The Architects' Journal
December 20 1961 Vol 134 No 25 Price 1s

SfB (22)

This issue of the AJ should be filed as it contains part of a 50-part technical information library which the AJ is founding. Below are the most important elements from Table 1 of the SfB classification.

These are the key to our library production programme, and each week we publish, with the normal AJ, a supplement dealing with one of these elements. Headings in bold type are those dealt with in previous issues. This week's supplement covers SfB (22). The remaining headings will be published in subsequent issues.

This is a token preclassified file cover for the Element File Technical Studies, Element Design Guide and Information Sheets within and for all subsequent articles and digests on these subjects which an architect needs to keep. At the end of a year readers will have a design manual covering all the functional elements listed below and forming the nucleus of a technical library.

(11) Ground: General
(12) Drainage: General
(13) Retaining structures: General
(14) Roads and pavings: General
(15) Garden: General
(15) Garden: Fences, gates, walls
(16)-(19) Foundations
(2) Structures: General
(2) Structures: Concrete: General
(2) Structures: Sections, metal
(2) Structures: Sections, wood
(21) Walls: External load-bearing: General
(21) Walls: External non-loadbearing: General

(22) Partitions: General

(23) Floors, ground: General
(23) Floors, structural: General
(24) Stairs and ramps: General
(25) Ceilings, suspended: General
(26) Roofs, structural, flat: General
(27) Roofs, structural, pitched: General
(30) Accessories, ironmongery: General
(31) Windows: General
(31) Windows: Sections, metal
(31) Windows: Sections, wood
(32) Doors: General
(34) Handrails and balustrades: General
(37) Roof-lights and traps: General
(38) Roof eaves, verges, gutters, rails: General
(41) Finishes, external: General
(42) Finishes, internal: General
(43) Finishes, floor: General
(46) Finishes, flat roofs
(47) Finishes, pitched roofs: General
(51) Installations, refuse disposal: General
(52) Installations, drainage and sanitation: General
(53) Installations, water, hot and cold: General
(54) Installations, gas, compressed air, steam, refrigeration: General
(56) Installations, heating: General
(56) Installations, heating: Equipment and fuel
(57) Installations, ventilation, air-conditioning: General
(63) Installations, electrical: Lighting and power: General
(63) Installations, electrical: Lighting equipment
(64) Installations, communications: General
(66) Installations, mechanical: General
(68) Installations, special: General
(72) Rooms, fixtures and equipment: General (fixed furniture)
(72) Rooms, fixtures and equipment: General (loose furniture)
(73) Kitchens, fixtures and equipment: General
(74) Cloakrooms, bathrooms, lavatories, fixtures and equipment: General
(75) Laundries, fixtures and equipment: General

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Controlling air flow, that is the real basis of good ventilation and good ventilator design. With the Colt Powered Air Inflow Unit for instance the individually adjustable blades of the Variable Air Projector give finger-tip control over the diffusion of the incoming air steam. With Colt Ventilation Systems the control is there on a larger scale. Take the new American Machine and Foundry Company factory for example. Here the Colt designed system uses Powered Inflows to bring fresh air to a centrally sited Production Area. In every branch of British industry there are similar Colt-designed ventilation systems, supplied and installed by Colt.

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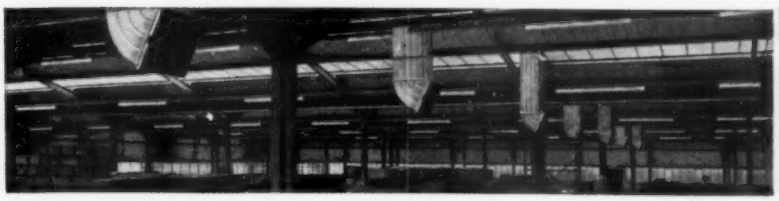
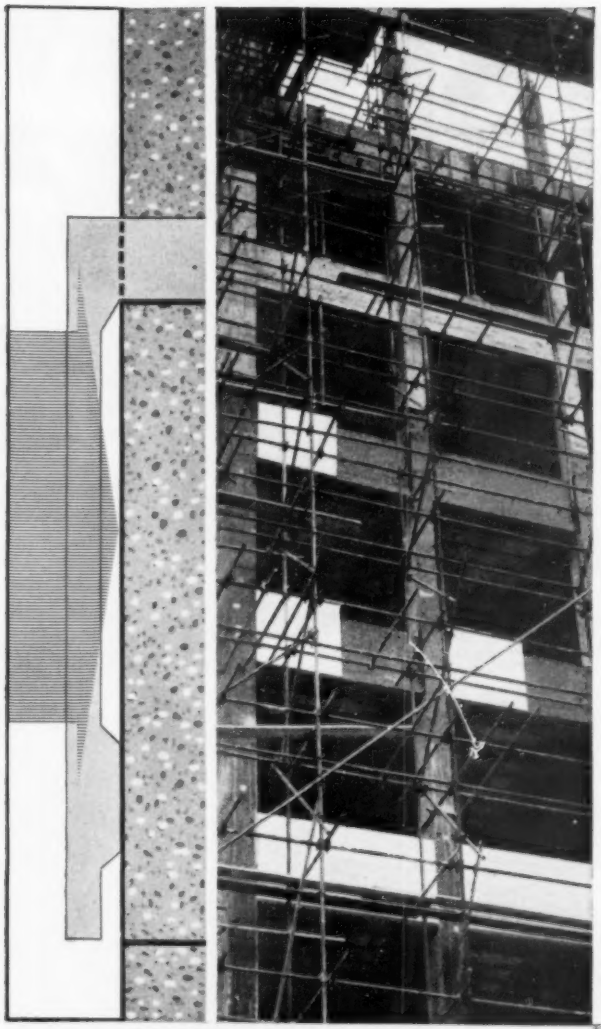
CLIENT *American Machine and Foundry Company Ltd. Whitstable Industrial Estate*

CONTRACTORS *Sir Robert McAlpine and Son Ltd.*

VENTILATION *Colt Ventilation Ltd. Surbiton Surrey Telephone: ELMbridge 0161*



COLT



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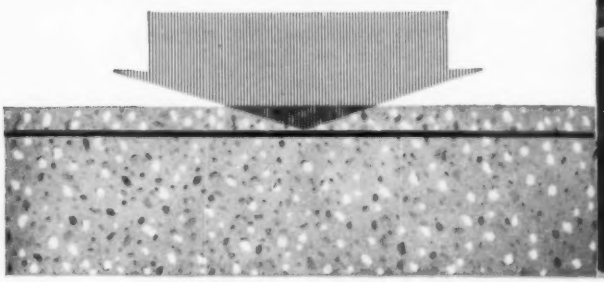

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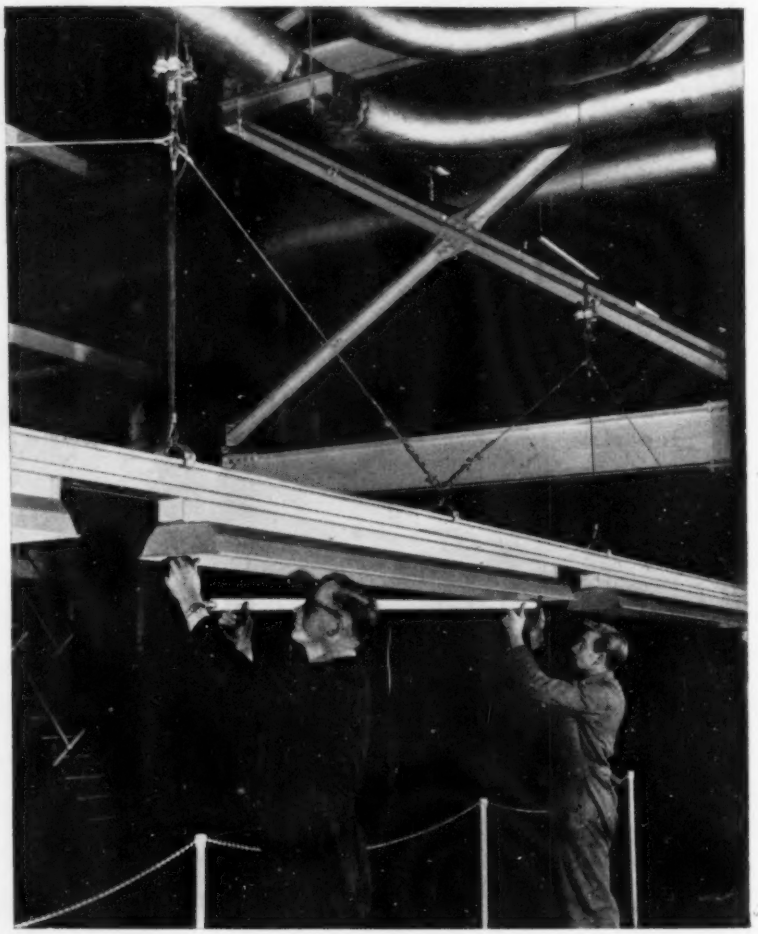
says T. W. McCullough, O.B.E., H.M. Chief Inspector of Factories, Ministry of Labour, referring specifically to electric light fittings ('Factory Safety by Design,' Industrial Equipment Progress, 1960).



Right: Safety in cleaning and servicing lighting fittings is ensured by the use of L.E.F. Raising and Lowering Gear in Vauxhall Motors' boiler house.

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Director of Housing, Westminster City Council

Architects : Powell & Moya, F./F.R.I.B.A.
Contractors : M. J. Gleeson (Contractors) Ltd.

Overlooking the River Thames, the Churchill Gardens Estate is a perfect example of modern architecture and constructional skill.

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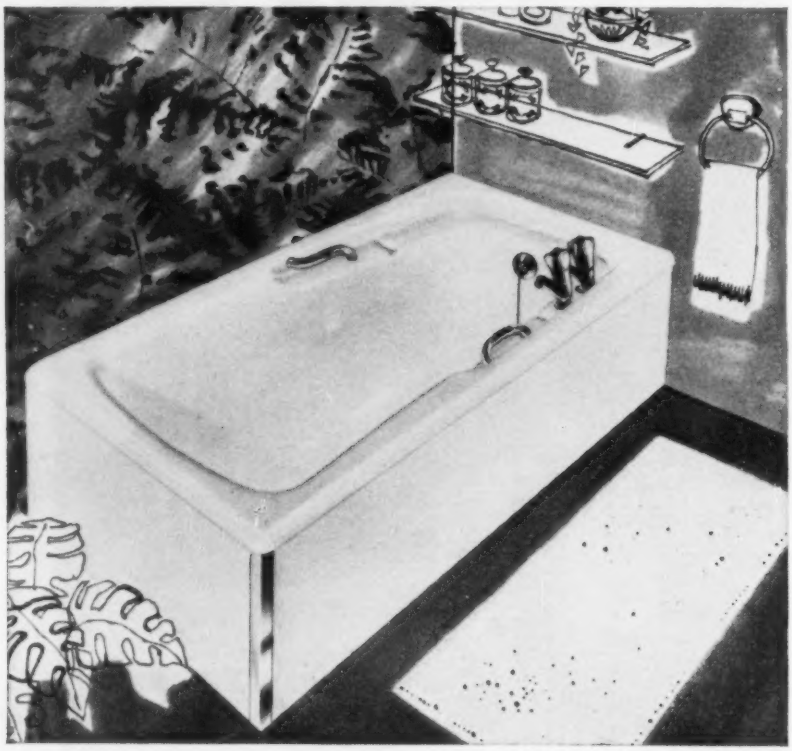


new Kingston Bath completes Britain's best Bathroom suite

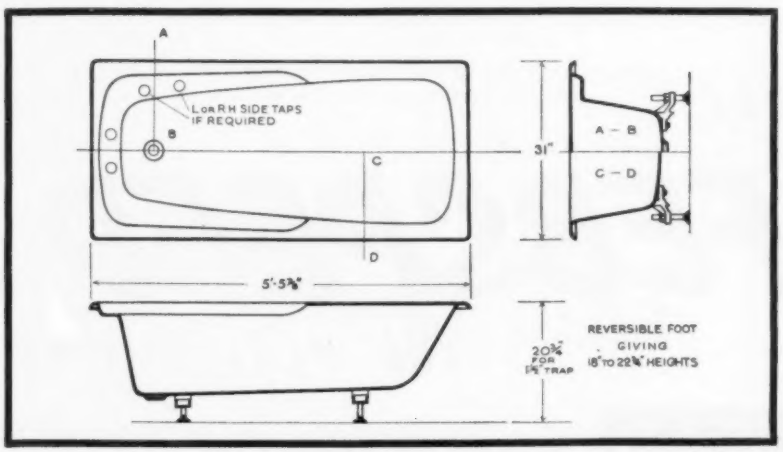
IDEAL-STANDARD Introduce New Luxury Bath in Moderate Price Range

Kingston vitreous china sanitary appliances have for some time been accepted as outstanding designs. Now Ideal-Standard have completed the suite by introducing the Kingston bath.

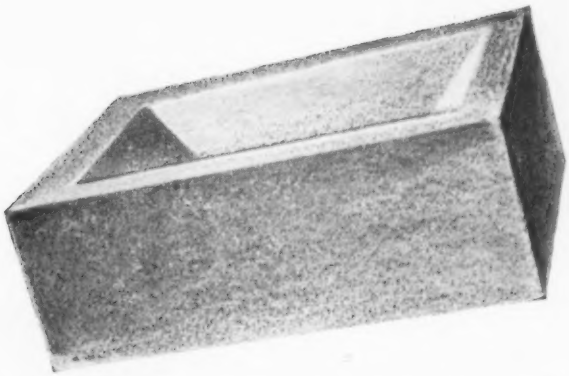
The new Kingston bath is 5′ 6″ long and is finished in high quality porcelain enamel. Its main features are:—

1. Wide shoulder space and special slope to headend to provide maximum comfort.
2. Flat bottom for more space and safety when standing or entering the bath.
3. Special adjustable feet give very low height for the elderly — and also for bathing children.
4. A generous shelf area with soap sinkings.
5. Optional twin handgrips.
6. Easy-to-clean sloping rim.
7. Generous water content — this will be appreciated by "soakers".
8. The bath can be supplied to take mixer or pillar taps centrally mounted or on either side.

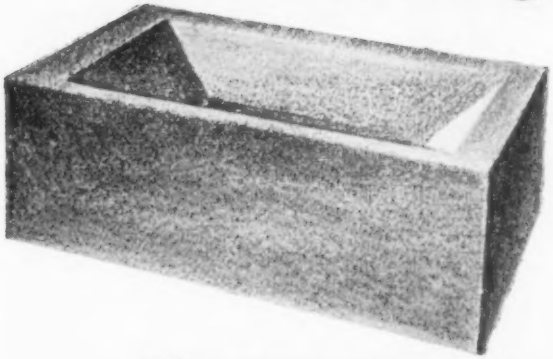
The design of the bath is simple and elegant with an attractive low appearance. It can be used in conjunction with the Trimline as well as the Kingston suites, and is available in the usual range of Ideal-Standard colours.



The new Ideal-Standard Kingston bath completes the elegant Kingston suite. It is 5′ 6″ long, low in outline and has many unique features.



Between you and me ...



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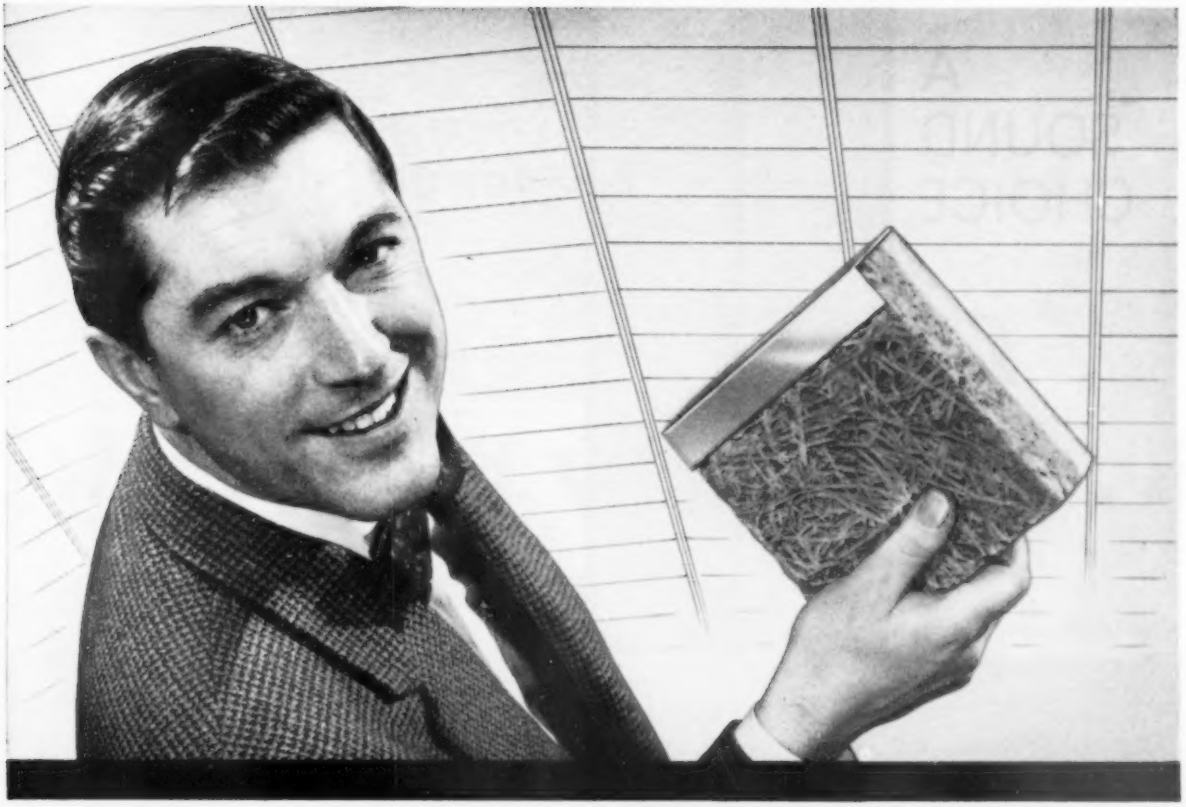

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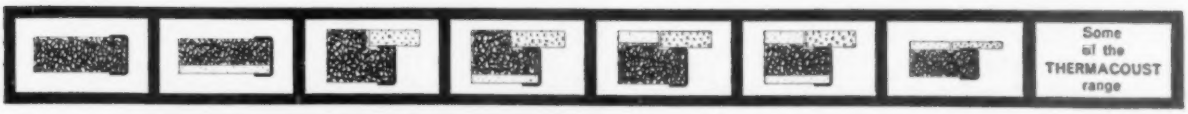

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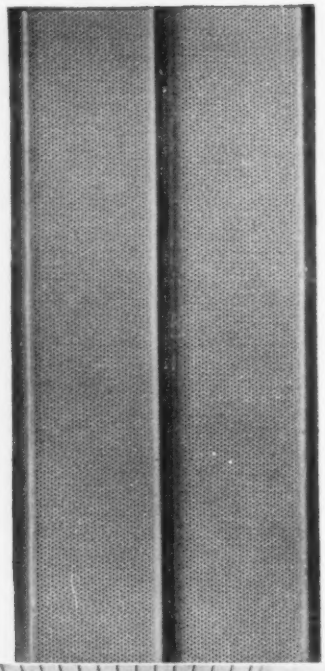

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for architects....

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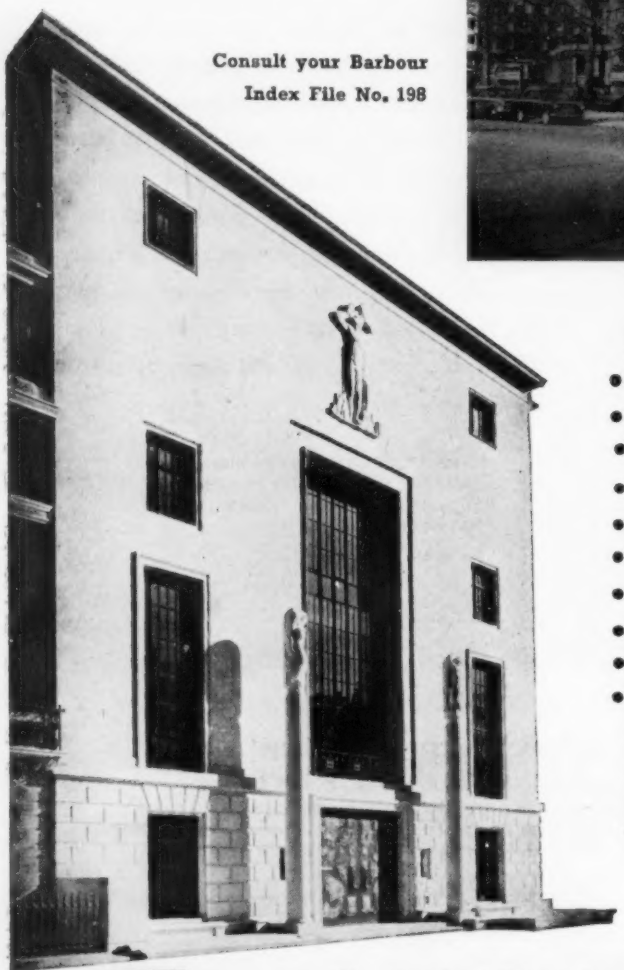

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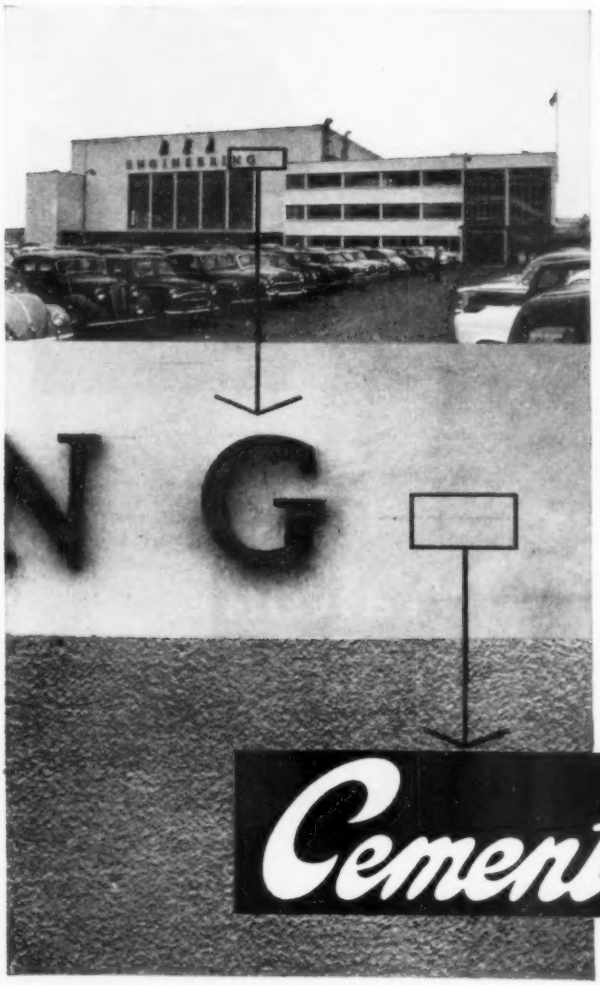

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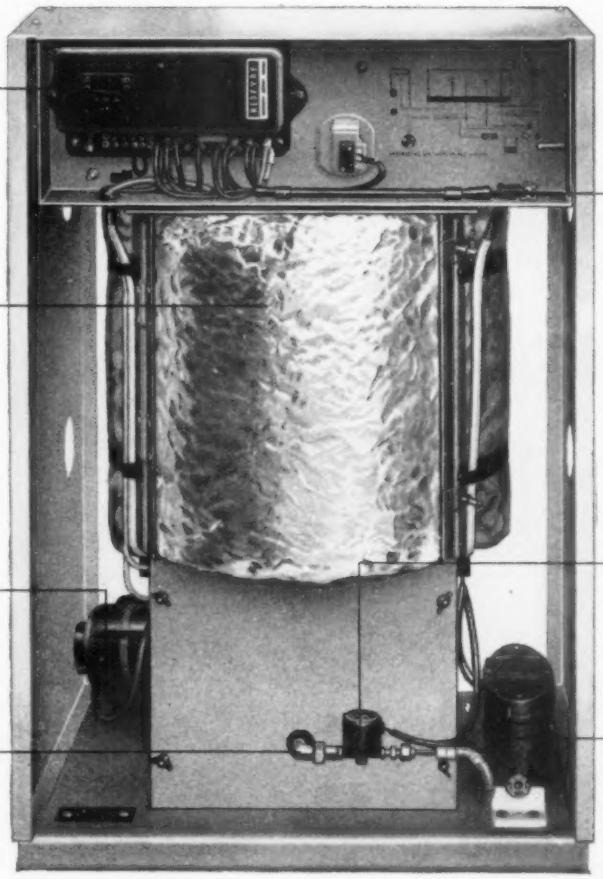

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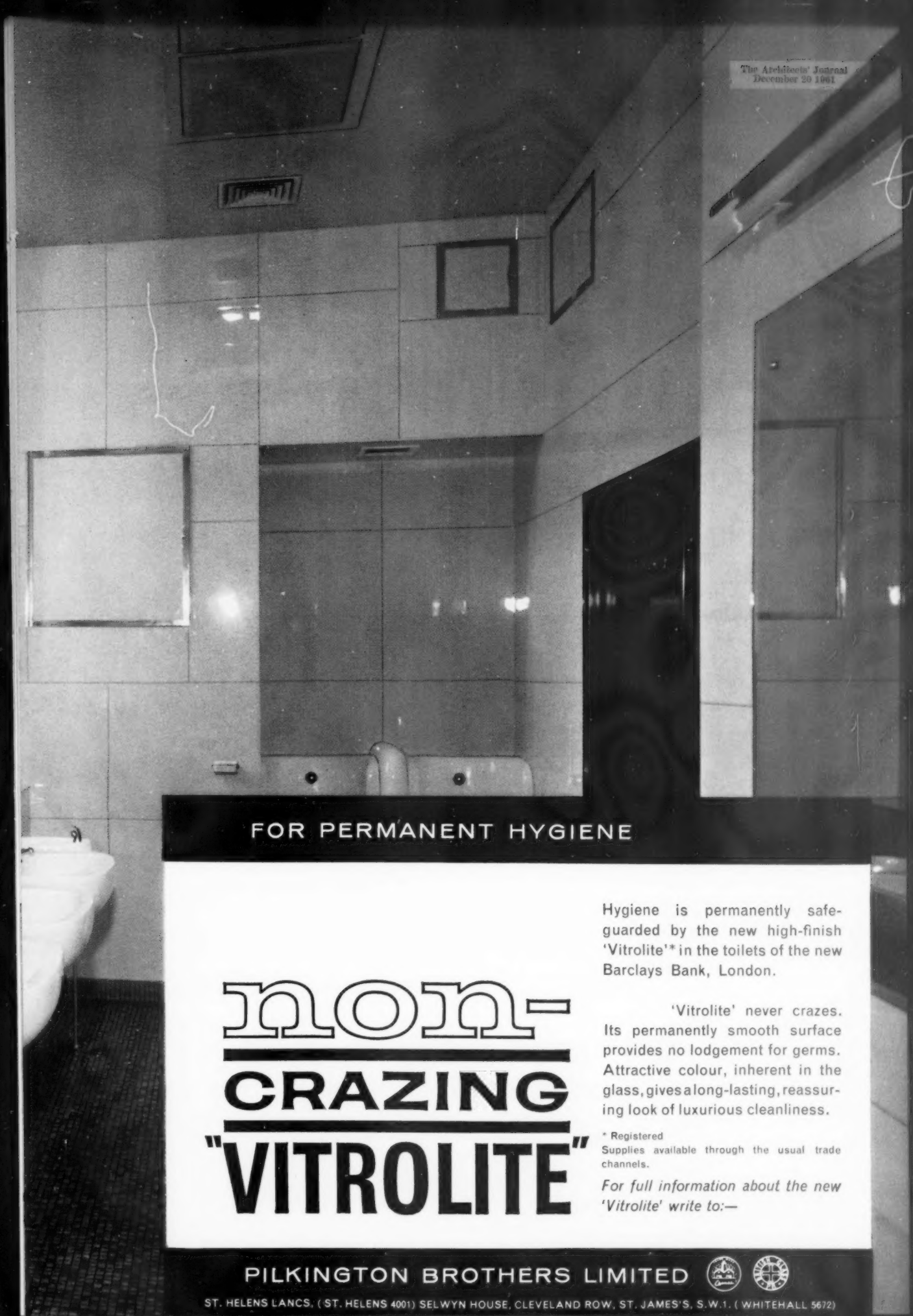

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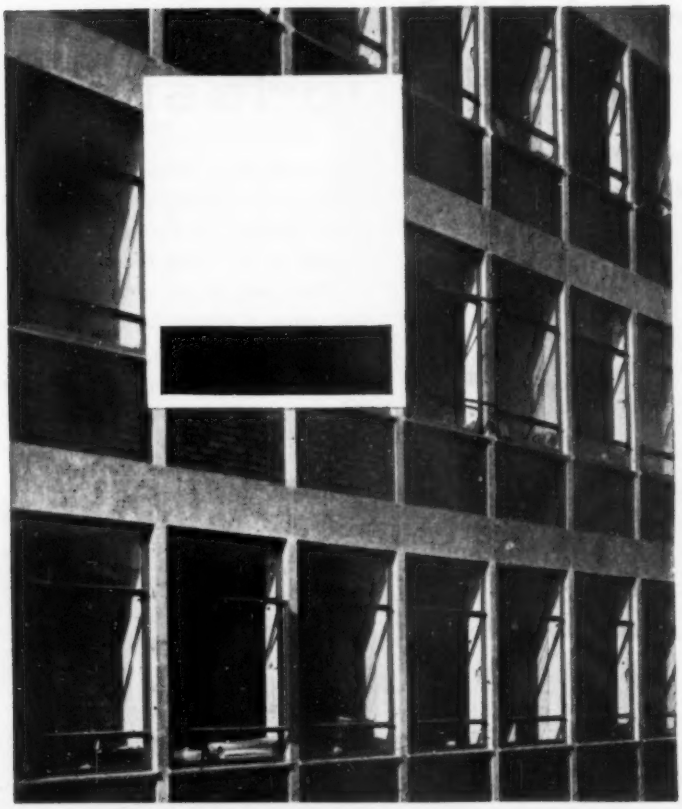
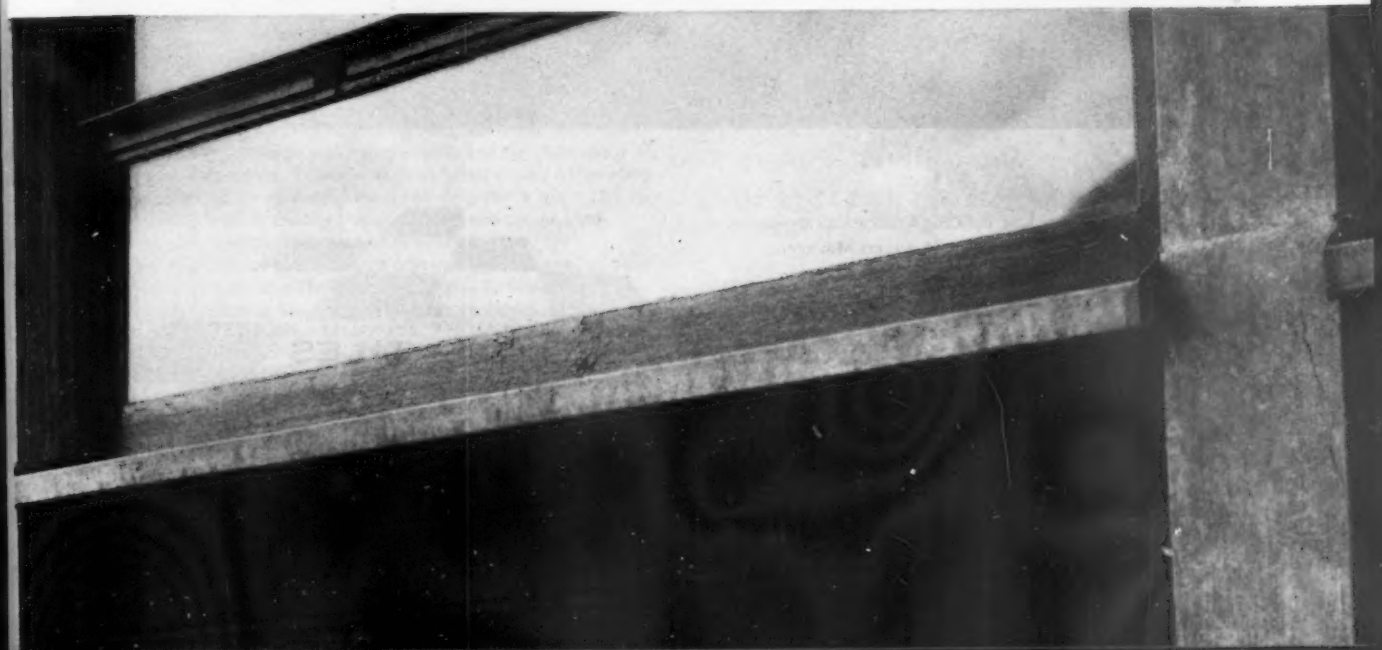
ZINC

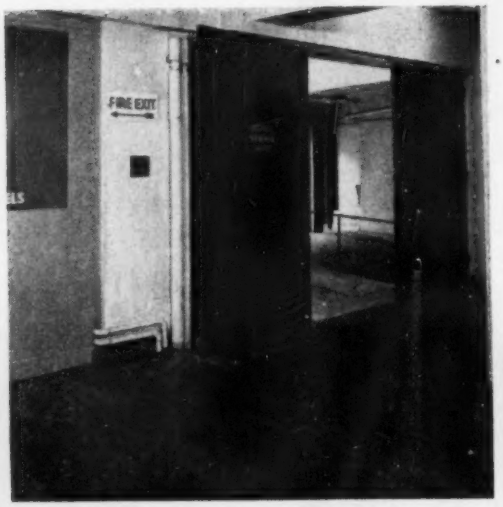


Zinc for neatness and precision. Simple to fabricate, durable and economical, zinc is ideal for all weatherings, such as these cills on the British Iron and Steel Research Association laboratories at Battersea by Morrison and Partners. For information and publications on the many uses of zinc, telephone or write to the Zinc Development Association 34 Berkeley Square W1. GRO6636



After three years in use at the George Newnes Limited premises at 15, Long Acre, W.C.2, Poly-Flor p.v.c. flooring shows no signs of heavy wear even in the busy despatch loading bays where weighty loads are constantly being trucked out.

