

THE ARCHITECTS' JOURNAL



standard contents

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

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No. 3450]

[Vol. 133

THE ARCHITECTURAL PRESS

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Registered as a Newspaper.

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

AA	Architectural Association, 34/6, Bedford Square, W.C.1.	Museum 0974
AAI	Association of Art Institutions. Secy.: J. H. Holden, College of Art, Cavendish Street, Manchester 15	
ABS	Architects' Benevolent Society. 66, Portland Place, W.1.	Langham 5533
ABT	Association of Building Technicians. 156, Waterloo Road, S.E.1.	Waterloo 5427/8
ACGB	Arts Council of Great Britain. 4, St. James's Square, S.W.1.	Whitehall 9737
ADA	Aluminium Development Association. 33, Grosvenor Street, W.1.	Mayfair 7501/8
ARCUK	Architects' Registration Council. 68, Portland Place, W.1.	Langham 5861
BAE	Board of Architectural Education. 66, Portland Place, W.1.	Langham 5721
BASA	British Architectural Students Association. Building Centre, 26 Store Street, W.C.1.	
BC	Building Centre, 26, Store Street, Tottenham Court Road, W.C.1.	Museum 5400
BCC	British Colour Council. 13, Portland Square, W.1.	Welbeck 4185
BCCF	British Cast Concrete Federation. 105, Uxbridge Road, Ealing, W.5.	Ealing 9621
BCIRA	British Cast Iron Research Association. Alvechurch, Birmingham	Redditch 716
BDA	British Door Association. 10, The Boltons, S.W.10.	Fremantle 8494
BE	Building Exhibition. 11, Manchester Square, W.1.	Hunter 1951
BEDA	British Electrical Development Association, 2, Savoy Hill, W.C.2.	Temple Bar 9434
BIA	British Ironfounders' Association. 145, Vincent Street, Glasgow, C.2.	
BID	Building Industries Distributors. 52, High Holborn, W.C.1.	Glasgow Central 2891
BINC	Building Industries National Council. 11, Weymouth Street, W.1.	Chancery 7772
BOT	Board of Trade. Whitehall Gardens, Horseguards Avenue, S.W.1.	Langham 2785
BRs	Building Research Station. Bucknalls Lane, Watford.	Trafalgar 8855
BSA	Building Societies Association. 14, Park Street, W.1.	Garston 4040
BSI	British Standards Institution. British Standards House, 2, Park St., W.1.	Mayfair 9000
CABAS	City and Borough Architects Society. C/o S. A. G. Cook, A.R.I.B.A., Borough Architect and Director of Housing, Town Hall, High Holborn, W.C.1.	
CAS	County Architects' Society. C/o J. Hurst, A.R.I.B.A., County Hall, Dorchester.	Holborn 3411
CCA	Cement and Concrete Association. 52, Grosvenor Gardens, S.W.1.	Belgravia 6661
CDA	Copper Development Association. 55, South Audley Street, W.1.	Grosvenor 8811
COID	Council of Industrial Design. 28, Haymarket, S.W.1.	Trafalgar 8000
CPRE	Council for the Preservation of Rural England, 4, Hobart Place, S.W.1.	Sloane 4280
CUC	Coal Utilization Council. 3, Upper Belgrave Street, S.W.1.	Sloane 9116
DIA	Design and Industries Association. 13, Suffolk Street, S.W.1.	Whitehall 0540
EJMA	English Joinery Manufacturers' Association (Incorporated). Sackville House, 40, Piccadilly, W.1.	Regent 4448
EPNS	English Place-Name Society. 7, Selwyn Gardens, Cambridge.	
FAS	Faculty of Architects and Surveyors. 68, Gloucester Place, W.1.	Welbeck 9966
FASS	Federation of Associations of Specialists and Sub-Contractors. 14, Bryanston Street, W.1.	Welbeck 1781
FBBDO	Fibre Building Board Development Organization Ltd. (Fidor). Stafford House, Norfolk Street, W.C.2.	Covent Garden 3008
FBI	Federation of British Industries. 21, Tothill Street, S.W.1.	Whitehall 6711
FC	Forestry Commission. 25, Savile Row, W.1.	Regent 0221
FCMI	Federation of Coated Macadam Industries. 37, Chester Square, S.W.1.	Sloane 1002
FDMA	Flush Door Manufacturers Association Ltd. Trowell, Nottingham.	Ilkeston 623
FLD	Friends of the Lake District. Pennington House, nr. Ulverston, Lancs.	Ulverston 201
FMB	Federation of Master Builders. 33, John Street, W.C.1. Tel.: Chancery 7583 (6 lines)	
FPC	Federation of Painting Contractors. St. Stephen's House, S.W.1.	Whitehall 3902
FRHB	Federation of Registered House Builders. 82, New Cavendish Street, W.1.	Langham 4341
GPDA	Gypsum Plasterboard Development Association. 11, Ironmonger Lane, E.C.2.	Monarch 8888
GC	Gas Council. 1, Grosvenor Place, S.W.1.	Belgravia 4321
GG	Georgian Group. 2, Chester Street, S.W.1.	Belgravia 3081
HC	Housing Centre. 13, Suffolk Street, S.W.1.	Whitehall 2881
IAAS	Incorporated Association of Architects and Surveyors. 29, Belgrave Square, S.W.1.	Belgravia 3755
ICA	Institute of Contemporary Arts. 17-18, Dover Street, W.1.	Grosvenor 6186
ICE	Institution of Civil Engineers. 1, Great George Street, S.W.1.	Whitehall 4577
IEE	Institution of Electrical Engineers. Savoy Place, Victoria Embankment, W.C.2.	Temple Bar 7676
IES	Illuminating Engineering Society. 32, Victoria Street, S.W.1.	Abbey 5215
IGE	Institution of Gas Engineers. 17, Grosvenor Crescent, S.W.1.	Sloane 8266
IHVE	Institution of Heating and Ventilating Engineers. 49, Cadogan Square.	Sloane 1601/3158
IBDID	Incorporated Institute of British Decorators and Interior Designers. 37, Soho Square, W.1.	Gerrard 5056



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THEY PUT THEM
SOMEWHERE
ELSE?**

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Contractor:
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In the East End of London, row upon row of dingy terraced houses are disappearing and being replaced by these attractive modern flats and in their erection, the old fashioned type of lime mortar has been replaced by a mortar plasticised with Febmix Admix.

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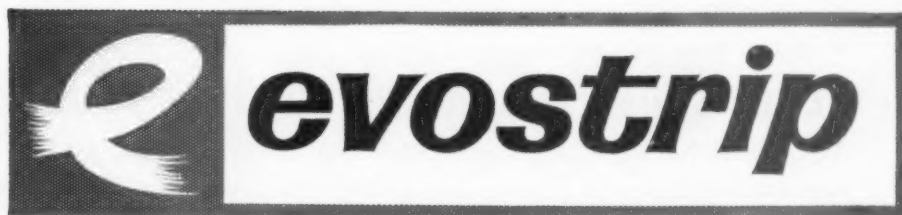




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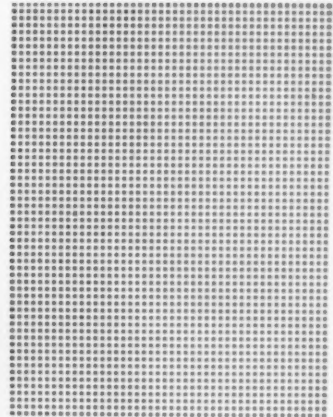
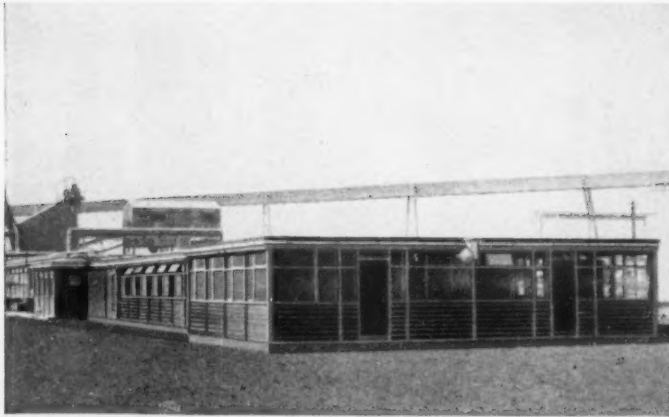
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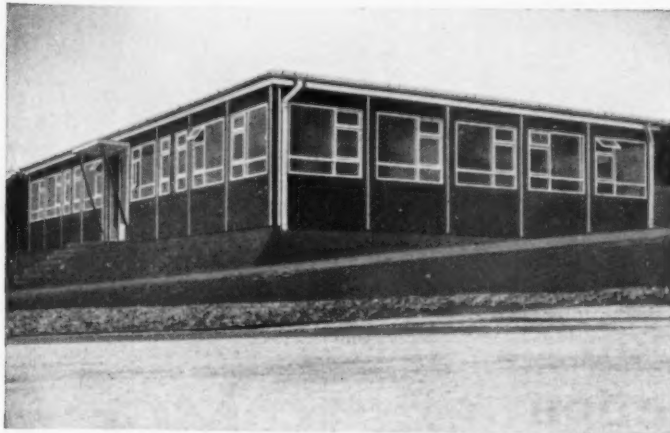




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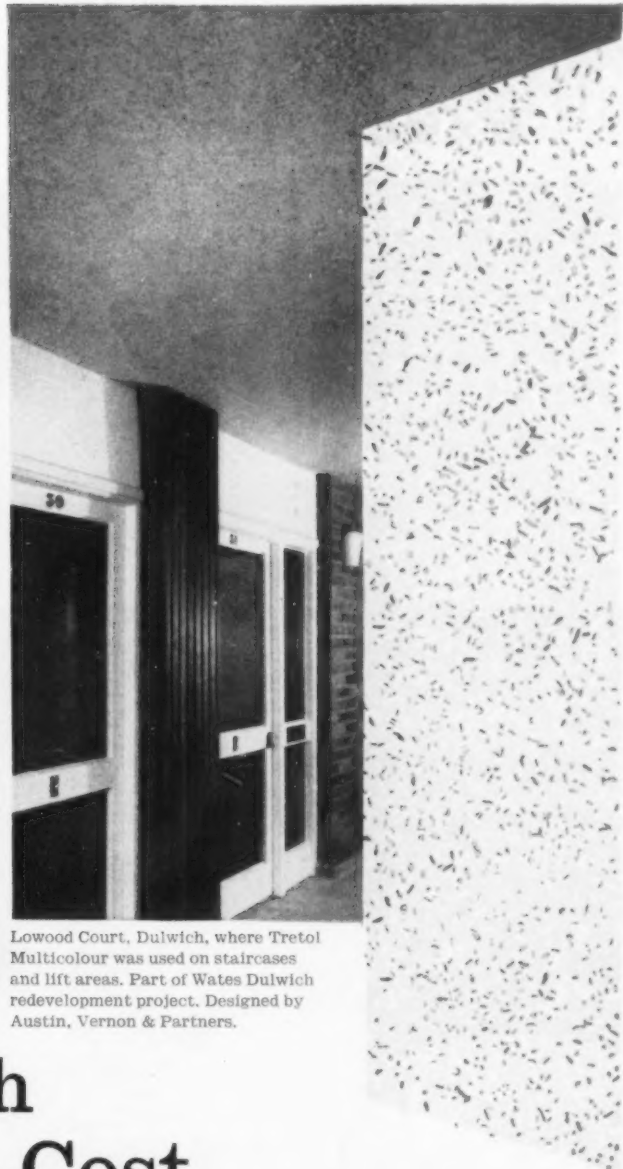
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Architects: R.E. Enthoven, F.R.I.B.A., F.S.A. and R.J. Mock, A.I.A



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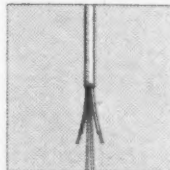
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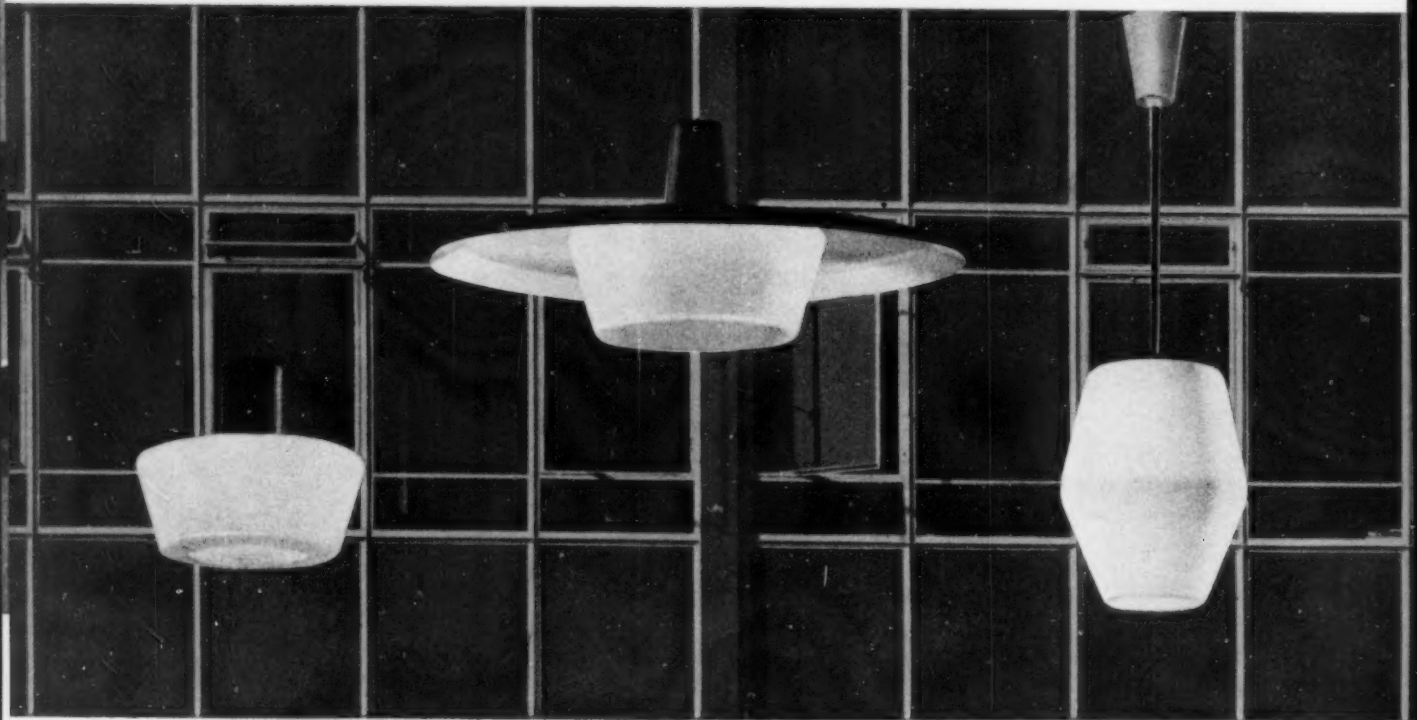
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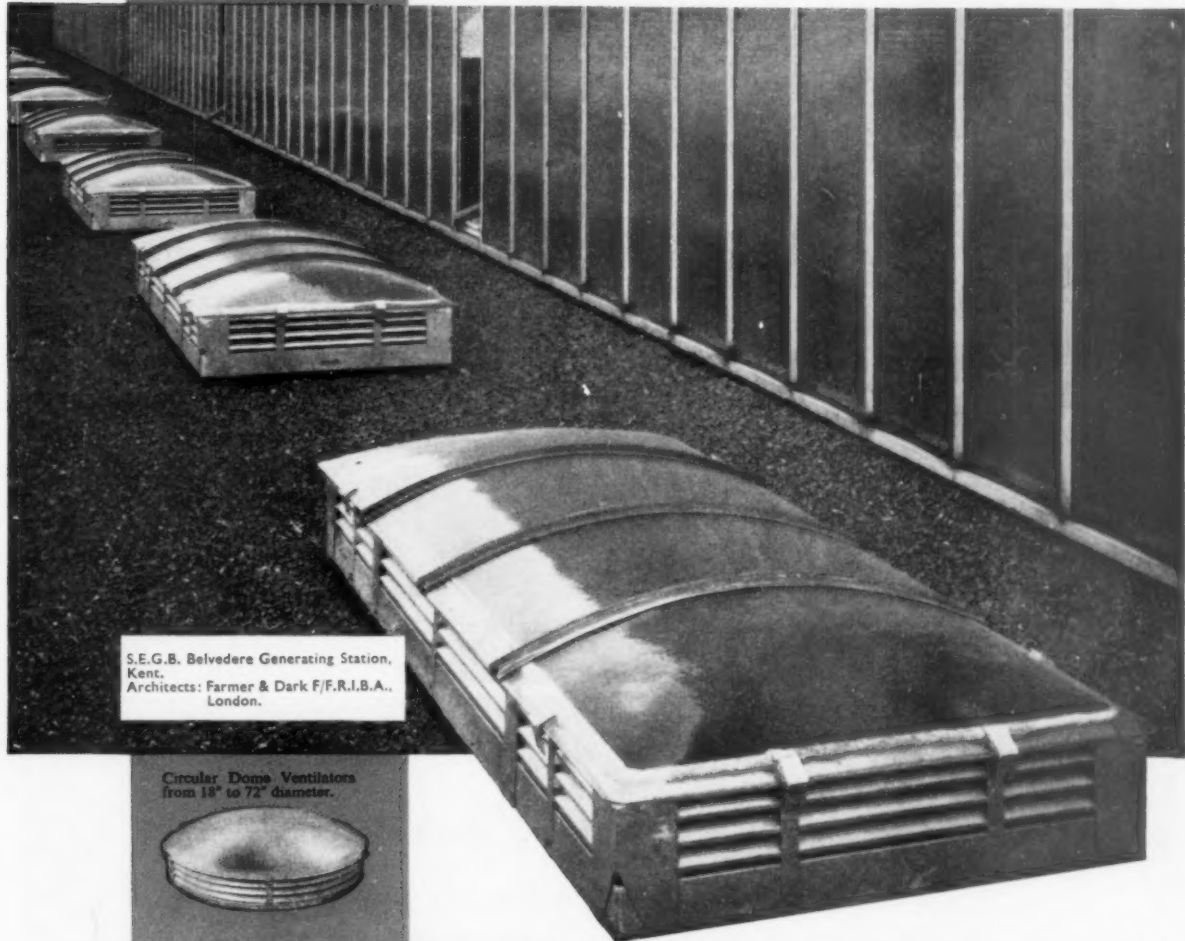


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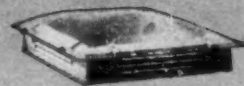
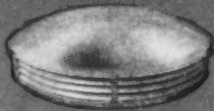
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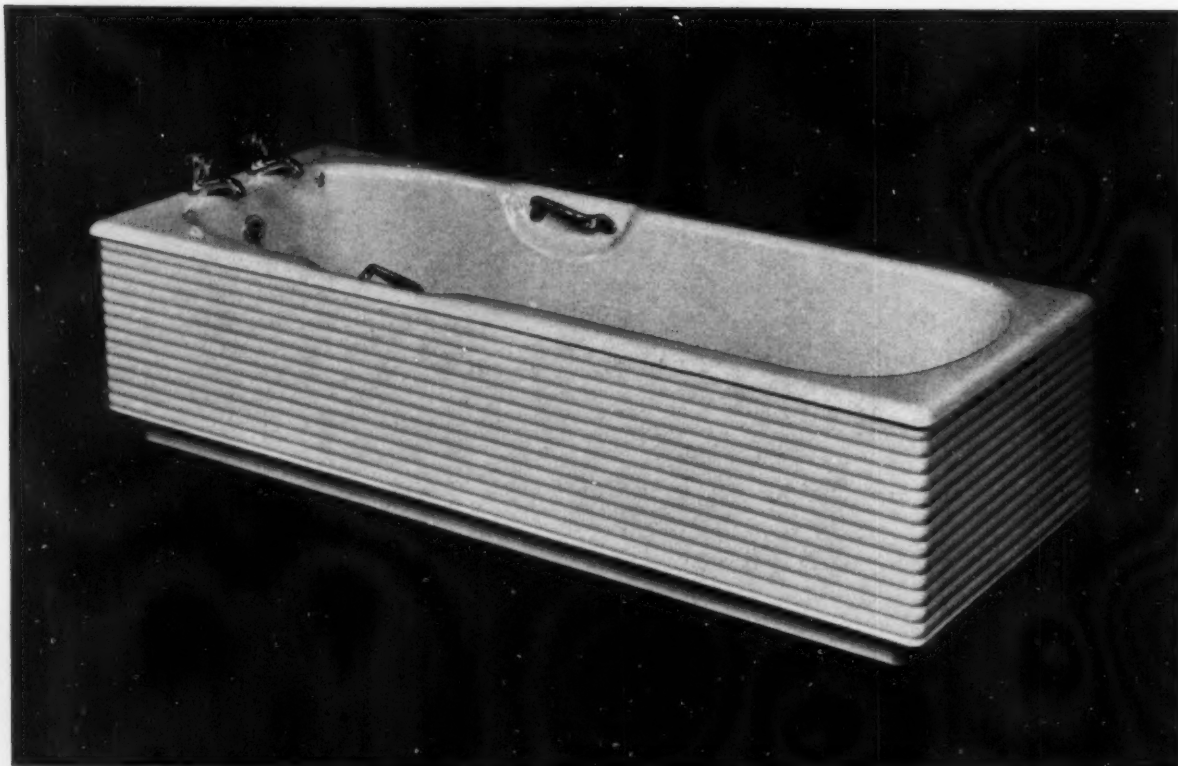
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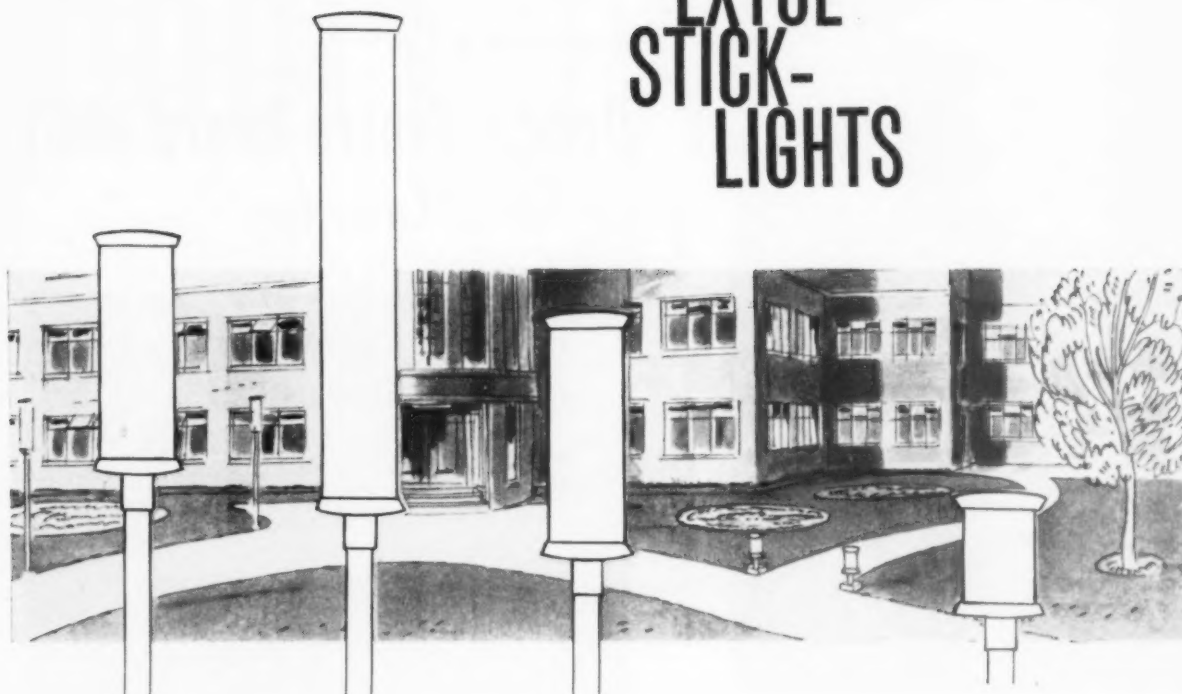
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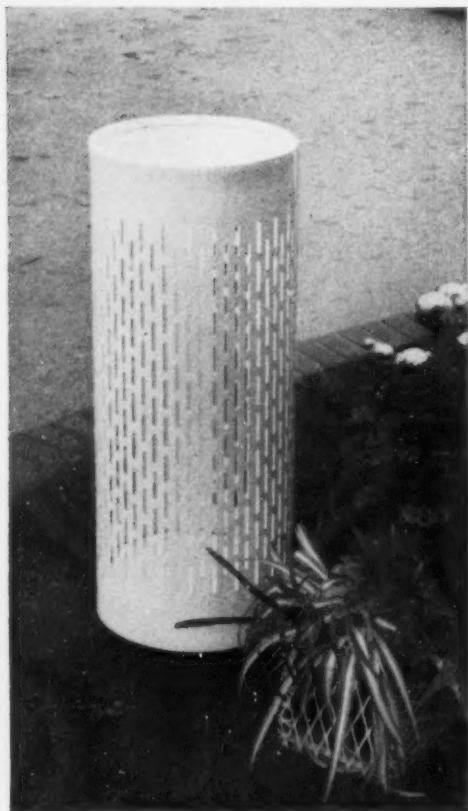
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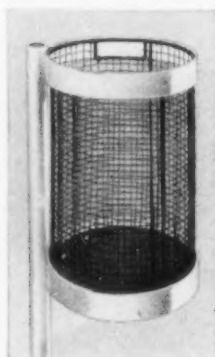


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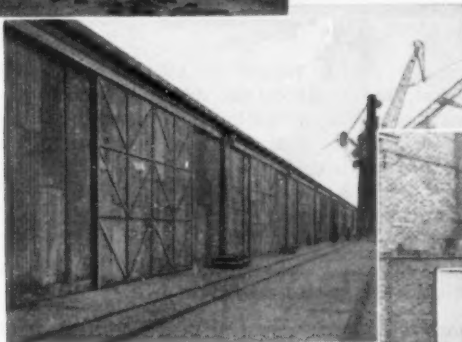
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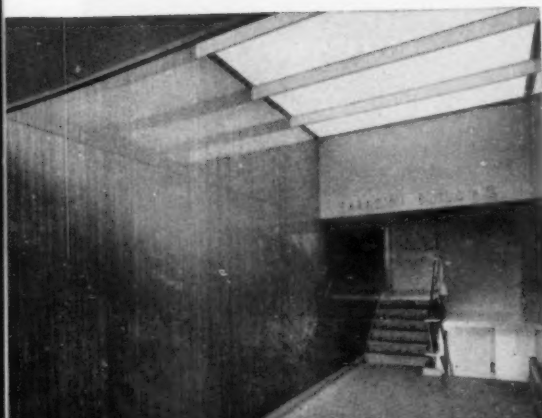
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Othello, v. ii.

By A. F. B. Nall, A.M.I.San.E., A.M.Inst.W.

Fireclay is a deep-mined clay which is subjected to a temperature of 1,200°C. to fuse the porcelain-like glaze to its strong, dense body to produce a homogeneous whole. The finished ware has, in effect, been washed in fire, for it is sterile and aseptic, clean and wholesome. Modern designs avoid germ traps and facilitate maintenance, so that this initial sterility may be preserved through a long and useful life.

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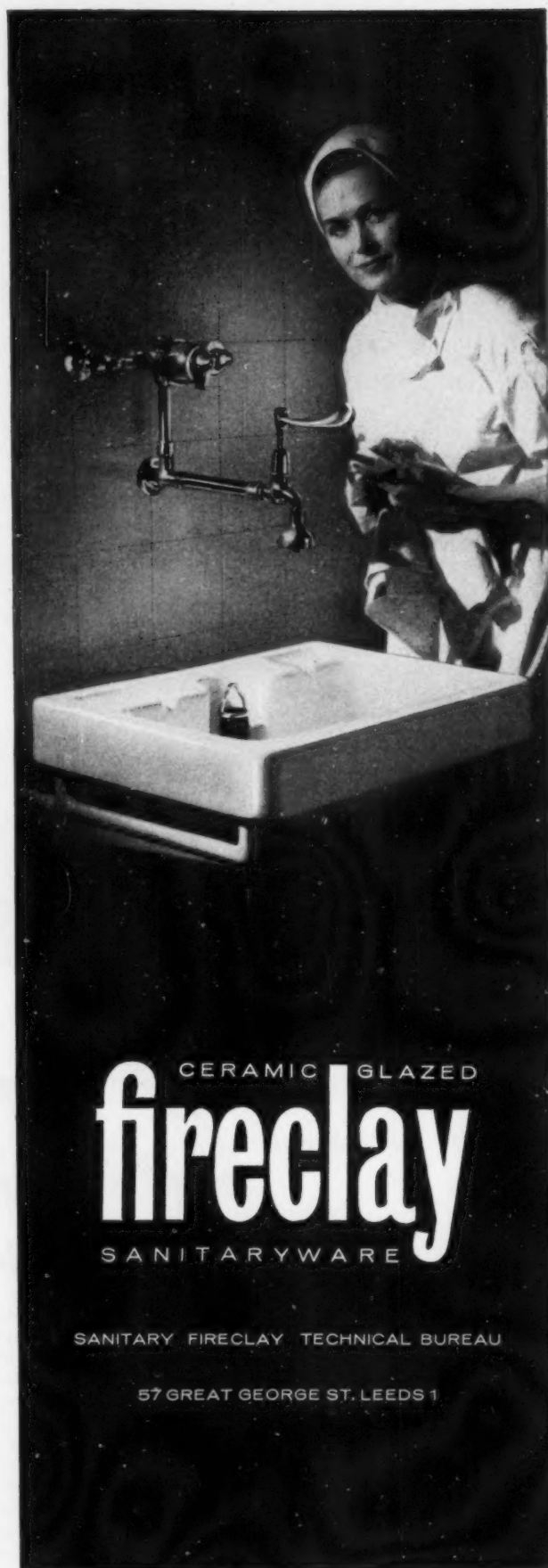
One cannot have a first-class glazed or enamelled surface without a robust base; the immense strength of the fireclay body provides an unequalled foundation for a ceramic glaze: this is of prime importance, because it is on the performance of its glaze that any sanitary ware is judged. Fireclay's resistance to thermal shock and to physical strain contribute to a glaze of unmatched durability and lustre. This basic strength and toughness are illustrated by the fact that it is in fireclay alone that the larger items of ware can be produced without failing in the kiln.

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Photograph by courtesy of The City Engineer, City of New Sarum.



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STORAGE BUILDING AT TENBY, PEMBS.
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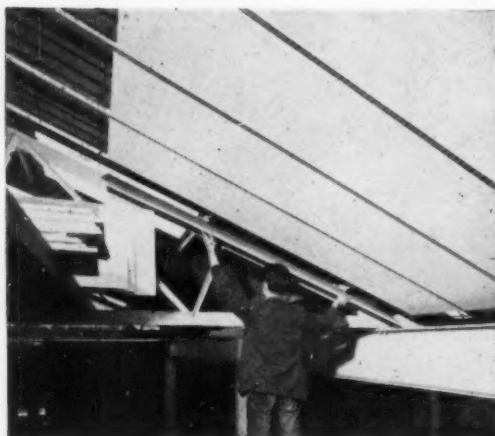
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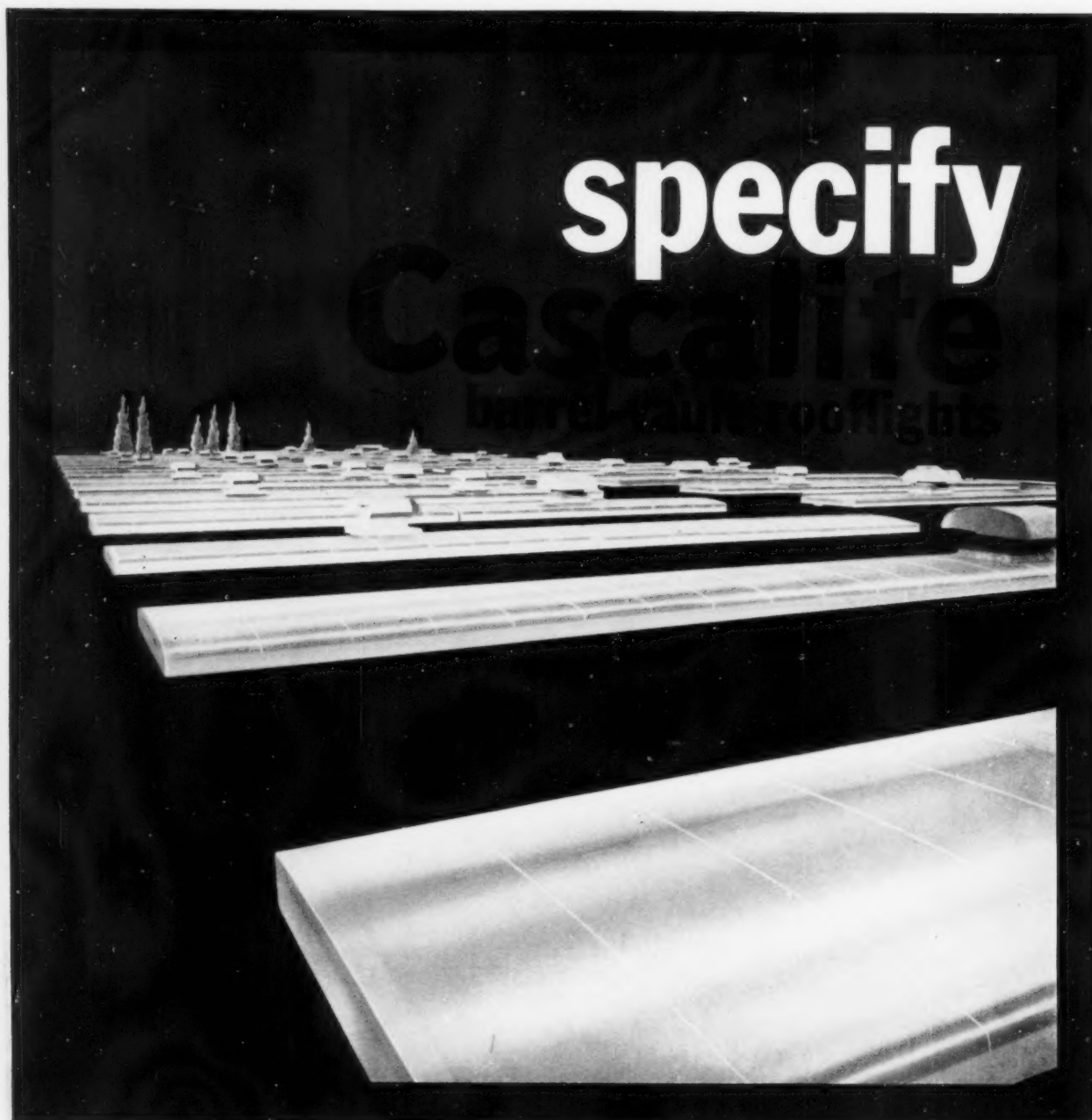
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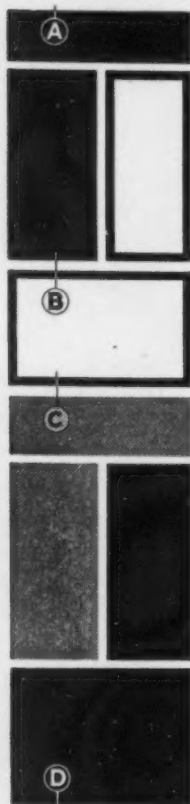
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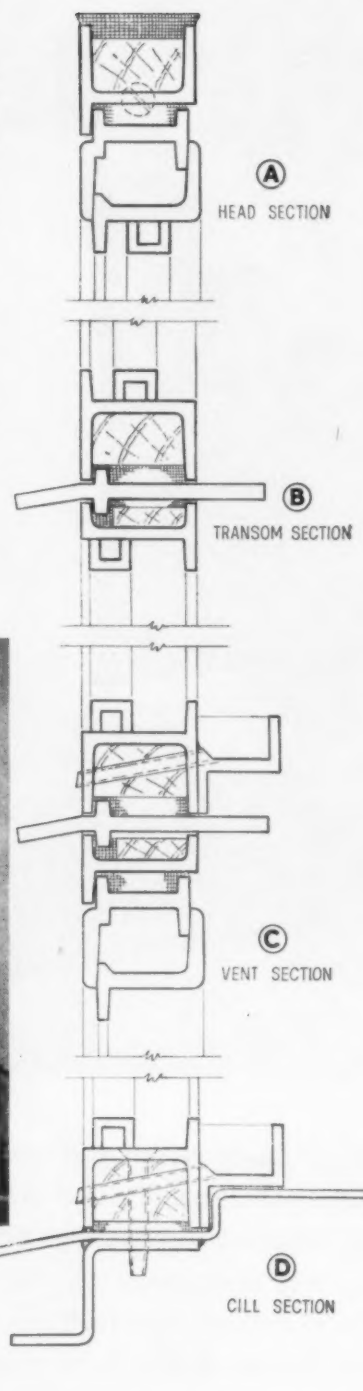
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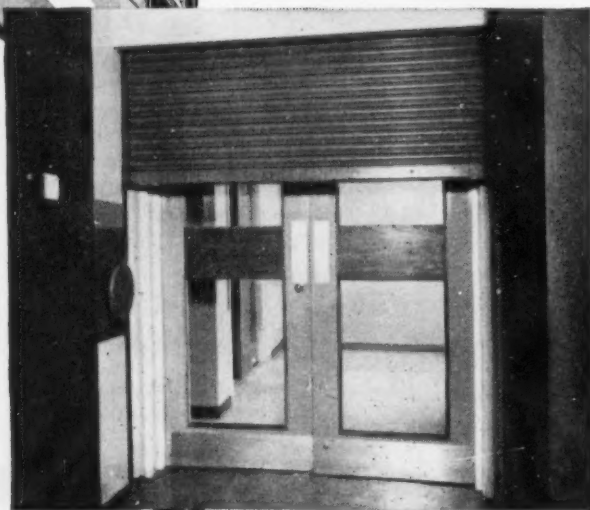
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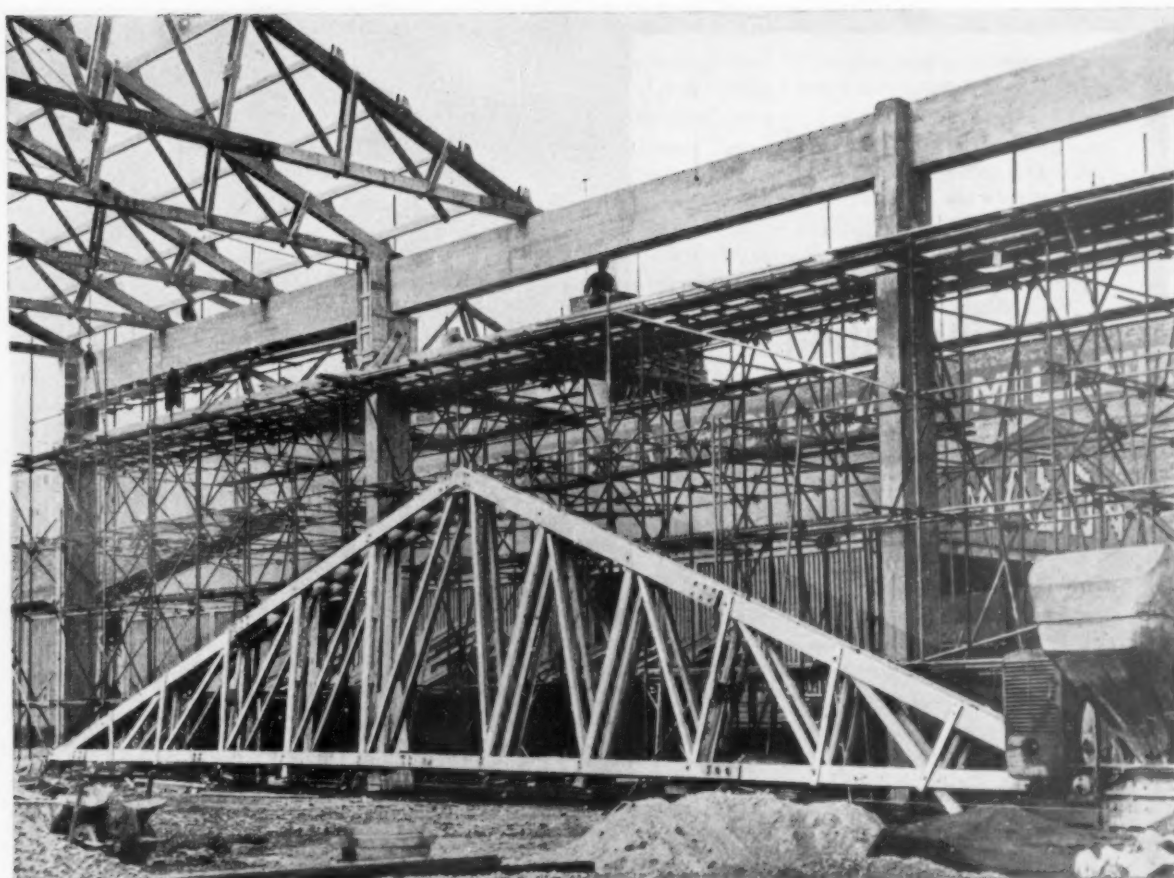
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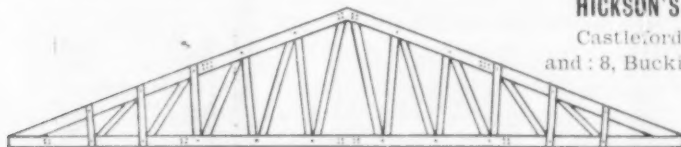
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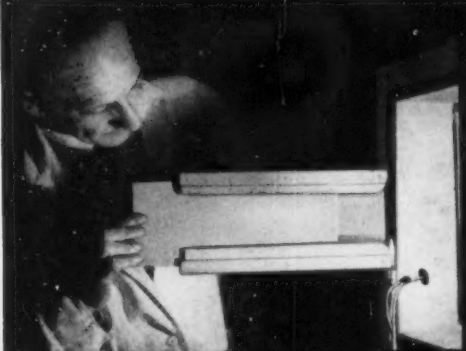
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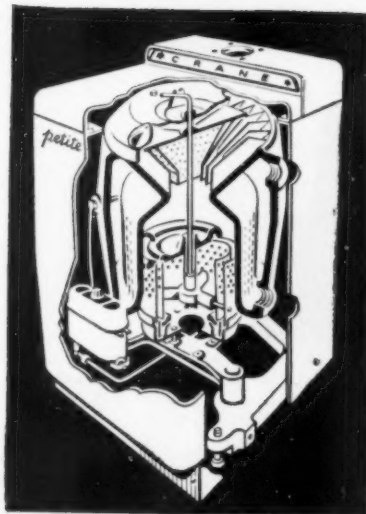
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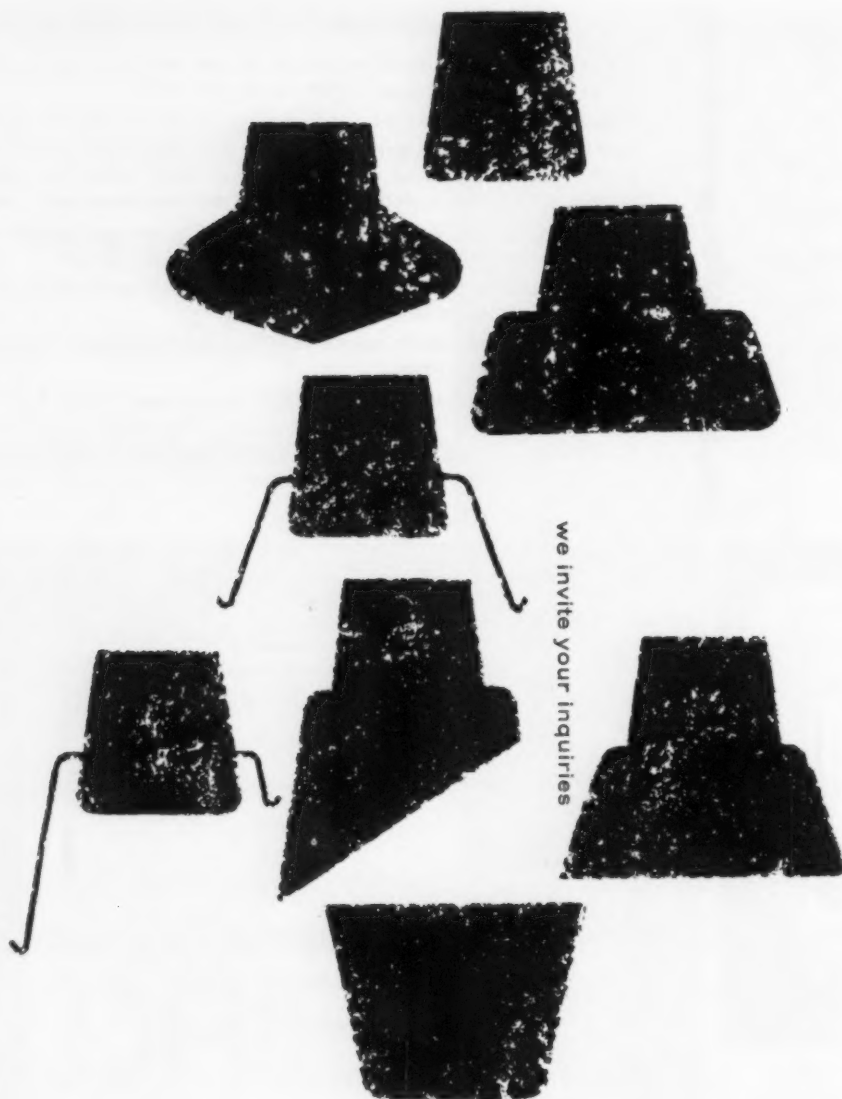
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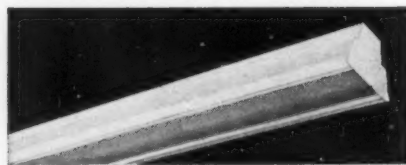
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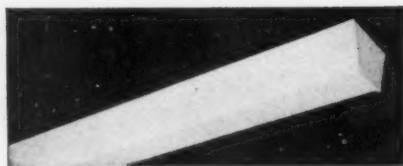
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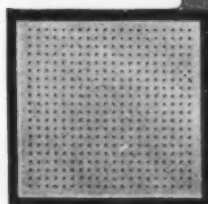
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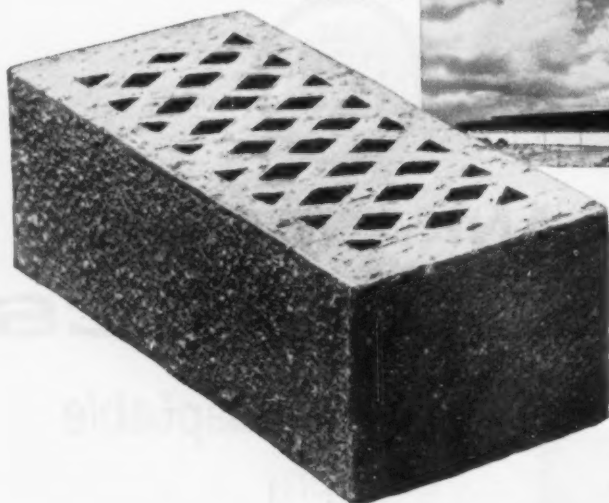
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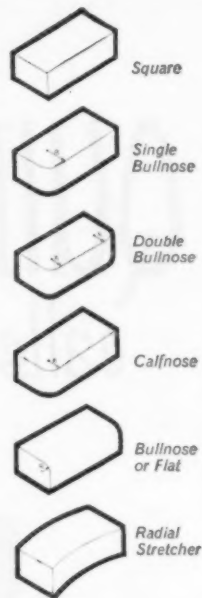
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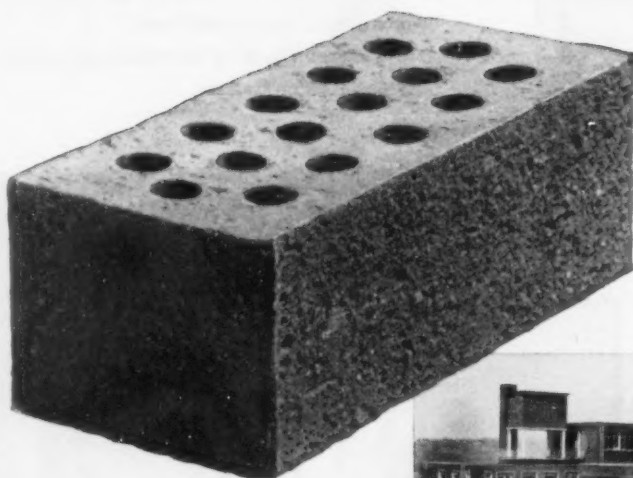


