuel.

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	May		June		July		August	

technical section

23 HEATING & VENTILATION

running cost of heating small houses

When we first saw the programme for the Institute of Fuel's Domestic Heating Conference, the subject of our special issue of June 28, we realized that one aspect which was particularly interesting to architects was being virtually missed out: namely the running cost of heating detached houses by unconventional methods. We therefore sent a questionnaire to the architect and occupier (often the same person) of a number of houses built during the last few years and distinguished by the choice of one of the newer systems of heating; and asked them to let us know how the heating has functioned and what it has cost. Their replies were forwarded to our Specialist Editor (15) for Heating and Ventilation, who here reports upon them. We wish to take this opportunity of thanking all who have been so public-spirited in filling in questionnaires.

One of the chief limitations of a survey of this kind is that you can never tell quite how the occupier has used his heating system; how often windows were opened and how often the house has been empty. Also it must be remembered that each house of this type has a different plan and widely-differing fenestration, so that differences in fuel cost may be influenced as much by these as by the relative efficiencies of the heating. Once these limitations are realised, it will be readily granted that evidence of this kind is at least a valuable indication of the kind of service each heating method will give and of what this service will cost. So that architect readers can draw their own broad conclusions on each case we have shown plans and one or two key photographs of each job; and so that some kind of comparison should be possible between the examples we only publish houses which are up to 1,500 sq. ft. floor area. We hope that the few architects and owners of houses which proved to be of larger floor area who were kind enough to complete a questionnaire will accept our apology for not publishing their results.

The houses chosen for the investigation included two single-storeyed dwellings where embedded resistance

wires in the floors provide electrical floor heating; three double-storeyed houses where hot water pipes in the ground floor provide floor heating, and radiators are used on the first floor; one two-storeyed house where heating in the ceiling construction gives ceiling heating downstairs and floor heating upstairs; one two-storeyed house with baseboard heating; three houses where warm air is circulated and delivered in the space; and finally one house with radiator heating. It should be noted that it has not always been possible to obtain consumptions in exactly the same form; in some cases it is the annual consumption that is given, in others it is the space heating for winter. Even so, as is discussed later, the results give a useful guide to what can be expected in practice.

House at Otham, Kent by Brian Peake*

This is a single-storeyed house of about 1,200 sq. ft. and is heated by embedded electrical resistance wires in the floor. There are two separate circuits, one serving the hall and livingroom and the other serving bedroom 1 and the dressingroom-study. Each is controlled by two thermostats, the first being an ordinary air thermostat mounted on a wall, the second being a floor thermostat which limits the maximum floor temperature. Bathroom and kitchen are provided with



The house at Otham, with the living-dining room on the left and the bedroom wing on the right.

electrically-heated towel rails. The guest bedroom is heated as required by an electric convector.

The house is well insulated to an average U value of 0.2. Walls are of cavity construction with the outer leaf of bricks and inner leaf of insulation blocks; floors are of solid concrete; and the roof which is of timber construction has 2-inch woodwool slabs.

There are 2 occupants in the house and full use is made of the floor-heating system, the air thermostats being set at 60 deg. F. throughout the year. The owner reports that for the first full year, the total cost of electricity for cooking, water heating, lighting and refrigeration was £127; in the second year, the bill was £123. It had been hoped that off-peak electricity would be available at a reduced charge for the floor-heating system, but this was not possible, and the above costs were at the normal rates. The owner

* Discussed in the JOURNAL, Dec. 17, 1953



... OLD PEOPLES' HOSTEL

(GOODWINS ROAD • KING'S LYNN)



Architect: C. H. Thurston, Esq., L.R.I.B.A., F.R.I.C.S.,
County Architect, 25, Thorpe Road, Norwich.
Contractors: Oliver Staines & Son, Station Street, Swaffham.

For the prevention of rising dampness in the floors of the above hostel, the County Architect specified the inclusion of 4% of 'PUDLO' Brand waterproofer to the cement in a 1.2.4. mix. The finishing screed 1" to 1½" thick will receive various patent floor tiles.

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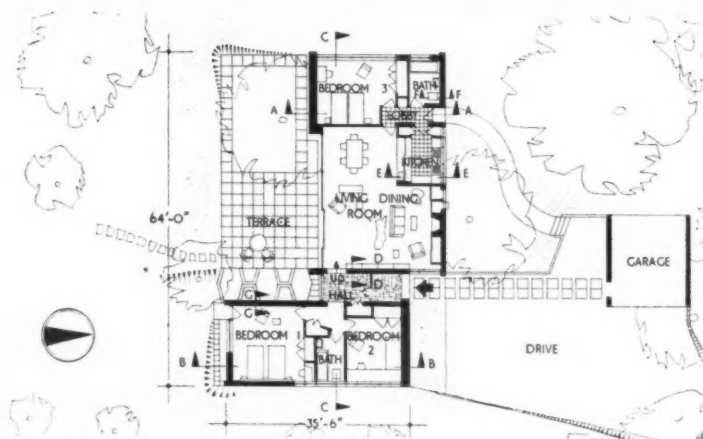
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technical section



Floor plan of the house at Otham.

[Scale: $\frac{1}{2}$ " = 1' 0"]

has been very satisfied with the comfort provided by the system, and reports that little supplementary heating is used—a small amount of wood is burned on the living room fire.

House at Whiteleaf by Colin and Mary Oates

This two-storeyed house also has electrical floor heating: a panel serves the study and dining room and another serves the living room. These are sized to



Above: the house at Whiteleaf. Below: ground and first floor plans and, below right, layout of the heating installation. [Scale: $\frac{1}{2}$ " = 1' 0"]



give 65 deg. F. for the design outside temperature of 32 deg. F. Background heating to 55 deg. F. is provided by wall panels in the hall and landing and in the cloakroom. There is a solid fuel convector fire in the living room which also can supply some warmed air to bedroom 2. Electric towel airers are installed in the bathroom and upstairs cloakroom.

The house which is insulated to Egerton standards was first occupied in the summer of 1955, and during the winter there have been four adults and three children living there. The owner reports that during the winter the system has been run to take full advantage of the off-peak tariff of $\frac{1}{4}$ d. per unit which is available: air thermostats in the main living area have been set up to 75 deg. F. at night in average winter weather and then turned down to 60 deg. F. for daytime. The total consumption from October to April inclusive was 7,000 units at night rate and 9,000 units at day rate; these figures include: lighting, iron, washing machine, towel airers and occasional use of an electric fire in bedroom 1. The solid fuel fire was used continuously during very cold weather. The occupants state that although the air temperatures were not high, the conditions were comfortable and not at all "stuffy."

House at North End by Architects' Co-Partnership*

This two-storeyed house has a novel heating system, using circulating warm air in a cavity in the first floor. The construction consists of lattice steel joists with plasterboard on the underside and corrugated iron, 3 in. of screed and quarry tiles on the top. The direction of the air flow is shown on the drawing, the air being drawn by a fan through the heater battery which is suspended in a 2 ft. 0 in. deep box underneath the floor. A solid fuel boiler heats the water for the battery and also gives domestic hot water. The house, which is well insulated, has a floor area of 1,160 sq. ft. and the space heating system is designed for a temperature rise of 30 deg. F.

The heating system thus provides ceiling heating to the downstairs rooms and floor heating upstairs. The owner has found the floor heating to give reasonable

* Discussed in the JOURNAL, Sept. 20, 1951



The new (1953) office building of C. A. Parsons & Co., Ltd., at Heaton, Newcastle, has a total staff accommodation of 1,100. It stands on the site of the founder's first factory where 48 persons were employed in 1889. Oil-firing is used by Parsons in their very advanced office and factory space heating systems. The fuel is supplied by Shell-Mex and B.P. Ltd.

SPACE HEATING, TURBO ALTERNATOR TESTING, GAS TURBINE RESEARCH

Oil-Fuel used at C. A. Parsons & Co., Ltd.

AT THE HEATON, NEWCASTLE, plant of C. A. Parsons Ltd. over 6,000 people are now employed. Here turbo alternators of 100,000 kW have been built and even larger machines are under construction. Gas turbo alternators, turbo compressors, and transformers up to 275 KV are built also.

For heating the new office block (above) and the large factory buildings oil-fired boilers are used. The same system supplies steam for testing steam turbo-alternator plant.

The choice of oil-fuel rather than coal for a Newcastle plant is all the more noteworthy in view of the

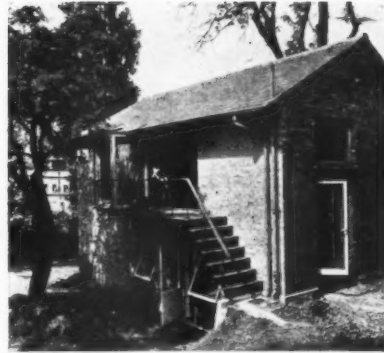
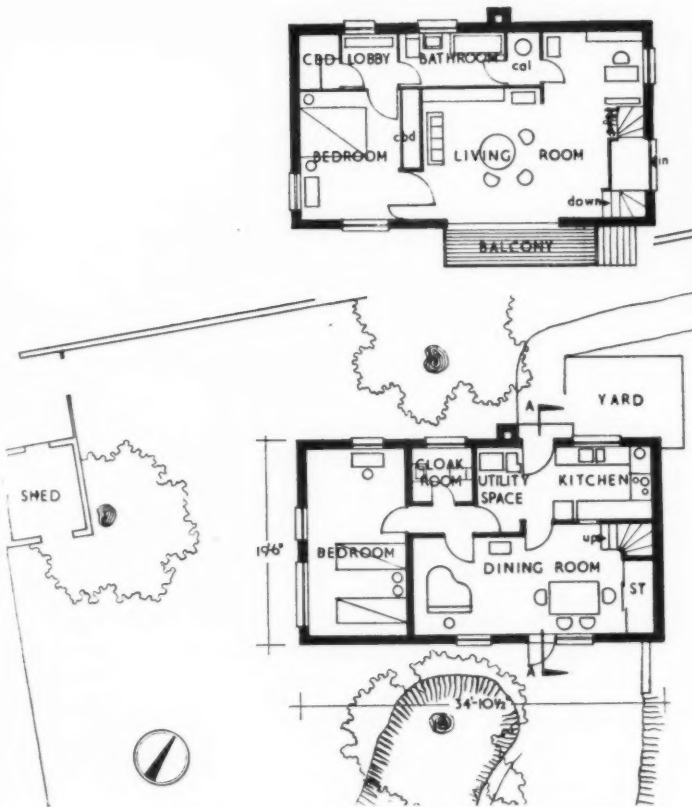
firm's vast experience in the science of heat. Oil-fuel is used also in the company's gas turbine developments.

In the offices, low-pressure hot water heating pipes are contained in ceilings. These are built up of aluminium units which serve to reflect the light from cold-cathode fluorescent tubes and are perforated to enable noise to be absorbed in sound- and heat-insulating material. The thermostatic controls are based on outside temperature.

Oil-fired heating eliminates the need for stoking and for ash and clinker disposal as well. It needs no

more maintenance than a few minutes every few weeks—and there are no supply problems. With Britain already forced to import several million tons of fuel a year, one in four of today's solid fuel users may well have to convert to oil-firing by 1960. Shell-Mex and B.P. Ltd. have had more than forty years' experience in handling oil-fuel and in advising on its use. If you are interested in conversion or installation of this most efficient and flexible heating system, please write to Shell-Mex and B.P. Ltd., Fuel Oil Dept. 37F, Shell-Mex House, Strand, London, W.C.2.

technical section



Above: the house at North End. Left: ground and first floor plans. [Scale: $\frac{1}{8}" = 1' 0"$]

is rather uneven. It is obviously tricky to obtain completely-even distribution of the heat until more experience has been gained.

The owner reports the heating system to be economical, the average fuel consumption being about 5 tons of anthracite per year. This, with the use of electric fires in cold spells, gives a high standard of space heating and also provides domestic hot water for three occupants for ten months of the year.

House at Welwyn Garden City by W. A. Allen*

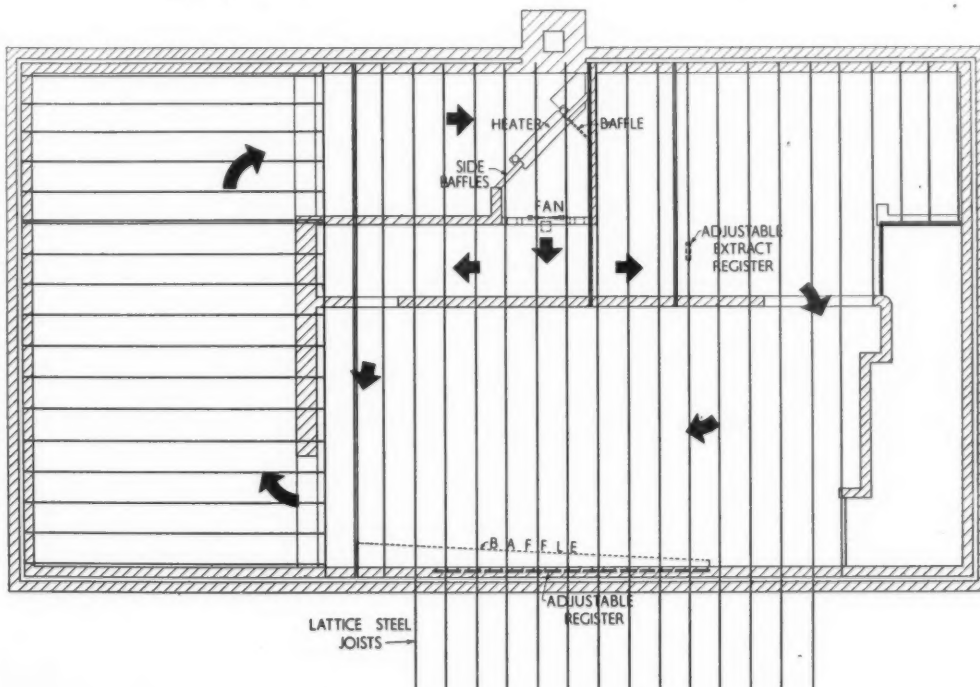
This was the first house in Britain with full floor heating and was built in 1948. It is a two-storeyed dwelling of 1,500 sq. ft. It has embedded hot water pipes throughout the ground floor, supplemented by one radiator downstairs: a further radiator is installed in a bedroom and the first-floor heating is augmented by heating pipes run in the open web joists. A solid

comfort on the first floor, except for cold spells, and a rather lower standard on the ground floor. Some difficulty has been met in the distribution of the heated air in the cavity, and the heating of the floor

Plan showing floor structure of the house at North End. The arrows show the direction of warm-air flow.

[Scale: $\frac{1}{8}" = 1' 0"$]

* Discussed in the JOURNAL, Feb. 19, 1953



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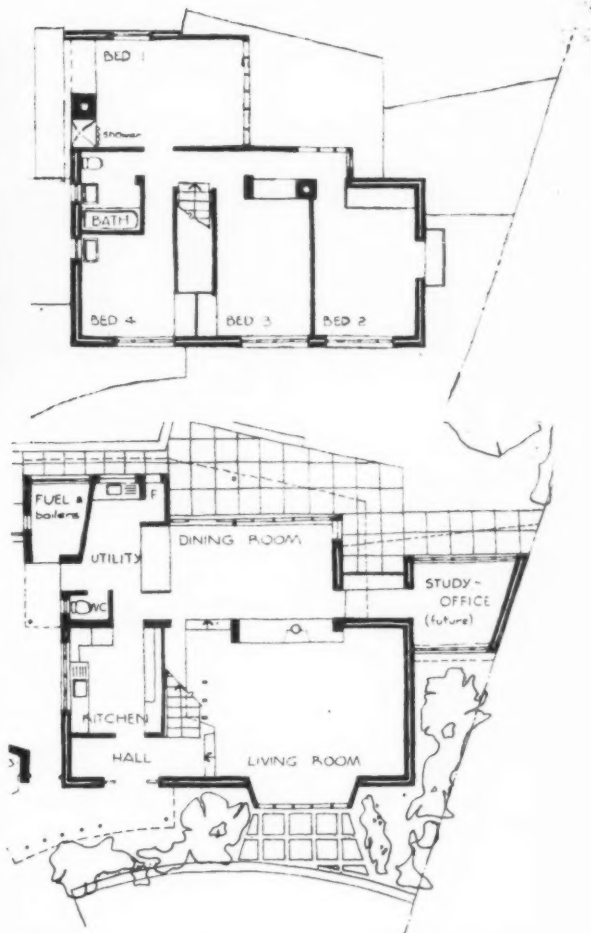
technical section



Above: the living room of the house at Welwyn Garden City. Right: ground and first floor plans. [Scale: $\frac{1}{8}" = 1' 0"$]

fuel boiler serves both heating system and domestic hot water.

The house is well insulated, with clinker blocks as the inner skin of the cavity walls; the floor is solid concrete and the first-floor ceiling has 4 in. glass wool between the joists. There are normally two adults and three children in the house, and the owner reports that the average consumption of boiler fuel in winter has been about $3\frac{1}{2}$ tons. Some use is made of the living room fire and it is estimated that 1 ton of coal is used on this each winter. The owner aims at full heating constantly, and this is achieved in the downstairs rooms and the bedroom with radiators. Some topping up is needed in one of the bedrooms occasionally.



The choice of floor heating for this house was made to see if this system could provide a solution to the draughts which are sometimes encountered with open planning where the stairs ascend direct from the living area. Mr. Allen reports that in this respect the system has been completely successful, draughts from stairs or from external doors being eliminated. Although away from the main theme of these notes, it is of interest to record that the main drawback of open planning was found to be the excessive noise transmission up and down stairs and Mr. Allen recommends that sound absorbents be placed in strategic positions.

House at Reigate by Peter Stiles

Here we have a further example of the combination of embedded hot water panels in the ground floor, with radiator heating on the first floor. A central solid fuel boiler is used, the hot water being circulated by a pump. The house has a total floor area of 1,460 sq. ft., and the design temperatures are 60 deg. F. in the two living rooms and 50 deg. F. in the bedrooms and passage. The ground-floor living room has an open fire for occasional use. Domestic water is obtained in winter from a 35 gallon indirect cylinder served by the solid fuel boiler.



Above left: the house at Reigate. Left: ground and first floor plans. [Scale: $\frac{3}{8}" = 1' 0"$]



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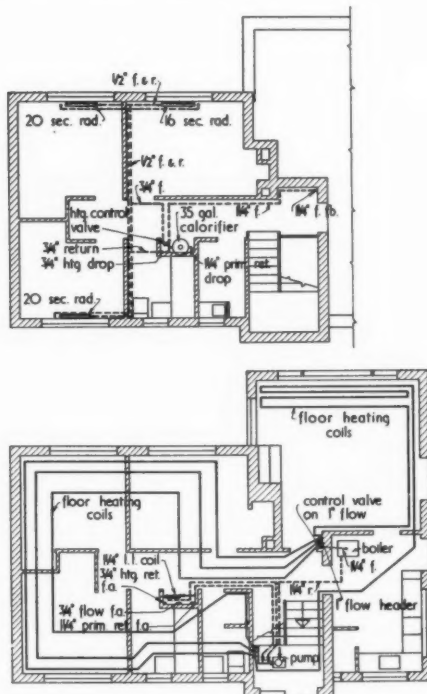
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technical section



Top, first floor plan and, above, ground floor plan of the house at Reigate, showing heating installation.

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

Fuel costs are available for only one year, during which there were four occupants. Phurnacite for the solid fuel boiler cost £42 and coal for the open fire worked out at £7 10s. The central heating system has been run to give an average temperature of 60 deg. F. generally during the day with 65 deg. F. in the living-rooms. The system has been run economically by avoiding wastage of heat during the night when the circulating pump is normally switched off.

House at Rickmansworth by June Park*

This two-storeyed house of some 1,500 sq. ft. has embedded hot-water floor panels under the entire ground floor, and radiators on the first floor. A forced circulation system is used to distribute the heat obtained from an anthracite burning boiler, which also supplies domestic hot water. Design temperatures are 65 deg. F. for living and dining rooms, 55 deg. F. for bedrooms and kitchen and 50 deg. F. for hall and landing.

A high standard of insulation is obtained from cavity walls with clinker block inner skin, 2 in. compressed straw slabs in the roof structure and a solid concrete floor. All windows are double-glazed in timber frames. The house was completed in the summer of 1954 and since then there have been six to seven persons living there. The owner reports that the floor-heating pump has, in the interests of economy, been at times

turned off at night; even so, the average temperature maintained has been 60-65 deg. F. throughout the house. It appears from the reported figures that the annual fuel consumption is about 7 tons; although an open fire has been installed in the living room, it has only been lit twice "to look at."



Above: the house at Rickmansworth. Below: ground and first floor plans [Scale: $\frac{3}{4}$ " = 1' 0"]



House at Welwyn Garden City by J. A. Godfrey*

Next we turn to an example of skirting-board heating or base-board heating as it is called in America, where it is widely used. With this system, long low hot water panels around the room replace the normal skirting board, running in the circuit shown in the diagram. Hot water is provided by a solid fuel boiler which also supplies domestic hot water: circulation in the heating system is by gravity. The design temperatures are 65 deg. F. for the living room, 60 deg. F. for the dining room and 55 deg. F. for the bedrooms. An open fire is installed in the living room. The house is two-storeyed with a total floor area of 1,500 sq. ft. A high standard of insulation is obtained by the use of clinker blocks as the inner leaf of a cavity wall, by a solid concrete floor and by the provision of 4 in. glass wool at first floor ceiling level.

* Discussed in the JOURNAL, Oct. 20, 1955

* Heating Installation discussed in the JOURNAL, May 6, 1954

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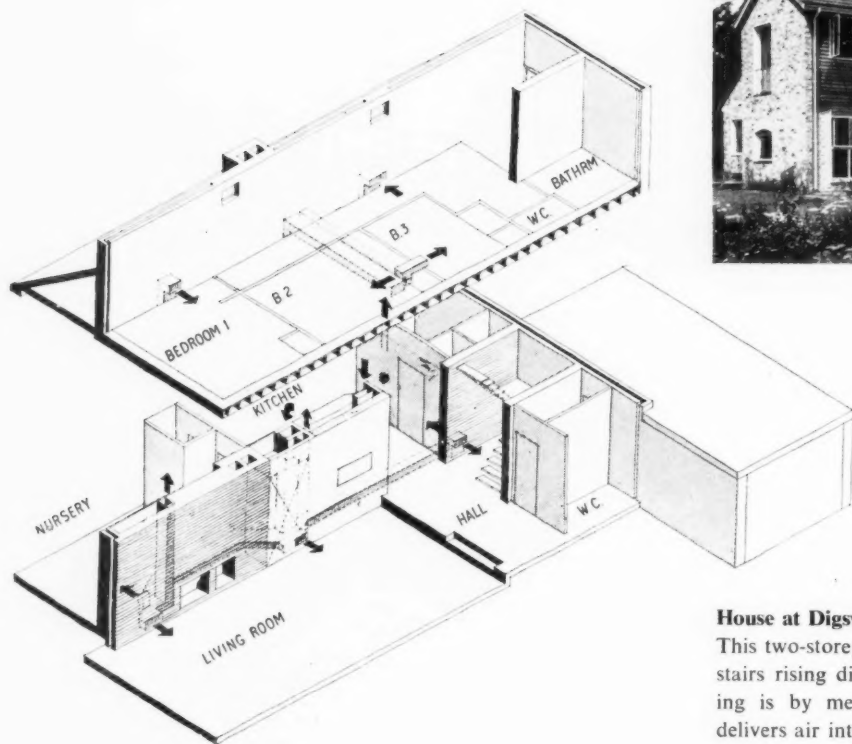
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6/56/511

technical section



Above: the house at Pinner. Left: exploded isometric showing registers.

House at Pinner by N. J. Dore and T. P. Wurr*

A ducted warm air system gives whole house heating in this two-storeyed house, with the air being heated in a solid fuel furnace. An open plan has been used for the ground floor, the hall being divided from the dining and living areas by a bamboo screen. The house has a total floor area of 1,400 sq. ft. and is insulated to Egerton standards. The air-heating system is designed to give a temperature of 65-70 deg. F. when it is 30 deg. F. outside. An open fire is also provided in the living room. The owner remarks on the even temperature distribution throughout all heated areas. Originally draughts were apparent but these were prevented by phosphor bronze strip or foamed plastic on the pivot-hung windows and on the doors to unheated areas such as the porch and cloaks. The annual consumption on the solid-fuel furnace has averaged just over 4 tons, this supplying space and water heating for three adults and three children in winter; a gas circulator is generally used for summer water heating. To this must be added some 13 cwt. of coal burned on the open fire. The temperatures maintained in practice average 60 deg. F. in the living area during the day rising to about 68 deg. F. during the evening; the bedrooms run at about 55 deg. F. The system is readily controlled to give the required service as the warm air registers may be shut off in rooms not in use.

House at Digswell by Maurice Lee

This two-storeyed dwelling uses an open plan with the stairs rising directly from the main living area. Heating is by means of a forced-warm-air unit which delivers air into the study and living area. A solid-fuel

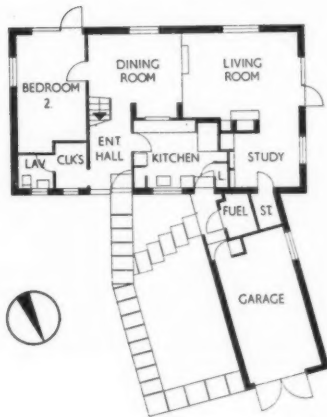


Above: the house at Digswell. Below: the living room.