POLY-FLOR
is laid to last...



90 gauge sheet form Poly-Flor in an attractive marbled green, shade 107, has been laid on six floors of the Newnes building including the floors in two general offices used by 200 girls. Despite fashionable wearing of stiletto heels, all the flooring is in perfect condition, and a weekly wash-over is all that is required to maintain the smart appearance of these floors.

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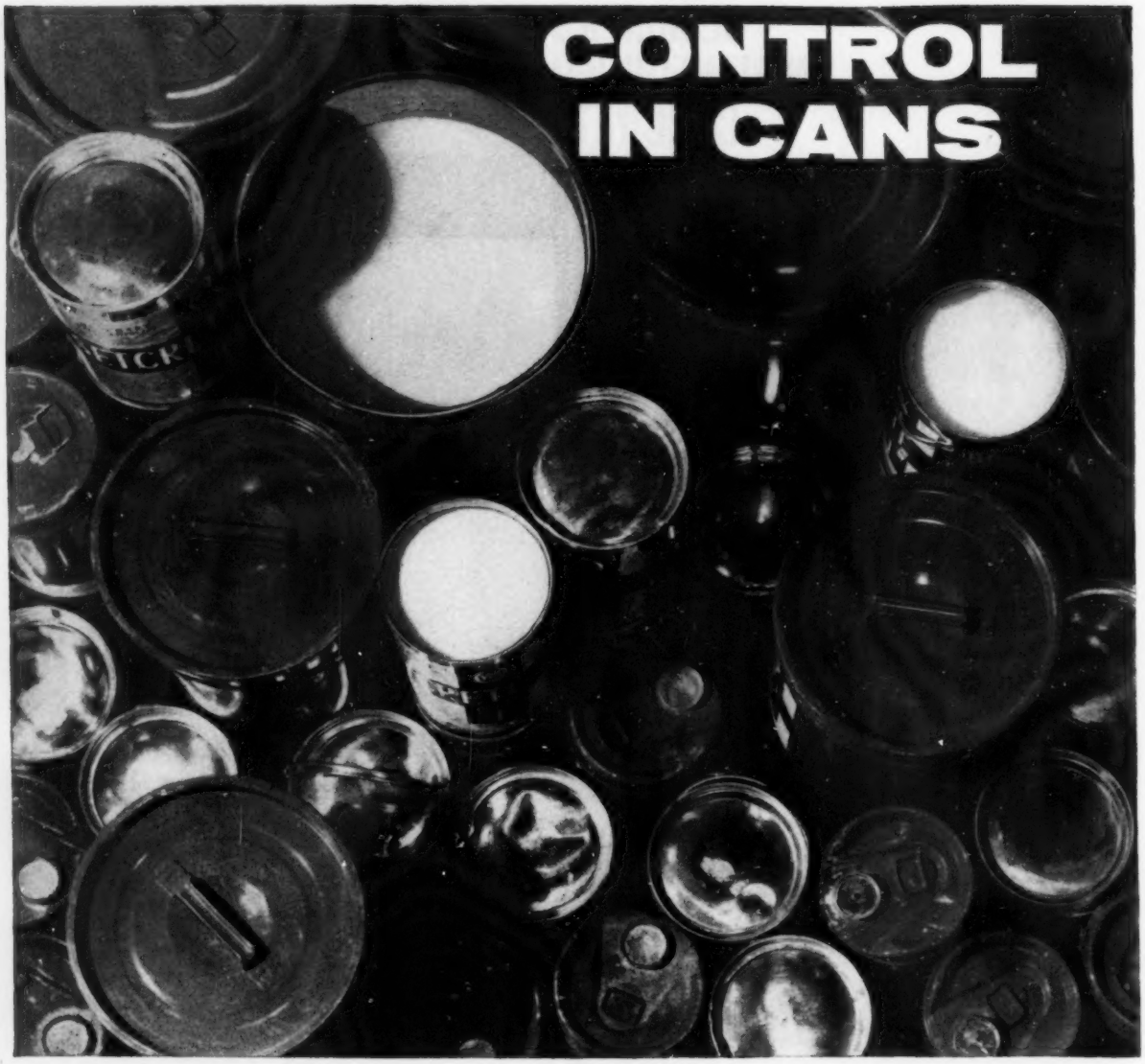

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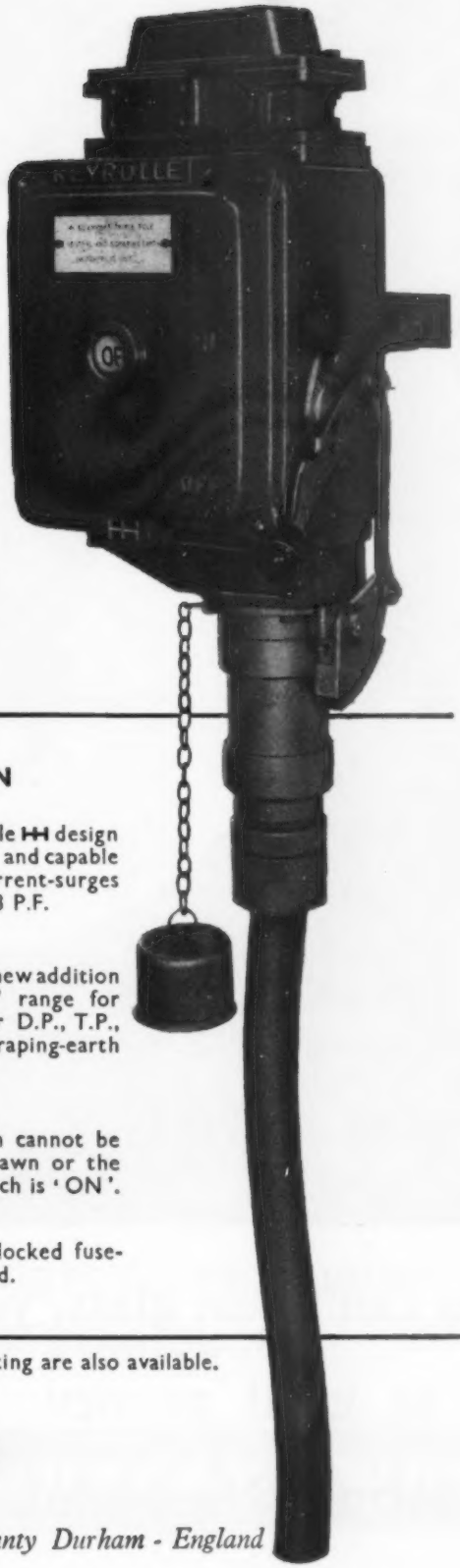

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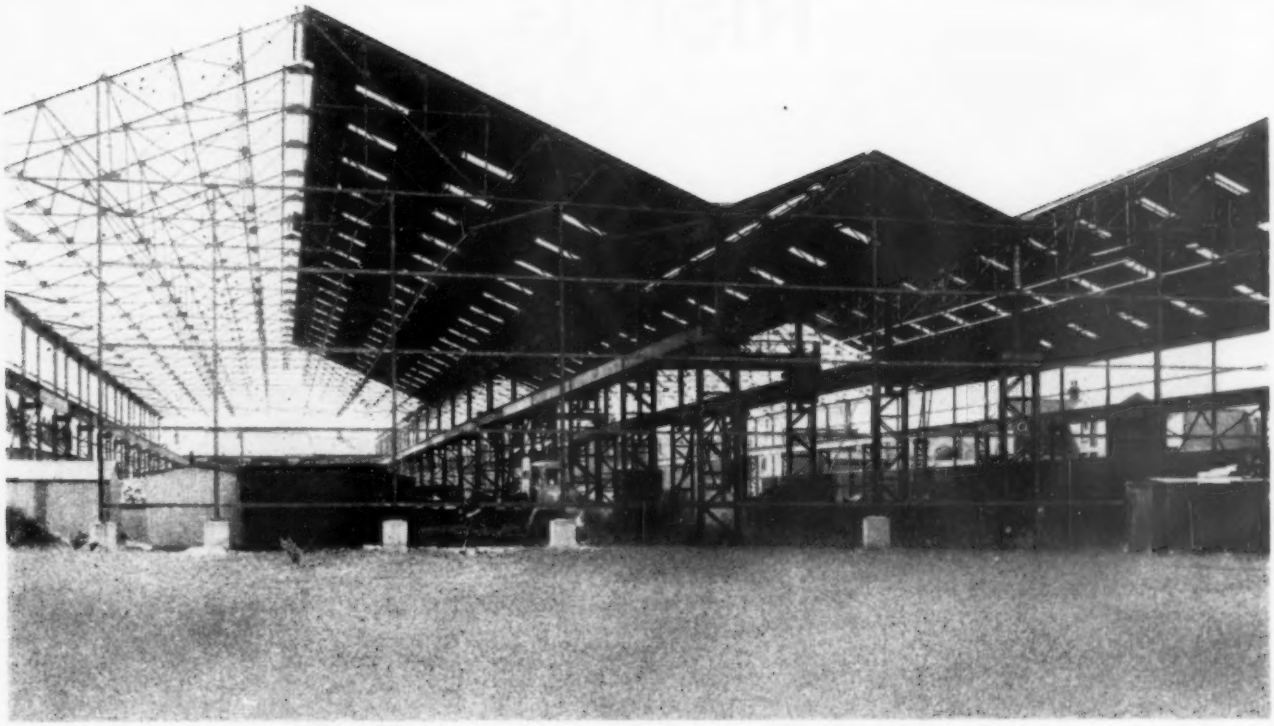
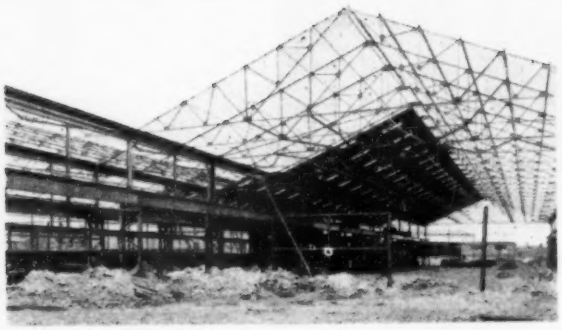
new hot mill buildings





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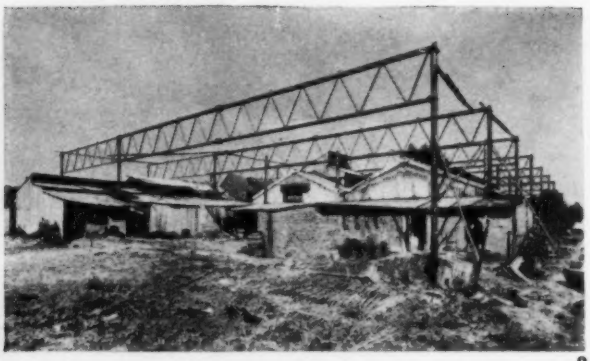

2

3

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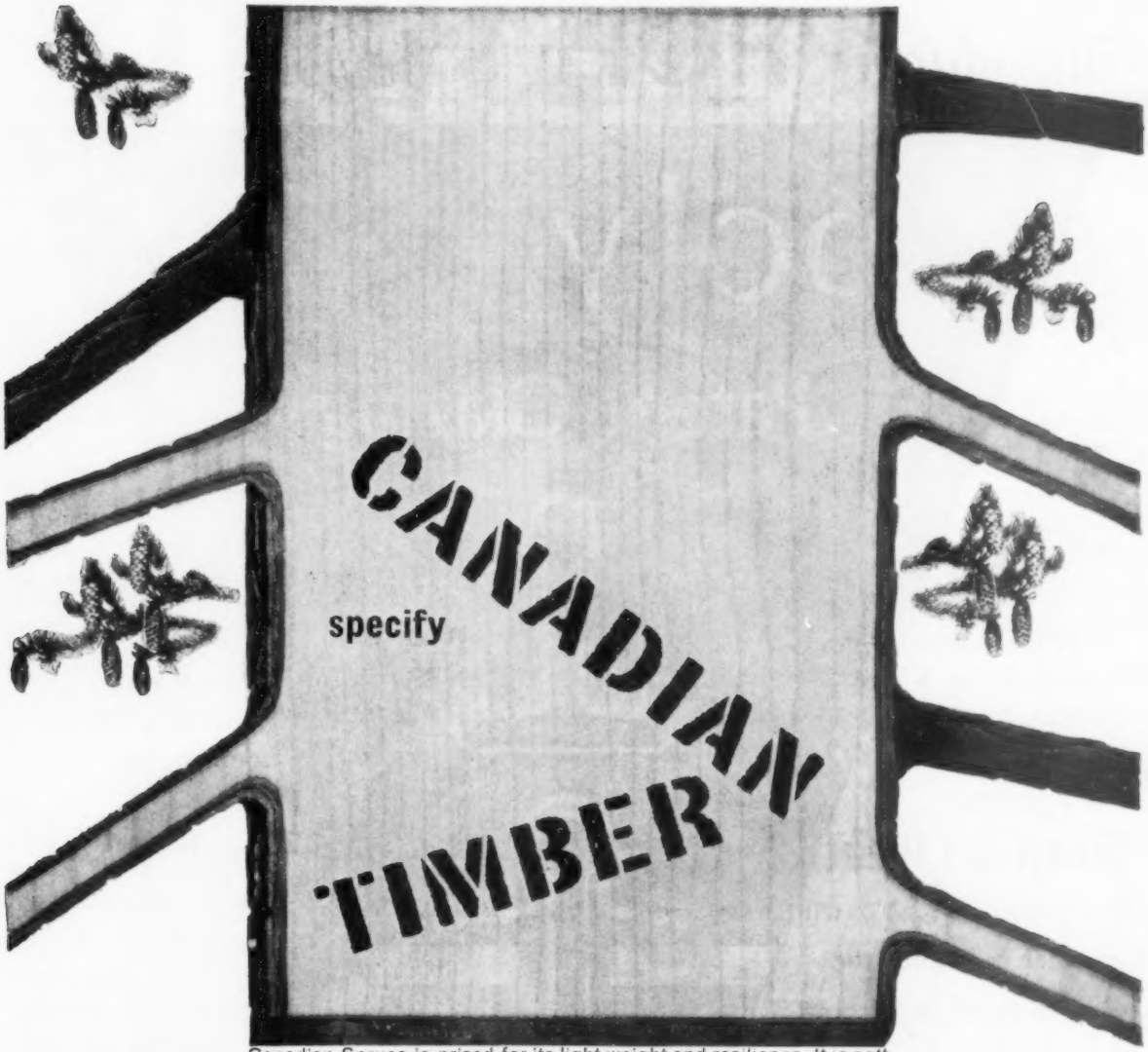

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Construction framing with tough resilient Canadian spruce

KITCHEN PLANNING

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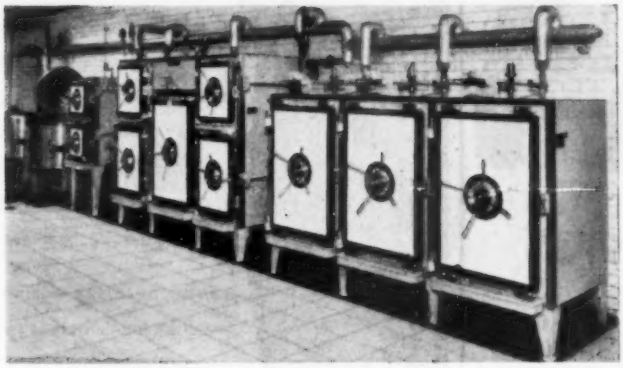
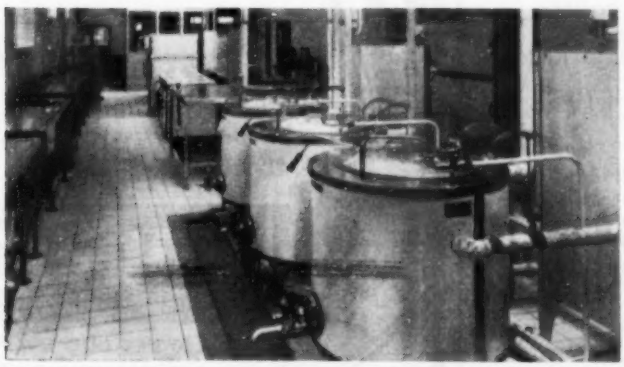


Steaming ovens installed in a hospital kitchen in Yorkshire. Moorwood-Vulcan specialise in kitchen planning on all scales.



These boiling pans are part of a recent contract for the planning and installation of kitchen equipment for a large works canteen.

A JOB FOR EXPERTS

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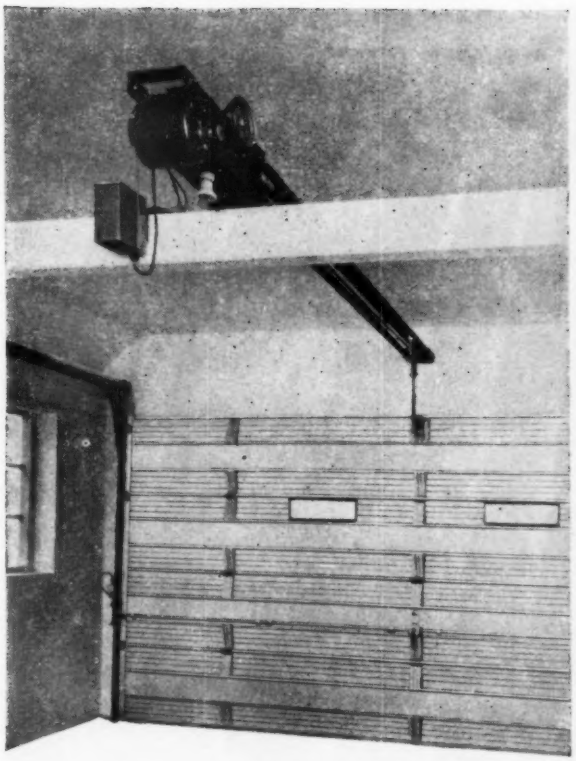

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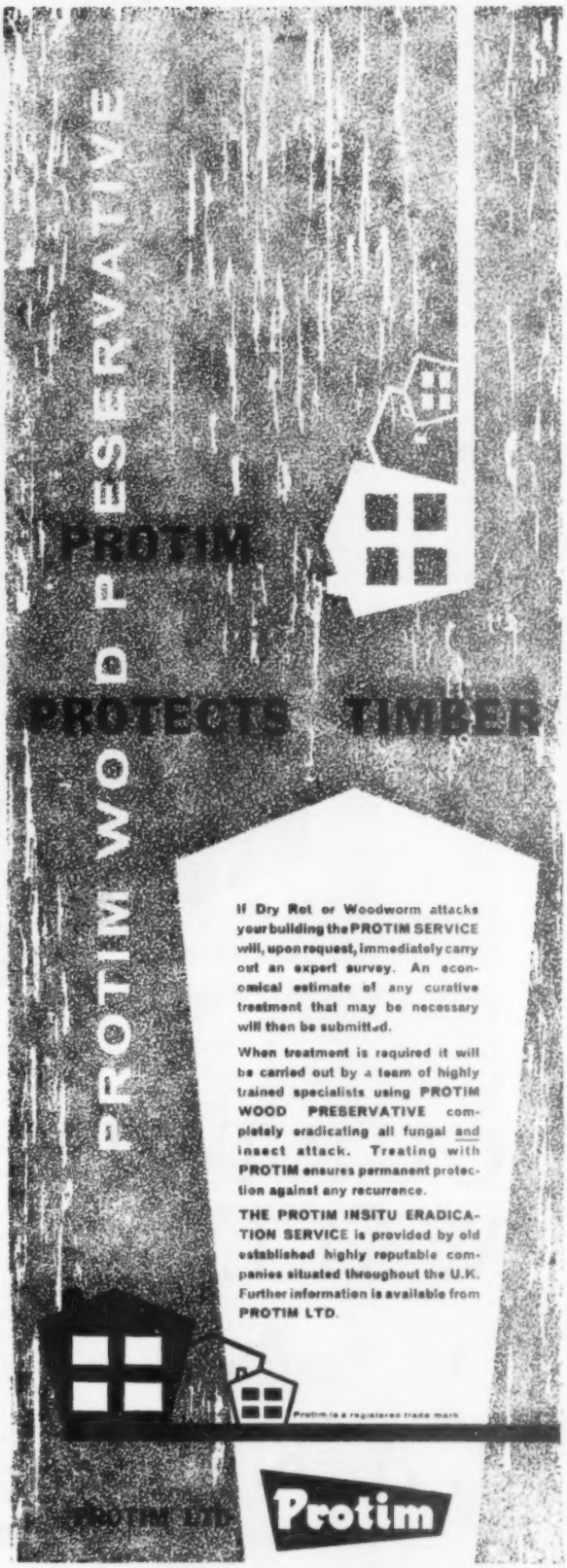

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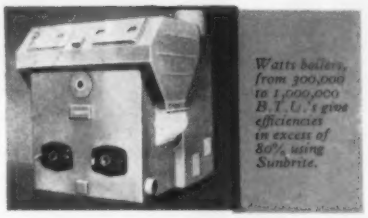
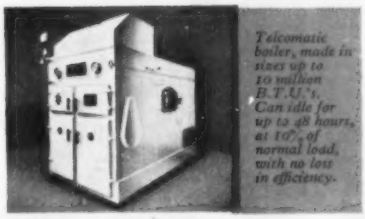
One of the garages (shown above) served by a Newton Chambers Redfyre Emma (on left). The fuel is fed to the hopper by skips.



Watts boilers, from 300,000 to 1,000,000 B.T.U.'s give efficiencies in excess of 80% using Sunbrite.



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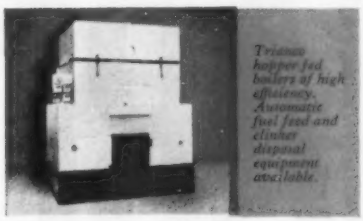
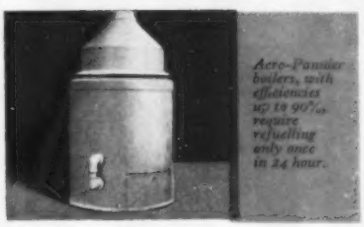


Trianon hopper fed boilers of high efficiency. Automatic fuel feed and clinker disposal equipment available.



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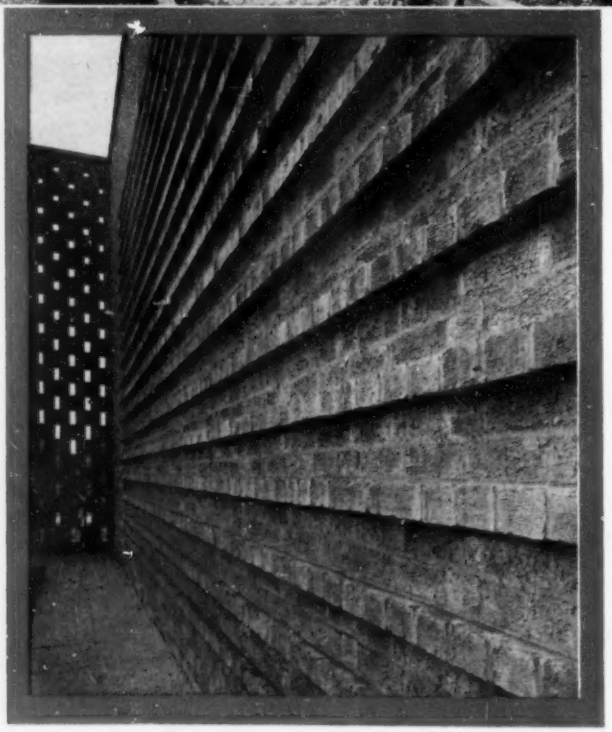

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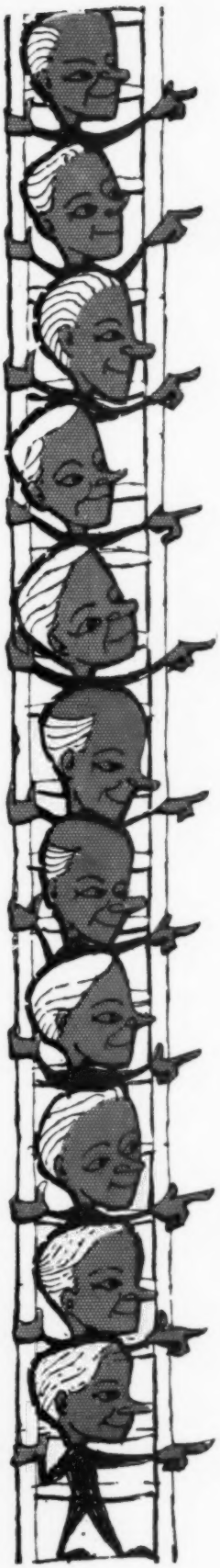

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The Architects' Journal

Volume 134 Number 25 December 20 1961

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NOT QUITE ARCHITECTURE

Toys

Old Testament Adam was lucky: he was at the apex of his family tree. As a result he gave Eve presents when he felt like it, instead of when custom and commerce dictated, and had the minimum of relations to worry about.

Seen from our point of view that was an enviable position for unlike Adam we live in an age of commercial Christmas and tend, for most of our lives, to occupy middle positions in huge pyramids of relations. It was different, I remember, as a child. Then I was at dpc level in my pyramid and I used to think that the aunts and uncles above me were the real problems to find presents for. That was partly because they seemed to have everything and partly because the money to buy their presents didn't exist until one of them had started an unvicious circle by giving me some.