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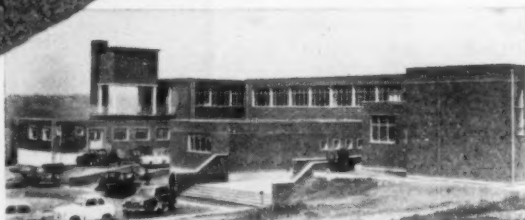


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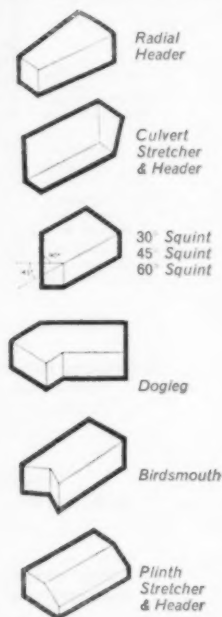


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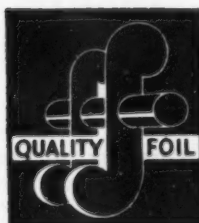


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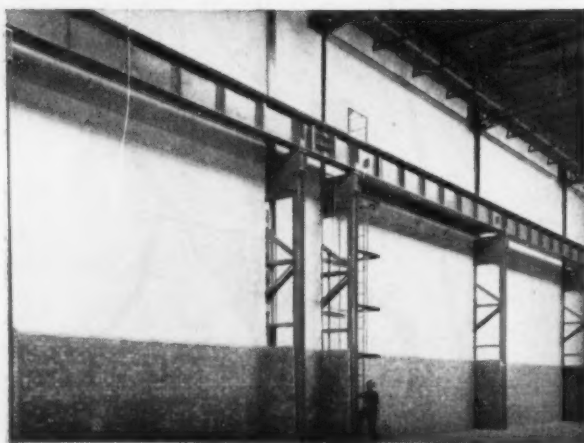
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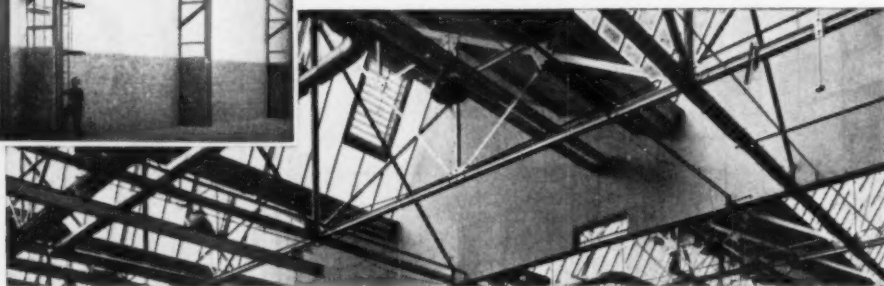


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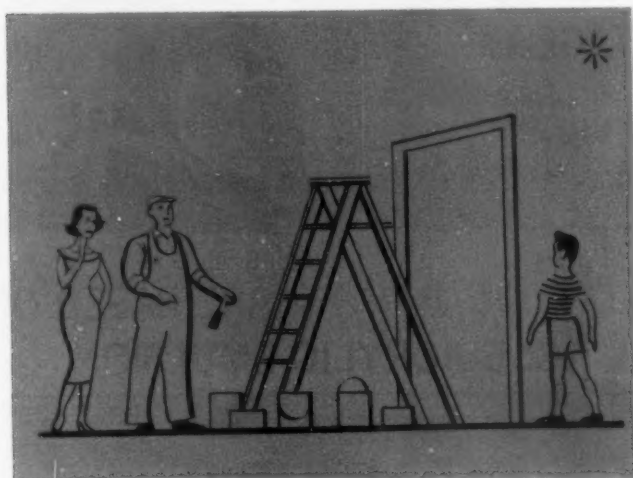
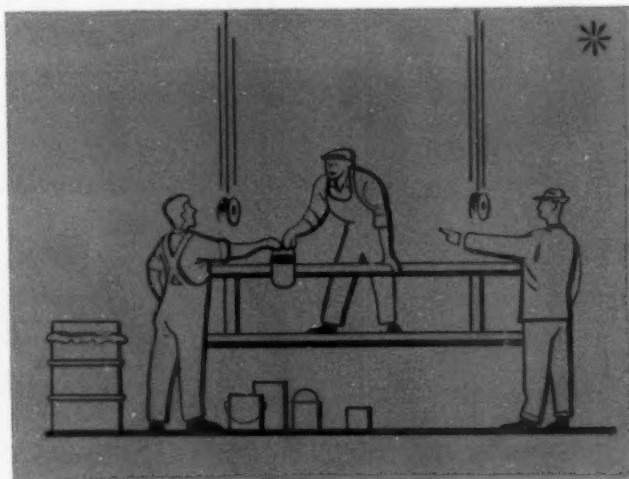
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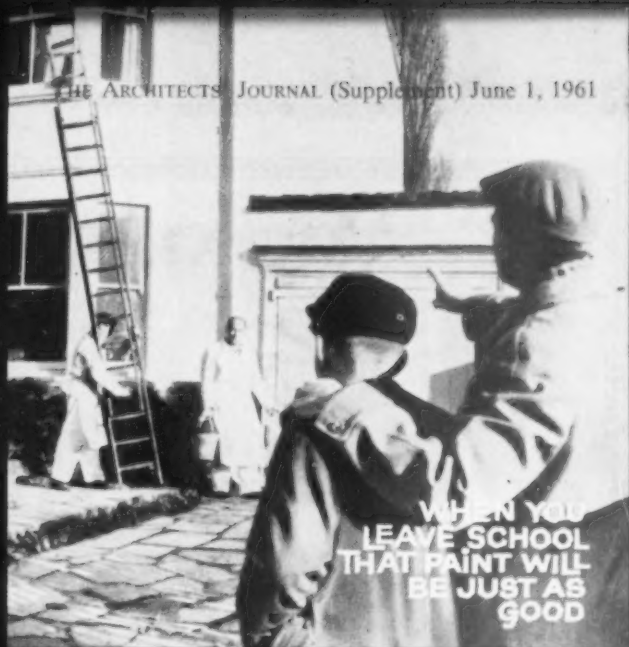
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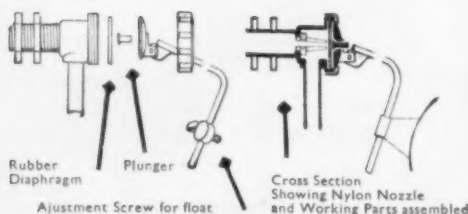
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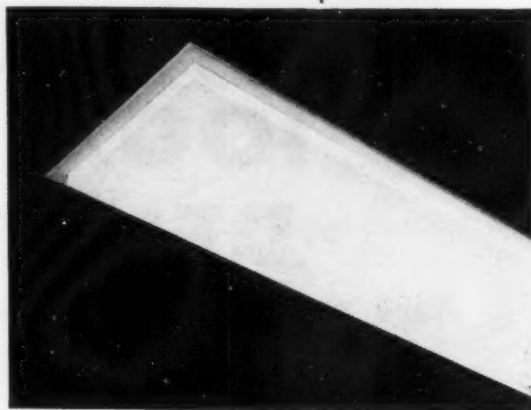
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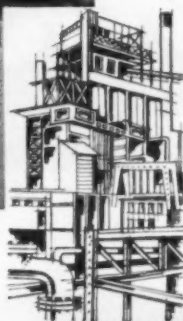
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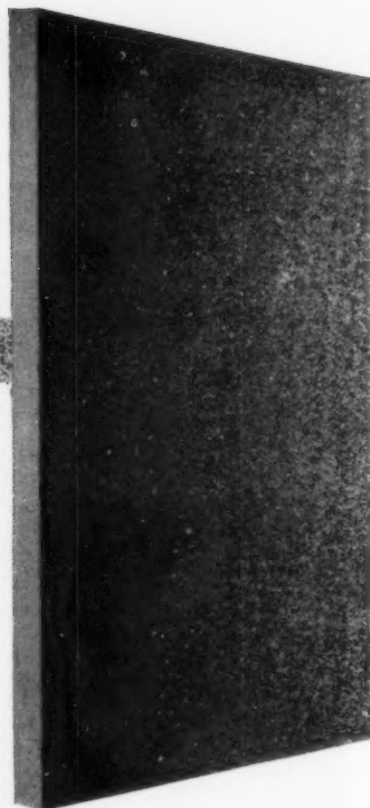
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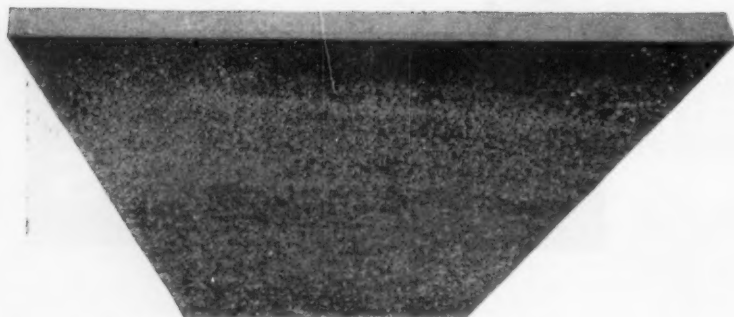


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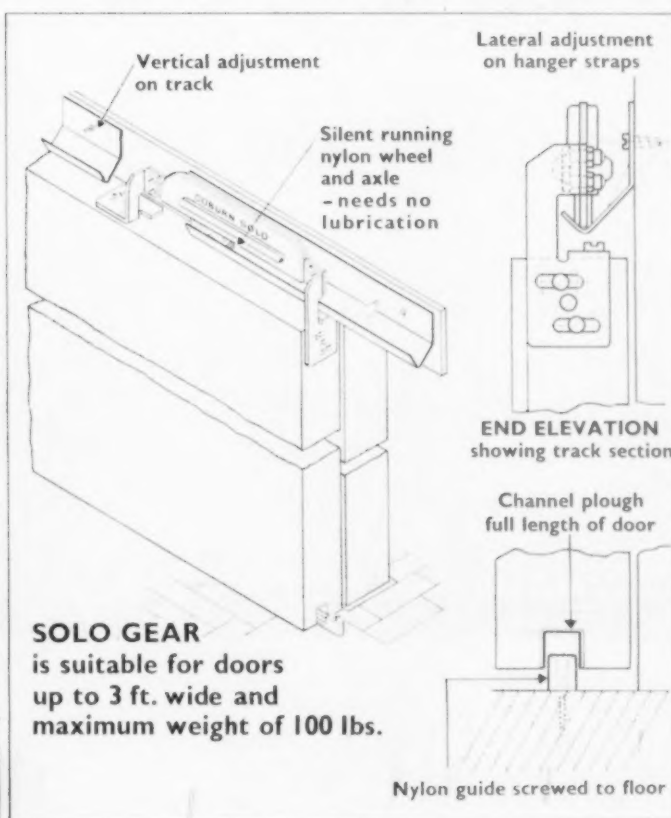


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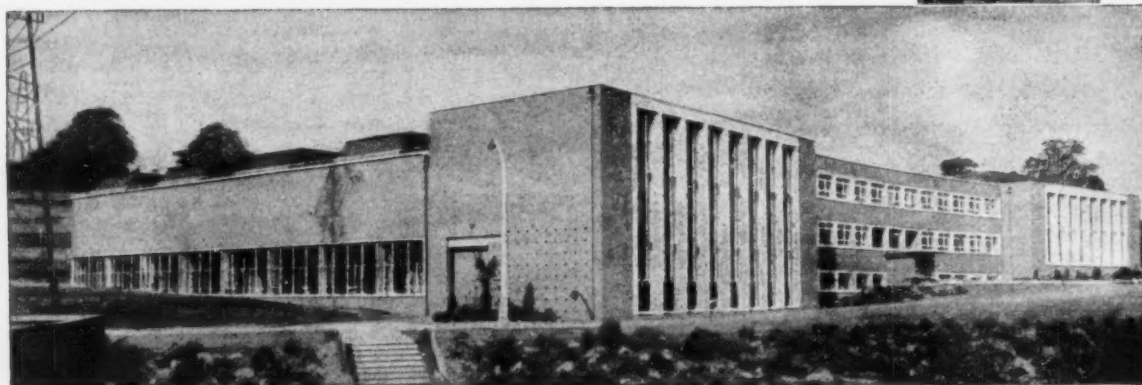
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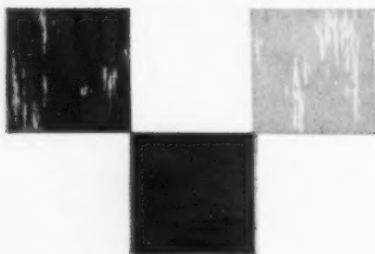
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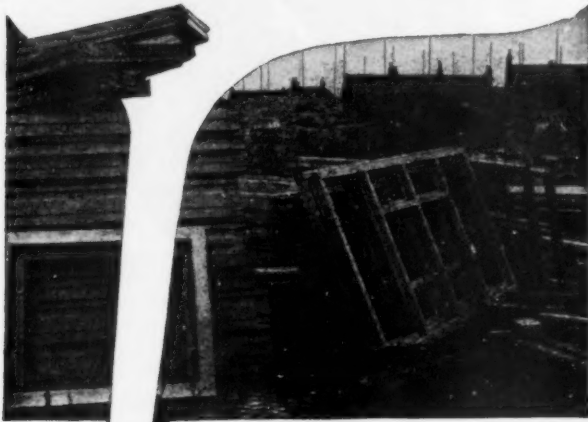
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The Architects' Journal

No. 3450. Vol. 133. June 1, 1961

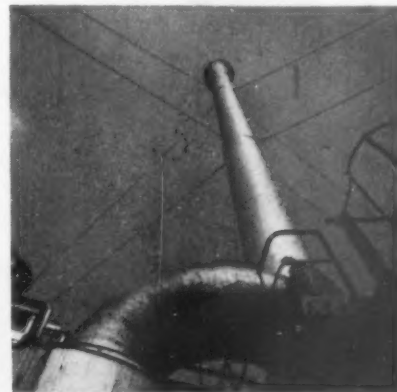
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Not Yet Architecture

Only the greatest survive pre-breakfast scrutiny. London Airport doesn't. It isn't of course much improved after tea either. Saarinen, one remembered moving up on the escalator, said airports should be symbolic of flight. Yet London's lack of wings was hardly the problem. In any case symbolism may get in the way of function—collecting, sifting, distributing. Eagles only add corn. Was it then the old world window dressing of red brick that jarred? Cosmetics often confuse after all. Looking back from the yellow bus that goes a biscuit throw, Gatwick still seemed the best.

Perhaps the plastics house and exhibition which Chemische Werke Hüls were staging at Marl, two and a half hours away—one and a half in the air, one on the autobahn—would give some hint; would synchromesh the Viscount and the Terminal Building. Hüls has some of the capacity; an enforced offshoot of I. G. Farben, now the biggest producer of p.v.c. in Europe. Marl, where



Reinforced p.v.c. chimney by Hüls

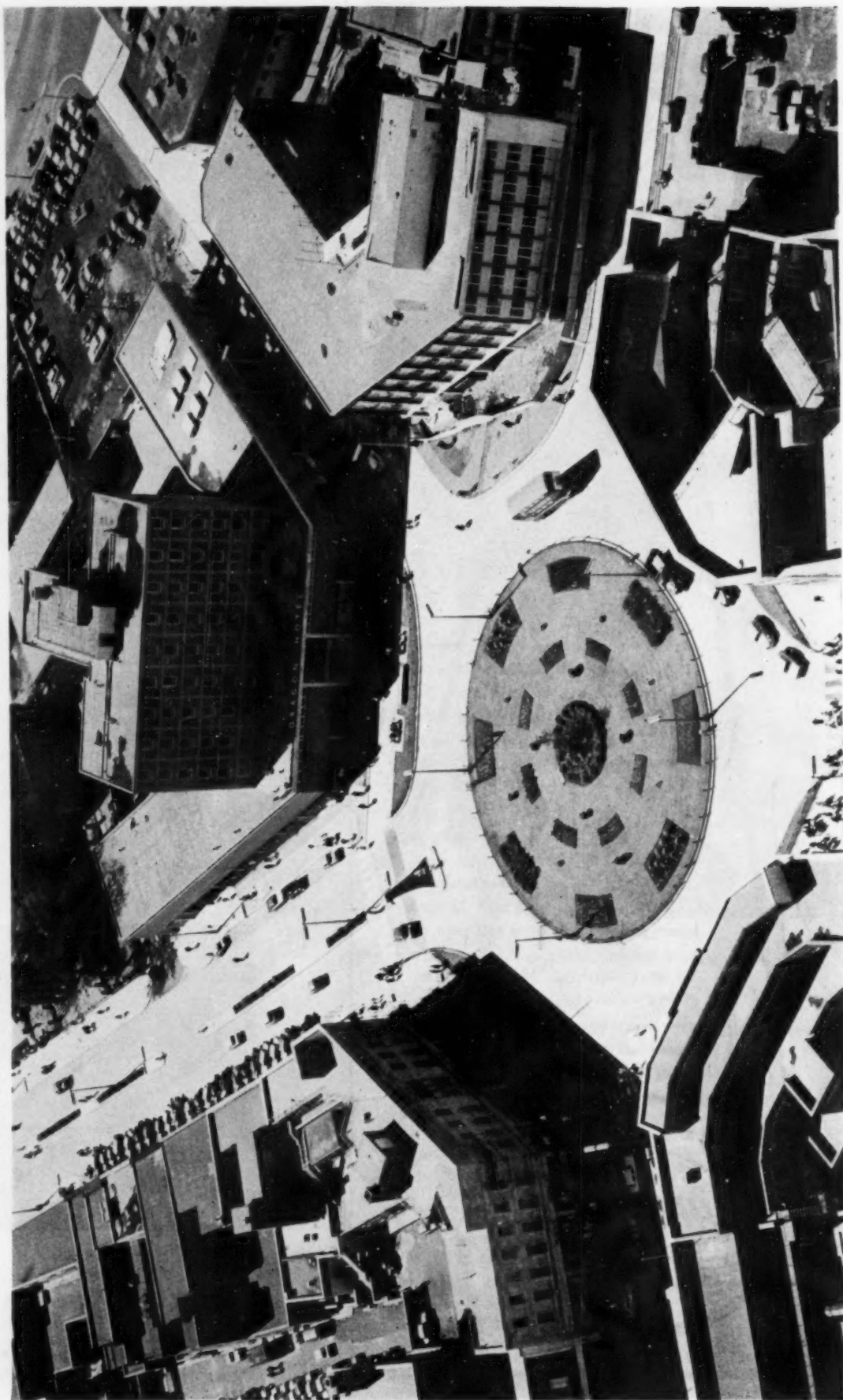
Bakema's city centre is shuttered to first-floor level, is virtually a company town—16,000 employees in a half-hearted garden city spread themselves quite far.

There isn't a moment's doubt at Hüls about the ability of the technology of the sixties

Roundabout Achievement

The Dragon Hotel, owned by Trus: Houses, designed by Sir John Burnet, Tait, Wilson and Partners, in collaboration with Trust Houses' architect D. G. Millett, and built by Laing Developments, now completes the fifth site of Kingsway Circle roundabout in the centre of once-blitzed Swansea. The T-block of 117 bedrooms, all with bathrooms, stands above a two-storey arrow-head of shops (on the street frontage) with store-rooms over, and the public rooms of the hotel. To the rear of the

site is a separate block of 14 garages and 40 staff bedrooms. In design and massing the building shows a marked advance on its neighbours, but this aerial photograph demonstrates vividly the vital importance of planners and engineers being up to date in their ideas. Here, 15 years after the war, a plan has been completed (after a fashion: note the pathetic endeavours to achieve imposing four-storey frontages) that was out of date when it was designed.



to produce; the statistics have a sort of naïve spaceman charm that is only dispelled after the first half-hour among the chemical pipe spaghetti. But no amount of Rhenish spātlesse can cancel the much stronger awareness that neither automation nor electric arcs beyond the sun's surface temperature necessarily help in getting the gears to mesh. There is barely a recognition that gears exist, that power needs to be transferred.

*

Even if one accepts Marvin Goody's cruciform for Monsanto or Ionel Schein's spiral for *Elle*, the work at Hül's doesn't add as much as an explanatory footnote. It's not that one craves for stunts in plastics—their amusement value is after all strictly limited—but only that all assembly must be greater than the recalcitrant bits that make it up; it must say something else on its own. Starting with the premise that only the currently acceptable has to be shuffled into some sort of proximity, the Hül's pavilion was doomed to stay dumb.

This is not an indictment of technology, only of that particular research. Its basis may already be outdated. If Riesman is right and our affluent societies are to be consumer orientated—Banham's thesis on the effect of the human sciences is but one important facet of this—technology may show itself elsewhere. It may be that the air-conditioning ducts, the appliance feeds, the PSALI fittings, the air filters: the gadgetry of creature and machine wellbeing will push to prominence. Services, rather than structure, as form regulator. It is this, of course, that makes Kahn's servant spaces such clairvoyant architecture.

But, and the immoral thought is inescapable, if services are to be able to cope as it were almost unaided in keeping us content, can the building be just gingerbread? Do Kahn and Yamasaki start from the same assumption and come to conclusions which even if opposed are equally valid, valid that is to say once one is purged of the ethic of scarcity? When Pevsner complains of current historicism, he is only condemning the apparent immorality of the gingerbread. The fallacy is probably inherent in the word "unaided."

*

Amsterdam the following day confirmed. It's the total assembly that bowls over: water, brick, trees, the narrowest shopping streets functioning magnificently — cars bullied by pedestrians—the sense of immediacy, of place. Every brick, every barge, every bridge adding to uniqueness. And one view of the Stedelijk Museum puts Hül's into a blurred dissolve. Marino Marini. Pyrex pot. Calder mobile, restaurant and coffee terrace, pool, children's sandpit, Henry Moore, grass, trees, library, posters projecting into the city, all in superb Mumfordian juxtaposition. The new wing of the Stedelijk is in concrete, brick, glass and timber; it could have been in stabilised earth, it could have been in plastics. What mattered was not the making but the using.

MICHAEL BRAWNE

Editorial

ANOTHER LOST CAUSE FOR OXFORD?

THE Report of Sir Frederick Armer on the Oxford Roads Inquiry could hardly be more depressing, and if the makeshift of driving a road through Christchurch Meadow is accepted as "inescapable" the loss of amenity in the Meadow will be only one of its minor consequences. The truth is, Sir Frederick has adopted a motorist's solution—and a very-short-sighted motorist, at that. His conclusion rests on the bogus assumption that a Meadow road without any precinct scheme for the University will leave the High Street with 23 per cent of its present flow in 30 years' time. He denies that a new road would itself generate more traffic, rejects the notion that eased conditions would cause traffic to flow back into the High Street and omits the 15 per cent of internal traffic which was not covered by the Road Research Laboratory Survey. He cannot accept the "hardship and inconvenience" which would be caused to motorists by closing roads to traffic, but presumably accepts the hardship and inconvenience to the redevelopment areas of St. Ebbe's and St. Clements resulting from trisecting them with motor roads. The tragedy is that if a purely relief-road solution, based on juggling with traffic flow figures, is adopted all hope of a far-reaching and imaginative plan for Oxford will be lost. Sir Frederick has accepted the view of the City Council that the Townmaker Plan for the city's redevelopment cannot be considered, because it calls for alterations in the development plan, due for renewal anyhow.

We hold no particular brief for the Townmaker Plan: but we believe that the Townmaker *approach* is the only way to a logical plan for Oxford, its university, its industry, and its citizens, whether they drive or whether they walk.

KNOW YOURSELVES

The results of the RIBA office survey will be submitted to RIBA Council early in the next session. The report will probably be the most valuable document ever produced by the RIBA. For the first time the RIBA has attempted the investigation of the profession as it now practises, and it is only with this self-knowledge that an efficient policy for education, practice and professional responsibility can be evolved. Inevitably this report, if and when it is published, will be used or even distorted by various interests to prove particular points. It was therefore encouraging to learn, at a Press conference given by the office survey team last week, that the team are well aware of the limited scope of this first survey and of the danger of trying to attach more to it than the facts warrant. Such a danger is less, however, than that of basing policy on emotion as at present.



RIBA JIVER

Many thanks to the RIBA for changing the brand image of the architect. The traditional, bow-tied, pipe-gripping artist-type—who has turned up in novels, films and ads for bad breath or night starvation—is giving way to typically rough-headed, jerseyed young men in the Institute's 12 recruiting posters for use at schools, careers exhibitions and so on. These gay, striking and informative attempts to attract the intelligentsia of the sixth forms (there's even a modest jiver pictured with a brave, barefooted girl) set out to show that the architect's job is important, interesting and varied and give details of how to become an architect and "how a job goes through." The display of these posters by the LCC and the MCC—to coincide with Commonwealth Technical Training Week—fills the nasty gap left in the first Careers Exhibition at Olympia organised by the National Union of Teachers. Let's hope they will soon be on view in other parts of the country.

HITCHCOCK VERSUS HRYNIEWIECKI

Members of the IUA Congress, to be held in July, have just seen the three main papers that are to be given by Hitchcock, Nervi and Hryniewiecki—together with the comments made by various national sections of the Congress. It is clear that contributors are looking at the Congress theme in two different ways. Some national

sections think, with Hitchcock, that the theme ("The Influence of New Materials and Techniques on Architecture") is primarily a matter of aesthetics: others, like Hryniewiecki, that it is mainly to do with the adoption by the profession and the building industry of industrialisation and prefabrication. The AJ publishes summaries of these papers, which do not, happily, seem to represent an ideological, east-west tussle, in its special Congress double number on June 29.

THE REAL MACHOLY

Moholy Nagy, as you will have gathered, is to be the patron saint of whatever happens next in architecture. And if that isn't why you are hurrying along to see his paintings and collages at the New London Gallery it will be because you remember him as one of the heroes of the Isokon period in England in the thirties. And you will not, in that case, be surprised to find Maxwell Fry as the author of the catalogue introduction of an exhibition best described as "interesting." None of the pictures, which cover the whole of the Hungarian's painting career, is an example of great abstract art, but they do give a strong impression of the enquiring, experimental approach that made him such a great teacher and a stimulating collaborator.

*

If you get caught up in the discussion this exhibition will arouse, remember to say MoHOY-noj, and then try again.

TEACH WHOSE GRANDMOTHER?

Does anyone want to teach Architectural Engineering? Leeds University hoped so but have been disappointed by the results of an advertisement of this job (unhappily named?) in their civil engineering department. It is a job that will involve teaching on the aesthetics of engineering structures and, to some extent, town design as well as historical development of domes, arches, vaults and so on. To any architect interested in education—particularly in teaching budding engineers something about architecture—this sounds an interesting job. The salary scale—and perhaps this is the trouble—is £1,050 to £1,850.

NO GROUP PRACTICE?

The Building Exhibition sponsors (yes, the year's come round again) are encouraging all exhibitors to provide good technical information, properly

classified under the SFB system. Good: but what about the grouping of exhibits, which the AJ and other journals have asked for so often? The usual objections are that firms won't move from their 40-year-old sites, or that some manufacturers make products so diverse that they can't be grouped. But there really isn't any excuse for the usual chaos: once exhibitors were sold on the idea it would not be difficult to classify them under broad groupings.

HIGH AND OVERDEVELOPMENT?

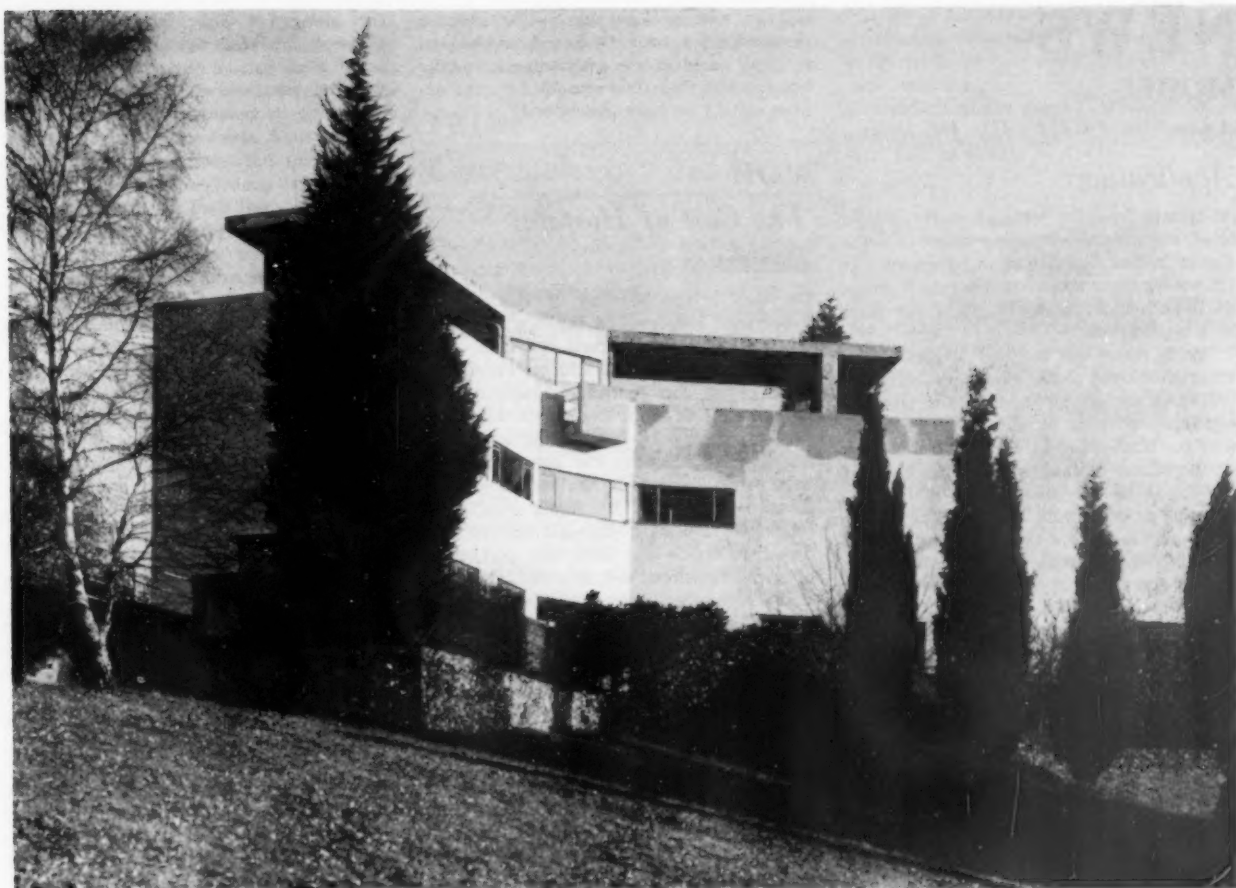
My picture shows "High and Over" in Amersham, A. D. Connell's first building and one of the earliest examples of modern English architecture (1927). The house and its five and a half acres has been sold and development is pending. No details are yet available of what is going to happen, so it may be too early to sound the preservationist clarion. But in case anyone who ought to care is interested, let me remind them that—as Henry Russell Hitchcock has pointed out—there was no new house of comparable boldness in Europe before 1929 outside France, Holland and Germany. And there were not many in those countries either.

*

Some of the early houses had an unhappy fate. The little one in Vaucresson acquired a steep roof when its walls needed repainting; and in Bordeaux they thought Pessac would look nice with green shutters. Nearer home some trellis work arrived to "mask" the projecting ladders of Early English Modern. But not everyone has suffered. The Wells Coates flats in Hampstead (second, if you remember, in the late *Horizon's* competition for the ugliest building in Europe) are safe and merely change colour occasionally. And quite recently a later work by Connell, Ward & Lucas (6, Temple Gardens, Moor Park) found a new owner who repaired it and improved the heating. This, as someone ought to whisper in the ear of the Amersham developer, was quite profitable.

END OF A CHAPTER

A new, 200-strong Allied Society was formed the other day. Chapters of the Manchester Society who were remote from that City, and who were tired, according to one spokesman, of being tied to a moribund body, decided to



"High and Over," the Connell house, is threatened by development. See note on opposite page.

become independent. Accordingly, with a small boundary adjustment with Liverpool, the Blackpool and Fylde and the Preston, Blackburn and District Societies have amalgamated to form the North Lancashire Society of Architects.

*

A well-attended inaugural dinner, with Sir William Holford as guest of honour to bless the event, was given near Preston. Local, as well as architectural Press, was there in force to hear the Society's first president, Lancashire County Architect C. H. Simmons, toast the old society and Sir William, with Haydn Smith, the vice-president of the parent body, Manchester, in support, toast the new.

*

ASTRAGAL is not entirely convinced that Allied societies make the most of their potentialities. Perhaps North Lancashire will set an example. At least they've made a promising start with a series of talks to grammar school sixth forms on appreciating environment. As Haydn Smith wisely pointed out, every architect can only ask him-

self: "What am I doing for my Society?"—never the reverse.

BETTER LITERATURE

The RIBA/Building Centre Competition for trade literature has come round again, with a 20 per cent increase in entries but with many of the same names cropping up again. Looking round the exhibits I wondered if it is reasonable to have outright winners in the various classes, when so many products are inherently photogenic and need little factual data, while others need a lot of information but are essentially rather dull, however vital they may be. There is no point in arguing about the awards, but haven't the judges been given an almost impossible task? Wouldn't plain certificates and mentions be the answer?

GOING TO THE COUNTRY

The RIBA's meeting at Leeds, the first in the series designed to familiarise architects in the provinces with the Institute's work, was a great success, ASTRAGAL learns. President Holford started the meeting by giving a synopsis of the Institute's programme of

work and he was supported by a strong Council team: Donald Gibson, Sheppard Fidler, Edward Mills, Andrew Derbyshire, Hugh Wilson and Herbert Jackson. Questions had to be put in writing, but this was no deterrent and the meeting went with a greater sense of purpose than is observable at recent London AGMs.

*

Two discussions followed. The first was on the two-tier problem, and was opened by F. Chippindale, head of the Leeds school, who had interesting ideas on raising the Fellowship standard. However, it was obvious from the comments which followed that hot heads on this subject have had time to cool, and most architects are waiting to hear the results of the RIBA survey.

The second discussion on the package deal was, my informant tells me, the best he'd heard. Led by J. L. Womersley, the discussion subsequently ranged from the extreme of attacking architects as traitors to their profession for participating in package deals to defending them (by Joseph Konrad) for the undoubted advantages they can provide to the client.

ASTRAGAL

NEWS

MOHLG

More Publicity for Planning Applications

A circular from the Minister of Housing to local authorities, reminding them that the Public Bodies (Admission to Meetings) Act 1960 comes into operation this June 1, raises the question of greater publicity for planning applications.

"The Minister has received a good many representations about the desirability of arranging for greater publicity for planning applications," says the document, "and he asks for local planning authorities to review their present arrangements in the light of the following comments.

"Some people would like to see specific provision made for advertisement of all planning applications of any importance before decision is taken. The Minister does not believe that that would be right; it would in any event be bound seriously to increase delays at a time when the great need is to speed up decisions.

"Planning applications are registered and arrangements are already in force which secure publicity for many of them: under the Town and Country Planning Act 1959 certain types of proposal relating to uses which may be particularly objectionable neighbours have to be advertised: substantial departures from the development plan are also given publicity in appropriate cases; and there is publicity again when public inquiries are held by the Minister. . . .

"But there are some planning applications not covered by these arrangements where, in the Minister's view, there is scope for greater publicity than at present. The applications which the Minister has in mind are those which, if carried out, would affect the whole of a neighbourhood and which are therefore of considerable interest to a good many people. These cases are . . . not very numerous. Nor can they be satisfactorily defined. . . . It is a question of judging whether a particular proposal is of such interest . . . that it ought to be made publicly known, whether by direct notification to persons affected or by local publicity or both, and an opportunity given for anyone concerned to make his views known before a decision is taken."

Some authorities already do more than they are obliged to, in publicising proposals and notifying local civic and amenity societies, but all are asked to look at their existing arrangements with an eye to improvement. The circular goes on: "Local planning authorities will still have to judge applications by principles which may not reflect the popular view in the immediate locality. Room has to be found for many developments which are not welcome neighbours . . . such as close-knit layouts of houses and flats in high blocks, which, however well designed, are apt to cause local objection as being likely to change the character of the neighbourhood."

Even where unpopular decisions have to be taken, however, the local authority would

still be wise to keep the public and the press informed, so that "they should be seen to have acted in the knowledge of public opinion and that their reasons for their actions should be fully understood."

MOH

The Cost of Hospital Buildings

On May 25 the Ministry of Health published their long-awaited Building Note No. 2 on the Cost of Hospital Buildings. This note, which presents the Ministry's proposals for applying cost control to hospitals, thus serves as the keystone to the arch which the Ministry have been constructing with their Building Note series. The most important part of the proposals lies in the putting forward of a set of "functional units" each relating to a class of hospital accommodation. For wards and short-stay psychiatric units the functional unit is a bed; for diagnostic X-ray departments it is a diagnostic room; for nurses' homes it is accommodation for one student (a nurse counts as 1½ student, a sister as 1¼ student); for physiotherapy it is an individual treatment unit and for kitchens and dining rooms it is a meal. Taking their information from cost studies of existing jobs, the Ministry propose "cost recommendations" in respect of each of these units and in respect also of the many items (ancillary buildings, external works, communications, etc.) which escape from these unit classifications. The AJ will comment in detail in a future issue on the cost aspect of this important document.

IUA

MOE Architects Mentioned in Awards

The Committee of the International Union of Architects set up to award the August Perret Prize and the Sir Patrick Abercrombie Prize announced last week that it had unanimously awarded the Perret Prize to Felix Candela, "engineer of proven talent and of bold and fruitful imagination," and the Abercrombie Prize for services to town planning to the City of Stockholm.

It also agreed that honourable mentions go to the MOE Architect's Department, and to the Development Group for Industrial and Agricultural Buildings in Hungary, IPAR TERV, both runners-up for the Perret Prize.

Of the MOE architects, the Committee says their development of prefabrication in the field of school building achieved a "happy combination of technical innovation, industrial know-how and planning for educational and social needs" and has resulted in school buildings which have had great international influence since the war. "Special mention should be given to S. Johnson-Marshall, as much for his work in Hertfordshire as for his part in the work at the Ministry of Education, and to Donald Gibson, for his work on the CLASP system," says the award.

The Hungarian Development Group for Research into Industrial and Agricultural Building has carried out a methodical study over the past twelve years of heavy prefabrication techniques, and are cited for having found new methods of economical construction "without losing sight of the architectural quality which must be its indispensable corollary."

The Abercrombie Prize goes to Stockholm for a "planned expansion and renewal which are a fine example to other cities for their profoundly far-seeing policy and the intelligent co-ordination of the complex problems posed by a modern town."

The awards will be made at the IUA Congress in London next month.

RIBA

Office Survey Progress Report

The RIBA office survey team has completed its survey and has started writing its report which it hopes to submit to the Professional Relations Committee by September. Last week the members of the team described their work to date to members of the Press. Stirrat Johnson-Marshall, chairman of the Professional Relations Committee, sketched in the background which led to the appointment of Gordon Ricketts and subsequently Joan Milne as research officers for the Institute some years ago. The more recent Pilkington Committee's report showed how urgent was the need to learn more about the profession's problems. The Leverhulme Trust fortunately gave enough money for a professional team to be appointed and set to work. The members are: D. Howard, management consultant; Mrs. J. Madge, economist; Joan Milne (now deputy secretary to the Board of Architectural Education); J. M. Austin-Smith, principal in private practice; Andrew Derbyshire, a senior architect from a local authority, an adviser from Associated Industrial Consultants Ltd., Mr. Howard's firm, was C. A. Waghorn, an accountant.