* Discussed in THE JOURNAL, Oct. 20, 1955

technical section



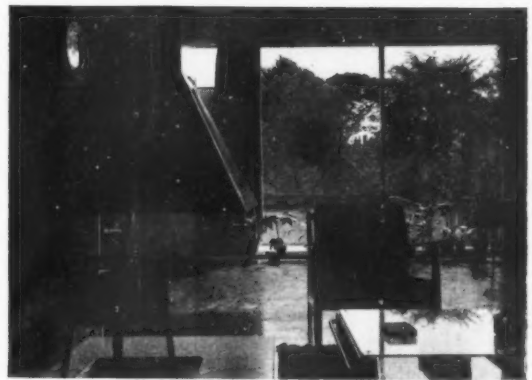
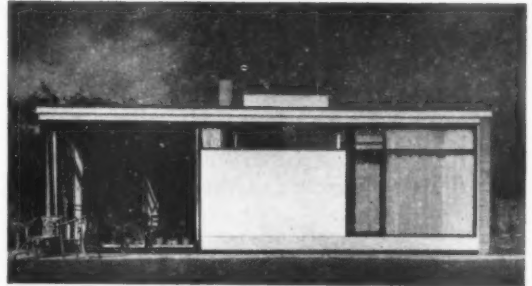
The ground and first floor plans of the house at Digswell.
[Scale: $\frac{3}{8}$ " = 1' 0"]

boiler serves the warm-air unit and also provides domestic hot water. An open fire is included in the living space. The house, which is of 1,350 sq. ft., has a high standard of insulation with walls of U value 0.17 and roof with a value of 0.12. The area heated by the warm-air unit is some 750 sq. ft. and the aim is to maintain 60 deg. F. during the day and 50 deg. F. during the night.

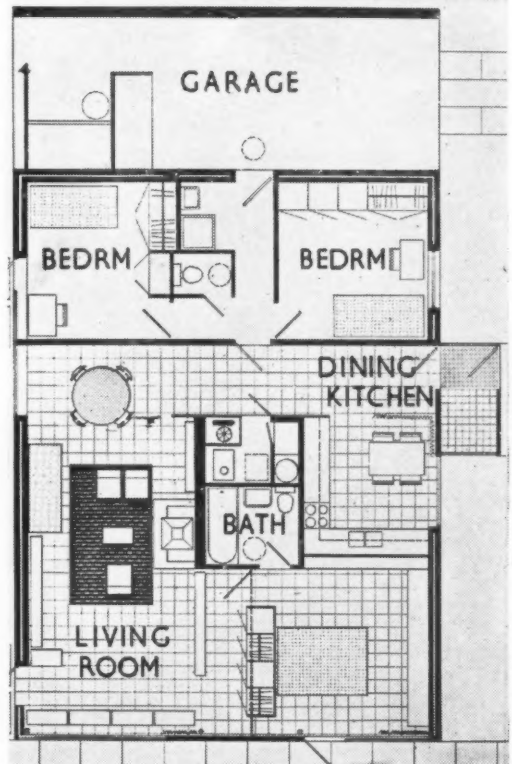
The system has been found to give a good standard of comfort and it is only in cold weather, when the outside temperature is below 35 deg. F., that supplementary radiant heating has been required. During the first year after installation some $6\frac{1}{2}$ tons of coke were used; this gave space heating to 60 deg. F. in the heated area and water heating for the two occupants. A log fire was used occasionally at weekends; at other times an electric radiant fire was used in the cold evenings. Some of this fuel no doubt went to assist drying out of the structure, and it would be expected that consumption would be rather lower in subsequent years. The owner has since fitted a curtain at the foot of the stairs to reduce circulation to and from the hall and landing when not required; he had noticed that the warmest place in the house was always the landing—which must have been rather surprising in view of the distance from the warm air unit. The introduction of the curtain should also tend to reduce the fuel consumption.

House at Ham by James Cubitt & Partners

The heating of this house is by a forced-warm-air unit supplied with hot water by a gas-fired boiler. The total floor area is 1,200 sq. ft., of which just over



Above: the exterior and living room of the house at Ham.
Below: floor plan. [Scale: $\frac{3}{8}$ " = 1' 0"]



technical section

700 sq. ft. is heated by the warm air system, which is designed to give an air temperature of 65 deg. F. when it is 30 deg. F. outside. There is also an open fire in the living room. Insulation is provided by a clinker block inner leaf to the cavity walls and in the roof by the use of 2 in. woodwool slabs.

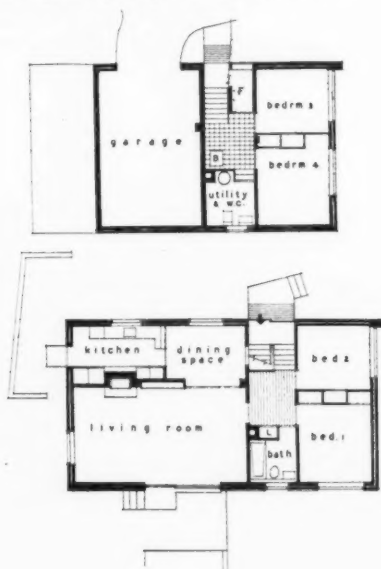
The running cost for gas during the first year was £75, corresponding to a consumption of some 900 therms. Some 2 tons of coal were used on the open fire, and this was supplemented by some wood. These consumptions provided space heating to 65 deg. F. in the area covered by the warm air unit, and also water heating for the four occupants. There was only one adverse comment on the system, and that was a tendency of the warm air to cause dirtying of the walls by depositing dust.

House at Fitzroy Park by June Park

Finally we have a two-storey house with radiator heating served by a solid fuel boiler. The design temperatures are 65 deg. F. in the living room and 55-60 deg. F. in the bedrooms, the total area being 1,350



Above: the house at Fitzroy Park, with the kitchen on the left and the living room in the centre. Below: the lower ground and ground floor plans [Scale: $\frac{1}{4}$ " = 1' 0"]



sq. ft. Domestic hot water is also provided via a calorifier from the solid-fuel boiler. An open fire is installed in the living room. The roof is insulated with compressed straw slabs and walls are of cavity construction with lightweight inner leaf.

The annual fuel consumption for space heating and water heating (apart from the summer when electricity is used) for the four occupants averages 4 tons anthracite for the boiler and $\frac{1}{4}$ ton coal for the open fire which is used in the evening. In practice the radiator system is turned off at night to avoid any wastage of fuel.

Conclusions

The houses described above are a fairly homogeneous group as regards heat losses: the floor areas range from 1,100 to 1,500 sq. ft. and they are well insulated. The standards of heating are bound to vary to some extent, but the general practice is to run the system so as to get a fairly high standard of heating in the living area and reasonable temperatures elsewhere. The data obtained can therefore give some guidance on fuel consumptions to be expected in practice. One might expect that the fuel consumptions would vary with the different types of heating system (for instance there must be an increased heat loss from the floor when embedded floor panels are used), but in the present investigation such differences are probably swamped by the different standards of heating and hot water usage. The data do illustrate, however, the equivalence of different fuels in providing space heating. It will be seen that where solid fuel is used, the average consumption to provide space heating and water heating in winter is about 5 tons, of which 1 ton is often used on an open fire. Taking this as a general pattern we can examine the fuel requirements to provide the same heat as 4 tons of solid fuel in a central heating boiler. Assuming a boiler efficiency of 70 per cent., the 4 tons will deliver some 800 therms into the house. With a gas fired boiler working at 70 per cent. efficiency, the gas consumption required to deliver 800 therms into the house would be about 1,100 therms; this is in reasonable agreement with the reported gas consumption of 900 therms in the house by James Cubitt & Partners, where, it will be noted, the fuel consumption on the open fire was rather higher than the 1 ton assumed above. With an oil-fired boiler, again at 70 per cent. efficiency, the consumption of 680 gallons would be required to deliver 800 therms. With electrical heating, the 800 therms would entail the consumption of 24,000 units: this is comparable with that in the house by Brian Peake but greater than that in the house by Colin and Mary Oates. The prices of fuels vary considerably throughout the country and in assessing probable costs local prices should of course be obtained. An example of comparative costs is given below for general guidance: 4 tons solid fuel at £8 per ton: £32; 680 gallons oil at 1s. 3d. per gallon: £43; 1,100 therms gas at 1s. 8d. per therm: £92; 24,000 units electricity at 1d. per unit: £100; 24,000 units electricity at $\frac{1}{4}$ d. per unit: £75.

WHOLESALE MARKET

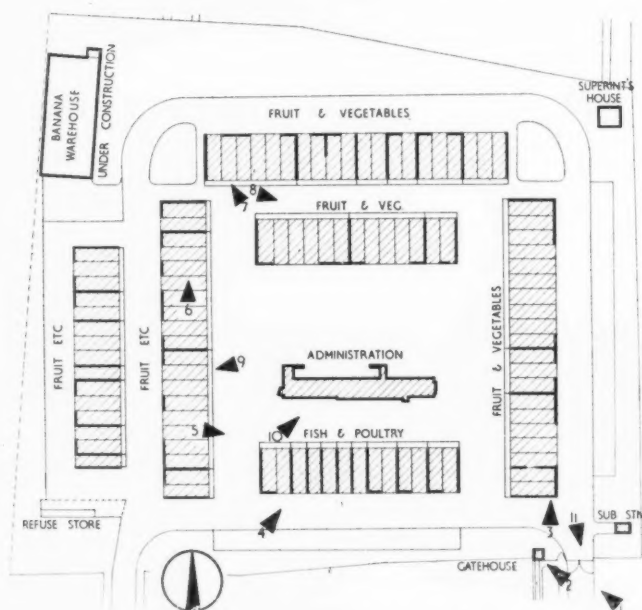
at BARRAS HEATH, COVENTRY, for the COVENTRY CORPORATION
 designed by A. G. LING, city architect, and D. E. E. GIBSON, formerly city architect
 DOUGLAS BEATON, principal architect; M. JEAN HANNEY, architect-in-charge
 J. G. WATSON, T. R. HINDLEY and R. IREDALE, assistant architects,
 quantity surveyors, city architects department, and BRIDGEWATER and COULTON

The project illustrated in the following pages represents the first post-war attempt in this country to remove wholesale markets out of congested centres, nearer to the retail markets they are intended to serve. In outline, the problem and its solution are relatively simple: to provide a series of warehouses through which perishable goods can quickly pass from producer to retailer. In this example ranges of single-storey warehouses are placed around the market-square, the goods being delivered by a peripheral road lying outside the square and passed inwards for transmission to local delivery vehicles. This quite large project had to be produced at a cut-price cost and still maintain something of the architectural standards that are expected of new work in Coventry. The scheme was developed and largely built under D. E. E. Gibson who was city architect until January, 1955.

Viewpoint 1. The main entrance.



building illustrated



Key plan showing photographic viewpoints



Above (viewpoint 2): the gatehouse at the main entrance. Facing bricks—multi-rustics with blue Staffordshire bricks below windows. Metal windows painted white. Roof $5\frac{1}{2}$ in. concrete slab with screed laid to falls and covered with two layers of felt. Left (viewpoint 3): close-up of the specially-designed traffic sign seen on the right in viewpoint 1 behind the entrance gate. Below (viewpoint 5): a general view of the market square with the administrative building in the middle. Below left (viewpoint 4): warehouses from peripheral road. Goods are brought from producers and delivered into the warehouses through the large doors. Returnable empties (the property of the producers) present a storage problem that



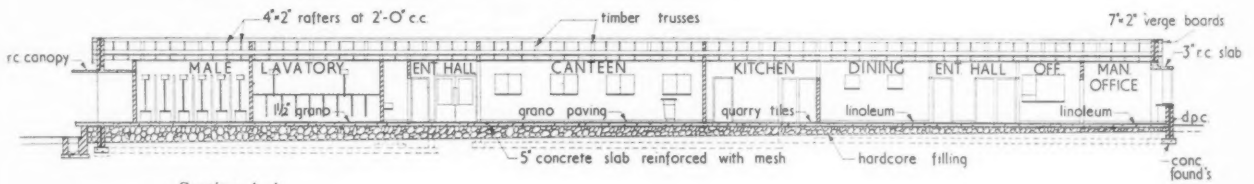
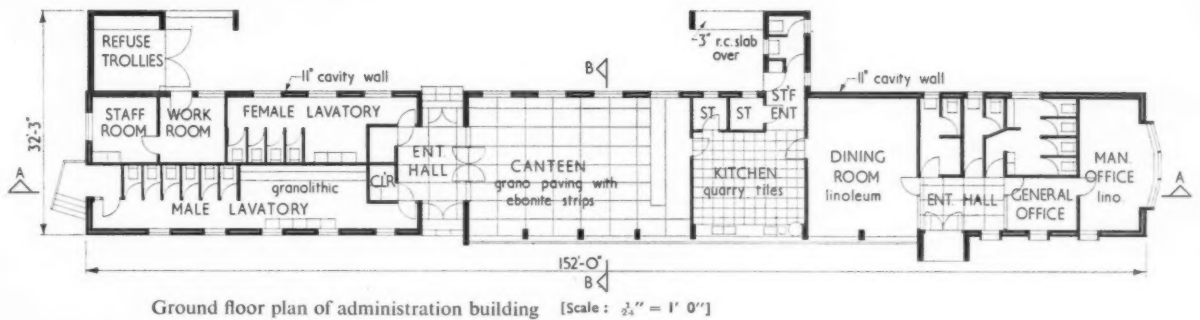
WHOLESALE MARKET

at COVENTRY

designed by A. G. LING, city architect



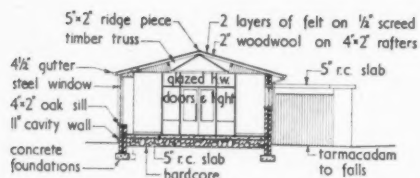
building illustrated



is well-nigh intractable, but the clean background of the warehouse range does something to mitigate the difficulty. The height of the roller-shutter doors allows vehicles to be driven into the warehouses if necessary. Right (viewpoint 6): interior of a fruiterer's warehouse. The usual procedure is for a wholesaler to lease several bays for a fixed term of years. The lorry seen in this photograph is the wholesaler's delivery lorry. The rolling shutters seen on the right open into the market square and their principal purpose is to allow the warehouse to be opened up for the display of goods to purchasing retailers.



building illustrated

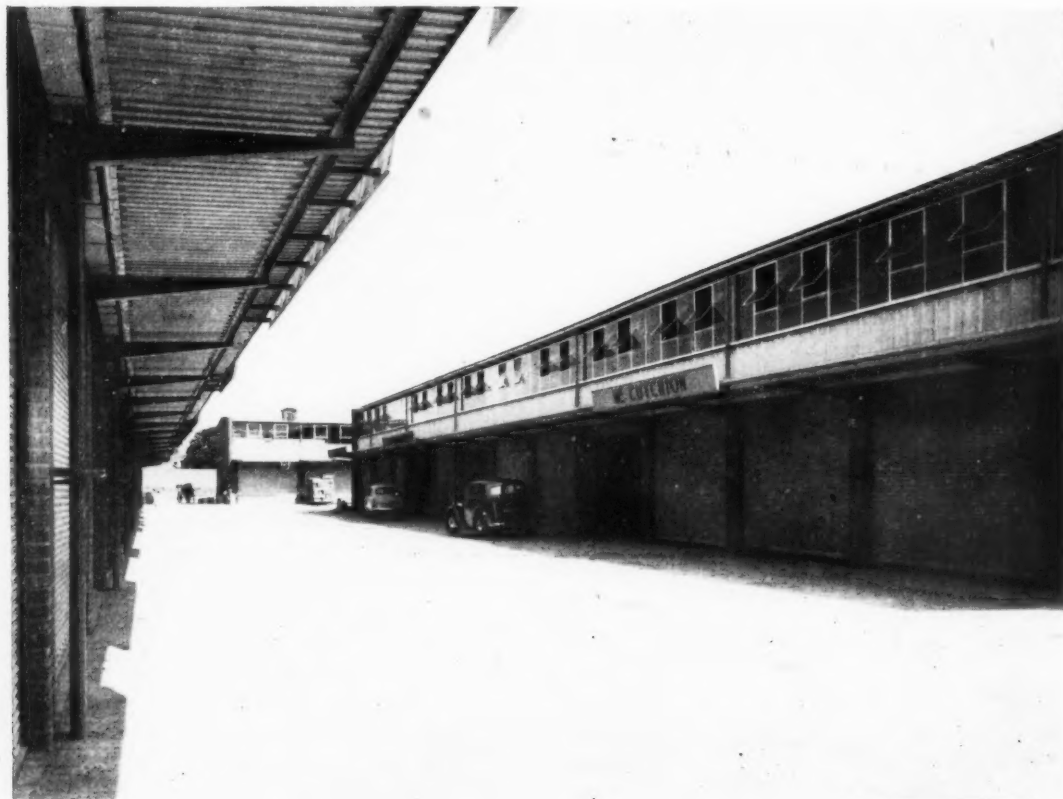
Section B-B [Scale: $\frac{1}{4}$ " = 1' 0"]

**WHOLESALE
MARKET**
at COVENTRY
designed by A. G. LING

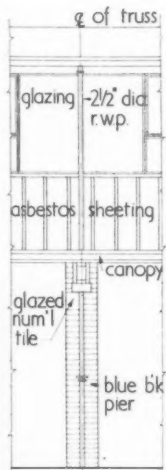
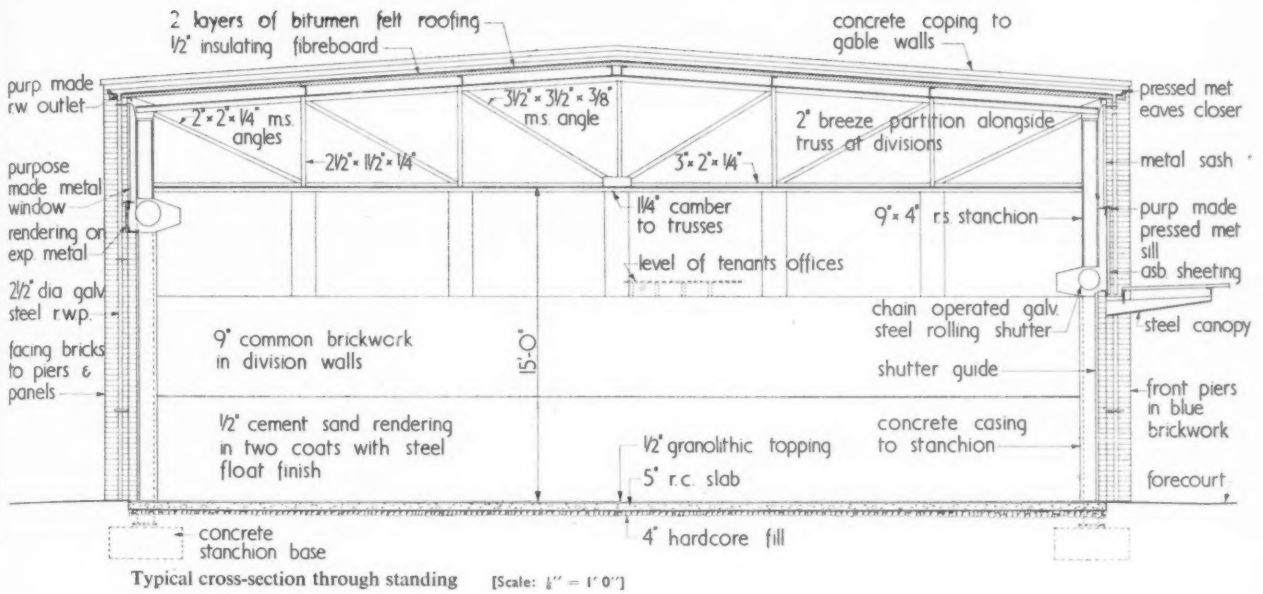


Above right (viewpoint 7): lessees are free to erect whatever they wish and to form office spaces, cold rooms, etc., inside their holding. Their choice may range from a very simple free-standing prefabricated office to the more elaborate two-storey structure illustrated here. The architects are not responsible for the design of such structures, but most wholesalers have co-operated in submitting their proposals for the architects' approval. Gas, water and electricity services run throughout the length of a warehouse range and from these the wholesaler may tap branch supplies to meet his requirements. Below (viewpoint 8): warehouse ranges seen

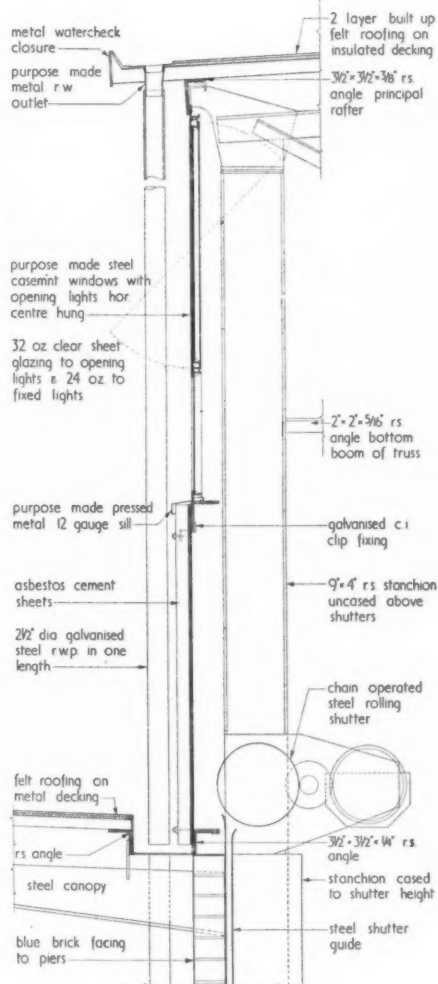
from the collection side. Note the stout tubular guard to the rain-water pipe seen on the left. The brick casing to the stanchions up to canopy level is a further indication of the precautions needed in the face of rough usage. The large number of opening lights are necessitated by the need for really adequate ventilation. The rolling shutters are left with the natural finish of galvanized steel and the asbestos sheeting under the windows is not painted. Lively colour is introduced in the turquoise rain-water pipes (grey under the canopy), red cantilevers and yellow purlins at the end of the cantilevers.



building illustrated



Typical elevation at support [Scale: $\frac{1}{8}" = 1' 0"$]



Detail section through front wall of typical eaves to head of roller shutter (canopy not shown) [Scale: $\frac{1}{8}" = 1' 0"$]



Viewpoint 9: detail of rain-water head under canopy. This enables the canopy to be drained and also allows the rain-water pipe from the clerestory to clear the cantilever.

building illustrated



Above (viewpoint 10): the central administrative block. The several elements of this building are clearly expressed in the elevations. Reading from left to right are lavatories, workmen's canteen, kitchen, managerial dining-room and (beyond the clock tower) superintendent's offices. The roof is covered with bituminous felt. Below (viewpoint 11): entrance gates seen from inside the market. The frame of the gate, made up of heavy angles, is painted black, and the grille attached to the outside of this is white. The result is an effect of lightness and delicacy which is more apparent in reality than the photograph suggests.



analysis

WHOLESALE
MARKET

at COVENTRY

designed by A. G. LING,
city architectCLIENT'S BRIEF: his stated
requirements

A scheme for wholesale marketing of fruit, vegetables and fish to replace the old congested market in the city centre where land was required for central redevelopment. Located to avoid bulk delivery by lorry through the city centre, and to serve retailers mostly concentrated to the east of the city centre. Ample room for traffic circulation within the market was essential to ensure quick turnover of perishable goods. Scheme designed in collaboration with markets manager and wholesalers' local association. More lavish scheme originally prepared, but subsequently revised to a price calculated on the maximum rent agreed between the corporation and the wholesalers' association. Research and preliminary designs commenced 1949. The present design was based on a maximum target figure on completion of a rent-expenditure analysis prepared by the city treasurer and the Estates and Markets Management. The policy of the corporation has been to provide a structural shell within which each tenant is free (within reasonable limitations) to construct such office accommodation, cold storage, banana rooms, crate storage, etc., as he requires, employing his own contractor to do so. Some of the larger concerns have all the internal

features mentioned, and some have portable timber offices only within their tenancies. A private architect was consulted for a majority of the schemes, but in some cases the work was done entirely by building firms. In all cases it was a condition that any work other than portable offices was to be submitted in drawing form to the city architect's department, with sufficient information to allow the electrical and other service installations by the corporation to be made to suit the tenant's layout. (A standard allowance of lighting and power points was assessed and installed, and the tenant's electrician installed everything in excess of that allowance.) Tenants established in the old market absorbed all the available standing accommodation, and only the additional standings on the west side are occupied by new tenants.

SITE: topography, surroundings,
access, planting

Area of site $7\frac{1}{2}$ acres. Approximately square site, diagonal fall to south-west of 7 ft. Arable land with small bombed factory near railway. Housing north and south: railway to west, with school playing fields beyond: public grassland to east. New concrete approach road across Heath from local bus route, Mercer Avenue. Planting work carried out by Corporation Parks Department.

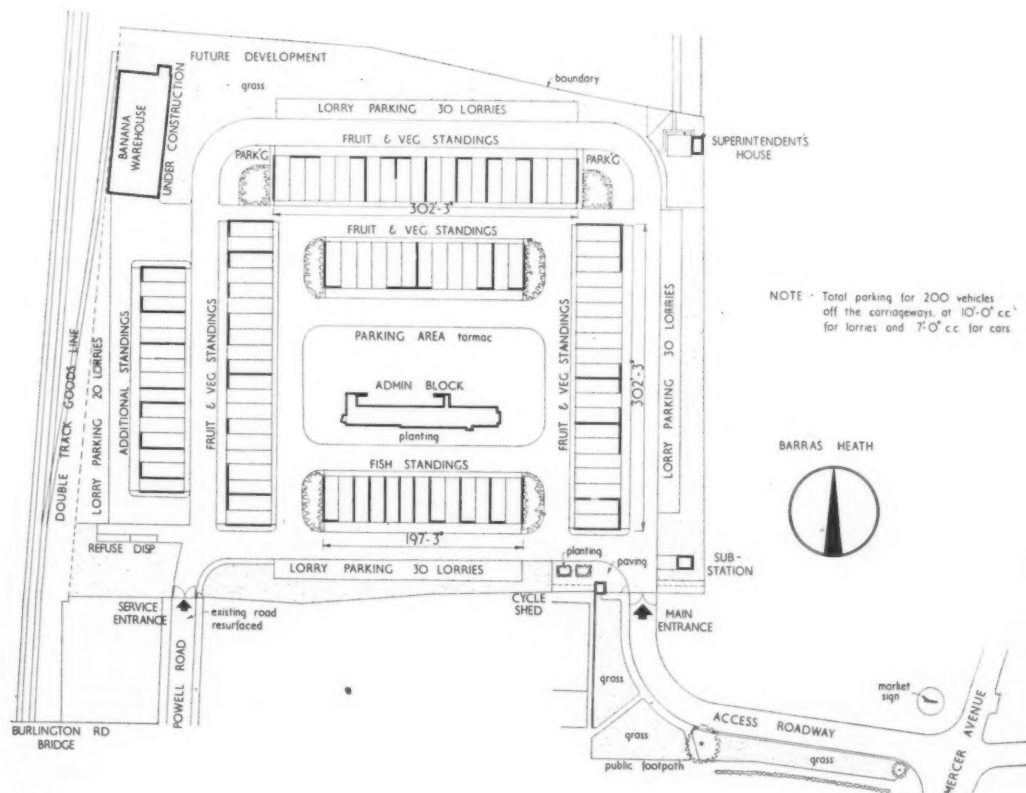
PLAN: general appreciation and
relation of units

Market square principle, with warehouses surrounding central parking space and admin-

istration building. Outer road serves rear of warehouses for bulk delivery only, and inner road round parking space is used by retailers buying from the front. There is additional warehousing on the railway side and ancillary buildings are on perimeter of site. One-way traffic is enforced in a clockwise direction. Wholesalers required lorry or van access direct into standings: therefore concrete roads and floors of standings have been designed as continuous surfaces graded to fall with the site drain away from the buildings. All ranges of standings have horizontal superstructures, but the floors fall 1 ft. 6 in. from top end to bottom end of a 300 ft. 0 in. range of 20 bays. (Note: possibility of mechanical handling and loading bay system into standings was investigated at an early stage, but rejected by wholesalers in favour of approximately level table throughout.)