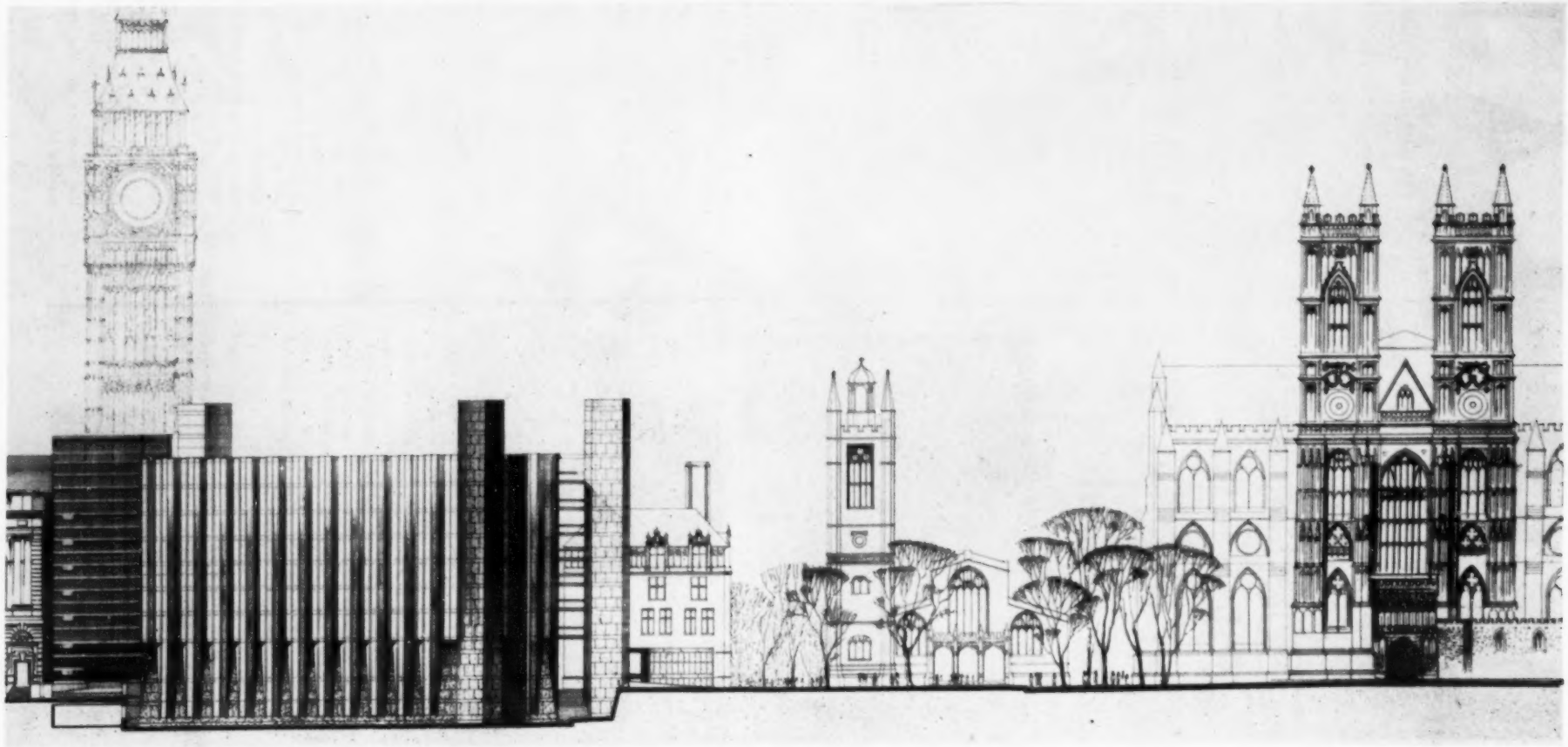
Unfortunately times have changed. Now the pyramid extends not only upwards but far below me in course after course of nieces and nephews like bricks in English bond.

Obviously toys are the best presents for them. Probably they have bags full already, but if they are to become full-blooded members of our acquisitive society, they may as well be given more. Christmas is, after all, a ritual of materialism by which we indoctrinate the young with the belief that salvation lies in piling up the maximum of this world's kit.

Broad Sanctuary—the winning design

This is the winning design by William Whitfield in the MOW competition for a conference centre and office building on the site opposite Westminster Abbey previously intended for a new Colonial Office. Work on this was suspended at an early stage nine years ago after the design had been severely criticised in the House of Lords. The west elevation of the winning scheme is shown below in relation to the Abbey, St Margaret's Church, Big Ben, and the just visible Middlesex Guildhall next door to the site. Not shown in this direction, of course, is the massive bulk of Central Hall to the west. But competitors were asked to leave the south end of the site free above ground, so that the whole of Central Hall would remain exposed to Broad Sanctuary.

The aim of the winning scheme has been to recognise the strong vertical emphasis of repetitive elements which is the common characteristic of the Abbey and much of the Palace of Westminster, and to interpret it in a way which is appropriate to the new building. This has been done by such features as the undulating fenestration of upper floor offices, and three detached staircase towers. At the same time a mainly solid frontage is created on to Broad Sanctuary, so as to enhance the feeling of enclosure, even though this is, at least at present, rather disrupted by the diagonal flow of traffic from Victoria Street. For further details see page 1231.



So away I steamed to one of those toy shops that are full of clever objects designed by sensitive people who seem to have put their minds into a cerebral orange squeezer in order to press out something suitable for children. The result is toys for squashed grown-ups, never so obvious or odious as miniature cocktail shakers, but never so sublime as a cardboard box with its bottom pushed out that a child's mind can translate into a charger in the wild armies of Genghis Khan.

*

In the shop my eye was caught first by some psycho-educational toys by which children are reputed to acquire skills such as manual dexterity. The best one consisted of red, blue and green knobs stuck into holes in a yellow board. Cold, November wind had turned my hands stiff and blue so I tested the toy by trying to become manually dexterous. Marvellous! The knobs performed beautifully and soon my fingers were as supple as a judo instructor's biceps. But who has ever met a nipper who found the slightest difficulty in the far more meticulous job of hooking an engine driver from the tiny cab of a model railway engine or, for that matter, in eating him. So much for manual dexterity.

Dolls with eyelashes a yard long and pink succulent lips caught my eye. Splendid for men lusting after Lolitas and BBs but children are not as childish as we are. They can be amused by golliwogs as abstract as paintings by Mark Rothko. This drove me on to look at fretwork animals, smoothly sandpapered and stylishly coloured. The best were German—pink pigs, black horses, orange cows, white sheep and green elephants, all stylised and robust, and all about the same size.

*

Out of the window went preconceptions about the logic of German design. Miniature poodles yes, miniature golf courses perhaps, but miniature elephants NO. What a miserable source of confusion these phony pachyderms would be for children playing with them.

Surely if we must accept Swedish gibberish for the label of our architectural filing system, contemplate driving on the wrong side of the road *in England* to suit a lot of misguided tourists and even decimalise our coinage for the benefit of conformist foreigners, people like the Germans should in return accept the results of British research into elephant proportions. Damn it, didn't we shoot the blighters in Africa and India?

Happily at this juncture I spied some Plasticine. It smelled right, felt right and cost right so I bought sticks for all my relations. It's reassuring to think they will now be able to model anything they like to British proportions. Down with non-modular German elephants.

T. M. P. BENDIXSON

The Editors

AS I WAS GOING THROUGH PARLIAMENT SQUARE I SAW A PLAN THAT WASN'T THERE . . . .

The Broad Sanctuary/Great George Street area is a typical site meriting comprehensive redevelopment, as has been repeatedly stated in the AJ. There are only four occupants: the County Offices of Middlesex (soon to disappear, presumably, in the reorganisation of Greater London), the Royal Institution of Chartered Surveyors (which is considering redevelopment), the Institution of Civil Engineers, and the Ministry of Works: and it should not have been impossible for such enlightened bodies to have agreed a phased, three-dimensional redevelopment of the site.

With this in mind, we cannot greet the results of the Broad Sanctuary competition (see opposite, and pages 1231 to 1246) as anything but a demonstration of an omission to plan fully for the maximum public and private good. This would hold good, however satisfactory the design might be when considered in isolation, or only in its relationship to Westminster Abbey. Unfortunately the winning design makes no contribution to the better functional design of Government offices: it has the usual long dreary corridors with banks of offices on either side. In terms of office design—of creating a stimulating and enjoyable environment for office workers, it is no marked advance on the product of the last Government competition, the ponderous Air Ministry building, Whitehall Gardens, won by Vincent Harris in 1915. Faintly reminiscent of Kahn's medical building for Pennsylvania University, it appears fashionably "contemporary," but whether it is the best solution for linking the vast bulk of Central Hall, the small-scale Gothic revivalism of the Middlesex building and Westminster Abbey opposite seems very doubtful. If this design meets opposition, as well it may, it should not however be faulted so much for its appearance, unsatisfactory though this may be in certain respects, but because the competition conditions were basically at fault.

We must give thanks that the old design for the Colonial Office has been abandoned, and congratulate the Government

for that: it was a piece of surprising initiative to hold a competition. Architectural competitions are not necessarily the best method of securing satisfactory long-term solutions, however, particularly where joint decisions are required from the owners of parts of the site which should rightly be treated as a whole. The pity is that this enterprise has been on the wrong lines from the start.

SETTING AN EXAMPLE

Two cheering examples of local initiative, well ahead of the habitual thinking of Ministers or building industry, are reported in this week's AJ. One comes from the Warwickshire village of Claverdon, the other from the Bedfordshire county planning department.

Claverdon is one of those convenient and pretty villages which stands to be " developed " when it gets main water and sewers in a couple of years' time. Instead of waiting anxiously for the arrival of the spec builder in the surrounding fields, Claverdon's Parish Council initiated discussions on the future of the village which have resulted in a local preservation society (surely the smallest in Britain?) being established, and in the production of a three-dimensional plan for phased growth of the village, designed (in their spare time) by Arthur Ling and R. S. Johnstone. Moreover, a model of this plan has been made and thoroughly discussed by villagers in their community hall—they have even decided what shops they will need when they double the population. For once, the people most concerned have undertaken to fill the gap that exists between zoning plan and development controls, with a three-dimensional scheme to ensure that, since development is certain, they, the villagers, will keep control of their village.

The other welcome initiative comes from Bedfordshire's county planning officer, P. G. Laws, who is determined to do something to rid private developers of " 1930 thinking " by collecting together and publishing the best samples he can find of private residential developments at higher densities in all parts of England. He has asked other counties and county boroughs to help by sending him such schemes.

Mr Laws is not an iconoclast, he is only suggesting schemes of up to three storeys at densities of 12 to 20 dwellings to the acre, but even this is an advance on most of the spec building that is going on, and the very modesty of Mr. Laws's appeal ensures him of a fairly wide range of developments from which to pick and publish the best.

We wish them all an exceptionally merry Christmas in Bedford's Shire Hall and in the Dorothea Mitchell Hall at Claverdon.

BEERIBA

An architect must love pubs before he can design one, Ian Nairn told a Design and Industries Association lunch the other day, and sensibly suggested a special exam—a liquid one, for pub-planning architects. Nairn's subject was " Pubs in Peril," and he complained that these profane edifices are suffering from brewers' attempts to ape coffee bars, instead of making you want another pint. A good pub, said Nairn, is characterised by " good beer, a good landlord and a framework to sink into as the evening wears on." Delving into this framework he pointed out that designing pubs is difficult because, like churches, their spaces are loaded with psychological importance—" the bar space has to be coherent so you can put it on like a coat." Breweries would not make the mistake of clinging to details and throwing out the spirit if they would undertake research, taking groups of drinkers on expenses-paid pub crawls, to gather data on consumer reactions.

*

One example quoted by Nairn was the slightly larger than half pint glass introduced by one brewery, a classic example of failure to understand pub psychology because it banishes the joy of the foaming, overflowing glass of beer.

Gilbey's wineshop in the centre of the tough, ugly and exhilarating city of Belfast has just been "remodelled," retaining only the 1880 fascia and carved columns with their capitals of entwined shamrocks but doing odd things behind it because the first floor has been lowered six feet. Robert McKinstry, who did the job, is a Belfastman, but doesn't seem, by the interior, to have noticed that Belfast is no Regency city, and this is hardly a drinking den that a fellow Belfastman could "put on like an old coat" (see BEERIBA).

HENRY MORRIS

ASTRAGAL was reminded that the sands are running out for the pioneers of modern architecture when he read of the death of Henry Morris, the Cambridgeshire educationalist who created the village college, the most famous of which is Impington. He had the vision to commission Walter Gropius and Maxwell Fry for Impington in 1937, and his name should be remembered by British students of modern architecture for years to come, not only on that account, but because he helped to lay the foundations for the development of educational building today.

SUCCESS STORY

William Whitfield, who, as announced elsewhere, has won the Broad Sanctuary competition, is not perhaps as well known to the profession as he should be. As a young man he joined Professor J. S. Allen and as associate architect designed the new mathematics and geography and main lecture room block at Durham University: the first university building of any consequence to be designed since the war. He next made a mark when with George Kadleigh and Patrick Horsburgh he designed the New Barbican project, the first real large-scale comprehensively planned, multi-use central area project to appear in this country. It was this pioneer work that started the City Corporation thinking and helped pave the way for the Chamberlin, Powell & Bon scheme. Since then, in partnership with Raglan Squire, he has largely been concerned in planning commissions, notably a plan for Mosul (Nineveh) in Irak, and a master plan for the University of the Punjab at Lahore.

*

The assessors of the Broad Sanctuary competition are no doubt feeling a faint relief on having chosen such a competent architect. Nevertheless the design should arouse controversy.

*

Mr Whitfield is only 41 years old, still a young man as architects go. ASTRAGAL has no doubt he will produce many more surprises and controversies in the future.

SEASONAL TICKET

Last-minute avuncular shoppers should know that MOW Christmas cards contain season tickets for all historic buildings and ancient monuments. They can be bought for 7s 6d (or 2s 6d for under-fourteens) from most HMSO bookshops or from head MOW offices in London, Cardiff or Edinburgh. With the card you get a neat booklet listing opening times of everything from forts on Hadrian's Wall to Hampton Court and maze.

NOT ON THE CARDS

Up goes the AJ's circulation and with it the number of the staff's friends, acquaintances and enemies So much so that the Christmas card list is at last, regrettably, too large to be handled. But congratulations to Gordon Cullen whose contribution to the AP's post-war cards can be assessed at an AA exhibition, open until January 12. And Christmas greetings to all readers—particularly to SfB filers, who probably need them most.

ASTRAGAL

LETTERS

Per Gradus

G. J. Foxley
hon. secretary, Association of Official Architects

Michael S. Stainton

Mrs M. Glass
librarian to Munce & Kennedy

Thomas Peatfield, ARIBA, *and Geoffrey Bodgener*, ARIBA

Richard C. Hosford, ARIBA, AAD

Howard W. Gatling, ARIBA

Patrick D. Hamilton

Robin J. Pearce-Boby, DipArch, ARIBA

One year's delay

SIR: We have clients on whose behalf we submitted plans of a small factory to the local authority on June 7 this year.

After resolving sundry minor criticisms of the proposals with the building inspector, fire prevention officer, area planning officer and others and amending the drawing accordingly, we were verbally assured that the project would be approved.

We then received a planning refusal notice dated October 12, four months after the submission of the application, citing the Minister of Transport's objection to the proposals on traffic grounds. Acting on our clients' instructions we forthwith lodged an appeal with the Minister of Housing and Local Government.

We have just learned that an inquiry will be held on April 17 and as the Minister's decision is not likely to be known until a month or two thereafter, a full year will have elapsed since the project was first submitted to the local authority.

No doubt many of your readers have had similar frustrating experiences, as indeed we have, but what possible justification can there be in this jet age for such dilatoriness in considering a small building project?

As we do not wish to prejudice the issue of the appeal in any way we must subscribe ourselves anonymously as—

PER GRADUS

Salary structure in Local Government

SIR: I should be glad of the opportunity to give the Association of Official Architects' Executive Committee's immediate comments on the recently notified proposals submitted by the staff side of NALGO on new salary proposals so far as they affect architects in the local government service.

The staff side of NALGO did not consult this association prior to the formulation of its proposals despite NALGO having this association's paper on *Salaries and grading of architects in local government* in September, and NALGO being requested by letter in October 1961 to consult this association to discuss any proposals relating to salaries and service conditions of architects in local government before any proposals were submitted to the employers' side.

Neither has the RIBA been previously consulted, though NALGO has been informed that this association would deal with matters affecting salaries and conditions of service of architects in local government, in agreement with the RIBA.

The proposals are for architects and architectural assistants and appear under the heading "architectural assistants" whereas NALGO was advised some time ago that the Purple Book should be properly amended to read "architects, assistant architects and architectural assistants" in order properly to designate registered and unqualified and unregistered persons.

The proposals by NALGO bear no significant relationship to this association's proposals which were formulated to face the real issue posed by the problem of properly remunerating architect service.

These views have been notified to NALGO and to the other professional associations in local government (representing solicitors, financial officers, education officers, and engineers and surveyors).

G. J. FOXLEY
London W1

SfB

SIR: The word "element" seems to be badly and confusingly used at the moment in your filing system. C/X comprise the basic elements of construction, products before fixing: (1) and (2) comprise the parts of a building and its surroundings, which might loosely be termed the elements of a building as opposed to the elements of building: (3)/(6) comprise what would more correctly be called the components of a building, or, of building.

Therefore, I think you should rename your preclassified files "Component File Studies" and "Component Design Guide," and leave the word element to the really basic items. This may seem like splitting hairs, but the confusion exists and is shown by your own double logic against John Brunton (AJ 21.11.61), about the precedence to be given to C/X or (1)/(6), products before fixing or assemblies before items. You "cannot accept—that construction comes logically before elements." Few would, since elements are more basic than construction. But, you say, "It is quite wrong to argue that, because elements are usually made up of construction components, the components must, therefore, come first."

Unless we perceive that "elements" are not now so elemental as at first appeared, your argument might seem to be proved, for most would agree that it is wrong to say that elements are made up of components and it is easy to transfer this thought of wrongness to the argument that if elements are made of components then components come first. Your analogy of words and letters it quite plausible, but it really contradicts your argument. The architect does usually start with a notion of the larger items and looks for the smaller ones to fit, and that is precisely why SfB should reverse the thought process and give first what he is looking for.

This brings me to suggest that the success of the scheme depends on having all advertisements preclassified accurately and with all references, so we can choose our own order and refer across. Could the different publishers combine and classify the entries themselves, perhaps making a small charge, or agree to accept only entries which are classified?

MICHAEL S. STAINTON
Edgbaston, Birmingham

The word "element" in SfB is only applicable to the major parts of a building (floors, walls, etc) or to a service; it is not applicable to "elements of construction," C/X, and I hope that we have never used it in this sense. Our Element Files and the Element Design Guides which they contain are surely correctly named as they are concerned all along with the design of an element. The question of whether we give preference to an element classification over a construction classification arises only where we have to deal with a product which can only be used in one element or where the piece of literature concerned is concerned only with the use of the product in one element. By giving such a preference, we claim, we are ensuring that as much information as possible will coalesce in the Element Files, so that the architect having an element to design will find most of his constructional data ready to hand. We are hoping that in time new trade literature will be written dealing systematically with the use of products in each element. If this preference is not observed and if all products find their way into the construction or materials files, then this specialised literature will not be written and the architect will have to make the round of the construction and materials files every time he designs an element.

We agree that preclassification of advertisements is desirable, but there are so

many different ways of approaching the problem of classifying that it may be some years before all classify in the same way.—THE EDITORS.

SfB: Housing for old people

SIR: It is sometimes rather difficult to trace a consistent pattern in some of the AJ articles classified by SfB. In particular, I should like to refer to "Housing for old people" (AJ 8.11.61) classified as (98) and similar articles, eg "The housing needs of old people" (AJ 11.5.61) classified as (94). I should be grateful if some guidance could be given on the choice of classification numbers in these two instances.

M. GLASS
Belfast 7

SfB (94) *Health and welfare buildings, includes homes for the aged.* SfB (98) *is housing. The article* (AJ 8.11.61) *described housing, not a "home", so it was classified as* (98). *Further thought, however, shows us to have been wrong, as all useful information for designing for old people would tend to go into* SfB (94)—THE EDITORS.

Foundations: Footings

SIR: We think it will be generally agreed that un-reinforced oversite slabs should not normally be taken into the thickness of walls, cavity or otherwise. We are prompted to write by your editorial footnote (AJ 29.11.61) in which you suggest that an exception might be made if the fill under the slab were unsatisfactory. If there is any question of differential settlement between the wall and the oversite slab it is all the more important to separate them structurally since otherwise the slab will fracture, and in a serious case may even tip the wall out of plumb.

THOMAS PEATFIELD
GEOFFREY BODGENER
LONDON, WC1

SIR: Further to the letter from Mr Tyldesley and your reply on the subject of oversite concrete slabs, it is highly unlikely that hardcore remains firmly compacted under oversite concrete for any great length of time.

Good building practice is to cast a lightweight fabric into the slab in all cases. If the ground it known to be unstable a heavier mesh can be used. This is not expensive and saves all the problems mentioned in the letter from Mr White, published in the same issue.

RICHARD C. HOSFORD
London NW8

SIR: The method of stooling concrete 1-in on a 5-in slab to coincide with brick joints may be common practice in some details, but I doubt whether these are generally adhered to on the site.

Only on a few occasions have I encountered stooling of this nature and then it has been on public buildings where the finished floor level coincides with a brick course, and where this level is revealed as the top of a long external step.

The most obvious way to form the extra 1in is to create a downstand with the hardcore forming a permanent shuttering behind. Should the floor level be predetermined then allowance can be made to the depth or thickness of the foundation.

H. W. GATLING
Little Tew, Oxfordshire

SIR: I note that on Information Sheets Nos 1022, 1023 and 1024 (Foundations; Footings; piles, AJ 8.11.61), floor screeds over DPC membranes are consistently shown as 1½in thick.

Ministry of Works Advisory Leaflet No 5, *Laying screeds as an underlay for floor coverings*, states that "when laying a screed over a damp-proof course . . . the screed should be at least 2 in thick."

Does this represent a divergence of opinion, or is the extra ½in demanded by MOW due to the difference between a conventional type of DPC and a membrane?

PATRICK D. HAMILTON
Dublin

Although some manufacturers of bitumen solution damp-proof membranes recommend a 1½in thick screed, the Information Sheets should have shown a 2in screed, which is normal practice. We are grateful to Mr Hamilton for pointing this out.—THE EDITORS.

SIR: After your first-rate pioneering in and consolidating of the SfB system, I was appalled to see you supporting methods of construction more complex and costly than tried and proved processes. I therefore basically support the letters of M. G. White and A. J. Tyldesley and put forward the following additional points.

Reasonable diligence by the builder, coupled with correct specification requirements and proper supervision will rule out the possibility of the hard core settling to a degree that will affect the concrete slab over.

If the detail is carried out as shown on Information Sheet 1022 and the hard core settles, the slab itself may shear, surely a far worse state of affairs than just simple settlement. Of course reinforcing can be used, but again adding expense. However, should the hard core and slab settle in spite of the reasonable precautions stated, it suggests that proper investigation of the ground properties had not been carried out, or taken notice of. This would have indicated the subsidence possibilities and the probable use of a reinforced concrete slab spanning from "wall" to "wall."

Anyway, why have a 1in upstand on the slab with all the attendant difficulties of shuttering (strong enough for tamping on) and damp proofing; a 1in downstand on the underside of the slab is so much easier. And why does a slab require greater support at its edge compared to the remainder?

Really, this is all basic first year construction principles and I do not wish to expand to a lecture at this level in your correspondence columns.

ROBIN I. PEARCE-BOBY
Headington, Oxford

J. H. ARMSTRONG *of A. J. & J. D. Harris, replies: Concerning the floor slab detail shown on Information Sheet No 1022, I would like to raise the following points: This information sheet is intended to cover foundations for lightly loaded structures. These structures are usually small in scale and very often detailed information of the ground conditions is not available before construction so that it is not possible to predict whether or not any settlement is likely. With this type of structure, the builder himself will probably not employ senior qualified technical staff nor would it be economical for the architect to provide close supervision of the construction at all stages. As I am sure most of us are aware, with the best will in the world, it is not always possible to ensure that specification requirements are met, even if these should be adequate in the first place; which I am afraid is not always the case on a smaller project.*

The possibility of shear failure of the slab around the edge is very unlikely since such a shear failure, even with builders' concrete, requires a superimposed load of approximately one ton per ft run on the 5in ground floor slab. Slab failures in fact, are almost always bending failures due to uneven settlement of fill. For this type of structure, the use of a suspended slab spanning from wall to wall in reinforced concrete would certainly be ruled out on the grounds of economy.

It is a well-known engineering principle, although R. J. Pearce-Boby may not be aware of this since it is not normally discussed in basic first year building design, that all ground bearing slabs are more liable to crack and fail around the edges than they are in the centre. I would refer Mr Pearce-Boby in this instance to the article by Westergaard on "Stresses in concrete pavements computed by technical analysis," which appeared in 1926 *"Public Roads"* (US *Publication*)—7:25.

We agree with Mr Pearce-Boby that some contractors may prefer to provide a 1in down stand on the underside of the slab instead of the 1in upstand indicated on the sketch. This choice could obviously be left to the contractor.

NEWS

VILLAGE WITH A PLAN

Claverdon looks ahead

Claverdon in Warwickshire is the first village in Britain to have drawn up a three-dimensional plan for its own orderly extension, when the expected arrival of main drainage in about two years' time opens it up to the spec builder. The plan has been designed by Arthur Ling, Coventry's city architect, and R. S. Johnstone, who, working in their spare time, prepared a draft scheme. The whole thing was sparked off two years ago by a meeting called by the Parish Council, which invited representatives of the County Planning Office and the Rural District Council to explain their ideas about the future growth of Claverdon. The result was the formation of the Claverdon Village Preservation Society, and the scheme is the outcome. Claverdon lies just outside the Warwickshire green belt, and is just the sort of small community to attract the commuter, since it is agreeably sited on a hilltop where the roads from Warwick to Henley-in-Arden and from Coventry to Stratford meet, and is near four railway stations: businessmen can reach Birmingham in thirty-five minutes.

"Most people," remarks an excellent statement put out by the village Preservation Society, "probably feel that it is large enough now and would prefer to see no increase in size apart from a certain amount of improvement . . . nevertheless the pressure of population in the industrial midlands makes the expansion of towns and villages just outside the green belt areas . . . highly probable. "A group of village people, therefore, decided that the breathing space until the completion of the sewerage and water supply schemes should be used in preparing some kind of plan to guide the future development of the village if and when it took place. This development should be such as to retain the village as a community and also to secure a growth of the built-up area which should be satisfying to the eye, in accordance with modern ideas of town planning, and at the same time be an outward expression of the idea of the village as a community." They found sympathetic backing from the Warwickshire county planning authorities, the Civic Trust and the Regional Standing Committee, set up after a conference of midlands amenities societies held in Leamington this autumn. There is no question, the statement points out, of Claverdon wishing to develop itself, but what the people there are anxious to do is "to direct the inevitable growth of the village so that we can be proud of what we shall be handing over in course of time to the next generation of villagers."

In preparation for the development plan information was collected by the society's secretary, Francis Bromilow, about the village's present social and medical services, transport, leisure activities (revealing an exceptional number of vigorous clubs) and the work pattern of its inhabitants. On this, the lie of the land and the discussions they had attended in the village hall, Arthur Ling and R. S. Johnstone based their scheme. "At present there is a design gap," their report points out, "between the statutory plan and development control, which means that there is no three-dimensional design to guide the individual developers, for while the zoning plan controls the use of land and development controls look after the details of buildings and roads, there is no comprehensive design which ensures that village extensions have the design and landscape qualities which we admire so much in the older parts of villages. The main purpose of this scheme is to demonstrate how this gap can be filled." The scheme is based on the assumption that the population of the village will have risen to 1,200 by 1965, made possible by the new sewerage scheme, and later perhaps to 2,000, which could be phased. The extensions are all contained within the 410ft contour, so that Claverdon remains a hilltop village. Developments are grouped round two existing focal points, the school and village green, and the church and community hall, and a third, the new school—when it is built. The general idea is to provide a circulatory connection between the three, with footpath and road connections between old and new. New shops, new playing fields and tree planting are allowed for in the scheme.

Model of Claverdon's development scheme: main new housing and the only blocks of flats are proposed on the north-west (right of picture) overlooking open views

TPI

Comp and Bett again?

Five positive proposals were put forward as the next steps in planning by Sir Colin Thornton-Kemsley, MP, at the Town Planning Institute this month.

The first was an urgent examination of development plans in the pressure areas to see where white land could be released for development. The statutory green belt should remain inviolate, he explained; but much of the land which planning authorities in the home counties were seeking to sterilise in the name of the green belt should be made available for house-building.

Secondly, planning should adjust itself to the arrival of the city region. The standard conurbations were too narrowly drawn to meet present-day realities. The manifest emergence of the city region required the establishment of a regional planning organisation which, Sir Colin suggested, should take the form of a joint planning board for each conurbation region, with about three-fifths of its members representing the local authorities and the rest nominated by the Minister to represent local interests. The legislation required to set up these regional boards should have a high priority and should envisage an eventual regional pat-

tern covering the whole of the country. Believing that Government control over the economic field should be reduced to a minimum, Sir Colin had no fresh proposals to make in the field of industrial location, but he said he would like to see drastic limitation of office zones in pressure areas combined with severe plot-ratio control in those zones.

As to urban renewal, he thought it was the local authority's job to define the area to be redeveloped, to prepare a three-dimensional plan, to unify land ownerships by compulsory purchase and then to sell or lease sites for redevelopment in accordance with the plan; but because large-scale undertakings of this kind were beyond the resources of most local authorities, whose system of annual accountancy was not geared to costly long-term projects, he supported Henry Wells's scheme for a national corporation to hold and manage all land acquired in advance of local authority needs, and proposed that the Central Land Board should be reconstituted for this purpose. So far Sir Colin had been following well-trodden paths. His fifth proposal, however, was all his own: a solution to the compensation-betterment problem which he said he knew would deeply offend many supporters of the party to which he belonged. By way of preface, he argued the unfairness of levying a capital gains tax on owners of one particular form of investment, and the impossibility of recruiting enough experienced valuers to carry out the necessary assessment of capital values. He also complained of the disparity between the value of land with planning permission and the standard of compensation for planning refusals, which exposes planning officials to stresses which they ought not to be required to bear. What was needed, in his view, was a fair solution to the compensation-betterment problem which also ironed out this disparity.