The terms of reference for the team were to discover: what sort of work needs to be done in architects' offices and what proportion of professional and other staff are required to execute it; whether present fees are remunerative and what changes might be desirable or practical; can common levels of responsibilities and salaries be laid down; can efficiency be improved through better management.

Joan Milne described how 65 offices had been selected on a scientific basis related to the proportions of offices by size and region, but with a bias in favour of offices believed to give a good standard of service to the client. This was backed by a postal survey on a larger scale. Eighty per cent of local authority offices and 40 per cent of private architects replied to this.

Mr. Howard described his work as "virtually endless." For instance: do profits depend on the type of work or the type of client; does office turnover relate to office size or office location; what is the relationship between work and staff, profits and

work certified? etc.

The first impressions of the survey team were:—

Office organisation: there would seem to be little conscious organisation of offices.

Amount of part-time work: As no accurate answer could be ensured this question was not asked.

Overheads: It is hoped to give accurate estimates of the overheads of private and local authority offices.

Fee undercutting: The survey was accurate enough to detect this if it was happening.

Funds available: The team's resources were adequate for the job.

Recommendations: The report is to be a factual survey only and will not make recommendations, except as necessary to indicate trends.

National Joint Consultative Committee

The fifth Annual Conference of Regional Joint Consultative Chairmen and Secretaries at the RIBA last month was attended by representatives from all the regional consultative committees and of the National Joint Consultative Committee.

A very full discussion of the present state of the building industry took place. All regions reported a very heavy load of new work which showed no signs of slackening. This was leading in most areas to labour shortages, especially of craftsmen. The large number of major projects—power stations, motor ways, major industrial developments—were, in many areas, delaying progress on small and medium size projects.

Although it was realised that building was essentially a service industry and must accommodate itself to rapid changes in demand without reliance on any artificial control of the volume of work, several delegates expressed the view that the Government should have regard to the effect on local resources of men and materials when scheduling the start of major works.

The Conference recommended that the National Joint Consultative Committee should attempt to take stock of the building industry's position in the national economy and the future capacity likely to be required. The need for specific advice to the industry on how urgent projects should be handled was one of the main topics of discussion.

Orthodox procedures were often inappropriate when a client, usually for good economic reasons, wanted a job built very quickly. The industry used many different unorthodox procedures to satisfy such clients, but they were not always successful. Rationalisation of procedures, and in particular some means of combining the speed that results from negotiating a contract with an element of competition, was called for. The Conference endorsed the proposal that the National Joint Consultative Council should examine this problem.

A lively discussion also occurred on the report from the Eastern Region of a Conference on Joint Training and the news that the National Joint Consultative Committee had been advised by its officials to establish a

representative committee under an independent chairman to make proposals for joint training before qualification.

FBTE

Costs Stability "A Thing of the Past"

The President of the Eastern Federation of Building Trades Employers, C. E. Wadley, told the Summer Meeting at Clacton last week that any stability on building costs "now appears to be a thing of the past."

To the uncertainty of labour and materials prices, the Chancellor had added "the further hazard of a payroll tax," which could only be regarded as a revenue-raiser adding to industrial costs, and falling particularly heavily on an industry such as building where the labour content is high.

"The value of firm price tendering is such, however," concluded Mr. Wadley, "that, while pressing for closer observance of the essential conditions (proper pre-planning by architects and their clients), the Federation feels that this spur to efficient building should not be removed."

He acknowledged that the building industry was booming, and "very fully employed," and pointed out that apprenticeship recruitment was 10 per cent higher than last year and 50 per cent higher than in 1959. And called for "firmness on paid tea breaks."

THE STOCK EXCHANGE

Architects for New Building

The Council of the Stock Exchange has appointed Professor Richard Llewellyn

DIARY

Automation and Architecture: Yerbury Foundation Lecture by Gordon Friesen at the RIEA at 6 p.m.

JUNE 1

Ernst Barlach: Sculpture Exhibition at the Arts Council Gallery, St. James's Square.

Until JUNE 3

The Architecture of Charles Robert Cockerell: Illustrated lecture by E. M. Dodd at the Library Group Meeting of the RIBA, at 6 p.m.

JUNE 5

The Need for a Land Finance Corporation: Lecture by Henry Wells, TCPA Planning Forum, 28, King Street, London, W.C.2 at 6.30 p.m.

JUNE 5

Brazil and Brasilia: Illustrated talk by Bryan Westwood at the AA at 6.15 p.m.

JUNE 7

Harlow Housing Competition Exhibition: The entries for the Harlow Housing Competition are on view at the Housing Centre from 9.30 to 5, Monday to Friday, and till 1 p.m. on Saturdays.

Until JUNE 10

Davies of Llewellyn Davies and Weeks, and H. Fitzroy Robinson, of Fitzroy Robinson & Partners, as associated architects for the new building.

Rebuilding of the Stock Exchange, on the present site, is expected to start during the first half of 1963.

TPI

Competition Result

The Town Planning Institute has announced the winners of its competition for a design for the cover of its Journal: first prize was won by C. P. Davidson, 23-year-old architect of the staff of the City Architect, Gloucester. Second prize goes to D. Collard, 24-year-old teacher at Coventry College of Art, and the third prize to J. E. Kelsey, 24-year-old student member of the TPI, Civic Design Section, who works in the Town Planning Division of the LCC.

All entries are on view at the Institute's offices, 18 Ashley Place, Victoria, London, S.W.1, until July 8, from 10.30 a.m. to 5 p.m. from Monday to Friday, and 10 a.m. till noon on Saturdays.

Prize Essay Award

The Thomas Adams Prize, awarded by the Town Planning Institute for the best essay on landscape design in relation to Town and Country Planning, has been won by Michael Lamb, a graduate of King's College, Durham University, where he is a graduate in Town and Country Planning, and has a post-graduate diploma in Landscape Design.

Mr. Lamb works in the Planning Department of Lancashire County Council.

COMPETITION POSTPONED

Berkshire County Offices

The Royal County of Berkshire has announced that it has been able to acquire additional land adjacent to the Shire Hall, which it is proposed to include in the competition site.

The competition (published AJ March 9) has therefore been postponed pending revision of the conditions and schedules of accommodation, and revised competition documents will be sent to all intending competitors when they are available.

RIBA

Prizes and Scholarships Handbook

The Board of Architectural Education has just issued its handbook to RIBA Prizes and Scholarships, 1961-1962, containing full information about the various awards available, with detailed progress for the competitions. Copies of the pamphlet are available from the RIBA, 3s. post free.

RIBA Elections

Below we publish the "election addresses" of a number of candidates for the RIBA Council who have accepted our invitation to state what they considered the three most important issues facing architects today, and what they would try to get the RIBA to do about them, if elected to the Council. Candidates' replies are divided into Fellows', Associates', and Licentiates', and given alphabetically in those categories. No licentiates however have contributed. You are voting for 10 new Council members, of which 3 will be Fellows, 3 Associates and 1 a Licentiate, the other three being the "also-rans" with the highest vote, regardless of F, A or L to their names.

The JOURNAL's advice to enthusiastic voters is: Don't throw your votes about. Vote only for those you really want to see on the Council.

Fellows' Replies

KENNETH ABLETT

The three most important issues facing the new Council as I see them are:

1. The Education of the Architect
 2. The Architect's Practice
 3. The Architect/Client relationship.
1. The Institute's present policy on a "two-tier" profession with the lower status guild of technicians proposal is not a happy one. More thought is needed to be given to the accumulated experience of the teaching profession in general where the system should take due account of the important problem of the late developer dedicated to his work. It should be possible to devise an enhanced status of probationship or Intermediate examination common to all.
2. All is not well within the Architect's practice itself. The advent of the package deal is a symptom not a solution to the



Kenneth Ablett

G. Grenfell Baines



H. Conolly

malady. I would like to see added status given to the men who design and build, as opposed to the large number of Architects who operate in subordinate spheres of the profession. It is possible that the pride of belonging to a *corps élite* may do much for the general efficiency and quality of design turned out by the country's available Architects.

3. The proper control of the work, a distribution of the time devoted to the contract, not necessarily the total time allocated thereto, will have to be accepted by the Client, who tends to deny to the architect research time he considers normal in the production of his new car.

G. GRENFELL BAINES

My interest in the RIBA centres around Relationships, Recognition and Reward. Relationships inside the profession—the way we learn and work together to develop the best possible architects and architecture: relationships outside with associated professions and particularly the productive building industry.

Recognition by the public, through the best possible examples, of the true value of good design in every aspect of physical environment: recognition among ourselves of the parts played by fully creative and responsible members of public or private practices. Reward for the profession as a whole; adequate materially and in public respect.

We must increase total incomes by finding better methods of work in the office, and individual incomes by devising the fairest possible methods of sharing rewards in relation to responsibilities undertaken.

Lately, I believe the Institute has made progress towards becoming a source of inspiration and help, and if elected I would work to increase the tempo of progress in these three interdependent matters of relationships, recognition and reward, all of which are vital to Architects and Architecture.

H. CONOLLY

It is not easy, Mr. Editor, to devise a policy for the Institute in 200 words! But here goes!

1. An immediate assessment of the results of the "Office Survey," first in respect of fees and salaries to counteract the position revealed by the Pilkington Report. Should fees be higher—and should standard fees apply to all types of buildings or should there be different scales? Can higher salaries be afforded? And if not, why not? And can the best performance standards of the top notch firms and official departments be

taught to the less-than-average? All these need serious and immediate study.

2. Education—normal five years—post-graduate—and joint training. I think the ordinary syllabus needs a fresh approach, particularly the fifth year, where many thesis designs are unrealistic and time-wasting. Some measure of joint education with the other professions and the industry is now a "must," and in this connection I would like to see a junior organisation like the RICS have. Also, wider facilities for post-graduate research and more technical conferences.

3. Development of management techniques for the present, and a long term looking at the future by a special team, to enable the profession to keep its place in a fast-changing world.

J. C. BARKER

Strategy

The passing of an Act to ensure that all developers must employ architects, coupled with the raising of the standard of service offered by the profession.

Tactical Problems Facing the Next Council

- (1) *Education:* To produce an "attitude of mind" that architecture is a service. The present school training is too isolated, and a greater interchange with selected offices and the use of live projects followed by post-graduate research is essential.

- (2) *Two-tier Profession:* I am opposed to two levels of qualification. This would split the profession, lower the quality of architecture, and lead to dilution.

The desire for a two-tier profession may be because many of us feel that it is impossible for any one person to be fully equipped to deal adequately with all aspects of our work. I would like to see architectural education developed on a broad front covering all matters relating to building and three-dimensional planning with a series of equal qualifications allowing for specialisation in a number of different aspects.

- (3) *Scale of Remuneration:* The Report of the Royal Commission on Salaries for the medical profession has shown how far we lag behind. Fees and salaries can only be raised concurrently with the raising of the standard of the service. We must therefore make ourselves more efficient by improved education and better office management.

CLIFFORD CULPIN

May I be blunt? I want to be re-elected to the Council because I should hate to leave unfinished several tasks I have undertaken during the last three years; three years of considerable change at Portland Place.



Clifford
Culpin

John
Eastwick-Field



Leonard C.
Howitt



J. H. Napper



F. T. Orman



The three most important issues before the new Council in my opinion will be:—

1. *The Two-tier Proposals:* I should strongly resist any move to establish a low-paid draughtsman class which would inevitably force down salaries. Highly paid technicians, yes! Cheap labour, no!
2. *Differential Fees:* Some practising architects have declared they must have the low-paid class of assistant to make their jobs pay. In that case, the fees are too low.

We have at last secured proper fees for repetitive housing. Now we need to adjust fees in other fields. A few (e.g. industrial) may be too high; many are too low. Official salaries would rise in step with increased prosperity in private offices.

3. *Professional Efficiency:* This is basic. If we want a higher standard of remuneration we simply must be more efficient. Better general education, as expressed by the two "A" levels, is a start. Now we need a far higher standard of technical education where longer and wider practical experience is a condition of qualification.

PETER DUNHAM

1. *Professional Efficiency*—our relationship with the public, whether good or bad, is influenced more by this than anything else. The new Management Committee, and the Office Survey now under way, are evidence that the Institute are tackling the problem, but the desire to improve our efficiency must continue.

2. *Architects' Remuneration*—the Practice Committee are now considering a differential scale. This is essential to cut out this silly business of some jobs paying well and having to subsidise others. The fee chargeable must show a standard level of profit for all types of work and allow the staff remuneration to be considerably higher than at present.

3. *The structure training of the profession*—this subject is getting a bit warm, but it has got to be faced realistically. There is a two-tier set up now and it will never be eliminated; it should, therefore, be recognised and regulated by the Institute. With the decrease in intake to the profession that must accrue from the higher standard of entry, and the increased use of the profession, the services of the technical assistant will be needed, and frankly the qualified architect will never command the respect and salary he deserves without him.

JOHN EASTWICK-FIELD

The status of the architect (the establishment of confidence in the profession); education (the creation of a sound profession for the future); the composition of the profession (the so-called two tiers); these are the three issues which I consider to be currently of great importance.

Taking the last point first, I do not believe that the concept is one designed for the permanent suppression, socially and monetarily, of a particular class of person.

I would support the idea if it meant that architects could direct more attention to broader issues (as their training leads them to suppose they will), but I would support it only if there was evidence that it would contribute to greater technical efficiency and that the persons involved were appropriately paid, with the opportunity for subsequent graduation to the position of architect—or engineer, etc.

Education still needs to be more closely related to the realities of architectural practice—in particular to a better understanding of the means and processes of building in a commercial and industrialised world and I would support student representation on the

Council. Post-graduate teaching needs to be vigorously encouraged, and in my view is one of the most fruitful and desirable possibilities for joint education for the various interests in the industry.

Lastly, the information given in the recent report on professional salaries, together with the emergence of the "all-in" service, underlines the public's lack of confidence in the profession at large.

The RIBA should extend its efforts to inform the public of the value of the architect's service and should, further, not be afraid to ask for commensurate fees.

LEONARD C. HOWITT

It was disclosed at the recent A.G.M. that a Sub-Committee of the Board of Architectural Education had been appointed to draw up at once a scheme of training for technicians.

Therefore, it is obvious that the first priority issue is the vexed question of whether we should have a two-tier profession. Whilst allowing for the deep sincerity of its advocates, I am strongly opposed to the two-tier proposal and to any recognition by the RIBA, by diploma or otherwise, of a training course for technicians. Such an award would dilute the value of the Associateship. If lower-priced unqualified labour is essential to the economics of some types of practice then there is something wrong with the fee scale and/or their organisation.

I believe architecture to be indivisible and to extend into the smallest detail, and techniques of communication should be devised to eliminate the need for hack work by cheap labour.

The second important issue, allied with the first, is how to raise standards of design in all its aspects and to increase efficiency in architectural practice, especially in the face of the package deal.

Thirdly, there is much still to be worked out about the functions of the allied societies and their relations, financial and otherwise, with the RIBA.

J. H. NAPPER

Here are my three main points:

1. To consider positive ways of promoting those studies (pure research) in architecture which can only be carried out in association with other professions and uninfluenced by current Government policies.
2. To review critically the present methods of communication of information between the building parties, i.e., architects, surveyors, engineers and contractors.
3. To make, as quickly as the present survey permits, decisions on the immediate needs of the profession so that a course of action can be put into effect.

F. T. ORMAN

The "all-in" deal and the relationship with other consultants usually figures among current griefs for the architect. They are, unfortunately, only a symptom of the decline in the position of architects over the last fifty years. The decline and/or the difficulties with other consultants—not merely the "all-in" deal, is the basic problem.



C. E. Pearson

Ernest F. Tew



Basil R. Ward

The contributions (not solutions—there are none) to step up the positive and continuous presentation of the profession's case by all the appropriate techniques of communication are as follows:—

1. To overhaul training, especially in the economics and techniques of building. It is useless for architects to know about the ABC of building if they do not constantly remember the LSD.
2. If architects were generally more awake about costs, contractors' problems and technical matters, there would be less heard of other consultants and the problems of working with them.
3. To devote more attention to the tasks of the medium to small practice and give more backing to its efforts. The profession sometimes looks like an army where the generals and staff have forgotten there are other ranks.

CHARLES E. PEARSON

Every architect should get real value from the RIBA and feel that membership is worth while and essential.

1. The technical information service should be greatly expanded and routine office work investigated and analysed, with the help of consultants, to reduce the dreary paper work in large offices and increase the competence of small offices, thus raising production and salaries and leaving more time for design.
2. Publicity should be increased, using TV,

etc. Local authorities without separate architect's departments must be urged to form them on equal status with engineers. Also we must get our own house in order to prevent competition failures by adopting a new way of selecting assessors and insisting on more than one. And we must devise a closer co-operation with planners to avoid time-wasting struggles.

3. Educational standards in schools must be raised and part-time courses should be reduced in size. Students must have greater contact with practices and be taught by more practising architects. The invitation of visiting lecturers and critics should be encouraged. I do not agree with a two-tier profession which can only produce an inferior group, although building technicians skilled in a particular field could be invaluable.

DAVID STOKES

1. If it matters who is on the RIBA Council, then it is certainly a good thing that the Council should be democratically elected as proposed in the new bye-laws.

There is unluckily a big flaw. The London and Middlesex members—about one-sixth of the total membership—are only to have a part in electing the nationally elected half of the Council, whereas the remaining members elect both halves.

This is very wrong, and, unless you take the view that none of it matters anyway, must be modified. It is quite simple and does not need a London Middlesex Society but only an additional list of say five members from the area. Proposed and elected by members in the area.

Why should London members to whom the history of the RIBA owes so much now be disenfranchised as to half the Council?

2. I think that the interests of the private practitioner and his staff should be looked after by a special society or committee of the RIBA. Otherwise, as an unorganised minority group, our interests may, through our own fault, get overlooked.

3. The "two-tier" idea may become a fact simply as a result of the two "A" level rule. No one can tell. If it does I think a bridge must be created to enable people to get "commissioned" as it were from the "ranks."

ERNEST F. TEW

My three points are as follows:

1 *The Status of the Profession*

As shown by the Pilkington report, the architectural profession is the lowest paid of all the major professions. Obviously it is not highly enough regarded by the general public who must be familiarised with good architecture through the medium of television, cinema and magazines, and a clear distinction must be drawn between the work of qualified architects and the work of commercial adventurers who all too often masquerade under the cloak of our profession—to the great confusion of the public.

The Codes of professional practice must be more closely adhered to and enforced.

2 *Unity of the Profession*

The official architect, the architect in private practice, the metropolitan and the provincial must all have a voice at Portland Place.

Nor must we forget the small rural architect. Full integration can be brought about by a balanced representation in the various committees and sub-committees of the RIBA.

3 *Training of the Profession*

The new higher standard of entry into the profession followed by a University degree course and post-graduate research will enable architects to become first rate principals and chief officials. However there are many others who have no ambition to become principals, with the attendant responsibilities, but who, because of their various and often specialised skills, can make a distinct contribution to the art of architecture. Such people do exist in large numbers to-day—whether unqualified or partly qualified—and will continue to do so.

For these some basic standard of education must be found, and some status given them under the aegis of the RIBA.

May I add a fourth point? I would like to see an RIBA Sailing Club formed.

BASIL R. WARD

Limiting as you do the number of issues to three is of course arbitrary and there may be more than three to concern oneself with when one sees more of what is going on as a member of Council. However, I would like the Council of the RIBA to concern itself with the aspect of "package deals" within the building industry as it affects the independent status of the architect. The second point would be to campaign for all building work of whatever size to be under the control or qualified architects. A further point would be related to both the above, namely, the strengthening of the profession generally.

If I may have another point as an alternative, I believe that architectural education should provide a greater degree of opportunity for broadening the outlook of students, notwithstanding the critical need for higher standards in purely technological training. For example, general study in the fields of social science, for instance, sociology and social anthropology, should be encouraged rather than the study of history of architecture based on outmoded methods and concepts.

BRYAN WESTWOOD

In my view, the three questions to tackle now are:

Urban renewal

The so-called "two-tier" profession
A new approach to education

The central parts of all towns with any pretensions to prosperity are potential victims of take-over bids by the property kings. Architects should be able to do something about this in an organised way. The President needs all the backing he can get. Better controls, better design and a greater drive to educate the public are perhaps ways of approach.

"Two tiers" seems to be a misleading misnomer. The architect/technician and the architect/artist are a reality. The former needs a re-orientation of education. They should develop as recognised categories in parallel.



Edwin
Williams

Hugh
Wilson



J. L. Womersley

Education must be changed to accord more closely with engineers and builders in its preliminary stages, and to divide later to cater for the two categories. We need better trained technicians and we can ill afford to spend school time trying to train those with this potentiality as artist designers.

EDWIN WILLIAMS

Three very important issues which the new Council will have to face concern the status and the financial position of an architect and the subject of building law:—

The architect is seen to have fallen considerably behind other professions in status. This is reflected in the lower relative scale of remuneration. The Council should consider how this has come about.

As a result of rising costs and salaries, the architect is finding that the margin of profit is diminished and that he is approaching a precarious position which will make him vulnerable to misfortune. The Council should consider how this position could be eased.

The Government have it in hand to revise building regulations upon a more national basis and in line with current trends. The general technical standards are already fairly well known and need streamlining probably without much radical change save in the method of administration. It is in this latter field that the Council will need to watch to see that a sound administrative machine is devised which will be swift, consistent and sensible in operation.

HUGH WILSON

During the past three years the RIBA Council has undertaken a series of reforms in the constitutional and financial fields, provided opportunities for closer and more fruitful relationships with the allied societies and initiated programmes of work in the technical information services, public relations, practice, planning and urban renewal, and education. This work must continue but the three most important issues facing the profession I believe to be as follows:—

1. Remuneration for principals and assistants. This should include a fundamental revision of the fee system involving consideration of differential fees for different building types and consolidated fees covering the work of a group of professions.
2. Registration. Consideration should be given to means by which protection can be obtained for the architect's work as well as his title.
3. Education. As soon as the results of the office survey are available, decisions must be taken on the two-tier issue and the types of training necessary for the staff required in various architects' offices.

J. L. WOMERSLEY

In my view the most vital issues for the new Council to tackle today are:—

1. To raise considerably the average standard of architecture and the quality of our total environment.
2. To bring about changes in building methods and organisation so that a greater amount of building can be produced by the same number of architects and builders.
3. To improve, or at least maintain, the architect's position of independence, integrity and idealism under the prevailing conditions of financial pressures.

Item 1 is dependent on attracting the best possible material to the profession and then giving it a better training. Teachers in grammar and secondary schools are still by and large utterly ignorant of the opportunities for and the job of the architect. The profession needs far better liaison. In the schools of architecture themselves we then need more lecturers who have practised architecture and town planning full time.

To achieve item 2 we need much closer liaison with and sympathy between architects, engineers, manufacturers and builders. If architects are really to be the leaders of the building team, they will need many kinds of specialist architects, a "multi-lateral," rather than a "two-tier," profession. As a first step towards item 3 we need to consolidate the professions and provide a comprehensive service including structural, heating and electrical engineering and surveying.

Associates' Replies

G. ROLAND ADAMSON

1. *Two-tier System.* The Council of the RIBA has appointed a committee to draw up a syllabus for the training of a "second tier." They should abandon the idea immediately. A body of reputedly highly trained

people conforming to a professional standard should not be divided into "the cream" and "the clots." Before long, each faction would be sub-dividing; it is then only one step to separate facilities at Portland Place. Technicians? Certainly—but outside the Institute and with the qualification LRIBA.

2. *Architectural Education.* Architectural education is a subtle and intangible process. We need intellect, initiative and above all open minds in our profession.

Academically inculcated architects (as in other professions) are worse than useless if they cannot apply their academic qualities in a practical manner.

I believe that there should be a standard Final External Examination for all aspiring to Associateship of the Institute.

3. *Representation.* The Institute was founded on the basis of its members being principals of private practices and its constitution logically followed from this fact. With the ever increasing number of architects who are employed on a salaried basis, both in private and public offices, there should be better representation of this body which could well be effected through the Allied Societies.

W. A. ALLEN

First, the Great Survey of the Profession will be finished soon and will tell us more than we have ever known about ourselves. Probably one of the most useful things we can do is to get it out quickly for discussion and action. No one knows what issues it will throw up, so all one can say is that we must give it high priority of attention.

Second, I suppose one cannot omit the poor old, much misunderstood, "two-tier" issue, but much of the information we need about it must come from the Great Survey, and the only thing I can say at the moment is that on present evidence there is a fair body of opinion for and against. In situations like this the thing that seems to me matters most is not to make a black-and-white issue of it because this will make sensible discussion so difficult. Neither side has any right to assume that Truth has been revealed to it only.

Finally, education. At this moment I cannot say much in detail, for obvious reasons, but I think a feeling for change is widespread at the moment, and I hope the Institute will give a vigorous lead.

CLEEVE BARR

Over the past three years the RIBA has taken the first steps towards putting its own house in order—democratisation of the



William Allen



Cleeve Barr

George Lawrence



J. Mackay-Lewis

Council (pending Privy Council approval), stable finances (see budget), recruiting good staff (Ricketts, Milne, McEwen, Goldring and others), and making a beginning on architectural education (two "A" levels, new executive Board and so on). Our outstanding professional needs now are:

(a) closer links between architectural education and practice;
(b) a code of good management (standards of service) for architectural offices.
I am against the introduction of "two-tiers," in the sense of a new qualification for second-grade architects. I am in favour of architects, engineers and other specialist consultants combining to offer joint services, which could result long term in a new profession of building services engineer. Economic conditions have never been better than now for making an impact on the public. Apart from professional issues, the new Council should continue to pursue these objectives:

(a) Raise the status of architects working under engineers in local government.
(b) Demonstrate the advantages in terms both of amenity and of design of employing architects on urban redevelopment.
(c) Urge the need for simplifying and unifying building controls.

E. G. DODDS

1. I would like to see more personal work by architects and less by anonymous assis-

tants working for large architectural "empires." To this end I believe the RIBA should encourage legislation making it a necessity for an architect's signature to be on every application form for permission under town planning and byelaws for work costing over, say, £2,500. It would follow that the architect's name should by law figure clearly on the building site. Such legislation would enable many frustrated assistants to demonstrate their talents, to the greater benefit of the country as a whole.

2. It seems to me that the architectural departments of public authorities should concentrate on pioneering development work of the sort so successfully carried out by the Hertfordshire Schools Department after the war, by the LCC, by the Ministry of Education and by several other enlightened bodies. To do this the architectural staff must be of the highest calibre, and, it follows, highly paid. I believe the RIBA should discourage public authorities from running their architect's departments as a means of producing cheap hack work.

3. As a part-time teacher I would like to see the RIBA make a survey and analysis of the type of education offered by the various schools in Great Britain and publish the results, and, after a period for digestion and discussion, a fairly authoritative recommendation issued.

N. H. FOWLER

Education: The RIBA, having rightly declared for 2 A level standard of entry into the profession should at the earliest opportunity provide facilities for a qualification of Architectural / Technical Draughtsman and in the long term, joint education with all concerned within the Building Industry.

Status: Examine the status of the Profession with particular reference to those in salaried appointments.

Planning: The RIBA should exercise the maximum effort for the organisation and methods of comprehensive redevelopment.

P. JOHNSON-MARSHALL

In order to achieve a high standard of architectural and environment design in the future, the Institute requires short and long term programmes.

Short Term Programme:

1. A clear understanding and knowledge of the profession as it exists today is essential, and the studies now being conducted should be fully supported.
2. The Institute should continue to press for all architectural work to be designed and supervised by architects.
3. The Institute should give more attention to the direction, organisation, conditions of work, and salaries in public offices.
4. There is still considerable room for immediate improvements in architectural education.
5. The Institute should encourage the younger members to take an active part in the affairs of the RIBA.
6. All members should have a clear understanding of the vitally important problems of urban planning and development.

Long Term Programme:

Fundamental changes are taking place in the whole nature of architecture and environmental design. It is urgently necessary for the Institute to evolve, in collaboration with other related professions and the building industry, a long range policy to ensure that these changes should be recognised as a great opportunity for the design of tomorrow's environment.

GEORGE LAWRENCE

The Council in sponsoring the Oxford Conference on Architectural Education four years ago and in adopting its recommendations made a very wise and forward-looking move. The need to attract a higher proportion of the potential national brainpower into the architectural profession is paramount. The question which must be the continued concern of the Council is what are the disciplines to which these young minds should be subjected, what post-graduate courses should be provided.

I hope the Council will not spend much of its time on the secondary question of training technicians.

The question of a better service to the community and to individual clients is always the Council's concern. We are entering a period when we are better equipped to provide the answers. The Survey should bring out a number of facts. When these are analysed they must be studied by a number of the committees of the Council with a view to helping architectural offices, both public and private, to improve their technical standards, management and standing.

The position of the profession in relation to the building industry as a whole is a matter for constant vigilance by the Council. It is hoped that they will lead the industry along lines of technical development which will enable the industry to deal efficiently with the enormous volume of work which confronts it.

J. MACKAY-LEWIS

The three most important issues that the new Council will have to tackle as I see them are:—

1. Improving the profession's service to society.
2. The dilemma of the two-tier.
3. Architectural education.

The Pilkington Commission's report has shown that the architect is one of the lowest paid professionals. The RIBA has gone some of the way to rectifying this by raising fees but any increase in fees must be related to improvement in the architect's service.

Therefore my first consideration would be to help in promoting every activity which will enable the architect to achieve greater efficiency in his office. In this connection I would like to see a greater expansion of the RIBA Technical Service.

Before creating a second tier we should try to decide whether the modern office really needs assistants of this nature. The results of the RIBA office survey will help to form the basis of this decision which must be considered in terms of the overall organisational, economic, and educative problems facing the profession.

Guy
Oddie

L. G. Vincent



R. T. Walters

My connection with BASA has made me vitally interested in architectural education and I would like to see an overhaul of the present system of examinations and a clearer assessment of the principles which govern whether recognition should be granted or withdrawn from a school and the standard of the school's educational facilities.

GUY ODDIE

1. *Two-Tier Profession*

Scotch this. For want of a better model, technician-training will be bulldozed towards the kind of practice which ought to be remedied not regularised.

2. *Architectural Education*

Emphasis here should be on raising the level of architectural skill, not on watering it down. The real need is for *parallel* tiers; highly-trained specialists, post-graduate perhaps, to cope professionally (not as amateurish hacks) with services structure and detail, cost planning, job drawings, site and office management etc.—working as co-designers on an equal footing with the man who sketches out the initial space design, and paid accordingly.

3. *Relations with the building industry*

We need a substitute for competitive tendering which, while still safeguarding the client, will allow the designer to draw fully on the know-how of the producer. This, together

with the point just mentioned, will offer the client all he gets in the "package deal" and a great deal more besides. The resulting improvement in architectural performance is, in the long run, the surest way to higher professional status and remuneration.

ROY PARKER

1. Probably the most important issue to me is the still low standard of the profession. Not the pettifoggery ensuring that nobody's name is over two inches high, but the responsibility to Clients and architecture. We all know architects who merely do what they are told, whose Clients in desperation do the planning, even some of the few drawings, and endless telephoning to get the architect just once on the site, and are still charged full fees.

Then there are the architects who do the speculative housebuilders work. Under their names the worst excesses of commercial building are carried out.

After years of this business there is no evidence that any improvement has been effected. The point is that no architect capable of doing better would allow himself to be so debased. Most of us agree that a man has a right to do this sort of thing if he wishes, but I believe we should prevent such work being described as "architect designed" and reject members who prostitute themselves with it, from our profession. Perhaps a start can be made by increasing the status of Fellowship. Proof could be required that architecture has really been put first by the applicant in his years in practice.

2. The "all-in service" threat. Firms offering this advertise widely and openly the "advantages" of not having an architect. We should be more vociferous as a body.

3. The bureaucratic centralisation of the RIBA seems to be getting out of hand. More decisions could be left to the allied societies.

LEONARD G. VINCENT

1. The matter of the two-tier profession is not yet resolved. Results from the inquiries made by the RIBA office survey team should be available soon indicating to what extent a two-tier profession exists. From this the organisation of the second tier may be deduced, if there is a need at all. Many of us have had second thoughts on the subject, the pros and cons seem interminable. However, the Council should be pressed to settle the matter within the next three months.

2. A more active part in town planning must be taken by the RIBA together with the encouragement of architects to train as planners. There is a great shortage of architect/planners who are able to practise in both capacities. The Council should again look at the question of the RIBA awarding a planning diploma which has the standing of its diploma in architecture.

3. Many important matters need attention;

e.g. raising the status of the profession in public eyes; overhauling the competition system, and refresher courses in design and construction for established architects. There is still a great deal more to be done in publicising the work of the architect and the PR Committee should press for more time for broadcasting.

ROGER T. WALTERS

Inevitably the new Council will be facing the question of *The Two-tier Profession*. Before any policy decisions are taken, the members of the Institute should have plenty of time to study the report of the Office Survey, together with any other relevant data such as the first effects of the two "A" level entry. The subject should then be freely debated, at the RIBA, in the Allied Societies, and particularly among the younger salaried members of the profession. I am not in favour of a two-tier profession, but I believe that from the discussion of it there could emerge a flexible policy, aimed at raising the general level of competence and improving the rewards architects receive. New patterns in *Education* are long overdue. I hope the Council will actively support those who are trying to revitalise the schools of architecture. We need less emphasis on conformity; clearer thinking about the variety of functions which qualified architects can and do perform; more freedom to experiment; special encouragement for those teachers who have enthusiastic convictions about the place of the architect in society.

With *Land Use and Urban Renewal* almost out of control, our country is in danger of becoming materially prosperous but unfit to live in. The Council should urge the Government to concentrate the responsibilities which are now divided among several Departments.

THURSTON WILLIAMS

The boom in the building industry may have brought affluence for some, but most salaried architects have yet to receive any considerable benefit. If the position shown up by the Pilkington Commission is to be rectified the salaries of members must be one of the primary issues to be considered when the results of the Office Survey Team are known. Immediate support should be given to the campaign of the Association of Official Architects to obtain comparable salary levels for all architects in public employment.

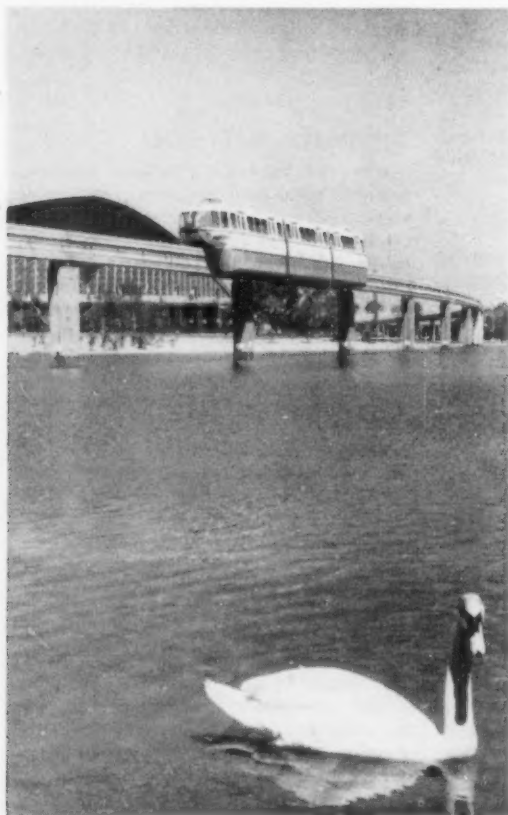
Likewise the conception of obtaining cheap assistants by way of the so-called "two-tier" profession should be set aside once and for all. The answer to the present shortage of architects is more efficiency in the office and a more productive use of those there are. The RIBA's Technical Department must be given every opportunity to increase its service to members.

Any action by the Government on the Herbert Commission should be the sign for an immediate and all-out campaign to ensure that in London at least all local authority building comes under the direct control of architects.

Italia 61 Exhibition

by Peter Rawstorne

An aluminium monorail, which holds 200 people, sweeps in a curve between the artificial lake and the Palazzo della Mostra (seen in the background) not finished when the exhibition opened and fetches up in front of Nervi's Palazzo del Lavoro



Sometimes man in his saner moments makes contact with the gods. At such times beautiful things have been known to happen and sometimes some of these beautiful things are remembered a long time after their originators have disappeared. Pier Luigi Nervi's Palazzo del Lavoro at the Turin Italia 61 exhibition is, I think, one of these beautiful things.

This Palace of Labour is one of two big buildings and many smaller ones that have been constructed on a site on the southern outskirts of the city to house the various exhibitions commemorating the centenary of the unification of Italy in 1861.

The total cost of this exhibition has been about £12m. It closes on October 31. The government has contributed £7m. of the cost and the rest has come from the city of Turin, the regions of Italy and local industry. Of the total cost, about £1½m. has been spent on historic building renovations, road improvements and a new sports palace designed by Vitellozzi which is a steel version of the Nervi palazzetto at the Rome Olympiad.

A Minister, Giuseppe Pella, has been in charge of the whole venture, but the International Labour Exhibition which takes place in the Nervi building has been under the control of Giovanni Agnelli, the dynamic chief of the Fiat empire.

The conception of the Palace of Labour was Nervi's (working with his son Antonio) and collaborating with him on the detailed design of its steel roof and curtain wall was the engineer Gino Covre. The interior layout of the various exhibits (a central stainless steel truncated pyramid sheltering Italian industrial exhibits surrounded by angled perimeter screens of plastic and aluminium poles enclosing exhibits by 18 countries and 5 international organisations) has been the work of Gio Ponti. Ponti explained his organisation of the huge space as an attempt to introduce "urban control" instead of a more normal free-for-all following a grid plan.

Commenting on the design process behind the building Nervi said: "I often wonder whether all of us concerned with architecture realise how radical has been the revolution that has taken place in building in the last hundred years. The enormous new advantage presented by the discovery of the science of building in the middle of the last century is that it allows us, by means of a previous study of the internal forces in a system of resistances, to find the most suitable static plan for every building project. Thus arise new architectural forms with an almost inexhaustible richness.

"But the static styles which best solve

the vast building problems posed by the continuous increase in dimensions of modern buildings, are those which most faithfully obey the physical laws governing the equilibrium between active and resistant forces within a structural organism.

"When a building's dimensions go beyond a certain limit (many of our buildings are already close to it) the strictest obedience to these laws becomes an unquestionable condition of life. The huge arch of today and tomorrow will either exactly reproduce the shape corresponding to its maximum static efficiency or it will not exist. The structure needed to solve a vast problem of building can no longer be invented—it can only be discovered.

"The inventors are those laws governing equilibriums between forces and possible resistances between materials. Except for details of greater or lesser significance I think that buildings will become objectively true and immutable according to their time and place."

Three men have created the Palazzo del Lavoro—an engineer, an architect and an industrialist. Pier Luigi Nervi, reticent, immensely shy even, approachable but difficult to talk to unless you are a child or a pretty girl; Gio Ponti the father figure of modern Italian design, ebullient, kindly, humane and always ready for an argument, smiling happily at his own cleverness; and Giovanni Agnelli, the hard-eyed, cultured, handsome and gay boss of Fiat who is president of the exhibition committee. The 1961 counterpart of the Renaissance patron, he didn't just want a building—he wanted a great building and he saw to it that he got it.

Dividing the 100-acre site of the exhibition is a grand avenue which is a continuation of the Corso Polonia which runs from the city southwards alongside the Po to the exhibition gates. In a central divide to the dual carriageway are parallel rows of lamp standards whose sprays of fluorescent lighting and collars of blue bulbs echo the Doric steel capitals of the columns inside Nervi's square Palazzo del Lavoro. If you enter the site through the main gates at the north end, the concrete shell of the new Palazzo della Mostra (exhibition palace) is on your right past a low steel and glass administration building. This shell is a refined version of the CNIT building outside Paris (by the same engineer) designed by the Italian architects Anibale and Giorgio Rigotti. It has a not quite circular plan of 380 ft. diameter and an internal clear-span area of 270,000 sq. ft. covered by three, triangular-plan concrete shells. With more aesthetic success

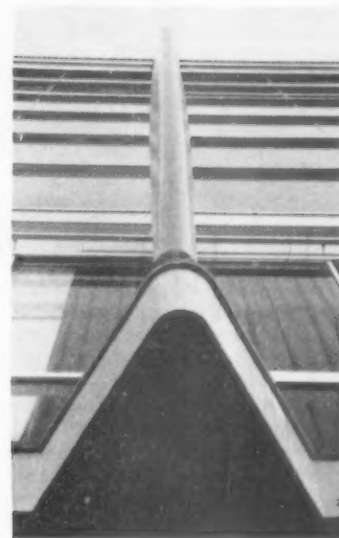
than the Paris building this parabolic structure has been glazed with three, flat-V-plan curtain walls in heavy steel mullions. Each pane is backed by a diagonal brace. The eaves of the parabolas swing out and cast a heavy shadow that moves across the face of the glass as the sun changes position. While the exhibition authorities are very proud of it, the building is a bit of a black sheep because it isn't really ready. It was however used for the inaugural banquet and will be much used for fashion shows and exhibitions of ready-made clothes—one of Turin's fast-expanding industries. The acoustics are awful.

Opposite this hall the pavilions housing the regional exhibits begin. Between it and the Nervi building are two circular structures—one used by the Italian Ministry of Labour and the other by Walt Disney and Fiat for Circarama. Inside a big (1000 standing) drum, nine projectors throw an all-round colour travelogue of Italy in one giddy-making but spectacular and technically pure aesthetic drama. Between the regional pavilions and the big scallop shell is a high-speed (allegedly) monorail car that runs on overhead concrete beams on neatly simple, twin, concrete columns. It starts at the city end of the site and finishes in front of the Nervi building. The rail sweeps around in a curve alongside the Corso Polonia and over an artificial lake. The articulated, aluminium monorail car (German made by Alweg) holds 200 people and can travel at 65 m.p.h. plus but because of the short run it travels at a sedate 20 or so m.p.h. They say it can carry 25,000 people a day. It has rubber tyres that grip the sides of the concrete beams and is very quiet. (It is a scandal that a project for a



Aerial view of the exhibition, showing its extent and layout on the built-up edge of the River Po. In the foreground, the Palace of Labour with lake and gardens beyond, and the Exhibition Hall beyond again. Regional exhibitions, to the right, on the river bank, which has been raised 15 ft.

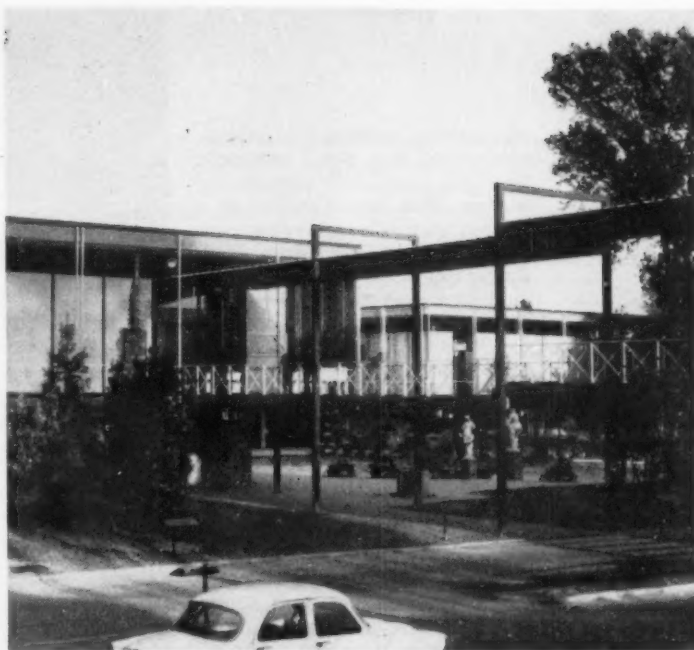
Detail of the hollow, steel, vertical members which surround the outside of the Palace of Labour, pin jointed to the fascia and to triangular projections from the concrete gallery floor



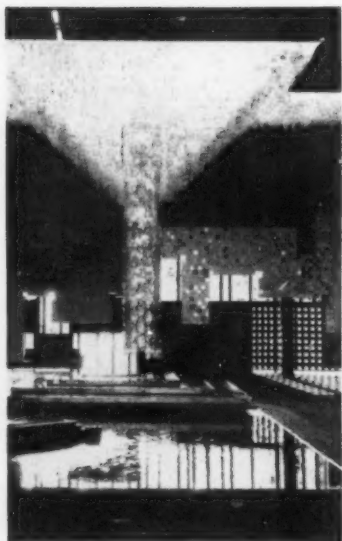
Cross view of the Palace of Labour

system of this kind to link London Airport with the centre, suggested four years ago, is still mouldering somewhere in the files of the Ministry of Transport.) Apart from being conveniently able to go over existing railways, it is claimed to be cheaper in operation and capital cost than conventional rail systems. It is also electronically controlled, fast, and independent of the weather.