MAIN CONSTRUCTION:
general appreciation

Fruit, vegetable and fish standings (bays 1-101) light structural steel frame with insulated aluminium roof deck and 2-layer felt built-up roofing: concrete floors with grano finish: continuous runs of windows at high level, rolling shutters, and asbestos sheeting. Banana warehouse, administration building and ancillaries in load-bearing brick. Tender price based on a nominal number of division walls and shutters in standings before letting plan was settled: actual letting plan involved extensive adjustments which make an accurate assessment of cost difficult at this stage.



Site plan

analysis

STRUCTURAL ELEMENTS

*Work below ground floor level:
foundation type*

Location	Materials	Finish	Reasons and comments
Solid foundations	Gable walls, boundary walls, and ancillaries	Strip-concrete foundations in load-bearing brick	Complex layout of services, ducted and branched for flexibility. Hardcore fill over area of made-up ground up to depth of about 4 ft. 6 in. over 3 acres to south-west of site

External walls and facings

Location	Materials	Finish	Reasons and comments
9-in. gable walls	Standings	Wirecut rustic facings with backing of common brick	Fairfaced both sides, flush mortar joint
9-in. rear panel walls	Standings	Wirecut rustic facings with backing of common brick	Fairfaced both sides, flush mortar joint. Facings darker than those of gable walls
Boundary walls	Standings	Two 4½-in. skins, rustic facings tied together, with brindles below ground level	Fairfaced both sides, flush joint. Precast concrete coping

Frame or load-bearing element

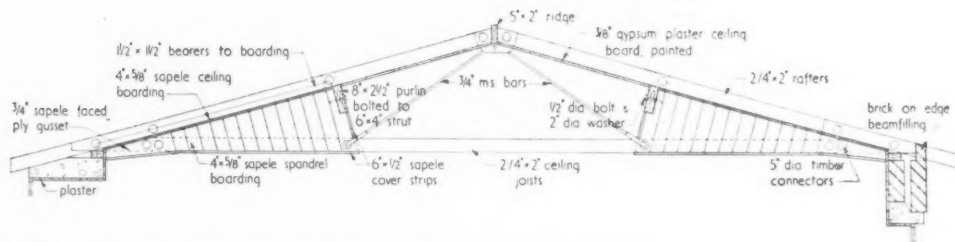
Location	Materials	Spans	Column grid	Reasons and comments
Steel frame	Standings	Mild steel welded trusses	45-ft. span	15-ft. centres
11-in. cavity brickwork	Administration building	Rustic-faced outside		Finish as for gables to standings
9-in. solid brickwork	Ancillaries	Rustic-faced outside		Finish as for gables to standings

Floor construction

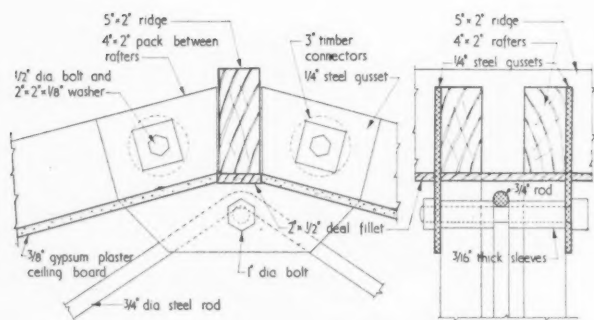
Location	Materials	Finish	Reasons and comments
Solid reinforced-concrete slab	Standings	5-in. thick, truck-mixed	½-in. grano, laid monolithically
	Administration building	5-in. thick, truck-mixed	1½-in. allowed, including screed

Roof construction

Location	Materials	Finish	Reasons and comments
Insulated metal deck	Standings	Aluminium, and ½-in. insulation board	2-layer built-up felt, with ¾-in. spar chipping surface
Timber rafters, boarded	Administration building	Boarding of 1-in. woodwool slab	2-layer felt, mineral finish
Reinforced-concrete slab	Ancillaries	1 : 3 : 6 concrete on expanded metal	2-layer felt, mineral finish, soffit rendered or plastered



Detail section canteen roof truss [Scale: ¼" = 1' 0"]



Detail section and elevation centre roof truss ridge [Scale: 1½" = 1' 0"]



The staff canteen in the centre of the administrative building. The brick pillars and external walls up to sill height are of concrete bricks; the walls being of 11-in. cavity brick construction. The floor is finished with 4 ft. by 2 ft. 7 in. in situ granolithic paving, divided by ebonite strips. The door in the far wall leads from the kitchen to the service counter.

analysis

<i>Windows</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Purpose-made metal	Standings	Hot-dip galvanized steel	Painted (including metal sills)	Industrial sash section. Pressed metal sills
Purpose-made metal with timber sills	Administration (front only)	Hot-dip galvanized steel	Painted	Industrial sash section. Pressed metal sills
Standard "Z" range	Ancillaries	Hot-dip galvanized steel		
<i>External doors</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Rolling shutters	Standings	Galvanized steel	Unpainted	Threshold sealed by rubber strip on sole plate
Purpose-made timber	Administration ancillaries	Sapele and oak, 2 in. solid	Plastic polish, wire-wool rubbed	Threshold sealed by rubber strip on sole plate
	Administration and refuse disposal	Softwood	Painted	
<i>Glazing</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Obscured glass	Lavatories and screens	Reeded glass		
Clear glass	Other than above	24 oz., 32 oz. and $\frac{1}{2}$ in. plate		
Wired glass (clear)	Doors	Georgian-wired $\frac{1}{2}$ -in. plate		

PARTITIONING

<i>Internal partitions</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Division walls between tenancies	Standings	9-in. brick to 10 ft. height; $4\frac{1}{2}$ in. piers up to truss level	Fairfaced, with 5-ft. rendered dado. (Tiled dado in Fish standing)	Dados required by Sanitary Inspector. Wood-wool slab against trusses up to roof deck for sound insulation
Internal walls	Administration	$4\frac{1}{2}$ -in. brick	Plastered and emulsion painted	Some walls supporting purlins
<i>Screens</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Glazed	Administration and canteen	Sapele and glass	Plastic polish, wire-wool rubbed. Ply panels painted	
	Administration tower vestibule	Oak and glass	Plastic polish, wire-wool rubbed. Ply panels painted	
<i>W.C. doors and partitions</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Door height only	Administration: public lavatories	Brick-on-edge: doors 2 ft. 3 in. flush standard	Walls white tiled: doors painted	
	Administration: private lavatories	$4\frac{1}{2}$ -in. brick: doors as above	Plaster, emulsion painted	
<i>Internal doors</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Purpose-made timber	Administration	2-in. sapele or oak	Plastic polish	Solid, and solid-core veneered
Standard flush	Administration	Ply-faced timber	Painted	
<i>Ironmongery to internal doors</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
"D" handles, lever furniture, etc.	Administration and gatehouse	Brass	Satin chrome	Satin chrome kicking-plates to main doors
Floor springs	Administration		B.M.A.	

FINISHINGS

<i>Floor finishes</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Granolithic	Standings	$\frac{1}{2}$ -in., laid monolithically	Surface hardened	15 ft. 9 in. bays laid alternately
	Administration: public space	$1\frac{1}{2}$ -in., laid in panels	Ebonite strip between panels	
	Main lavatories and gatehouse	$1\frac{1}{2}$ -in., in single areas		
Linoleum	Administration: offices and dining room	1-in. red lino on screed		
Tile	Administration: kitchen and private lavatories	6-in. red quarries on screed		
<i>Wall finishes</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Plaster	Administration and gatehouse	2-coat class "C" Gypsum plaster	Emulsion painted	

analysis

<i>Wall finishes</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Brick	Canteen and dining room	Hand-made buff sand-faced bricks to piers and under sill	Flush cement mortar joint	Blue burnt bricks to withstand hard usage
Tile	Main lavatories and kitchen	$\frac{1}{2}$ in. \times 6 in. \times 6 in. white glazed tile	Laid with straight joints	

<i>Ceiling finishes</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Fixed to ceiling joists	Administration building	$\frac{3}{4}$ in. Gypsum wallboard	Skim coat emulsion painted	
Boarded ceiling	Canteen	Sapele T & G Boarding	Natural	
Boarded ceiling	Canteen: centre section only	Asbestos board	Natural	

<i>Decorations</i>	<i>Location</i>	<i>Paint types</i>	<i>Munsell or other ref.</i>	<i>Reasons and comments</i>
Standings	Windows and sills structural steel	Hard gloss red oxide primer internally as finishing coat		Broken white
	External steel	Hard gloss	7.5 R 4 16 and 3 12	Red
	Canopy purlins	Hard gloss	7.5 Y 8 10	Light and dark red
	R.W. goods	Hard gloss	10.0 BG 5 4	Yellow
	R.W. goods under canopies	Hard gloss	N.4	Turquoise
				Grey

*Decorations**Colour scheme and comments*

These colours used in gloss and emulsion paint throughout the scheme: all windows broken white; kitchen and lavatories white walls, with yellow ceilings to lavatories in administration

FITTINGS

<i>Cloakrooms in Administration building</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Mirrors	All lavatories	Bevelled plate glass		
Hooks	All lavatories	Brass	Polished and satin chrome	
Toilet roll and towel holders	All lavatories	Brass	Polished chrome	Made to lock. (Main lavatories subject to rough usage)
Soap dispensers	All lavatories	Glass and chromed metal		

<i>Other fittings (Administration)</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Incinerators	Ladies lavatories			Electric
Serving counter	Canteen	Sapele with plastic top	Plastic polish	Made to incorporate catering tenant's hot cupboard

<i>Kitchen equipment</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Wash-up sink	Administration kitchen	Teak double sink and drainers		Requested by catering tenant
Vegetable sink	Administration kitchen	Glazed fireclay sink and drainer		(All cooking equipment installed by tenant)

SERVICES

<i>Rain water disposal</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Separate system: secret gutters, single-length downpipes	Standings	Galvanised steel tubing into stoneware inspection shoes	Painted	Pipes protected by tubular steel hoop at tailboard height. Canopy gutters pressed steel
Socketed downpipes	Administration	Vitreous enamelled steel		Ogee gutters also enamelled steel

<i>Plumbing internal</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Waste disposal into manholes		Copper to stoneware	Copper painted	
Floor gullies	Fruit and vegetables standings	Stoneware dished tops	Coated cast iron grating	Flush with grano floor. Gullies provided in approximately alternate bays for letting flexibility, but installed to suit present tenants who occupy tenancies on a 7-year basis. Gullies not now in use are sealed off with concrete pad interchangeable with the stoneware dished tops
Floor channels	Fish standing	Stoneware cast-iron gratings		Falling with sloped floor

analysis

<i>Hot water storage</i>	<i>Location</i>	<i>Materials</i>	<i>Capacity</i>	<i>Reasons and comments</i>
Electrical throughout, all storage type	Administration building		50 gall. kitchen: 10, 5, 3 and 1½ gall. in lavatories	Capital cost saving more important than running cost at time of tender
<i>Cold water storage</i>	<i>Location</i>	<i>Materials</i>	<i>Capacity</i>	<i>Reasons and comments</i>
Incorporated in water heaters	Administration			
Common supply	Standings (under ridge)	Steel, wrapped insulation	Main supply	Tenants branch off where required
<i>Plumbing: Sanitary fittings</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
W.C.'s lavatory basins, sinks, urinal stalls	Administration	Vitreous china, glazed fireclay, and earthenware		W.C. cisterns cast iron in administration
<i>Heating installation</i>	<i>Location</i>	<i>Criteria temp.</i>	<i>Air change rate</i>	<i>Reasons and comments</i>
Heat-exchanger type	Administration	Adjustable thermostat		Tubular and wall convector heaters
<i>Note: No heating is provided in standings by the corporation: tenants have installed their own, taking their supplies from the services provided</i>				
<i>Drainage: Type of system</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
One pipe	Administration	Cast-iron internal S. & V. pipes. Underground pipes stoneware in concrete surround	S. & V. pipes painted	
<i>Drain pipes</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Stoneware in concrete surround	Throughout			Separate systems for foul and surface water discharging into existing manholes outside the site
<i>Kitchen ventilation</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Extract fan and hood. Also natural ventilation via windows	Administration	Hood in softwood glazed with reeded glass	Softwood painted	Kitchen ceiling as soffit. Duct through roof space and extractor outside
<i>Gas installation</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Supply pipes to roof (run through trusses under ridge)	Standings	Cast-iron main underground: steel above ground level	Painted where exposed	Branches provided for tenants to connect separately
	Administration	Steel		Copper length exposed in canteen and painted

ELECTRICAL INSTALLATION

<i>Source and fitting type</i>	<i>Location</i>	<i>Illumination level</i>	<i>Quality</i>	<i>Reasons and comments</i>
Main supply via site sub-station	Throughout			Street lighting separately metered and switched
Tungsten point lighting				
<i>Wiring and switching</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Cables in conduit		V.I.R. cable, heavy gauge screwed and welded steel conduit		Suspended street lights served by sheathed cable supported by strainer wires
<i>Power supply type</i>	<i>Location</i>	<i>How distributed</i>	<i>Finish</i>	<i>Reasons and comments</i>
3 phase, 4 wire, 415 volts between phases, 240 between each phase and neutral conductor		Ring main cable round outer road, in stoneware duct underground	Supply points to approximately alternate bays in standings	Access boxes over all joints to avoid cutting into concrete slab for future alterations

Additional information: underground water and gas mains run within the market square, and in each warehouse a rising main feeds an overhead main slung on the centre of the steel roof girders and running the entire length of the building. Tenants' connections are taken from the overhead mains. The electricity ring cable from the sub-station on the site also runs underground at the rear of the warehouses in 4-in. stoneware ducting, with branch ducts to serve within the building in sufficient number to cope with present needs and any future sub-division.

<i>Paved areas and roadworks</i>	<i>Location</i>	<i>Materials</i>	<i>Finish</i>	<i>Reasons and comments</i>
Lorry parks	Outer perimeter	Concrete, vibrated and reinforced	Surface coloured red	Parking marked with white plastic strip
Car park	Central square	Tarmacadam on rock pitching		
Roads and forecourts		Concrete, 8 in. slab reinforced	No colouring	
Paving	Paths, etc.	2½ in. concrete paving slabs		

analysis

THERMAL INSULATION

Type	Location	U-value	Finish	Reasons and comments
½-in. insulating board	Standings		Roof	
1-in. wood wool slab	Administration		Roof	

Sound insulation	Location	Materials	Reasons and comments
Between tenancies	Standings	2 in. wood wool slab	Highly competitive business: wholesalers insisted on complete separation of tenancies to avoid telephone transactions being overheard

REFUSE DISPOSAL

Method	Type of refuse	Waste recovery	Materials and installation	Reasons and comments
Collection by electric hand trolley: tipped direct into corporation refuse trailer	Vegetable, fish, earth, packing materials, etc.	None on site: all carted direct to city refuse destructor	Brick building to house refuse trailer	Standard method for wholesale and retail markets in the city

TIME SCHEDULE

Drawings revised scheme	Tender date	Contract signed	Work commenced	Work completed	Type of contract
January, 1953	August, 1953	September, 1953	November, 1953	June 28, 1955	RIBA with quantities

RATIOS

Standings only. Floor area 70,450 sq. ft.

Area of enclosing walls	0.85	Area of windows (inc. ext. shutters)	0.54
Total floor area	1	Total floor area	1
Area of solid wall	0.3	Total roof area	1
Total floor area	1	Total floor area	1

COST DETAILS

Based on tender cost, August, 1953. The architects and quantity surveyors were unable to provide a cost per sq. ft. analysis for the various elements.

Preliminaries	£	s.	d.
Standings (86 bays excluding 15 additional standings on west perimeter of site)	2,500	0	0
	89,018	12	6
P.C. items: steel frame	£	s.	d.
roof decking	11,642	0	5
metal windows	14,887	11	3
Administration building	4,649	0	0
P.C. items: internal doors			
ironmongery	135	0	0
heating installation and h.w. system	263	6	6
Supervisor's house	3,975	0	0
Ancillary works (gatehouse, boundary walls and gates, sub-station, refuse disposal, cycle sheds, etc.)			
Roadworks			
Contingencies			
Total net tender sum			156,418 9 5
Contract extensions ordered during contract period and completed with original contract (lorry parking to the north and on either side of north block of standings, Additional buildings and roadworks ordered during contract period. (15 additional standings on west side of site and including £13,250 for banana warehouse)			1,440 0 0
Additional parking space and paved area, including retaining wall on west perimeter of site			38,950 0 0 (approx.)
Total gross tender sum			3,305 0 0
Plus legitimate increases and sundry minor extra items bring the total to approximately			194,450 6 3
			200,000 0 0
Standings			
Ground floor area of original 86 bays, 59,985 sq. ft.			
Cost of 86 bays (with extra finishes)	89,018	12	6
Approximate tender cost per bay	1,035	2	0
Approximate tender cost per foot super	1	9	8½
Approximate tender cost per foot cube	1	4½	
Administration building			
Ground floor area of administration building, 3,400 sq. ft.			
Tender cost of administration building (without tower)	12,362	10	0
Cost per foot super	3	12	7½
Cost per foot cube	4	10	
Estimated cost of final scheme, excluding professional fees and increased costs.			
Acquisition of site			12,400 0 0
Tender cost of original scheme			156,418 9 5
15 additional bays and roadworks			25,400 0 0
Banana warehouse			13,250 0 0
Additional parking areas and railway retaining wall			4,865 0 0
Garage to supervisor's house			195 0 0
Empty crate storage (not yet built)			6,632 0 0
			£219,160 9 5

CONTRACTORS

General contractor: J. G. Gray Ltd. Structural steelwork: Palmers Hebburn Co. Ltd. Insulated Aluminium roof decking: William Briggs & Sons Ltd. Steel Rolling Shutters: Non-standard metal windows, window gearing, pressed metal sills and canopy gutters: Henry Hope & Sons Ltd. Rustic facings: London Brick Co. Ltd. Coleford	Golden Grey facings: Proctor & Lavendor Ltd. Buff bricks, Metal letters to main approach sign and entrance gable sign: Ward & Co. Slate window surrounds: Broughton Moor Green Slate Quarries Ltd. Towel rollers: Parker, Winder & Achurch Ltd. Chairs: Parker Knoll Ltd. & Hille Ltd. Numeral tiles: Carter & Co. London Ltd.	Emulsion paints Smith & Walton Ltd. Gloss paints in "Archrome" Range: George Bros. (Paints) Ltd. Kitchen extractor fan: Brooks Air & Heat Systems Ltd. Electric water heaters: Aidas Electric Ltd. Electric space heaters, and convectors: E. K. Cole Ltd. Clocks: Gent & Co. Ltd.
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LEAD AND ALLOYS | GENERAL DATA

The Architects' Journal Library of Information Sheets 575. Editor: Cotterell Butler, A.R.I.B.A.

10.FI

LEAD PIPE AND LEAD SHEET FOR BUILDING WORK

This Sheet summarises the characteristics of lead and lead-alloy pipe and sheet for use in building work and gives the B.S. requirements.

Lead and Lead-Alloy Pipe

Lead and lead-alloy pipe is produced by extrusion from hydraulic presses. Long lengths of pipe of accurate shape and diameter, and smooth bore, are produced. Lead pipe is manufactured in a large number of sizes, external and internal diameter being varied according to the size and weight of pipe required. Pipe is therefore specified by internal diameter and weight per linear yard.

Pipe of rectangular section is also extruded.

British Standards: These Standards are B.S.602, *Lead Pipes for other than Chemical Purposes* and B.S.1085, *Lead Pipes for other than Chemical Purposes (Silver-copper-lead alloy)*.

The requirements of these standards include the following: the composition of the metal; the uniformity of the grain size; that the pipe be cylindrical, true, smooth and of uniform thickness throughout (to a given tolerance) and in all respects sound and free from pronounced extrusion marks, flaws and other imperfections; that pipe from $\frac{3}{8}$ -in. diameter up to 2-in. internal diameter be marked with the British Standard number, internal diameter and minimum weight per yard.

B.S.1085: Lead-alloy pipe—the alloy is composed of lead with not less than 0.003 or more than 0.005 per cent copper and not less than 0.003 or more than 0.005 per cent silver.

The general properties of ordinary lead pipe are retained in pipe of this alloy and it has a greater resistance to prolonged internal pressure.

For some purposes it is practicable to use this alloy for water service and distributing pipes, in a reduced wall thickness as compared with ordinary lead.

Sizes and Weights of Lead and Lead-Alloy Pipe

The following table gives the range of sizes and weights which are included in B.S.602 and B.S.1085 as "Standard Bores and Weights" and to which the Standards in every case apply.