Such a solution, he maintained, should be based on the fact that the enhanced value of land with planning permission was due to the limitation of the area available for development by planning restrictions: part of this shift in values should therefore be returned by those who benefited from it to those who were denied planning permission. This could best be done, he thought, by requiring all vendors of land and buildings to pay a fixed percentage of the purchase price by way of additional stamp duty, and by making a supplementary payment to owners aggrieved by planning refusals—but only upon a *bona fide* sale of the land concerned. He would make the percentage charge variable between one part of the country and another, so that it might be used as an instrument of positive planning, and would start it in the conurbation regions at a rate of 5 or 10 per cent. This, he reckoned, would suffice to cover the cost of full compensation for planning restrictions and provide funds for acquisition of land for public purposes. DEREK SENIOR

BEDFORDSHIRE INITIATIVE

Encouraging higher densities

Bedfordshire's county planning officer, P. G. Laws, has sent out a letter to most of the county planning officers in England and many of the technical officers of county boroughs, inviting them to supply information to enable him to compile a publication giving details of some of the best examples of residential development schemes in the 12 to 20 dwellings per acre range.

In his letter, Mr. Laws writes: "The Bedfordshire County Planning Committee are very conscious of the need for a more intensive use of urban land. They are further aware that the Ministry of Housing and Local Government's current policy on higher residential densities requires a long overdue reappraisal of the layout and design of the residential environment. . . . It is in an effort to satisfy the very real qualms of district councils and developers" [about loss of amenities and lowered standards in high density developments] "that I am contacting . . . planning officers . . . in an effort to enlist their assistance.

"I would like to compile a collection of examples of private enterprise, residential development schemes of up to three storeys at densities in the 12 to 20 dwellings per acre range, where attention has been paid to new and successful patterns of layout; the dwellings should be competitive in price with those of orthodox schemes and should show that tightly knit grouping can afford opportunities for the creation of a genuine urban environment, together with privacy."

Mr Laws asks for lists of such schemes with details and, where possible, copies of plans, so that he could include the best in a publication which "if sufficient schemes could be illustrated and described in details, with concrete facts about layout, costs, maintenance, etc. . . . could make a real contribution towards answering the doubts of those who are not as yet confident about the visual, financial and social success of such projects, and would encourage developers willing to entertain a departure from the thinking of the 1930s in this sphere."

RIBA

Building components and the architect

An architect, an industrial designer and a manufacturer will take part in a discussion organised at the RIBA on January 9, on the architect's responsibility for the design of building components.

Each will be asked to reply to the following five questions: What types of building components should be designed by a professional designer? In which cases should he be an architect or an industrial designer? When should the designer be on the manufacturer's staff and when should he be a consultant? What abilities does the designer need? What should be his working relationship with the manufacturing firm?

WAR DAMAGE

Final settlement announced

The Government has decided that "sixteen years after the end of the war it would be fair to require owners to begin outstanding repairs at once." To stimulate them to do so, it is proposing to introduce a bill to amend the War Damage Act 1943, by setting a term to war damage payments. The proposals for a final settlement are outlined in a White Paper, published last week, *Final Settlement for War Damage Payments* (HMSO, 1s).

CORNELL UNIVERSITY

Fellowships, scholarships, assistantships

Cornell University is offering financial aids to qualified students for graduate studies in architecture, landscape architecture, city and regional planning, painting and sculpture, as follows: graduate fellowships, stipend $2,000 plus free tuition and fees; university scholarship, stipend $140 plus free tuition and fees; tuition scholarships, value, free tuition and fees; assistantships, available in the department of architectural history, architectural construction, architectural design, city and regional planning, painting and sculpture, minimum stipend $1,250 plus free tuition and fees.

Applications will be accepted until February 10, 1962, and application forms are available from Dean Burnham Kelly, College of Architecture, Cornell University, Ithaca, New York, USA.

CoID

Duke of Edinburgh's prize

Lucienne Day, ARCA, FSIA, and Sir Trenchard Cox, CBE, MA, FMA, FSA, director of the Victoria and Albert Museum, have accepted an invitation from Prince Philip to join the selection panel for his 1962 Elegant Design prize. The two continuing members of the panel are Jane Drew and Sir Kenneth Clark.

Correction

It was incorrectly stated in AJ 6.12.61 that the Consortium of Local Authorities Special Programme was raking in £8,000,000 of royalties from schools using the CLASP system being built in Italy and Germany. It is receiving royalties on £8,000,000 worth of school building abroad.

BUILDING EXHIBITION

Design for the disabled

SfB (94) UDC 725.54

The conference on architectural design for the disabled at the Building Exhibition brought together many specialists in this field and succeeded in giving a clear idea of the scale of the problem. Rather optimistically the conference had hoped to resolve many of the questions under discussion, but the mass of detailed advice from each speaker and the shortage of time made this difficult.

Some advice was conflicting, and two little was known about the economic implications of some ideas put forward, therefore the best news of the conference was that an architect, P. Selwyn Goldsmith, had been appointed by the RIBA and Polio Research Fund to classify and evaluate available information on this subject—mainly from USA, Denmark and this country. His work will take two years and will result in publication of a manual of design information for architects. An interim report will be issued in a few months' time. Mr. Goldsmith is anxious to make contact with architects and other specialists working in this field (c/o National Fund for Research into Poliomyelitis, Vincent House, Vincent Square, London SW1).

Miss Lane Fox, in the opening paper, made the point that disabled people do not want to be reminded of their disability by living in houses full of clinical gadgets. Their environment should be similar to other people's to avoid any sense of being set apart, and essential aids can be unobtrusive if some care is taken with the design. Several speakers asked for more study and consideration of psychological and emotional problems of disablement and it seemed that, by comparison with the data on physical aids, this is a relatively neglected field.

The clearest undertanding of the kind of brief an architect needs came from an orthopaedic surgeon, Mr Norman Capener. He dealt comprehensively with medical problems of disability, listing the crippling diseases and objects of orthopaedic treatment. It was refreshing to hear such a broad statement of the user requirements coupled with understanding that the architect can help to evaluate users' problems and find solutions to them. Other speakers had a less clear view of the architect's role, and fell into the trap of providing as a brief a list of do's, don'ts and ready-made solutions based on their own experience.

Dr Floyd's paper, on the ergonomics of designing for disabled people, urged more consideration of problems of movement, posture and environmental comfort. Among points on heating it was recognised that the sedentary life of the disabled required a warmer environment than usual.

Wheelchairs, and the space they require for movement, were discussed in some detail. A minimum clear door opening of 2ft 6in will allow a chair through; a corridor width of 4ft 6in will allow one chair to turn but will be too narrow for chairs to pass. A new chair with a seat that can be raised from 19in to 29in, giving a much wider range of reach and activity to the disabled person, is also fitted with a platform that allows the occupant to stand on it without tipping.

The afternoon session concentrated on new and adapted buildings for the disabled. Sheppard Fidler described a seven-storey scheme with lifts at Chamberlain Gardens, Birmingham. This scheme has been carefully designed for wheelchair circulation, and Mr Fidler had some surprising figures showing how small was the increase of space necessary in the living units. Only 5 sq ft extra was allowed in the dining-room and 9 sq ft in the living-room.

A modified flat attached to the occupational therapy department at St Margaret's Hospital, Swindon, was described. Here every attempt had been made to avoid gadgets and reminders of disability. A resident warden looks after patients who live in the flat for a maximum period of three weeks. The disabilities of each person are studied in this time, and suitable aids designed; these are later installed in the patient's own home. It seemed a particularly good way of helping people over the initial period of adjustment.

Howard Lobb described an alteration to a National Children's Home at Penhurst (near Chipping Norton) and supported the argument for providing a home environment designed to encourage the children's sense of independence, and to avoid reminding them that their needs are any different from those of other children.

Many design details mentioned during the conference have also been advocated for normal old age. With more knowledge of such specialist problems and slightly more initial investment, many expensive adaptations could be avoided and homes could be provided that would suit equally well the young, the old and the disabled.

In summing up, the chairman reminded the conference that if these problems could be considered more in both industrial and domestic design, it would be possible for the disabled to lead fuller lives as citizens, through wider opportunities of employment.

CIVIC THEATRE

Nottingham Council goes ahead

The Nottingham City Council announced last week that, having failed to persuade Moss Empires to take over the proposed civic theatre site, with Peter Moro's theatre already above ground level, it has found it impracticable to terminate the contract for the new theatre. The capital loss involved would be of such magnitude, says the council, that it would be unreasonable to do so. "In these circumstances it is our duty to the citizens to use every endeavour to ensure the success of the venture."

The council is still intent, however, on seeing that the running of the theatre costs the ratepayers as little as possible, and is looking into possibilities of revising the capital provision for the building and considering enlarging the seating capacity. The cost of building the theatre will come largely from a special fund left in trust "for the improvement of Nottingham," so the ratepayers are already getting an exceptionally exciting civic building on the cheap.

REVIEW

Design for fire resistance

SfB Ab9 UDC 699.81

Fire resistance of floors and ceilings, by G. I. Bird, BSC, MIMechE (Published by HMSO for DSIR and the Fire Offices' Committee Joint Fire Research Organisation, price 2s (by post 2s. 4d), USA 36 cents).

This is the first of a series of *Fire notes* and is based upon results obtained from large-scale field tests carried out by the JFRO at the Fire Research Station, Boreham Wood, Hertfordshire. Architects and others concerned in building are daily being faced with the problem of meeting fire regulations without being forced to use uneconomic methods of construction or being burdened with unnecessary restrictions, and this series of notes is based on many of the queries which the JFRO has dealt with.

In considering overall fire resistance, the floor and the ceiling which it supports are normally considered as one structural element and this pamphlet sets out to show what fire gradings can be obtained by combinations of floor and ceiling finishes. The descriptions of various systems are ably illustrated and results of actual fire tests are given. The pamphlet also covers the conversion of old buildings and gives suggestions for increasing the fire gradings of existing structures. A concise paragraph deals with the repair of concrete floors after fires and the final section deals with the effect of openings in ceilings (service ducts and ventilation openings) which constitute a potential weakness to the fire resistance of the structure and must, therefore, be considered.

This booklet is brief and to the point and will be a valuable reference for all concerned in building.

A. G. LAW

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J22

BUILDING CENTRE

Colour: Co-ordinated ranges

SfB Aa9 UDC 535.6

It seems likely that colour will follow paper sizes as the next sphere of potential co-ordination in which the architectural profession can get the present chaos replaced by sensible order, provided it presses its case strongly enough. A Building Centre Forum on this subject, held earlier this month, made clear that at least one manufacturer is benefiting handsomely from toeing the line. The current problem facing the architect was neatly put by Bill Gloag of the BRS, who showed examples of exteriors and interiors in which almost the entire design consisted of building products and materials which had been coloured before they left the factory. As he pointed out, this was an inevitable and growing trend, and the architect could not hope to control colour in building satisfactorily unless manufacturers were prepared to co-ordinate colour ranges.

The first step towards this was the adoption by the BRS some years ago of a method of defining colours, replacing the inadequacy of colour names in the Munsell Atlas. This was followed by the MOE and BRS collaboration on the Archrome range for paints, the first specifically created by architects as a complete pallette of design, rather than a miscellany of popular colours. Their success within the limited sphere of schools was followed by the publication of the first architects' paint colour range for general use in BS 2660, on which the RIBA, BRS, Government departments and the paint industry co-operated.

It was rapidly recognised, said Bill Gloag, that although the introduction of BS 2660 was a major breakthrough for paint colours, attention must be given to the materials and components which arrive on the site already coloured. At the suggestion of the BRS, it has for some time been the official policy of the RIBA to encourage manufacturers to co-ordinate their colour ranges to BS 2660, and to offer them advice on how to go about it. This had already achieved a limited measure of success.

W. E. Holley of Richards Tiles said that previously his firm had relied on an assortment of colours, each considered separately by management and sales staff, including some thrown in for the foreign market. The idea of co-ordinating to BS 2660, and producing a well-balanced range of colours, was a radical departure, and could only be achieved gradually with most of the firm's products. However, a relatively new range of tiles with a matt glaze was considered a suitable case for experiment, and it had been a success.

In the discussion, Dr Young of the BSI suggested that this was due to the fact that BS 2660 was a gimmick; that it was something new and therefore fashionable. This Mr Holley denied. Speaking quite objectively, he said that since current sales of the particular range looked like being twice what they were last year, there must be something basically right about the RIBA's policy and, indeed, about the BS 2660 colours. It was particularly interesting that most of his firm's products had about equal sales in Britain and abroad, but with this particular range the home sales were roughly double. Was this because of the co-ordination with BS 2660? He wasn't sure, but any advertisement in the technical press about the range, mentioning the fact, resulted in at least 300 inquiries from architects, and he thought this was a fair indication.

A further suggestion from Dr Young, that there might be a case for a new master range out of which smaller standard ranges could be selected for different building materials and products, was warmly welcomed by Bill Gloag provided, he said, that it followed the same systematic structure as BS 2660, and was not merely an unwieldy collation of current practice. One hopes that it may not be too long before the BSI puts such an idea into action in its many committees dealing with building products.

Gontran Goulden, from the chair, reminded architects that BS 2660 was the only satisfactory method available by which they could accurately specify colour, and that success in co-ordination depended largely on the demands they placed on industry. This is true, but the Building Centre itself might well be able to spur things on, just as it has so handsomely done with trade literature. For instance, it would be possible for the centre to open immediately a register of colour ranges which are co-ordinated to BS 2660, to which manufacturers could apply for inclusion. When the register was large enough, a further step might be to hold competitions for colour ranges, organised on the same lines as those for trade literature.

BRS

Experiments on high buildings in high winds

As more buildings rise higher and cladding becomes lighter it has become increasingly important to have accurate information about the forces exerted on them by high winds. The Building Research Station is to carry out experiments to measure the intensity and pattern of wind loads on some of the tall buildings already standing in central London, a particularly good place for investigation because of the turbulent winds which occur in a large city. Results are to be compared with measurements already made in wind tunnels, simulating steady winds.

One of the buildings used will be the headquarters of the Department of Scientific and Industrial Research, which has recently moved into the 15-storey-high State House in High Holborn. Here measurements will be recorded continually for several years, and circular aluminium plates are being let in flush with the windows and supported by springs, which will record wind pressures electrically. These measurements will be taken at the eleventh and fifteenth floors on the east and west faces of the building. Other buildings selected for similar recordings are the Millbank tower by Ronald Ward & Partners, now approaching completion, R. Seifert & Partners' Barbican building, and the CPO's transmission tower off Tottenham Court Road, when these are ready. Each is expected to yield different information: the Millbank tower, knowledge of wind loads at 400ft; the Barbican building to study gust distribution round a rectangular block, and the circular transmission tower to give readings up to 650ft while allowing studies of the free movement of wind gusts round a circular surface. As a result of this work the 1952 Code of Practice will be revised.

LCC

Overspill at King's Lynn

London County Council last week accepted a proposal from the New and Expanding Towns Committee that an agreement should be made with King's Lynn for the provision of about 3,500 dwellings for London's overspill plus development of industrial sites by King's Lynn Borough Council. The LCC would meet interest charges during construction and half any housing deficit for ten years after completion for every dwelling let to a tenant nominated by the LCC.

The council also approved a Housing Committee decision to order a hundred temporary prefabricated bungalows to put up on unused sites to help provide housing in the present crisis: it was decided to buy fifty Terrapins and fifty Sun Cottages (illustrated AJ 29.11.61).

OBITUARY

Eric Sunderland

The death occurred suddenly, early this month, of Eric Stanley Sunderland, deputy county architect to the Kesteven County Council, Lincolnshire, at the early age of forty-nine.

Mr Sunderland was an associate of the Royal Institute of British Architects and was chairman of the exceptionally lively Lincoln branch of the Nottingham, Derby and Lincoln Society of Architects.

In his early days, he was articled to the city architect of York, then joined the staff of the Derbyshire County Council, and later became principal assistant to the East Riding county architect until he went to Kesteven 6½ years ago. He leaves a widow.

A memorial service was held at South Rauceby Church on December 8.

ANNOUNCEMENTS

A series of lectures, study visits and discussions on timber engineering is to be held at Westham House Adult Residential College, Barford, Warwickshire, from January 19-21. It is arranged by the Timber Development Association in conjunction with the Mid-Warwickshire College of Further Education. Course secretary is the association's midland regional officer, 55 Pershore Street, Birmingham 5.

William Kirkby, FRICS, has retired from Cyril Sweett & Partners after nine years as a partner. Geoffrey Browne, ARICS, has been made a partner and Raymond H. Howard, ARICS, and Maurice W. Parrott, ARICS, have been appointed associates. The title of the firm remains unchanged.

D. Knox, ARIBA, AMTPI, has been appointed city architect for Hereford.

J. W. Murphy, ARIBA, has been appointed deputy borough architect for Luton.

File this week

The Element File, on SfB (22) *Partitions: General*, starts on page 1247. The Information Library, of which the Element File is a part, starts on the opposite page. Features pre-classified for removal and filing are:

1 **Publications File** (page 1221) may be filed under SfB Aa2: UDC 03 as some time will elapse before the best of the publications listed are included in the EDG.

2 **Products File** (pages 1222, 1223) is a record of new products and services arranged for cutting into A6 sheets. As each item is classified separately, it can be filed in its correct place, or, the complete sheet may be filed under Aa2 in an SfB file.

3 Working Detail (pages 1224, 1225) **Curtain wall; Factory at Turku, Finland.** To be filed under SfB (21):UDC 69.022.326.

4 Technical Study, **Electric underfloor heating 1 Heat loss from solid floors** (pages 1226-1230) should be filed under SfB (56):UDC 697.71.

5 Result of the **Broad Sanctuary Competition** (pages 1231-1246). File under SfB (92):UDC 725.12.
The Element File contains:

6 **Element Design Guide** (pages 1247-1260).

7 Technical Study, **Requirements of adaptable partitions.** File also under SfB (22):UDC 69.022.5

8 Four Information Sheets on **Partitions; Blocks.**

Railway station in Belgium

While the destruction of the Euston arch and grand hall marks only the beginning of a major attack on the rebuilding of the London termini, Belgium is now well advanced on a large-scale programme of rebuilding. This most recent example, the new central station at Liége designed by Carlier, Lhoest & Mozin, was a particularly difficult planning problem because the space available between the platforms and the road frontage was very narrow. The architects have therefore produced a single large volume for booking and waiting space, with restaurant and bar separated only by a glazed screen. One detail which is becoming common practice on the Continent and which might well be adopted by British Railways is the provision of benches so that passengers can wait sitting down to buy their tickets.

AJ **SfB Aa2**

Publications File **UDC 03 References: Handbooks**

Publications File

(43)Tn6
69.025.356
Finishes, floor, rubber

Specification for anti-static rubber flooring. BS 3398:1961. Published by the BSI, 4s.
Prescribes the upper and lower limits of conductivity in rubber flooring where there is a risk of electric shock. Defines also workmanship and thickness.

(43)
69.025.3
Finishes, floor: General

Sheet and tile flooring. BS Code of Practice CP 203:1961. Published by The Council for Codes of Practice, BSI, 5s.
This revision of an important Code deals with cork, linoleum, rubber and—for the first time—plastics (thermoplastic, vinyl, asbestos and flexible pvc). It considers which to use, where, how to lay and how to maintain and is an indispensable office reference.

(52)
696.129
Installations, sanitation: gulleys, traps

Specification for copper and copper alloy traps. BS 1184:1961. Published by the BSI, 8s 6d.
The only points the architect need notice about this revision are, first, that bath overflows are now dealt with in BS 338 Part 1 and, second, that the BS has introduced a very handy method of specifying fittings. Architects who have taken the trouble to check all the dimensions they want, rather enjoy quoting them in full, but this is anti-social. An essential office reference.

(53)
696.11
Installations, water: General

Specification for polythene pipe (type 425) for cold water services. BSI 1972:1961, published by the BSI, 4s 6d.
This is exactly the same as the 1953 edition except for the additional statement that manufacturers must apply to the BSI for a licence to use the kite mark if they wish to say that their product conforms to this standard. Evidently some have been playing fast and loose. Architects might well note this.

(53)
696.11
Installations, water: General

Pipes and fittings for domestic water supply. BRS Digest 15 (Second Series). Published by HMSO, 4d.
Recommends larger diameter warning pipes, draws attention to the need to relate ball valve orifices to the head available and states that plumbers should be given large-scale working drawings detailing the plumbing requirements.

(72)
69.028.33
Rooms, fixtures and equipment: General

Specification for mechanical performance of venetian blinds. BS 3415:1961. Published by the BSI, 3s.
This is a new and potentially useful standard. Blinds capable of passing it can in future carry the BS number near the maker's name, but where the factory is subject to the BSI's special supervision they may carry the kite mark.

Aa1
025.4
Information: Classification

SfB/UDC building filing manual. Published by the RIBA Technical Information Service, 36s.
This handsome volume (to A4 size) contains the official " recommendations for standard practice in preclassification and filing " (to quote the subtitle) and is an essential for all self-respecting architects' offices.

Ab1 614.7
Public health: Pollution

Methods for the measurement of air pollution. BS 1747:Part 1:1961. Published by the BSI, 5s.
Revision of a specialist reference which takes into account the more accurate methods of measurement which have come into use since 1951, when the original standard was published.

Ab3
624.011.1
Structural engineering: Timber

Working stresses for structural timbers. Forest Products Research Bulletin No. 47. Published for Department of Scientific and Industrial Research by HMSO, 1s 3d.
This is a basic document for all who design timber structures and is easily comprehensible by any architect who is prepared to set his mind to it.

Ac1
711.1
Planning: Principles and practice

The principles and practice of town and country planning, by Lewis Keeble. Published by The Estates Gazette, 3s 6d.
A readable review and criticism of current practice, but not a work of reference. Reviewed AJ 22.11.61, page 987.

Ba1
651.7
Office administration: Stationery

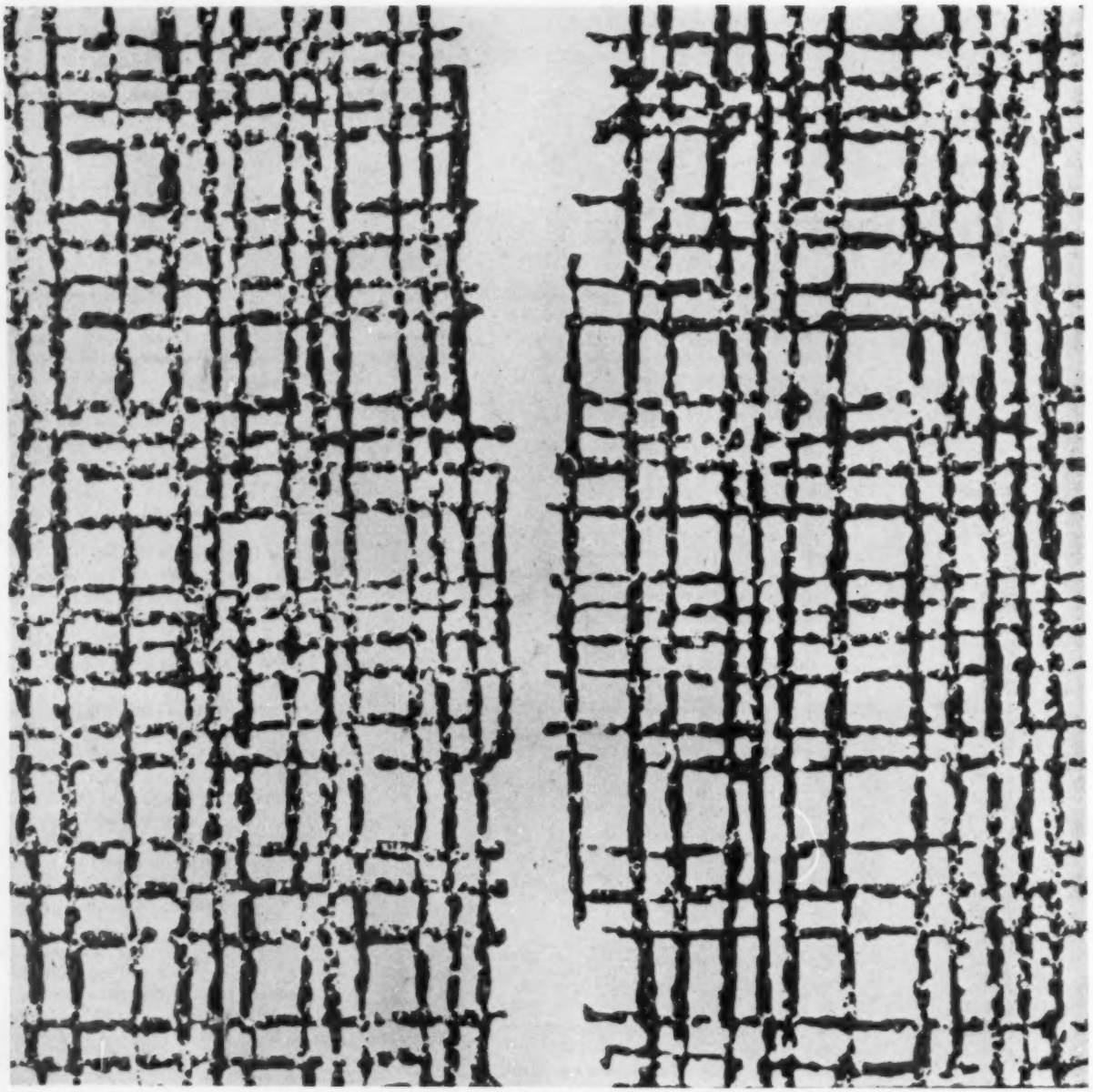
Specification for sizes of drawing sheets. BS 3429:1961. Published by the BSI, 3s.
This standard gives paper sizes both for engineers who cling to the 30in and 40in sizes and for architects who (the committee reports) are going increasingly for the A4 sizes.

Do
691.6
Glass: General

Glass in architecture, by Rayfflond McGrath, A. C. Frost and H. E. Beckett. Published by The Architectural Press, £6 6s.
This monumental work which has just been re-edited is at once a history, an aesthetic appraisal and a very good technical reference. Reviewed AJ 8.11.61, page 879.

Du1
Protectives: anti-corrosion

Zinc coatings on iron and steel articles. Part 1: Hot-dip galvanised coatings. Part 2: Sherardized coatings. BS 729: Part 1:1961. BS 729:Part 2:1961. Published by the BSI, 4s and 5s, respectively.
It is as well to know about the existence of this revision as there has been some tightening up.



"Plaid" designed by Fritz Werthmüller. M 1017 shown to scale.

A new collection of machine printed wallpapers has just been compiled by the London Office of
The Wall Paper Manufacturers Limited 19/21 Mortimer Street, W.1.
and is now available through wallpaper suppliers. Many prominent designers are associated with this collection
among them Lucienne Day, Jacqueline Groag, Terence Conran, Joyce Storey and William Gear.
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AJ Products File December 20 1961

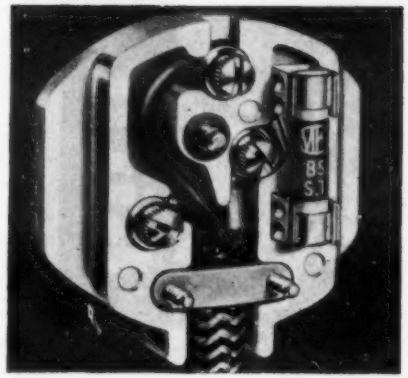
SfB (60)

UDC 621·316

Electrical accessories

The new 1962 catalogue from **MK** shows that very few prices have been increased, and these by only a comparatively small amount. The list, which would be better for architects were it A4 size, is none the less well produced and gives a good idea of the various colours available for the covers of switches and sockets. An item new to me is a switch locator which fits between the wall face and the plate of any flush accessory and emits an electroluminescent glow all round the fitting. Not necessary for the average domestic job I would have thought, but useful in hotels and other semi-public buildings where there may be strangers about.

MK Electric Ltd, Shrubbery Road, London N9



MK *plug top: the screws have unlosable washers*

AJ Products File December 20 1961

SfB (64)

UDC 621·39

Staff location system

The Hasler radio system of staff location makes use of highly sensitive receivers so that considerable savings can be made in the necessary loop aerials. In a current hotel installation, for instance, a single loop at first floor ceiling level gives coverage over a total height of nine storeys plus three in the basement. The pocket receiver, as can be seen from the photograph, is about the size of a cigarette pack. It weighs just over 5oz and the batteries have a life of about 12 months, though as the replacement cost is only 5s 2d this is not of great importance. The signal emitted has a frequency of 2,500 c/sec, so that it can be heard above normal industrial noise, but a special model is made for use in riveting shops or other places where noise is excessive. Transmitter stations are made for 20, 56, 90 or 380 separate channels, and they can also be linked to an internal automatic telephone system in such a way that the unanswered calls are automatically diverted to the pocket receiver and can then be dealt with from the nearest internal telephone. A variable signal allows the called person to tell whether he is being called on the internal or

Hasler personal receiver

GPO system. The complete system can be installed on a rent and maintenance basis for a few pence per day per person.

Tele-Nova Ltd, 73 Great Peter Street, London SW1

AJ Products File December 20 1961

SfB (23) Gk3

UDC 69·025·2

Insulated concrete floors

The Neolith system of floor construction has been designed by Concrete Structures of Halifax, the components being made by Neolith Ltd of Newcastle. The basic components of the system are made of wood wool, and are all 6ft long. The base units consist of a 1in-thick flat wood wool slab with raised ribs all round, 3in thick and set in 2½in from the edge of the flat slab, forming a lidless box. When these units are placed on the centering they automatically provide a 5in-wide space for reinforcement and concrete. The top units are in effect the lids of the boxes, and as both top and bottom units are made in various thicknesses it is possible with judicious juggling to produce floors with depths varying from 4 to 11in. The illustration shows one of the lids being placed in position. The result is a well-insulated floor with a soffit already keyed for plaster. It is claimed to be lighter than the conventional hollow tile floor and half the weight of a solid floor. The system can be used by general contractors without any special lifting equipment, the heaviest unit weighing only 80lb, while irregular shapes are easy to arrange as the units

can be cut with an ordinary handsaw. The manufacturers run a design service and can also supply reinforcement.

Concrete Structures Ltd, Imperial Chambers, George Square, Halifax, Yorkshire

Products File by Brian Grant

The Industry has been replaced by Products File. Each item occupies a quarter-page (ie A6 size) and is given an SfB number so that readers may cut the page and file each under its number if they wish. Alternatively, they may tear out the whole page and file all Products File pages together. Products File pages never back on to editorial matter. Readers wanting more information from manufacturers may turn to the back page where they will find Products File items included in the lists of advertisers. The reader, therefore, has merely to tick the manufacturer's name, add his own name and address, detach the page and post it to the Journal, using the reply paid folder.