On the east side of the site, alongside the river, 20 steel and glass pavilions have been built to house exhibits by each of the 19 Italian regions. One, of different design from the other, standardised buildings, houses a composite show by all of them. This particular

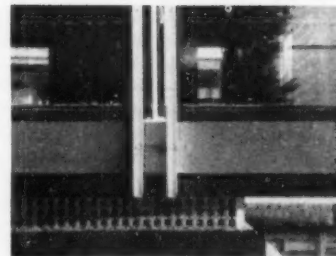


The regional pavilions, of steel and glass, are linked together by overhead walks

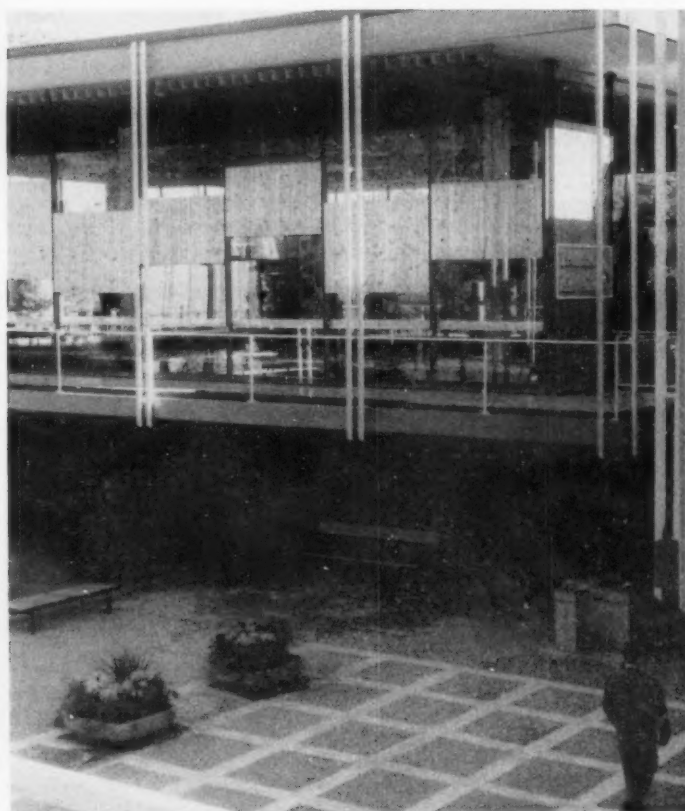
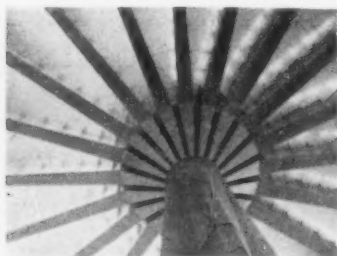


The Venice pavilion, exquisite stalactite of glass beads . . .

Below, close up of one of the regional pavilions, and, right, detail of column fixing



Detail of roof of the Palace of Labour



building is remarkable for the use of enormous sheets of glass. One mullionless window is 8 ft. high and 50 ft. long. It is high up a wall and beneath it is another sheet 10 ft. wide and 18 ft. high. Co-ordinating the work of the many individual designers (only one, Carlo Scarpa of Venice, is internationally known) was Mario Soldati. This lively author of the themes of these very good exhibits is not an architect but a writer and critic. The 19 pavilions have been laid out, with skilful understanding of landscaping, among existing and new trees to a plan that corresponds roughly to the shape of Italy itself. Each pavilion occupies its appropriate geographical place. This part of the exhibition site was originally marshland and the whole ground level has been filled in to a new height of 15 ft. above the marsh level. Trunks of existing trees are neatly left in deep wells closed at the top by circular metal gratings. The new ground level is intentionally undulating and the pavilions have been raised above it on a more or less common altitude on the steel stanchions of their frames. Sometimes the ground reaches almost to the underside of their *in situ* concrete floors (said to be more convenient at the time than precasting) and at other times it is 20 ft. below. Some pavilions are clear beneath and some sit on recessed podiums of brick or stone which house restaurants and cloakrooms. Pools, lakes and fountains have been worked into the layout with infinite skill and comprehension of reflections. The perimeter floor and roof beams of these pavilions are steel plates and the one supports the other by twin columns of steel channels bolted to the plates. Each designer has been free to treat the floor and ceiling individually. Supporting the recessed glass curtains are steel mullions welded to steel frames bolted to the rafters and to the joists. Standard size glass sheets have a 3 ft. air space at the top and a 2 in. clear space for sweeping through at the bottom. The designers have varied the appearance of the curtain by the use of boarding, concrete, coloured glass, sheets of plastic and metal and various kinds of blinds. The pavilions, which are very like the German one at the 1958 Brussels fair, are connected to one another by overhead walkways. Once inside one it is difficult to reach the ground without walking through several others because only a few have steps down. Most of the structural steelwork is painted white but facias and floor beams are of different colours for variety. Each designer in each pavilion was given a subject to represent, within Mario Soldati's general theme for the whole regional exhibit. That of Venice was the Control of Water and the

Control of Colour. Its architect, Carlo Scarpa, given what might be called a natural, has produced not only the best exhibit in the show but also a work of art in its own right. He manipulates water as a sculptor bends Perspex. It splashes, gushes, trickles and flows into and over steps of burnished brass and into a flat pool let into the dark red cement-finished floor. Above it the ceiling is painted a heavy matt black. From a series of rectangular spaces in this he suspends an irregular geometric stalactite of 2,900 open ended 8 in. high Murano-glass beads on thin wire. This exceptionally lovely object is lit from within by naked, but indiscernible, electric light bulbs. The beads vary in colour from shimmering crystal to pale blue, mauve, pink and violet. On the west side of the subdued light interior is a stained glass wall of unbelievable splendour by Luciano Gaspari who has set rectangular sheets of abstract-patterned, brilliant-hued glass (widths vary from 4 in. to 32 in.) in edge-to-edge courses without lead strips in floor to ceiling windows. With superb showmanship the rays of the afternoon sun are seized by the glass to spill wild colour all over the floor and the moving water.

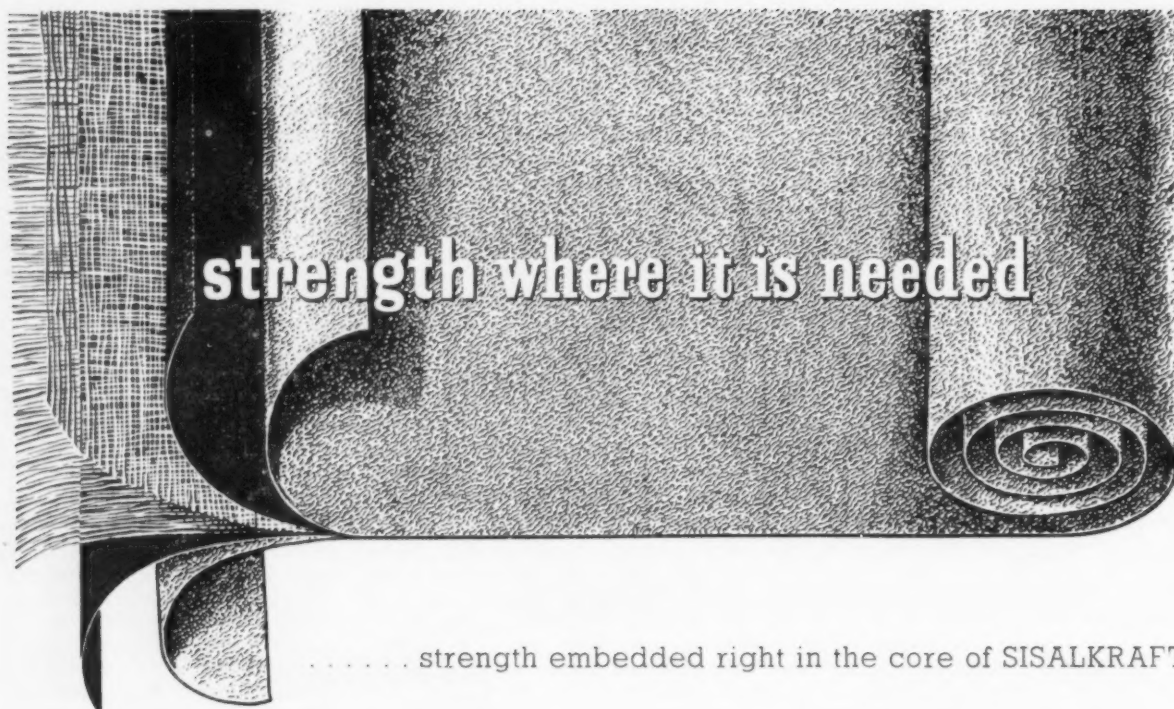
The Palace of Labour is as big as the Colosseum and has a usable area, including the one-floor gallery, of 315,000 sq. ft. It is square on plan and has sides 525 ft. long. The roof is divided into 16 separate squares and each of these squares, or flat parasols, is supported in the centre by one of sixteen 82-ft.-high columns. The columns are concrete and at the base are cruciform in plan (diameter 18 ft.) and taper to a circle at the top of a diameter of 9 ft. They were cast *in situ* in wood strip moulds and each took eight days. They rest on 24 ft. x 24 ft. concrete bases 4 ft. deep which are supported on piles. The surface of the concrete is delicately lined by the wooden shuttering strips. On top of these columns has been placed a steel capital made up of steel triangles welded around a circular steel core. This supports a hollow steel drum the same diameter as the top of the capital. Into the central cavity was poured concrete to connect the steel with the concrete columns. Fanning out from the steel drum are tapering steel cantilevers that support a stainless steel, ribbed, roof deck. The ends of the cantilevers are encased in a steel plate frame delineating the square decks. Both ends of the massive spokes are riveted—either to the perimeter beams or to the drum. Covering the long open lines between the 16 squares are glass cloches of triangular section. Suspended from the centre of these are long rows of blue tinted incandescent floodlamps. All the

steelwork is painted light grey and is lit from underneath by fluorescent strips placed on one side only—always the same—of the bottom flange of each of the spokes. Whichever way you look at them you see a changing pattern of light strips. From the outside by night the columns merge with the light of the roof and the huge deck becomes amazingly visually weightless. During the day and again from outside, the columns again cease to register in the huge inside space and the structure is delicately transparent. Enhancing the soft whiteness of the interior is a grey marble floor throughout the immense space.

Running right around the fascia perimeter of the whole building is a steel beam that serves as top fixing of the glass curtain wall. Dropping down from this vertically are hollow, aerodynamic-shaped steel members that are pin jointed to the fascia and to triangular projections all around the building from the concrete gallery floor. Horizontally back from these curved tubes are steel rods to the mullions. The combined action of the three units is a massive but adequately wind-braced window wall. Steel louvres between the hollow members shade the interior from direct sun rays on three sides.

Ponti's "urban control" of stainless steel vertical and sloping walls on black- and red-painted scaffold poles in the centre and his light and angled screens of plastic sheets clipped into aluminium tube frames around the perimeter, doesn't quite come off but it is an ingenious idea for organising a big open space. Through the screens you see constantly changing vistas of the columns and the roof fans which is more scale-giving to the huge structure than seeing them all at once without interruptions.

In the international section the German architect Wolfgang Bley has produced the best piece of new exhibition design with photographic collages in complicated constructions of right-angled flat frames. The US, with Harley Earl Associates, has produced the best piece of working exhibition technique with a slick exhibit following a theme of communications. The UK, with architect Ted Allan and the COI, has produced a skilfully positive and dramatic show that says more, with simple gimmicks, than any of the others in the hall about its given subject—in this case man's scientific advances—plus a section on the Fears of Man by Timothy O'Brien and George Haslam. As a last comment to the building itself, Nervi said that the roof was only constructed in steel because it was convenient to do so. He could just as easily have made it the same way in concrete.



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THE INDUSTRY

This week Brian Grant describes a circulating pump, wallboard, illuminated signs, roof decking, light fittings, shower cabinets and a fire alarm system

Circulating Pumps

Another pump recently introduced for small-bore heating systems is the Deblorac, a Swiss design now being made under licence in this country. Standard model is for 1-in. pipe, but larger sizes are made for pipes up to 6 in. Weight is only 15 lb. so that it is simply mounted in the pipe line without the need for any separate support. (*Aero Controls Ltd., Industrial Estate, Weedon Road, Northampton.*)

Stove Enamelled Wallboard

Consalac stove enamelled wallboard, made in France by Panolac, is now being marketed in this country. It is made with a pattern of 1 by 1 or 4 by 4 in. square tiles, or plain, and there is a choice of 11 colours. Sheets are 6 ft. by 4 ft. and there is also a complete range of mouldings and cover strips in 6 ft. 3 in. lengths. (*Robert Sandall (Group Sales) Ltd., 228 High Street, Croydon, Surrey.*)

Illuminated Signs

A booklet of shop and other signs has just been issued by Moderneon, who are prepared to make signs of all kinds to any design. Some of the examples illustrated are pretty deplorable, but that is not the manufacturers' fault, and at least they prove that almost anything can be made. There are some useful pages of type faces and the manufacturers are glad to show visitors over their works so that they can get some

idea of what can be done. A handy little booklet which would be better for architects if it were to A4 size. (*Modern Electric (Installations) Ltd., Brewery Road, London, N.7.*)

Roof Deckings

The new range of Robertson roof decking is made in a series of eight sections suitable for spans from 7 ft. 6 in. to 20 ft., and a deck with a permanent maintenance free coloured soffit is also available. An advantage of this roof is that the manufacturers offer a complete roof, with any necessary daylighting or ventilation, an integral ceiling, and space for electric wiring within the decking. (*Robertson Thain Ltd., Ellesmere Port, Wirral, Cheshire.*)

Lighting Fittings

The catalogue and 1961 supplement to it by Merchant Adventurers shows, as one might expect, a considerable range of well-designed fittings to take both fluorescent and tungsten lamps. Prices are mostly quite reasonable and the manufacturers maintain an advisory service to help in the preparation of lighting schemes. (*Merchant Adventurers Ltd., Hanworth Estate, Hampton Road West, Feltham, Middlesex.*)

Shower Cabinets

There seems to be a growing demand, or at least a growing number of makers, for standardised shower cubicles which are easy to install. The latest is by Leisure, and it has an internal height of 6 ft. 3 in. It is made of pressed steel with a white plastic roof and a curtain at the front. Finish is white with a black plinth, and there is a 9½-in.-deep timber sill at the entrance. Price, with stainless steel mixing valve, flexible pipe and spray head is £54, or £42 10s. without equipment. (*Leisure Kitchen Equipment Ltd., Long Eaton, Nottingham.*)

Fire Alarm Systems

The fire alarm system at the White City television centre is, as the photograph shows, a remarkably impressive installation. In the fire control room there is an indicator board with an outline plan of the whole building

and a series of indicator lamps which show the source of any alarm call by telephone, the setting off of a sprinkler head or the release of CO₂. A four line telephone switch-board allows firemen to be called and any other instructions to be given all over the building. (*Standard Telephones & Cables Ltd., Connaught House, Aldwych, London, W.C.2.*)



S.T.C. fire alarm system

The Deblorac circulating pump



HOPE'S aluminium windows

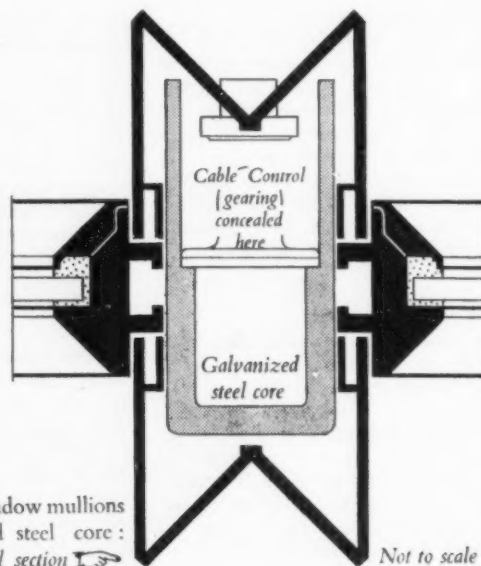



UNITED STATES EMBASSY, GROSVENOR SQUARE, LONDON

Architects: Eero Saarinen & Associates, U.S.A. Associate Architects: F. R. S. Yorke, E. Rosenberg & C. S. Mardall, F.F.R.I.B.A.

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10 DESIGN: BUILDING TYPES

space and water heating in local authority flats, 1

Many JOURNAL readers will remember the experiments completed at Abbots Langley in 1952 on the heating of local authority houses. We publish below (by permission of the Director of Building Research) the first part of a report by P. T. Loader and Elizabeth A. Milroy on a later, complementary study on the heating of local authority flats. This week's instalment considers heating standards: next week's will consider capital costs and fuel consumption.

Studies of different methods of space and water heating in local authority flats have been made by the Building Research Station over several years, and the results are being published in the National Building Studies,⁽¹⁾ and in a shortened version as a Digest.⁽²⁾ This publication presents some of the practical results of the enquiry in a form which may be of use to architects and local authority officials concerned with the planning and operation of housing estates, and suggests lines of development for the future.

The study in flats followed the work on house heating⁽³⁾ carried out previously by the Station. This research had shown clearly that it was not sufficient to consider heating in houses solely in terms of heating efficiency—as can be done to a large extent for schools, hospitals and offices—because of the different ways of running the systems and the different demands made upon them by the occupants. A picture of the levels of heating maintained with the different systems was, however, built up, and the influence of fuel costs on the routine adopted by tenants was demonstrated. Attention was turned to the problems of space and water heating in flats because of their increased importance in the building programmes of local authorities in recent years. The pattern of running costs and tenants' preferences, as well as capital costs, would be likely to differ from those in houses, and it was clear that an extension of the earlier work was required.

The study was carried out during the period 1956-9 and deals with three aspects of the problem by the following methods:

1. Interviews with tenants to discover how the heating system was used and whether it was found to be satisfactory, and assessment of expenditure.
2. Analysis of the capital costs of the space and water heating installations, together with data on maintenance and replacement costs.
3. Measurement of temperatures maintained and fuels consumed.

technical section

The main types of space heating examined were central heating, individual solid fuel appliances, electric floor warming, and individual gas and electric fires. The surveys and measurements were carried out in 1,100 flats and maisonettes on twenty-one estates, and the study of capital costs was made partly by ordinary costing methods and partly by a design-and-price study of a number of actual schemes. The estates examined ranged geographically from southern England to north-east Scotland. The work in the three aspects outlined does not entirely refer to the same individual estates, but the data are sufficiently representative to be brought together for an overall assessment.

The survey of tenant satisfaction was carried out during the winters of 1957 and 1959, on fourteen different estates. In selecting the blocks of flats, the general policy adopted was to consult the authorities connected with each of the fuel industries in order to choose technically satisfactory examples of each type of heating. In all, 830 interviews were completed. The main points examined were how the occupants used their heating system, what temperatures they attained, how much it cost them and how they liked the method of heating provided. From experience in earlier surveys, the Station has developed a schedule of questions designed to determine the degree of satisfaction with the heating and hot water services provided, to record briefly the personal circumstances of the households, and finally to summarise, by means of a many sided approach, the informants' general experiences of, and attitudes towards, their heating systems. Also at the interview, spot temperature readings were taken in living room, kitchen and main bedroom, as well as externally, and the house holder was requested to allow the Station to approach coal merchants and gas and electricity boards to obtain details of fuel consumptions.

The majority of the dwellings included in the survey of tenant satisfaction and in the study of temperatures and fuel consumptions had two bedrooms, the remainder having one or three. It was not possible in all cases to determine the performance of the heating systems in relation to size of flat, and the figures given are average for all flats; when dealing with expenditure by the tenant, however, data referring exclusively to two-bedroom flats have been included for comparison.

In the study of capital costs it was not practicable to cover all possible combinations of space and water heating methods, nor to examine space heating to varying numbers of rooms. The study has therefore been based on the types of heating already mentioned, providing space heating to living room and one other room such as kitchen, main bedroom or hall. For central heating, in view of the great variations in practice, a more detailed study of design and prices of a number of actual schemes was made. For the remaining three types, the capital costs of providing space heating in living room and hall and also water heating were obtained from detailed estimates based on current practice, supplemented by

visits to manufacturers and consultants, and in the case of electric floor warming, by observations at three different sites. The estimates were based on rates ruling in January, 1960, and relate to a flat of 660 sq. ft. in an eight-storey block having a living room of 180 sq. ft. and a hall of 80 sq. ft.

The temperature and fuel consumption studies were made in eight blocks of flats, and were designed to show the general temperature levels of the various rooms, to relate changes of temperature and of fuel consumption with changes of the outside temperature, to determine the probable temperature levels and fuel consumptions for a standard outside temperature, and finally, to interpret the differences in terms of the system efficiency and the service provided. The procedure adopted in these studies was to install thermographs in selected rooms in six flats for a week, to record the consumption of all fuels in these dwellings during the week and then to repeat this in successive weeks in other flats in the block. In choosing the flats, regard was paid to storey-height and orientation so that a representative average for the whole block was obtained. Although emphasis was placed on the heated rooms, measurements were also made of the temperatures in the main unheated rooms; these are of interest, not only as part of the service provided, but also in any consideration of heat loss and of condensation risk. Arrangements were also made to obtain annual fuel consumptions with the various heating systems.

Tenant Satisfaction, Expenditure and Temperatures

The survey of tenant satisfaction was made on three estates with central heating, four with individual solid fuel appliances, five with electric floor warming, one with gas fires and one with electric fires. On five of these estates (three with central heating, one with individual solid fuel appliances and central hot water supply, and one with floor warming), either the space heating or the water heating or both were provided by the landlord and a fixed charge to the tenant was made throughout the year for the service provided. On the remaining estates the heating was entirely under the control of the tenant, who was able to determine the hours of use, the temperatures aimed at and the amount spent on heating.

Tenants were asked in some detail how they used the heating provided, what other means of heating they used, and to what extent they were satisfied. All tenants, irrespective of the type of heating they had, were asked certain questions relating to their satisfaction. These questions fall into four groups; two deal with the warmth of rooms and the hot water supply, and are concerned with the adequacy of the system in providing heat at the points required; the

Table 1
Analysis of satisfaction—overall appraisal

	Central heating	Open fire (central hot water)	Open fire (back boiler)	Openable stove (back boiler)	Electric floor warming (tenant)	Electric floor warming (landlord)	Gas fires	Electric fires
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Like more than previous	73	61	77	75	74	73	42	56
Like more than at first	40	46	42	53	51	44	57	66
General satisfaction	81	60	84	90	85	38	58	76
Would not change	68	35	64	69	76	60	26	56
Good value	78	69	89	94	79	29	59	62

third examines environmental conditions, such as the cleanliness of the system, and the occupants' opinions of the comfort and healthiness of the conditions provided, and the fourth enables the informant to make an overall appraisal of the system. It is possible to compare the answers to these questions for the different systems studied, but before examining the detailed comments it may be of interest to look at the more general picture.

Overall Appraisal and Expenditure

The overall appraisal is made on the basis of five questions which have been found to reinforce each other as a composite probe of tenants' attitudes to their heating as a whole, and to give a more reliable picture than the answers to any single question, however logical it may appear to be. They are:—

Do you like the heating here more or not as much as what you had before?

Compared with when you first came here, do you like the heating more or not as much?

Taking your heating arrangements as a whole, do you consider them satisfactory?

If you had the opportunity, would you choose to have a different sort of heating?

Considering the service provided, do you think that the heating is worth what it costs you?

The percentages of people who expressed themselves as satisfied in answer to these five questions are given in Table 1.

Over 90 per cent of all those interviewed had pre-

viously had individual solid fuel appliances, and it is not therefore possible to say how previous experience affected tenants' answers to this question. In comparing the new heating system with what they had before, a reasonably high percentage with central heating, individual solid fuel appliances and electric floor warming expressed a preference for their new heating, but gas and electric fires were somewhat less favoured.

A large number of tenants said that their views on their present heating system had not changed since they first came. A fairly high proportion of those with electric fires, gas fires, openable stoves and electric floor warming said that they liked the new heating more after a time than at first. This suggests that there was in fact a period of adaptation during which tenants learned to make better use of new systems.

Tenants' answers to the question of whether they would choose to have a different type of heating leave little doubt of the dissatisfaction felt on the estates with gas fires and open fires with central hot water. This appears to be a reflection of their dissatisfaction with the general heating in the flats. Some of those with central heating and with floor warming under landlord control would have liked to have closer control over the heating, although they would not have preferred a different system. Of those who were dissatisfied with their present heating, the majority would have chosen individual solid fuel appliances, the second choice being central heating. It is interesting to note that of those who said that they preferred

Table 2
Average total expenditures on fuel

	Estates where charges are levied by landlord			Estates where no charges are levied by landlord			
	Central heating	Open fire (central hot water)	Electric floor warming (landlord)	Open fire (back boiler)	Openable stove (back boiler)	Electric floor warming (tenant)	Gas fires
	£	£	£	£	£	£	£
Average total expenditure all fuels	49 ¹	58 ²	55 ³	41	36	34	38
Average total expenditure all fuels, 2 bedroom flats only	50	52	57	42	37	39	42

¹ Including £32 paid to landlord for central heating service

² Including £22 paid to landlord for central hot water service

³ Including £26 paid to landlord for electric floor warming

technical section

Table 3
Analysis of satisfaction—environmental conditions

	Central heating	Open fire	Openable stove	Electric floor warming	Gas fires	Electric fires
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Little discoloration	15	39	51	86	64	20
Little dirt	30	46	75	80	72	65
Comfortable	73	82	88	78	58	54
Healthy	59	69	80	71	57	57
Not too dry	51	73	86	55	58	56
Free from draughts	34	19	25	53	18	18

central heating, the largest proportion had incomes of over £15 a week.

Whether or not a heating system gives good value for the money expended on running it must be considered with reference to actual expenditure, and the average costs to the tenant are given in Table 2. The costs include all standing charges and the tenants' expenditure on fuels for all purposes, such as cooking, lighting, etc., as such consumptions contribute to the thermal input to the dwellings. Average figures for all flats on each estate are given, and as the proportions of flats of different sizes vary as between estates, average expenditures in two bedroom flats are also given.

The table shows that expenditures are greater (at about £50 per annum) with the systems which include a fixed charge made by the landlord than with those which are entirely under the control of the tenant (at about £40 per annum). Further analysis has shown that there are marked correlations between expenditure and dwelling size, and between expenditure and family income. The same order of difference applies both to landlord-controlled and tenant-controlled systems.

Turning now to the tenants' views on satisfaction with value for money (Table 1), it is noticeable that the lowest percentage of favourable replies to this question occurred on the estate with floor warming under landlord control. This is almost entirely due to the fact that the floor heating was controlled by room thermostats, set by the local authority so that use of topping up appliances could result in the thermostat switching off. This difficulty has now been overcome by modifying the system so that the heat input is varied according to the outside temperature, and is not affected by the use of supplementary heating; this alteration should result in reduced expenditure and increased satisfaction.

On the other estates where fixed charges were levied, satisfaction with value for money was reasonably high, indeed one of the individual estates with central heating shows a figure comparable with those for individual solid fuel appliances, even though the tenants were paying on average £10 a year more.

The estates which show the highest satisfaction with value for money are those with individual solid fuel appliances, which further indicates the continued

acceptability of this form of heating. Tenant-controlled floor warming gives a reasonably high level of satisfaction with value for money, two of the estates studied showing a very high score, but the individual gas and electric fires show rather lower percentages of favourable replies, although their running cost is similar.

The general picture given by Table 1 shows a fairly high and consistent level of satisfaction with central heating, individual solid fuel appliances and tenant-controlled electric floor warming, but indicates that gas and electric fires, landlord-controlled floor warming and open fires with central hot water each give rise to criticism.

Environmental Conditions

Satisfaction with what may be called the environmental conditions provided by a heating system has some bearing on the tenants' overall view of the system. The percentages satisfied on a variety of aspects are given for the different heating methods in Table 3.

Some replies in the group reflect very widespread adverse feelings, particularly concerning the discoloration of walls with central heating and electric fires. Although central heating is normally represented as advantageous because it is so clean, its poor showing in interviews with housewives has been apparent in previous surveys. It appears that the difficulty of cleaning off the unexpected discoloration above radiators and pipes worries housewives more than the familiar ash and coal dust associated with solid fuel fires. The discoloration of the wall above the electric fire was also criticised. In both these cases staining could have been reduced if the appliances had been fitted with adequate baffles. It is noticeable that on the question of cleanliness, the electric floor warming schemes were much the most favoured.

On the question of comfort, which appears to be related to opinions on health, the solid fuel schemes had the highest proportion of satisfied tenants. It would, of course, be difficult to prove that any system promotes good health, but it is possible that the tenant's favourable view of the healthiness of traditional fires plays an important part in the continued popularity of this form of heating. A high level of

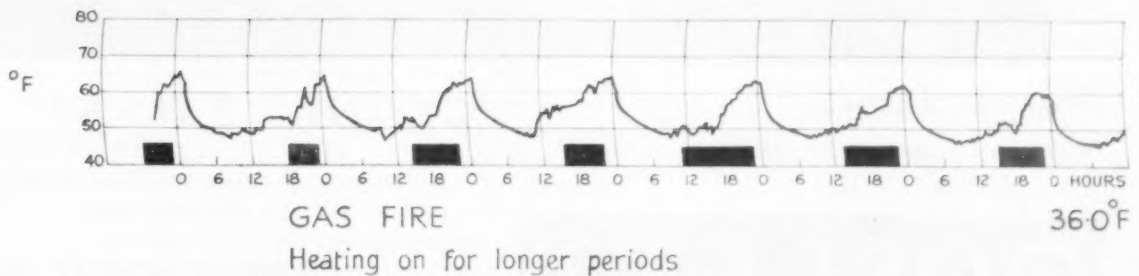
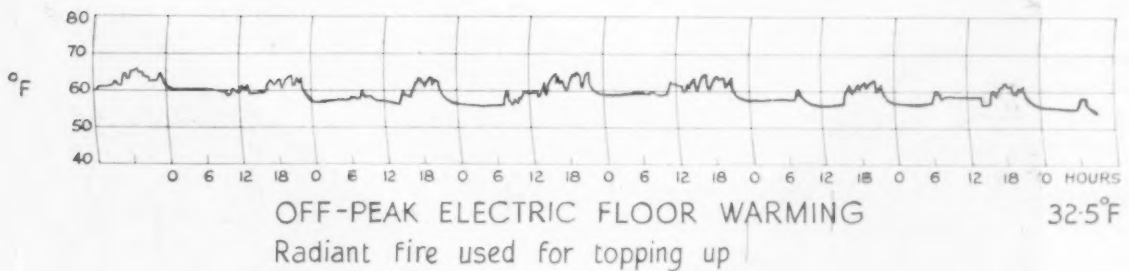
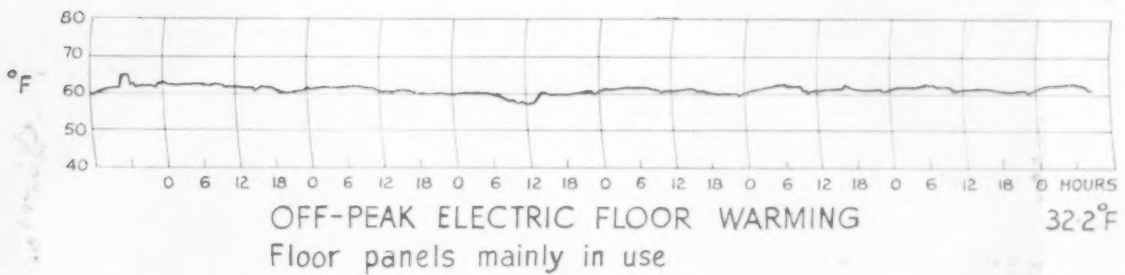
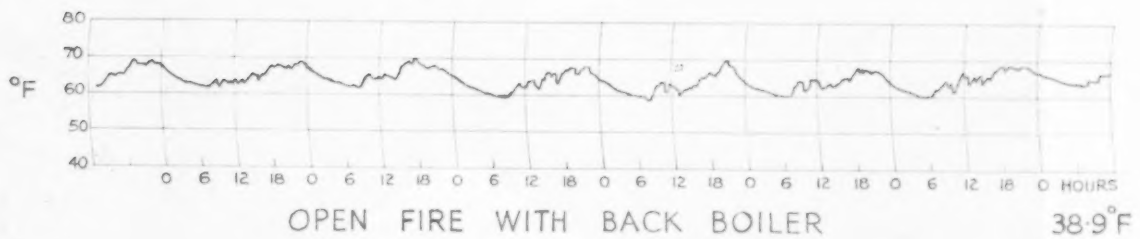
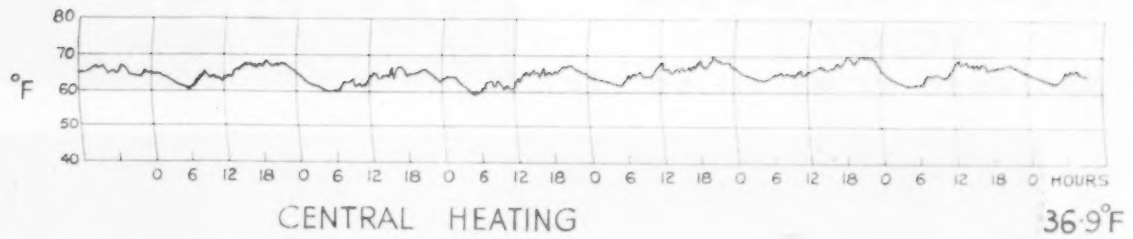
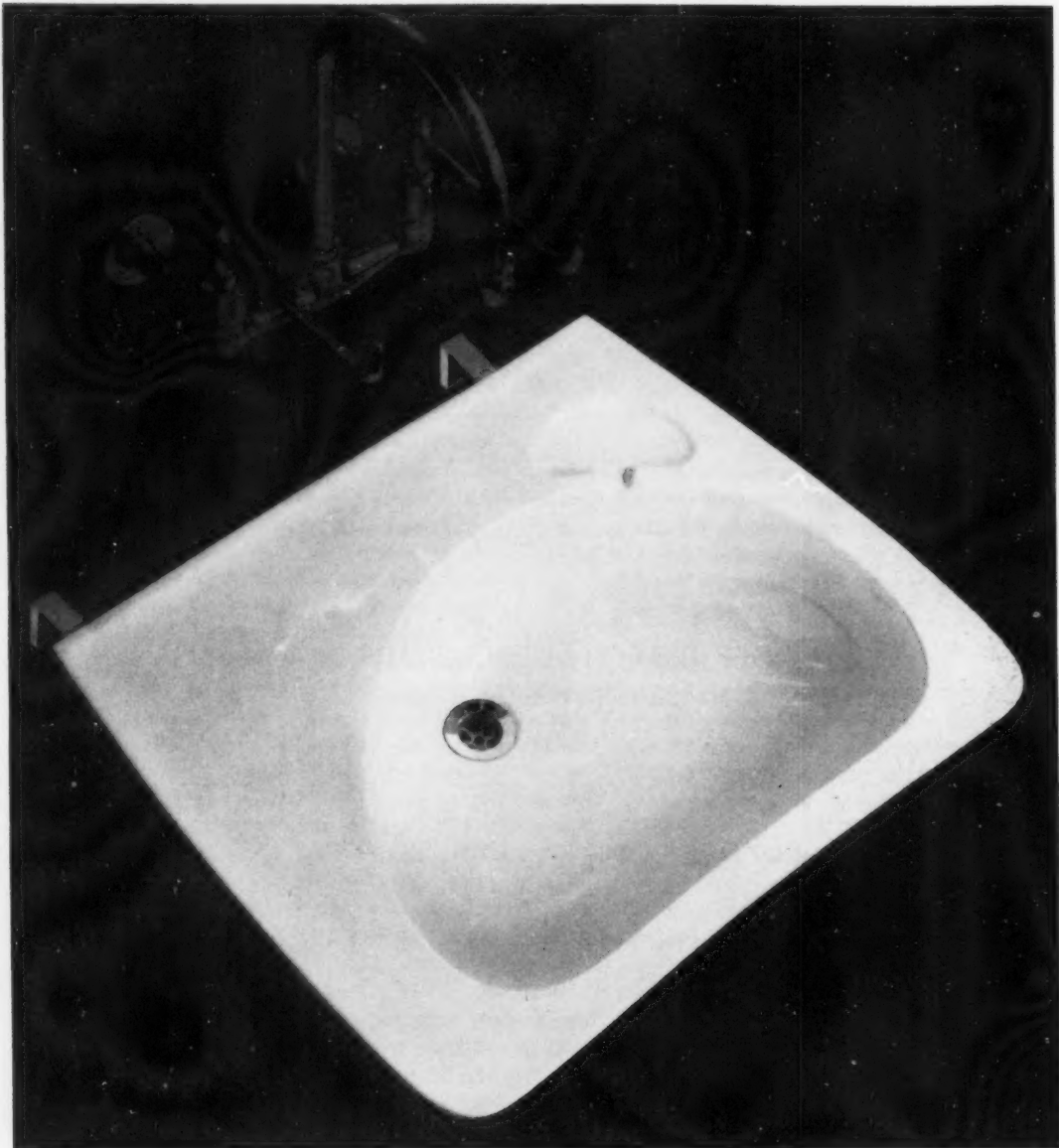


Fig. 1. Living rooms—specimen temperature records, for different heating systems. Outside temperatures as indicated

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technical section

Table 4
Analysis of satisfaction—hot water supply

	Central- bulk supply	Central- individual calorifier	Back boiler and immersion heater	Back boiler only	Electric storage heater	Gas storage heater	Gas multi- point heater
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Satisfied in winter	100	91	96	89	98	76	88
Satisfied in summer	100	91	93	65	98	76	88
No disadvantages	92	63	68	41	80	38	56

satisfaction with comfort was found on all the schemes with electric floor warming, despite the somewhat low temperatures which will be discussed later. This may largely arise from the provision of heat at floor level, with the consequent elimination of vertical temperature gradients and draughts. The greatest complaint of draughts came from flats with gas and electric fires and individual solid fuel appliances, but even this did not necessarily result in solid fuel systems being classed as uncomfortable or unhealthy. Complaints of dryness of the atmosphere were again lowest on the solid fuel schemes. With central heating, where nearly half of those interviewed complained that the atmosphere felt too dry, the response is to some extent objectively confirmed by records showing a somewhat low relative humidity.

Water Heating

The method of water heating provided is a further factor which would be expected to contribute to tenants' overall satisfaction. Tenants were asked whether they considered the hot water supply satisfactory in winter and in summer, and whether the means of obtaining hot water had any disadvantages, which might be a cause of annoyance although not sufficient to make the supply unsatisfactory. The percentages satisfied with the seven distinct water heating systems investigated are given in Table 4.

It is clear that satisfaction with all the methods of water heating provided is high. Whether a tenant is provided with a central hot water supply for which he pays a fixed charge, when he is likely to use an average of 450 gallons per week, or whether he controls the means of water heating himself when his consumption may be as low as 150 gallons per week does not appear to have a marked influence on his satisfaction. One or two points, however, are worthy of note. Two of the central systems provided a bulk supply of hot water, and two were fitted with individual calorifiers so that the supply was to some extent restricted; it is clear that an unlimited supply leads to increased satisfaction. On some of the estates with electric storage heaters, the electricity supply to the water heaters was connected only during off-peak periods and was charged at off-peak rates, and on others it was available all the time and charged at the normal rate. Capacities of the tanks varied, from 25 or 30 gallons when connected to off-peak

supply, to 20 gallons when connected to normal supply. In addition to the electric storage heaters, wash boilers were provided on four estates and a communal laundry on the fifth. Despite the many variations, there was a consistently high level of satisfaction with the method of water heating, although some complaints were made on grounds of expense.

Satisfaction with back boiler without supplementary means drops sharply in summer, confirming that people object to having to light the fire in summer just to obtain hot water. The chief complaint about back boilers and immersion heaters was of the running cost of the immersion heater. Criticisms of gas multi-point heaters and gas storage heaters were on grounds of expense and slowness of heating.

The provision of a warm airing cupboard as an incidental to the hot water supply was much appreciated. On the estates studied, the hot water tanks and electric storage heaters were fitted in cupboards which were used for airing, and on estates with a bulk supply of central hot water, a cupboard with a hot pipe was provided. On the estates with gas multi-point heaters and gas storage heaters, airing cupboards with separate means of heating were installed, but the absence of a cupboard which was warmed as an incidental to the water heating was much criticised.

TEMPERATURES AND SATISFACTION WITH ROOM HEATING

Choice of Rooms to be Heated

All those interviewed were asked in which rooms they thought that means of heating should be provided, and their views are summarised in Table 5. Their choice was made without specific reference to

Table 5
Tenants' order of preference for room heating

	First choice	Second choice	Third choice	First three choices
	Per cent	Per cent	Per cent	Per cent
Living room ..	97	2	1	100
Kitchen ..	2	38	11	51
Main bedroom ..	1	36	34	71
Second bedroom ..	1	20	31	52
Hall ..	0	8	11	19
Bathroom ..	0	4	13	17

technical section

provision in their own dwellings, and as some tenants included more than one room in each choice, the totals exceed 100 per cent.

Before considering the tenants' satisfaction with the heating that was provided in their dwellings, it is appropriate to discuss the temperature levels maintained with the different heating systems.

Temperatures Maintained

Average temperatures with the various methods of heating have been calculated from the records of thermographs placed in the flats and from temperature readings taken at the time of the interview. As might be expected, there were appreciable differences from dwelling to dwelling, but many of the thermograph records from the same block show a characteristic pattern; some specimen records are given in Fig. 1. With central heating, temperatures in living rooms tend to start upwards at an early hour and rise steadily throughout the day till late evening. This appears to be mainly a reflection of boiler house routine, and a swing of about 6° F. is common. Individual solid fuel appliances show a more rapid and fluctuating rise of temperature starting generally somewhat later in the day; an overall swing of about 10° F. is found. Electric floor warming is characterised by a very small daily swing, but when electric fires are used in addition, the temperature records show a sharp fluctuation. The use of gas and electric fires tends to be intermittent, and temperatures rise and fall rapidly by as much as 10-15° F. Table 6 shows for the different heating systems mean temperatures of living rooms, bedrooms and the flat as a whole, as well as evening living room temperatures; all these temperatures are with reference to a mean daily outside temperature of 43.5° F., and the mean temperature differences are also given. Figures for a house with individual solid fuel appliances, from

Table 6
Mean weekly temperatures for outside temperature of 43.5° F

	Living room Even- ing	Bed- room Mean	Flat Mean	Mean tempera- ture difference
	°F	°F	°F	°F
Central heating ..	67-72	66-70	61-67	63-68
Open fire ..	65	62	58	59.5
Openable stove	66	64	57	60.5
Floor warming (tenant)	62	62	56	58.5
Floor warming (landlord)	66	65	57	61
Gas fire ..	62	60	56	58
Electric fire ..	61	59	55	57
House with individual solid fuel appliances ..	63	60	52	55.5

an earlier survey, are included for comparison.

On the centrally heated estates, evening living room temperatures at 67-72 deg. F. were running well above the design temperatures of 62-65° F. Discussions with designers showed that in the design calculations it was not normal to make allowance for the miscellaneous heat gains that could be expected in the dwellings; this may account for the fact that many of the central heating systems appeared to be oversized and over-run. Flats with individual solid fuel appliances showed evening living room temperatures nearly as high as those for central heating. Comparison of these figures with those for houses shows that the temperatures in flats were appreciably higher; this is largely due to the lower conduction losses in flats which result from the reduced external surface area. Flats with gas and electric fires and tenant-controlled electric floor warming form another consistent group with evening temperatures of 61-62° F. Floor warming under landlord control gives evening temperatures nearer to those for individual solid fuel appliances.