Bore (in.)	Weight per yd. (lb.)	Ext. dia. nearest 1/64 in.	Bore (in.)	Weight per yd. (lb.)	Ext. dia. nearest 1/64 in.	Bore (in.)	Weight per yd. (lb.)	Ext. dia. nearest 1/64 in.
1 1/2	12	1 51/64	2	25	2 31/64	4	19	4 13/64
1 1/4	14	1 55/64	2 1/2	28	2 17/32	4 1/2	20	4 7/32
1 3/8	15	1 59/64	3	30	2 9/16	5	22	4 15/64
1 1/2	16	1 29/32	3 1/2	38	2 45/64	6	23	4 1/2
1 5/8	18	1 61/64	4	42	2 25/32	6 1/2	24	4 1/2
1 3/4	20	2	4 1/2	48	2 11/16	7	26	4 17/64
1 7/8	24	2 5/64	5	52	2 45/64	8	27	4 1/2
2	27	2 9/64	6	60	2 21/16	9	29	4 49/64
2 1/4	30	2 13/64	8	80	2 49/64	10	31	4 1/2
2 1/2	35	2 19/64	10	100	3 1/16	12	34	5 1/32
3	40	2 23/64	12	120	3 5/16	14	37	5 1/32
3 1/2	45	2 27/64	14	140	3 9/16	16	40	5 1/32
4	50	2 31/64	16	160	3 13/16	18	43	5 1/32
4 1/2	55	2 35/64	18	180	3 17/16	20	46	5 1/32
5	60	2 39/64	20	200	3 21/16	22	49	5 1/32
5 1/2	65	2 43/64	22	220	3 25/16	24	52	5 1/32
6	70	2 47/64	24	240	3 29/16	26	55	5 1/32
6 1/2	75	2 51/64	26	260	3 33/16	28	58	5 1/32
7	80	2 55/64	28	280	3 37/16	30	61	5 1/32
7 1/2	85	2 59/64	30	300	3 41/16	32	64	5 1/32
8	90	2 63/64	32	320	3 45/16	34	67	5 1/32
8 1/2	95	2 67/64	34	340	3 49/16	36	70	5 1/32
9	100	2 71/64	36	360	3 53/16	38	73	5 1/32
9 1/2	105	2 75/64	38	380	3 57/16	40	76	5 1/32
10	110	2 79/64	40	400	3 61/16	42	79	5 1/32
10 1/2	115	2 83/64	42	420	3 65/16	44	82	5 1/32
11	120	2 87/64	44	440	3 69/16	46	85	5 1/32
11 1/2	125	2 91/64	46	460	3 73/16	48	88	5 1/32
12	130	2 95/64	48	480	3 77/16	50	91	5 1/32
12 1/2	135	2 99/64	50	500	3 81/16	52	94	5 1/32
13	140	2 103/64	52	520	3 85/16	54	97	5 1/32
13 1/2	145	2 107/64	54	540	3 89/16	56	100	5 1/32
14	150	2 111/64	56	560	3 93/16	58	103	5 1/32
14 1/2	155	2 115/64	58	580	3 97/16	60	106	5 1/32
15	160	2 119/64	60	600	3 101/16	62	109	5 1/32
15 1/2	165	2 123/64	62	620	3 105/16	64	112	5 1/32
16	170	2 127/64	64	640	3 109/16	66	115	5 1/32
16 1/2	175	2 131/64	66	660	3 113/16	68	118	5 1/32
17	180	2 135/64	68	680	3 117/16	70	121	5 1/32
17 1/2	185	2 139/64	70	700	3 121/16	72	124	5 1/32
18	190	2 143/64	72	720	3 125/16	74	127	5 1/32
18 1/2	195	2 147/64	74	740	3 129/16	76	130	5 1/32
19	200	2 151/64	76	760	3 133/16	78	133	5 1/32
19 1/2	205	2 155/64	78	780	3 137/16	80	136	5 1/32
20	210	2 159/64	80	800	3 141/16	82	139	5 1/32
20 1/2	215	2 163/64	82	820	3 145/16	84	142	5 1/32
21	220	2 167/64	84	840	3 149/16	86	145	5 1/32
21 1/2	225	2 171/64	86	860	3 153/16	88	148	5 1/32
22	230	2 175/64	88	880	3 157/16	90	151	5 1/32
22 1/2	235	2 179/64	90	900	3 161/16	92	154	5 1/32
23	240	2 183/64	92	920	3 165/16	94	157	5 1/32
23 1/2	245	2 187/64	94	940	3 169/16	96	160	5 1/32
24	250	2 191/64	96	960	3 173/16	98	163	5 1/32
24 1/2	255	2 195/64	98	980	3 177/16	100	166	5 1/32
25	260	2 199/64	100	1000	3 181/16	102	169	5 1/32
25 1/2	265	2 203/64	102	1020	3 185/16	104	172	5 1/32
26	270	2 207/64	104	1040	3 189/16	106	175	5 1/32
26 1/2	275	2 211/64	106	1060	3 193/16	108	178	5 1/32
27	280	2 215/64	108	1080	3 197/16	110	181	5 1/32
27 1/2	285	2 219/64	110	1100	3 201/16	112	184	5 1/32
28	290	2 223/64	112	1120	3 205/16	114	187	5 1/32
28 1/2	295	2 227/64	114	1140	3 209/16	116	190	5 1/32
29	300	2 231/64	116	1160	3 213/16	118	193	5 1/32
29 1/2	305	2 235/64	118	1180	3 217/16	120	196	5 1/32
30	310	2 239/64	120	1200	3 221/16	122	199	5 1/32
30 1/2	315	2 243/64	122	1220	3 225/16	124	202	5 1/32
31	320	2 247/64	124	1240	3 229/16	126	205	5 1/32
31 1/2	325	2 251/64	126	1260	3 233/16	128	208	5 1/32
32	330	2 255/64	128	1280	3 237/16	130	211	5 1/32
32 1/2	335	2 259/64	130	1300	3 241/16	132	214	5 1/32
33	340	2 263/64	132	1320	3 245/16	134	217	5 1/32
33 1/2	345	2 267/64	134	1340	3 249/16	136	220	5 1/32
34	350	2 271/64	136	1360	3 253/16	138	223	5 1/32
34 1/2	355	2 275/64	138	1380	3 257/16	140	226	5 1/32
35	360	2 279/64	140	1400	3 261/16	142	229	5 1/32
35 1/2	365	2 283/64	142	1420	3 265/16	144	232	5 1/32
36	370	2 287/64	144	1440	3 269/16	146	235	5 1/32
36 1/2	375	2 291/64	146	1460	3 273/16	148	238	5 1/32
37	380	2 295/64	148	1480	3 277/16	150	241	5 1/32
37 1/2	385	2 299/64	150	1500	3 281/16	152	244	5 1/32
38	390	2 303/64	152	1520	3 285/16	154	247	5 1/32
38 1/2	395	2 307/64	154	1540	3 289/16	156	250	5 1/32
39	400	2 311/64	156	1560	3 293/16	158	253	5 1/32
39 1/2	405	2 315/64	158	1580	3 297/16	160	256	5 1/32
40	410	2 319/64	160	1600	3 301/16	162	259	5 1/32
40 1/2	415	2 323/64	162	1620	3 305/16	164	262	5 1/32
41	420	2 327/64	164	1640	3 309/16	166	265	5 1/32
41 1/2	425	2 331/64	166	1660	3 313/16	168	268	5 1/32
42	430	2 335/64	168	1680	3 317/16	170	271	5 1/32
42 1/2	435	2 339/64	170	1700	3 321/16	172	274	5 1/32
43	440	2 343/64	172	1720	3 325/16	174	277	5 1/32
43 1/2	445	2 347/64	174	1740	3 329/16	176	280	5 1/32
44	450	2 351/64	176	1760	3 333/16	178	283	5 1/32
44 1/2	455	2 355/64	178	1780	3 337/16	180	286	5 1/32
45	460	2 359/64	180	1800	3 341/16	182	289	5 1/32
45 1/2	465	2 363/64	182	1820	3 345/16	184	292	5 1/32
46	470	2 367/64	184	1840	3 349/16	186	295	5 1/32
46 1/2	475	2 371/64	186	1860	3 353/16	188	298	5 1/32
47	480	2 375/64	188	1880	3 357/16	190	301	5 1/32
47 1/2	485	2 379/64	190	1900	3 361/16	192	304	5 1/32
48	490	2 383/64	192	1920	3 365/16	194	307	5 1/32
48 1/2	495	2 387/64	194	1940	3 369/16	196	310	5 1/32
49	500	2 391/64	196	1960	3 373/16	198	313	5 1/32
49 1/2	505	2 395/64	198	1980	3 377/16	200	316	5 1/32
50	510	2 399/64	200	2000	3 381/16	202	319	5 1/32
50 1/2	515	2 403/64	202	2020	3 385/16	204	322	5 1/32
51	520	2 407/64	204	2040	3 389/16	206	325	5 1/32
51 1/2	525	2 411/64	206	2060	3 393/16	208	328	5 1/32
52	530	2 415/64	208	2080	3 397/16	210	331	5 1/32
52 1/2	535	2 419/64	210	2100	3 401/16	212	334	5 1/32
53	540	2 423/64	212	2120	3 405/16	214	337	5 1/32
53 1/2	545	2 427/64	214	2140	3 409/16	216	340	5 1/32
54	550	2 431/64	216	2160	3 413/16	218	343	5 1/32
54 1/2	555	2 435/64	218	2180	3 417/16	220	346	5 1/32
55	560	2 439/64	220	2200	3 421/16	222	349	5 1/32
55 1/2	565	2 443/64	222	2220	3 425/16	224	352	5 1/32
56	570	2 447/64	224	2240	3 429/16	226	355	5 1/32
56 1/2	575	2 451/64	226	2260	3 433/16	228	358	5 1/32
57	580	2 455/64	228	2280	3 437/16	230	361	5 1/32
57 1/2	585	2 459/64	230	2300	3 441/16	232	364	5 1/32
58	590	2 463/64	232	2320	3 445/16	234	367	5 1/32
58 1/2	595	2 467/64	234	2340	3 449/16	236	370	5 1/32
59	600	2 471/64	236	2360	3 453/16	238	373	5 1/32
59 1/2	605	2 475/64	238	2380	3 457/16	240	376	5 1/32
60	610	2 479/64	240	2400	3 461/16	242	379	

10.F1 LEAD PIPE AND LEAD SHEET FOR BUILDING WORK

Water Supply and Distributing Pipes to B.S. 602 and B.S. 1085

Internal diameters (in.)	Weight per yard (lb.) for different uses and water pressures									
	Cold water distributing pipes above ground		Hot water distributing pipes above ground		Service pipes fixed or laid above ground			Service and distributing pipes laid underground		
	Head of water		Head of water		Head of water			Head of water		
	Up to 75 ft. (33 lb./sq. in.)	75 ft. to 150 ft. (65 lb./sq. in.)	Up to 60 ft. (26 lb./sq. in.)	60 ft. to 120 ft. (52 lb./sq. in.)	Up to 150 ft. (65 lb./sq. in.)	150 ft. to 250 ft. (108 lb./sq. in.)	250 ft. to 350 ft. (152 lb./sq. in.)	Up to 150 ft. (65 lb./sq. in.)	150 ft. to 250 ft. (108 lb./sq. in.)	250 ft. to 350 ft. (152 lb./sq. in.)
Pipes to B.S. 602										
1	3	3	3	3	3	4	6	4	5	6
1½	4	4	4	5	4	5	9	6	7	9
2	5	5	5	10	5	11	15*	9	11	15*
2½	7	8	8	18	8	16	21*	13	16	21*
3	9	12	12	28	14	28	—	16	28	—
3½	12	18	15	—	20	35†	—	20	35†	—
4	16	30	28	—	30	—	—	30	—	—
Pipes to B.S. 1085										
1	3	3	3	3	3	3	4	4	4	4
1½	4	4	4	4	4	4	6	6	6	7
2	5	5	5	9	5	7	12	9	9	13
2½	7	7	8	16	7	13	21	13	13	21
3	9	10	12	23	10	21	—	14	21	—
3½	10	15	15	—	15	30	—	16	30	—
4	14	25	24	—	25	38‡	—	28	38‡	—

* The maximum permissible working pressure for this size and weight of pipe is 300 ft. head of water (131 lb./sq. in.)

† The maximum permissible working pressure for this size and weight of pipe is 225 ft. head of water (98 lb./sq. in.)

‡ The maximum permissible working pressure for this size and weight of pipe is 200 ft. head of water (87 lb./sq. in.)

Lead Sheet

The greater part of the sheet lead in use today is produced by rolling or milling and is called milled sheet lead.

Lead sheet is known and specified by its weight per square foot, thus: three pound lead, four pound lead, and so on, the weight given always indicating the weight of one square foot of lead.

British Standard: Milled sheet lead for building work is manufactured to B.S.1178, which sets down certain requirements. These include:

(a) Composition of metal—not less than 99.90 per cent. lead.

(b) Freedom from defects. (It shall be rolled and sound, free from inclusions, laminations and other defects).

(c) Thickness tolerance of not more than 5 per cent. **Weights and equivalent thicknesses:** The weights of milled sheet lead mostly used in building, together with equivalent thicknesses, are given below.

Weight in lb./sq. ft.	Thickness.			Nearest Imperial Standard Wire Gauge
	In.	Nearest 1/64 in.	Mm.	
1	0.016	1/64—	0.425	27
1½	0.025	1/32—	0.635	23
2	0.034	1/32+	0.85	21
2½	0.042	3/64—	1.07	19
3	0.050	3/64+	1.27	18
3½	0.059	1/16—	1.50	17
4	0.068	1/16+	1.702	16
4½	0.076	5/64—	1.93	15
5	0.084	5/64+	2.13	14
5½	0.093	3/32—	2.35	13
6	0.101	7/64—	2.56	12
7	0.118	1/8—	2.99	11
8	0.135	9/64—	3.42	10
10	0.169	11/64—	4.29	7

The National Physical Laboratory indicates that the thickness of 1 lb. lead per sq. ft. is 0.01695 in. Weight of 1 sq. ft. of lead 1 in. thick is 59.08 lb.

Sizes: B.S.1178 states that, unless otherwise arranged, lead sheet shall be 8 ft. wide and in lengths up to 40 ft. as specified. Generally the commercial sizes of lead sheet range from 15-40 ft. in length and 7-9 ft. in width. Lead sheet can also be supplied cut to any width in rolls up to 40 ft.

Applications: Suggested suitable weights of lead sheet for various purposes are given in the Information Sheets dealing with applications.

Chemical Lead and Other Alloys

B.S.334 refers to two types of chemical lead—A and B. Type A, a high-purity lead is normally specified for ordinary laboratory plumbing.

Type B may be either copper bearing (0.06 per cent) or copper-tellurium (0.06 per cent cu-0.04 per cent te) and is primarily for use in chemical engineering. It is valuable where trouble arises from the effects of vibration.

Lead Traps

Lead traps, covered by B.S.504, are produced by extrusion from hydraulic presses and are made in a large range of sizes and types (see Sheet 33.C12).

Compiled from information supplied by:

The Lead Sheet and Pipe Council

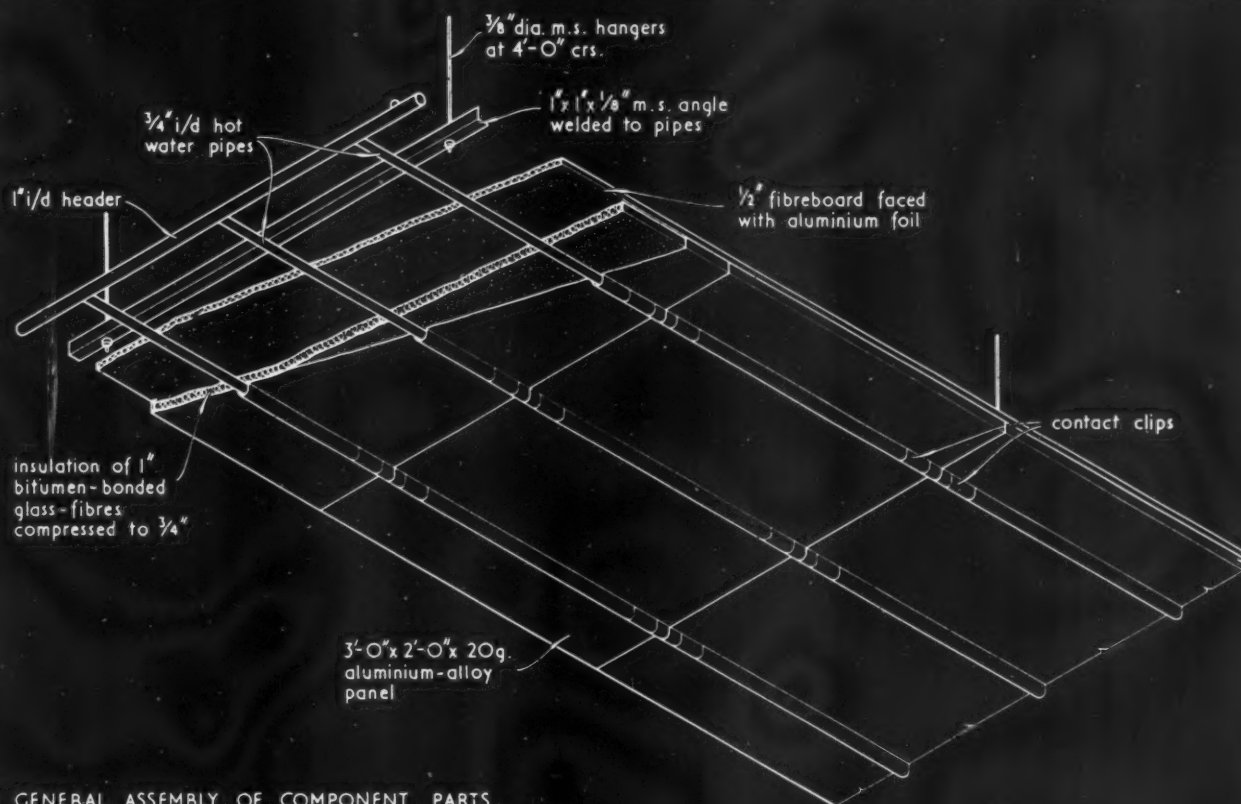
Address: Eagle House, Jermyn Street, London, S.W.1.

Telephone: Whitehall 4175.

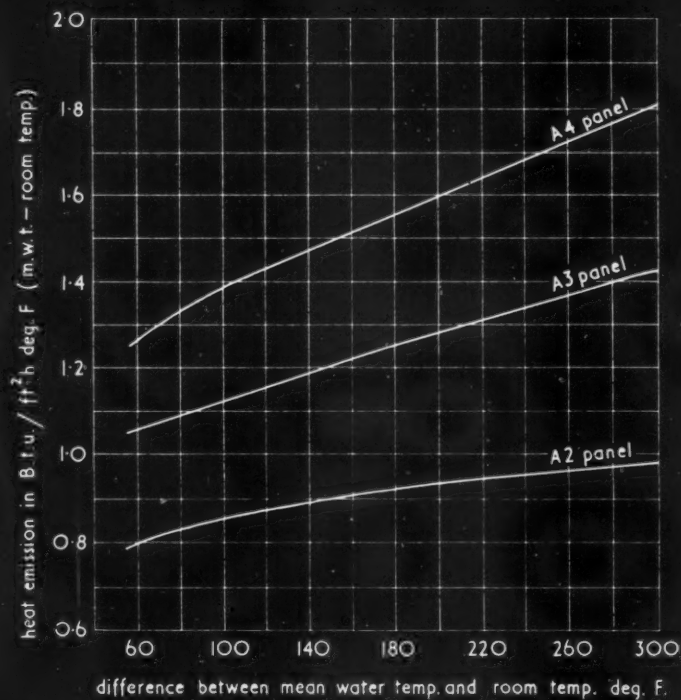
SPACE HEATING | HOT WATER

29.H3

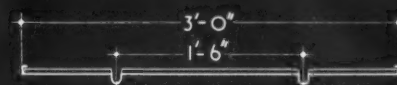
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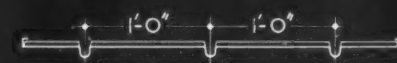
● GENERAL ASSEMBLY OF COMPONENT PARTS.



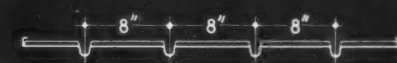
GRAPH SHOWING HEAT EMISSION.



type A2

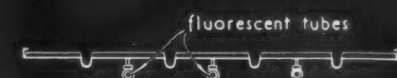


type A3



type A4

ALTERNATIVE PANELS.



HOTLIT STRIP (heating panels combined with lighting).

29.H3 ·HOTSTRIP· RADIANT STRIP HEATING

This Sheet describes Hotstrip radiant strip heating. The drawings on the face show the general assembly, and the variations available, including Hotlit strip, a combination of the heating with lighting.

Principle

A grid of parallel tubes with headers is suspended from or fixed direct to the structure at a convenient height and to it are fixed aluminium panels with recesses corresponding to the tubes. The backs of the panels are insulated to reduce heat emission in that direction. The heating medium may be low- or high-pressure hot water or steam which, in passing through the pipes, heats the panels, which radiate heat to the space below. With suitable surface treatment, the panels may also be used as flat reflectors for lighting.

Components

Pipe grid: The jig-welded grid is formed from tube to BS.1387 Class C. There may be 2 stretchers at 1 ft. 6 in. centres, 3 at 1 ft. 0 in. centres or 4 at 8 in. centres, all of $\frac{3}{8}$ -in. nominal bore. Headers have 1-in. nominal bore and are provided with flow and return connections. The maximum length of the grid is normally 60 ft. 0 in. and any grid over 18 ft. 0 in. long is fabricated in sections convenient for transport and erection, and butt-welded in position, the welds being subsequently ground flush. Grids or sections of grids are tested to withstand twice their working pressure before erection. Working pressures greater than 150 psi require special grids which must be specified when ordering.

Radiant panels: These are 3 ft. 0 in. by 2 ft. 0 in. and are pressed from 20 gauge aluminium alloy sheet. Grooves to correspond to the heating pipes are formed in the sheet which is stiffened by flanges on all four edges.

Insulation: Bitumen-bonded glass fibres of 1-in. nominal thickness are completely enclosed between the radiant panels and a $\frac{1}{2}$ -in. cover of insulating fibre-board faced with aluminium foil.

Clips: Specially-designed steel clips with a rust-proofed finish are fitted over the tube recesses to ensure efficient contact between panel and tube.

Hangers: 1 in. by 1 in. by $\frac{1}{8}$ in. mild steel angles are welded across the tops of the tubes at 4 ft. 0 in. centres and secured by lock nuts to $\frac{3}{8}$ -in. diameter suspension rods suitably fixed to the structure. Special hangers may be used where the panels are desired inclined to the horizontal.

Finish

Panels are Pyluminised for painting after fixing; normal heat-resisting paint treatment is required and specifications may be obtained from the manufac-

turer. For strip lighting, panels may be supplied either with an anodised self-colour finish or stove-enamelled if required; contact clips are cadmium-plated or stove-enamelled.

Heating pipes are galvanised. Hangers are sherardized or painted with red oxide.

Heat Emission

The graph on the face of the Sheet gives the actual heat emission from the face of a painted horizontal panel. The increase in emission for vertical or near-vertical panels will be 10 per cent. of the emission obtained from the graph. For anodised panels, the reduction in emission is 10 per cent. The emission from the back of the panel will be approximately 10 per cent. of emission from the face. The percentage of total output emitted as radiation lies within 66 per cent. and 68 per cent. for the temperature range on the graph.

Example:

To find the emission from A3 anodised lighting panels fixed horizontally to a room at 60° F. when supplied with medium pressure hot water at a mean temperature of 210° F.

Difference between mean water temperature and room temperature = 150° F.

Face emission from A3 painted horizontal panels
= 1.21 B.t.u./h. ft² °F. diff.
— room temp.

Face emission from A3 anodised horizontal panels
= 0.9 × 1.21
= 1.09 B.t.u./h. ft² °F. diff.
= 1.09 × 150 B.t.u./h. ft.²
= 164 B.t.u./h. ft.²

Back emission = 0.1 × 164
= 16.4 B.t.u./h. ft.²

Further Information

The manufacturer maintains a technical service to advise on problems relating to radiant strip heating and to prepare detailed schemes for installation. Technical data relating to the lighting system will be supplied on request.

Compiled from information supplied by:

Frenger Ceilings, Ltd.

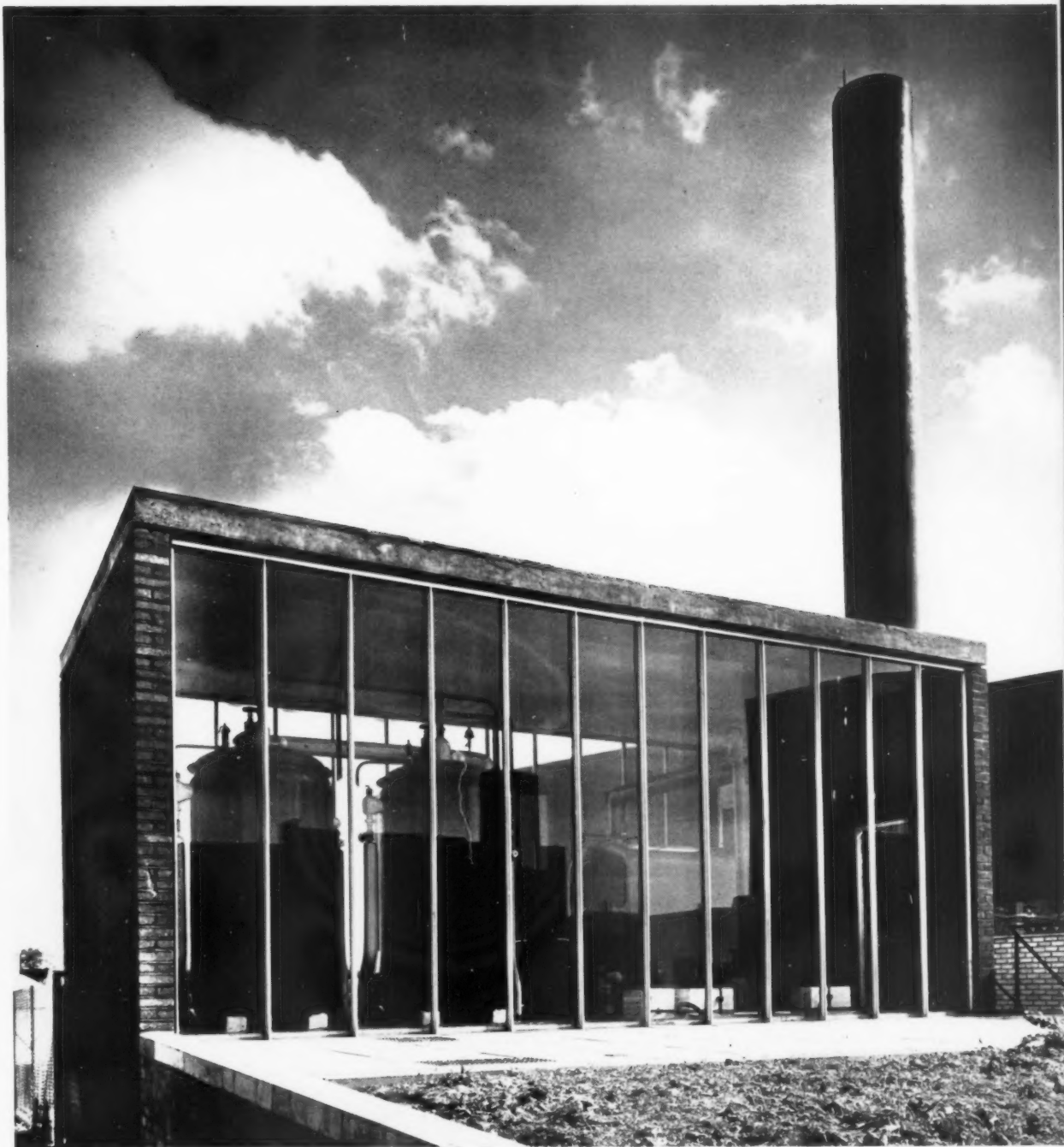
Address: 67, Great Russell Street, London, W.C.1.
Telephone: Chancery 5534/5.