SfB (Du3)

UDC 620·197

Preserving red cedar shingles

Cectox has been developed as a preservative for cedar shingles, which do not seem to last as long in this country as they do in North America, largely owing to differences in climate. It consists of a silicone resin, with fungicidal and water-repellent properties, dissolved in a penetrating petroleum solvent. It is best applied to the shingles by dipping before the roof is built, but an existing roof can be treated by spraying generously after the removal of moss or other growths. The liquid is colourless and does not prevent the shingles from weathering to the usual grey. A gallon of liquid will cover about 80 sq ft of roof, or roughly double this area of vertical cladding.

Richardson & Starling Ltd, 21 Hyde Street, Winchester, Hampshire

AJ Products File December 20 1961

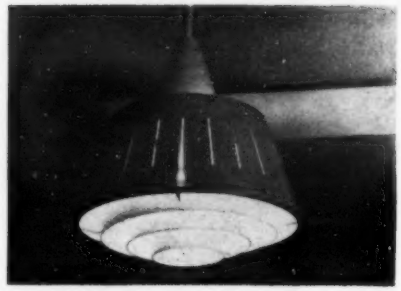
SfB (63)

UDC 628·95

Lighting fittings

Two new Courtney Pope fittings, TF.56a and 56b, are pendants with suspended metal cones in white, with a metal surround finished in red, though non-standard colours can be supplied. Both fittings are designed to take 150 watt lamps and are fitted with white concentric louvres. The diameter measurement is 10in at the widest part. Prices are £7 for the long cone version and £6 14s for the smaller fitting.

Courtney Pope (Electrical) Ltd, Amhurst Park Works, Tottenham, London N15



Short-cone version of the new Courtney Pope pendant

AJ Products File December 20 1961

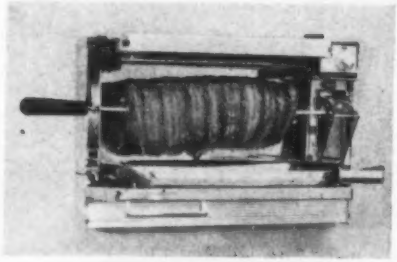
SfB (73)

UDC 643·33

Electric spit and grill

The Cannon combined spit roaster and grill can be hung on a wall, fixed to the top of a kitchen cabinet, or, when fitted with feet, used as a portable unit. The grill heater is rated at 2.1 kW and the spit is motor driven. Maximum accommodation on the spit is 10in diameter by 16in long, which means that birds or joints up to 12lb can be cooked. With the spit removed and the drive motor folded back, the unit becomes a large-capacity grill. When not in use the grill folds away into a depth of only 4½in. Price is £27 6s retail.

Cannon (GA) Ltd, Deepfields, Bilston, Staffordshire



Cannon Foldaway spit/grill

AJ Products File December 20 1961

SfB In2

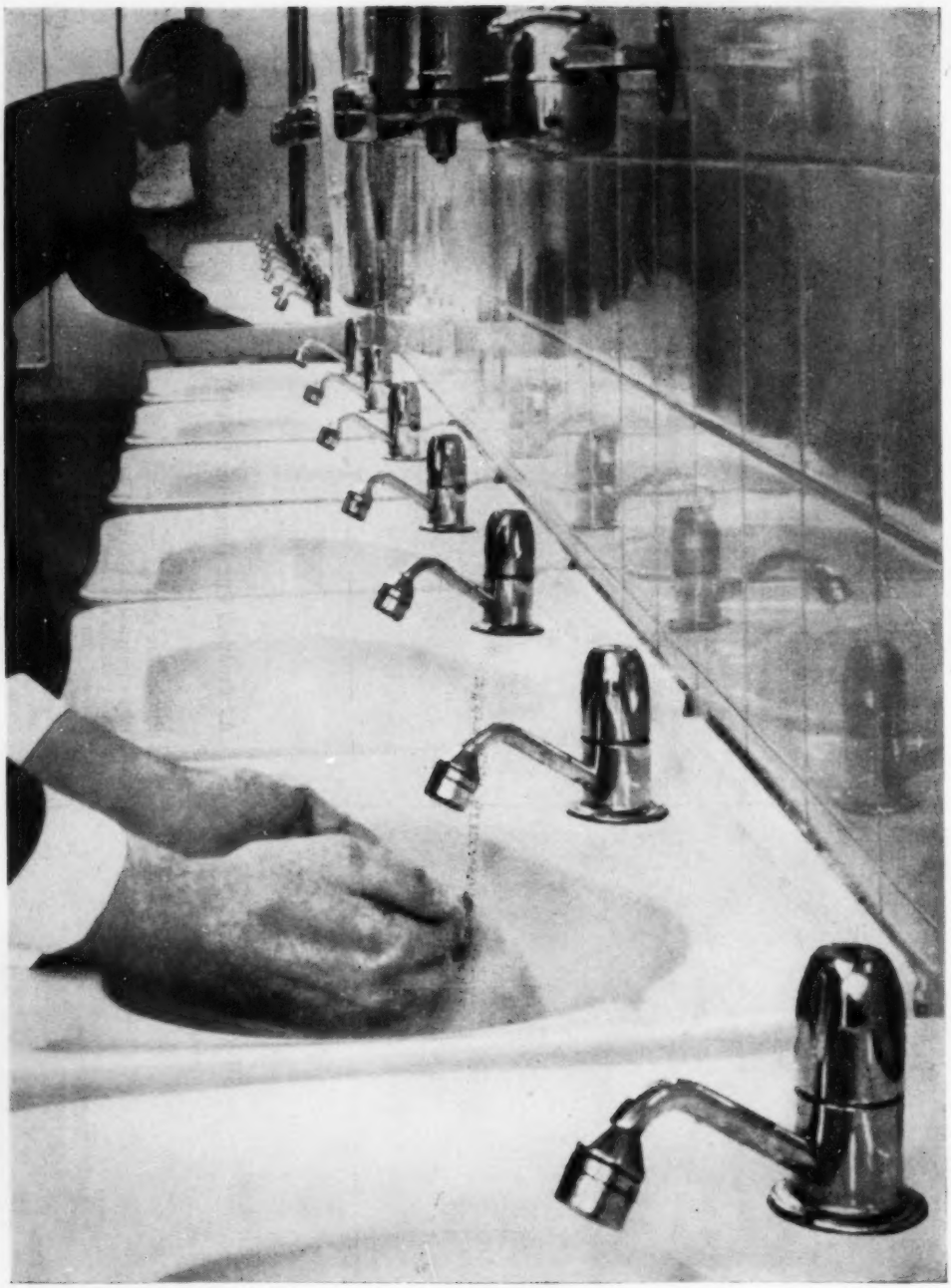
UDC 621·643

Pitch fibre pipe

A new technical manual about Bowater pitch fibre Flexpipes has been issued. It has been prepared with the assistance of Peter Burberry, ARIBA, and as well as illustrating the pipes, fittings and methods of laying, it also has some very useful tables and data on the sizing of drains and reprints BRS Digest No 6 on Drainage for Housing. Similar manuals are in preparation to cover the use of pitch fibre for electrical and other conduit work, and for agricultural land drainage. Flexpipes conform to BS 2760. The fittings are in polypropylene and are not covered by a British Standard, but they comply with BS 2760 where applicable.

Bowater Flexpipe Ltd, Ellesmere Port, Cheshire

Concrete manhole base with built-in channels and benching



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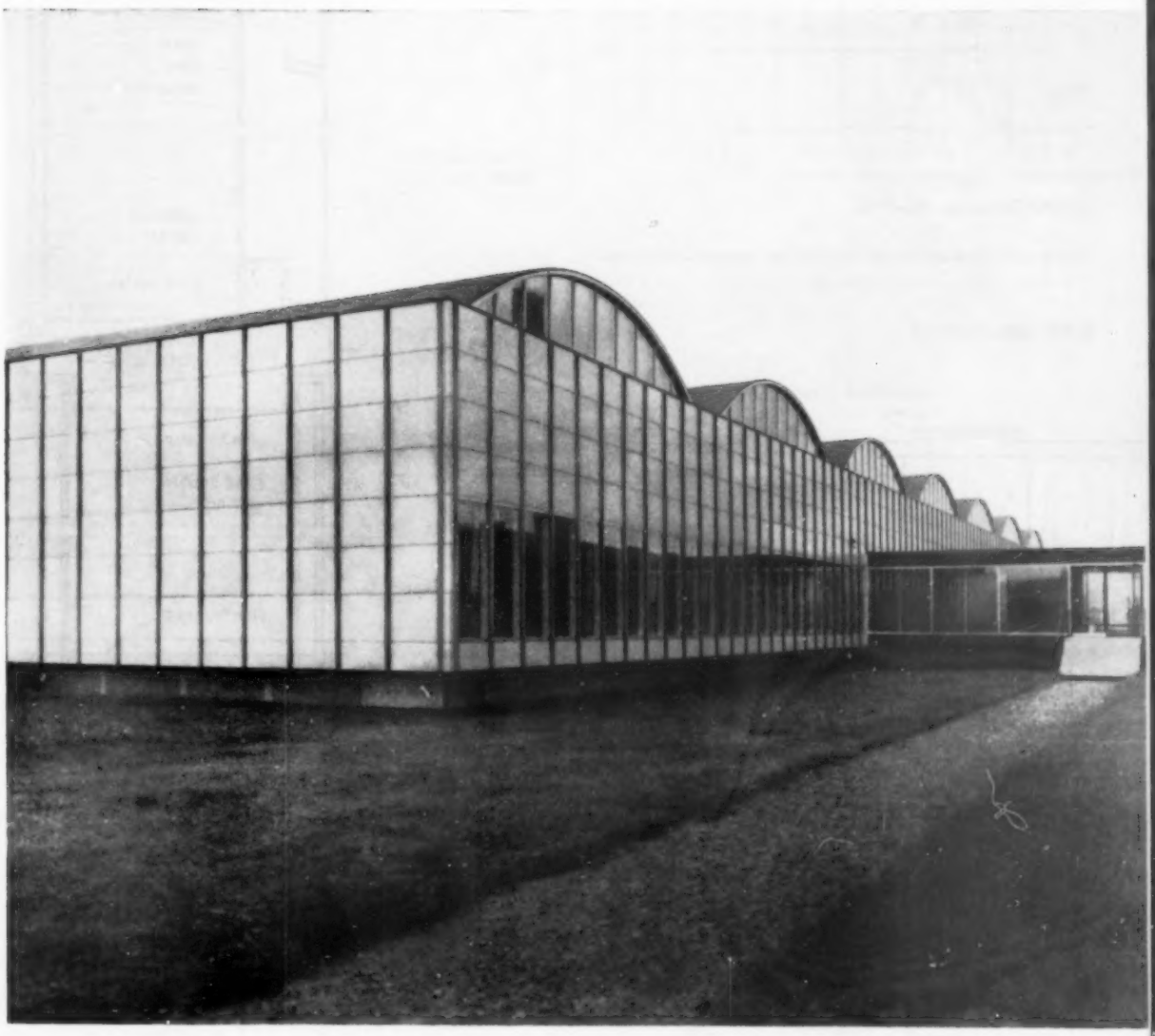
AJ SfB **(21)**

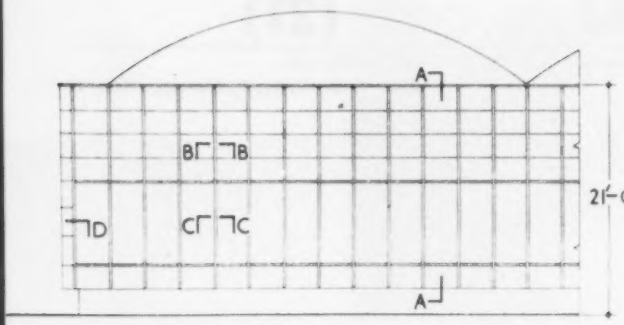
Working Detail No 11 **UDC 69·022·326**
Walls: External, non-loadbearing: General



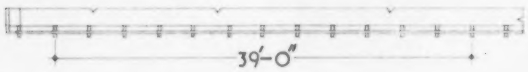
Curtain wall: Factory at Turku, Finland

Kurt Simberg, architect (material supplied by H. S. Sami)

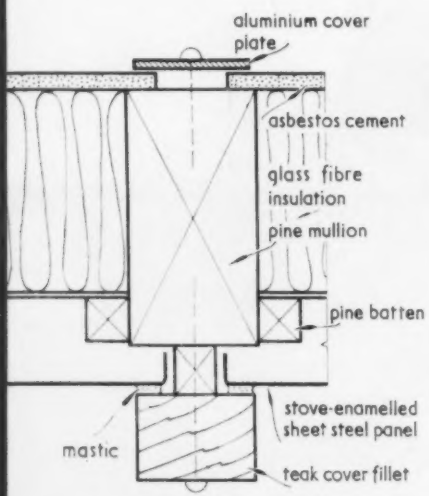
This screen wall is framed with wood and faced with vitreous-enamelled steel panels and encloses a reinforced concrete structure. The steel sheets are held in position by slotted screws. Joints are filled with mastic and covered by teak strips.



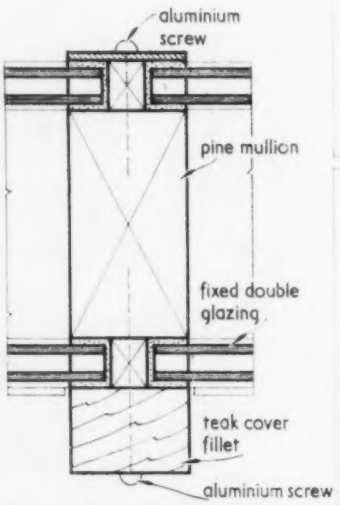
ELEVATION. scale 1/16"=1'-0"



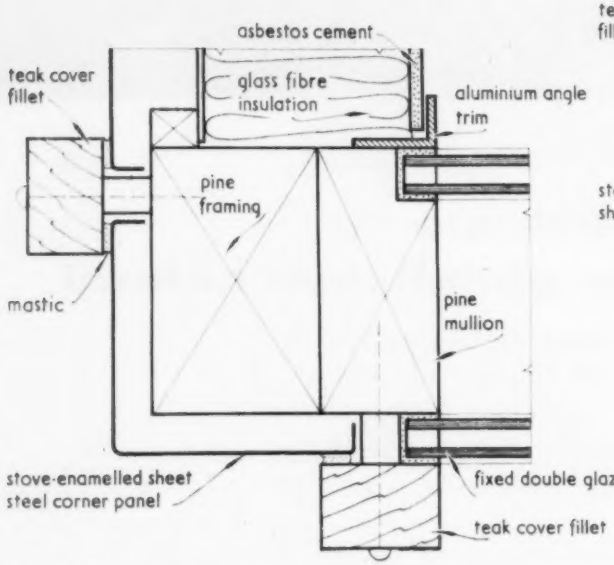
PLAN. scale 1/16"=1'-0"



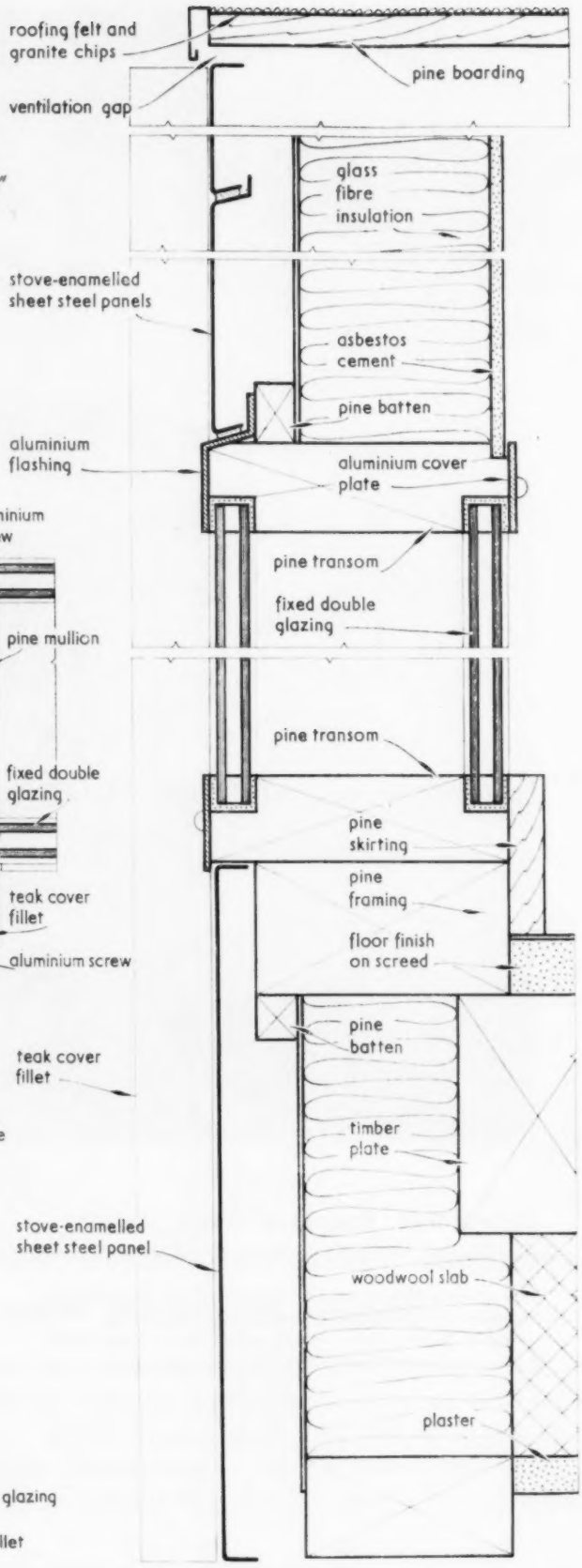
PLAN AT B-B.



PLAN AT C-C.



PLAN AT D. scale 1/4 full size



SECTION A-A. scale 1/4 full size

note: figured dimensions in feet and inches are approximate

AJ SfB (56)

Technical Study UDC 697·71 Installations, heating: General

Electric underfloor heating

1 Heat loss from solid floors

Electric underfloor heating has now been in use long enough for us to know that it can and does work. There have, of course, been failures and there is still a measure of disagreement among heating engineers on the correct method of computation to be used. We publish this week the first of a series of articles by our Specialist Editor for Electrics who has had considerable experience in designing and supervising the installation of these systems.

He considers the nature of heat transfer from an electric underfloor heating system and examines the findings of the recent enquiry carried out by the Institution of Heating and Ventilating Engineers. He concludes by outlining the design approach suggested by these findings.

An electrically heated floor is supplied with a given amount of heat energy, and all this heat must ultimately be emitted. Part will be conducted horizontally to the adjacent parts of the structure, and if it leaks to the exterior will be edge loss. Some will be conducted downwards to the soil in the case of a ground floor or to the ceiling below in the case of an upper floor, and will be downwards loss. The remainder of the heat supplied to the floor must be transmitted to the room by convection and radiation. The proportion of each will vary with circumstances, but radiation is likely to make up between 50 per cent and 70 per cent of the total. Losses must obviously be kept to a minimum by careful choice of materials and use of insulation. This will be dealt with in detail in a later article.

Heating of floors by electricity must be distinguished from heating by means of embedded water coils. With electric heating, the rate of input of energy is constant when the current is turned on, and, as has been pointed out, all this heat must be emitted. Laying a carpet, or some other material of high thermal resistance, over the floor will not affect the total emission, although it will raise the internal temperature of the floor and so increase the proportion of edge and downwards losses.

By contrast, when a floor is heated by embedded water coils the temperature of the circulating water cannot be increased much above about 120 deg F without causing immense stresses owing to expansion.

We shall take as an example a system which has been designed to operate without a carpet with the incoming water at 120 deg F and the outgoing water at 110 deg F. The heat transfer to the floor will be 10 W Btu/h, when W is the circulation rate in lb of water per hour. Laying a carpet will, in this case, have the effect of lagging the water coils. The incoming temperature cannot be increased,

but the outgoing temperature will rise to, say, 112 deg, so that the total amount of heat transferred to the floor will be reduced to 8 W Btu/h.

Emission of heat from the floor

Heat is emitted from the floor surface in two principal ways—by radiation and by convection. The amount of heat emitted by radiation depends upon the difference in temperature between the floor and the opposing surface, ie the ceiling. Where this difference is small the rate of emission is very nearly directly proportional to it. The amount of heat emitted by convection depends upon the difference between the temperature of the floor and that of the air. Again, when this difference is small the rate of emission is nearly directly proportional to it. Therefore, although the equations which govern the emission of heat are rather complicated, under practical conditions in spaces such as offices, flats or houses, where the air temperature and ceiling temperature are likely to be almost the same, the rate of emission from the floor will be approximately 2 Btu/sq ft/h/deg F difference between the floor surface temperature and the air temperature. For instance, a heated panel of 150 sq ft with a surface temperature of 75 deg F in a room where the air temperature is 58 deg F will emit $2 \times 150 \times (75 - 58)$ which is 5,100 Btu/h. Unfortunately, this figure of 2 Btu/sq ft/h/deg F cannot be used as a basis for design as it is extremely difficult to determine the effective surface area of the heated panel. Even where edge insulation has been applied most carefully, the ceiling, the lower parts of the walls and objects standing on the floor will act as secondary emitters. Moreover, nearly all electric floor heating schemes are run on a cycle basis of several hours on alternating with several hours off, whether or not they are charged on an off-peak tariff. Heat will be supplied to the floor for about 12 to 15 hours each day, but owing to the inherent time lag of the system it will be emitted over the whole 24 hours. The total heat supplied to a building during a season must equal the total heat emitted, but the rate at which it is supplied may differ greatly from the rate at which it is emitted.

At the beginning of the charging period, when the current is first switched on, the air, ceiling and wall temperatures may be fairly low and emission from the floor will be relatively high. At the end of this period warmth will have increased so that emission from the floor will have fallen off. By this time, however, the ceiling and walls will have absorbed heat and will be re-emitting in their turn, so that the total emission of heat into the room will be appreciably greater than that from the floor. In practice, the limit on the rate at which heat may be supplied to the floor, which may be quite distinct from the rate at which it is emitted, is based on the purely empirical fact that provided the loading does not exceed 12 watt/sq ft transmitted upwards (or, more usually, 15 watt/sq ft in all, taking into account edge and downwards losses) the floor surface temperatures will not exceed the limit for comfort, and the covering will not be damaged. The 12 watt/sq ft corresponds to a rate of supply of heat of 41·5 Btu/sq ft/h.

The self-regulating effect of floor heating systems

The majority of heating systems endeavour to equate the instantaneous heat input with the instantaneous heat loss from the building to achieve steady internal conditions. The mode of operation of a low temperature system like floor heating, with a long time lag between any alteration in the supply of heat and a corresponding alteration in the temperature of the emitting surface, is quite different. We have seen that the rate of emission from the floor is approximately proportional to the difference in temperature between the floor surface and the air. Take the case of a system that has been designed to maintain 62 deg F internally against 32 deg F externally, with the floor surface temperature at 75 deg F. When all the temperatures are at design level and the current has just been turned off, the emission from the floor will be proportional to the temperature difference, ie to $75 - 62 = 13$, and may be written as 13k Btu/h where k is a constant. The total losses from the room will be proportional to the difference between the internal and external temperature, that is, to 30 deg F, and may be written as 30K Btu/h where K is another constant. In the simple case we may write $13k = 30K$, although this is most unlikely to be exactly true, since, as we have explained, a good deal of heat will be emitted from the wall and ceiling surfaces. To be rigorous, it would be necessary to determine the amount of heat being emitted from all objects and surfaces in the room, and the sum of these together would equal 30K. In a simple treatment of this kind we shall neglect these other factors, which, in any case, only reinforce the argument. If the external air temperature rises from 32 deg F to 42 deg F, there will be a reduction in losses from 30K to 20K, so that the internal air temperature will rise. When it has risen to 65 deg F, the emission from the floor will have fallen to 10k, and the losses from the building will be 23K. We have written $13k = 30K$, so that $k = 30K/13$. Under the new conditions, the emission from the floor is 10k, which is equal to 300K/13, or about 23·1K. This is slightly higher than the losses for an internal temperature of 65 deg F, so that steady conditions will be reached with an internal air temperature a little above 65 deg F.

This treatment is necessarily extremely crude, but it does serve to give some indication of the self-regulating mechanism of floor heating. It depends on two basic assumptions. First, the difference in temperature between the emitting surface and the air must be small. It should be noted that in so far as some heat is being emitted from the ceiling and walls, their temperatures will be even closer to the air temperature and the self-regulating effect will be enhanced. Second, the floor must have sufficient thermal capacity to ensure that its surface temperature will not change significantly between one charging period and the next. This second can never be exactly fulfilled as the floor must always start to cool down as soon as the current is switched off. However, in buildings of relatively massive construction the fall in temperature between one charging period and the next will be relatively small. Even where the rate of fall of the floor surface temperature is very small, it is real, and there must always be a tendency for the building to cool down between charging periods. This points to the desirability of running the system on a cycle in which the current is turned off at a time when the external temperature is likely to rise. This increase will then tend to offset the cooling of the building, resulting in substantially constant internal temperatures. Running a floor heating system on an off-peak tariff terminating at 7 am does fulfil this requirement. In the case discussed, if heat were still being supplied to the floor while the external temperature was rising, the floor surface temperature would continue to rise, so defeating the mechanism of regulation which depends on the floor surface temperature remaining nearly constant.

Practical designs

It would appear that the design of a storage system of floor heating should give as much attention to the thermal

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capacity of the structure as to the calculation of losses. In practice, most designers make a straightforward heat loss calculation, add on a rule of thumb percentage which may be anything from 10 per cent to 50 per cent as a working margin and install an equivalent loading of electric cables in the floor. This procedure is supplemented by two other rules of thumb: the loading must not be allowed to exceed 12 watt/sq ft upwards (or where the proportion of heat emitted upwards cannot be known accurately in advance, 15/17 watt/sq ft total), and, a panel with a loading of less than about 8 watt/sq ft upwards is found not to register as a heat emitter, so that where losses are low, the panel should be concentrated into a small area.

Until recently there was only experience to follow in regard to the thermal capacity of structures. For instance, it was known that concrete frame buildings with slabs 6in thick and 2in of screed in good thermal contact with them would store enough heat for most practical purposes. However, Danter (ref 1) has now produced a method for calculating the temperature drop in floor heated spaces during the period when the current is switched off and this should make it possible to put the design of installations on a more scientific basis. It is, for instance, recommended that specifications for floor heating systems should give not merely one temperature which must be maintained continuously during the occupied period, as is usual for ordinary central heating systems, but should specify an upper and lower limit to the temperature. In most office buildings the specified internal temperature is 65 deg F, but where floor heating is being considered it would be more appropriate to specify the range of 62 deg to 68 deg. The higher figure represents the maximum permissible temperature at the beginning of the occupied period, and the lower figure the minimum below which the temperature should not be allowed to fall at the end of the day. This should not lead to any unusual discomfort in practice as the temperature range over which most people feel comfortable is at least 6 deg and the upper and lower limits of this range differ most markedly from one individual to another.

Although, therefore, the people who feel comfortable at 62 deg F will not all be the same as those who feel comfortable at 68 deg F, there is no reason to suppose that the proportion of people feeling comfortable at either temperature will differ significantly from the proportion of people who feel comfortable at 65 deg F exactly. The larger the number of people involved, the more likely is this statement to be correct. In buildings occupied by small groups of people it may sometimes happen that the group preference will lie towards one end or other of the typical band for average people. This sort of effect is not peculiar to heating and applies to almost any other environmental factor and as long as buildings are designed for that shadowy figure the average man, rather than for particular men, there is not very much that can be done.

The off-peak factor

Heat supplied to a floor for, at most, 15 hours each day will be emitted during the whole 24 hours, so it would appear that 24 hours of loss must be made up during 12 or 15 hours of charge. This implies that loading installed in the floor should be double the hourly losses where there is no midday boost, and 24/15, that is 1·6 times the hourly losses where there is a midday boost. As explained in the preceding section, different designers add on anything from 10 per cent to 50 per cent of the calculated losses, and the most popular figure is probably around 25 per cent. Even where there is a midday boost, installations with a 25 per cent margin would not, at first sight, appear to be capable of providing enough heat to maintain the internal temperature under freezing conditions. On the other hand, most of these installations seem to work quite satisfactorily and even those designers who only allow a 10 per cent working margin claim just as high a proportion of success as those who allow 25 per cent or 50 per cent. For quite a long time it was customary to deny the possibility of success for these installations and to suggest that even where the occupants said they were comfortable, they must have been mistaken. As time went on, and the number of successful floor heating installations grew, it became increasingly difficult to maintain that they were a sort of confidence trick, and eventually the Heating and Ventilating Research Association set up a committee to investigate the matter. The report of this committee was issued in May 1961 (ref 1) and the main part of it was concerned with the discrepancy between the loadings actually installed in floors, and the much larger loadings theoretically necessary to maintain comfort; and with the corresponding discrepancy between observed and theoretical running costs. This latter point will be dealt with in a later article.

The factor by which the designer multiplies the calculated hourly loss in order to arrive at the electrical loading to be installed in the floor is called the "off-peak factor". As we have seen, simple theory implies that it should be 2 where there is no midday boost, and 1·6 where there is a boost. In practice, factors ranging from 1·1 to 1·5 appear to have been employed successfully. The committee's conclusions on this question are that the standard method of computation of losses, based on U factors gives results that are in most cases at least 10 per cent too high. There are various reasons for this, one of the most obvious being that the conductivity of any material is greatly affected by its moisture content, but in making calculations in advance it is necessary to assume some figure and most prudent designers are likely to err on the high side. Another vital point is that it is generally assumed that the U factor for any structure, being expressed in Btu/sq ft/deg difference in outside/inside temperature, is in fact independent of the outside weather conditions, whereas this is obviously not the case. The losses from an interior maintained at 65 deg F to the exterior will depend not only on the exterior temperature, but on wind, rain and so on. It takes little thought to see that the losses through a wall to still air of 45 deg F will be very much less than when the external face is drenched with water, even if this water is at the same temperature. This type of contingency is covered in the standard method by taking different values for the external surface resistance according to the orientation and degree of exposure of the outside wall. This may be perfectly satisfactory for low pressure hot water systems, where the boilers must be capable of making up the maximum losses at any given time, but hardly applies to floor heating when, as we have seen, there is no attempt to equate the instantaneous heat input with the instantaneous losses. Thus a U factor is required which applies to average, and not extreme, conditions. Even then it is necessary to decide over how long a period the average is to be taken.