Mean living room temperatures show much the same grouping, at a slightly lower level, as the evening values. In comparing the different systems, it should be remembered that temperatures were recorded on thermographs placed near the perimeter of the room, and that any radiant heat source would increase the equivalent temperatures above the recorded values. Comparison of mean bedroom temperatures shows that bedrooms in the centrally heated flats were appreciably warmer than those on other estates; this occurred whether or not there was provision for heating in the bedrooms themselves, and could be attributed to the spread of heat from heated rooms. Bedrooms on the estate with open fires were slightly warmed by a circulating hot pipe from the back boiler to the storage tank; this may have contributed to the temperature rise of 1-2° F. above the unheated bedrooms in the flats with other systems. Bedrooms where no heat source was provided showed little diurnal variation of temperature apart from occasional peaks due to supplementary heating.

In the centrally heated flats, temperatures in other rooms appear to follow much the same pattern as in living rooms. In dwellings where the main heating was restricted to the living room, kitchens showed rapid fluctuations of temperature as cooking was undertaken.

Examination of the mean temperatures of the whole flat shows that in practice the average rise above the outside temperature varies considerably according to the heating system. The mean temperature difference for an outside temperature of 43.5° F. is greatest for central heating at about 22° F. and least for gas and electric fires at about 14 deg. F.

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Monthly supplement

BASA

BASA and IUA

London, July 3-7

CONGRESS DANCE

This will be held in the New Refectory of University College London on Wednesday July 5 at 8.30. (The architect to which forgot about fashion in shoes and put a wood strip floor down, so there are little notices about saying NO STILETTOS . . .)

Bands—THE TEMPERANCE SEVEN and it is hoped to obtain the services of THE HAPPY WANDERERS.

There will be a BAR, and FREE refreshment for foreign students.

Price for English students, 7s. 6d. single.

Décor by Malcolm Quinton and Bartlett students.

Part of the exhibition (see below) will be transported to U.C.L. for the dance.

The prizes for exhibition display will be given during the dance.

HOSPITALITY

Accommodation—promises to house visiting students now amount to 80 and it seems likely that this will reach 100 and more before long. In addition to this 50 places have been booked for visitors in hostels.

Foreign students will be asked to contribute 5s. per night.

Hospitality within schools—On the Monday and Tuesday, students from different London schools will provide hospitality for visiting students staying with its members.

AA are organising parties and tours

Regent St. Poly. " "

Northern " " and discussion

Hammersmith " "

Bartlett " "

GUIDES INTERPRETERS STEWARDS

We already have quite a number of volunteers and should have no difficulty in getting the 30 required. Interpreters, guides and stewards will have free access to the Congress and out-of-pocket expenses (including travel and food) will be refunded.

SCOOTERMEN

15 leather-jacketed black-booted students are still needed to help (on their motor bikes, scooters or whatever), communications at the conference. Scootermen will also have free access to Conference when not on duty, and expenses.

STEWARDS FOR EXHIBITION

We do not anticipate difficulty in obtaining these. Expenses as before.

There will be 35s. accommodation expenses allowed for all Guides, Interpreters, Scootermen, Stewards . . .

MOBILE THEATRE COMP

Students from all over the world have been taking part in the special IUA Competition design for a mobile theatre. The CRIT (we thought that crits were OUT these days—at least in the grand old style where extinguished architects gave brief, cynical and uninformed discourses about students' work to satisfy their own vanity . . .): we hope Michael Patrick will allow questions to be asked when he gives it—on Friday afternoon, July 7, in the National Film Theatre.

EXHIBITION

All recognised schools have been invited to participate in this important exhibition. It will be on show at the RIBA until the Gala Evening (July 7).

Each school will be allowed 4 screens 5 ft. x 2 ft. 6 in. and 2 screens 4 ft. x 2 ft. The exhibition has been designed by Rodney Mace (Regent Street Poly) and consists of a series of square frames which form the sides of interlinked boxes, inside which each school will have its display on screens hung from the frame. To quote from Mace's letter to the schools:

"The IUA Congress offers an unparalleled opportunity to show architects and students from many countries the work of the British schools."

The entry date for all exhibits is JUNE 12.

The exhibition will be shown again at BASA York Conference and it is hoped to circulate throughout England to as many centres as possible.

It is hoped in the exhibition to incorporate some BITS of ART from the London schools (sculpture particularly).

There will be prizes for the best-presented work on show.

The address of the Congress office is
I.U.A. Secretariat
66 Portland Place
W.1

AA—Silverstone Redevelopment, 2nd year

The village, the town and the city are the subjects of the study of 2nd, 3rd and 4th years respectively. This year Silverstone was selected as the object of study for the 2nd year.

Groups carried out a survey of the village, and then prepared with the staff, a redevelopment programme.

Various projects derived from the development plan were used as a basis for exercises in the use of timber, brick and steel design, sited with regard to each student's ideas for the development. The opportunities to select various sites made comparative criticism difficult.

The freedom to develop one's own scheme and sites within very liberal and flexible programmes encourages the imagination, but makes it difficult for many to be objective in the formative period of their designs.

Besides the timber, brick and steel projects students are required to prepare and design housing for their village schemes, the quantity and types resulting from the original survey.

The scheme published is an example of a programme for the design of an economical family unit (5-6 persons), adhering strictly to floor areas given, totalling between 800 and 1,000 sq. ft.

This unit was to be considered in relation to other houses, sites, access services and social needs. One could consider the possibility of a group or "fill in" housing.

It was decided to place a group of houses on the south sloping site in the village centre. This was an attempt to make the square a positive element and to counteract the visual effect of its sloping away to a vacant area of land.

The site is bounded by a road at the south and west, both connected to the by-pass. From the southern road a service road runs up the east boundary to join up with an existing cul-de-sac. The factors which have influenced the sites of the units are the views to the south over the village, and the farmlands in the west, the need for maximum sunlight, and the site's sloping exposed nature.

Firstly local buildings, and materials were considered to form the basis of the design. However, only a very limited supply of local stone and slate is obtainable, and only boundary and retaining walls are of stone. The resulting impression has come out of social needs, site considerations, and the pattern of neighbouring courtyard and farm houses. The planting of more small fruit trees will help to integrate the present orchard and surroundings with the buildings.

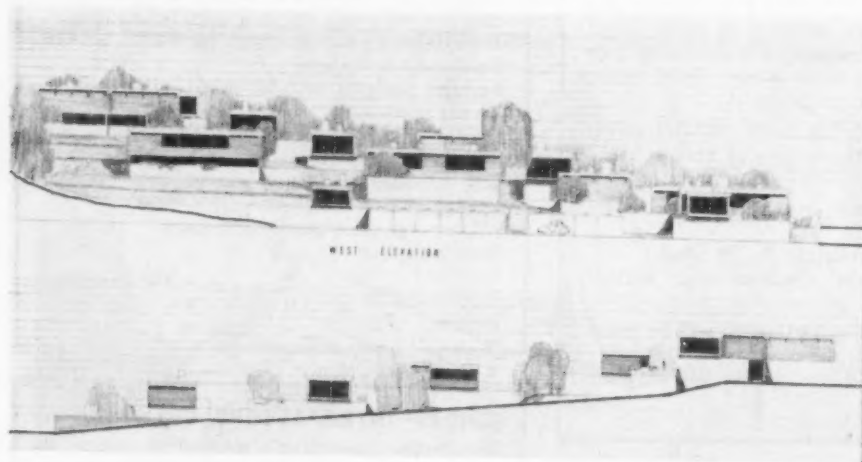
It was assumed that the majority of the people who would live in the units would come from cities, or neighbouring towns, and thus would not require very large gardens. Many would be employed in the local industries, and others would commute to the town of Towcester.

There are three basic types of housing, single family units, two family semi-detached, and a unit comprising a two person dwelling at first floor level and two single person units with a communal garden, at ground floor level.

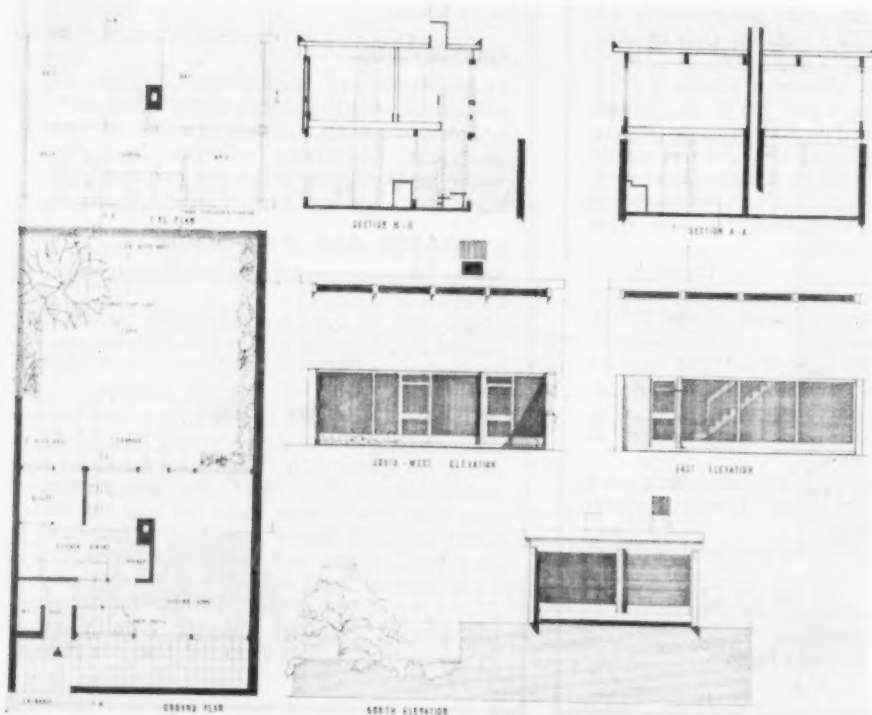
The latter unit occurs where the site has been excavated, so as to "step" the groups down the slope, and so provide garden or terraced roofed garaging. The garages are in groups of four to six, and serve several houses from a communal parking court.

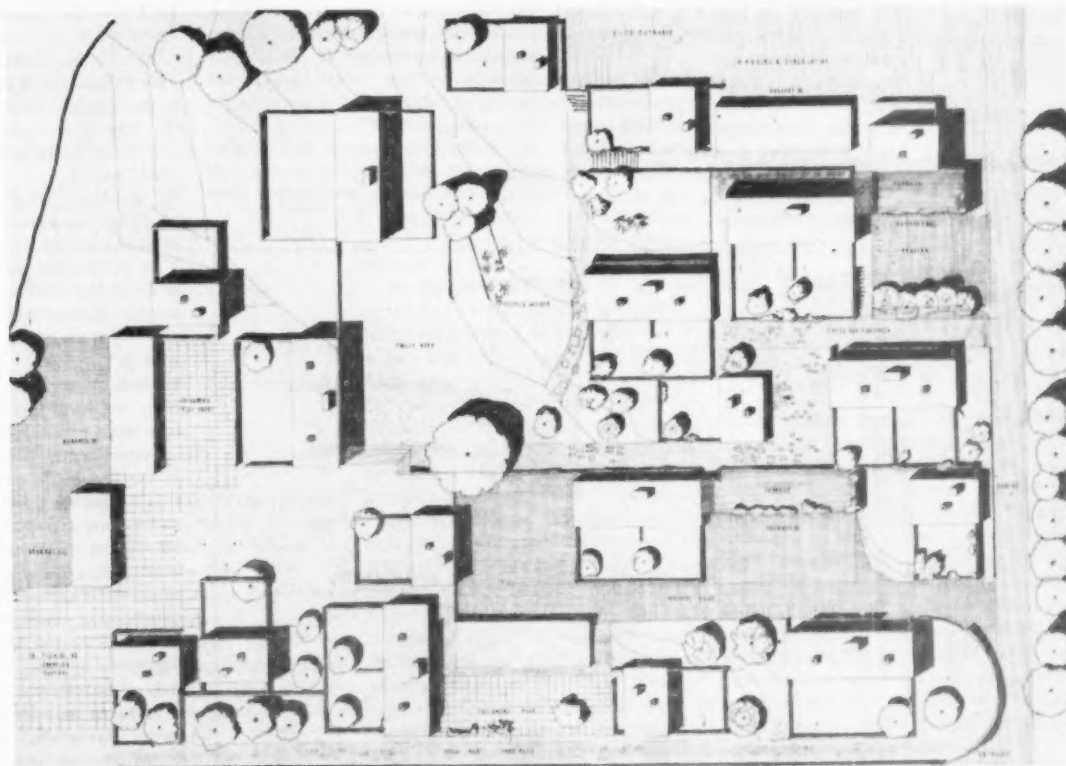
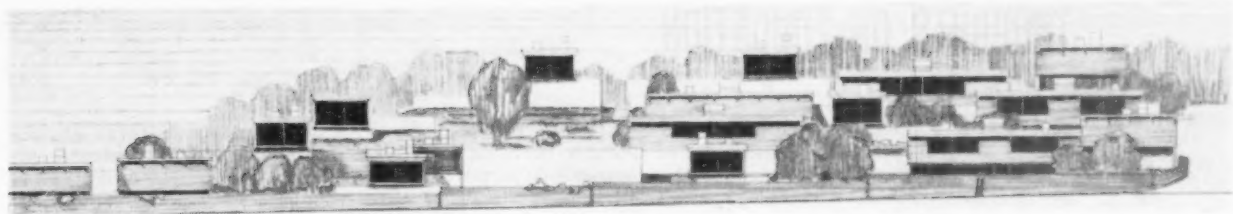
The variation in type and family size is carried further into the arrangement of private court gardens, a group's communal court, and the whole estate's common-garden, lawns and children's playground.

The service roads and parking areas are on different levels from the courts, foot and cycle paths. There has been an attempt to direct the circulation flow to the communal garden, to the surgery, and the Launderette which bound the site—and lead out to the shopping and community facilities



West elevation, east elevation and, below, housing elevations and plan



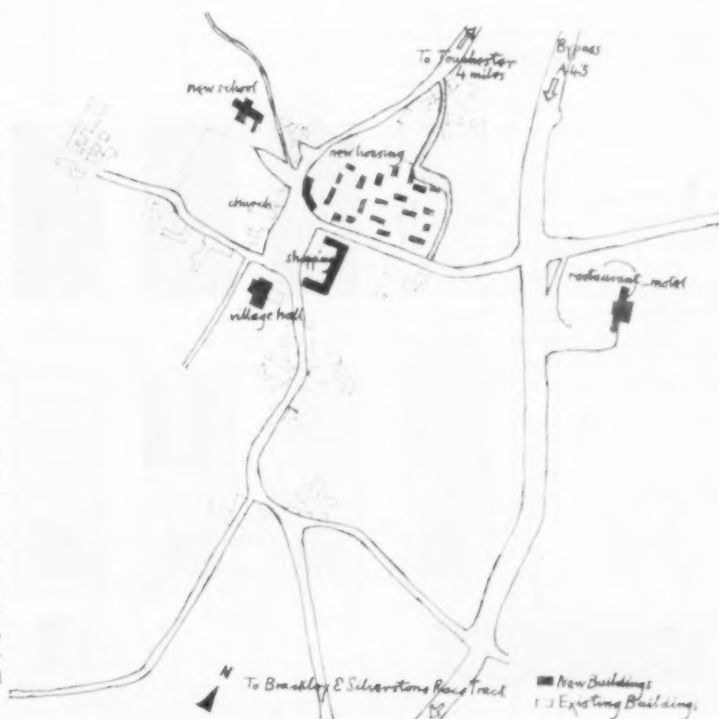


South elevation, top, site plan, above, and layout of the village, right

which are around the village square. Construction is similar in the three types, consisting of load-bearing brick walls forming the ground floor space and continuing to form court gardens, the walls being cut away when sun and view are needed. The exteriors of walls are whitewashed. The first floor is of timber construction, consisting of two trusses spanning the ground floor walls, the verticals of which act as columns to the transverse beams of the roof. The external cladding would be of t. and g. horizontal cedar boarding. The flexibility of the upper structure's walls allows glazing to be used where desired, and in some cases the clerestory lighting between the roof beams is dispensed with.

Another variable factor is the living spaces of the unit. The decision on first or ground floor living will depend on the orientation, between one unit and the other. This breaks monotony, but the scheme retains a sense of continuity in construction principles and completeness as a grouping complex.

CARL R. REES



THOUGHTS ON EDUCATION

Education is a purposive activity. The purpose of any educational system must be carefully thought about before any valid discussion about "teaching method" and "teaching techniques" may usefully be held. In education, if not in political philosophy, the end must justify the means.

Organisers and administrators of education, whether on behalf of private trusts or public corporations, are unable to bring into focus in their own minds what their schools or colleges are really trying to do—let alone ask of them-

selves "what kind of person *should* we be aiming at producing?" To ask such a question (the answer to which might involve a revaluation of high level policies . . .) would generally meet with the considerable disapproval of the authority to whom the school administrators were responsible (with some exceptions). This would occur not because the authority did not consider the purpose of their schools an important factor in education, but because they would nearly always assume that the kind of person they wished their

schools to produce was a better educated version of themselves (probably the most obvious examples of this kind of built-in assumption on the part of committee and administrator *becoming* built in to the educational system is the continuance of teaching of sectarian religion in secondary schools).

This process can be seen as the conscious or more usually unconscious attempt on the part of one section of society to contribute towards the stability of the whole society.

In thinking about an architectural education, we should therefore consider what the architect is to be trained for. This proposition involves us in considering the alternative attitudes that an individual architect can take towards the society in which he lives and may wish to work.

Human beings have, by virtue of their birth within any society, some of the society's characteristics. Although intelligence is largely inherited from parents (according to Professor Eysenck the I.Q. is 3 parts a result of direct heredity and 1 part a result of environmental conditions) the mental apparatus with which we use this intelligence is acquired by contact with the external environment and with adult thought patterns. As the historian E. H. Carr puts it:—

"As soon as we are born, the world gets to work on us and transforms us from merely biological into social units." ("Society and the Individual," *The Listener*, April 27, 1961.)

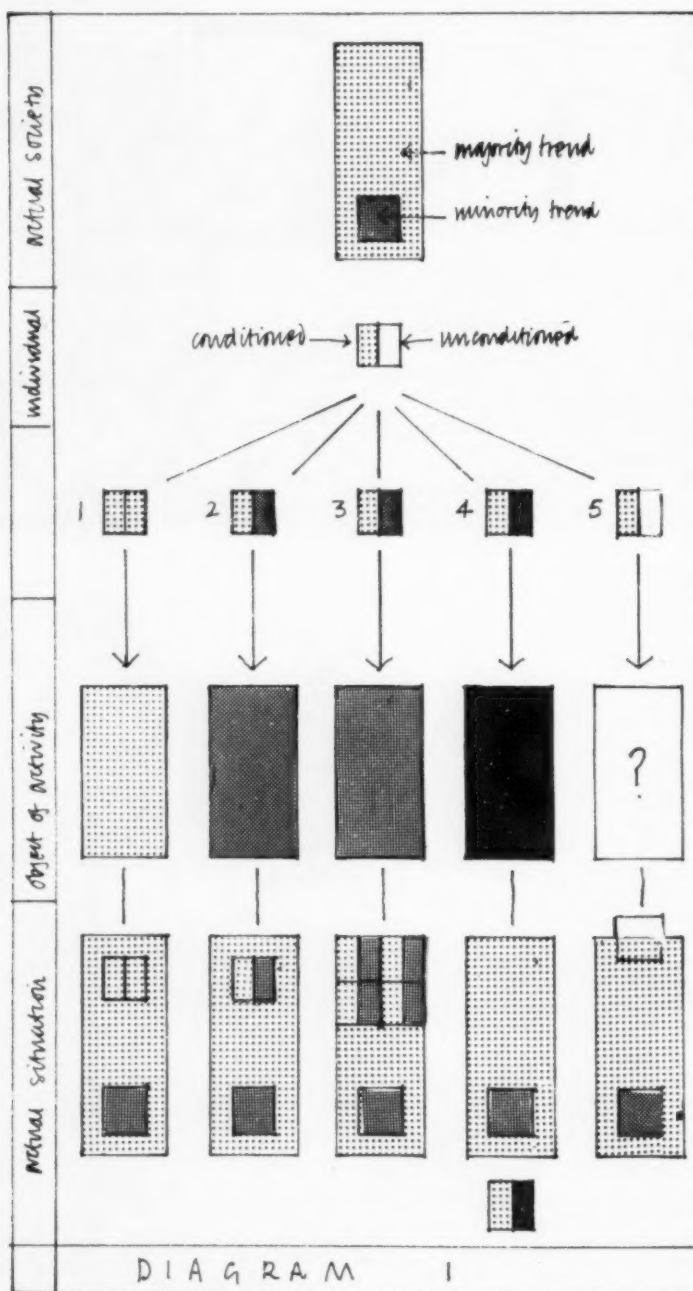
Man, at least in civilised societies, may use his reason in determining the direction of his own activity. (This is more accurate with respect to well-educated man than with non-educated, but after all the RIBA now demand 2 A-level subjects. . . .) To make a deliberate choice requires some degree of self-conscious sophistication, but frequently the activity of choice-making is made extremely difficult because the choices themselves are not clear.

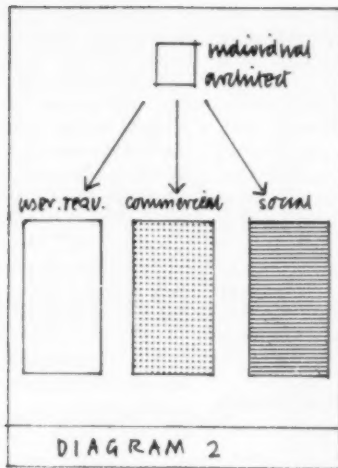
I want now to try to deal, diagrammatically, with the alternatives facing an individual with respect to his activity in society (see diagram 1).

The basic distinction is between a purposive attitude and a non-purposive attitude.

Purposive:

1. The individual accepts the majority trend (the Establishment view of society's aims . . .). The object of his activity will be to stabilise the majority trend and eliminate the minority trend.
2. The individual does not accept the majority trend but accepts the minority trend. His object will be to change the majority trend to the trend he supports. He may try to do this as an individual or
3. As a member of an organisation committed to the minority trend.





4. The individual does not accept either trend.

Non-Purposive:

5. The individual does not consider the alternatives.

I did not intend to become too specific, but it may be helpful to consider the diagram as generally related to English society in the 60s.

It is clear that only certain alternatives can concern us with respect to architects and their education. (4) will be unable to operate purposively within the framework of the society and (5) does not consider his activity as purposive at all.

At this point we must consider *HOW* the architect operates in society. Some examination should be made of *CLIENTS* (different kinds of work require different techniques of approach to the client... see "Research," by Peter Cowan, RIBA Journal, April 1961).

Some analysis of the different amounts of building activity promoted by different clients and their reasons for building would be an admirable subject for post-graduate research or study (recalling Sir Leslie Martin's remarks about studying the forces that control our environment). But lacking results of such a study and needing a broad framework in which to consider various clients there seem to be the following main categories (see diagram 2).

1. **USERS** in offices—typists and executives...
in hospitals—patients and nurses...
admin
in schools—pupils and teachers
etc.

2. **OWNERS**, perhaps "executive owners" would be more accurate. Executive owners work with the architect and any specialist advisers in compiling a programme upon which work may be based.

A. Commercial—whose primary object is quick return on capital expenditure. There will generally be some conflict in commercial building between User Requirements and Owner Requirements.

B. Social—buildings, housing, social, services, schools, hospitals, prisons, libraries....

It is obvious that there is a close correlation between the alternatives facing an architect as an individual in society and the choice of the kind of client for whom the architect will wish to work. With most architects the "choice" of clients is more a tendency to specialise in certain building types. It seems to me that any educational system geared to the training of architects should be very clear about the desired end product of the system. This EP will be, or should be if the curriculum is to be realistic, related to the framework suggested by the two diagrams. This will involve some decision on the part of the school administrators as to what kind of architect *ought* to be produced. It is at this point that value judgments as to the social and political directions of society are raised.

Three different situations may exist in architectural education:

1. Each school can determine its own EP and gear its teaching techniques accordingly.

2. The EP could be governed by a directive from the Government or the RIBA—in which case teaching techniques could be left for individual schools to experiment with. The RIBA's position regarding policy is, of course, fundamentally important.

3. Schools would have no conscious EP at all—as happens now in the majority of schools where the principal is answerable to a local authority education committee who are only concerned with quantity of qualified

architects the school produces, and not with the quality.

The crucial decision which BASA must face is whether or not to make a value judgement about the kind of client architects should be framed to work for. Obviously the solution is not simple. The various types of clients are all an essential part of our existing political and social pattern—but at the moment the educational system (and therefore the RIBA) are geared heavily in favour of commercial interests at the expense of public services.

MICHAEL CASSIDY

STUDENT'S VIEW

Is Your Journey Really Necessary?

What effect Mr. J. M. Richards's recent talk on the Home Service on *Men in Motor Cars* (*The Listener*, May 11) will have on the general public is open to speculation. What is not doubtful is that it was a stimulating and intelligent attack upon the fundamental assumptions that those in authority to deal with traffic problems in cities have made and are still making.

In accepting the existence of the motor car as a necessary part of our culture, the real and vital priorities of planning and legislation—the service of human beings—have been ignored.

"We should," he argues, "put ourselves first, even if it means questioning the way cars are now used."

The motor car now is an ambiguous "mixture of private asset and public nuisance."

He analyses the main reasons for the rapidly increasing number of cars as follows:

(1) Cars fulfil functions other than simply being a means of transport from A to B. Their value as a social symbol, of affluence and of status has nothing to do with their usefulness!

(2) The motor car industry goes to great lengths to sell more and more cars. (The only way in which this commercial pressure could be prevented or reduced is by a clear Government



Where's the chimney?

No smoke—no smokestack—for Bristol's most modern housing scheme



Architect: Albert H. Clarke, F.R.I.B.A., A.M.P.T.I.
City Architect, Bristol.

Waring and Francombe Houses, recently completed, together with Underdown House, form the largest single block in the 400-flats first stage of the Redcliffe development.

THE 400 flats of the Redcliffe Precinct development are an impressive new landmark in Bristol, standing at the very heart of a district which has been planned as the city's newest smoke-controlled area. The flats are provided with central heating and constant hot water from a central boilerhouse—and the fuel chosen to fire the boilers is *coal*. But the chimney which traditionally marks the location of a boilerhouse is hidden from the Redcliffe skyline. You'll see no smoke clouds drifting on the wind. For the six modern boilers which heat 6,000 gallons of water a day for the Redcliffe flats produce no smoke, although they have been burning 300 tons of coal a year, and will burn much more as the development reaches completion.

The National Coal Board is proud of the fact that coal, in competition with other fuels, was chosen for heating purposes in this major housing project. Mr. D. F. Pexton, the Board's Divisional Marketing Director, looks upon Redcliffe as a graphic illustration of how coal—properly burned with modern equipment—is proving itself to be the most economical and efficient fuel for present-day needs.

CLEAN AIR

"Smoke and grime are no longer an inevitable outcome of burning coal," he states. "The days of burning any type of coal any old how, without thought for the power wasted or the smoke produced, are gone. A lot of progress has been made since then in methods of burning, and power engineers now know that the right kind of coal used with the right kind of equipment produces maximum efficiency, maximum value for money—and does not pollute the atmosphere."

R. W. Gregory and Partners of Manchester acted as Heating Consultants for the scheme, and the Redcliffe boilerhouse is equipped with 'Suxé' burners, which are specially designed to burn the cheaper grades of anthracite. This is a naturally smokeless fuel, but all modern furnaces—from the huge chain grate stokers used in large industrial plants to the small installations burning a few hundredweights a week for flat or office heating—can burn bituminous coals without producing smoke. By controlling draughts and regulating combustion rates all the smoky gases given off by burning coals are

consumed in the furnace.

This control is frequently fully automatic—as with the Redcliffe boilerhouse, which virtually runs itself. The burners are regulated by a thermostat which operates according to the temperature of the outside air. The colder the temperature out in the open, the more heat the burners produce, and vice versa, thus assuring the tenants of the Redcliffe flats of comfortable living conditions whatever the weather. The burners also bank themselves down automatically at night and open themselves up again in the morning.

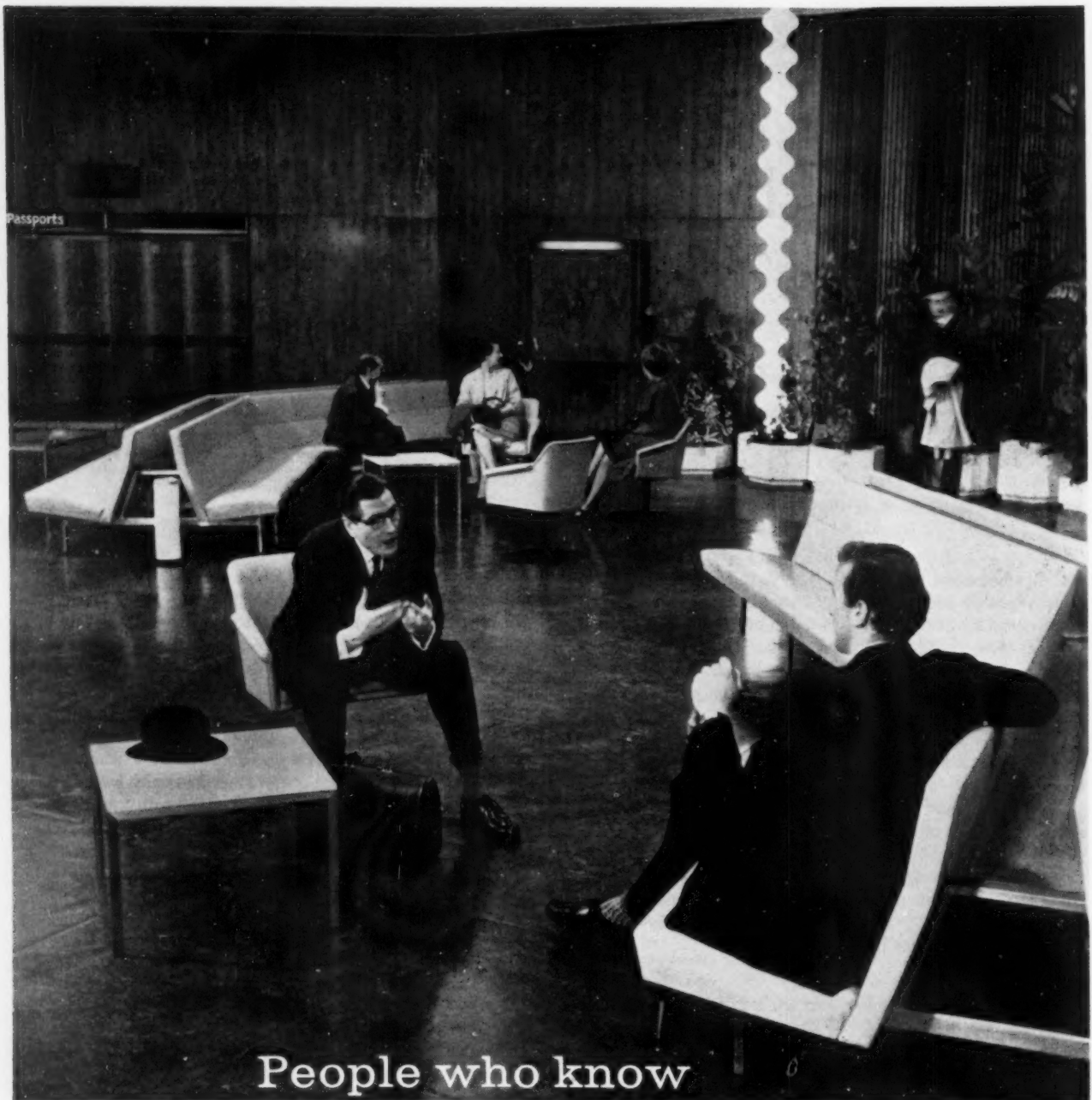
Coal is fed into the boilers by gravity, and one daily filling of the feed hoppers provides sufficient fuel for a whole day's operation. The filling is also done automatically by means of an electrically driven travelling loader, with push-button controls, which has been specially designed for this boilerhouse. The coal is, in fact, 'untouched by human hand' from the time that it is mechanically cut from the coal face until it is burned on the firebeds.

NO LABOUR TROUBLES

The boilerhouse, which will eventually provide a central heating system for the whole of the first stage of the Redcliffe development, is located in the basement of Canynge House. Four boilers were originally installed here, two more having since been added to meet peak demands when the scheme is completed. Hot water for domestic purposes and central heating in the newly completed and separate 170-flat block is pumped by underground pipes from Canynge House. Further pipes will feed the third block of 100 flats which will complete the first stage. Work on these has already begun. By centralizing the boiler installations in this way, coal delivery, handling and storage are simplified and maintenance made considerably easier.

This modern heating and hot water system makes a minimum demand on the time of the caretaker and his assistant who are responsible for its operation. A few minutes each day has been sufficient to keep the boilers running at peak efficiency without further supervision and it is not anticipated that boiler operation will be appreciably more arduous even when all 400 flats are connected.

PROGRESSIVE HOUSING IS GOING FORWARD ON COAL



People who know
are talking about

. . . the striking new Passenger Waiting Hall for Southampton Docks... the beautiful oak staircase with its glass panelling in France & Son's Bond Street showroom... the distinguished appearance of the Birmingham Chamber of Commerce... the stylish simplicity of the new reception hall of the United Dominions Trust... and other large interior schemes too numerous to mention. For a fully illustrated brochure, write for "Interiors" by

HEAL'S
CONTRACTS LIMITED

196 Tottenham Court Road London W1 Museum 1666

Contract administration

compiling tender list

35

Main contractors to be listed for competitive tendering should be selected with extreme care and generally in accordance with the following principles:

1. Careful investigation is to be made to ensure that the firms listed are of equal capability, size and reputation.
2. Their selection by the client or you must be made without prejudice.
3. The firms and their previous works should preferably be known to you or, alternatively, recommendation should only be sought of a person whose knowledge of the firm is sound.
4. Where their work is unknown, the firms should be asked to submit a list of contracts carried out with the names and addresses of three of the architects or clients from whom references can be obtained. The buildings should be inspected and where necessary an appointment made to visit the contractors' offices and yards.
5. When taking up references it is advisable to ask specifically for answers on such matters as contractors' office/site liaison, co-operation with sub-contractors, quality of workmanship in all trades, time, costs and extras.
6. The client must be fully informed of the system of selection and he must approve the list of those contractors recommended by you.
7. The client must be given the opportunity to add to the list, but only in accordance with the principles on which the others were selected.

8. The client should be warned not to contact or allow any staff communication with any of the selected firms before or while tendering is in progress.

9. The client must be informed that, although he is under no obligation to accept the lowest or any tender submitted, the system is devised to produce the most fair and well-balanced results on an equal basis to both client and contractor, and if for any reason the lowest tender received is not chosen it is reasonable to offer estimating costs to the firm submitting the lowest tender.

When the list is agreed between client and architect, the contractors should each be asked in good time whether they are prepared to submit competitive tenders.

The form of invitation to tender suggested in the Code of Procedure for Selective Tendering is:

Dear Sirs,

I am authorised to invite you to submit a tender for the construction of the works described below. Your acceptance will imply your agreement to submit a wholly bona fide tender and not to divulge your tender price to any person or body before the time for submission of tenders.

If you are able to accept this invitation please inform me whether you will require any additional unbound copies of the bills or sections of the bills of quantities in addition to the one bound and one unbound copy that it is proposed to send you. These additional copies will be supplied on repayment of the costs of reproduction.

You are requested to send me your answer by..... Your inability to accept will in no way prejudice your opportunities for tendering for further work under my direction. In this connection your attention is drawn to paragraph 11 of the Code of Tendering Procedure currently published by the Joint Consultative Committee of Architects, Quantity Surveyors and Builders.

Yours faithfully,

.....
Architect

- (a) Job.....
- (b) Building owner.....
- (c) Quantity surveyor.....
- (d) Consultants with
supervisory duties.....
- (e) Location of site.....
- (f) General description
of works.....
- (g) Form of contract.....
- (h) Proposed date
for possession.....
- (i) Period for completion
of works.....
- (j) Date for despatch of
all tender documents.....
- (k) Date for submission
of tender.....

It has been said that this is probably the most important "five minutes" in any contract. It is certainly the time when an error of judgment can cause frustration to yourself and the client for as long as the job is in progress and in many cases for some time after the building is occupied. Any doubts which arise at this time, however slight, must be cleared or the name crossed off the list.

compile list of suitable
contractors with client

invite references

inspect buildings

inspect yards

client to
approve
final list

ask contractors if
prepared to tender
giving dates, etc.

Contract administration

contract drawings

36

Drawings coming into your own office from any source must be checked carefully against your own drawings to ensure that both read together in answering all queries that could possibly arise about the work when these drawings reach a building site. This must be done quickly but accurately and the sender informed immediately of any discrepancies in order to prevent his doing further work in his own office on the basis of incorrect dimensions, details or notation. When the correction affects your own drawings, a copy of your amended drawing should be issued at the same time. Discrepancies should, however, be carefully investigated in all their aspects before correction to avoid making a superficial amendment affecting complex detailing which cannot be adjusted on other drawings. A drawing which is amended and re-issued should have its amendments clearly noted. The drawing must also be issued to everyone whose work will be affected by the change. Estimates which are affected by the amendments should be revised. Instructions should be issued where sub-contract or other drawings need to be revised to follow

the amendment and checked again after revision.

By this time all the drawings which have been prepared in your own office or by consultants or sub-contractors should form a comprehensive set of documents. At this point they can be seen as the final contract drawings. Before issuing these to the quantity surveyor for preparation of his bills of quantities, as well as going through construction, damp-proofing and weatherings throughout, a general check through all other information should be made as follows:

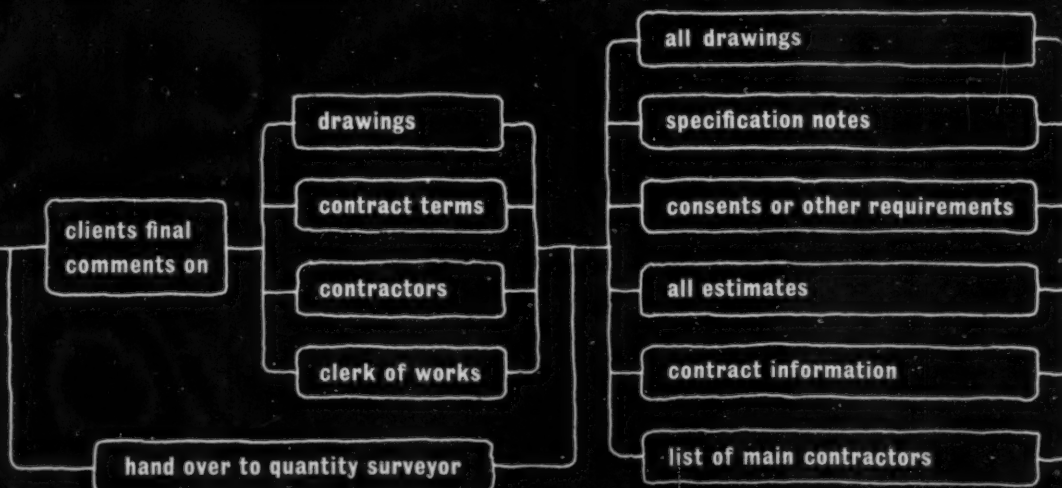
1. Read through all files from the beginning to see that instructions given from time to time have been incorporated on drawings or, alternatively, will be written into the bills of quantities.
2. See that all consents have been received and that all terms of consents have been complied with.
3. Check against spelling errors, muddled dimensions or notation, or discrepancies between one drawing and another or on the schedules.
4. Ensure that all reference numbers for sub-contract items or British

Standards are correct at the date of issue.

Add to the drawings the names of the sub-contractors or suppliers with their address and telephone number and the name of the technical representative with whom the work has been discussed. This gives the contractor, when nominated, or his general foreman on the site the appropriate contacts for all sections of the work.

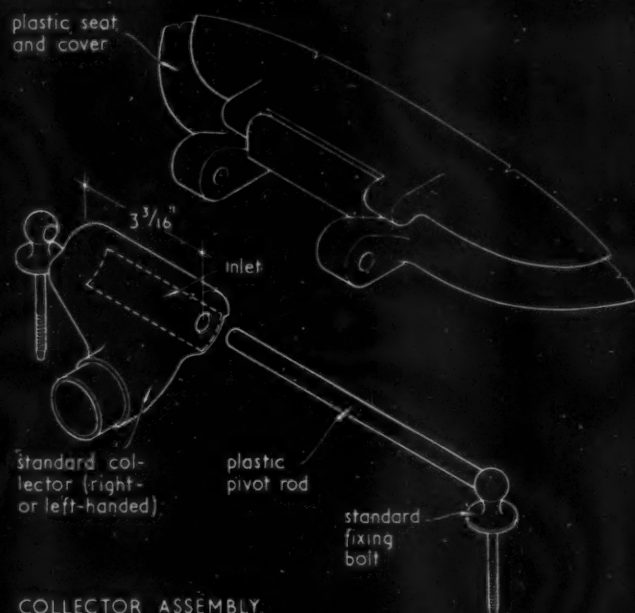
Finally, and before regarding the drawings as complete:

- (a) Go through each item as it is to be used by the client on completion and correct all inconsistencies (e.g. a tap position too low to get a bucket into a cleaner's sink, or the centre line of a skirting socket outlet shown at 6 in. from finished floor level where a 5 in. skirting is noted).
- (b) Go through the drawings as a general foreman would, set out the job, construct the work, or order material to see if all the information is to hand.
- (c) Go through the drawings as a quantity surveyor would, check a claim against a loosely specified section of work.

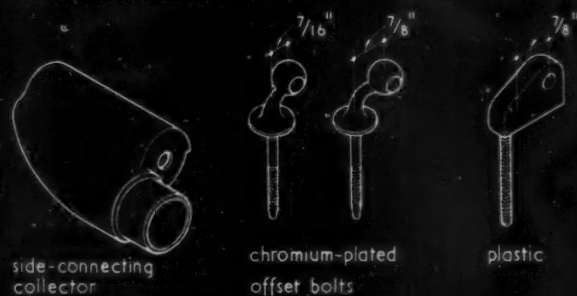


SANITATION | EQUIPMENT | W.C. VENT**33.P4**

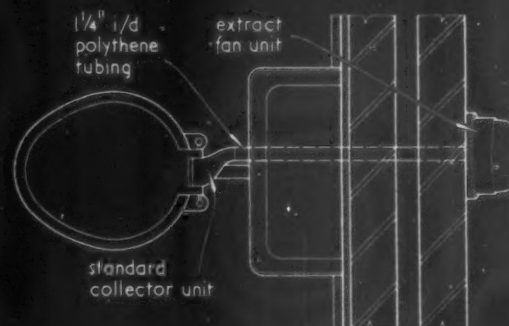
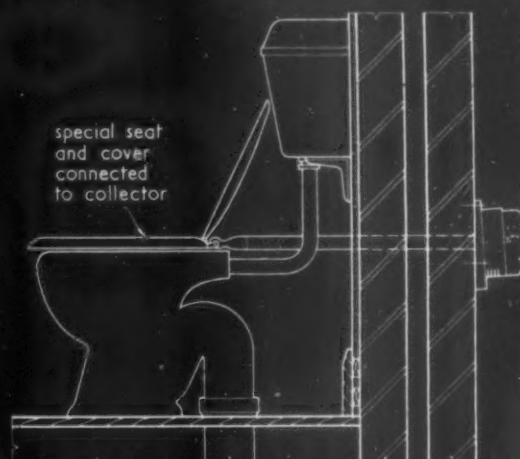
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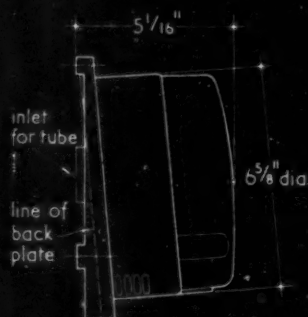
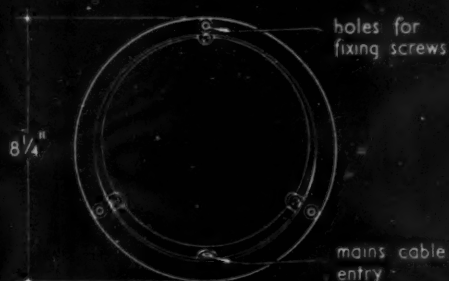
COLLECTOR ASSEMBLY.