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GLASS WALL TO BOILER HOUSE: FACTORY AT HEMEL HEMPSTEAD

Ove Arup and Partners, designers; Philip Dawson and Francis Pym, architects-in-charge



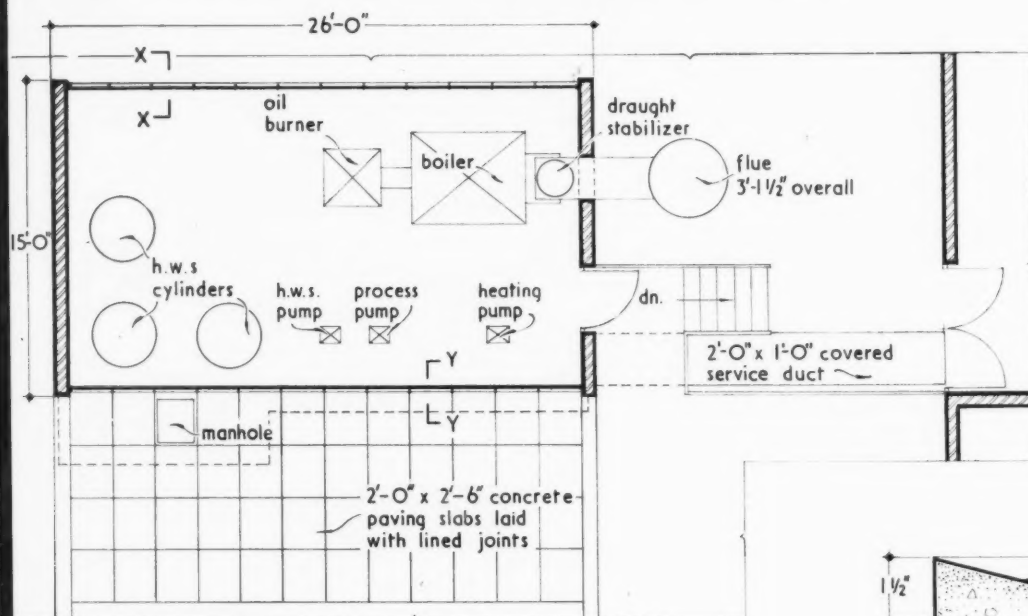
The equipment in the boiler house—the calorifiers, the pipe runs and the oil-fired boiler itself—is sufficiently lagged to make heat loss through the glass of no account. A half-inch gap is left to right and left of each glazed wall to let air in to the boiler. It was found that this was insufficient and a louvered ventilator was inserted in the boiler-house door. An incidental advantage of the glazed walling in this context is that it is relatively simple to take down a few sections when any of the larger pieces of equipment have to be renewed.

working detail

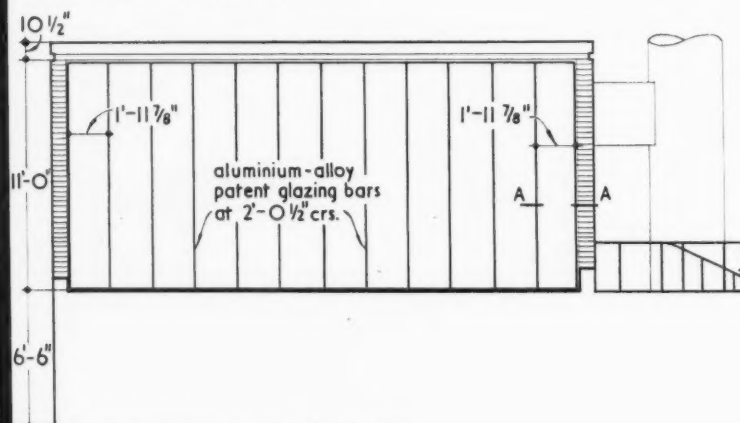
WALLS AND PARTITIONS: 34

GLASS WALL TO BOILER HOUSE: FACTORY AT HEMEL HEMPSTEAD

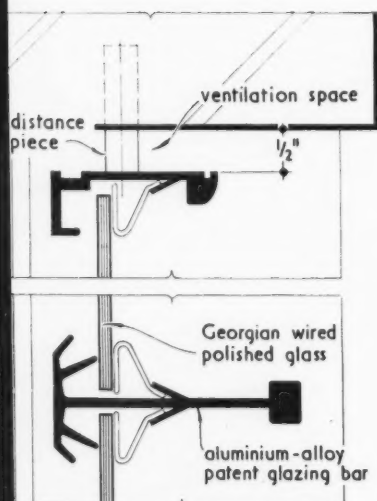
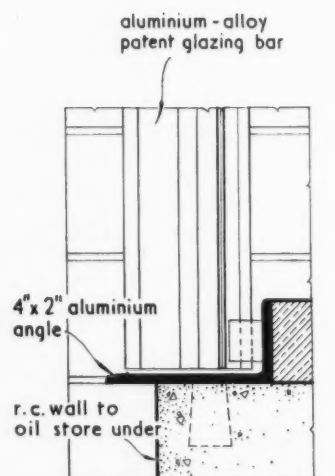
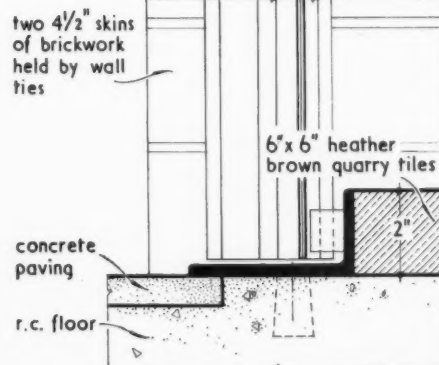
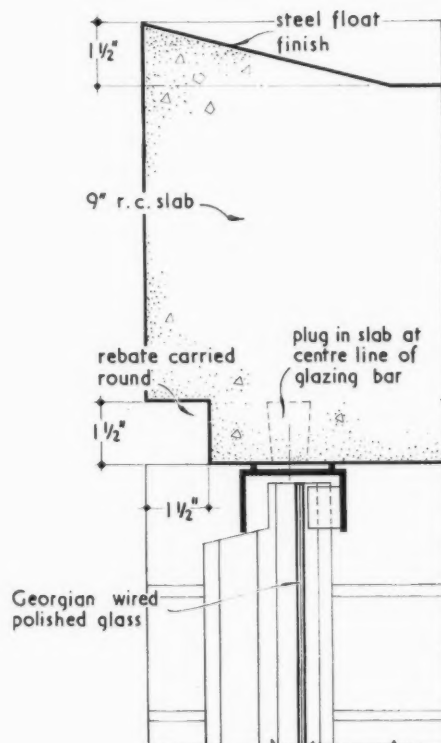
Ove Arup and Partners, designers; Philip Dowson and Francis Pym, architects-in-charge



PLAN OF BOILER HOUSE.



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

PLAN AT 'A-A'.
scale 1/2 full sizeSECTION AT BASE OF
GLASS SCREEN AT 'X-X'.
scale 1/4 full sizeSECTION AT HEAD AND BASE OF
GLASS SCREEN AT 'Y-Y'.
scale 1/4 full size

NEWS IN BRIEF

A subsidiary company of Richard Costain Ltd., the Dolphin Development & Management Co. Ltd., are to apply to the Kent County Council for approval to a scheme to convert the village of Allhallows-on-Sea, on the Thames Estuary opposite Southend, into a private enterprise New Town with a population of 25,000. One aim of this new town will be to accommodate workers in the nearby British Petroleum Co. factory. The architect for the project is Frederick Gibberd.

A 29-year-old British architect, Gerald E. Crane, has designed a Detroit Medical Centre. The project, which is a 100-million-dollar conversion of a central slum area, includes medical buildings, housing for 9,000 persons and recreation and shopping centres.

A special selection committee of the English-Speaking Union has awarded Steuben-Corning Travel Grants to Sir Hugh Casson, E. A. Lane, W. E. Tatton-Brown, Professor R. D. Russell and James W. Tower.

They will each spend about ten weeks in the United States between the autumn of 1956 and the summer of 1957 on these Travel Grants, which have been financed by generous gifts to the English-Speaking Union by the Steuben Glass Company and the Corning Glass Foundation.

Applications are invited for a sixth Steuben-Corning Travel Grant, to be taken up in late 1956 or during 1957. Whilst in general the same conditions will apply as in respect of applications for the five Steuben-Corning Travel Grants now awarded, there will be a special requirement in connection

with this sixth Grant that applicants *must*, whatever their other qualifications, in any event be able to give evidence of their qualifications as practising artists or designers.

Application forms can be obtained from the Director-General, English-Speaking Union, 37, Charles Street, Berkeley Square, W.1, and must be returned to him not later than September 30, 1956.

A ventilation centre has been opened at 3, Eagle Street, Southampton Row, W.C.1, by the Heat, Insulation and Ventilation Co. Ltd. At this centre there is a permanent exhibition of ventilating equipment of all manufacturers, together with a free technical advisory service and a qualified installation department.

A conference organised by the Coal Utilisation Council at the Connaught Rooms, W.C.2, on June 8, agreed to a suggestion that the Council should approach all interested organisations with a view to setting up a working party to consider how best the problem of ensuring the correct installation of domestic solid fuel appliances could be tackled.

At Moor Park College, Farnham, Surrey, a course for builders' foremen will be held at the week-end of July 13. Lectures given will be on "The General Foreman and the Building Team," "Site Administration," "Work Study and Method Study on the Site," "Personnel Management," "The Contract & Bills of Quantities" and "Safety." The course is organized by the West Surrey Association of Building Trade Employers and will be introduced by R. W. Whittington—a past president of the Southern Counties FBTE.

Announcements
PROFESSIONAL

D. J. Robinson, A.R.I.B.A., 48, High Street, Sutton Coldfield, Warwickshire, has acquired the practice previously known as John W. Wilson & Alan L. Snow of the same address.

G. Michael H. Lea, A.R.I.B.A., 134, High Street, Reilly Hill, Staffs., will be pleased to receive trade catalogues, etc.

T. Snook, Esq., 14, The Elms, Nicoll Road, Harlesden, London, N.W.10, will be pleased to receive trade catalogues, etc.

Philip A. Dixon, A.R.I.B.A., DIPL. ARCH., has been appointed Architect to the Nuclear Power Division, Messrs. Simon-Carves Ltd., Avery House, Avery Row, London, W.1, and will be pleased to receive trade catalogues, etc.

H. Edgar Bell, A.R.I.B.A., has relinquished his appointment with the East Suffolk County Council, and has entered into private practice at 6, Goyfield Avenue, Felixstowe, Suffolk, where he will be pleased to receive trade catalogues. (Tel.: Felixstowe 950.)

Morrison, Rose & Partners, chartered architects and surveyors, have taken new offices at 4, Wimpole Street, Cavendish Square, London, W.1. (Tel.: LAngham 8061.)

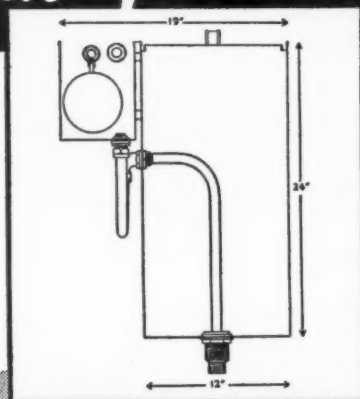
A. J. R. Potter, Registered Architect, has moved to Three Trees, 77, Hillside, Bantstead, Surrey, and will be pleased to receive trade catalogues. (Tel.: Burgh Heath 4379.)

Roy H. Stephenson, DIP. ARCH., A.R.I.B.A., has been appointed staff architect to Morris Hedstrom Ltd., Suva, Fiji, and would be pleased to receive trade catalogues.

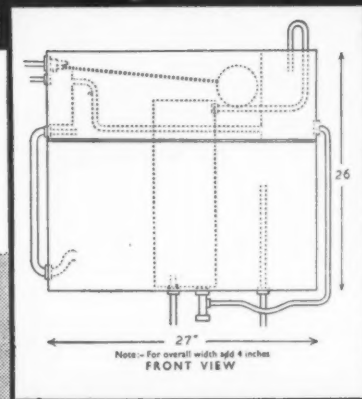
Noel Hunter, A.R.I.B.A., has moved to 19, Poltimore Road, Guildford, Surrey. (Tel.: Guildford 2090.)

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Registered architects are advised that the Council of the Incorporated Association of Architects and Surveyors have announced that as from September 1, 1956, the licentiate grade of membership, hitherto granted on practice grounds, will be discontinued. Only applications received before that date will therefore be considered. Details from the General Secretary, IAAS, 29, Belgrave Square, S.W.1.

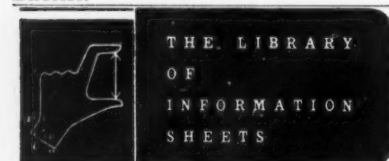
TRADE

Ajax Architectural Products Ltd. have appointed Mr. J. B. Seago as Sales Manager from July 1.

British Insulated Callender's Cables Ltd. announce that the telephone number of their Hull Branch office is now Hull 16367.

The Armstrong Cork Co. Ltd., announce that Mr. Kenneth M. Kent, Managing Director, has appointed Mr. E. Malcolm Wood as Deputy Managing Director. Mr. F. G. A. Philip succeeds Mr. Wood as Manager of the Building Materials Division.

Concrete Ltd. have appointed Alderman W. T. Bowen, J.P., as Midlands Area Director.



44.D1. REFERENCE BACK

Readers are asked to note that the address of the manufacturer's London Office is now Dundas House, 59, St. James's Street, London, S.W.1; telephone Hyde Park 0093-4.

The Marley Tile Co. Ltd. will shortly open a roof-tile manufacturing plant at Salisbury, Southern Rhodesia. This will be the second plant the company has built in South Africa, the first being at Nigel, in the Transvaal, two years ago.

British Insulated Callender's Cables Ltd. announce that the telephone number of their Exeter Branch has been changed to Exeter 66018-9.

Mr. W. W. Burditt has recently been appointed Southern Area Contracts Sales Manager of Permanite Ltd., Roofing Felt and Asphalt Manufacturers and Contractors. Mr. Burditt has for a number of years represented Permanite Ltd. as Technical Representative in the Kent, Surrey and Sussex area.

The Heat, Insulation & Ventilation Co., Ltd., have opened a Ventilation Centre at 3, Eagle Street, Southampton Row, W.C.1, where there is a permanent exhibition of fans and ventilation equipment of all manufacturers, together with a free technical advisory service and a qualified installation department at the disposal of architects and surveyors, etc.

Rowe Bros. & Company Ltd., of 89/91, St. George's Road, Bristol, 1, are transferring their Catering Equipment Showrooms to 39/45, Victoria Street, Bristol.

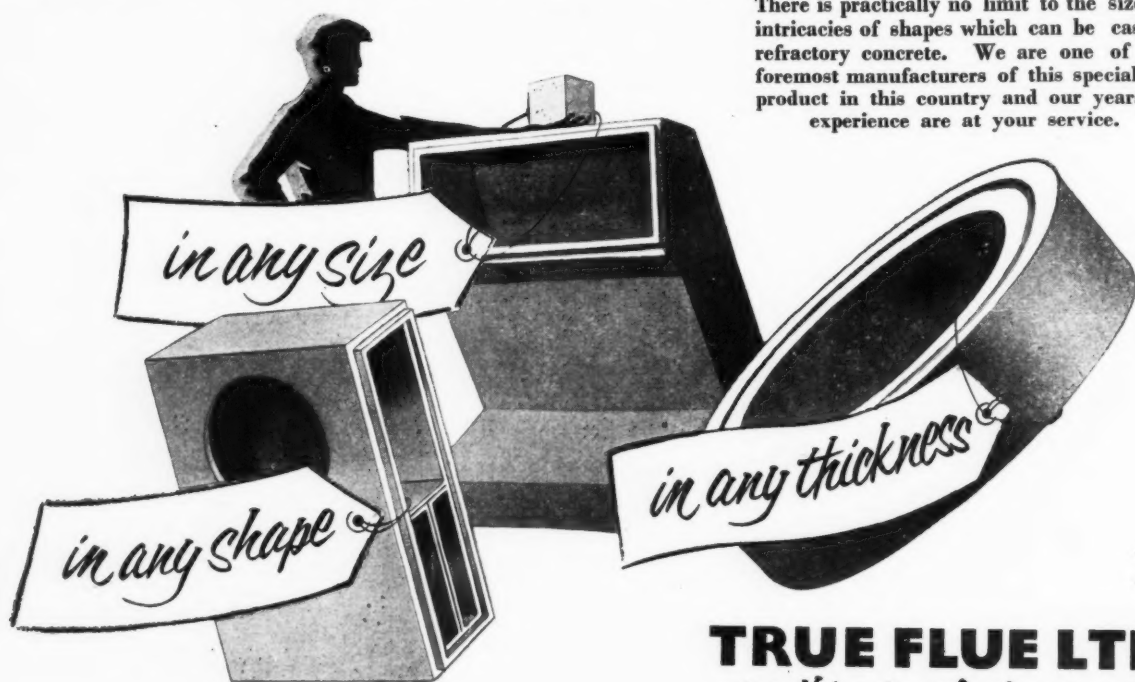
Contractors

Bank at Canterbury, for Barclays Bank Ltd. (Pages 46-47).

Architects: Willan, Stewart & Waite, A.R.I.B.A. Quantity surveyors: Harry Trinick & Partners. General contractors: John E. Wiltshire. Sub-contractors: Reinforced

concrete: The Trussed Concrete Steel Co. Basement tanking: The Limmer & Trinidad Lake Asphalt Co. Ltd. Heating & hot water installation: J. Jeffreys & Co. Ltd. Electrical installation: S. W. Bligh Ltd. Electric platform hoist: J. & E. Hall Ltd. Reinforced concrete roof lights: Luxfer Ltd. Bronze doors and eagles: Francis Dudley & Co. Bronze and metal windows: Henry Hope & Sons Ltd. Steel framed staircase: T. W. Palmer & Co. Ltd. Internal glazing: James Clark & Eaton Ltd. Hardwood strip flooring: Bennett's Wood Flooring. Rubber floor tiles: The North British Rubber Co. Ltd. Cork floor tiles: Armstrong Cork Company Ltd. Internal telephone system: The Reliance Telephone Co. Ltd. Travertine marble floors and Levanto marble margins and skirtings: J. Whitehead & Son Ltd. Suppliers: Facing bricks: Hall & Co. Ltd. Stock bricks: Eastwoods Sales Ltd. Ancaster stone: The Gregory Quarries Ltd. Portland and Roman stone: J. Whitehead & Sons. Blue Woodkirk Yorkstone copings and cills: George Armitage & Sons Ltd. External and internal flush doors: William Mallinson & Sons Ltd. External bronze lettering: Buckleys (London) Ltd. Internal door lettering: Dale's (Lettering) Ltd. Sanitary fittings: Tylors of London Ltd. Ironmongery: Yannedis & Co. Ltd. Veneers and timber for fittings and furniture: W. Mallinson & Sons Ltd. Electric light fittings: Troughton & Young (Lighting) Ltd. Metal calendars and umbrella stand: Francis Dudley & Co.

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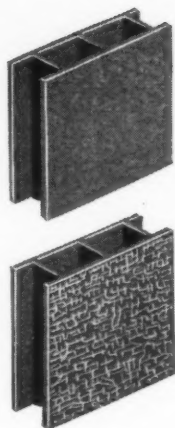
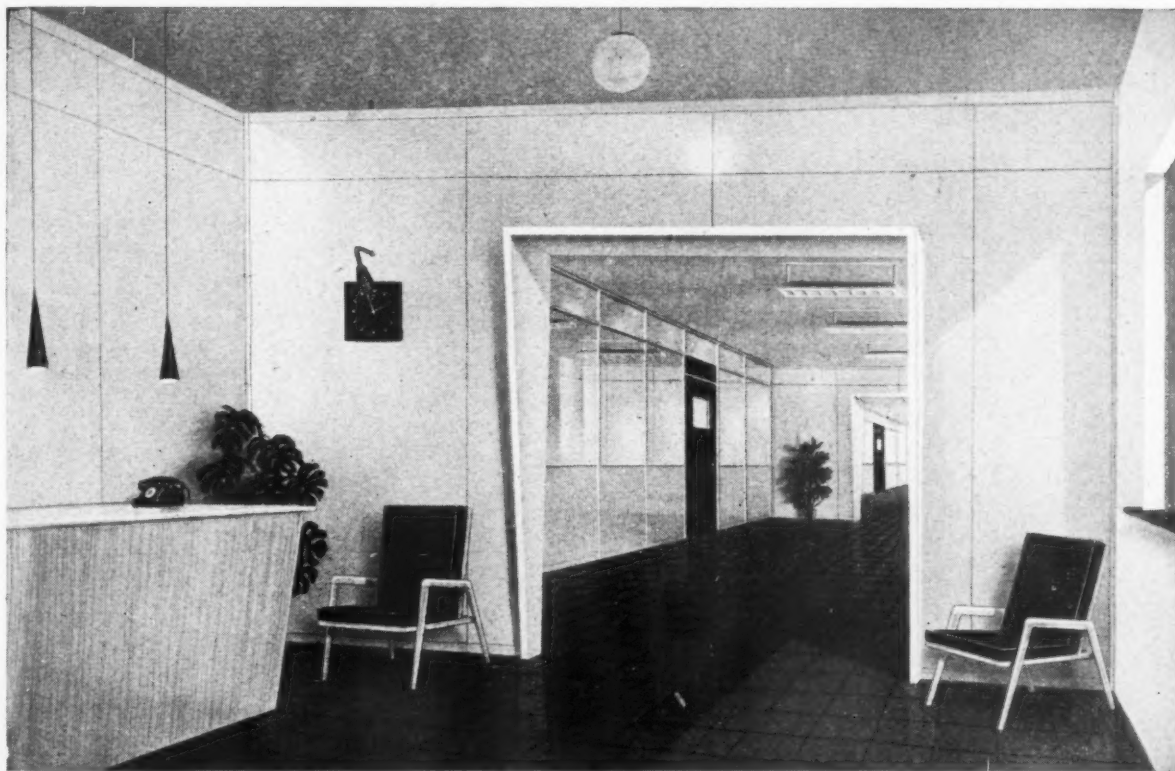
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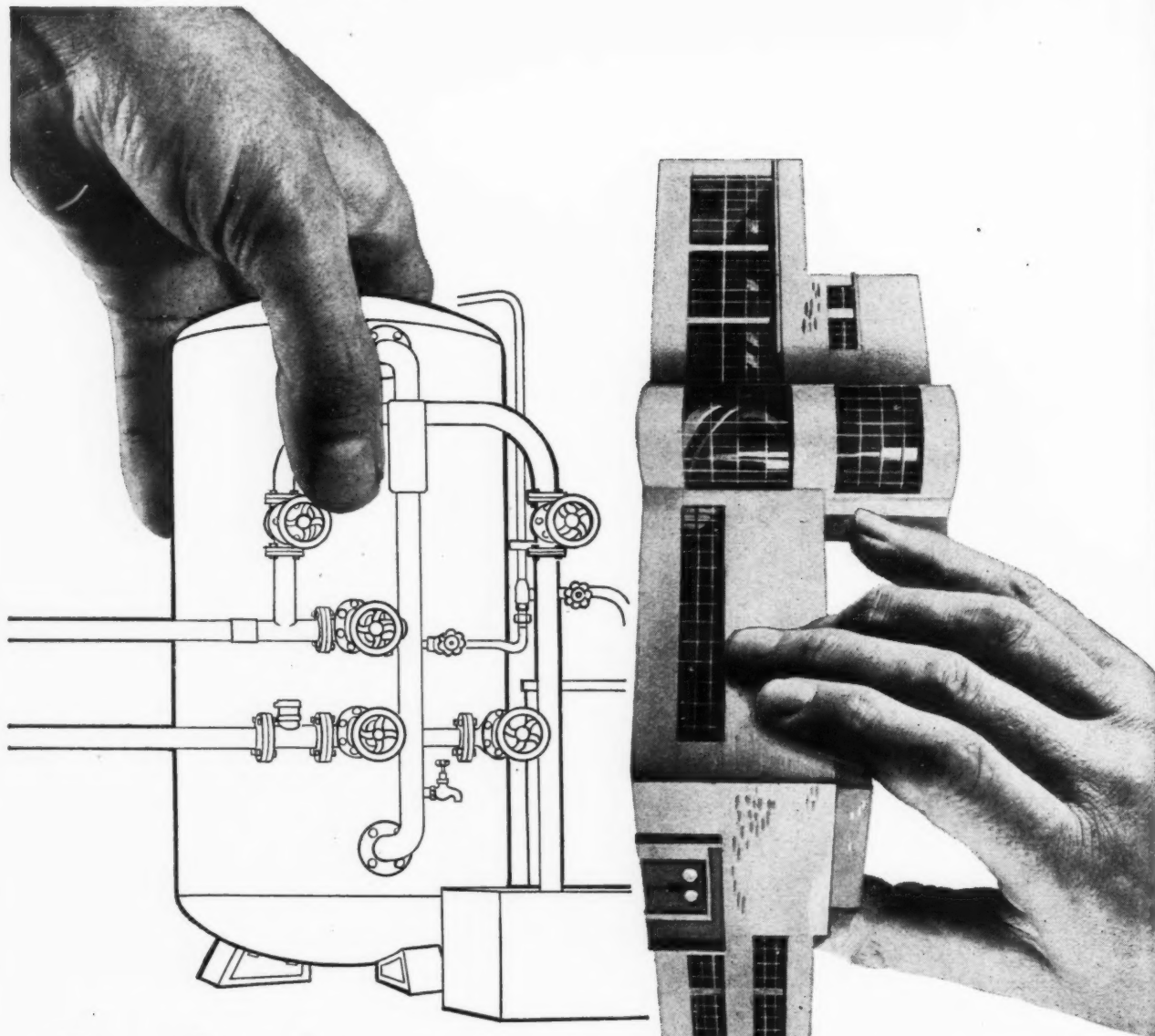
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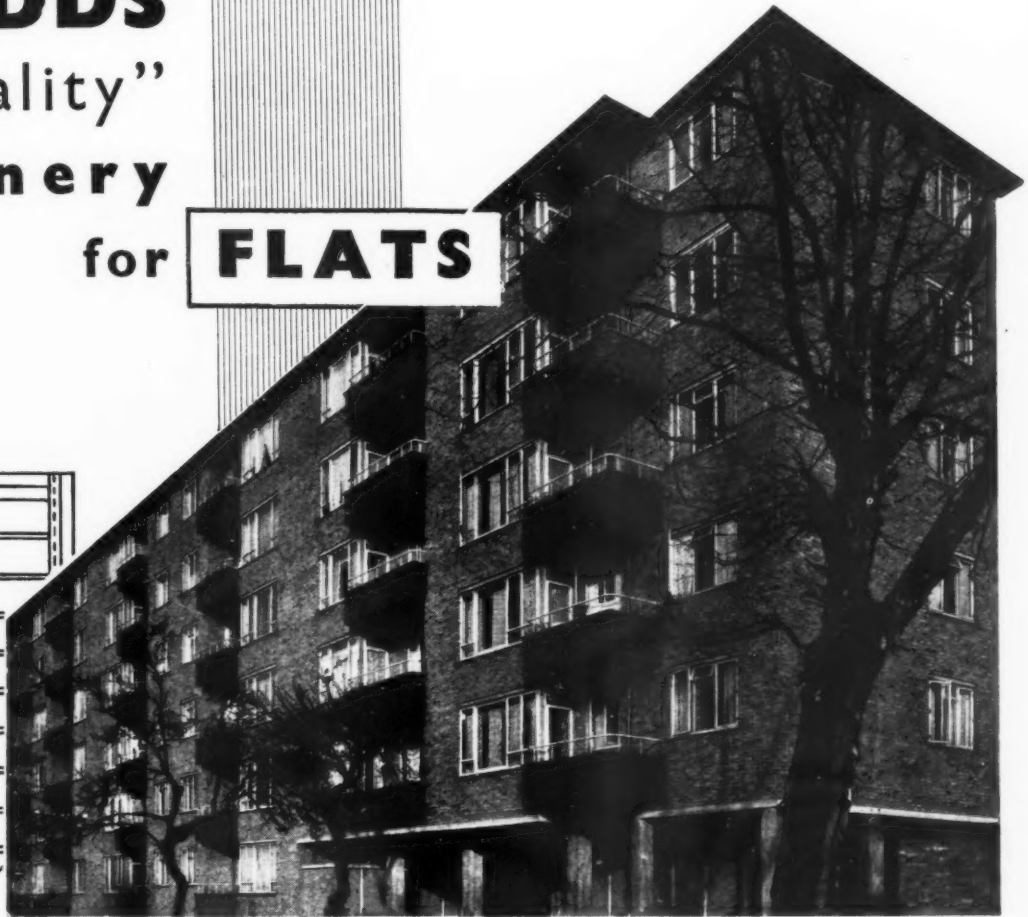
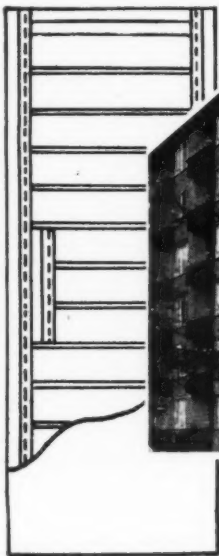
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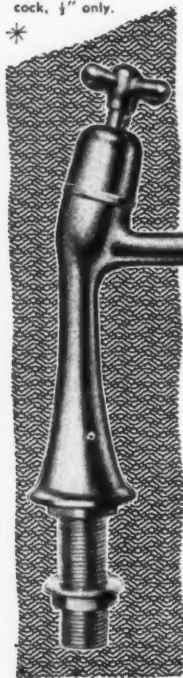
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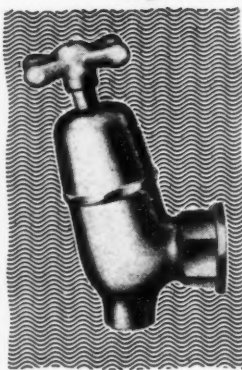
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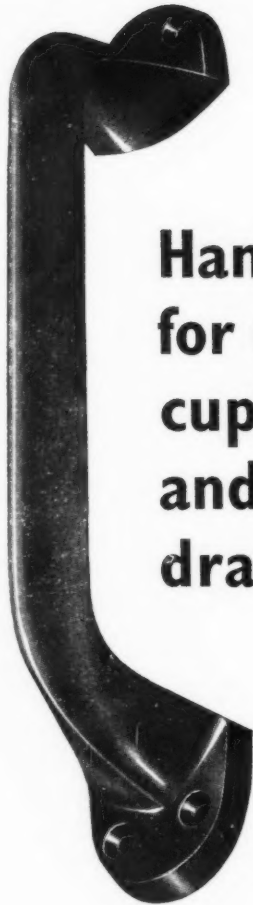
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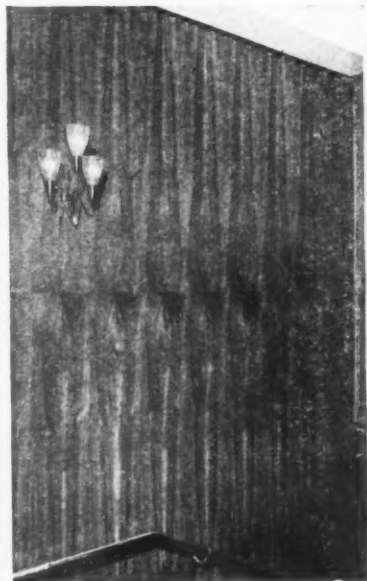
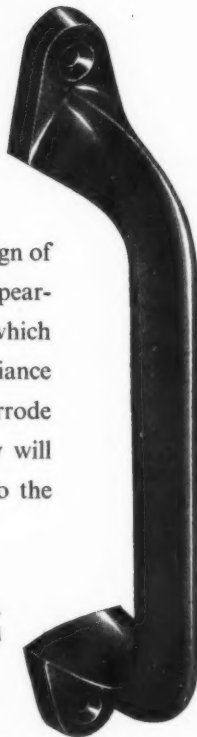