It is usually assumed that the charge/recharge cycle period for a floor heating installation is 24 hours. In this case it would appear necessary to take readings for several years to determine how often extreme cold is associated with high wind and rain in any 24-hour period. If one assumes, as is argued below, that with floor heating the cycle period is a week or even more, it would be necessary to find out how often periods of extreme cold lasting several days are associated with wind and rain. Whatever the detailed results

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might be, one would expect to find that the average U factor would become progressively less the longer the period over which it is averaged. Although there might be occasional high winds at freezing temperatures, one would hardly expect them to continue for several days at a time. The HVRA committee also concluded that the ventilation rate normally assumed for design purposes is much higher than that found in practice. In office buildings and flats it has been customary to assume three air changes per hour as a design figure, and to provide for heating this quantity of air from the external temperature to the required internal temperature. In fact, although the windows may be kept open when the outside weather is mild, customary English reaction to cold is to shut them as tightly as possible, so that the ventilation rate found in practice is very much less than three. Further, if one is to take heating at night into account, it can be assumed that all windows will be closed all the time. In the upshot, it is now recommended that the ventilation rates given in Table I should be taken for design purposes in floor-heated buildings. These values are lower than would be expected for buildings heated by other means, since floor heating does not itself induce any air movement, whereas radiators, or forced draught convectors, work by setting up circulating currents and must increase the ventilation rate to some extent.

TABLE I
RECOMMENDED DESIGN VALUES OF RATES OF AIR CHANGE DUE TO INFILTRATION IN BUILDINGS HEATED BY OFF-PEAK ELECTRICITY

	Building 50ft and under Infiltration rate		*Building over 50ft (air change/h)*	
	Day	*Night*	*Day*	*Night*
For buildings with little or no internal partitioning, ie open plan buildings, or those with partitions of less than full height	1½	¾	2	1
For buildings with internal full-height partitions (ie with rooms each side of a central corridor) without cross-ventilation and having self-closing doors to staircases, lift-lobbies, etc	¾	½	1	½

(Published in a report by the Heating and Ventilating Research Association, *The heating of buildings by off-peak electricity supplies*)

Conclusions

The committee's conclusions on heat losses may be summarised as: the standard method gives results for conduction losses which are between 10 per cent and 20 per cent higher than the real losses; the ventilation rate is likely to be about half that normally assumed in calculation. In many buildings ventilation losses amount to one-third of the total, so that reducing them will have a marked effect on the overall figure. Let us take the case of a building where the real conduction losses are x Btu per hour under design conditions, and the real ventilation losses are y Btu per hour. Here, y will probably be of the order of one-third of x. A designer using the standard method will calculate the losses as about $1{\cdot}15x$ by conduction and 2y by ventilation, the total being $1{\cdot}15x + 2y$. He will then take an off-peak factor of $1{\cdot}25$ and install a load of $1{\cdot}25(1{\cdot}15x + 2y)$. This equals $1{\cdot}44x + 2{\cdot}5y$ (a). If the system is to have a midday boost we are saying that he should in fact have installed $1{\cdot}6x + 1{\cdot}6y$ (b). The equation (a) represents what is actually installed, and equation (b) what should be installed. It may be seen that the installation is up by $0{\cdot}9y$ and down by $0{\cdot}16x$. We have said that y is likely to be about one-third of x so that the $0{\cdot}9y$ excess will more than cancel the $0{\cdot}16x$ deficit. This would appear to explain how it is that installations can work satisfactorily with off-peak factors as low as $1{\cdot}25$.

Flywheel effect

This account is a repetition of the conclusions of the committee set up by the Heating and Ventilating Research Association, and may therefore be regarded as representative of the "consensus of informed opinion". The committee's arguments have given a satisfactory explanation of how it is that floor heating installations will work with an off-peak factor as low as $1{\cdot}25$. However, there is a large number of installations in which the off-peak factor is lower than this. In particular, one large firm takes a factor of $1{\cdot}1$ for intermediate floors and $1{\cdot}2$ for the top and bottom floors; in a four-storey building this will come to about $1{\cdot}18$ overall. This method appears to be perfectly satisfactory, but it is difficult to account for its success purely on the basis of lower conduction losses and reduced ventilation rate. In some buildings we have no doubt that the ventilation rate is even lower than the reduced figures now recommended, while in sheltered situations the conduction losses may be more than 20 per cent below the standard figures, but this is hardly likely to be true of all buildings. If the HVRA is correct, one would expect the proportion of successful installations designed by any method to rise as the off-peak factor is increased but there appears to be no evidence that this is the case.

There are grounds for thinking that massive heat storage in the fabric of a building enables a reserve of heat to be built up during the earlier part of the heating season, which can be drawn upon during the month or two when the weather is really cold. This is sometimes called "the flywheel effect". Conventional heating theory assumes that not more than two or three days' heat reserve can be stored in the average building, and that this reserve is sufficient only to make up the difference between the losses for the few days in each year when the mean temperature may fall to 28 deg F or 29 deg F and the output of boilers which were designed only to maintain the internal temperature against 32 deg F. This view would appear to be conservative even as applied to conventional low pressure hot water systems, but when concerned with floor heating in buildings with thick concrete slabs and loadbearing walls it would seem to allow far too small a reserve. It seems that the heat stored in the structure of a building of this kind is often sufficient to make up a substantial discrepancy between the heat supplied and the heat lost to the exterior for several days at a time. This proposition is the only one that would appear to be able to account for the fact that very few floor heating systems will work satisfactorily if they are not switched on at the beginning of the heating season. It is a fact of common experience that any floor heating installation which is completed and brought into use in the middle of the winter cannot always maintain the design temperature during cold weather until the second heating season. Some support is also lent to this suggestion from regular observations of energy consumption. It has been found that at the end of the heating season, during March and April, the weekly consumption of a floor heating installation is often very much less than would be expected by calculation of the losses during the period (ref 2). The figures are by no means conclusive, and it has yet to be established that consumption at the beginning of the heating season is greater than would be expected from calculation—which would appear to be an obvious corollary of any massive storage theory. However, there is plenty of scope for further investigation. This effect is particularly important in considering the correct U factor to take in floor heating calculations. As explained earlier, the U factor will be greater under extreme conditions of cold associated with rain and wind than under cold only. For low pressure hot water systems it is generally necessary to allow for the worst case, however infrequently it may occur. For floor heating it is necessary only to take the worst average U factor for the storage period. If this is a week or more the factor should go down, as the likelihood of

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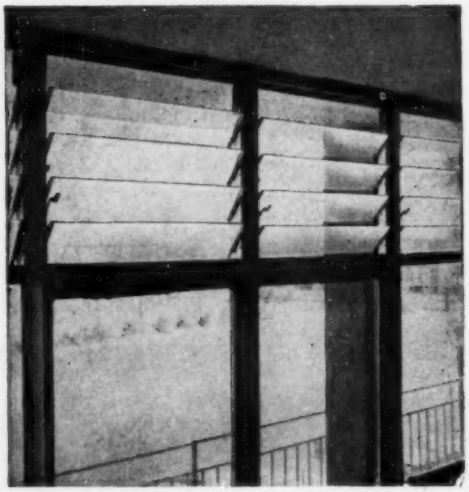

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Waste heat

In any occupied building there will be various sources of waste heat normally neglected in calculating the heat requirement, which can have important effects. The most obvious example is the lighting installation, and in the case of modern buildings with a high level of incandescent lighting, the load may total up to 30 per cent of the heat requirement. Where, as is usual, fluorescent lighting is employed, the total load is not likely to be more than 15 per cent of the heat requirement. In either case, the lighting will not be switched on all the time and is therefore very properly neglected in heat loss calculations. In windowless factories, of course, the lighting load should be taken into account. It will, in fact, involve a substantial reduction in the duty of the heating installation, and an even more substantial increase in that of the air-conditioning installation. In all buildings, however, lighting will be switched on during winter afternoons, at a time when the external temperature is likely to be falling and the floor is losing its charge, so that it can be very important in preventing a fall of internal temperature at the end of the day. Body heat from the occupants is a source of waste heat, and it is usual to reckon here that the heat given off by an adult carrying out sedentary work amounts to about 1/11 kW. This is unlikely to be very important in offices or flats with only one or two people to each room, but it can be quite significant in large open offices with many occupants. Other possible sources of heat are from the domestic hot water system, motors, cooking appliances and so on. This waste heat very rarely enables the loading of the heating installation to be reduced, but it does help to keep the temperature even throughout the day and has an important effect on running costs. The latter point will be dealt with in a later article.

Temperatures maintained in practice

Measurements in floor-heated buildings do show a remarkable constancy of internal temperature, even where the floor surface temperature itself may be subject to large variations. As has been argued, this is due in part to the self-regulating effect of the system, but it can probably be attributed at least as much to the introduction of waste heat towards the end of the day, as happens in most buildings. However, it does not occur in all buildings, and matters of this kind should be studied most carefully in deciding whether or not a given building is suitable for floor heating.

Downwards losses

Only a proportion of the heat supplied to a floor will be emitted upwards, and where there is no insulation as much as 50 per cent may be lost to the space below. Ceiling insulation will reduce this proportion, as will an insulating blanket on top of the slab, beneath the screed, although this will also tend to reduce the storage capacity of the building. In multi-storey buildings, in which all spaces are maintained at the same temperature, there is rarely any trouble on intermediate floors because the heat lost to the floor beneath is balanced by the heat gained from the floor above. There is likely to be difficulty only where, as in flats, the occupants of each floor have independent control over their heating. In all buildings of this kind the ground floor will show a net gain of heat while the top floor will show a net loss. In theory, it might be possible to reduce the ground floor loading although this is rarely done as losses through the ground floor slab are very difficult to calculate. Most designers prefer to work out these losses as best they can and to treat the gain from the first floor as a margin for safety. The most difficult problem is always the top floor, where it is necessary to provide for losses through the roof and to the floor below. Even where the cost of providing substantial insulation on all ceilings cannot be met, it is recommended that the ceiling of the floor below the top should be insulated as well as possible. Some further comments on the top floor problem will be given in a later article.

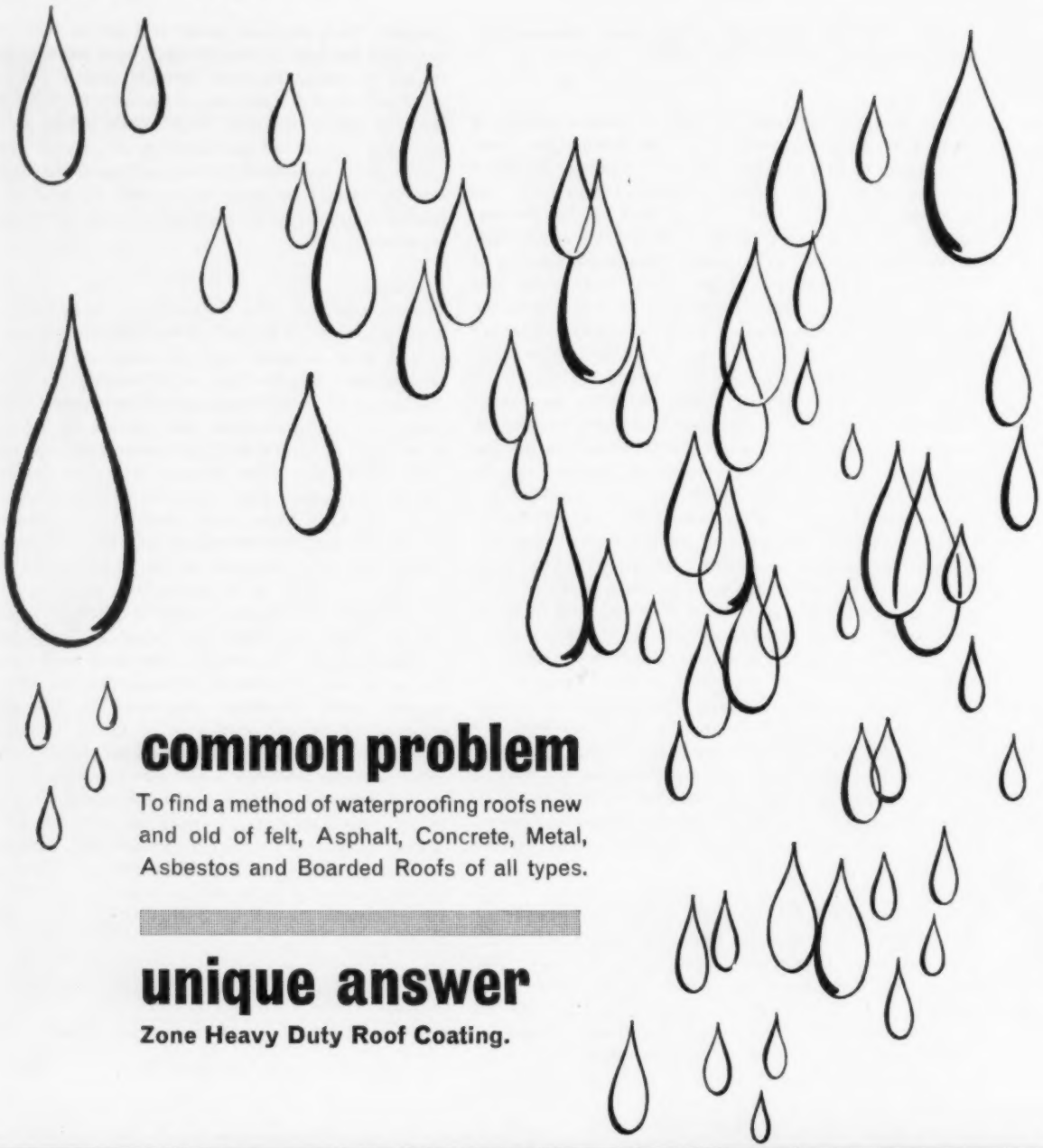
Conclusion

Anyone who has some acquaintance with conventional heating practice will have noted that the account given here is very different from the usual approach. This is because some factors which are of marginal significance in the design of conventional installations become of prime importance in floor heating, and because the introduction of the massive storage principle makes it difficult to decide what is really happening. Instead, one has to consider what may be happening, which is a very different matter. It is fair to say that when nearly all heating installations employed low pressure hot water used in a standard way, certain equations and rules which represent the mode of operation of this kind of system with sufficient accuracy were assumed to apply universally. It is only now that quite different types of heating are being developed that the limitations of the standard formulae have been recognised. This is, in fact, an advance in knowledge, but as so often happens when knowledge increases, the first result is apparent chaos and confusion of ideas. Although the physics of heat is an exact science, the design of heating installations in buildings is not; just as optics is an exact science, while the design of lighting installations is not. In both cases, the laws governing the emission and transmission of heat and light under controlled conditions are known very accurately. What is so difficult to determine is the application of these laws to practical problems when the conditions cannot be predicted with any degree of certainty.

References

1 *The heating of buildings by off-peak electricity supplies.* Technical report by the Heating and Ventilating Research Association. [(56)]

2 *Performance of electric floor heating installations in large and small buildings.* Technical report No Y/T26 of the Electrical Research Association. [(56)]



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Broad Sanctuary competition

SfB (92)
UDC 725·12 Government offices

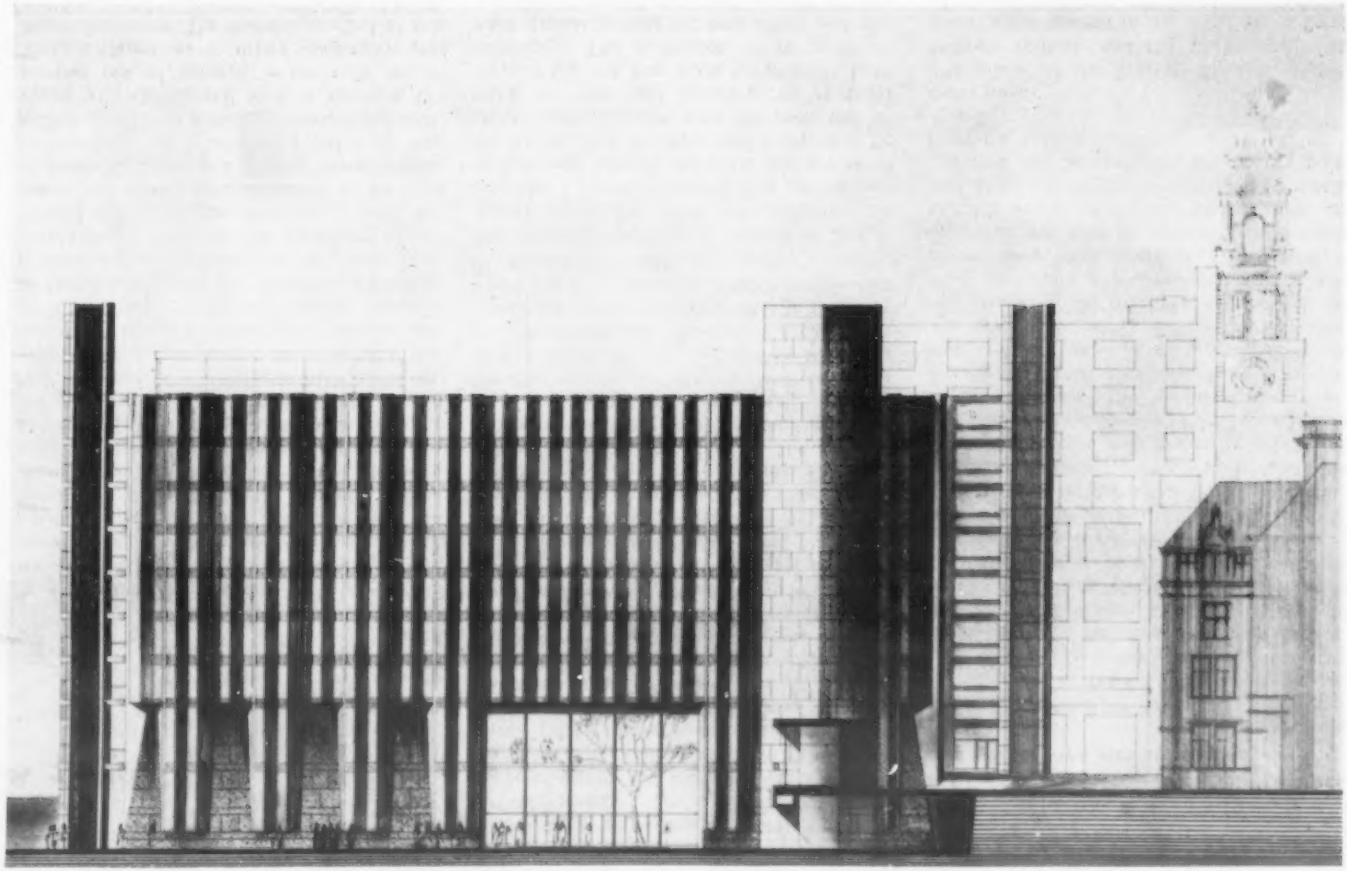
Announced in Parliament this week was the result of the competition organised by the Minister of Works for a combined Government conference centre and offices on the old Colonial Office site at Broad Sanctuary, Westminster (see also page 1210). The winning design is by William Whitfield, who will receive £3,000; the entry placed second is by Michael Edwards and Alberto Ponis, who will receive £1,500; Roy Case, Anthony Evans, Digby Farrow and Richard Farrow, joint authors of the design placed third will receive £1,000. The winner's report is on the next page.

The assessors, Sir William Holford, PRIBA, MTPI, Sir Leslie Martin, PhD, FRIBA, and Eric Bedford, CB, CVO, ARIBA, (Chief Architect of the Directorate General, Ministry of Works, whose report we publish in full on page 1246, also commended for the originality of its approach the entry by Stanley P. Merer in association with David Blatchford. These designs, with the remaining sixty-one entries, will be on view to the public from 9am to 5.30pm in the Air Ministry Hall, Whitehall Gardens, SW1 until Friday evening, and from December 27-29 inclusive.

No stipulations are made in the conditions about the maximum height of the building, but one critical point is that all offices are to be naturally lit, with a maximum depth of about 18ft. It may seem natural for the assessors to prefer schemes which maintained about the same roof line as those surrounding the site but this, to all intents and purposes, has imposed courtyard or semi-courtyard planning with extended corridor access. Thus although the winning design has many virtues, it cannot be said to make any new contribution either to the planning of Government offices, or to the improvement of the working environment. Nor is any note taken in the conditions of the growing trend for mechanisation in offices, currently beginning to influence planning, and which may well render this traditional form obsolete within a few years.

Whether the MOW would have been better advised to accept the idea of a certain amount of permanent supplementary artificial lighting is debatable, but it might well have been worthwhile for this important site in order to achieve much more flexible planning, and yet avoid an excessively tall building.

All three winning entries are based on long corridor access. The attempt to break away in the commended design fails because the three separate towers, however admirable individually, obviously cannot together form sufficiently flexible accommodation.



South elevation of winning design, fronting Broad Sanctuary

Broad Sanctuary competition

Extract from winner's report

The two kinds of space called for (ie conference and office) almost force a solution which uses the office space with its small repetitive module as a backdrop for a self-conscious display of conference rooms at its foot. This solution was rejected at the outset, because not only would it tend to squander the definition needed on the north side of Broad Sanctuary, but a display of architectural antics at ground level would accord very poorly with the large scale ones on top of the Westminster Central Hall.

The request in the competition conditions, (69), to permit maximum flexibility of cross-partitioning in the offices, inevitably controls the character of the bulk of the building, and suggests a repetition of small scale vertical elements. By chance, it is this characteristic which is most apparent in the buildings of the Westminster enclave. The west front of the Abbey, almost all the Palace of Westminster, and, notably, Henry VII's Chapel, have this repetition of vertical rectangle as a common feature. It seemed reasonable, therefore, to accept this characteristic and handle it in a way appropriate to the building and the site. To this end the façades have been facetted to emphasise verticality, and increase the sparkle of the glazing. It has been possible also to allow the office floors to grow easily out of the lower conference rooms, thus avoiding a clash of scales and reducing the building to one basic form set off only by the stair towers. By placing the building in a shallow cutting, a suggestion of privacy is conveyed without in any way losing the all-important sense of closure on that side of Broad Sanctuary. In addition, the height of the building is controlled, so that it is high enough to conceal the backs of the George Street buildings and contain the "place", but not so low that it would coincide with the average height of Central Hall, and thereby emphasise the isolation of the dome from the rest of the skyline. With the exception of the Westminster Central Hall, all the surviving buildings in Broad Sanctuary play a subservient role in creating the total character of the Abbey precinct. Unfortunately the Central Hall, an impressive building in itself, is wholly alien to the subtle Gothic build-up of Broad Sanctuary. It is a building to end a vista, and as seen from Parliament Square, between St Margaret's Church and Middlesex Guildhall, it momentarily achieves this. However, once St Margaret's is passed, the dominance of the Central Hall competes disastrously with the Abbey and creates a visual duality. As the rules of competition set out a building line calculated to reveal the whole of the Central Hall, very little is possible to diminish its over-dominance. Equal with the Central Hall in throwing the precinct out of balance, is the rude cut of Victoria Street as it drives diagonally into Broad Sanctuary. The destructive effect of this could be eased by a sensitive handling of building masses at the foot of Victoria Street. If these observations are tenable, then the following observations may be made.

1. Any new building on the north side of Broad Sanctuary should be reduced to simplest forms in order to close the precinct, without adding another competing visual dominant.
2. The building should be brought forward as far as the conditions permit, to enhance the sense of enclosure.
3. The siting and design should be such as to minimise the dominance of the Central Hall, particularly as approached from the east.
4. The design of the building, while deserving particular scrutiny, should have an appropriate degree of dignity with humility such as befits a lesser one of a group of buildings.

These factors have controlled the present design, which is a simple block of building, featureless apart from the staircase towers. These are detached in order to supply additional vertical up-thrust and airiness which, with the exception of the Central Hall, is a common feature of all other buildings in the precinct. The conference rooms are expressed in the greater scale of the lower floors, but have been carefully controlled to avoid a "podium and superstructure" effect which would produce an undue horizontal separation of the parts of the building. The need to emphasise the small-scale Guildhall and play down the Westminster Central Hall is one of the chief reasons for aligning the front of the conference building at an angle of 10 deg to the site boundaries. The proposed conference building presents a regular façade to the north which could be included, without modification in any redevelopment.

The building, basically, is formed of two U-shaped forms, the lower one containing the conference rooms, surrounding a garden with its open end towards the south and a view of the Abbey, and the upper one, comprising the office accommodation, with the open end towards the east, and including the attractive view of the Big Ben clock tower down Little Sanctuary. The disposition of parts assures good natural lighting for both offices and conference accommodation, and privacy for the conference garden. As only a small part of the garden court is over the substructure, there is no obstacle to tree planting. The whole building, which lies within the building lines, stands in a shallow dry moat. For reasons of economy, the car park has been kept to one level, but if further funds were available, more use could be made of the site with split-level parking and a more generous treatment of the low level forecourt. Minimisation of excavation and retaining walls, and the use, wherever possible, of those existing, is conditioned by the need for strict economy in these matters. Although the building will appear as a single entity, it is designed to operate in a number of completely independent sections, each with its own separate access.

Conference centre

In the layout of the conference area, the aim has been to provide both delegates and secretarial staff with the easiest and most obvious lines of communication. Delegates are confined to two floors with cloakrooms and lavatories for both sexes at each level, and secretarial accommodation is on two floors and a mezzanine. Circulation is entirely separate for both delegates and secretarial staff. The conference rooms are arranged in four suites in a way which will permit their use separately or in easily identifiable groups. Each suite has a servery adjacent. The rooms are arranged around the central courtyard, which is private, and available only to conference delegates. The press suite, which is on the mezzanine, consists of a press gallery overlooking the main conference room, together with a telephone room, and lavatories. This suite is accessible only from the separate press entrance in Little Sanctuary. The conference rooms are well away from Broad Sanctuary, and should therefore not be noticeably affected by noise from the Underground.