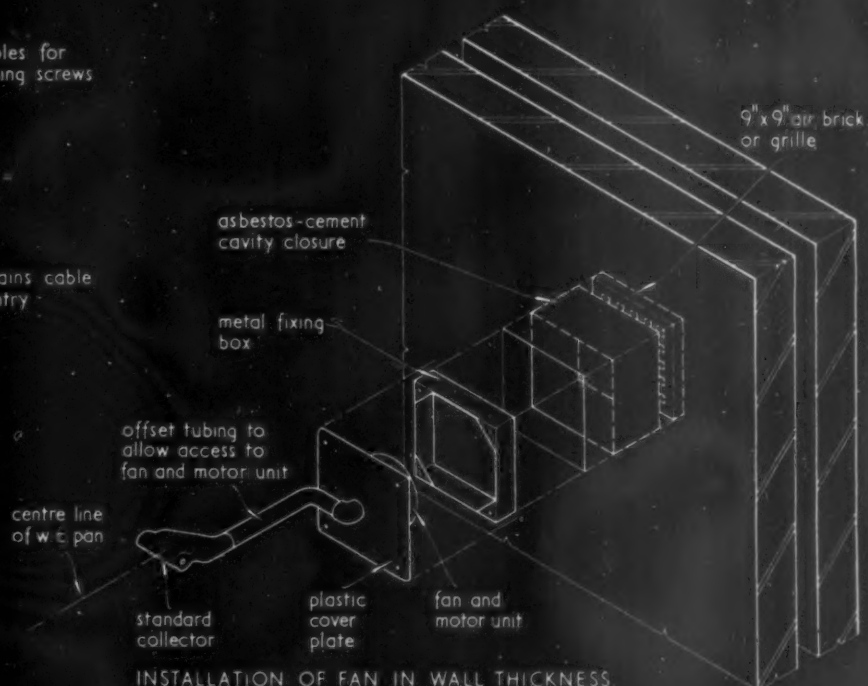
ALTERNATIVE COMPONENTS.



SECTION AND PLAN OF SINGLE INSTALLATION WITH FAN ON EXTERNAL WALL FACE.



EXTRACT FAN UNIT.



INSTALLATION OF FAN IN WALL THICKNESS.

33.P4 ·SILAVENT· W.C. VENTILATOR

This Sheet is the first on the Silavent extractor for ventilating water closets. The system can be fitted to any w.c. pan provided that the special seat supplied by the manufacturer is also fitted. It can be connected direct to the open air or to an extract duct.

Principle

The system is designed to remove offensive odours from a w.c. compartment and its effectiveness depends on the fact that it operates directly at the source of the nuisance. It also removes aerosols formed during the flushing action and these have been proved on medical authority to contain living bacteria which can be inhaled with harmful results.

Design and Construction

The basic components are a hollow collector, a special plastic seat with hinged cover having the hinge lugs designed to accommodate the collector, an extract fan mounted on or in the thickness of an exterior wall (or wall of an extract duct) and suitable tubing to connect the collector and fan. The seat and collector are fixed to the w.c. pan by a pivot rod mounted between two fixing bolts in the normal way. *Seat and cover:* These are in moulded plastic to B.S.1254:1945. The cover is permanently hinged to the seat. The pivot rod and spacing collets are supplied.

Collector: The standard collector is available in plastic or chromium-plated brass. A side-connecting collector is available for use with close-coupled types of w.c. suite, or where the back of the pan is very close to the wall. Both types of collector are handed to suit requirements. Standard fixing bolts of matching quality are supplied.

Tubing: The standard type of tubing supplied by the manufacturer is $1\frac{1}{4}$ in. i/d, $\frac{1}{8}$ in. wall normal gauge polythene tubing to B.S.1972:1953. It is supplied in 6-ft. lengths and ready-made bends are also available, details of which may be obtained from the manufacturer.

Fan: The electrically-driven fan has the shaft of the motor inclined to the horizontal so that when the current is switched off, the fan rotor slides down and closes the aperture, thus preventing back draught. The fan is of the centrifugal type and is enclosed in a weatherproof, pressure die-cast, aluminium-alloy housing. All U.K. voltages can be accommodated (a.c. only). The consumption is 22 watts. The type for building-in is mounted on a plastic cover plate and supplied with a metal building-in box.

Special fittings: Off-set bolts are available for positioning the collector effectively on certain types of w.c. pan.

Operation

The fan is switched on by the individual who enters the w.c. compartment. The switch may be arranged to operate:—

- (a) By a ceiling-mounted drop-cord (with or without warning light).
- (b) By the action of closing the door, when the switch is mounted in the jamb.
- (c) By the action of bolting the door, when the switch is mounted in the bolt socket.

Installation

Surface-mounted fan: The external wall is drilled to receive the $1\frac{1}{4}$ in. i/d tubing. A special set of drills is obtainable for this operation, incorporating a $\frac{1}{8}$ -in. pilot drill, a $1\frac{1}{4}$ -in. finishing drill and extension rods. The drills are durium-tipped and are recommended for clean-cutting through hard surfaces and they can be used with hand-braces or power drills. The tubing is fitted to the collector and pushed through the hole in the external wall. The seat and collector are assembled and bolted firmly to the w.c. pan. The tubing which projects from the external wall is trimmed off and the fan positioned with a push fit. The fan is then screwed into position on the wall, using the wall plugs and galvanised screws provided. It should be noted that detailed instructions are included with the fan unit.

Built-in fan: A metal box is built in on the inside face and a 9-in. square air brick or grille on the outside face of the external wall. In cavity walls, a cavity closure of asbestos cement or other suitable material should be included. Electric wiring runs should be taken to the aperture and the selected switch position. When all building work is completed and finishes applied, the fan unit is screwed in position on the built-in box on the inside of the wall. The seat and collector are assembled as previously described and connected to the cover plate on which the fan is mounted. This type of fixing makes it possible to carry out all maintenance work from inside the building.

Limitations

The rate of air extraction at the collector when connected to the fan by 3 ft. of $1\frac{1}{4}$ in. i/d tubing is approximately 15 cu. ft./min. The airflow resistance increases with the length of tubing required and the maximum length recommended is about 25 ft. 0 in. Should it be necessary to exceed this length, tubing of larger diameter may be used and the manufacturer should be consulted.

Colours and Finish

The seat and cover are available in black or white: the manufacturer will supply information on other colours. The standard collector is available in black or white plastic, or in chromium-plated brass. The side-connecting collector is only obtainable in chromium-plated brass.

Further Information

The manufacturer maintains a technical advisory service available to deal with any problems in connection with the application of the Silavent system, either to individual units as described in this Sheet, or to multiple installations in large buildings.

Compiled from information supplied by:

Morphy Richards (Installations) Ltd.

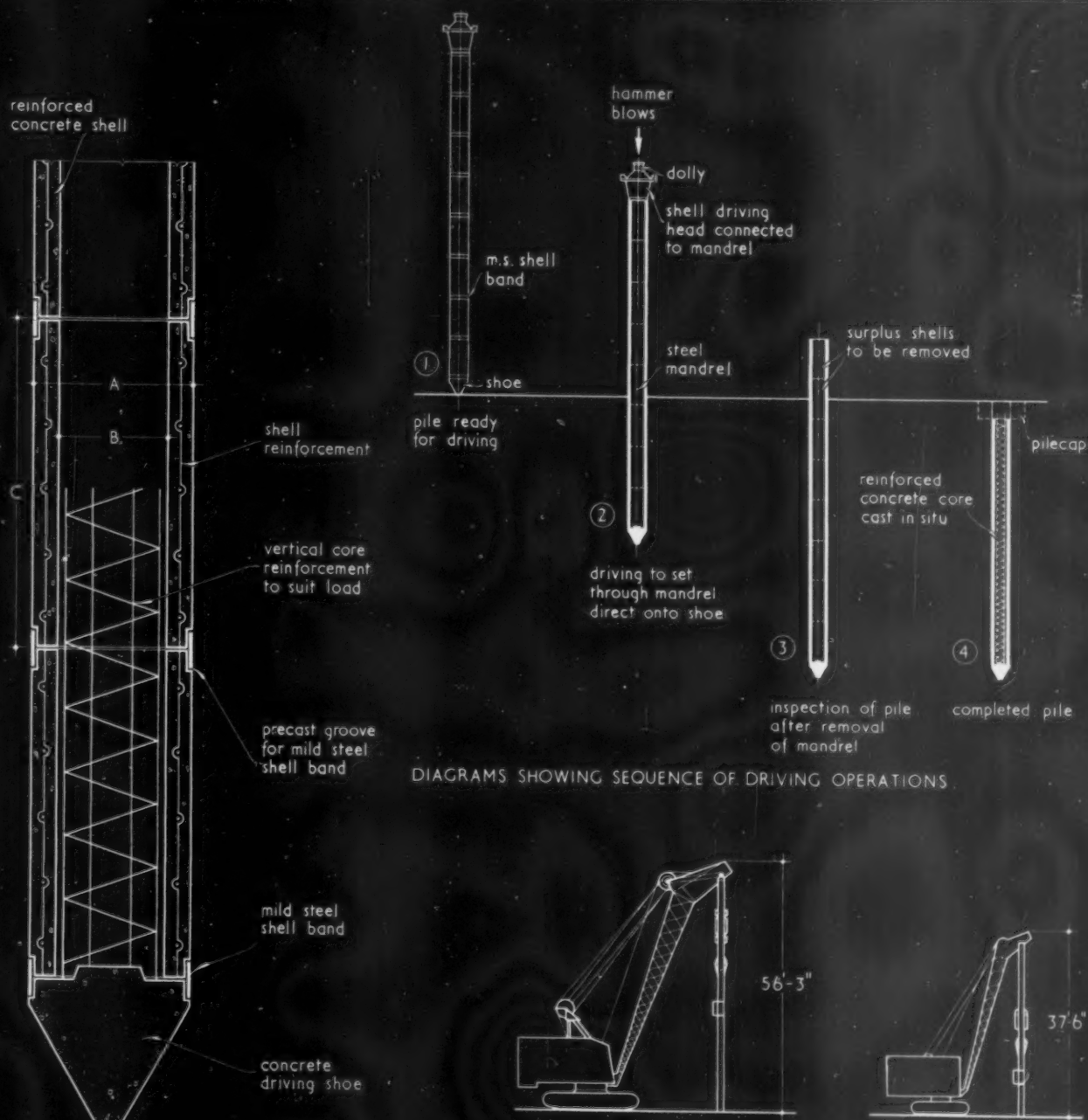
Address: 50, Conduit Street, London, W.1

Telephone: Regent 2803

Telex: 22813

PRODUCTS | FOUNDATIONS AND PILING

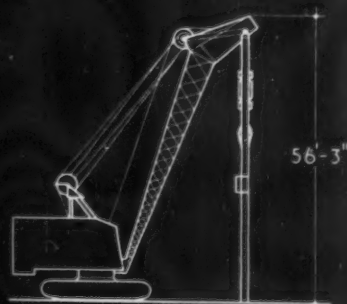
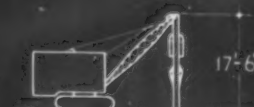
The Architects' Journal Library of Information Sheets 822. Editor: Cotterell Butler, A.R.T.B.A.



DIAGRAMS SHOWING SEQUENCE OF DRIVING OPERATIONS

A	B	C
24"	19"	3'-0"
20"	15"	3'-0"
17½"	12"	3'-0"
14½"	10⅞"	3'-0"

SECTION THROUGH TYPICAL SHELL PILE AND SCHEDULE OF SIZES.

large excavator:
6 to 8 ton hammermedium excavator:
3 to 5 ton hammerexcavator: for limited headroom,
2 to 5 ton hammerexcavator: for low headroom,
2 to 3 ton hammer

TYPES OF DRIVING EQUIPMENT

26.E1 WEST'S CONCRETE TUBULAR SHELL PILING (Patent Nos. 335620, 576236 and 724765)

This Sheet describes West's reinforced concrete shell piles. The pile is formed by driving into the ground precast reinforced concrete tubular sections, 3 ft. long, preceded by a concrete shoe. Each pile is driven until a desired resistance is obtained. The joints between the shells are kept watertight by means of steel bands treated with a bituminous plastic material. Advantages of the system are that the bearing capacity of each pile may be calculated owing to the fact that the pile is driven to a predetermined dynamic set by means of a hammer. A minimum of waste is involved as only the last shell to be driven may have to be cut to take the bearing cap. The skin friction arising as a result of the driving of the pile is retained since the technique avoids disturbing the initial set. The precast reinforced concrete shells ensure constant cross section and protect the core concrete from contact with the ground.

Sizes

The following table gives the sizes of standard piles available. Piles may vary in length from 10 ft. to 100 ft. or more.

External dia.	Core		Shell		Maximum loading* (tons)
	Dia.	Reinforcement	Reinforcement	Length	
24 in.	19 in.	4 to 8 main bars of	No. 4 s.w.g. mesh	3 ft. 0 in.	100—150
20 in.	15 in.	$\frac{1}{2}$ in. to 1 in. dia. with		3 ft. 0 in.	70—100
17½ in.	12 in.	spiral binding		3 ft. 0 in.	50—70
14½ in.	10½ in.	at 6 in. pitch	6 vertical bars 7 rings	3 ft. 0 in.	Up to 50

* The loading is dependent upon conditions of strata.

Construction

Shells: The shells are of precast reinforced concrete, recessed at each end to take the mild steel jointing bands. Stocks of matured shells of all sizes and types of cement are maintained in various parts of the United Kingdom.

Reinforcement: Core reinforcement to suit the load which the pile will have to carry is placed inside the shells and anchored in the concrete core.

Filling: The pile is completed by filling the shells and surrounding the reinforcement with concrete. The concrete core and reinforcement are not fatigued as they are placed after the set is obtained.

Driving

The hammer blow is delivered direct on to the shoe by means of a mandrel which is located inside the

shells, the shoe taking the driving stresses and penetrating into the load-bearing stratum. At the same time a cushioned blow is applied to the shells, through a special arrangement on the mandrel driving head, to overcome skin friction and keep the rate of travel of shells and shoe constant.

The ratio between the cushioned blow on the shells and the direct blow on the shoe can be varied.

After the set has been obtained the mandrel is withdrawn and any spare shells above ground removed.

Methods of Driving

The method of driving selected depends on the site conditions and the nature of the work. The lower diagrams show various machines which may be used for vertical or raking drive (up to 1 in 3 rake inwards or outwards). An immediate start may be made on any site, with a capacity per machine of 150 ft. to 400 ft. of completed pile each day.

Large Excavator Outfit: 6 to 8 ton drop hammer.

Medium Excavator Outfit: 3 to 5 ton drop hammer.

Small Excavator Outfit: 2 to 3 ton drop hammer.

Special Excavator Outfit: Adapted from medium or small outfit for use under restricted headroom (to a minimum of 18 ft. 0 in.).

Compiled from information supplied by:

West's Piling & Construction Co. Ltd.

Head Office: Bath Road, Harmondsworth, Middlesex.
Telephone: Skyport 5222 (11 lines).

London Office: Columbia House, Aldwych, London, W.C.2.
Telephone: Holborn 4108.

Western Office: 42/44 Triangle West, Clifton, Bristol, 8.
Telephone: Bristol 26906.

Midland Office: Griffin House, Ludgate Hill, Birmingham, 3.
Telephone: Central 1416.

Northern Office: 103, Hulme Hall Lane, Miles Platting, Manchester, 10.
Telephone: Collyhurst 3049.

Scottish Office: 183, West George Street, Glasgow, C.2.
Telephone: Central 8351/2.

Australian Office: 247, George Street, Sydney, N.S.W.
Telephone: Sydney, B.U. 5641.

Licensee for

the Continent: Carbonisation Entreprise et Ceramique (late Compagnie Generale de Construction de Fours), 8, Place des Etats-Unis, Montrouge, Paris, France.

Associated

Company: West's Shell Piling (Australasia) Pty. Ltd., 22, Dynon Road, South Kensington, Melbourne.

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working detail

STORAGE UNIT: SCHOOL AT CHESHUNT, HERTS.

G. C. Fardell, Architect to the Hertfordshire County Council



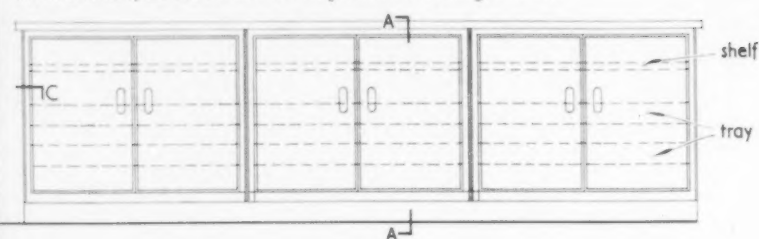
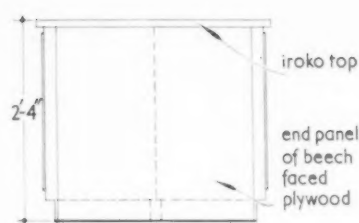
This back-to-back storage unit is framed in beech with plywood-faced doors and end panels. The top is polished iroko and the doors are painted.

working detail

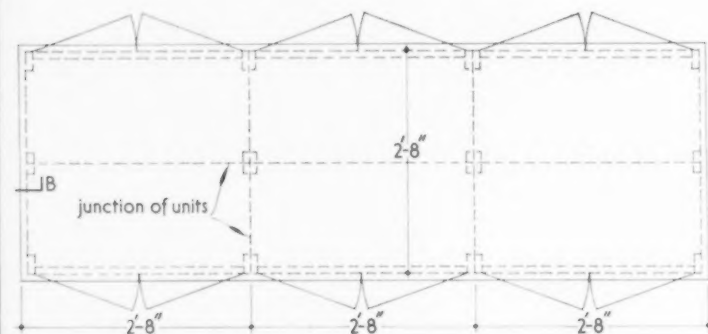
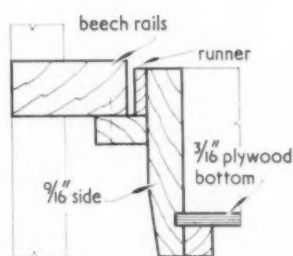
FURNITURE AND FITTINGS: 110

STORAGE UNIT: SCHOOL AT CHESHUNT, HERTS.

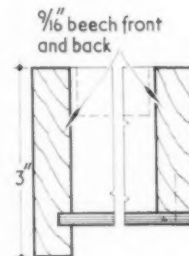
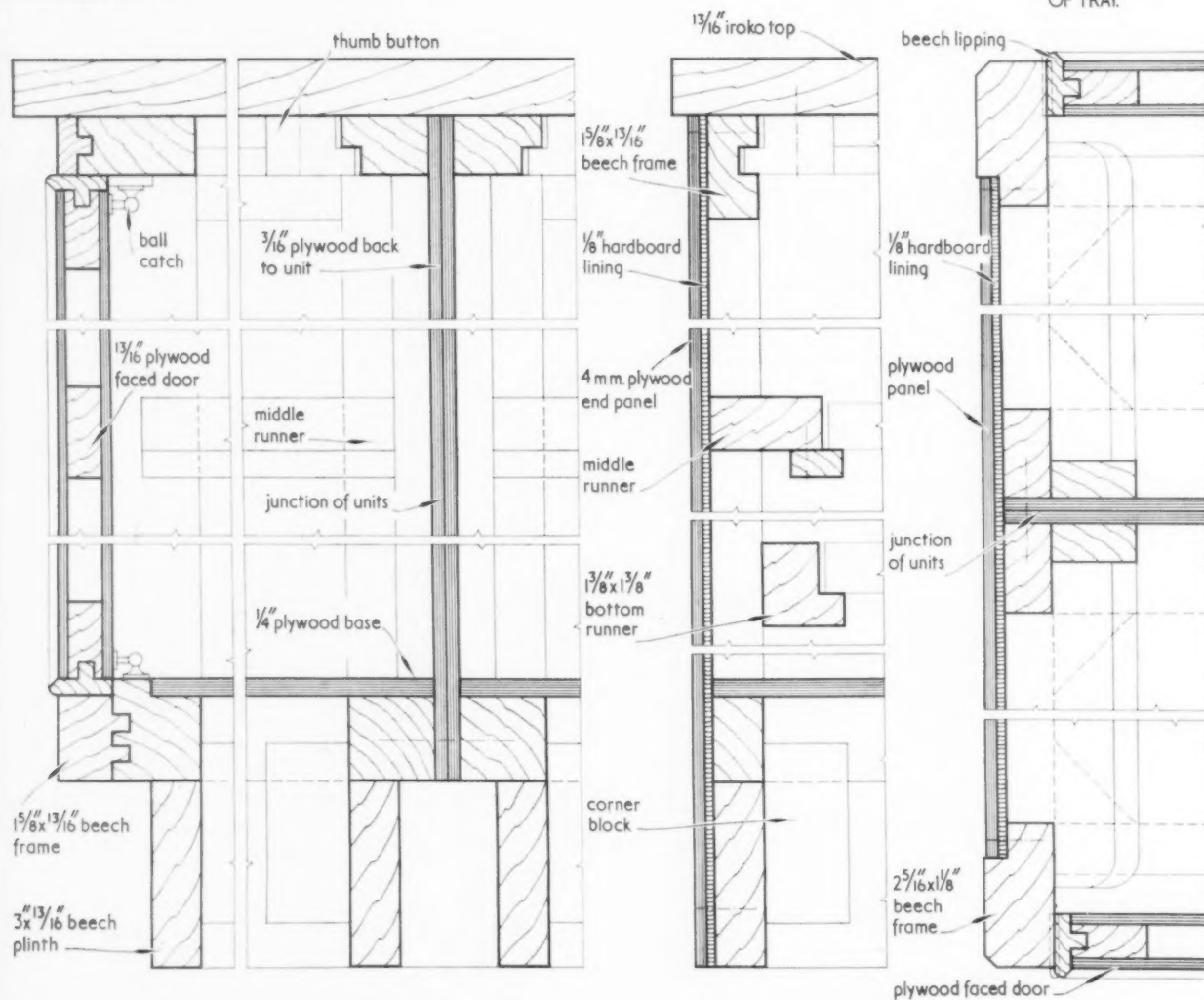
G. C. Fardell, Architect to the Hertfordshire County Council

ELEVATION. scale $\frac{1}{2}'' = 1'-0''$ 

END ELEVATION.

PLAN. scale $\frac{1}{2}'' = 1'-0''$ 

END SECTION OF TRAY.

SECTION THROUGH
FRONT AND BACK
OF TRAY.SECTION A-A. scale $\frac{3}{8}''$ full sizeSECTION B-B. scale $\frac{3}{8}''$ full size

PLAN AT C-C.



MARLEYrail

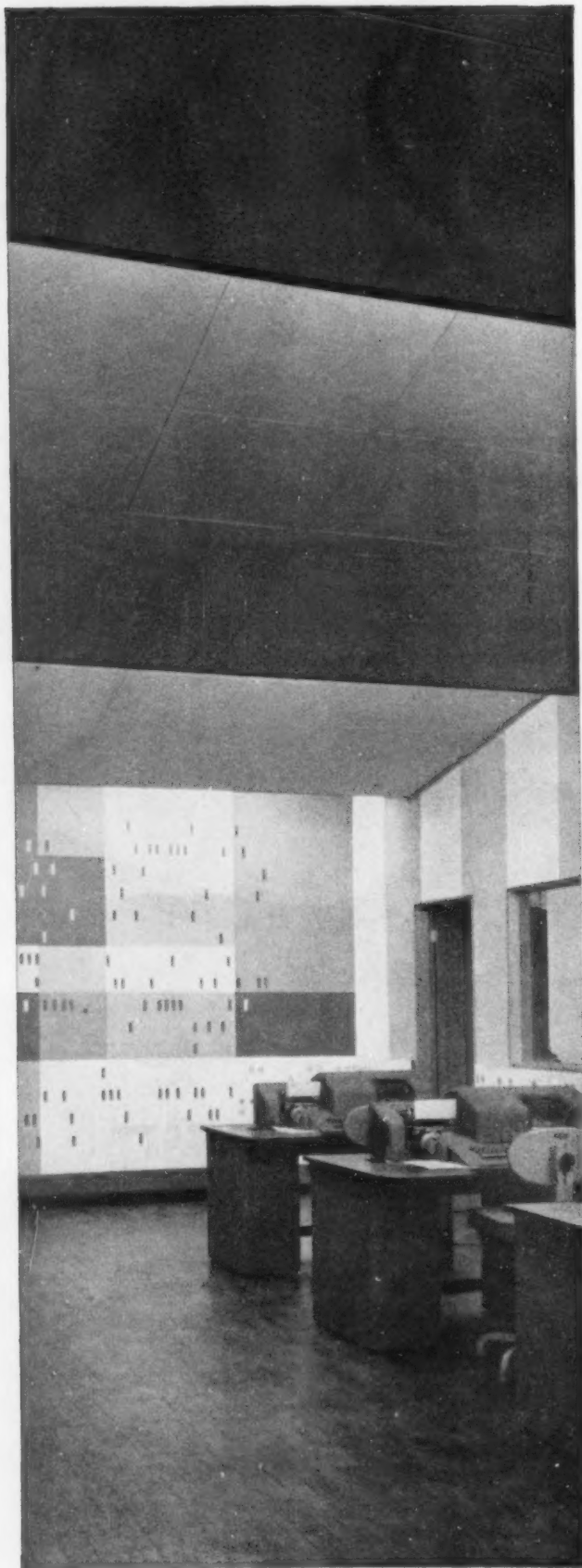
... the jointless vinyl handrail with the flexibility
to adapt to the wreaths and curves of any design,
bringing practical, maintenance-free distinction to staircases
and corridors in any situation, at low installed cost.

endless colour at hand

Complete technical information available on request.



SEVENOAKS
KENT
Sevenoaks SE255
London Showrooms
251 Tottenham Court Road • W1



Subtracting noise...

Bull computers are silent, but those who demonstrate and sell them aren't. To provide a quiet and restful background in their new showroom in Southampton Row, London, De La Rue Bull Machines Ltd had Armstrong Cushion-tone acoustic tiles installed on the ceiling, the plane of which was broken to mute the room even further. The side walls, too, were lined with Armstrong acoustic tiles - fire-resistant mineral wool Travertone which enhance the attractive modern appearance of the showroom at the same time as they help to ensure quiet for prospective buyers and staff.

Corkoustic is another Armstrong tile with a high sound-absorption coefficient. Armstrong experts are at your service to assist you in the choice of acoustic materials and the solving of acoustic problems. Please write for full details.

◀ Showroom of De La Rue Bull Machines Ltd in Southampton Row

Chartered Surveyors: Whiteley, Ferris & Puckridge

Designer: J. W. Begg (Formica Ltd.)

Acoustic Contractors: Anderson Construction Co. Ltd.



Armstrong acoustics

Armstrong Cork Company Ltd Acoustics Department
Carlisle Road, London N.W.9
Tel: COLindale 9744

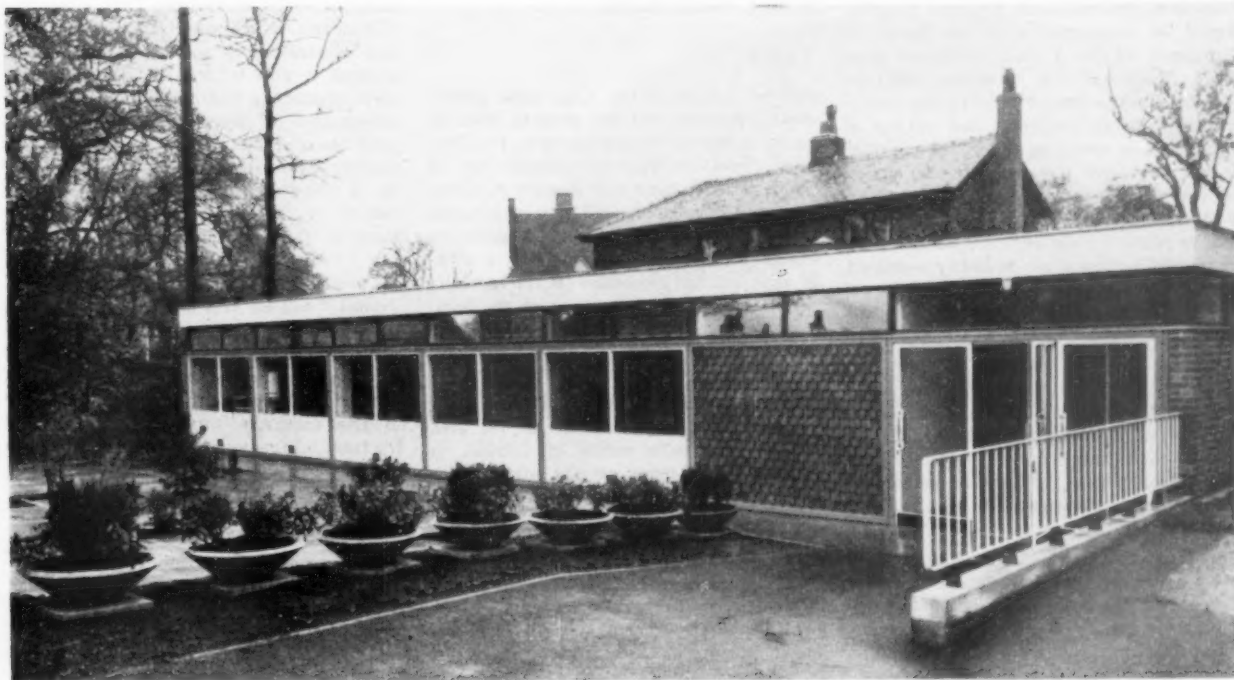
Also at 24, Fitzwilliam Place Dublin 2
Tel: Dublin 61907

AT24

Foot Clinic at Manchester

This new department of the Manchester Foot Hospital and School of Chiropody, opened last month, was designed by R. B. Lord, B.A., A.R.I.B.A., of Cruickshank & Seward, and reflects recent develop-

ments in remedial, as opposed to palliative chiropody, for it is a Department for Chiropodial Appliances. The simple, one-storey building consists of five rooms, each designed for the particular type of work to be done there, a waiting room and office. It is floor heated throughout.





THE WORLD'S BEST SLATES

SPECIFICATION

The roof to be covered with Broughton Moor Light Sea Green best quality (coarse grained) Westmorland Slates, to be obtained from The Broughton Moor Green Slate Quarries Ltd., Coniston, The Lake District, Lancs., in random sizes about 18" to 9" long, proportionate and random widths, laid to a 3" lap in regularly diminishing courses, from eaves to ridge. Each slate to be securely fixed by two stout copper nails and wide slates are to be used on the hips and verges.

Alternatives: Seconds, Thirds, Special Peggies; Olive Green and Mixed Shades. Larger sizes also available.

Ridging: "Bromoor" purpose-made of crushed and moulded slate from the same veins is recommended.

Before completing that next specification consider the superlative merits of the most durable and picturesque of all slates. Of rock-hard consistency, ruggedly textured and of lovely hue—Light Sea Green, Olive Green and Mixed Shades—the architect's ideal slates . . .

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Announcements

PROFESSIONAL

T. White, dip.arch., A.R.I.B.A., has taken up a Research Fellowship which has been created by the Newcastle Regional Hospital Board in association with the Board of Governors of the United Newcastle upon Tyne Hospitals. The research will be directed towards means of achieving easily-cleaned finishes and types and settings of equipment in operating suites. Subsequently it will investigate the design and equipping of operating suites and other hospital departments. Mr. White will be pleased to receive relevant trade literature which should be marked for his attention and be addressed to P. H. Knighton, M.B.E., A.R.I.B.A., Regional Architect, Newcastle Regional Hospital Board, Benfield Road, Newcastle upon Tyne 6.

Philip Hirst, F.R.I.B.A., and Wyn Jones, A.R.I.B.A., of 35, Doughty Street, W.C.1, have moved their Haverfordwest office to 22, High Street, where they will be pleased to receive trade catalogues.

The Trade Catalogue Section of the School of Architecture Library, the Polytechnic, Regent Street, is being reorganised and the Librarian would be pleased to receive current technical literature.

J. E. B. Robson, F.R.I.C.S., L.R.I.B.A., has retired from the firm of Floyd, Robson & Paul. The remaining partner, E. H. Paul, A.R.I.B.A., has taken B. D. Palmer, A.R.I.B.A., into partnership. The practice will continue at the same address under the style of Robson, Paul & Palmer.

TRADE

Charles Knight & Co. Ltd., local government publishers and law printers, have recently published a supplement to the Standard Form of Building Contract by Sir Derek Walker Smith and Howard A. Close. Copies of this supplement may be obtained free on request if a stamped addressed envelope (6d. stamp, envelope 9 in. x 4 in.) is sent to the publishers at 11-12, Bury Street, London, E.C.3. Copies of the book, together with supplement, are available at £2 5s., plus 2s. postage.

Moderneon have recently increased their technical sales representation in the area covering 200 miles radius of London, in order to give more prompt attention to enquiries from architect by personal discussion.

COURSES

A course on Timber Engineering will be held at the Department of Civil Engineering (University of Durham), King's College,

Newcastle upon Tyne, from July 17 to 21, 1961. The course, which has been arranged by the Timber Development Association, is being held by kind permission of Professor W. Fisher Cassie, Ph.D., M.Sc., F.R.S.E., M.I.C.E., M.I.Struct.E., Head of the Department of Civil Engineering.

The course, which will include a site visit and demonstrations as well as lectures, is planned to give lectures in civil and structural engineering and in building, the latest information on developments in the structural use of timber.

Further information can be obtained from A. J. Browning, North-Eastern Regional Officer of the TDA, at 18, Park Row, Leeds 1. (Leeds 27256.)

A course on "Design Opportunities in Timber" will be held at the York Institute of Advanced Architectural Studies, from September 15 to 19, 1961. The course, which is being organised in conjunction with the Timber Development Association, is planned to give architects, surveyors and builders the latest information on recent international developments and design possibilities in the use of timber as a structural material; and its functional, aesthetic and economic advantages.

The tuition fee for the course is 8 guineas. Full details and application forms can be obtained from the Secretary, Institute of Advanced Architectural Studies, Micklegate, York.

ANNOUNCING...

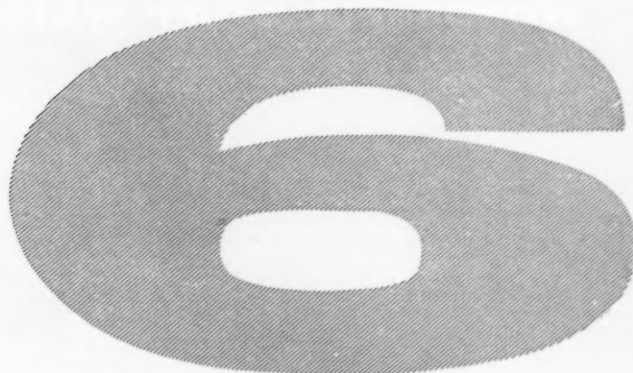


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It is of interest then to examine the names given to colours by the English language. These are few — blue, green, yellow, red and purple. Purple was the name given to Imperial Crimson and is related to status rather than colour. The remaining four words dig deep into the history of the language and have been used for centuries as basic words to describe the sensations evoked by differing fluxes received by the eye. These four colours are also those showing little or no change in hue with change in luminance—they remain fixed. The nature of the sensation in each case is distinct; red is not yellowish, greenish or bluish, and so on. By physical methods of measurement these colour names can be fixed in wavebands of the visible spectrum. They are the names given to the basic hues which, together with black and white, can create the whole of the colour range that we know today. They are also the basic fluxes that give us colour vision; three parameters—yellow-blue, red-green, and light-dark.

All other colour names (and they are now legion) are derived words or names of association. Aquamarine (a blue-green) is the name of a blue-green gem. Jasmine (a yellow) is the name of a shrub with a yellow flower.

Although colour names are useful in preparing a decorative scheme, it is advisable to use a subjective system of nomenclature such as the Munsell or Adams system, or some physical criteria such as selective reflective power, in determining colours suitable for functional decoration. Associative colour names can be a trap to the unwary since the association may not be a true one.

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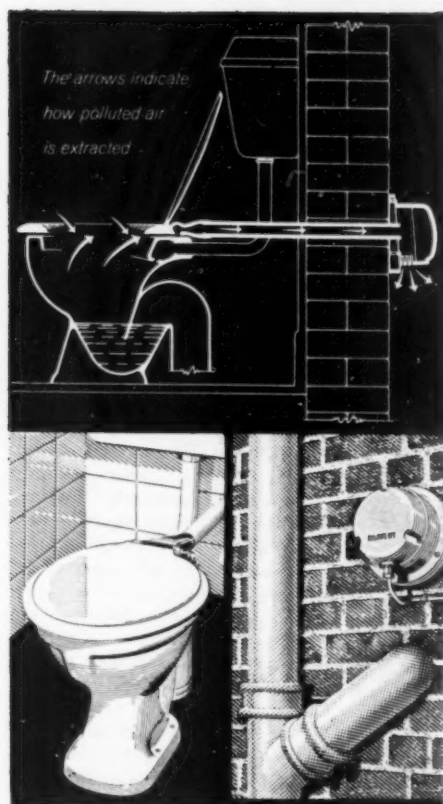
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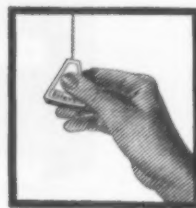
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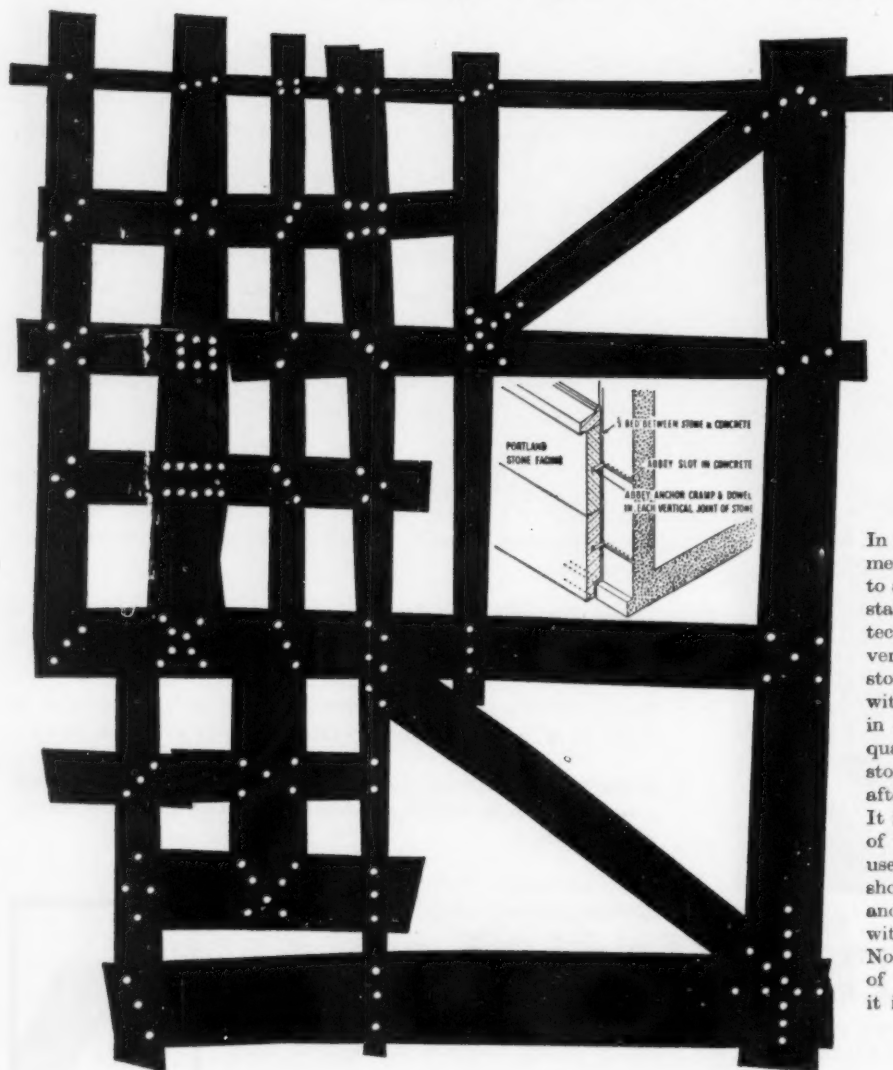
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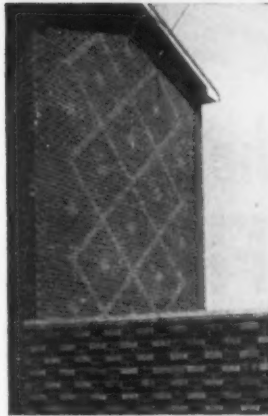


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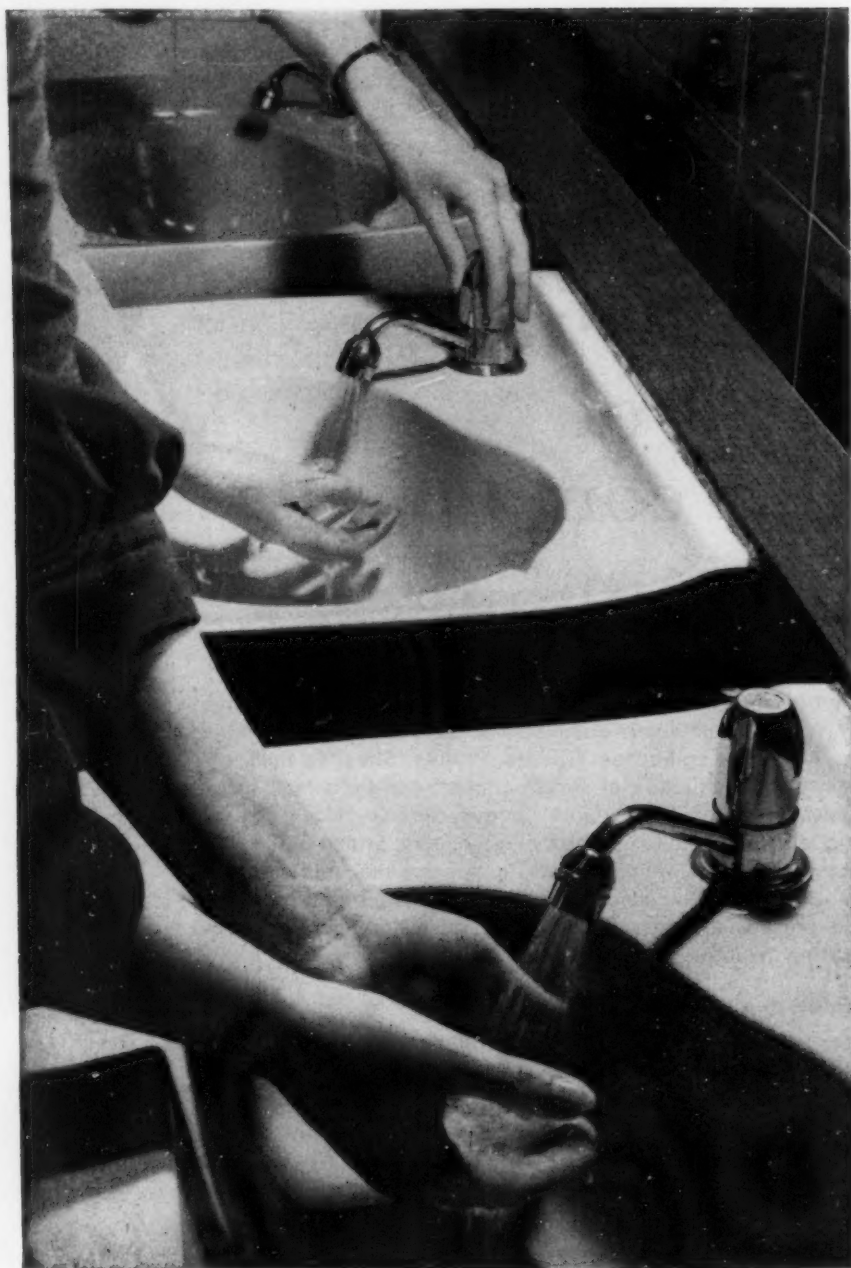
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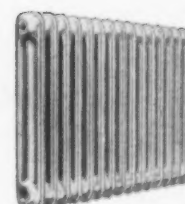
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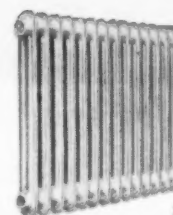
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Angle-Wall



3-Column

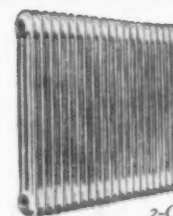


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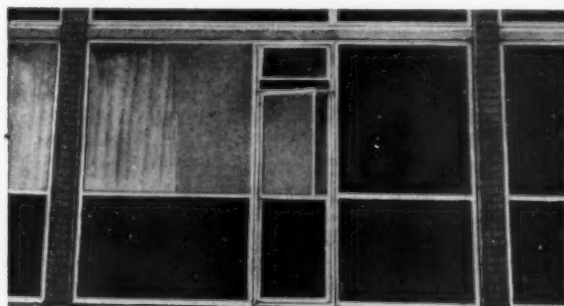
at Europe's largest air hotel



This view of the bedroom block and escape staircase illustrates the contrasting blue and white colour scheme chosen for Skyway. The blue Plyglass infilling panels are backed by Thermalite insulation blocks. With quarter inch glass throughout the building, this effectively reduces airport noise to a minimum.