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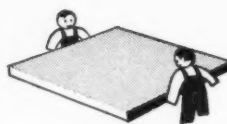
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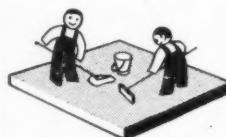
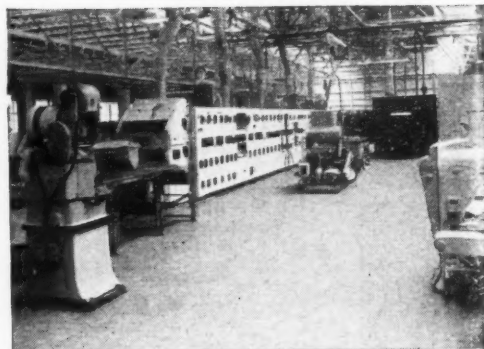
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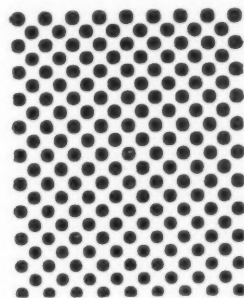
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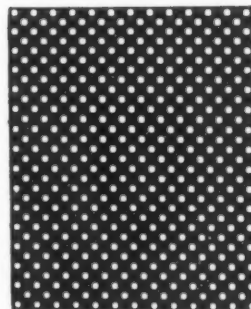
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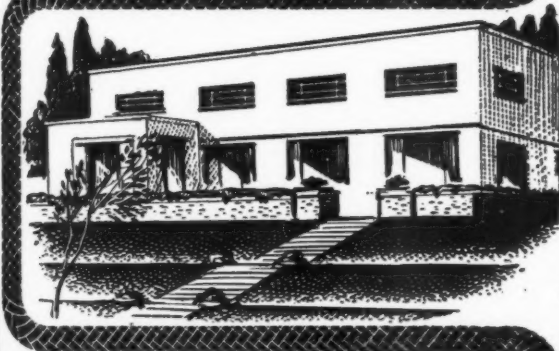
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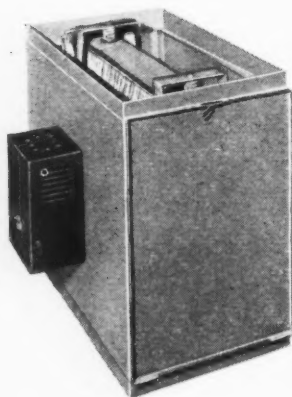
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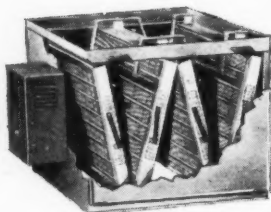
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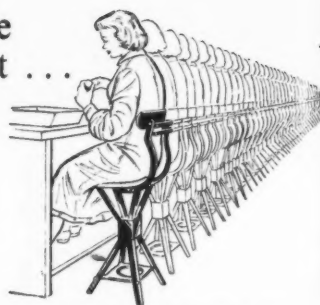
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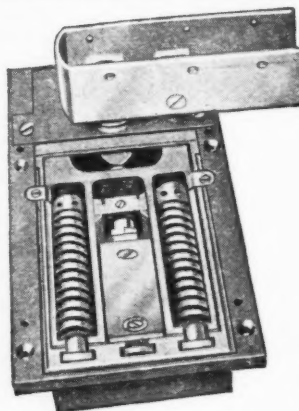
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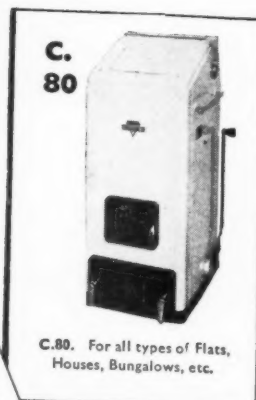
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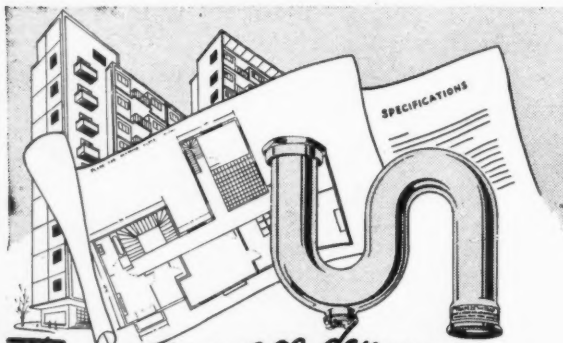


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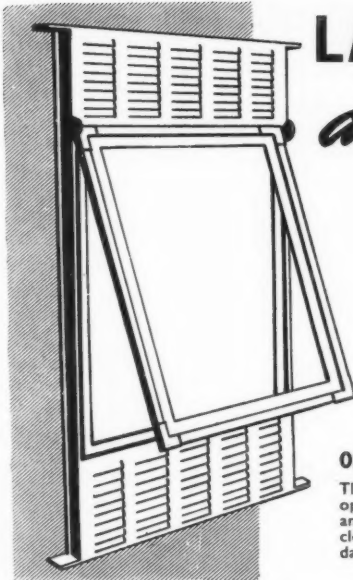
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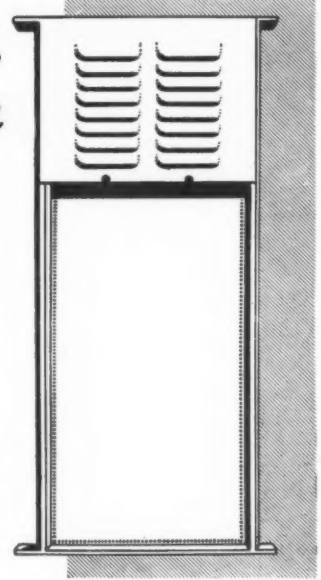
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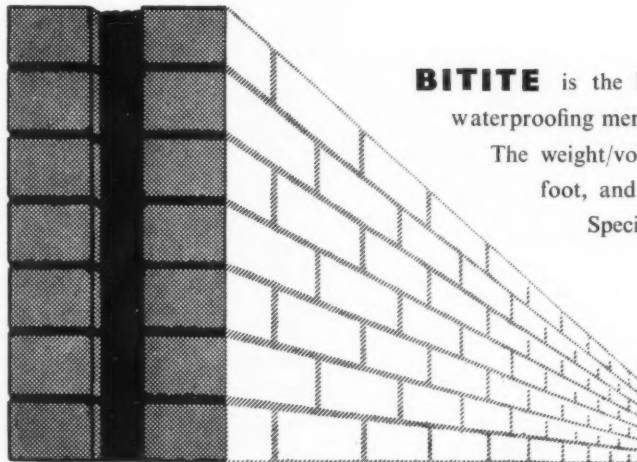
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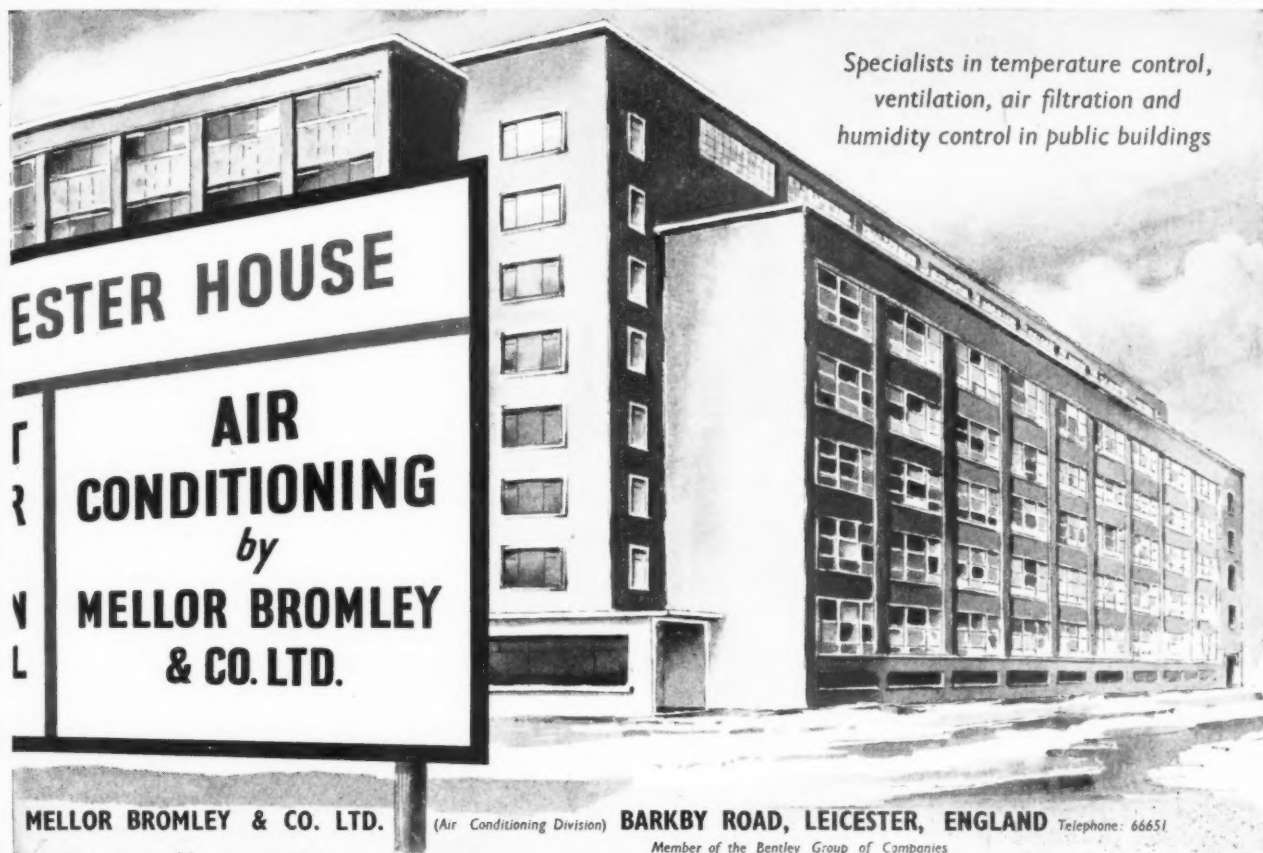
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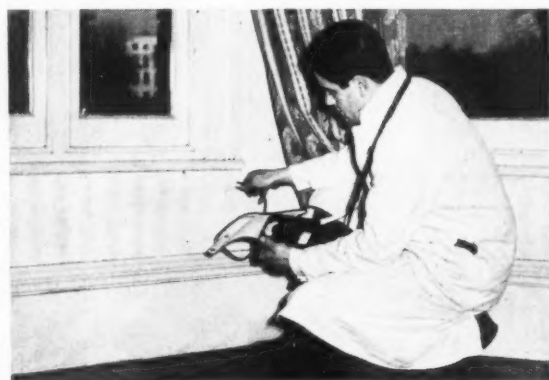


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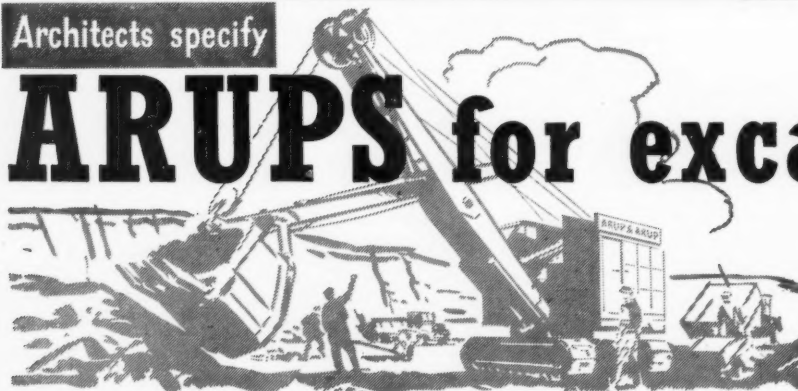
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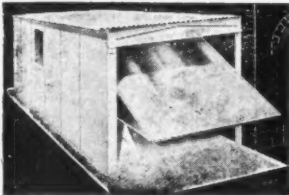
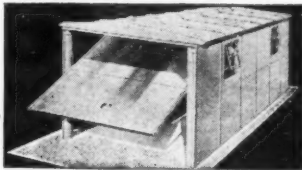
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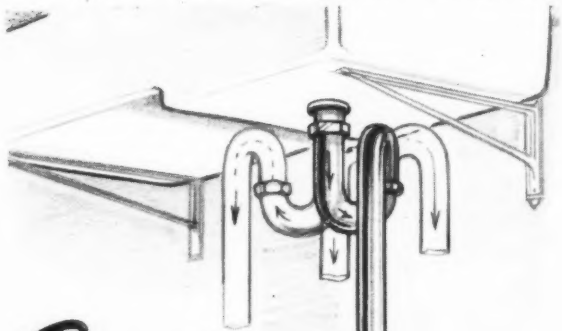
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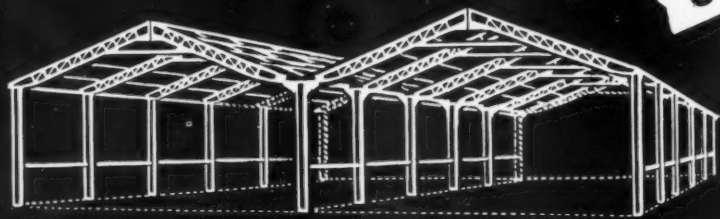
2 STRONGER
than other steel sections
of equal weight

3 EASILY ERECTED AND ASSEMBLED on
account of light weight and special Salopian design

4 INCREASED HEADROOM AND GREATER STORAGE CAPACITY ensured by high level tie beam

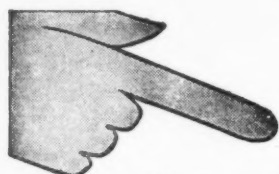
5 LOWER MAINTENANCE COST in paint
and labour due to reduced surface area

6 STANDARD SPANS of 18ft., 27ft. 6ins., 34ft.,
40 ft., 50 ft., and 60 ft. readily available



Where additional accommodation is required quickly for offices, factories, canteens, schools, pavilions, etc. — Salopian Tubular Framed Buildings and Roof Structures can meet any specific requirement. Illustrated literature describing the wide adaptability of this medium is available on request — may we send you a copy ?

SALOPIAN ENGINEERS LIMITED (Constructional Engineering Division), PREES, WHITCHURCH, SHROPSHIRE. Telephone: PREES 331-4



Facts about



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What it is: PLASTAWELD is a non-toxic fluid used straight from the can. Does **NOT** require stippling or blinding with sand.



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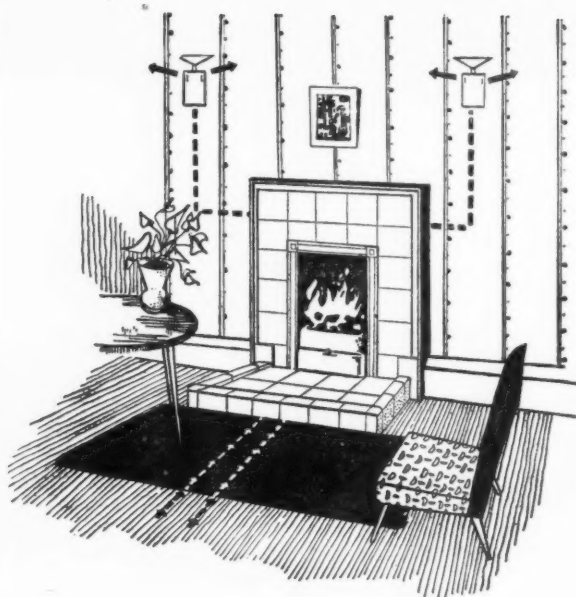
How we can help: Our technical department is at your service to assist in particular problems.

Technical Representatives are ready to call on you or visit your sites.

Telephone Clissold 5307 (4 lines) or write to Dept. A. J.

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With Dunn's AIRDUN Convecting Fire you have the best of two systems of heating. Primarily, you have all the advantages of the traditional open fire—including radiant heating and economy control. In addition to this, you have a continuous flow of warm convected air entering the room from grilles situated in the wall or fireplace. (In the example illustrated the grilles are concealed behind light fittings in the wall). The AIRDUN Convecting Fire has several applications and is especially suited for heating other parts of the house from the one fire.

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CLASSIFIED ADVERTISEMENTS

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

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

Public and Official Announcements

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

HAYES AND HARINGTON URBAN DISTRICT COUNCIL

Applications are invited for:—
(a) ARCHITECTURAL ASSISTANTS (PERMANENT) (two vacancies) within Grade A.P.T. II, i.e., £595-£675 per annum. (b) SENIOR ARCHITECTURAL ASSISTANT (TEMPORARY) within Grade A.P.T. IV, i.e., £710-£885 per annum, plus London weighting, in each instance, 21-25 years £20 per annum, 26 years and over £30 per annum. Candidates for (a) must have passed the R.I.B.A. Inter. Exam. good experience of housing work with local authority. Housing accommodation will be made available for one of these two appointments if necessary. (b) Must be a Registered Architect, have good general experience in design and construction in relation to municipal housing and other works, and capable of supervising large building contracts. Housing accommodation will be made available if necessary. 5-day week. Further particulars and form of application obtainable from the undersigned, which, when completed, must be returned as soon as possible.

GEORGE HOOPER,

Clerk and Solicitor.

Town Hall, Hayes, Middlesex.

1277

METROPOLITAN BOROUGH OF BERMONDSEY

BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT

CHIEF ARCHITECTURAL ASSISTANT

Applications are invited from persons under 45 years of age for the position of Chief Architectural Assistant, to take charge of the Architectural Section of the Borough Engineer and Surveyor's Department.

Salary will be in accordance with Scale A of the Joint Negotiating Committee for Chief Officers, commencing at an incremental point according to experience.

Candidates must be A.R.I.B.A., with considerable office experience, particularly of multi-storey housing projects. They must be capable of organising and supervising the work of the Architectural Section, and should have a contemporary approach to Architecture.

Applications on the appropriate form obtainable from the undersigned, must be returned not later than 18th July, 1956.

S. E. FREEMAN,

Town Clerk.

Municipal Offices, Spa Road, S.E.16.

1611

URBAN DISTRICT COUNCIL OF CORBY JUNIOR ARCHITECTURAL ASSISTANT.

GRADE A.P.T. I (£530-£610)

Applications are invited for the above appointment in the Architectural Section of the Engineer and Surveyor's Department.

Applicants must have passed the R.I.B.A. Intermediate Examination or its equivalent at one of the recognised schools of architecture, and preference will be given to those who have had practical office experience in housing and general architecture.

The provisions of the Local Government Superannuation Acts, 1937/53, will apply to this appointment.

Housing accommodation will be made available to the successful candidate if married.

Forms of application may be obtained from the undersigned, to whom they should be returned not later than the first post on Saturday, 14th July, 1956. Testimonials will be required only from applicants selected for interview.

G. B. BLACKALL,

Clerk of the Council.

Council Offices, Corby, Northants.

1566

AYCLIFFE DEVELOPMENT CORPORATION CHIEF ARCHITECT'S DEPARTMENT

Applications are invited for the following appointments:

(i) ARCHITECTURAL ASSISTANT, A.P.T. IV (£710 × £35-£885).

(ii) QUANTITY SURVEYING ASSISTANT, A.P.T. IV (£710 × £35-£885).

Applicants for (i) should be associate members of the R.I.B.A. and have had at least three years' varied experience.

Applicants for (ii) should be up to final standard of the R.I.C.S. with experience in the preparation of bills of quantities, estimates and the settlement of final accounts.

Appointments subject to N.J.C. conditions superannuation and medical examination.

Housing accommodation provided if necessary. Applications stating age, qualifications and experience together with names of two referees to arrive not later than 21st July, 1956.

A. W. WILLIAMS,

General Manager

Newton Aycliffe,

nr. Darlington,

Co. Durham.

1637

BOROUGH OF HESTON AND ISLEWORTH APPOINTMENT OF (a) SENIOR ARCHITECTURAL ASSISTANT, A.P.T. IV, and (b) ARCHITECTURAL ASSISTANT, A.P.T. II

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

Appointment (a): Salary in accordance with A.P.T. Grade IV (£710 × £35-£885, plus London "weighting," per annum).

Applicants must have had good experience in architectural design and building work under construction. Other things being equal, preference will be given to applicants who have passed the examination for the Associateship R.I.B.A., or hold a University degree or diploma in architecture accepted by that Institute.

Appointment (b): Salary in accordance with A.P.T. Grade II (£595 × £20-£675, plus London "weighting," per annum).

Applicants should have passed the R.I.B.A. Intermediate Examination and have had one year's office experience.

Applications, on forms to be obtained from the Borough Engineer and Surveyor, 88, Lampton Road, Hounslow, Middlesex, must be returned to him not later than noon on 23rd July, 1956, appropriately endorsed.

D. MATHIESON,

Town Clerk.

Town Hall, Hounslow.

1563

COUNTY COUNCIL OF ESSEX COUNTY PLANNING DEPARTMENT

Applications are invited for the post of AREA PLANNING OFFICER, J.N.C. Scale "C" (£1,295-£1,515), in the East Central Area Office at Chelmsford.

Candidates must be Corporate Members of the Town Planning Institute, and should possess an additional recognised professional qualification. They should have had considerable and wide experience in the planning of both Urban and Rural areas, and be experienced in the administration of an office and the control of staff.

Application forms from County Planning Adviser, Bloomfield Place, Bloomfield, Chelmsford, returnable by 21st July, 1956.

Canvassing disqualifies.

1608

CITY AND COUNTY OF NEWCASTLE UPON TYNE

CITY ARCHITECT'S DEPARTMENT

The City Architect will be pleased to receive applications for the following Architectural vacancies:—

(a) SENIOR ASSISTANT ARCHITECT, A.P.T. Division, Grade V (£795-£970), General, Housing or Education Sections.

(b) SENIOR ASSISTANT ARCHITECT, A.P.T. Division, Grade IV (£710-£885), General, Housing or Re-housing Sections.