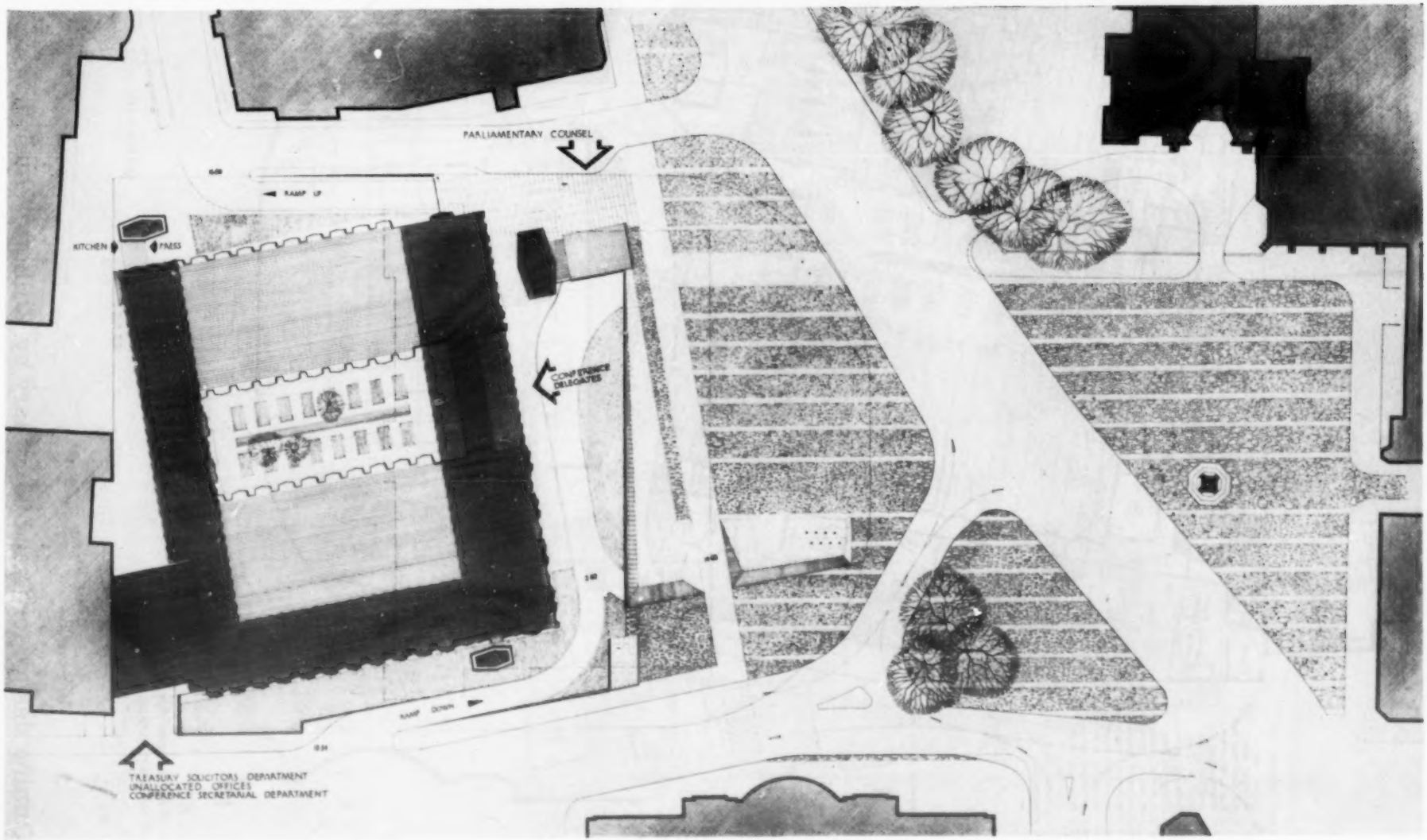
Office areas

The offices of the Treasury solicitor, Parliamentary counsel, and the unallocated office space, are contained in the seven upper floors of the building. Each of the three departments has its own staircase, lifts, internal circulation and lavatories, and is therefore wholly independent of the others, except for outside fire escapes, which are accessible from all departments. The location of entrances will enable the office space to function as three independent units or for either the Treasury or Parliamentary counsel offices to expand naturally into part or all of the unallocated office space. In this sense flexibility is complete. The small window module permits partitions to meet the

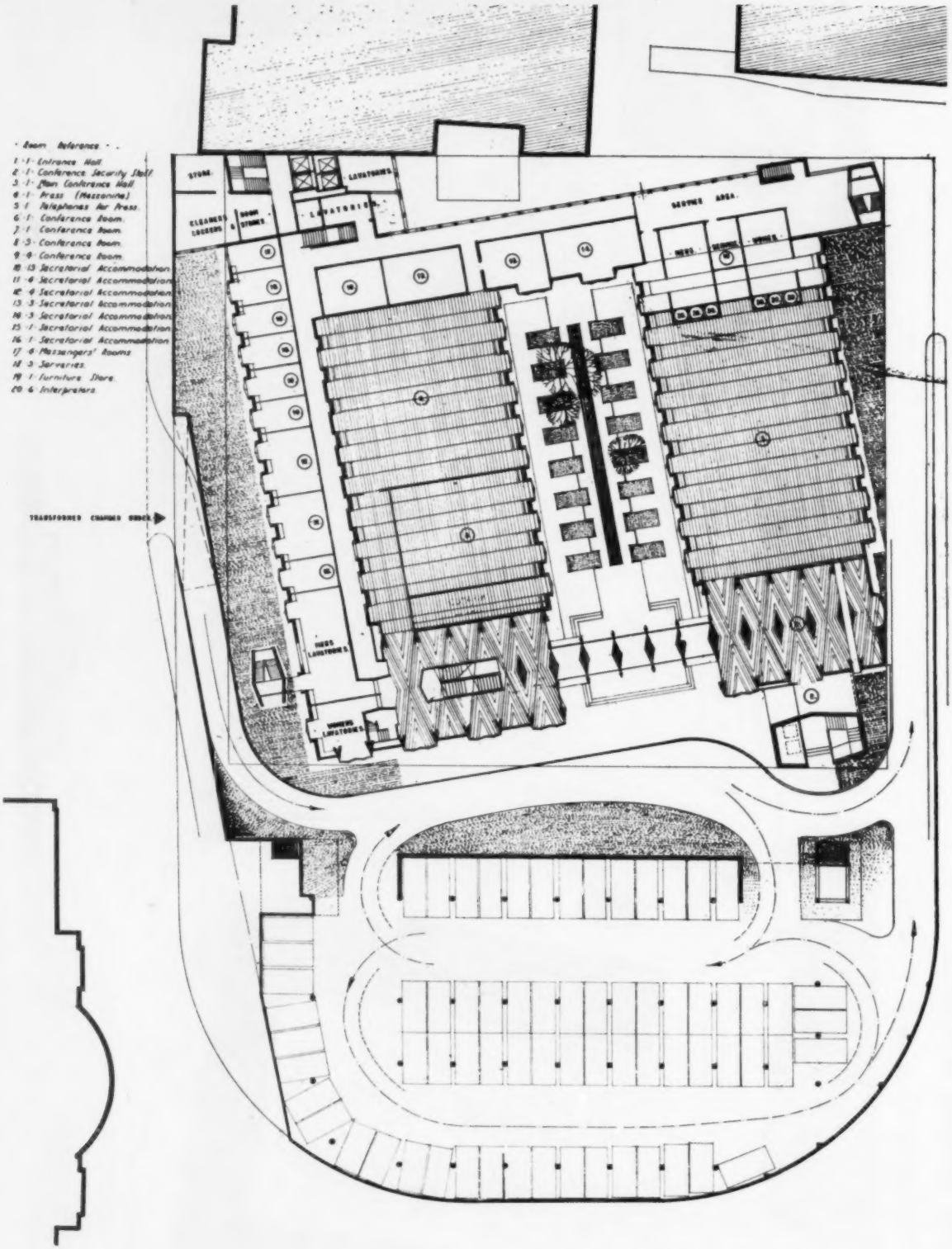
Continued on page 1237

Winning design by William Whitfield

Site plan (reproduced so that it is orientated to the floor plans on the pages that follow)

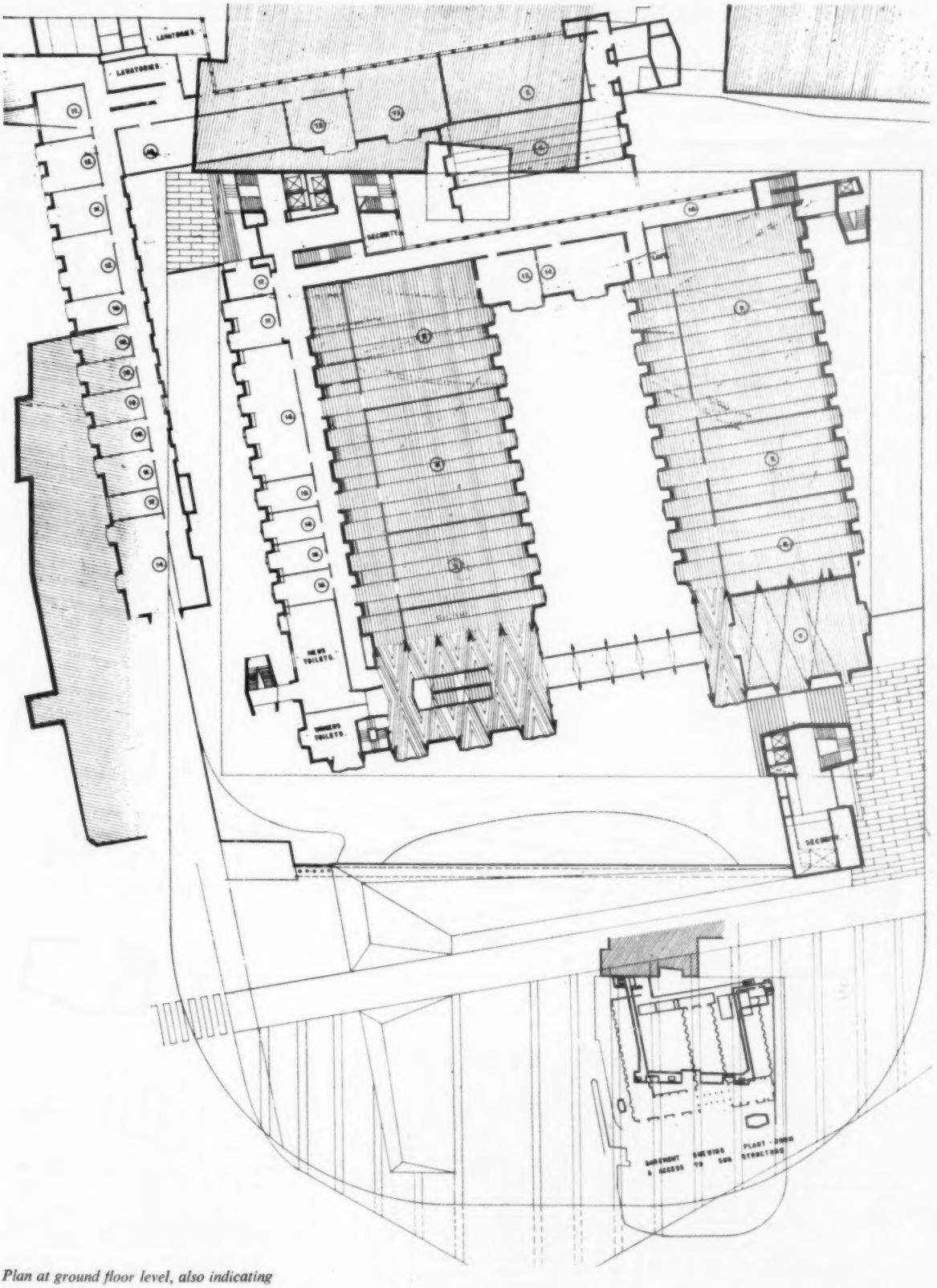


The Architects' Journal Information Library December 20 1961—SfB (92): UDC 725.12



Plan at lower ground floor level showing south end of site used as underground car park

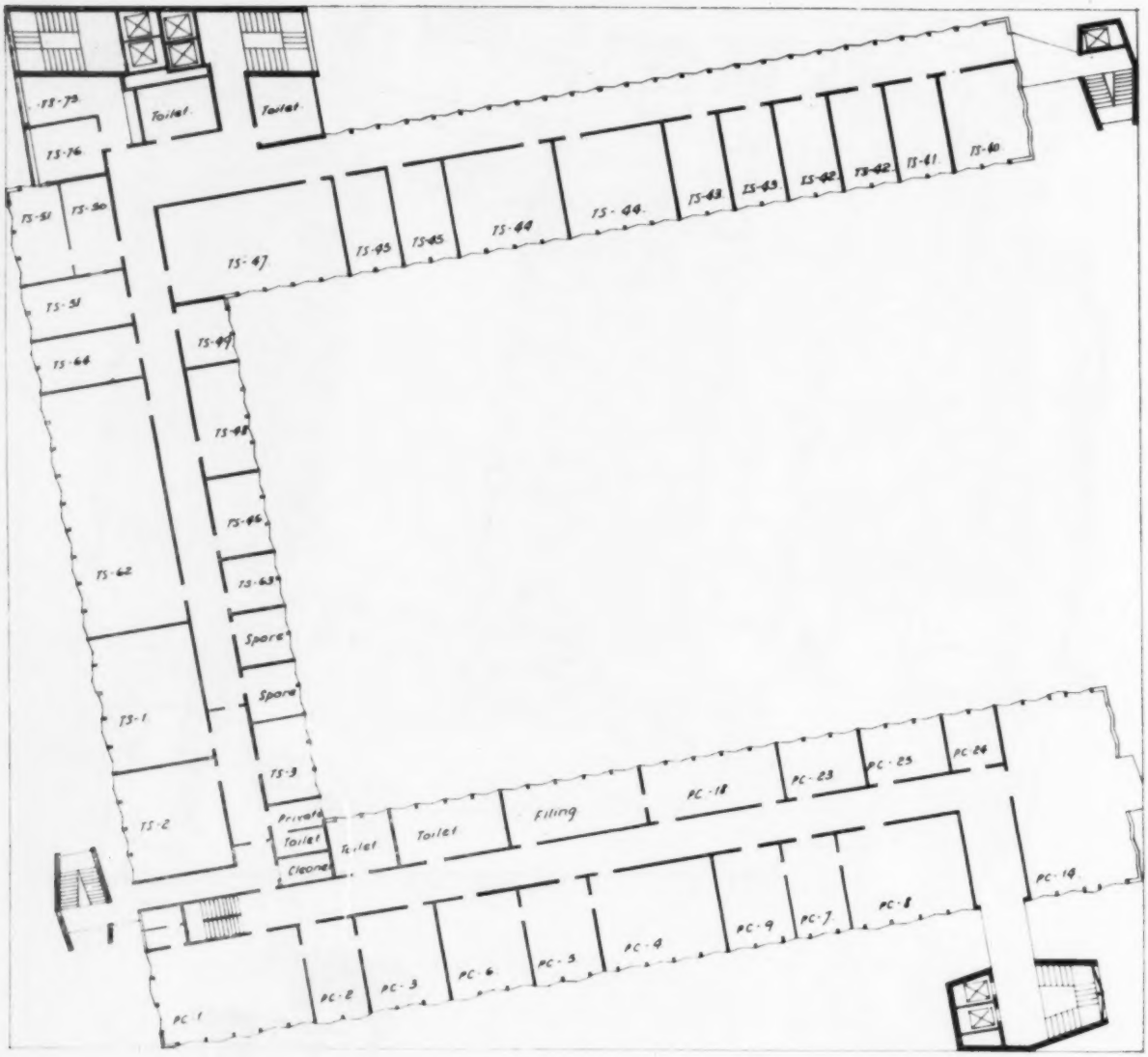
Winning design for Broad Sanctuary by William Whitfield *continued*



Plan at ground floor level, also indicating mezzanine plan

Winning design for Broad Sanctuary by William Whitfield *continued*

First floor plan showing typical arrangement of office accommodation



PARLIAMENTARY COUNSEL		
Room no	Title	No
1	First Counsel	1
2	Private Office	1
3	Junior Counsel	1
4	Second Counsel	1
5	Private Office	1
6	Junior Counsel	1
7	Third Counsel	1
8	Personal Assistant	1
9	Junior Counsel	1
16	Library	1
18	Clerical Staff	1
23	Messengers Room	1
24	Officekeeper	1
25	Officekeepers Store	1

TREASURY SOLICITOR'S OFFICE DIVISION V & DIVISION VI - REGISTRY & TREASURY SOLICITORS SUITE		
Room no	Title	No
1	Treasury Solicitor	1
2	Deputy Treasury Solicitor	1
3	Personal Assistant	1
40	Legal Staff	1
41	Legal Staff	1
42	Legal Staff	2
43	Legal Staff	2
44	Legal Staff - Non	2
45	Legal Staff - Non	2
46	Non - Legal Staff	1
47	Registry	1
48	Filing Space	1
49	Registrar	1
50	Waiting Room	1
51	Interview Rooms	2
62	Registry	1
63	Registrar	1
64	Reception Room	1
75	Messengers Room	1
76	Officekeeper	1

Continued from page 1232

outside walls at 2ft 6in intervals, and this, together with varied room depths, allows a very considerable and easy range of room sizes.

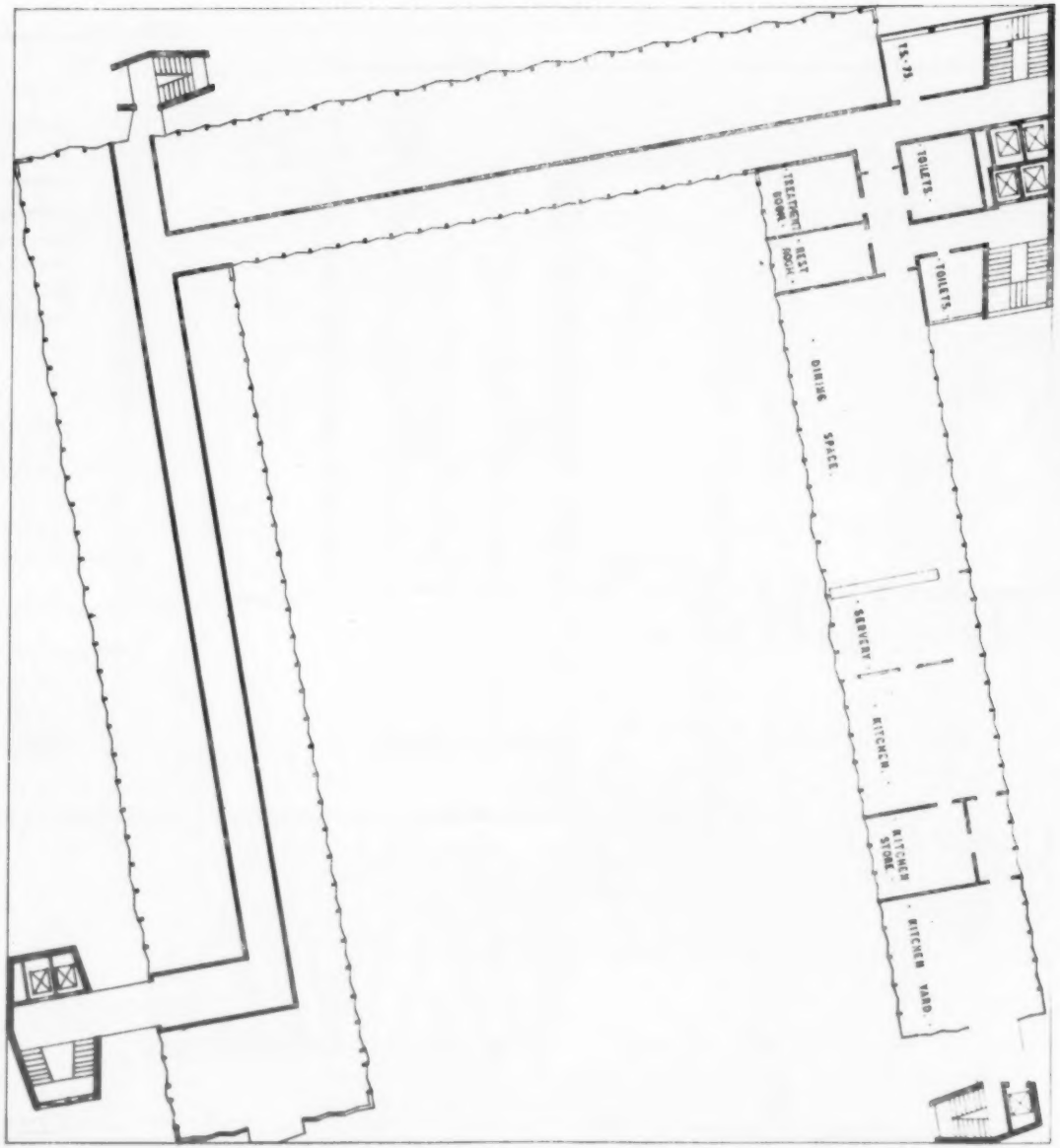
The elevations have been reduced to an unassertive repetition of vertically emphasised units, arranged in combinations of concave and convex facets, so that a degree of modelling will be brought out in the high lighting of the windows. The units are of precast concrete with a retarded finish exposing selected aggregates of light colour and with sufficient spa to ensure good self-cleansing. The lower battered walls of the substructure are faced in precast concrete panels again with a retarded exposed aggregate of warm-coloured selected granites.

The building is designed to have easy vertical and horizontal duct runs. Hot and cold supplies and soil and waste disposal are concentrated at similar points on all floors.

Construction is of reinforced concrete throughout. The seven upper floors are of precast unit construction, these units forming the fenestration and façades. The units are grouted together and support precast floor units to the centre spine wall. The two lower floors forming the conference suite are designed so that the upper storeys do not require to be carried on the large spans over conference rooms. The structure of the conference rooms is of in situ reinforced concrete of folded slab form.

While the building, with site works, could be erected for the sum of £800,000, at prices ruling as at March 1961, in the architect's opinion the amount of money available is insufficient to do justice to such an important site. Though materials and finishes are of a good standard, there must inevitably be criticism of any modern building which, because of financial stringency, cannot equal in quality of materials, its older neighbours.

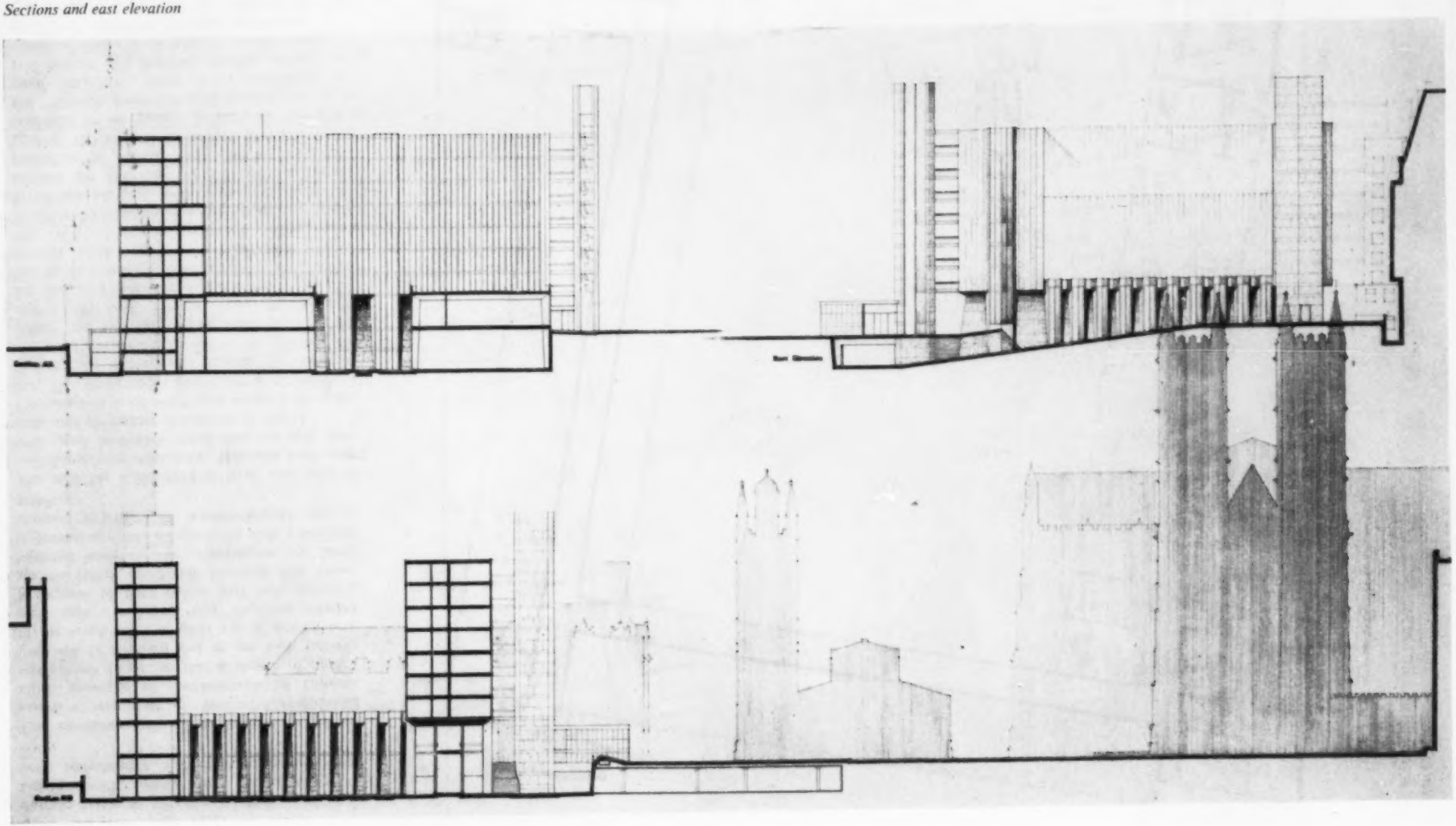
(The report ends with an estimate for the building of a net cost of £738,900, being 164,200 sq ft at 90s a sq ft, plus just under £57,000 for external works, giving a total estimate of £795,650.)



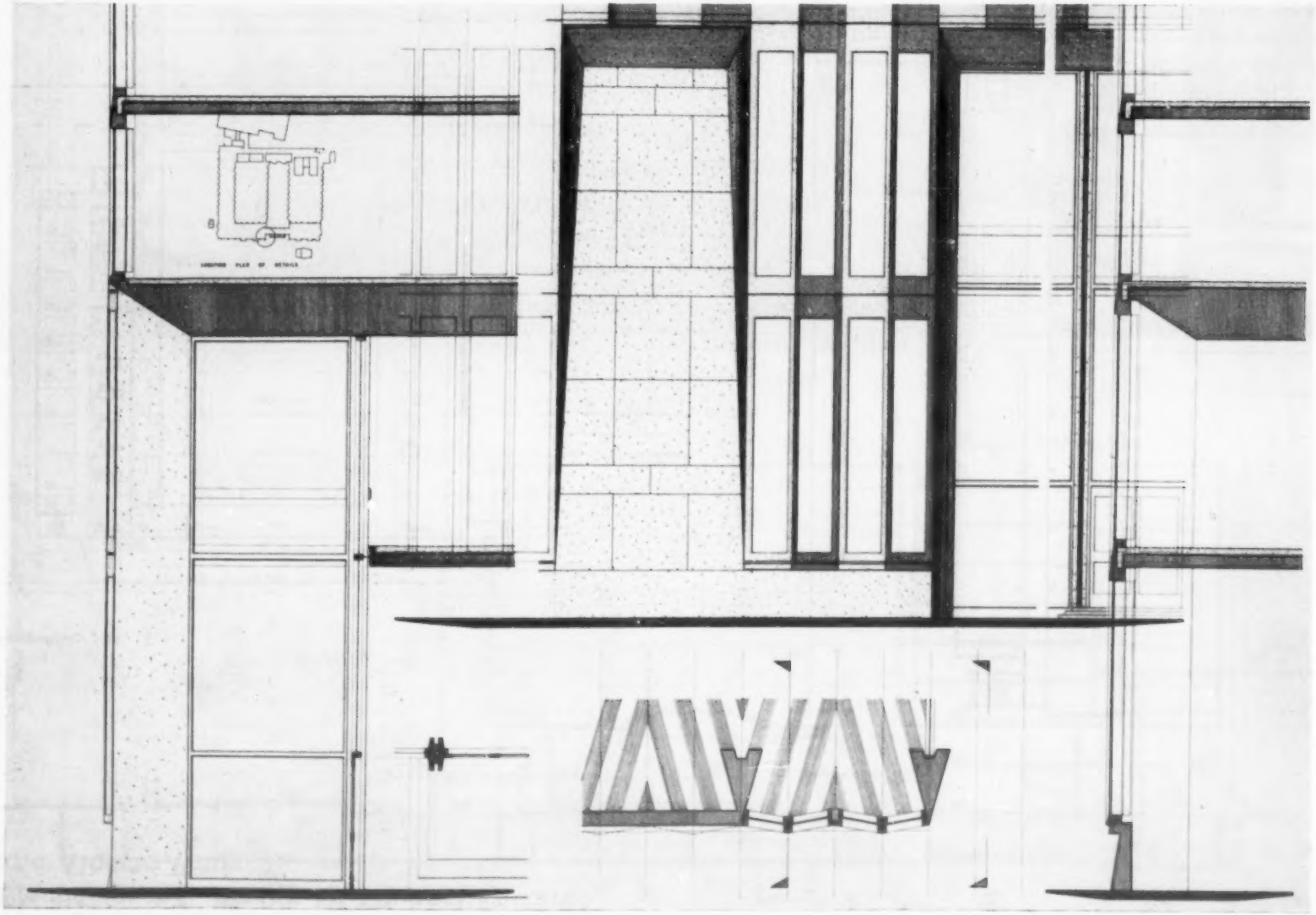
Plan of seventh floor showing office space, at present unallocated, and canteen

Winning design for Broad Sanctuary by William Whitfield *continued*

Sections and east elevation

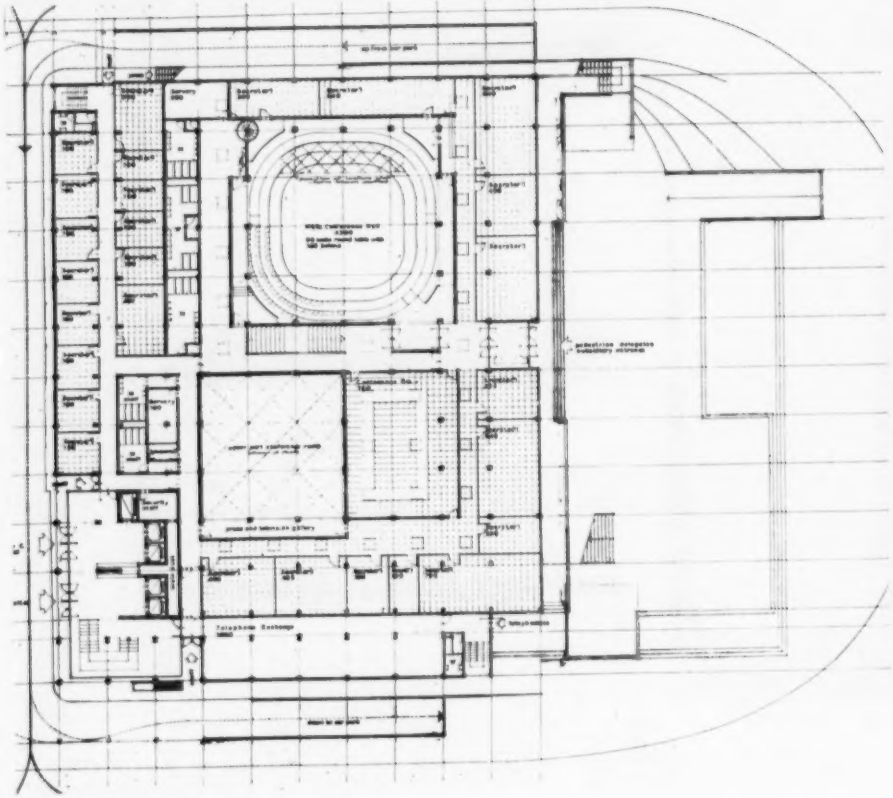


Drawings showing typical details. Construction is in reinforced concrete, with the seven upper floors of precast units. External finishes consist mainly of precast concrete units with exposed aggregate and aluminium windows