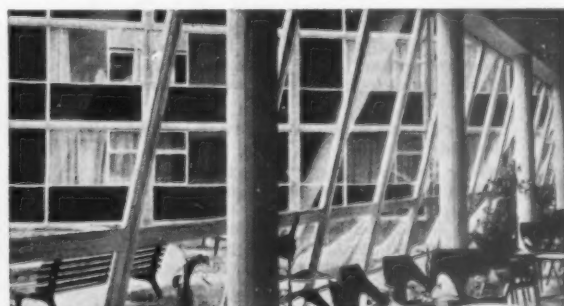
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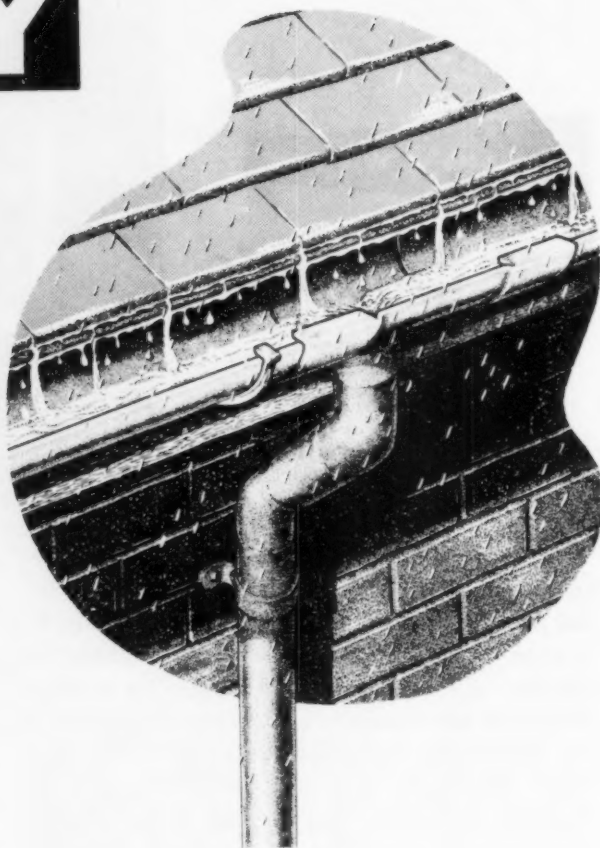
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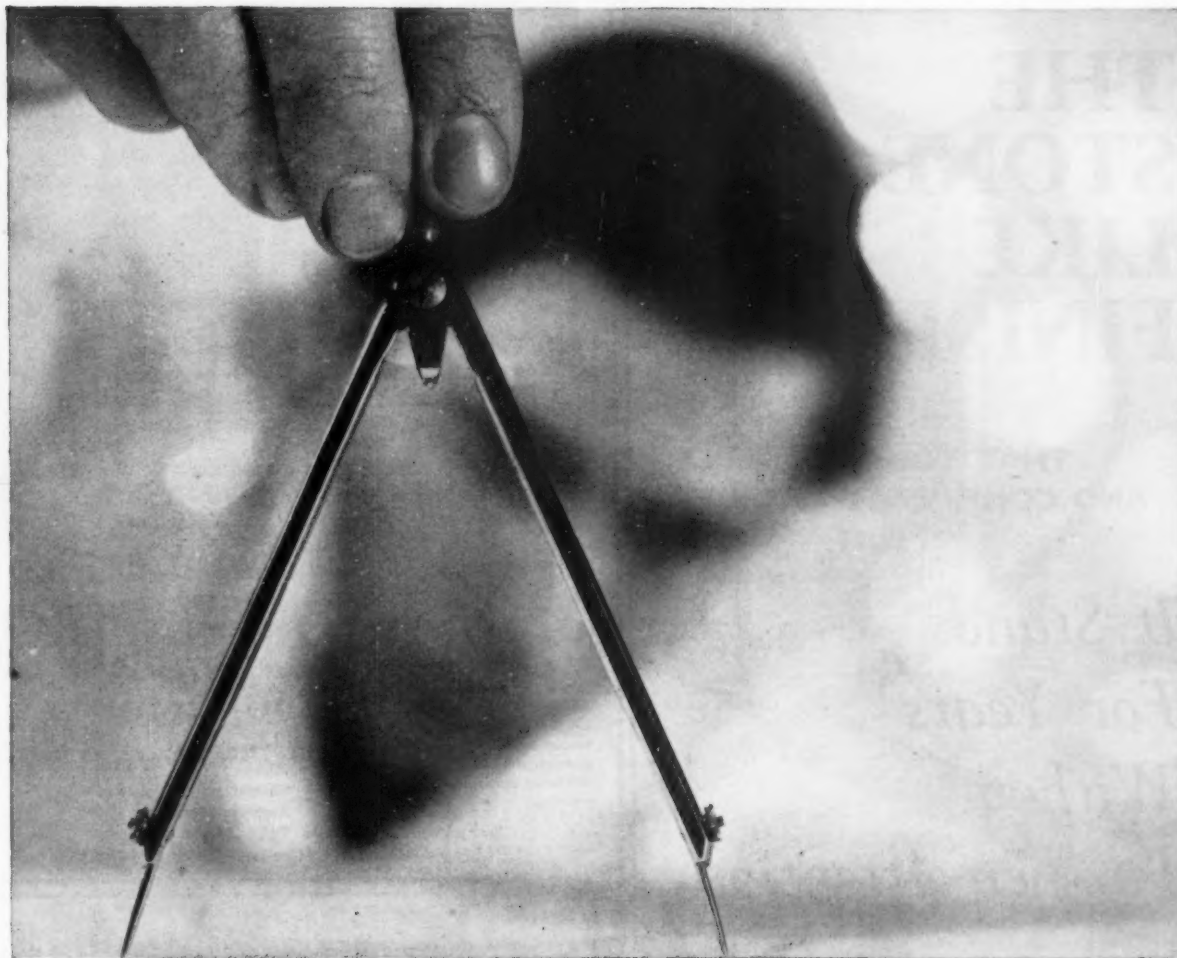
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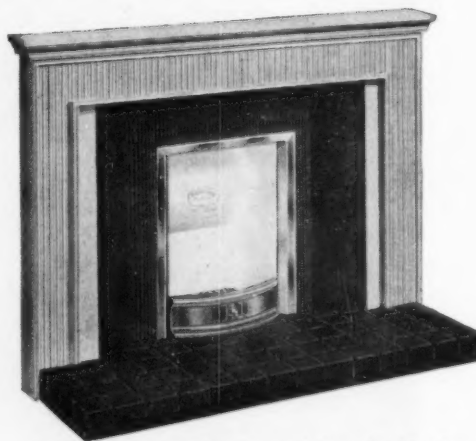
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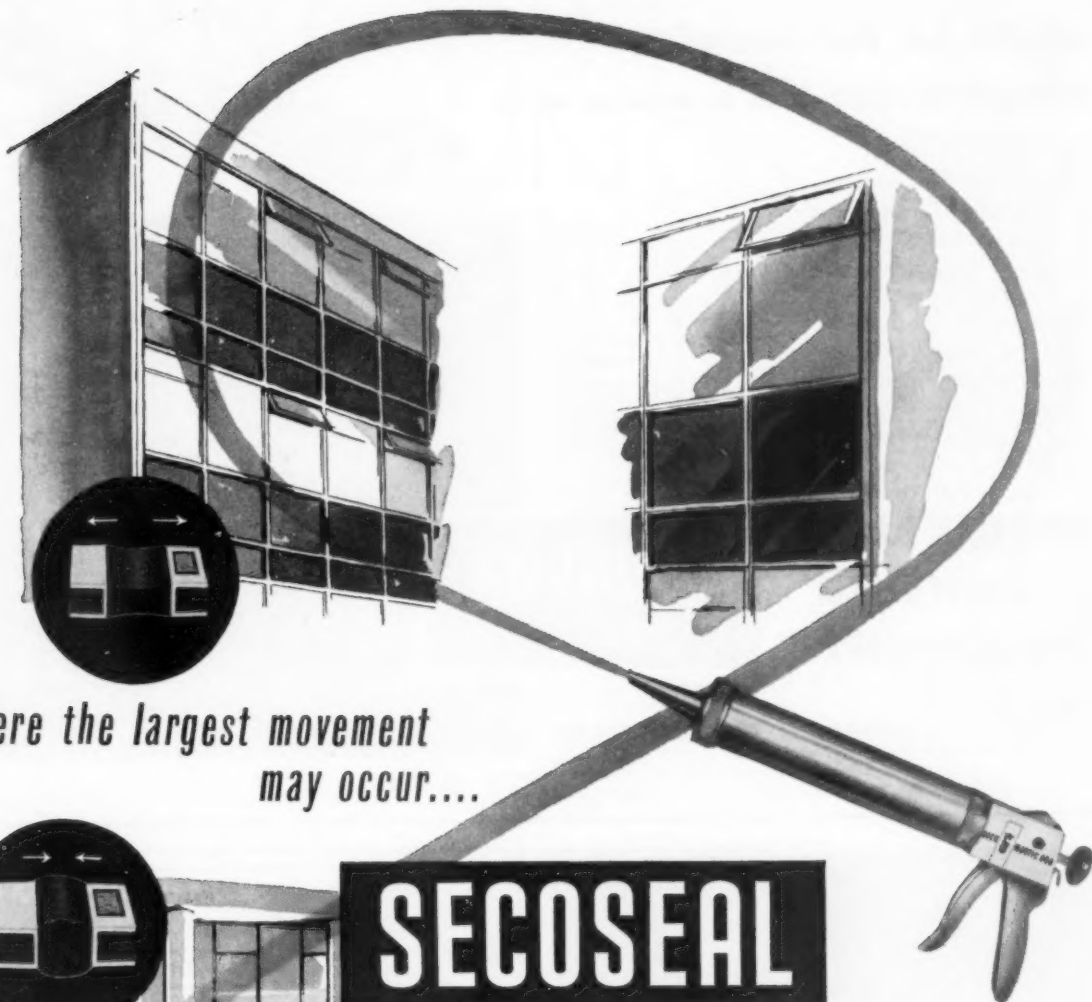
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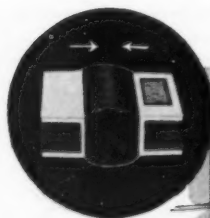


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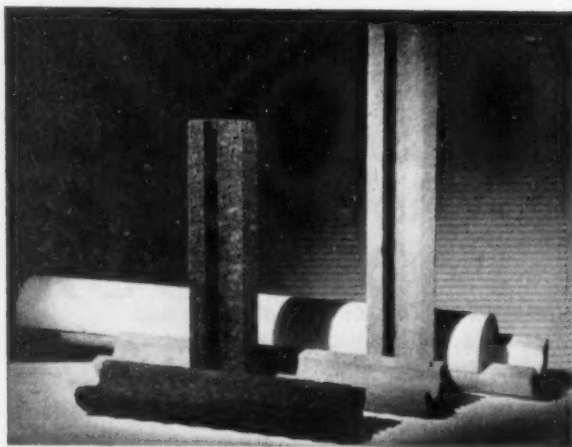
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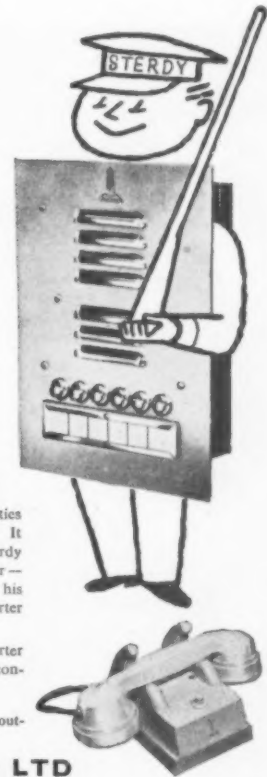
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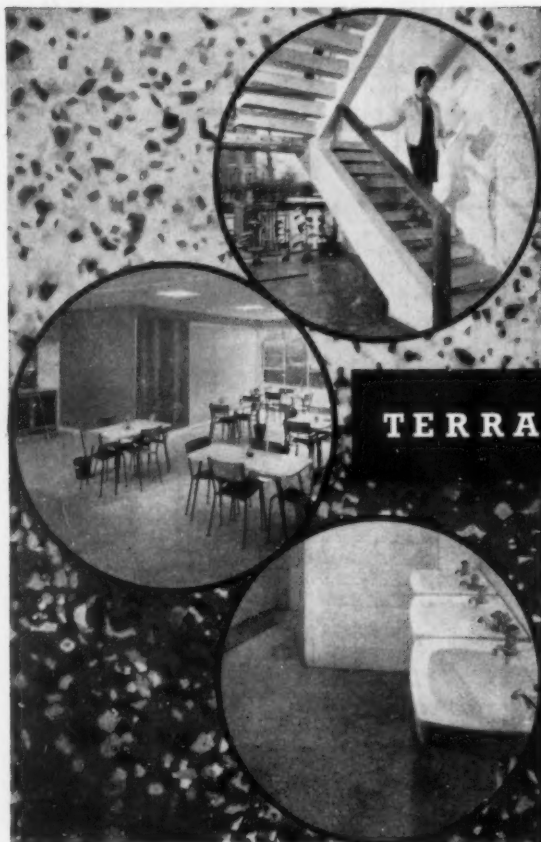
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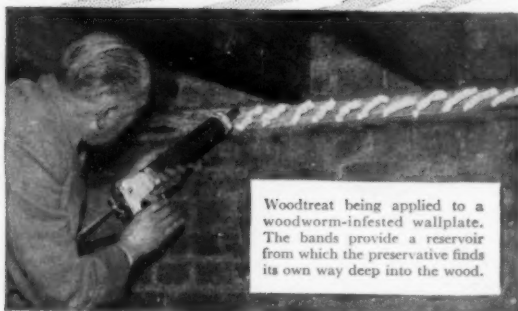
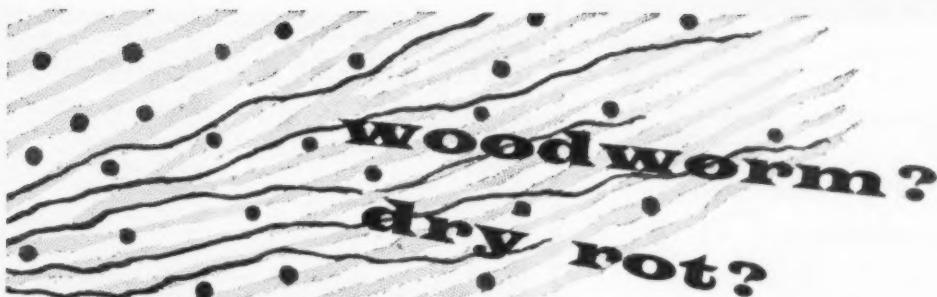
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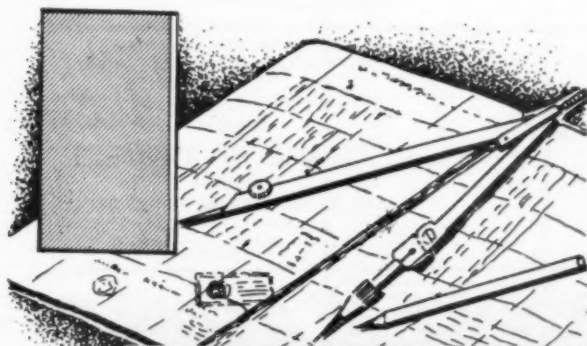
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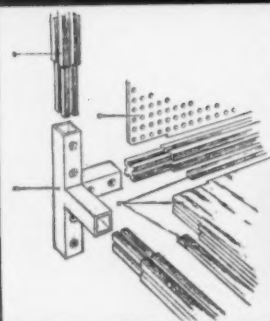
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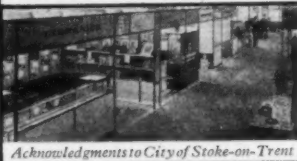


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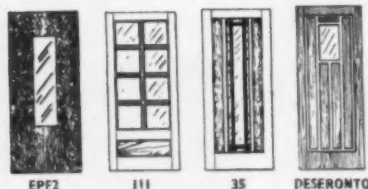


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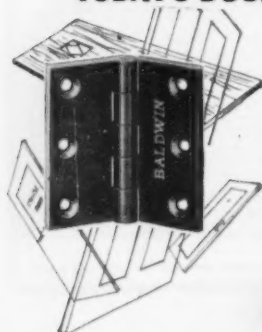
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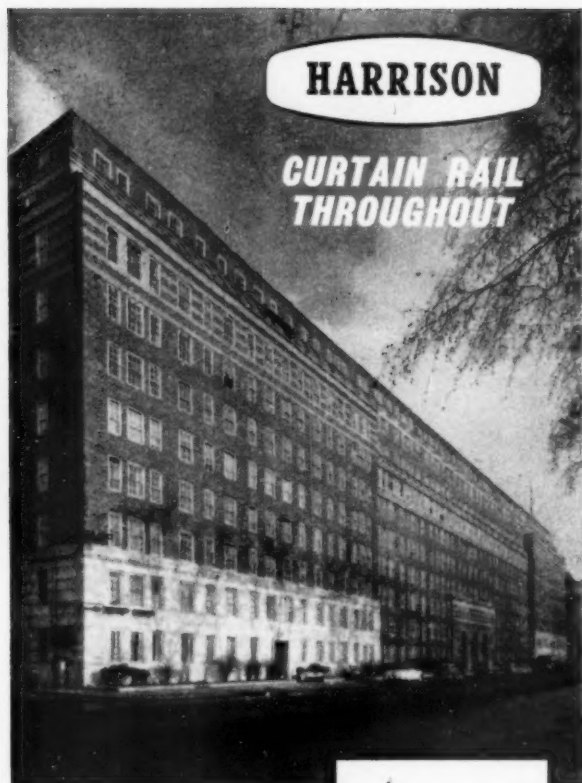
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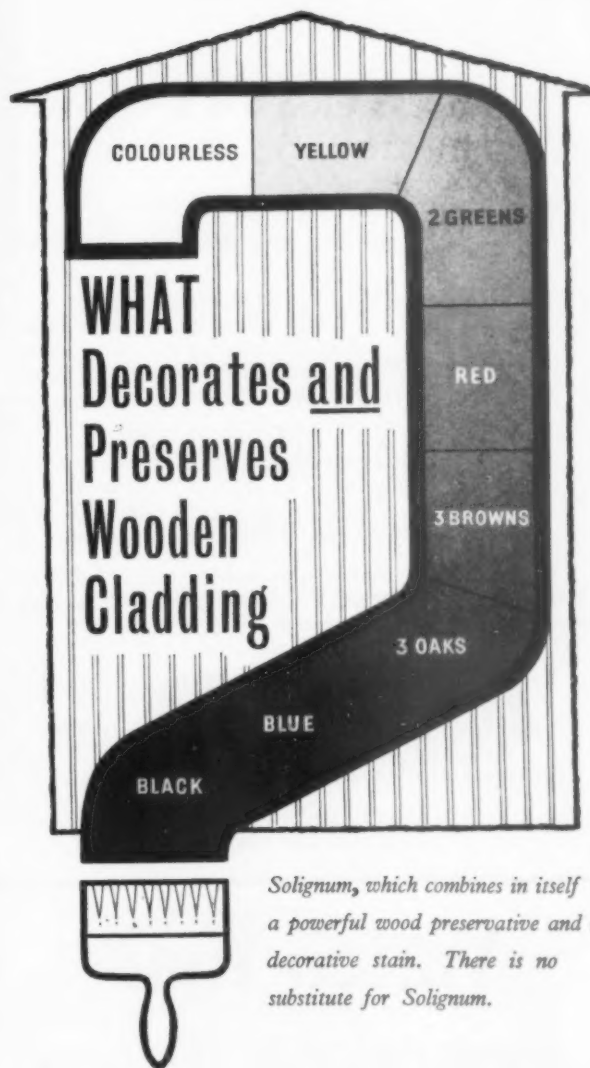
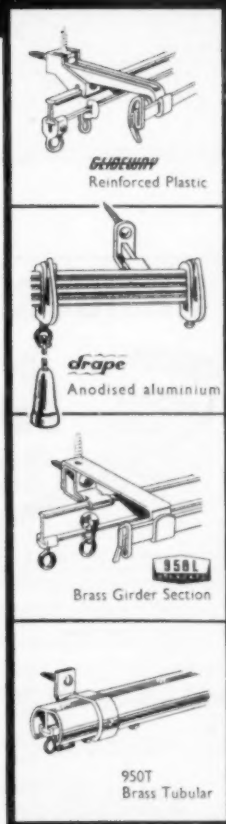


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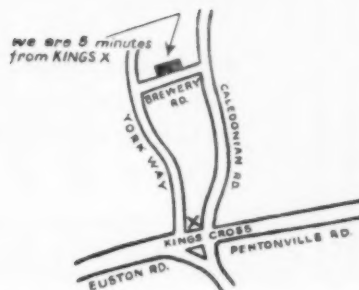
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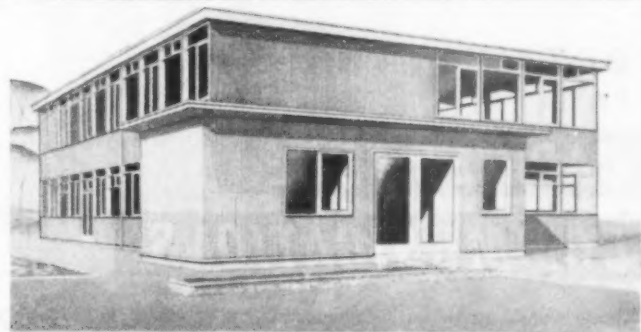
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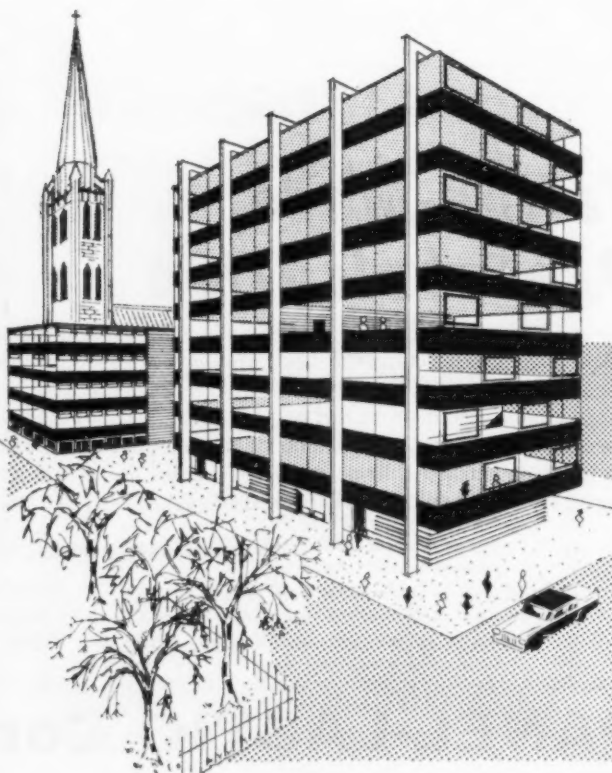
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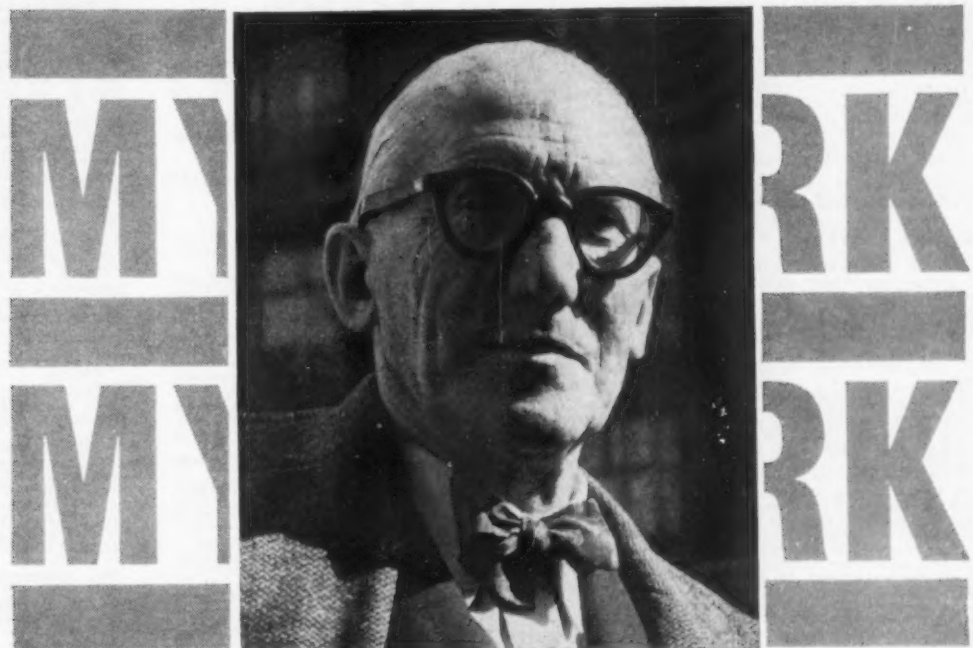
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The section is also responsible for maintenance works at these schools for which Building Surveyors with experience in maintenance works are required.

Starting salary for all appointments in accordance with qualifications and experience. Form and particulars from Hubert Bennett, F.R.I.B.A., Architect to the Council (EKA/1226/6a), County Hall, S.E.1. S7525

BOROUGH OF ILFORD BOROUGH ENGINEER'S DEPARTMENT APPOINTMENT OF ASSISTANT ARCHITECT. GRADE A.P.T. III

Candidates should preferably have passed the Intermediate Examination of the R.I.B.A.

The commencing salary will be fixed within the scale £960—£1,140, according to qualifications and experience. London Weighting payable in addition. Five day week.

The candidate appointed will be required for work in connection with housing and multi-storey flats.

The appointment will be subject to one month's notice on either side, to the provisions of the Local Government Superannuation Acts, to the National Conditions of Service and to satisfactory medical examination.

THE COUNCIL IS PREPARED TO CONSIDER, IF NECESSARY, THE PROVISION OF HOUSING ACCOMMODATION.

Application forms, obtainable from the Borough Engineer, Town Hall, Ilford, should be returned not later than Monday, 12th June. S7729

BRACKNELL DEVELOPMENT CORPORATION
Applications are invited for the post of ARCHITECT. Salary range £1,140—£1,310. The Minister is expected to give his decision shortly on the proposal to extend the scope of the New Town by increasing the designated area from 1,150 to 3,030 acres. Superannuation scheme, medical examination, 5 day week. Good housing accommodation available. Applications, stating age, education, qualifications, experience and appointments held (with dates and salaries), and the names of two referees, should be addressed to the General Manager (A), Bracknell Development Corporation, Farley Hall, Bracknell, Berks., to be received not later than 7th June. S7730

THE EAST MIDLANDS ELECTRICITY BOARD COVENTRY SUBAREA APPOINTMENT OF THIRD ASSISTANT ENGINEER (CONSTRUCTION)

Applications are invited from suitably qualified and experienced persons for the above appointment.

The salary will be in accordance with Class 'L' Grade 12 of the National Joint Road Agreement for technical engineering staff in the Electricity Supply Industry £1,040 to £1,165 per annum and will commence at a point commensurate with qualifications and experience.

The duties will include the preparation of estimates, Bills of Quantities, examination of Tenders, and contractors' accounts for civil engineering and building work associated with the construction of substations, offices, workshops, etc., in Coventry and District.

Applicants should possess the Higher National Certificate in Building, or an equivalent qualification, and should hold a current driving licence.

The successful applicant will qualify for membership of the Board's Superannuation Scheme. Applications, giving full details of age, qualifications, experience, present position and salary, should be forwarded to The Manager, Coventry Sub-Area, Sandy Lane, Coventry, Warwickshire, by the 16th June, 1961, in an envelope endorsed "Third Assistant Engineer (Construction)—Staff Vacancy No. 57/61." S7847

BOROUGH OF ENFIELD BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT

(Population 110,000—Area 12,400 acres)

Applications are invited for the following established positions within the Grades shown:—

- (a) ASSISTANT ARCHITECT—A.P.T. IV (£1,140—£1,310).
- (b) ARCHITECTURAL ASSISTANTS—A.P.T. III (£960—£1,140).
- (c) TECHNICAL ASSISTANT—A.P.T. III (£960—£1,140).

The commencing salary will be fixed at a point within the scale commensurate with qualifications and experience.

The appropriate London Weighting allowance will be paid in addition to the above salaries. Candidates for post (a) must be Associates of the Royal Institute of British Architects; for post (b) applicants must have passed the Intermediate Examination of the R.I.B.A.; for post (c) applicants must have a sound knowledge of all aspects of the building trade and be able to carry out inspections, prepare reports, specifications and estimates for works in connection with repair and maintenance of Schools, and should possess the Higher National Certificate in building.

The Council are prepared to consider the provision of housing accommodation if required, or 100 per cent. advances to successful applicants for house purchase within the Borough.

Five day week.
Details of appointments and application forms obtainable from Mr. H. D. Peake, M.Sc. (Eng.), Borough Engineer & Surveyor, 7, Little Park Gardens, Enfield, Middx.

CYRIL E. C. R. PLATTEN,
Town Clerk.

Civic Centre,
Enfield. S7725

BOROUGH OF ENFIELD BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT

(Population 110,000—Area 12,400 acres)

Applications are invited for the following established positions within the Grades shown:—

- (a) CHIEF PLANNING ASSISTANT—A.P.T. IV (£1,140—£1,310).
- (b) SENIOR PLANNING ASSISTANT—A.P.T. III (£960—£1,140).
- (c) PLANNING ASSISTANT—A.P.T. I (£645—£815).

The commencing salary will be fixed at a point within the scale commensurate with qualifications and experience.

The appropriate London Weighting allowance will be paid in addition to the above salaries.

Applicants for post (a) must have passed the Final Examination of the Town Planning Institute and membership of another related professional body will be considered an advantage.

Applicants for post (b) should have passed the Intermediate Examination of the Town Planning Institute.

The Council are prepared to consider the provision of housing accommodation if required, or 100 per cent. advances to successful applicants for house purchase within the Borough.

Five day week.
Details of appointments and application forms obtainable from Mr. H. D. Peake, M.Sc. (Eng.), Borough Engineer & Surveyor, 7, Little Park Gardens, Enfield, Middx.

CYRIL E. C. R. PLATTEN,
Town Clerk.

Civic Centre,
Enfield. S7726

METROPOLITAN BOROUGH OF LEWISHAM

Applications are invited from professionally qualified Architects for the following posts:—

- SENIOR ASSISTANT ARCHITECT. Salary scale A.P.T. V (£1,355—£1,525 per annum).
- ASSISTANT ARCHITECT. Salary scale A.P.T. III (£1,005—£1,185 per annum) or A.P.T. II/IV (£1,005—£1,355 per annum) or A.P.T. IV (£1,185—£1,355 per annum) according to qualifications and experience.

Further particulars and form of application from Town Clerk (Dept. H), Lewisham Town Hall, Catford, S.E.6. Closing date 13th June, 1961. S7692

CITY OF SHEFFIELD ESTATES SURVEYOR'S DEPARTMENT

Applications are invited from:—

- 1. Surveyors with experience.
- 2. Newly-qualified Surveyors.
- 3. Students who expect to qualify this year.
- 4. Young men who wish to train as Surveyors.

The Department, under the direction of Mr. W. H. Rothwell, B.Sc., F.R.I.C.S., offers a particularly wide field of experience including valuation and acquisition of properties for Housing and Education, Central Redevelopment and road improvement purposes, disposals of land and buildings by short and long leases; improvement, repair and demolition of properties acquired by the Local Authority for its various statutory purposes, rating valuation, agricultural estate management and advice on questions of stability arising out of underground mineral working.

Salaries for trainees range from £355 per annum at age 17 to £555 per annum at 21. Financial assistance is provided for tuition and examination fees. Salaries for qualified surveyors range from £960 per annum on qualification to £1,310 per annum according to experience, with good prospects of promotion to senior grades.

Apply in writing to the Town Clerk, Town Hall, Sheffield, 1. S7284

**CORPORATION OF DUNDEE
CITY ARCHITECTS' DEPARTMENT**

The City Architect's Department is at present engaged on an extensive and varied programme of architectural work which will provide opportunities for enthusiastic Architects with creative ability. The programme comprises the development of large Housing Estates, the Comprehensive Redevelopment of a number of Central Areas, which include multi-storey blocks of flats, and a variety of other types of walk-up housing and ancillary buildings. In addition, a large programme of school building is being undertaken which includes Primary and Secondary Schools. Applications are therefore invited from qualified architects for the following appointments in the City Architect's Department.

ASSISTANT ARCHITECTS (G)
Salary Scale £1,385-£1,620 by (3) £50 and (1) £55.
ASSISTANT ARCHITECTS (F)
Salary Scale £1,320-£1,485 by (3) £55.
ASSISTANT ARCHITECTS (E)
Salary Scale £1,220-£1,375 by £55 and (2) £50.

Applicants should be Associate Members of the Royal Institute of British Architects and practising in the grade will be according to experience.

Applicants should be under 45 years of age and the successful applicants will be required to pass a medical examination for entry to the Superannuation Scheme.

A five-day week is in operation. Applications stating age, qualifications, training and experience, naming two referees, also the applicant's housing needs, should be lodged with the subscriber not later than 18th June, 1961. City Chambers, Dundee.

23rd May, 1961. 7775

BOROUGH OF POOLE

Applications are invited for the following appointment of an **ASSISTANT ARCHITECT, Grade A.P.T. III** (£950-£1,140) in the Borough Architect's Department.

The successful applicant will be engaged on a variety of projects which include a new Civic Centre and a programme of redevelopment including multi-storey flats.

Application forms from the Borough Architect, Municipal Buildings, Poole, Dorset, to be returned to me by Tuesday, 13th June, 1961.

J. G. HILLIER,
Town Clerk.

May, 1961. 7808

**BOROUGH OF YEOVIL
ARCHITECTURAL ASSISTANT**

Applications are invited for the appointment of an Architectural Assistant in the Borough Surveyor's Department at a salary within Grade A.P.T. I (£645-£815 p.a.).

The Scheme of Conditions of Service laid down by the National Joint Council for Local Authorities' Administrative, Professional, Technical and Clerical Services will apply.

Applications giving full personal details, present and previous appointments, qualifications and experience should be sent to the undersigned not later than Wednesday, 21st June, 1961.

Housing accommodation will be available if required.

A. HEAL, M.I.Mun.E.,
Borough Surveyor.

Municipal Offices, Yeovil. 7786

ESSEX COUNTY COUNCIL

ILFORD COMMITTEE FOR EDUCATION

Applications are invited for the appointment in the Education Architects' Section of the Borough Engineer's Office of one **MAINTENANCE ASSISTANT, A.P.T. Grade I** (£645-£815 per annum) plus appropriate London weighting.

Applicants should have good knowledge of building construction and experience in dealing with minor alterations and general maintenance of school buildings.

There will also be paid such travelling and subsistence allowances as may be determined from time to time by the Essex County Council.

The post is superannuable and subject to medical examination.

Applications should be made on a form to be obtained from and returned to the Borough Engineer and Surveyor, Town Hall, Ilford, together with copies of not more than three recent testimonials within 14 days of the appearance of this advertisement. 7797

JUNIOR ARCHITECTURAL ASSISTANT required. Salary for holders of G.C.E. in three specific subjects—£405 at age 18 rising to £820. Opportunities for training and learning municipal architecture and surveying. Forms from Borough Engineer, returnable by 14th June. J. Noel Martin, Town Clerk, Municipal Buildings, S.W.18. 7849

**COUNTY BOROUGH OF WALSALL
PUBLIC WORKS DEPARTMENT**

Applications are invited from suitable qualified persons for the following appointments in the Chief Architect's Section of the Public Works Department:—

(a) **SENIOR ASSISTANT ARCHITECT** within Grade A.P.T. IV (£1,140-£1,310 per annum).
(b) **ASSISTANT ARCHITECTS** within Grade A.P.T. III/IV (£950-£1,310 per annum).

The Department is engaged on an extensive programme of architectural work, which includes comprehensive housing development incorporating multi-storey flats; an education programme including comprehensive schools, college of art and a youth centre; and extensive central area redevelopment embracing shops, offices, police headquarters, law courts, library, art gallery and other buildings associated with a proposed two-tier ring road.

All posts are superannuable and subject to a medical examination. Applicants should disclose if they are related to a member or officer of the Council. Housing accommodation will be made available if required.

Applications stating age, present position, salary, qualifications, details of experience and previous appointments, and the names of two referees, should be submitted to reach the undersigned by Monday, 12th June, 1961.

M. E. HABERSHON,
Borough Engineer and Surveyor.

Council House, Walsall.
May 24th, 1961. 7811

**BOROUGH OF WOOD GREEN
APPOINTMENT OF
ARCHITECTURAL ASSISTANT**

Applications are invited for the above appointment on the permanent establishment of the Borough Engineer's Department in A.P.T. Grade III (£965-£1,140) plus the appropriate London Weighting Allowance.

Applicants must be fully qualified architects and have had experience in the preparation of plans, drawings and other details associated with local authority housing schemes and other works.

The Council may make housing accommodation available to the successful applicant, if desired.

The appointment is subject to the Local Government Superannuation Acts and to medical examination.

Applications stating age, qualifications, experience and names and addresses of two referees must reach the undersigned by the 9th June, 1961.

G. W. PLATER,
Town Clerk.

Town Hall, Wood Green, N.22.
23rd May, 1961. 7790

**BOROUGH OF TAUNTON
ARCHITECTS' DEPARTMENT**

Applications are invited for the following appointments in the Borough Architect's Department.

ASSISTANT ARCHITECTS, Grade A.P.T. III/IV (£960-£1,140-£1,310 p.a.).

The Council have an interesting programme of estate development and redevelopment schemes including flatted accommodation, groups of shops, old persons accommodation, market offices and other ancillary buildings.

The posts are superannuable, subject to medical examination and to National Conditions of Service. Salary placing according to qualifications and experience. Applications stating age, present position and salary, qualifications, experience and names of two referees to be sent to C. Bacon, F.R.I.B.A., Borough Architect, Flook House, Station Road, Taunton, within 14 days of the appearance of this advertisement.

Housing accommodation will be made available to suitable applicants if required.

K. A. HORNE,
Town Clerk.

87810

AIR MINISTRY requires **QUANTITY SURVEYING ASSISTANTS, Grade III**, at R.A.F. and Ministry of Aviation stations throughout the United Kingdom. The work includes abstracting and billing, site measurement and preparation of estimates.

Salary, which is dependent upon age, qualifications and experience, ranges from £725 (age 25) to £951 maximum in Grade III. There are pension prospects and also opportunities of advancement to numerous posts in the higher grades, viz.:

Technical Grade II:	£961-£1,098	123 posts
Technical Grade I:	£1,098-£1,348	42 posts
Technical Grade B:	£1,348-£1,552	6 posts
Technical Grade A:	£1,439-£1,697	6 posts

Vacancies occurring in the higher grades are, as a rule, filled by promotion of existing staff.

Overseas tours for which special allowances ranging at present up to £1,800 p.a. are payable in addition to a higher salary. Financial assistance and time off allowed for recognised courses of study leading to higher qualifications. Five-day week with 18 days paid leave a year initially.

Applicants who must be natural born British subjects, must hold O.N.C. (Building or Builders Quantities) or equivalent and have had good experience under Quantity Surveyor or Building Contractor. Knowledge of W.D. Schedule an advantage. Forms from Manager (P.E.2), Ministry of Labour, Professional and Executive Registrar, Atlantic House, Farringdon Street, London, E.C.4. Candidates selected will be interviewed in Air Ministry, London, and certain expenses reimbursed. Only applicants selected for interview will be advised. 87028

BOROUGH OF LEYTON

Applications invited for appointment to established post of **SENIOR PLANNING ASSISTANT** in Borough Engineer's Department. Salary within Grade A.P.T. III of National Joint Council's Scheme, viz. £960-£1,140 per annum, plus London weighting. Housing accommodation will be made available to successful applicant and the appointment carries an "Essential User" Car Allowance for vehicle not exceeding 10 h.p. or 1,199 c.c. N.J.C. Conditions of Service. Five-day week. Staff Canteen available.

Apply by letter with details of age, experience and names, etc., of two referees, to reach the Borough Engineer, Town Hall, Leyton, E.10, not later than 8th June, 1961.

D. J. OSBORNE,
Town Clerk.

Town Hall, Leyton, E.10. 7793

**NEWMARKET URBAN DISTRICT COUNCIL
ASSISTANT ARCHITECT**

Newmarket is a residential district in West Suffolk. It has a separate Architect's Department engaged on Housing, Urban Renewal and kindred services. No great quantity of technical staff, just the Architect and his Assistant who do the lot! The Assistant never stays very long. He gets to know too much too quickly and clears off! We cannot complain about this. In fact we like to see men making progress. In any case it makes room for another bright young mind to start the upward climb.

This pensionable post is now vacant and applications should be sent to the undersigned before 15th June, 1961.

We should want particulars of age, education, qualifications and general experience and salary required for working a five-day week.

Don't bother about housing or the cost of removing your wife, family and furniture, we can attend to that.

JOHN CRABB,
Clerk of the Council.

Severalls House, Newmarket, Suffolk. 7794

**LONDON COUNTY COUNCIL
ARCHITECTS' DEPARTMENT**

ARCHITECTS AND BUILDING SURVEYORS
Required for surveying existing buildings, preparing sketch schemes, working drawings and specifications and supervising works in progress for the complete modernisation of the older type of Council flats (jobs up to £100,000).

Applicants should have an interest in this type of work and the ability to act on their own judgement since each will carry his own job through from survey to completion.

Salaries up to £1,250. Form and particulars from Hubert Bennett, F.R.I.B.A., Architect to the Council (EK/A/1326/6), County Hall, S.E.1. 7819

cladding

cills

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flooring

paving

fireplaces

surrounds

skirtings

stairtreads

shelves

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QUARRIES ABERLEFENI NORTH WALLS

TODAY'S
SLATE
AND
TOMORROW'S
WINGILATE

**CITY OF NOTTINGHAM
ASSISTANT PLANNING OFFICERS**
(A.P.T. V, £1,310-£1,480 p.a.)

Applications are invited for the above posts in the Planning Section of the City Engineer's Department.

Applicants should hold a town planning or an architectural qualification. Commencing salary will depend on experience and qualification.

There is a large volume of creative planning work on hand with a strong emphasis on central area redevelopment with scope for original and imaginative ideas.

Housing accommodation may be available.