(c) ASSISTANT ARCHITECT, A.P.T. Division, Grade III (£640-£765), Housing or Re-housing Sections.

(d) ASSISTANT ARCHITECT, A.P.T. Division, Grade II (£595-£675), Housing Section.

(e) ARCHITECTURAL ASSISTANT, A.P.T. Division, Grade I (£530-£610), General or Housing Sections.

Candidates for the Senior posts must be fully qualified Members of the Royal Institute of British Architects by examination, and preference will be given to those trained at a recognised School of Architecture. Candidates should possess a lively and creative approach to architectural design, combined with sound practical experience appropriate to the responsibility of the post they apply for.

The above are all established posts, and will be subject to the provisions of the Local Government Superannuation Acts, 1937-1953, and to one month's notice on either side. Successful candidates will be required to pass a medical examination.

Applications, stating position applied for, age, particulars of training, qualifications, experience, present and past appointments, together with copies of two recent testimonials or the names and addresses of two persons to whom reference may be made, should be addressed to George Kenyon, Esq., A.R.I.B.A., A.M.T.P.I., City Architect, 18, Cloth Market, Newcastle upon Tyne, 1, to arrive not later than Thursday, 19th July, 1956.

JOHN ATKINSON,

Town Clerk.

Town Hall, Newcastle upon Tyne, 1.

1594

CITY OF CANTERBURY

Applications are invited for the permanent appointment of a SENIOR ASSISTANT ARCHITECT, Grade A.P.T. V (£795-£970).

Candidates must be Associates of the R.I.B.A., be competent designers with a contemporary outlook and should have some experience of housing, including redevelopment.

The successful candidate will be in charge of the housing section of the Department and in addition to normal housing work, will be engaged on redevelopment schemes.

The commencing salary will be fixed within the Grade according to ability and experience.

Housing accommodation will be made available if required.

Applications together with names of two referees must reach the City Architect and Planning Officer, Mr. L. Hugh Wilson, O.B.E., A.R.I.B.A., A.M.T.P.I., not later than Friday, 27th July, 1956.

Canvassing will disqualify.

J. ROYLE,

Town Clerk.

Municipal Buildings,

Canterbury.

1681

THE ARCHITECTURAL ASSOCIATION SCHOOL OF ARCHITECTURE DEPARTMENT OF TROPICAL ARCHITECTURE

Session September 24th, 1956-March 22nd, 1957. Applications are invited from post-graduate students of architecture and qualified architects with interests in building in the tropics for the next six-month full-time course in Tropical Architecture. Full details can be obtained from the A.A. School.

The fee for the course is £100. Studentships for the amounts shown have been donated by the following firms:

The Yorkshire Copper Works, Ltd., 2 studentships each of £50.

Messrs. John Laing & Son, Ltd., 2 studentships each of £50.

Messrs. Crittalls, Ltd., 1 studentship of £50.

Messrs. International Paints, Ltd., 1 studentship of £40.

Applicants for studentships should apply by letter to the Principal before Tuesday, July 31st, 1956.

1652

BEDFORDSHIRE COUNTY COUNCIL ASSISTANT QUANTITY SURVEYOR

Applications are invited for the post of Assistant Quantity Surveyor, Grade IV (£710-£885). Commencing salary will be at any point within the scale, dependent upon candidates' qualifications and experience. Preference given to Members of the R.I.C.S. Candidates must have had experience in taking off quantities for all types of buildings, measurement of work on site, valuations for interim certificates, etc. Application forms from County Architect, Shire Hall, Bedford, to be returned by 27th July, 1956.

1609

COUNTY BOROUGH OF SOUTHEND-ON-SEA SENIOR ASSISTANT QUANTITY SURVEYOR IN BOROUGH ARCHITECT'S DEPARTMENT

Applications are invited for this appointment Salary Grade A.P.T. VI (£880 × £40-£1,080).

Candidates must be Corporate Members of the Royal Institute of Chartered Surveyors (Quantity Surveyors) and have had a wide experience in large scale Local Authority Housing, Schools and other Municipal projects. Medical examination.

Applications stating age, qualifications and experience, with the names of two referees, should be submitted to the Borough Architect, 30, Alexandra Street, Southend-on-Sea, by Friday, 20th July, 1956.

Canvassing will disqualify. Relationship with any member or officer of the Council must be disclosed.

ARCHIBALD GLEN,

Town Clerk.

1633

THE ARCHITECTURAL ASSOCIATION SCHOOL OF ARCHITECTURE DEPARTMENT OF TROPICAL ARCHITECTURE

The Council of the A.A. invite applications for the post of Director of the Department of Tropical Architecture. The appointment becomes vacant in September 1957. Candidate appointed will be asked to assist on a part-time basis under the present Director for the coming session from September 24th, 1956, to March 22nd, 1957. Salary as Director £1,100; as assistant for 1956/57 session by arrangement. Full particulars may be obtained from the Secretary, A.A., 36, Bedford Square, W.C.1, to whom applications should be sent not later than August 27th.

1683

COUNTY BOROUGH OF SOUTHAMPTON BOROUGH ARCHITECT'S DEPARTMENT

Applications are invited for the following permanent appointments:—

(a) SENIOR ASSISTANT PLANNING OFFICER; Grade A.P.T. IV (£710-£885) or Grade A.P.T. V (£795-£970) according to experience.

Applicants should be members of the Town Planning Institute and preferably hold a qualification in landscape architecture. Duties offer considerable scope for preparing and executing schemes of urban landscaping in addition to normal planning work.

(b) PLANNING ASSISTANT, Grade A.P.T. II (£595-£675).

(c) PLANNING ASSISTANT, Grade A.P.T. I (£530-£610).

Applicants should state their housing needs. Application forms from the Borough Architect, Civic Centre, Southampton. Closing date 28th July, 1956.

1684

NORTHAMPTON BOROUGH

(a) TOWN PLANNING ASSISTANT, A.P.T. III (£640-£765).

(b) TOWN PLANNING DRAUGHTSMAN (HIGHER GENERAL DIVISION).

Applications stating age, experience, qualifications and appointments, with names of two referees, should reach the Borough Architect and Town Planning Officer, Guildhall, Northampton, by 23rd July.

C. E. VIVIAN ROWE,

Town Clerk.

1693

NORTHAMPTON BOROUGH ASSISTANT ARCHITECT (HOUSING) A.P.T. IV (£710-£885) or Special Grade (£690-£840).

according to qualifications and experience. Applications stating age, experience, qualifications and appointments, with names of two referees, should reach the Borough Architect, Guildhall, Northampton, by 23rd July.

C. E. VIVIAN ROWE,

Town Clerk.

1694

**CITY OF LEEDS
CITY ARCHITECT'S DEPARTMENT**

Applications are invited for the following appointments:—

(a) ASSISTANT ARCHITECT, Grade A.P.T. IV, Salary Scale £710-£885.

Preference will be given to candidates who have had experience in the conversion and adaptation of buildings into flats and maisonettes or for other purposes.

(b) ASSISTANT ARCHITECTS, A.P.T. III, £640-£765.

(c) ARCHITECTURAL ASSISTANTS, A.P.T. II, £595-£675.

In the case of post (c) preference will be given to candidates who have had experience in the design of furniture, kitchen, laboratory, etc., equipment for schools.

(d) ARCHITECTURAL ASSISTANTS, A.P.T. I, £530-£610.

(e) ASSISTANT HEATING AND VENTILATING ENGINEER, A.P.T. III, £640-£765.

(f) ASSISTANT SURVEYORS (LAND), A.P.T. IV, £710-£885.

Preference will be given to applicants who have had some Town Planning experience.

(g) ASSISTANT SURVEYORS (LAND), A.P.T. II, £595-£675.

(h) ASSISTANT SURVEYOR (Improvement Areas), A.P.T. I, £530-£610.

In the case of post (h) preference will be given to candidates who have had experience in surveying and measuring up of buildings.

(i) SENIOR ASSISTANT QUANTITY SURVEYOR, A.P.T. VI, £880-£1,080.

The officer appointed will be next in seniority to the Chief Quantity Surveyor. Duties will include the preparation of Bills of Quantities for Schools, Public Buildings and other major works.

(j) ASSISTANT QUANTITY SURVEYORS, A.P.T. IV, £710-£885.

Applicants should be experienced in taking off the preparation of estimates, and the valuation of work in progress.

(k) ASSISTANT QUANTITY SURVEYORS, A.P.T. II, £595-£675.

Applicants should be experienced in working up dimensions and measurement of work on site. The payment of salary increments will be subject to satisfactory service and will be granted normally with effect from the 1st April following the completion of six months' service.

The appointments are subject to the Local Government Superannuation Acts 1937-1953 and the successful applicants will be required to pass a medical examination.

Application forms may be obtained from the City Architect, Priestley House, Quarry Hill, Leeds, 9, to whom they should be returned together with copies of three recent testimonials by 12 noon on Saturday, 21st July, 1956. Applicants should clearly indicate for which post they wish to be considered.

Canvassing in any form, either directly or indirectly, will be a disqualification.

R. A. H. LIVETT, O.B.E., A.R.I.B.A.,
City Architect.

Priestley House,
Quarry Hill,
Leeds, 9,
29th June, 1956.

**THE CORPORATION OF GLASGOW
ARCHITECTURAL AND PLANNING
DEPARTMENT**

ASSISTANT ARCHITECTS
PLANNING ASSISTANTS
CIVIL ENGINEERS
QUANTITY SURVEYORS

Vacancies exist for a number of assistants. Minimum qualification, Intermediate Examination of the appropriate professional body. Salary scale £580-£1,100 per annum, with placing according to age, experience and qualifications.

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

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

**STAFFORDSHIRE COUNTY COUNCIL
EDUCATION ARCHITECT'S DEPARTMENT**

Applications are invited for the following:—
ASSISTANT ARCHITECTS, Grade A.P.T. V (£795-£970 p.a.).

ASSISTANT ARCHITECTS, Grade A.P.T. IV (£710-£885 p.a.).

Applicants must be Associate R.I.B.A., and have had at least five years' experience including the period spent on theoretical training. For grade V appointment two years' practical experience is also required.

ARCHITECTURAL ASSISTANTS, Grade A.P.T. II (£595-£675 p.a.).

Applicants must have passed the R.I.B.A. Intermediate Examination or its equivalent at a recognised School of Architecture and have worked in an Architect's office for a minimum period of three years.

ARCHITECTURAL ASSISTANTS, Grade A.P.T. I (£530-£610 p.a.).

Applicants must have passed the R.I.B.A. Intermediate Examination or its equivalent, and have worked for a minimum period of one year in an Architect's Office.

Forms of application from the County Education Architect, Green Hall, Lichfield Road, Stafford; to be completed and returned by the 24th July, 1956.

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

**CITY OF LEICESTER
EDUCATION COMMITTEE**

COLLEGE OF ART

Principal: K. HOLMES, O.B.E., A.R.C.A.
STUDIO MASTER IN THE SCHOOL OF ARCHITECTURE

Applications are invited from graduates or holders of a diploma of a recognised School of Architecture for a post of Studio Master in the School of Architecture. Salary in accordance with the Lecturers' Grade of the Burnham Technical Scale.

Applications (no forms) giving details of age, training, qualifications and experience and the names of three referees, should be sent to the Registrar, College of Art, Leicester, within 14 days of the appearance of this advertisement.

ELFED THOMAS,
Director of Education.

**BOROUGH OF WEMBLEY
TOWN PLANNING ASSISTANT**

Applications are invited for the above appointment from persons who have passed a Professional Examination for Corporate Membership of one of the Institutions appropriate to practising Town Planners and who have had practical experience in town planning administration. Commencing salary according to experience, within £740-£915 p.a. inc. Applications, disclosing any relationship to a Member or Senior Officer of the Council, giving the names and addresses of three referees and quoting Reference 'C.' must reach the Borough Engineer and Surveyor, Town Hall, Wembley, by the 28th July 1956. Canvassing disqualifies. Housing accommodation not provided.

**WEST SUFFOLK COUNTY COUNCIL
COUNTY PLANNING DEPARTMENT
APPOINTMENT OF AREA PLANNING OFFICER**

Applications are invited for the appointment of Area Planning Officer for the Bury St. Edmunds Area. Salary within A.P.T. Grade V of the National Scales, £795-£970 per annum. Applicants must have passed the Final Examination of the Town Planning Institute or hold a Diploma of a recognised school. An additional qualification in municipal engineering, architecture or surveying would be an advantage. N.J.C. service conditions; car allowance; post pensionable; medical examination.

Application forms obtainable from J. M. Gorst, M.T.P.I., A.M.I.Mun.E., County Planning Officer, Shire Hall, Bury St. Edmunds, to be returned by 31st July, 1956.

ALAN F. SKINNER,
Clerk of the County Council.

**CITY OF STOKE-ON-TRENT
CITY ARCHITECT'S DEPARTMENT**

Vacancies for QUANTITY SURVEYORS on the permanent staff on Grade A.P.T. IV, £710-£885, A.P.T. III, £640-£765, and A.P.T. II, £595-£765 capable of taking-off and/or settlement of accounts.

Previous Local Government Service not essential.

Housing accommodation can be made available to suitable applicants.

Applications stating date of birth and giving full details of qualifications, training and experience to J. R. Pigott, T.D., F.R.I.B.A., City Architect, Kingsway, Stoke-on-Trent by Friday, 20th July, 1956.

HARRY TAYLOR,
Town Clerk.

**COUNTY OF CUMBERLAND
EDUCATION COMMITTEE**

Applications are invited for the temporary appointment of TWO CLERKS OF WORKS to supervise the erection of CLEAVER MOOR NEW COUNTY SECONDARY SCHOOL and COCKERMOUTH NEW SECONDARY MODERN SCHOOL.

The wage will be £12 15s. per week, plus £2 5s. per week subsistence. Applicants must have had good practical knowledge of all trades, and must have supervised the erection of public buildings, including steel framed and traditional buildings; and should be able to measure up work.

Particulars and forms of application may be obtained from John H. Haughan, F.R.I.B.A., County Architect, 15, Portland Square, Carlisle, to whom completed applications should be returned not later than Monday, 30th July, 1956.

G. N. C. SMITH,
Clerk of the County Council.

SURREY COUNTY COUNCIL

Applications invited for following appointments:—

1. SENIOR ASSISTANT QUANTITY SURVEYOR, Grade VI, £880 × £40-£1,080 p.a., plus £39 London Allowance. Must be Chartered Quantity Surveyor with experience of quantity surveying on major contracts, including adjustment of final accounts and directing staff.

2. ASSISTANT QUANTITY SURVEYOR, Grade IV-VI, minimum £710, maximum £1,080 plus £30 L.A. p.a.

3. ARCHITECTURAL ASSISTANT, Grade I-III, minimum £530, maximum £765 p.a. plus L.A.

For 2 and 3 salary range of appointment and commencing salary will depend on experience and qualifications.

Full details, present salary and three copy testimonials to County Architect, County Hall, Kingston, as soon as possible.

**COUNTY BOROUGH OF CROYDON
ARCHITECTURAL STAFF**

Applications are invited for appointments to the established staff as:

ARCHITECTURAL ASSISTANTS to work under Section Leaders. Commencing salary according to experience, and qualifications, progressing by annual increments of up to £45 p.a. to a maximum of £870 per annum.

If necessary the Corporation will endeavour to assist with living accommodation for which a full economic rent will be charged.

For particulars and application form write to The Borough Engineer, Town Hall, Croydon. Closing date 28th July, 1956.

COUNTY BOROUGH OF STOCKPORT
ASSISTANT ARCHITECTS required for large scale building programme, A.P.T. IV (£710-£885) commencing salary according to qualifications and experience. Full particulars, age, experience, two referees, to Borough Architect, Town Hall, Stockport, by 21st July, 1956, quoting reference A.A.6.

Post pensionable, subject to medical examinations. Canvassing or disqualifies. Applicants must disclose whether related to any member or senior officer of the Council. The Corporation do not provide housing accommodation for members of the staff.

**CITY OF WAKEFIELD
CITY ENGINEER'S DEPARTMENT
APPOINTMENT OF ARCHITECTURAL ASSISTANT**

Applications are invited for the above superannuable post on Grade A.P.T. I (£530 × £20-£610).

Candidates must have had some form of Architectural training and preference will be given to those with Municipal experience.

Applications stating age, qualifications and experience together with the names of two referees should be received by the City Engineer, Town Hall, Wakefield, not later than the 30th July, 1956.

COUNTY COUNCIL OF THE WEST RIDING

APPOINTMENT OF COUNTY ARCHITECT

Applications are invited from Fellows or Associate Members of the Royal Institute of British Architects for the post of COUNTY ARCHITECT at a salary of £3,285 rising by three annual increments of £105 and one of £55 until a maximum of £3,655 per annum is reached. The appointment will be subject to the provisions of the Local Government Superannuation Acts, 1937-1953, and the successful applicant will be required to pass a medical examination.

The person appointed will be required to carry out all architectural duties (including the design and construction of buildings) that may be assigned to him from time to time by the County Council and the Standing Joint Committee. Forms of application, together with particulars of the terms and conditions of the appointment, may be obtained from the undersigned, to whom applications should be submitted, together with copies of three recent testimonials, not later than 31st August, 1956.

BERNARD KENYON,
Clerk of the County Council.

County Hall,
Wakefield,
July, 1956.

**SKEGNESS URBAN DISTRICT COUNCIL
ARCHITECTURAL ASSISTANT**

Applications are invited from suitably qualified persons for the appointment of Architectural Assistant in the Engineer and Surveyor's Department, within the salary scale £690 × £30-£840 per annum.

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

Applicants should have had experience in the preparation of plans designs, details, specifications, etc., for the architectural work undertaken by an Urban Authority.

A flat on a service tenancy is available for the successful candidate, if required.

Applications, suitably endorsed, together with names and addresses of two referees, to be delivered to the undersigned not later than 21st July, 1956. Candidates should disclose whether they are related to any member or officer of the Council.

IVOR M. CULE,
Clerk to the Council.

Town Hall,
Skegness,
2nd July, 1956.

**NATIONAL COAL BOARD
NORTH EASTERN DIVISION**

Applications are invited for the following appointments in the office of the Divisional Chief Architect situated at Conisborough, near Doncaster:—

QUANTITY SURVEYOR, Grade II.

Salary Scale, £700 × £30-£1,000 per annum.

Qualifications: A.R.I.C.S.

ARCHITECTURAL ASSISTANTS, Grade II.

Salary Scale, £520 × £20-£615 per annum.

Qualifications: Preferably Intermediate R.I.B.A. or studying for such Examination.

JUNIOR ARCHITECTURAL ASSISTANTS.

Salary Scale: according to age. £4 5s. per week at 18 to £8 15s. per week at 25.

Full details and application forms obtainable from Hugh Smith, F.R.I.B.A., Deputy Chief Architect, National Coal Board, P.O. Box No. 4, Denaby, near Doncaster.

PADDINGTON BOROUGH COUNCIL
JUNIOR to train as QUANTITY SURVEYOR'S ASSISTANT. Salary within scale £235 to £530; then (subject to efficiency certificate) £555 to £605; and subject to a further certificate, £630 to £670. Candidates should possess G.C.E. (3 ordinary passes). The post affords an opportunity and experience for candidates studying for Quantity Surveying Professional Examinations. National Conditions of Service. Superannuation. Write age, experience, education, and names and addresses of two referees to the under-signed by 28th July, 1956 (Quoting A.293).

W. H. BENTLEY,
 Town Clerk.

Town Hall,
 Paddington Green, W.2. 1686

GLAMORGAN COUNTY COUNCIL
 Require SENIOR PLANNING ASSISTANTS. Grade A.P.T. IV (£710-£885 p.a.). Candidates must be members of an appropriate professional institute, and preference will be given to Corporate Members of the Town Planning Institute or those who hold a University Degree in Town Planning.
 Applicants, stating age, training, qualifications, experience and present salary, with two testimonials, to the County Planning Officer, County Hall, Cardiff. Closing date 14th July, 1956.

RICHARD JOHN,
 Clerk of the County Council. 1688

ROYAL BURGH OF ARBROATH
HOUSING ARCHITECT'S DEPARTMENT
 Applications are invited for the appointment of JUNIOR ARCHITECTURAL ASSISTANT in the above Department at a salary of £550-£595 (A.P.T. Grade I).

Applicants should have had experience in Municipal Housing Work and all applications, together with two copies of recent testimonials, should be lodged with W.R. Samson, A.R.I.B.A., Housing Architect, 32, Hill Street, Arbroath, not later than Saturday, 28th July, 1956.

WILLIAM D. SMITH,
 Town Clerk.

Town House,
 Arbroath,
 Angus. 1669
 July, 1956.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD

ASSISTANT QUANTITY SURVEYOR required. Applicants should be Associate members of the R.I.C.S. and be thoroughly experienced in taking-off, abstracting and billing of quantities, measurement of work in progress and settlement of final accounts.

Salary scale: £640 × £25(4) × £30(4) × £35(2) -£930 plus £20-£40 London weighting. Salary above minimum may be paid according to appropriate experience since obtaining qualification.

Applications, stating age, qualifications (with dates) and experience, together with names of two referees to Secretary, North West Metropolitan Regional Hospital Board, 11a, Portland Place, W.1, by 15th August. 1698

NEWTON-LE-WILLOWS URBAN DISTRICT COUNCIL

APPOINTMENT OF ARCHITECTURAL ASSISTANT

Applications are invited for the above-mentioned appointment at a salary in accordance with A.P.T. III. The National Scheme of Conditions of Service and the Local Government Superannuation Acts will apply. Housing accommodation available if required.

Preference will be given to applicants who have had experience in municipal housing.

Applications stating age, qualifications and experience, together with the names of two referees to be received by the Clerk of the Council, Town Hall, Market Street, Newton-le-Willocks, Lancashire, not later than 28th July, 1956. 1678

WESTMORLAND COUNTY COUNCIL

Applications are invited for the post of COUNTY ARCHITECT and COUNTY PLANNING OFFICER. The salary scale is £1,735 × £55-£1,955, the starting salary to be according to experience and qualifications. The appointment is subject to the Conditions of Service of the Negotiating Committee for Chief Officers. The post will include duties on behalf of the Lake District Planning Board. Full particulars may be obtained from me and applications on the official form must reach me by 27th July, 1956.

K. S. HIMSWORTH,
 Clerk of the Council.

County Hall,
 Kendal. 1708

KENT COUNTY COUNCIL

SURVEYING ASSISTANTS are required for work in connection with acquisition of land and property for the Council's large and varied building programme.

Applicants must have had sound practical experience of the surveying of land and buildings and be familiar with current legislation relating to the acquisition of land.

Salary within scales (a) £530-£610, (b) £595-£675 or (c) £590-£640 according to qualifications and experience. Candidates for (b) must have passed the Intermediate R.I.C.S. and for (c) the Final R.I.C.S. examination or possess similar qualifications.

Application forms from the County Architect, Springfield, Maidstone. Closing date 30th July, 1956. 1710

METROPOLITAN BOROUGH OF CAMBERWELL ASSISTANT ARCHITECTS

There are vacancies for Assistant Architects in the Borough Architect's Department in Grades A.P.T. III or IV or V, salary range £670/£1,000 inclusive of £30 London weighting. The grade and commencing salary will be according to qualifications and experience. Qualification A.R.I.B.A. The work of the department includes design and construction of public buildings, housing estates, including multi-storey construction. Application form from Town Clerk, Town Hall, S.E.5. Closing date, Thursday, 19th July, 1956. 1648

HATFIELD RURAL DISTRICT COUNCIL

ARCHITECT'S DEPARTMENT

APPOINTMENT OF JUNIOR ARCHITECTURAL ASSISTANT

Applications are invited for the appointment of Junior Architectural Assistant (A.P.T. Grade I, £530 × £20-£510) in the Department of the Architect to the Council.

Application giving age, details of training experience, etc., and copies of two recent testimonials or the names of two referees to be sent to Mr. J. H. Parker, A.R.I.B.A., 82, Great North Road, Hatfield, not later than 27th July, 1956.

E. F. CULL,
 Clerk to the Council. 1677

5th July, 1956.

CITY OF BELFAST

APPOINTMENT OF DEPUTY EDUCATION ARCHITECT AND HEATING ENGINEER

Applications are invited for the following positions on the staff of the Education Architect (Donald A. Shanks, Dipl.Arch., A.R.I.B.A.):—

DEPUTY EDUCATION ARCHITECT
 Qualifications: Registered Architect and corporate membership by examination of the R.I.B.A. Ability and interest in contemporary architectural design and construction. A sound knowledge of modern educational buildings. Administrative and Local Government experience desirable but not essential. Salary scale which may be reviewed shortly: £1,105 × £50-£1,355.

HEATING ENGINEER
 Qualifications: Corporate membership of the Institution of Heating and Ventilating Engineers. Wide experience in the design and supervision of all types of heating, plumbing and ventilation services, including large scale cooking installations. Duties: Supervision of the engineering section engaged on the design and new work and the maintenance of existing plant. Salary scale: £855 × £35-£1,100.

The commencing salary for both positions will be fixed according to the qualifications, ability and experience of the successful applicants. Superannuation contributions of approximately 5 per cent. of remuneration will be payable. Reciprocal pension arrangements exist between the Corporation and other Public Authorities. Favourable consideration will be given in suitable cases to the recruitment, up to a limit of 50 per cent., of removal expenses of newly appointed officers, coming to reside in Belfast.

Canvassing will be disallowed.

Application forms and further particulars are obtainable from the Education Office, Academy Street, Belfast. Completed applications must reach the undersigned by 2nd August.

JOHN DUNLOP,
 Town Clerk.

City Hall, Belfast,
 P.O. Box 234.
 6th July, 1956. 1711

COUNTY BOROUGH OF ROCHDALE

BOROUGH SURVEYOR'S DEPARTMENT

CHIEF HOUSING ARCHITECT

Applications are invited for the appointment of Chief Housing Architect at a salary of £880-£1,080 (Grade A.P.T. VI).

Preference will be given to applicants who are Associates of the Royal Institute of British Architects.

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

Consideration will be given to the provision of housing accommodation.