Applications on forms to be obtained from the City Engineer, Guildhall, Nottingham, are to be returned to him by Saturday, 10th June, 1961. 7795

**BRITISH OVERSEAS AIRWAYS
CORPORATION**

ASSISTANT STAFF ARCHITECT

A vacancy exists for an Assistant Staff Architect based at London Airport responsible for preparing and running projects through Consulting Architects and engineers. The applicant should have ability to tackle large scale planning work, and should possess a contemporary design outlook with good sketch presentation technique, and be competent in report writing. Applicants should be prepared to travel overseas for short periods.

Essential Qualifications:

1. Age: 25-35 years.

2. Associate Membership of the R.I.B.A.

The post is permanent and pensionable, and offers a secure future with excellent opportunities. The appointment will be made in the salary range from £1,048-£1,236 per annum. Commencing salary in accordance with experience.

Detailed applications to Recruitment Manager, B.O.A.C., London Airport, Hounslow, Middlesex. 7800

**CENTRAL ELECTRICITY GENERATING
BOARD**

**SOUTH EASTERN REGION
NORTH THAMES DIVISION**

Applications are invited for the following appointment in the Generation Department (Construction Section) at Divisional Headquarters, Cockfosters, in North London.

ARCHITECTURAL DRAUGHTSMAN

Salary £905-£1,140 per annum.

The commencing salary will depend upon the duties and responsibilities.

Applicants should have had experience in the preparation of working drawings, details, and specifications in connection with industrial buildings.

Applicants should have technical qualifications of Intermediate R.I.B.A. standard, and had previous office experience and a good knowledge of building construction.

Applications, quoting reference S.V. No. 1508, stating age, qualifications, experience and present position should be sent to the Personnel Officer, Central Electricity Generating Board, South Eastern Region, North Thames Division, West Farm Place, Chalk Lane, Cockfosters, Barnet, Herts., to arrive not later than 10th June, 1961. 7806

H.M. PRISON COMMISSION

London vacancies for Leading and Basic Grade ARCHITECTURAL ASSISTANTS
An Interesting and Essential Job.

Salaries:

Leading Grades, £1,048 to £1,220.

Basic Grades, £658 to £1,048.

Salaries include London weighting and are for posts in the Head Office of Prison Commission, London, S.W.1.

Starting pay within the above ranges according to age, qualifications and experience. Five-day week of 42 hours. Generous annual leave with full pay. Appointments unestablished in the first instance with prospects of establishment.

For full particulars and application form write: The Establishment Officer (JB483), Horseferry House, Dean Ryle Street, London, S.W.1. Closing date: 9th June, 1961. 7776

**SOUTH EASTERN ELECTRICITY BOARD
CLERK OF WORKS**

Applications are invited for the position of Clerk of Works in the Surrey Area. Applicants should have been trained as either a bricklayer or carpenter and have held the position of builder's foreman, or alternatively be holders of the Ordinary National Certificate in building or its equivalent. Salary £780 x £25 to £880 p.a. under N.J.C. Grade III. Superannuable. Excellent sick pay and holiday schemes. Applications, quoting AJ on forms from the Surrey Manager, Seeboard, Rough Rew, Ridgeway Road, Dorking, Surrey, by 12th June, 1961.

GEORGE WRAY,
Secretary. 7823

BOROUGH OF KEIGHLEY

BOROUGH ARCHITECT'S DEPARTMENT

Applications are invited for the following position:

ARCHITECTURAL ASSISTANT, Grade A.P.T. III (£950-£1,140). Applicants must have had good general experience in architectural design and detailing. Commencing salary to be in accordance with experience.

Applications to be made upon the prescribed form to be obtained from the undersigned, and to be returned not later than first post, Monday, 12th June, 1961.

T. D. WILLIAMS, A.R.I.B.A.,
Borough Architect.

Borough Architect's Department,
College Street, Keighley. 7759

**CORPORATION OF LONDON
CITY PLANNING OFFICE**

TWO PLANNING ASSISTANTS in the following salary ranges: (a) £1,195-£1,480; (b) £1,055-£1,310 are required.

The City Planning Office has interesting Planning projects on hand and others in active preparation, e.g. large scale development is now proceeding in Barbican commercial zone where separated pedestrian walkways are planned for a large area.

The vacancies exist in the Civic Design Section for qualified Architectural or Planning Assistants to join small group working on the present important phase of rebuilding in the City. Opportunities for advancement should occur from time to time.

Local Act Superannuation.
Apply to the City Planning Officer, Guildhall, E.C.2. 7C7719

**HAVERFORDWEST RURAL DISTRICT
COUNCIL**

The Council invite applications for the undermentioned appointment in the Building Surveyor's Department:

ARCHITECTURAL ASSISTANT.

A.P.T. I, £645-£815 per annum. Experience required in connection with housing works either with a local authority or in private employ.

The appointment, which is superannuable, will be made in accordance with the National Joint Conditions of Service and is terminable by one month's notice on either side.

Written applications to be received by the undersigned not later than 7th June, 1961, accompanied by three recent testimonials. State experience, qualifications, etc.

HENRY J. DICKMAN,
Clerk of the Council.

8/10 Picton Place,
Haverfordwest,
Pembrokeshire. 7813

CITY OF CARDIFF

CITY ARCHITECT'S DEPARTMENT

Applications are invited from Qualified Architects for the undermentioned appointments:

CHIEF ASSISTANT ARCHITECT (Civic Design).

J.N.C. Scale "A" £1,485-£1,565 per annum.

The successful applicant will work under the Assistant City Architect (Civic Design) principally on the redevelopment of outtown shopping, business and housing areas. Experience in similar work and Membership of The Town Planning Institute would be considered an advantage.

CHIEF ASSISTANT ARCHITECT (General).

J.N.C. Scale "A" £1,485-£1,565 per annum.

The successful applicant will work under the Assistant City Architect (General) on public buildings of all types including Libraries, Police and Fire Stations, Abattoirs, Welfare and Children's Homes, etc.

General Conditions of Appointment may be obtained from the undersigned.

Applications stating age, qualifications, past and present appointments, details of experience and the names of two persons to whom reference can be made, should be delivered to me in appropriately endorsed envelopes and must be received not later than the 5th June, 1961.

S. TAPPER-JONES,
Town Clerk.

City Hall,
Cardiff.
May 1961. 7816

**COUNTY COUNCIL OF THE WEST RIDING
OF YORKSHIRE**

OFFICE OF THE COUNTY ARCHITECT

Applications are invited for the following appointment in the Doncaster Divisional Office at Adwick-le-Street.

ARCHITECTURAL ASSISTANT, A.P.T. II, or

BUILDING SURVEYOR, Salary range £815-£960.

Applicants should possess a sound knowledge of building construction and be capable of dealing with maintenance works and adaptations to buildings of various types. Five-day week operated.

Applications to be submitted by the 20th June, 1961, on forms to be obtained from and returned to the undersigned.

A. W. GLOVER, F.R.I.B.A.,
County Architect.

Bishopgarth,
Westfield Road,
Wakefield. 7818

CORPORATION OF GREENOCK

Applications are invited from persons possessing the qualifications A.R.I.B.A. and A.M.T.P.I. for the post of BURGHER ARCHITECT AND TOWN PLANNING OFFICER, the salary applicable being on the scale £2,125 to £2,500 per annum.

The person appointed to this position will be directly responsible to the Corporation for all architectural, housing and town planning work undertaken by the local authority.

The appointment will be subject to the provisions of the Local Government Superannuation (Scotland) Acts and housing accommodation will, if required, be offered to the successful applicant for a temporary period.

Applications, giving details of age, experience, etc. together with the names and addresses of three referees should be lodged with the undersigned on or before Tuesday, 13th June, 1961.

JOHN LIDDELL,
Town Clerk.

Municipal Buildings,
Greenock.
19th May, 1961. 7757

CAMBRIDGESHIRE COUNTY COUNCIL

APPOINTMENT OF

DEPUTY COUNTY PLANNING OFFICER

Applications are invited for the appointment of Deputy County Planning Officer at a salary of £2,075 x £85 (2) x £80 (1)-£2,325.

Applicants must be Corporate Members of the Town Planning Institute and wide planning experience, both technical and administrative, is required.

The appointment is superannuable and subject to medical examination.

Applications should be made to the undersigned together with the names of two referees, not later than Saturday, 24th June, 1961.

CHARLES PHYTHIAN,
Clerk of the County Council.

Shire Hall,
Cambridge. 7821

BOROUGH OF KETTERING

**WEEKLEY GLEBE PLAYING FIELD
SPORTS PAVILION & REFRESHMENT
ROOMS**

Fixed Price Tenders are invited for the erection and completion in permanent materials of the above Sports Pavilion, which contains the following accommodation:-

5 Double Changing Rooms

1 Officials' Changing Room

Showers

Washroom & Toilet

Refreshment Room

Stores & Boiler House, making a total of 4,200 feet super.

Forms of Tender and Bills of Quantities may be obtained from and plans inspected at the Office of the Borough Engineer & Surveyor, 5, Gold Street, Kettering.

A deposit of two guineas is required which will be refunded upon receipt of a bona fide tender and the return of all documents.

Tenders, enclosed in a plain sealed envelope endorsed 'Sports Pavilion, Weekley Glebe,' are to be returned to the undersigned not later than 12 noon, Monday, 19th June, 1961.

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

D. DUNSFORD PRICE,
Town Clerk.

Town Clerk's Office,
Huxley Place,
KETTERING,
Northants.

18th May, 1961. 87843

BOROUGH OF HESTON AND ISLEWORTH

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

(a) **SENIOR PLANNING ASSISTANT.**

Salary in accordance with A.P.T. Grades II-III (£815-£1,140 per annum plus London "weighting").

(b) **PLANNING ASSISTANT**

Salary in accordance with A.P.T. Grades I-II (£645-£960 per annum plus London "weighting").

Applicants should have passed the Intermediate examination of the Town Planning Institute or other equivalent and have had experience in a town planning department of a local authority. Commencing salary to be in accordance with qualifications and experience.

The Council is unable to assist the successful candidates with housing accommodation.

Applications are to be submitted by Monday, 19th June, 1961, on forms to be obtained from and returned to the Borough Engineer and Surveyor, 88 Lampton Road, Hounslow.

D. MATHIESON,
Town Clerk.

Town Hall,
Hounslow, Middx. 7845

EDINBURGH COLLEGE OF ART

SCHOOL OF ARCHITECTURE

Applications are invited for the post of Studio Instructor and Lecturer in the School of Architecture. In addition to general studio work, he will be required to undertake instruction in Building Services. The candidate should be interested in this aspect of Architecture and facilities will be given him for special study in this field. Candidates must be Associate Members of the R.I.B.A.: salary scale £1,025 x £50-£1,575.

Form of application and conditions of appointment can be obtained from the Secretary, Edinburgh College of Art, Lauriston Place, Edinburgh, 3, to whom applications should be submitted not later than 10th June, 1961. 7737

COUNTY BOROUGH OF BOURNEMOUTH

BOROUGH ARCHITECT'S DEPARTMENT

Applications are invited for the appointment of:-

(a) **SENIOR ASSISTANT ARCHITECTS (Two).**

Salary Grade A.P.T. IV, £1,140-£1,310 p.a.

(b) **ARCHITECTURAL ASSISTANTS (Four).**

Salary Grade A.P.T. II, £815-£960 p.a.

The successful candidates will be appointed at not less than present salary if within the incremental scale and reasonable removal expenses will be paid.

For Post (a) all applicants must be fully qualified (by examination) members of the R.I.B.A., and for Post (b) must have passed the Intermediate Examination R.I.B.A. Applications from candidates over 45 years of age will be considered.

Application Forms and further particulars from Borough Architect, Town Hall, Bournemouth. Completed applications to reach the undersigned by 10 a.m., 14th June, 1961.

A. LINDSAY CLEGG,
Town Clerk. 7738

UNIVERSITY OF DURHAM KING'S COLLEGE NEWCASTLE UPON TYNE, 1

The Council of King's College invite applications for the post of LECTURER in the Department of Town and Country Planning.

The commencing salary will be determined at a suitable point on the Lecturers' Scale (£1,050-£1,850 per annum) in accordance with the age, qualifications and experience of the successful applicant. Family Allowance and F.S.S.U.

The successful candidate will be expected to take up duty on 1st October, 1961.

Applications, including the names and addresses of three persons to whom reference may be made, should be sent to the Registrar and Secretary of King's College, from whom further particulars may be obtained, so as to reach him not later than 27th June, 1961.

EASINGTON RURAL DISTRICT COUNCIL
Applications are invited for the under-mentioned appointments:—

ARCHITECTURAL ASSISTANT
Grade A.P.T. III (£960-£1,140).

Applicants must have had previous experience in the office of a Municipal Engineer, Architect or Surveyor and be experienced in Municipal Housing and General Architectural Work.

SECOND ENGINEERING ASSISTANT
Grade A.P.T. II (£815-£960).

Applicants for this appointment must have had previous Municipal experience.

In both cases applicants must have the appropriate qualifications as laid in the National Scheme of Conditions of Service for the particular Grade concerned.

The appointments will be subject to the Local Government Superannuation Acts, and to the successful applicants passing medical examinations.

Applications on forms obtainable from the undersigned must be received by 16th June, 1961.

T. AGAR,
Clerk of the Council.

Council Offices,
Easington, Co. Durham. 7758

BOROUGH OF CROSBY CAPITAL WORKS PROGRAMME PRINCIPAL ARCHITECTURAL ASSISTANT

Applications are invited for the above appointment at a salary in accordance with A.P.T. IV of the Conditions of Service (£1,140 per annum rising to £1,310 per annum) and commencing at a point commensurate with experience.

Applicants must have passed the Final examination of the R.I.B.A. or hold an equivalent qualification and must have had considerable experience in the design of large capital works including multi-storey flats.

It is the Council's policy to assist in the provision of housing accommodation upon satisfactory proof of need.

Applications on forms obtainable from the Borough Engineer and Surveyor at the address below must be received not later than 21st June, 1961.

Canvassing will disqualify.

HAROLD O. ROBERTS,
Town Clerk.

Town Hall,
Waterloo,
Liverpool 22.
24th May, 1961. S7834

CITY OF PETERBOROUGH

Applications are invited from qualified Architects for the appointment of a SENIOR ASSISTANT ARCHITECT in Grade IV, A.P. & T. (£1,140 to £1,310 by three increments), together with fixed car allowance of £108 per annum. Housing accommodation if desired, will be provided.

Forms of application from City Engineer, Town Hall, Peterborough. Closing date for applications 16th June, 1961.

C. PETER CLARKE,
Town Clerk.

Town Hall,
Peterborough.
May, 1961. S7838

CWMRRAN NEW TOWN MONMOUTHSHIRE

Applications are invited from suitably qualified ARCHITECTS who wish to take part in an interesting and varied programme of work including all types of residential development, Town Centre development and Neighbourhood Shopping Centres.

(a) SENIOR ASSISTANT ARCHITECT, Grade A.P.T. V, £1,310-£1,480. Candidates must be Associates of the R.I.B.A. with suitable office experience.

(b) ARCHITECTURAL ASSISTANTS, Grade A.P.T. III/IV, £960-£1,310. Candidates should have passed the Intermediate Examination of the R.I.B.A. and have had some office experience, particularly in the preparation of working drawings.

The posts are superannuable and Conditions of Service are similar to those in Local Government. Housing accommodation is available to rent or purchase if required.

Applications stating age, experience, details of present and former employment (together with applicable salaries) and the names and addresses of two referees must reach the undersigned by first post on Monday, 26th June, 1961.

J. C. P. WEST, A.R.I.B.A., M.T.P.I.,
Chief Architect.

Cwmbran Development Corporation,
Victoria Street,
Cwmbran,
Mon. S7765

COUNTY BOROUGH OF SWANSEA BOROUGH ARCHITECT'S DEPARTMENT

Applications are invited for the post of SENIOR ASSISTANT ARCHITECT, Salary Grade A.P.T. IV (£1,140 to £1,310). Applicants must be Associates of the R.I.B.A., and must have had considerable experience in the design and supervision of the erection of Schools and other Educational Buildings.

Candidates must be under 45 years of age unless they are already in superannuated service of a local or public authority in respect of which superannuation interchange is available.

The appointment will be subject to the provision of the Local Government Superannuation Acts and may be terminated by one month's notice on either side. The successful candidate will be required to pass a medical examination.

Forms of application may be obtained from the Borough Architect, The Guildhall, Swansea, to whom they must be returned not later than Friday, 16th June, 1961.

Canvassing disqualifies.
IORWERTH J. WATKINS,
Town Clerk.

The Guildhall,
Swansea.
26th May, 1961. 7840

CITY OF CARLISLE CITY SURVEYOR'S DEPARTMENT

Applications are invited from suitably qualified persons for the following appointments:—

ASSISTANT QUANTITY SURVEYOR,
A.P.T. II/III (£815-£1,140).

ASSISTANT QUANTITY SURVEYOR,
A.P.T. I (£645-£815).

Salary will be in accordance with qualifications and experience. Applications stating age, qualifications, present and past appointments with dates and salaries, experience and three referees to be received by City Surveyor, 18 Fisher Street, Carlisle, by 17th June, 1961.

H. D. A. ROBERTSON,
Town Clerk.
7839

BOROUGH OF CHELSEA BUILDING SURVEYOR, A.P.T. III-IV £960 to £1,310 plus £45 p.a. London weighting.

Applications are invited for the above appointment in the Borough Engineer and Surveyor's Department. Applicants must have A.R.I.C.S. (Building) or any other appropriate qualifications and have had good general experience. Council operates five-day week. Forms of application from Borough Engineer and Surveyor, Town Hall, King's Road, S.W.3, to be returned not later than 23rd June. S7812

TOWN PLANNING OFFICER

TOWN PLANNING DEPARTMENT GOVERNMENT OF TANGANYIKA

Duties: To design detailed schemes of the layout and sub-division of public land. To prepare planning schemes for local authorities and to advise the Town and Country Planning Board.

Qualifications: Candidates (men or women and preferably aged 30-45) must be A.M.T.P.I. with at least three years' professional experience. An additional qualification in architecture, surveying or engineering desirable.

Terms of appointment: On contract for one or two tours of 21-27 months. Salary at appropriate point in scale £1,266-£2,448 a year plus 25 per cent gratuity. Free passages. Generous leave. Education allowance. Tax at local rates. Free medical attendance. Write to Director of Recruitment, Colonial Office, London, S.W.1, quoting RCD.62 8/01/E2 and giving full names, age, qualifications and experience. 7745

CITY OF LEEDS

APPOINTMENT OF DEPUTY CITY ARCHITECT

Applications are invited from members of the Royal Institute of British Architects for the appointment of Deputy City Architect at a commencing salary of £2,406 per annum rising by increments of £100 to £2,705. A casual user motor car allowance is also payable.

Assistance will be given in providing housing accommodation if required.

The appointment is superannuable; medical examination. Application forms to be obtained from the undersigned are to be returned not later than Friday, 23rd June, 1961.

Canvassing disqualifies.
J. R. SHERIDAN-SHEDDEN,
City Architect.

Priestley House,
Quarry Hill,
Leeds, 9. S7741

CUMBERLAND COUNTY COUNCIL PLANNING DEPARTMENT

Applications are invited for the appointment of two SENIOR PLANNING ASSISTANTS within A.P.T. Grade V (£1,310-£1,480). A.M.T.P.I. or equivalent essential.

Application forms and further information from the County Planning Officer, 1, Alfred Street North, Carlisle. Closing date 17th June, 1961.

G. N. C. SWIFT,
Clerk of the County Council. 7835

COUNTY BOROUGH OF ROCHEDALE

Applications are invited from Corporate Members of the R.I.B.A. for the appointment of CHIEF ASSISTANT ARCHITECT as the Head of the General Architectural Section of the Borough Engineer and Surveyor's Department. The salary will be Grade JNC Scale B (£1,485/£65(1)/£60(2)/£1,670). The commencing salary will not necessarily be the minimum figure, and will be fixed according to ability and experience.

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

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

Housing accommodation may be provided by the Council in appropriate circumstances.

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 Assistant Architect," must be delivered to the Borough Engineer and Surveyor, Town Hall, Rochdale, by 16th June, 1961.

K. B. MOORE,
Town Clerk. 7744

PADDINGTON BOROUGH COUNCIL TECHNICAL (HOUSING) ASSISTANT (£845-£1,000)

Starting salary according to merit. Experienced in repair, maintenance, improvement and conversion of civic and residential properties. Able to conduct price negotiations with contractors and to prepare plans, specifications and estimates. Applications to be given age, qualifications, experience, present and past appointments and names of two referees by 13th June quoting A.540.

W. H. BENTLEY,
Town Clerk.

Town Hall,
Paddington, W.2. 7742

LIVERPOOL REGIONAL HOSPITAL BOARD

require
ARCHITECTS
SENIOR ASSISTANT ARCHITECTS £1,300-1,600
ASSISTANT ARCHITECTS £905-1,310
ARCHITECTURAL ASSISTANTS £625-900
ARCHITECTURAL DRAUGHTSMEN £475-685
and
SURVEYORS

ASSISTANT BUILDING SURVEYORS £905-1,310
In the Department of the Regional Architect, T. Noel Mitchell, B.Arch., F.R.I.B.A. Interesting new building is projected including new Hospitals and the complete replanning of a large number of older Hospitals covering a wide variety of building types.

All posts are superannuable and mileage allowances will be paid to approved car users.

Applications to reach me by 16th June, 1961, stating post applied for, age, education, qualifications, present salary, experience, present and previous posts and names and addresses of three referees (two technical).

VINCENT COLLINGE,
Secretary to the Board.

55, Castle Street,
Liverpool, 2. S7769

LIVERPOOL REGIONAL HOSPITAL BOARD

require
ASSISTANT REGIONAL ARCHITECT
Salary £1,825 x £75 (2) x £100 (2)—£2,175.
In the Department of the Regional Architect T. Noel Mitchell, B.Arch. (Liverpool), F.R.I.B.A. Graduate of a recognised School of Architecture preferred. High status in design essential. The Department has Principal Assistants—each responsible for a section of work which includes major projects—these being assisted by a number of Senior and Assistant Architects.

The post is superannuable; car mileage and subsistence allowances payable. The Department is in pleasant modern offices in a central position in the city.

Applications to reach me by 16th June, 1961, stating age, education, qualifications, present salary, experience, present and previous posts and names and addresses of three referees (two technical).

VINCENT COLLINGE,
Secretary to the Board.

55, Castle Street,
Liverpool, 2. S7768

ROYAL BOROUGH OF KINGSTON-UPON-THAMES

APPOINTMENT OF ASSISTANT ARCHITECT
A.P.T. Grade IV, £1,140-£1,310 per annum, plus London weighting.

Applications are invited for the above-mentioned appointment. Details and application forms obtainable from Borough Surveyor, Guildhall, Kingston-upon-Thames, and returnable by 16th June, 1961.

L. V. POWELL,
Town Clerk.

Guildhall,
Kingston-upon-Thames. 7837

SOUTHAMPTON BOROUGH ARCHITECT'S DEPARTMENT

Applications are invited for the permanent position of TECHNICAL ASSISTANT (Town Planning). Miscellaneous Grade IV (£625-£685) to deal with land charge searches, site inspections, general enquiries and development control work. Commencing salary within grade according to experience and qualifications.

Application forms from the Borough Architect, Civic Centre, Southampton, returnable by June 14th, 1961. 7836



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MOBIL OIL COMPANY LIMITED

invite applications for post of

Division Architect

in their Sheffield Offices.

Applicants must be A.R.I.B.A. capable of administrating staff and have experience in handling Contracts through all stages of development. They must hold a current driving licence. Full employment benefits and superannuation.

Write giving full details of experience, age and salary required to

The Employment Adviser,
MOBIL OIL COMPANY LIMITED
Caxton House, London, S.W.1.

ERIC de MARÉ

Photography & Architecture

THIS BOOK is by an architect who has become a professional writer and photographer. It reveals simply the technical tricks of the trade and shows how people, using their cameras, may learn to understand, love and enjoy architecture in a direct way without having to carry a burden of passionless academicism.

The book is for the amateur who wants to know more about a fascinating branch of photography; for the architect who wants to learn to make records for use or fine pictures for pleasure; for anyone who likes to possess a book of beautiful photographs from all over the world.

The pictures have been selected and arranged not merely as first-class records of buildings, made by the world's masters of photography, but as photographs striking in themselves, which reveal the visual kinship between photography and architecture, by expressing the sensually pleasing elements of texture contrast, rhythm, space relationship, scale, and monumentality—especially through the selected close shot. Here are townscape, wallscape, floorscape, reflections, the contributions of rain and snow, the drama of perspective and depth of field, light in all its strange and evocative moods, the viewpoint of bird or worm, and the accidental beauties of squalor, decay or of the merely commonplace.

Size: 11 × 8½ in. 208 pages: 109 of photographs.

50s. net, postage 1s. 9d.

The Architectural Press, 9-13 Queen Anne's Gate, S.W.1.

"Invisible Vacuum Cleaning?"

Architect Now that we've settled the central heating . . . let's discuss the central vacuum cleaning.

Client I don't quite see what you mean. . . .

A Of course you don't. Nobody can see it. It's *invisible* vacuum cleaning.

C Invisible vacuum cleaning?

A Yes. A hose is plugged into the wall of every room . . . and all dust and dirt are *silently* piped away. No heavy cleaner to drag around, no trailing cables.

C Sounds pretty marvellous.

A Except that you don't hear a sound.

C What about cost?

A Rental is 10s. 3d. a week. If you buy it's 66½ gns. completely installed. And there are easy H.P. Terms. I'll get you an illustrated leaflet from: Dept. A, THE BUILT-IN VACUUM CLEANER CO. LTD., 93 Black Lion Lane, London, W.6. RIVerside 2848.

C Good. Let me have the leaflet soon.

A Don't worry. I'll drop them a line today!

ARCHITECTURAL ASSISTANTS

are required in the Chief Architect's Department of the United Kingdom Atomic Energy Authority at Risley, Warrington, Lancashire, to prepare working drawings, etc., for a wide variety of buildings including process buildings of numerous kinds, research laboratories, offices, canteens, hostels, houses, etc.

One post exists in the Site Architect's Office at Windscale Works, Sellafield, Cumberland, where the duties consist of the preparation of drawings, etc., to meet the day-to-day requirements of the Resident Engineer and his staff supervising construction of major projects.

Applicants must have had several years' training in an Architect's office and should be of Intermediate R.I.B.A. Standard or be currently engaged upon a course of training for same.

Starting salary will be assessed on the scale £650 (at age 21) to £1,065 according to experience and qualifications.

Contributory Superannuation. Rented housing and house purchase assistance available for married officers living beyond daily travelling distance.

Send postcard for application form, quoting reference E.6/J41, to:—

The Appointments Officer,
U.K.A.E.A.,
Engineering Group Headquarters,
Risley, Warrington, Lancashire

CLOSING DATE: 26th JUNE, 1961

BOROUGH OF BEDFORD

Applications are invited for the following posts in the Architect's Section of the Borough Engineer's Department.

(a) Three Senior Assistant Architects

A.P.T. IV to V £1,140-£1,480

(b) Two Assistant Architects

A.P.T. II to III £815-£1,140

In the case of (a) applicants must be Associates of the R.I.B.A. and the conditions of this appointment include the payment of a car allowance of £115 per annum.

Housing accommodation will be offered to all successful applicants and a contribution towards removal expenses will be made. Commencing salary will depend on qualifications and previous experience.

The present programme of capital work includes new primary and secondary schools, new municipal offices, multi-storey flats, shops and houses.

The office is run on a group system and opportunity is given to all assistants to have experience on varying works undertaken.

Further particulars and application forms may be obtained from the under-signed to whom completed forms should be returned as soon as possible for immediate attention.

F. W. DAWKES, Borough Engineer and Surveyor.

ARCHITECTS and ASSISTANTS

for HOME and OVERSEAS Projects

INTERESTING Work involving the design and detailing of educational and industrial buildings incorporating standardised steel framed structures.

SALARY by arrangement plus Luncheon Vouchers.

Apply

The Chief Architect,
TAYLOR WOODROW (ARCON) LTD.,
41 Welbeck Street, London, W.1

OR

Phone:— HUNter 6666

ARCHITECTURAL STAFF

SENIOR & INTERMEDIATE ASSISTANTS & DRAUGHTSMEN

required by

F. W. Woolworth & Co Ltd

Five day week. Pension scheme. Dining facilities. Modern office building. Good salaries according to experience and qualifications. Apply giving details of salary required, age and experience to:—

District Architect,
F. W. Woolworth & Co Ltd,
1264 London Road,
Norbury, S.W.16

TECHNICAL ASSISTANT (ESTATE) required for Birmingham Office managing a large number of scattered properties of all types but mainly industrial. Applicants must have a professional qualification, sound knowledge of property law, leases, dilapidations, valuations for purchase and rent, rating and be able to act with limited supervision. Salary within the range £1,120-£1,340, according to qualifications and experience. Applications giving age, experience and qualifications to Divisional Manager (SV145), British Road Services Limited, 30, Harborne Road, Edgbaston, Birmingham, 15. 7748

BOROUGH ARCHITECTS DEPARTMENT
HOLBORN BOROUGH COUNCIL
ARCHITECTURAL ASSISTANT required, good, quick, neat, draughtsman. Salary £815-£1,140 (plus London weighting). Grade A.P.T. II/III according to experience. Applications, together with names of two referees, to Town Clerk, Town Hall, High Holborn, W.C.1. 7740

GLOUCESTERSHIRE COUNTY COUNCIL
COUNTY ARCHITECTS DEPARTMENT
Applications are invited for the following appointments:-

- (a) **ASSISTANT ARCHITECT - "CAREER CLASS"** commencing in A.P.T. IV (£1,140-£1,310 p.a.) progressing to A.P.T. V (£1,130-£1,480 p.a.) subject to satisfactory report on reaching appropriate incremental point in Grade. Applicants must be Registered Architects and Associate Members of the R.I.B.A.
- (b) **ARCHITECTURAL ASSISTANTS - "QUALIFYING CLASS."**
Vacancies exist in the following Grades:-
A.P.T. I. Salary £645-£815 p.a.
A.P.T. II. Salary £815-£960 p.a.
A.P.T. III. Salary £960-£1,140 p.a.
A.P.T. IV. Salary £1,140-£1,310 p.a.

Applicants for posts in Grades I and II should have passed the Intermediate Examination of the R.I.B.A., and for Grades III and IV the full R.I.B.A. Final Examination.

N.J.C. Conditions of Service; superannuation; medical examination.

Applications stating age, present position and salary, details of previous appointments, together with the names and addresses of two persons for reference, must reach the County Architect, Shire Hall, Gloucester, by 12th June, 1961.

GUY H. DAVIS,
Clerk of the County Council.
S7764

Architectural Appointments Vacant

3s. per line; minimum 12s. Box Number, including forwarding replies, 2s. extra.

RONALD WARD AND PARTNERS invite applications from ARCHITECTS, Senior and Junior. Long-term prospects. Scope for initiative and responsibility in interesting commercial, industrial and civic projects in British Isles, West Africa and Australia. Salaries commensurate with ability. Non-contributory Pension and Life Insurance schemes. Five-day week. Pleasant offices. Apply 29, Chesham Place, Belgrave Square, London, S.W.1. Tel.: BELGRAVIA 3361. TC2960

BOOTH, LEDEBOER AND PINCHEARD require ASSISTANTS in the salary range £750-£1,250. Apply 17-20, Mason's Yard, Duke Street, St. James's, S.W.1. Tel.: TRAFALGAR 1866. TC3119

£850-£1,600. ARCHITECTURAL ASSISTANTS required. Long term prospects. Non-contributory pension and life assurance schemes. Five-day week. Telephone or write: Ronald Ward & Partners, 29, Chesham Place, Belgrave Square, S.W.1. Belgravia 3361. TC6106

SENIOR ASSISTANTS required. Please apply to F. G. Frizzell, A.R.I.B.A., 80, Portland Place, W.1. LANCING 1732. TC4943

ARCHITECTURAL ASSISTANTS of all grades required in a busy provincial practice. Good salaries to right applicants. Pension scheme. Accommodation. Apply with full details to: Kuddie & Wilkinson, F/L/A.R.I.B.A., Long Causeway Chambers, Peterborough. TC6984

EDWARD D. MILLS & PARTNERS require additional qualified STAFF for a variety of new work including housing, schools, industrial and churches. Enthusiasm and initiative important. Five-day week. Write giving full details to 9/11, Richmond Buildings, Dean Street, London, W.1. TC7051

COMPLETE CONTROL £4 million contract in Home Counties. Hyde Park Corner office. Qualified and experienced architect. Up to £1,400 salary. Appointments BEL 6595. TC6951

GEORGE, TREW & DUNN.
Interesting projects include new hospitals, university buildings and multi-storey flats.

Qualified ARCHITECTS are invited to apply to 50, Eastbourne Terrace, W.2. Tel. PAD 6611. TC6463

£950-£1,500. ARCHITECTURAL ASSISTANTS with imagination and designing ability required to assist with large and important new developments in the central London Area. Telephone or write: Trehearne & Norman, Preston & Partners, 85, Kingsway, W.C.2. HOLBORN 4071. TC4934

INTERMEDIATE to Final ASSISTANTS required immediately. Salary according to ability and experience. Theo. H. Birks, 38, Portland Place, London, W.1. LAN. 7236. TC9739

ARCHITECTURAL ASSISTANTS of all grades, particularly Intermediate standard, required on varied and interesting projects. High salaries will be paid in accordance with skill or experience of applicant. Lewis Solomon, Kaye & Partners, City 8811. TC5970

PLAYNE & LACEY require experienced and enthusiastic SENIOR ARCHITECTURAL ASSISTANT for work on University project. Salary range £1,200 to £1,500. Write 19, Queen Anne's Gate, Westminster, S.W.1, or ring WHI 2552 for interview. TC5617

BRYAN & NORMAN WESTWOOD & PARTNERS require ASSISTANT ARCHITECTS. Salaries up to £1,200. Apply to 21, Suffolk Street, S.W.1. TRAFALGAR 1106. TC6736

SENIOR ASSISTANTS required for work on large Hospital programme, excellent opportunities for the right men, salary £1,000-£1,400. Luncheon Vouchers and five-day week. Write giving full particulars to W. H. Watkins, Gray and Partners, 57, Catherine Place, S.W.1. TC5633

ARCHITECTURAL ASSISTANTS required for interesting work, including schools and hospitals, in Croydon office. Commencing salaries offered: £900-£1,150 for Associates, £600-£850 for students, according to age and experience. Five-day week and annual bonus. Write to George Lowe & Partner, 79, George Street, Croydon. TC5197

ARCHITECTURAL ASSISTANTS required in busy Bloomsbury office with varied practice. Good salary and prospects for suitable applicants. Five-day week. Write giving particulars of age, qualifications, experience, etc., to Box 918, c/o 7, Coptic Street, W.C.1. TC5647

ARCHITECTS' ASSISTANTS required, both Intermediate R.I.B.A. and Finals standard, with experience in this country. Good salary offered. Bernard Gold & Partners, 4/6, Savile Row, W.1. Regent 7551. TC6170

ARCHITECTURAL ASSISTANTS REQUIRED FOR OFFICE WITH VARIED PRACTICE. WRITE W. F. HOWARD, 35, THURLOE STREET, S.W.7. S7708

YORKE, ROSENBERG AND MARDALL have some vacancies for experienced STAFF, starting salary according to qualifications and experience, in the range £950-£1,200. Ring AMBassador 4521 for appointment. TC6200

PLAYNE & LACEY require experienced and enthusiastic ARCHITECTURAL ASSISTANTS. Salary range £900-£1,050. Write 19, Queen Anne's Gate, Westminster, S.W.1, or ring WHI 2552 for interview. TC6249

OPPORTUNITY for intermediate or newly-qualified ASSISTANT with initiative and all-round ability, to join youthful expanding practice in Croydon. Apply to Donald Rowsell & Partners, 11/12a, George Street, Croydon, or telephone CROYdon 4080. TC5723

ARCHITECTURAL ASSISTANT required for North Devon Office. Box TC6673.

SENIOR AND JUNIOR ASSISTANTS. Only those who prefer a small office and an interesting variety of work on both old and new buildings should apply to: L. H. Bond & R. W. Read, 44, Castlegate, Grantham. TC6404

C. H. ELSOM & PARTNERS require two SENIOR ARCHITECTS with good technical experience and design ability for large scale projects. Pension scheme and luncheon vouchers. 10, Lower Grosvenor Place, S.W.1. VICTORIA 4304. TC6733

LEICESTER. SENIOR ARCHITECTS AND ASSISTANTS required for general practice. Appropriate salary paid. Apply by telephone or in writing for an interview to Herbert, Son & Sawday, 18, Friar Lane, Leicester. Tel. 56476. TC5307

ELIE MAYORCAS requires ARCHITECTURAL ASSISTANTS with a minimum of three years' office experience in this country. Write, giving brief particulars of architectural education and experience, and salary required, to: 13, David Mews, Baker Street, W.1. TC7014

STRATFORD-UPON-AVON Architects have further vacancies for ASSISTANTS up to R.I.B.A. Intermediate standard, and for JUNIOR ASSISTANTS. Opportunities to carry out varied and interesting work in delightful surroundings. Scope for initiative and advancement. Write stating age, experience and salary required to Earp, Badger & Harrison, A.A.R.I.B.A., Guild Chambers, Scholars Lane, Stratford-on-Avon, or phone Stratford-on-Avon 3424. S7712

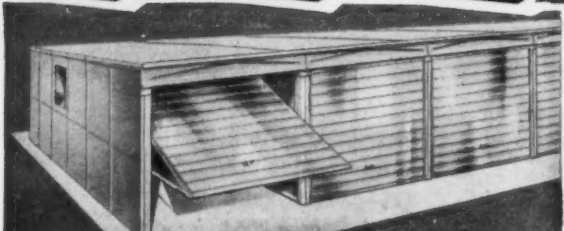
IMMEDIATE VACANCIES in leading Bristol office for all grades of ARCHITECTS and ARCHITECTURAL ASSISTANTS. Modern approach to design essential and considerable freedom of expression allowed. Top salaries paid according to ability and experience. Outstandingly good working conditions; five-day week; annual bonus; contributory pension scheme available; existing holiday commitments honoured. Apply giving particulars of age and experience to W. H. Watkins, Gray and Partners, 5 Colston Avenue, Bristol. Telephone Bristol 292333, reverse charge calls accepted. TC7675

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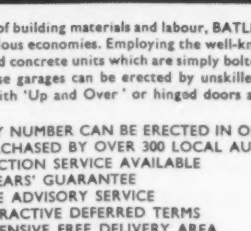
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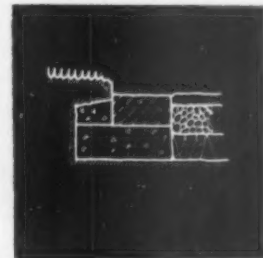
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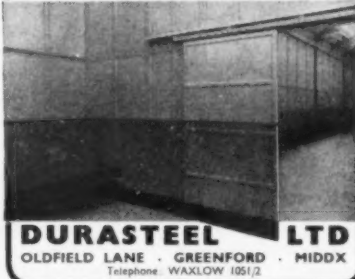
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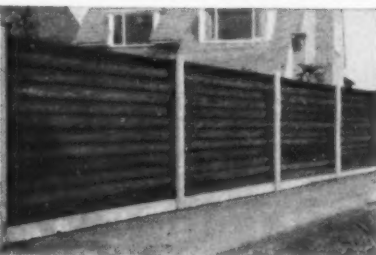
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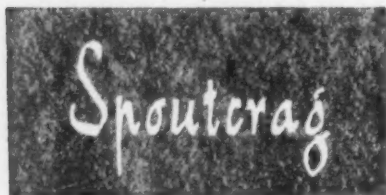
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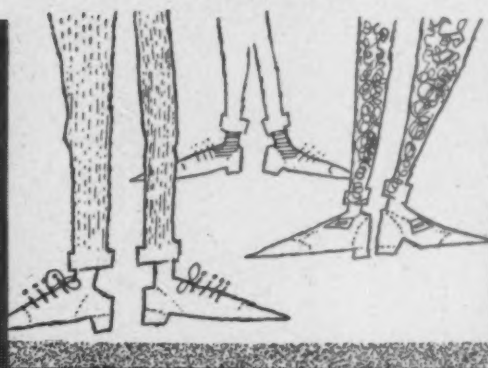
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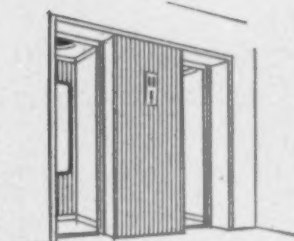
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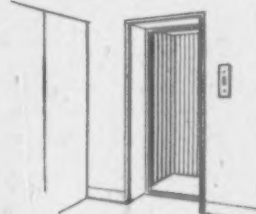


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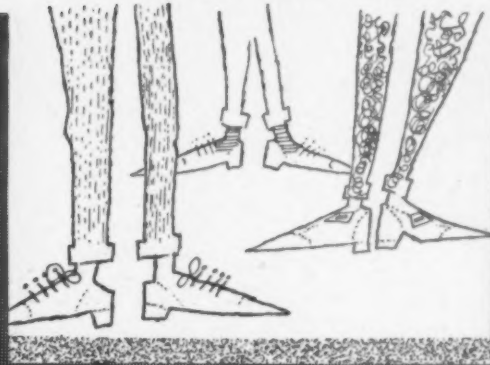
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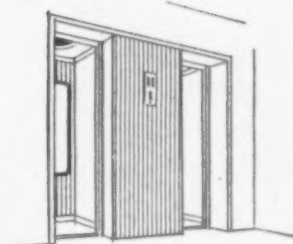


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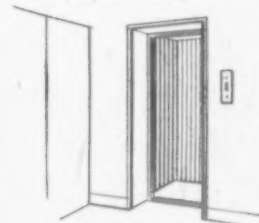
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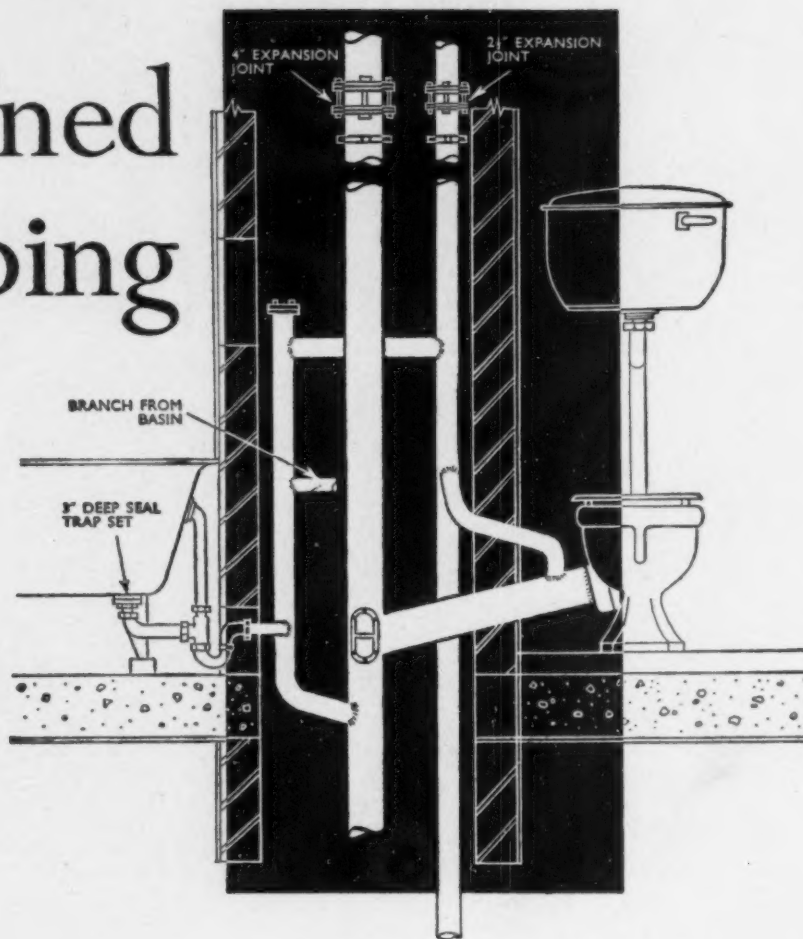
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