Canvassing is prohibited and applicants must disclose whether they are related to any member or senior official of the Council.

Applications, stating age, qualifications, training and experience, together with the names and addresses of two persons to whom reference can be made, and endorsed "Chief Housing Architect," must be delivered to the Borough Surveyor, Town Hall, Rochdale, by 30th July, 1956. 1713

LONDON COUNTY COUNCIL

ARCHITECT'S DEPARTMENT

Staff are required for varied and interesting work in the VOLUNTARY SCHOOLS SECTION. Salary range between £620 and £817 according to experience. Intermediate standard desirable.

(1) **SURVEYING ASSISTANTS**—for preparation of specifications and estimates in connection with maintenance, alterations and minor improvements, and technical supervision of works.

(2) **ARCHITECTURAL ASSISTANT**—for preparation of schemes for development of new and existing school sites and scrutiny of plans and designs for new primary and secondary schools. Applicants should be interested in contemporary school design.

Application forms, returnable by 2nd August, 1956. From The Architect (AR/EK/VS/2), County Hall, S.E.1. (1359) 1701

CITY OF BELFAST APPOINTMENT OF DEPUTY EDUCATION ARCHITECT

(As previously advertised)

Applications are invited for this position on the staff of the Education Architect (Donald A. Shanks, Dipl.Arch., A.R.I.B.A.).

Qualifications: Registered Architect and corporate membership by examination of the R.I.B.A.

Salary scale (which may be reviewed shortly): £1,105 × £50-£1,355.

The commencing salary will be fixed according to the qualifications, ability and experience of the successful applicant. Superannuation contributions of approximately 5 per cent. of remuneration will be payable. Reciprocal pension arrangements exist between the Corporation and other Public Authorities.

Canvassing will disqualify.

Application forms, etc., are obtainable from the Education Office, Academy Street, Belfast. Completed applications must reach the undersigned by 2nd August.

JOHN DUNLOP,
 Town Clerk.

City Hall, Belfast,
 P.O. Box 234.
 6th July, 1956. 1712

LONDON COUNTY COUNCIL

ARCHITECT'S DEPARTMENT

ARCHITECTS AND BUILDING SURVEYORS required in connection with a large programme of modernisation of schools and housing with a wide range of improvements and adaptations of all types of building. Salaries up to £817 for Assistants and up to £987 for Grade IIIs, with commencing rate according to qualifications and experience.

Further particulars and application form, returnable by 2nd August, from The Architect (AR/EK/MOD/2), County Hall, S.E.1. (1358) 1702

COUNTY LONDONDERRY EDUCATION COMMITTEE

ARCHITECTURAL ASSISTANT

Applications are invited for the above position in the Committee's Offices in Coleraine. Applicants must have passed the Intermediate R.I.B.A. Examination. Salary within the range £443-£725 according to qualifications and experience.

Application forms and conditions of appointment may be obtained from the Director of Education, Education Offices, New Row, Coleraine, and completed forms should be returned not later than 26th July, 1956. 1716

CITY OF LEEDS EDUCATION COMMITTEE

LEEDS COLLEGE OF ART

Principal: E. E. PULEE, A.R.C.A., F.S.A.E. Applications are invited for the post of HEAD OF THE SCHOOL OF DESIGN to commence duties as soon as possible.

The position is to be filled by an Architect qualified to teach interior decoration and industrial design.

Professional experience is essential and a knowledge of furniture design and/or metal products an added advantage.

A broad understanding of art is a necessity so that full co-operation may be maintained between the Schools of Architecture, Design, Painting, Sculpture and Teacher Training.

Salary—Burnham Technical Scale for Grade III Head of Department, at present £1,215 × £25-£1,365 a year for a man and £972 × £20-£1,092 for a woman.

Application forms (to be returned within 14 days of the appearance of this advertisement) and further particulars may be obtained from the undersigned.

GEORGE TAYLOR,
 Chief Education Officer.

Education Department,
 Leeds, 1. 1704

MALVERN URBAN DISTRICT COUNCIL

APPOINTMENT OF JUNIOR ARCHITECTURAL ASSISTANT

Applications are invited for the appointment of a Junior Architectural Assistant in the Department of the Surveyor and Water Engineer, at a salary in accordance with Grade I of the A.P. & T. Division of the National Scales (£530 to £610).

Candidates must have had experience of Architectural Draughtsmanship and Building Construction. Elementary knowledge of site measurements and quantities will be an advantage.

The appointment will be subject to the provision of the Local Government Superannuation Act, 1937, and to the National Joint Council Scheme of Conditions of Service.

Applications, stating age, qualifications and experience, together with the names of two persons to whom reference can be made, must be delivered to the undersigned not later than July 30th, 1956.

Housing accommodation will be provided if required by the successful applicant.

J. BULMAN,
 Clerk of the Council.

The Council House,
 Malvern.
 5th July, 1956. 1705

The Corporation of the Cranleigh and Bramley Schools wish to appoint an ARCHITECT AND SURVEYOR or a SURVEYOR for St. Catherine's School, Bramley, from the 1st September, 1956.

Applications are invited from Architects and Surveyors or Surveyors practising within 25 miles of Guildford. The Council propose to offer a retaining fee in addition to scale fees as laid down by the R.I.B.A. and/or R.I.C.S. Particulars may be obtained from the Headmistress. 1645

HERTFORDSHIRE COUNTY COUNCIL.
COUNTY ARCHITECT'S DEPARTMENT.
 Applications are invited for the following:—
 (a) **SENIOR ASSISTANT QUANTITY SURVEYOR**, Grade V, £795-£970.
 (b) **ASSISTANT QUANTITY SURVEYOR**, Grade IV, £710-£885.
 (c) **ASSISTANT ARCHITECT**, £690-£840.
 Previous Local Government experience not essential. Applicants must give full particulars of qualifications, training and experience, and state clearly which post is applied for.
 Applications with names of two referees to County Architect, County Hall, Hertford, Herts, not later than 23rd July, 1956. 1706

ARGYLL COUNTY COUNCIL.
 Applications are invited for the appointment of a **QUANTITY SURVEYING ASSISTANT** in the County Architect's Department, salary scale Grade IV-VI (£655-£870) with placing according to experience and qualifications. The post is superannuable.
 Apply giving details of qualifications and experience along with copies of two recent testimonials to County Architect, County Offices, Dunoon, within seven days of publication of this advertisement.

A. D. JACKSON
 County Clerk.
 1652

THE METROPOLITAN BOROUGH OF HAMPSTEAD requires **JUNIOR ARCHITECTURAL ASSISTANT**, salary Higher General Division (at age 18-£300 rising to a maximum of £540 plus London weighting). Medical examination. No housing provided. Applications, giving three referees, to the Town Clerk, Town Hall, Haverstock Hill, N.W.3. Closing date 3rd August, 1956. 1636

THE BRITISH THOMSON-HOUSTON CO. LTD. require **ASSISTANTS** in their Architect's Office at Rugby. R.I.B.A. Final or Intermediate standard required with previous experience on Industrial Projects. Applications stating age and experience and full particulars to:—
 G. C. KNIGHT, Esq., A.R.I.B.A.,
 Works Architect,
 The British Thomson-Houston Co., Ltd.,
 Rugby. 1670

Tenders Invited

5 lines or under, 12s. 6d.; each additional line, 2s.

BOROUGH OF EALING
ERECTION OF FLATS—GREENFORD ROAD
 The Corporation invite tenders for the erection of one block of three-storey flats, comprising 12 flats with site works on site in Greenford Road, Greenford.

The Form of Tender, Specification and other particulars can be obtained from the Borough Surveyor, Town Hall, Ealing, W.5, upon a deposit of £2 which will be returned on receipt of a bona fide tender.

Tenders (in plain sealed envelopes endorsed "Tender for Flats—Greenford Road" but bearing no name or mark indicating the sender) must be delivered at my office not later than 9 a.m. on the 31st August, 1956.

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

E. J. COPE-BROWN,
 Town Clerk.

Town Hall,
 Ealing, W.5. 1714

Architectural Appointments Vacant

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

ARCHITECTURAL ASSISTANTS, Senior and Junior required, preferably with London practice experience, office and factory buildings. Write, giving particulars of experience, etc., to Messrs. Bates & Sinning, 89, Chancery Lane, W.C.2. 2508

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

APPLICATIONS are invited for the following appointments:—
 (a) **SENIOR ASSISTANT ARCHITECTS**, with experience of work on commercial and industrial projects.
 (Salary range £820 to £975 per annum.)
 (b) **ASSISTANT ARCHITECTS**, capable of preparing working drawings from preliminary details.
 (Salary range £550 to £820 per annum.)

There is a five-day week in operation, and both appointments offer prospects of upgrading.
 Applications, stating age, experience, qualifications and salary required, to G. S. Hay, A.R.I.B.A., Chief Architect, Co-operative Wholesale Society, Ltd., 1, Balloon Street, Manchester, 4. 3371

ARCHITECTURAL ASSISTANT required in busy London office with varied practice. Good salary and prospects for suitable applicant. 5-day week. Write, giving particulars of age, qualifications, experience, etc., to Box 775, c/o 7, Coptic Street, W.C.1. 9313

LONDON Consultants require immediately **ASSISTANTS** of Intermediate and R.I.B.A. standard for varied and interesting contemporary industrial projects. Responsibility given to applicants with good design sense and constructional ability. Apply, giving full particulars and salary required, to Box No. 401, Glovers Advertising Ltd., 351, Oxford Street, London, W.1. 9341

ARCHITECTURAL ASSISTANTS required for St. Albans office for work on School, Commercial and Housing projects. Should be good draughtsmen with contemporary outlook. Good Salaries. Write to Box 9579.

CROYDON office. **ARCHITECTURAL ASSISTANT** required, with initiative, preferably qualified. Varied and interesting work. Write stating experience, age and salary required to George Lowe & Partner, 4, High Street, Croydon, Surrey. 1106

W. H. WATKINS, GRAY & PARTNERS require **ASSISTANTS** of Intermediate standard for interesting work on hospitals and schools. Pension scheme in operation.—Write or phone 57, Catherine Place, S.W.1. Victoria 7761. 1350

ARCHITECTURAL ASSISTANTS required for small West End Office. Good salaries. Write to Box 9580.

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

ASSISTANT ARCHITECTS, WORKER-UP.
 Applications are invited from suitably qualified persons. Salary on a scale £485-£945 inclusive of L.W., with placing according to age, qualifications and experience. The posts are superannuable, subject to medical examination. Five-day week in operation. Applications, stating age, experience, qualifications and salary required, to:—W. J. Reed, F.R.I.B.A., Chief Architect, Co-operative Wholesale Society, Ltd., 99, Leman Street, London, E.1. 2824

ARCHITECTS—One experienced Senior and one competent Junior Assistant required by West End Architects for interesting airport projects. Aptitude for engineering and industrial detail essential. Salary according to experience.—Box 1360.

ARCHITECTURAL ASSISTANT required, up to Intermediate standard, Westminster office. Pension and Bonus schemes. 5-day week.—Write, stating experience, age, and salary required, to Box 1339.

SENIOR ASSISTANT required in West End office. Very busy on interesting commercial work. Must be prepared to take responsibility.—Please write, giving details of experience, etc., Box 1509.

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 1510.

DAMS, HOLDEN & PEARSON require **ARCHITECTURAL ASSISTANTS** immediately.—Write, giving particulars of experience and salary required, to 38, Gordon Square, W.C.1. 1490

ARCHITECTURAL ASSISTANTS wanted for September onwards. London office experience an advantage. Intermediate or higher standard. 5-day week. Salary according to ability, but not below £700 p.a.—Percy V. Burnett & Partners, 12, Bloomsbury Square, London, W.C.1. HOLborn 6177. 1494

ARCHITECTURAL ASSISTANT required in small, but busy West End office, engaged upon varied schemes.—Apply by letter or telephone Hastie, Winch & Kelly, 1, Bentinck Street, W.1. WELbeck 8863. Mark letters "Private." 1481

ARCHITECTS' CO-PARTNERSHIP require **ASSISTANT** for working drawings and detailed design. Salary according to experience. Office doing work in U.K. and West Africa. Holiday can be taken this year.—Write 44, Charlotte Street, London, W.1. or telephone Langham 5791. 1496

SENIOR and **JUNIOR ASSISTANTS** required by London Architects with widespread practice covering all types of work.—Box 1499.

EXPERIENCED ARCHITECTURAL ASSISTANT required for Works Engineers Department. Capable of surveying, designing and detailing all types of industrial buildings and with experience of factory services. Only first-class man need apply. Apply stating age, qualifications, experience and notice required. Box 1630.

INTERMEDIATE and **JUNIOR ASSISTANTS** required in Progressive London Office. Lewis Solomon, Son & Joseph, 21, Bloomsbury Way, W.C.1. HOLborn 7032. 1446

EXPERIENCED SENIOR ARCHITECT required, contemporary office. Salary according to experience. C. H. Elsom, F.R.I.B.A., 10, Lower Grosvenor Place, S.W.1. VIC 4304. 1588

ARCHITECTURAL ASSISTANT required in busy West End Office engaged on commercial work. Able to prepare sketch schemes and working drawings. Five-day week, luncheon vouchers. Reply stating age, experience and salary required to Box 1584.

ARCHITECTURAL ASSISTANT required in London by a firm of City Architects for work on modern office buildings. Please telephone CENTral 7748. 1601

RONALD WARD & PARTNERS require several **ARCHITECTURAL ASSISTANTS**, with contemporary outlook and willing to use own initiative. Salary range £500 to £800. Interesting and varied work, home and abroad. Congenial working conditions.—Apply 29, Chesham Place, Belgrave Square, S.W.1. Telephone Belgravia 3361. 1625

ARCHITECTURAL ASSISTANTS: Intermediate Standard required. A knowledge of licensed property work would be an advantage but is not essential.

Applicants must be competent draughtsmen. Please reply giving full details of qualifications, experience, age and salary required to: The Chief Architect, Surveyors Department, Bass, Ratcliff & Gretton, Ltd., High Street, Burton-on-Trent. 1565

ASSISTANT required for small office. Final or Intermediate standard with good office experience. Salary £600-£700 p.a. according to experience. Write or telephone Alan S. Raimes, A.R.I.B.A., 6, Holborn Viaduct, E.C.1. City 4201. 1558

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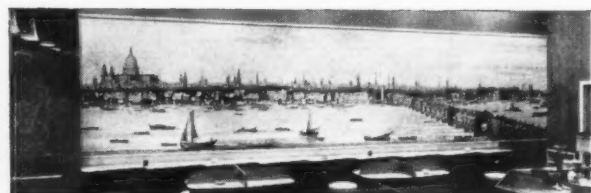


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are the vogue for interior décor of all buildings—municipal and business, restaurants, clubs, schools, shops, the home, etc. They are hung like wallpaper. Autotype (established 1869) specialises in their production and can submit subjects to choice.

ARCHITECTURAL ASSISTANTS (Senior and Junior) required for general and commercial practice. Apply stating age, experience, qualifications and salary required to Duncan Clark & Beckett, F/L.R.I.B.A., F/R.I.C.S., 7, West Stockwell Street, Colchester. 1578

ARCHITECT'S ASSISTANT required for office in North London. Box 1572.

BIRMINGHAM practice requires **ASSISTANT**, Intermediate to Final standard. Varied work, 5-day week. State salary required. Yorke, Harner & Harvey, 191, Corporation Street, Birmingham, 4. 1680

VACANCY for **CHIEF ARCHITECTURAL ASSISTANT** with prospects of partnership. The work is mainly industrial. West Riding of Yorkshire. Box No. 1674.

ARCHITECTURAL ASSISTANTS required immediately by a large Industrial Concern in the Midlands. R.I.B.A. Intermediate and/or Final standard required. Salary £700-£1,000 p.a. according to age and experience. Apply with all particulars, Box No. 1671.

ARCHITECTURAL ASSISTANTS required. A qualified and Intermediate standard, preferably experienced in Industrial and Office Buildings. Salary by arrangement. Eric Firmin & Partners, 10, Manchester Square, W.I. 1667

QUALIFIED ARCHITECTURAL ASSISTANT required for work on the professional side in the Westminster area. Previous experience in industrial work advantageous. The desirable age range for the post, which is a senior one, is the order of 28-40. The salary is not quoted as the age range is rather extensive and remuneration will be based upon the individual's qualifications and experience. Box 1668.

ASSISTANT, preferably qualified with some office experience, required for private office in West End. Box No. 1697.

OLD established City Architects with a busy and varied practice covering Schools, Hospitals, Research Laboratories and Licensed Premises, etc., require **ASSISTANT ARCHITECT**. Applicants must be in the age bracket 35-40 and fully qualified A.R.I.B.A. with at least 10 years' office experience. Salary £1,000 per annum plus overtime at 25% over basic rates. Five-day week—Luncheon Vouchers. Also **TWO JUNIOR ASSISTANTS** age bracket 20-25 of Intermediate Standard. Salary £500-£600 with overtime, hours and vouchers as above. Write giving full particulars of age, training and experience to Box No. 1699.

TWO SENIOR ASSISTANT ARCHITECTS required immediately in busy and varied practice in the West Riding of Yorkshire. Applicants should be Associate Members of R.I.B.A. and have had considerable experience, preferably in Schools, Commercial or Industrial Work. Contemporary outlook. Salary £1,000 per annum according to experience.

THREE ARCHITECTURAL ASSISTANTS required with minimum 2 years' office experience. Salary in the range of £600-£700 per annum according to experience. There is a pension scheme in operation and good prospects for promotion and upgrading. Apply with full particulars to J. G. L. Poulson, L.R.I.B.A., 29, Roper-gate, Pontefract. 1703

DEVEREUX AND DAVIES have vacancies for **TWO QUALIFIED ASSISTANTS**. Important and interesting work. When applying, please state age, training and experience as well as salary required. Box 1715.

QUALIFIED SENIOR ARCHITECTURAL ASSISTANT required in Cotswold area. Applications with details of experience and salary required to Eric Cole & Partners, Dyer Street House, Cirencester. 1650

SALES REPRESENTATIVE required for London area. Knowledge of trade most desirable but essential to have strong connection with architects. Age preferably under 40. Excellent opportunity for capable and ambitious man. Write giving full particulars including salary required to Richard Tiles Limited, Tunstall, Stoke-on-Trent. 1709

ASSISTANT, not necessarily qualified, required for interesting and varied work in small busy office, mainly industrial and commercial. Must be good draughtsman with previous office experience. Opportunity for keen man, salary £600 to £700 to start. Write full particulars to A. F. Hare, F.R.I.B.A., 24, Baker Street, W.I. 1707

BRITISH OXYGEN GASES LIMITED require the services of an **ARCHITECTURAL DRAUGHTSMAN** for work at their West-End offices. The work is in connection with the layout of both factory and office blocks and some experience in this field is necessary. An attractive commencing salary is offered, together with good canteen facilities and a Pension Fund. Full details should be sent to Personnel Manager, Bridgewater House, Cleveland Row, St. James, London, S.W.1. 1641

SENIOR ARCHITECTURAL ASSISTANT required for a South Midland Brewery. Capable of taking responsibility and controlling staff. Salary £700. Box 1647.

ARCHITECT, fully qualified, required by a Property Company with 20-year programme developing own sites. Able to assume full control of building from preparation of initial schemes to completion. Confident negotiator. Pre-war experience and knowledge of quantities an advantage. Position is permanent and pensionable with highest prospects for applicant with right qualifications and ability. Details and salary requirements to Box 1649.

ARCHITECT'S ASSISTANT required for interesting work. Intermediate R.I.B.A. standard, practical experience essential. Willan, Stewart & Waite, A.R.I.B.A., 127, Sandgate Road, Folkestone. Tel. 2134. 1651

ARCHITECT'S ASSISTANT (Intermediate standard) required by firm, S.E. London. State wages and experience. Box 1644.

ARCHITECTURAL ASSISTANT required for a small office in West End. Must be up to Intermediate standard. Interesting and varied work of all kinds. Good salary. Apply giving details of experience and salary required to Box 1640.

ARCHITECTURAL ASSISTANT required to divide his time between a Chartered Architect's two small offices: Southall (3 days), Kingston (2 days). Varied work. £600/£700 according to ability. Apply Bostock & Partners, Central Hall Buildings, Station Approach, Southall, Middx. 1639

RALPH TUBBS, 35, Welbeck Street, W.I. requires qualified **ASSISTANT ARCHITECT** with both imagination and experience. Please apply by letter with brief particulars. 1638

VACANCIES occur in an expanding Knightsbridge office for **ONE SENIOR, TWO INTERMEDIATE** and **TWO JUNIOR ASSISTANTS**. Experience in industrial and hospital work preferable but not essential. Salaries commensurate with ability and experience. Full particulars to Box 1664.

MONTREAL. Canadian firm of Architects and Engineers engaged on large projects, require additional **ARCHITECTURAL STAFF**, qualified or unqualified, with minimum of six years' experience. Good salaries, bonus, health scheme, passage paid. Further details quoting OSS.101/2 from O.T.S., 5, Welldon Crescent, Harrow, Middx. 1690

GEORGE WIMPEY & CO. LTD.
THE ARCHITECTS' DEPARTMENT seek **ARCHITECTURAL STAFF** enthusiastic to apply their knowledge to new construction techniques covering Houses, Multi-Storey Flats, Offices, Schools and Industrial Buildings for contracts in the U.K. and Overseas.

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

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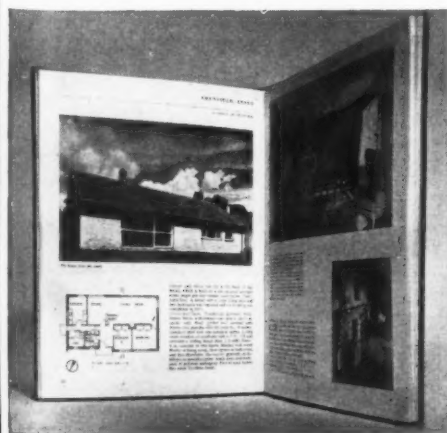
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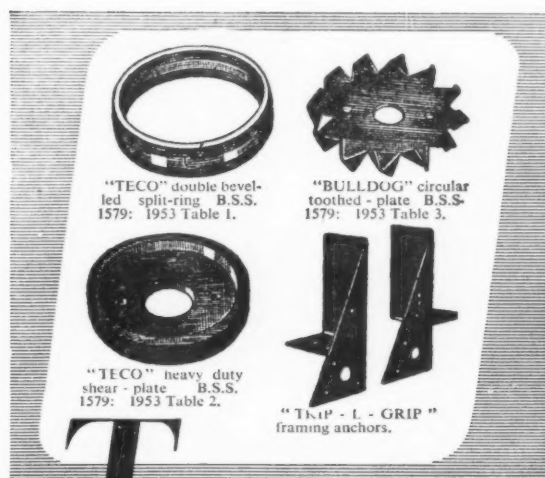
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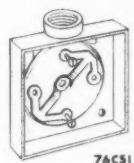
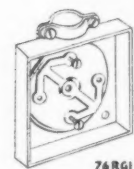
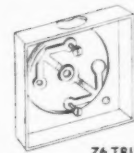
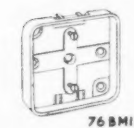
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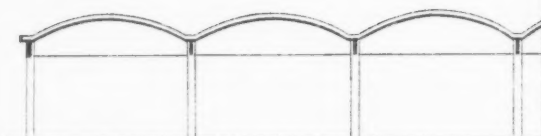
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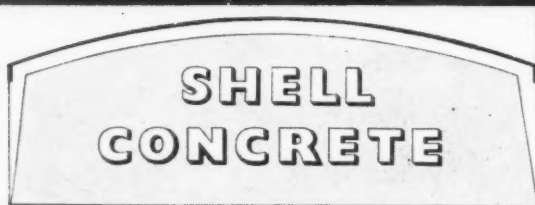
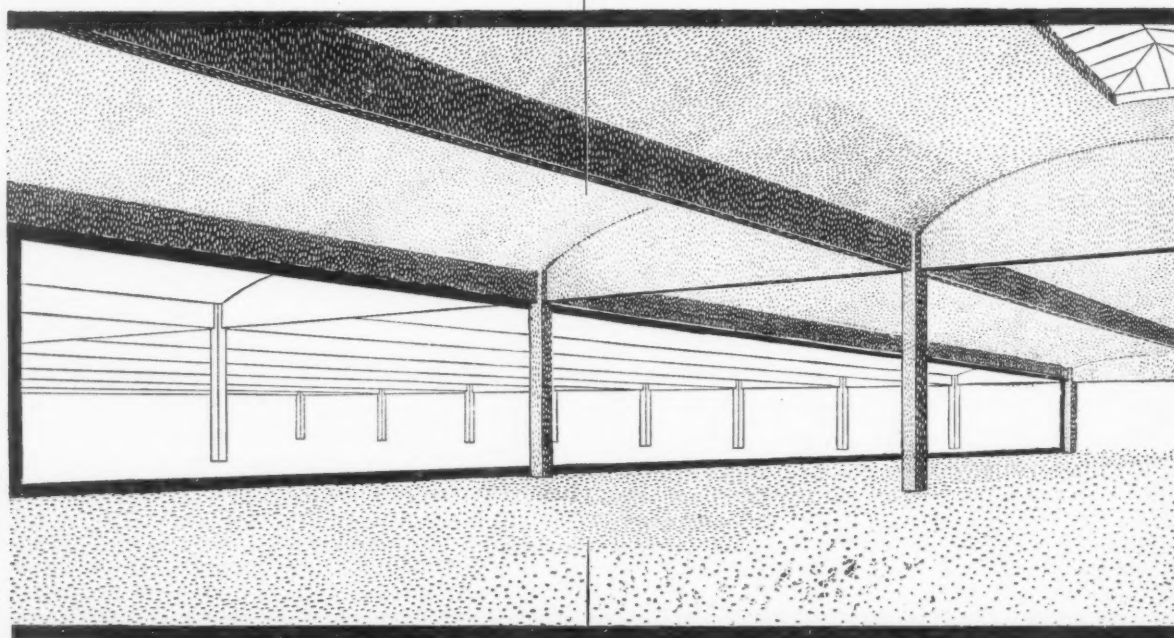


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