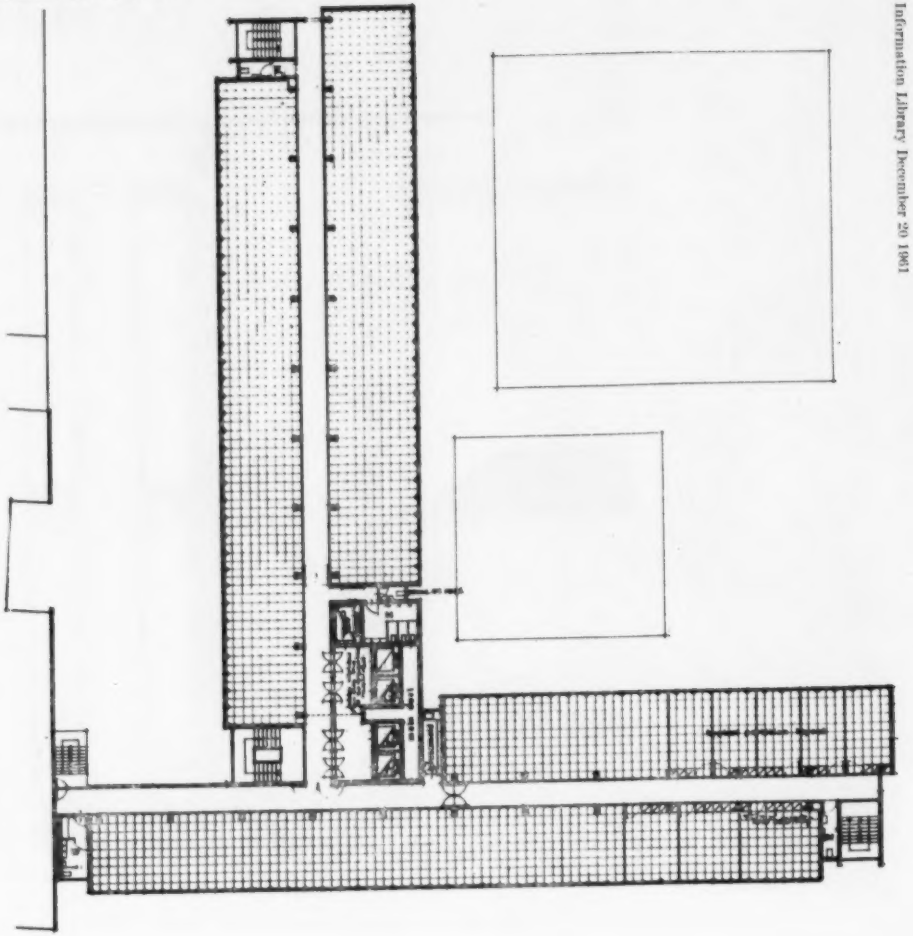


Placed second– design by Michael Edwards and Alberto Ponis

Ground floor plan



Typical upper floor plan



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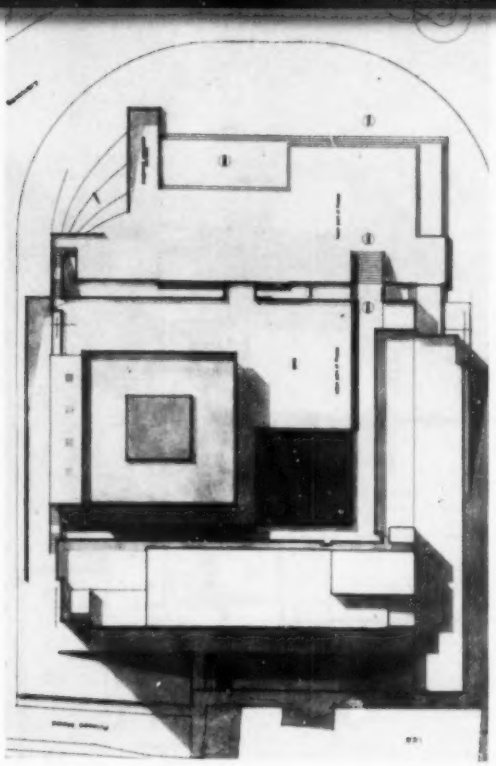
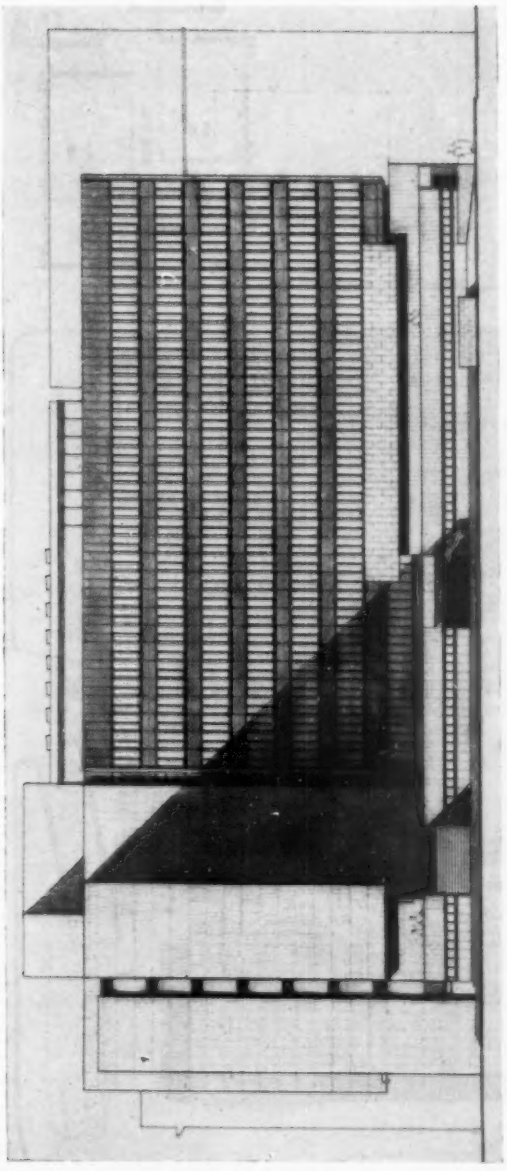
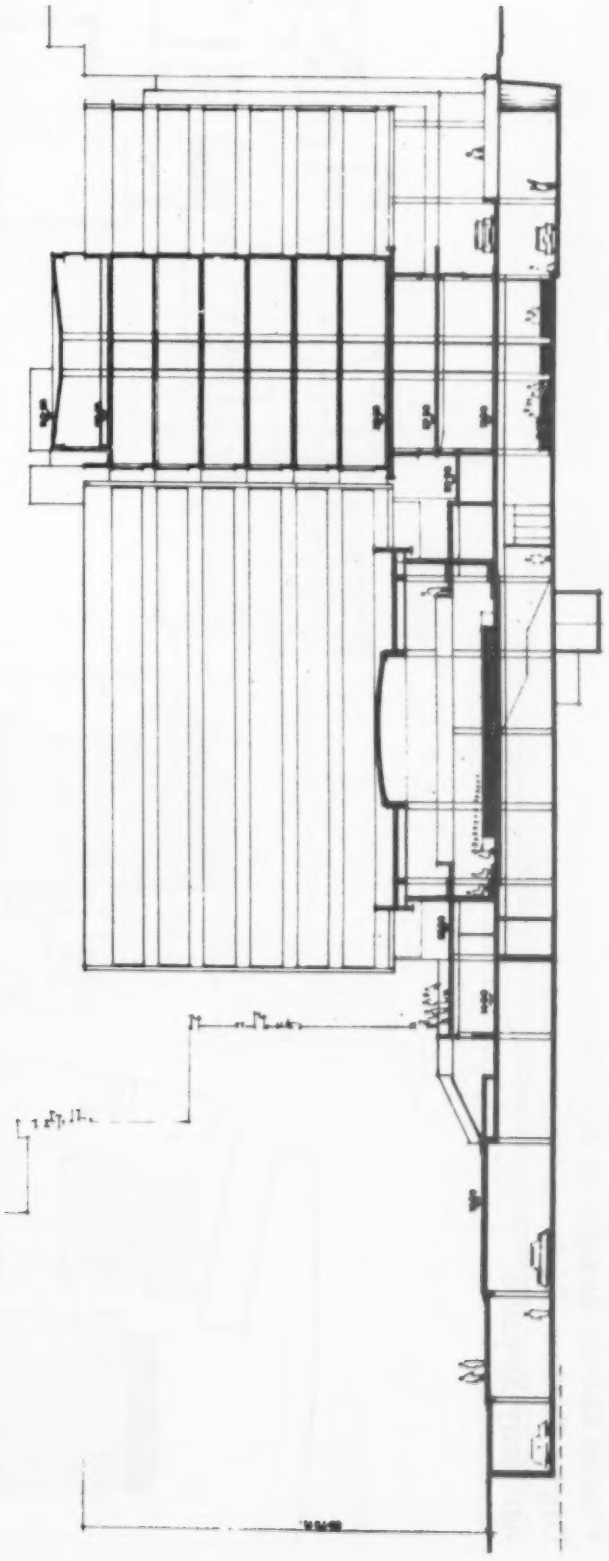




Top left, elevation to Broad Sanctuary

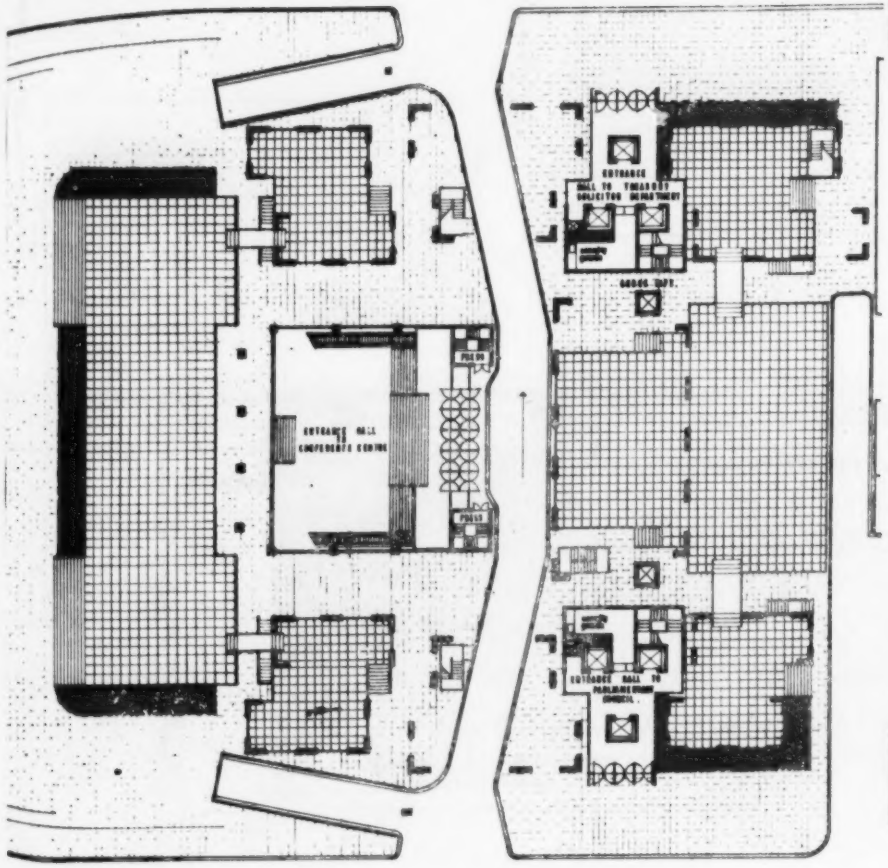
Top right, block plan

Left, section through building looking west

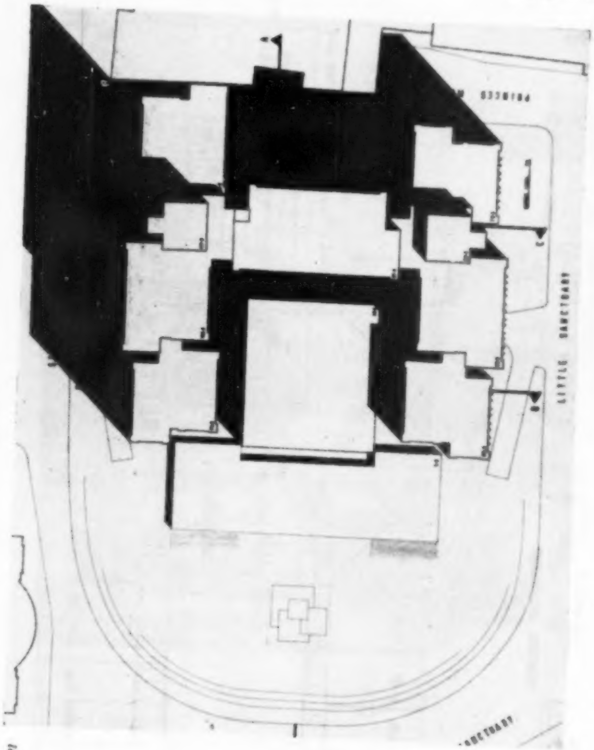


Placed third—design by Roy Case, Digby Farrow, Richard Farrow and Anthony Evans

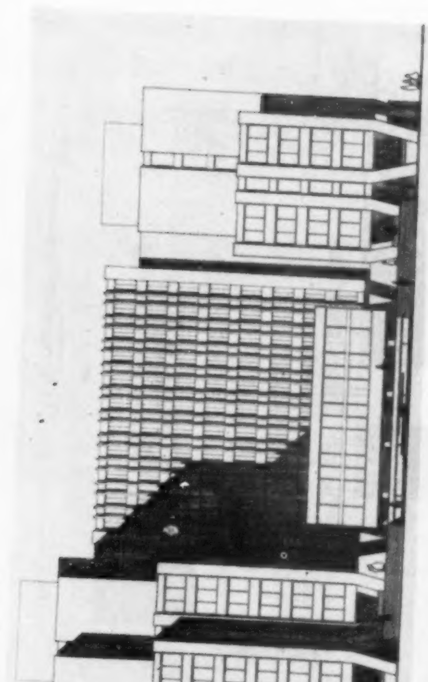
Ground floor plan



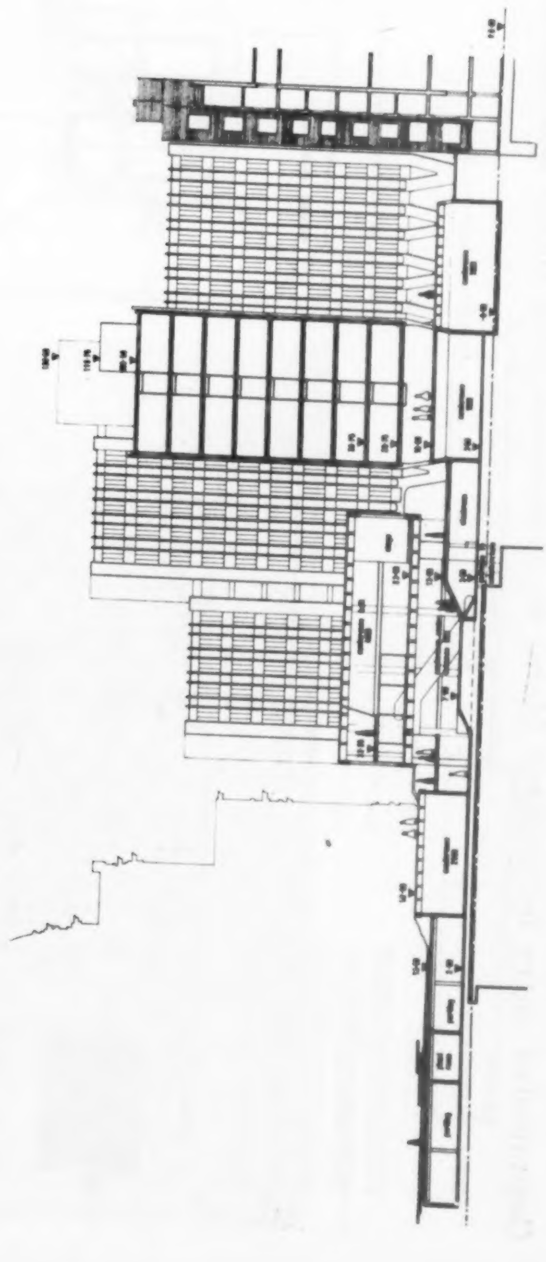
First floor plan



Block plan



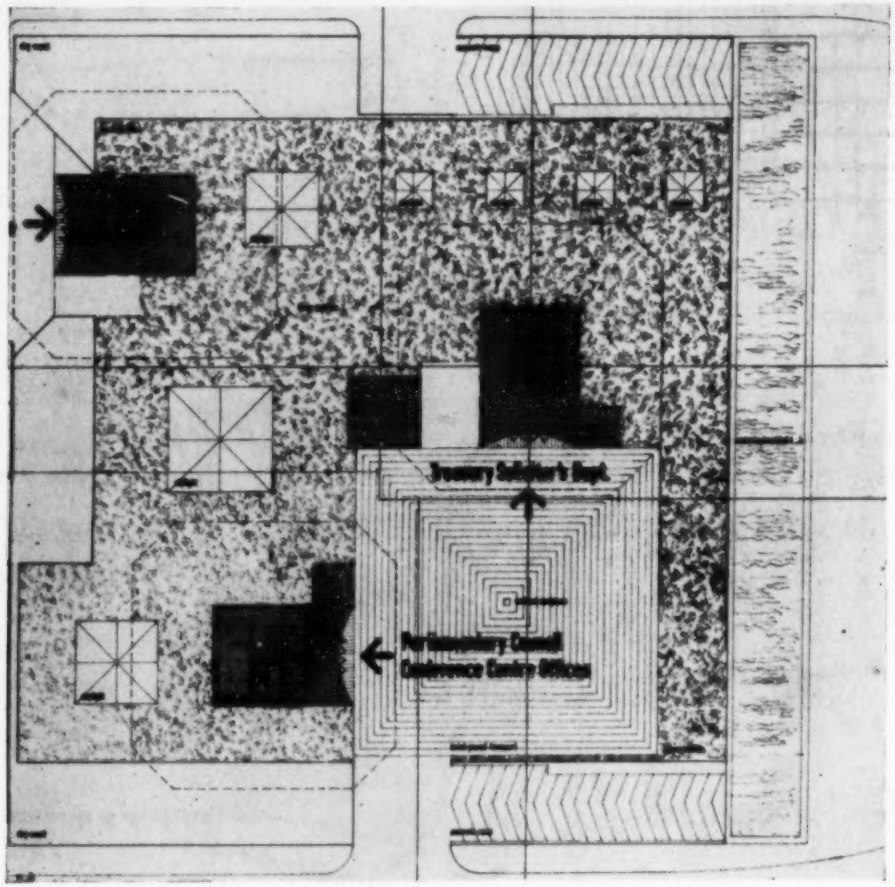
Elevation to Broad Sanctuary



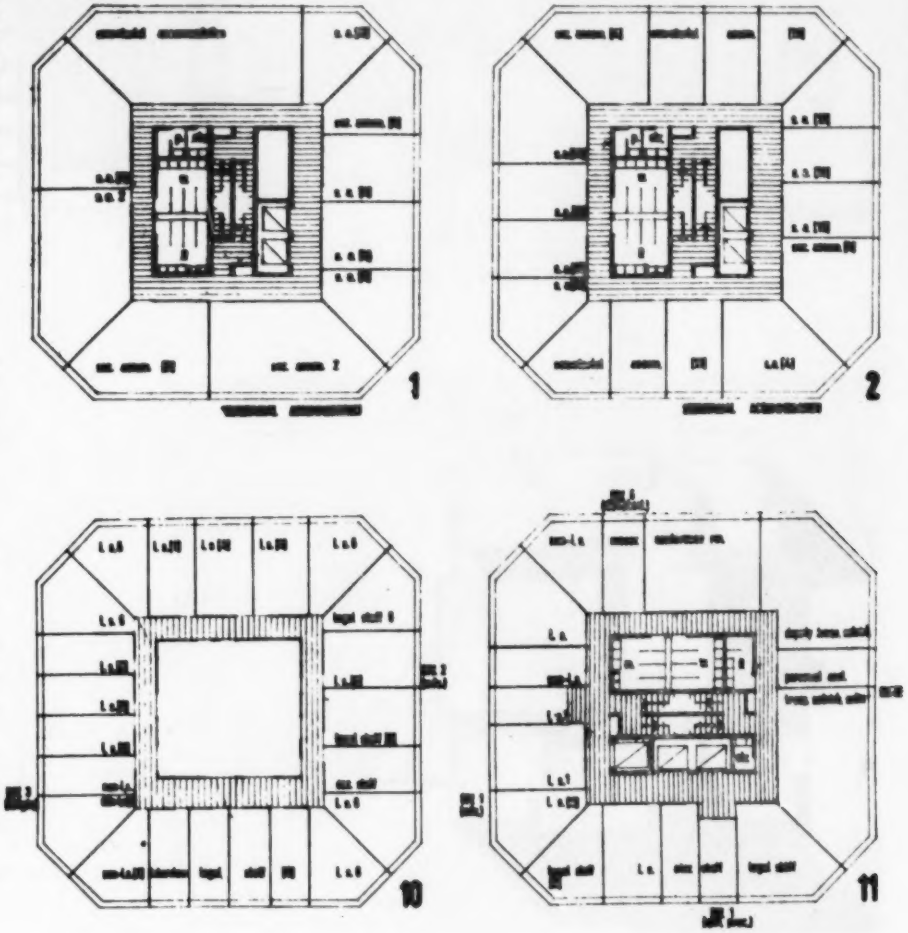
Section through building looking west

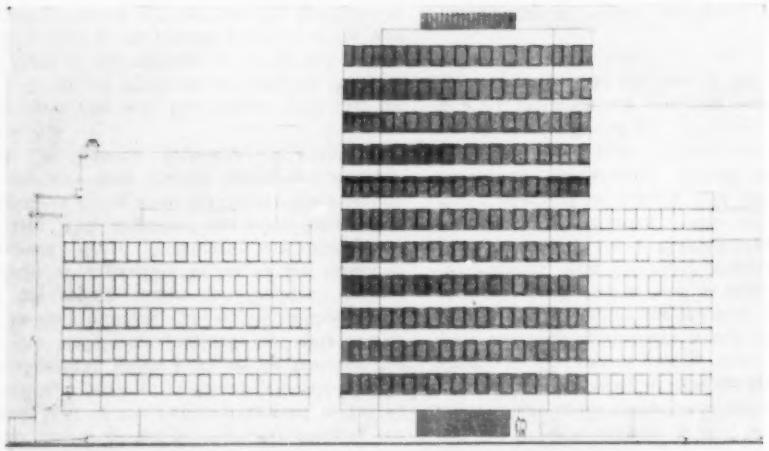
Commended entry by Stanley Merer in association with David Blatchford

Ground floor plan



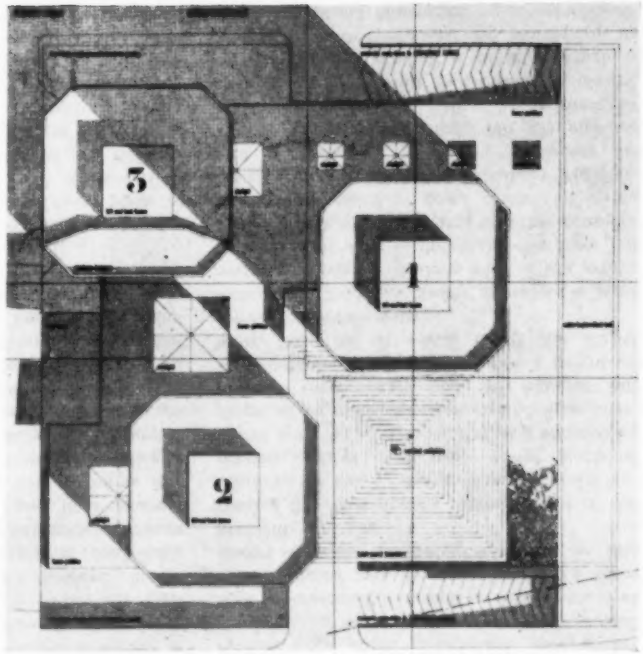
First and second floor, conference centre, and tenth and eleventh floors of Treasury solicitor's department



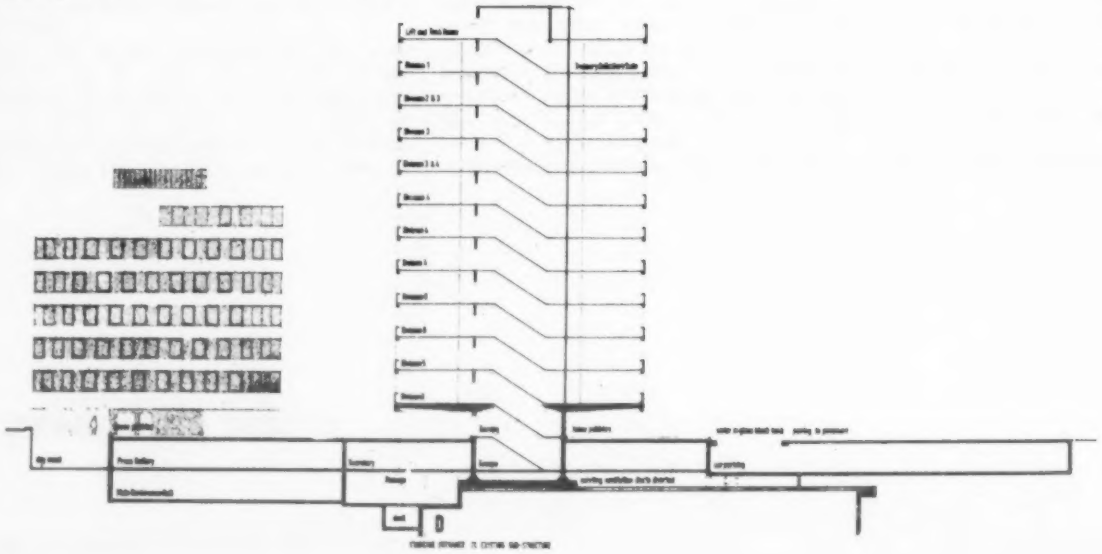


Elevation to Broad Sanctuary

Block plan



Section through main tower block and basement looking east



Assessors' report

We award the first prize to the author of design No 27 because we consider the general form, height and siting of the building he proposes, to be appropriate to its setting and sensitive to the scale and character of the Abbey and Palace of Westminster and of St Margaret's.

One of the chief problems here is to design a building not only to take its place in this distinguished setting and between two structures widely dissimilar in form, but if possible to place it so that it creates a greater feeling of unity and of occasion in Broad Sanctuary itself. In our opinion the winning design provides a good answer to this problem. By bringing the south face of the building forward as far as possible, a sense of enclosure is created; while its alignment, which picks up the frontage line of the Middlesex Guildhall, not only relates it to that building but—as the author states in his report—makes the Guildhall appear almost as a pavilion to act as the transition between Broad Sanctuary and Parliament Square. This alignment has other advantages, namely in giving more significance and direction to the view from Victoria Street, and in assisting the lighting problems of surrounding buildings.

We agree also with the author's view that the use of vertical repetitive elements, on the scale of some of the masonry panels in the Abbey, and applied to the interior planning of the new building, should suit the need for flexibility of accommodation proposed for it and help to relate it to its surroundings.

The plan of the building works well. The conference centre is separated from the office parts; and its main rooms have natural side lighting and overlook an internal tree-planted court. The upper floors, allocated to three separate office uses, can function independently, with their own main access, lifts, lavatories and escapes. Alternatively the unallocated office space can be used as an overflow for the two main departments.

The building could, in our opinion, be built within the cost limit stated in the conditions; but the author's estimate of cost like those of many others in the competition allows only for precast concrete facing units with exposed stone aggregate. The use of natural stone, even if it were not used exclusively, would increase the cost but would allow the building to weather more pleasantly and to hold its own, in quality of material, with its older neighbours. We strongly support the author's contention that, in respect of materials, some relaxation of the economical cost limits laid down in the competition programme should be allowed when the final design is being considered, but we have not allowed this additional consideration to influence our decision and we have made the award on the basis of the design and estimate as submitted.

Design No 9, which we place second, is efficient and workmanlike. The L-shaped composition gives an opportunity for a forecourt treatment in which the shape of the main conference hall is revealed. The plan works well and is flexible. The report is admirably clear and shows that the utmost economy in plan and section would allow Portland stone to be used for the exterior within the limit of cost. We find a weakness, however, in the way the spaces are handled at conference room level, and some inconsistencies between the plan of these rooms and their external effect—or lack of it. The author claims that he has tried to produce with his building a quiet background for public occasions and a design which would not assert itself amongst its more important neighbours. But this approach being negative, does not seem to us to make a sufficient contribution to the importance of its site, nor is the resultant building so well related to the surrounding buildings as the winning design.

We place third design No 34, because we think that it produces good floor plans at basement and office levels, and in its vertical emphasis and the build-up of its different sections to varying heights it might have formed an interesting and suitable development for this unusual site. The treatment of the ground floor, however, seems to us unsatisfactory, particularly where the cranked legs of the columns divide up the surface into uninteresting and probably unusable spaces.

We commend one other design, No 25, without placing it among the prizewinners. Apart from a small contravention of the building line, the necessary flexibility of office use between the three completely independent towers could not be secured, and the ground floor is inaccessible except at two points. But we considered that the grouping of the three towers was an interesting approach to this problem.

Among the other designs submitted one of the solutions to this problem most forcefully expressed consists of a single tower block of offices with the conference hall as a contrasting shape on an otherwise open ground floor level. Some of these designs were ably handled; but we considered that a tower with a height of more than 300 ft would dwarf the varied towers of Westminster.

The competition has clearly canvassed a great many methods of dealing with a site which is as difficult as it is important. We have not found it easy to reduce them to a few examples that would stand a good chance of being developed into a really satisfactory building. Out of these we have finally selected the winner of the competition, No 27; and we are confident that its author as architect, in co-operation with your own officers as clients, will be able to produce a building which is effective for its purposes and worthy of its setting in Broad Sanctuary.

AJ SfB (22)

Partitions : General

Patrick Quirke is an architect in private practice, design consultant to a firm manufacturing proprietary partitioning systems, and materials consultant to J. Douglass Mathews & Partners, who collaborated with him in the production of this Element File

(22) *Partitions : General*

The subject of this week's Element File includes all internal non-loadbearing walls as well as partitions which act as screens and do not rise to ceiling height. Fully and partially demountable partitions are included in its scope, as are partitions normally considered permanent but which may be removed without structural complications, such as stud, block and we partitions. In addition to the Element Design Guide, which gives a design procedure for all types of partition, the File contains two Information Sheets on partition blocks and a technical study. The file author assesses the influence on planning of the decision to use adaptable partitioning.

AJ **SfB (22)**

Element Design Guide **UDC 69·022·5 Partitions: General**

(22) Partitions: General

Bibliographic references (third column) are graded as follows:

* General reference of value to every architect and which he may wish to possess.

** Specialised reference normally used by consultant or architects with special knowledge of particular aspects of building

*** Highly specialised references and research papers which would not be of value to the architect unless working with a consultant

Figures in square brackets are SfB references to the publications. References in **bold type** are to AJ Element Files

Data required

1 **Establish nature of occupancy**	Owner occupier Tenanted: *single tenant* *multiple letting*	*Obtain details of occupancy from client*
2 **Assess environmental hazards**	NOISE: intensity frequency range duration location of source	**BURNS, W. Noise as an environmental factor. *Insulation*, 1959, July p 203–209 [Ab9] *SHEARER, K. The ambient noise level: a key factor in partition design. *Insulation*, 1958, September p 245–247 [Ab9]
	FIRE: areas of high fire risk fire load HUMIDITY: maximum relative humidity location EXTREMES OF TEMPERATURE: location degree	*BIRD, E. L. and S. J. DOCKING Fire in buildings: appendix A Hazardous materials and occupancies. London, 1949, Adam & Charles Black [Ab9]
	POLLUTION: nature degree IMPACT ABRASION RADIATION: degree location	*Note pollution caused by industrial processes* ***MINISTRY OF SUPPLY and CENTRAL OFFICE OF INFORMATION Harwell: chap 7, Protection of health in the detection of radiation. British Atomic Energy Research Establishment 1946–1951: HMSO 1956 [Ab9]
3 **Examine adjacent structure**	ELEMENT: floors	**SfB (23) Floors, ground: General** **SfB (23) Floors, structural: General**
	walls	**SfB (21) Walls: External, loadbearing: General** **SfB (21) Walls: External, non-loadbearing: General**
	columns	**SfB (2) Structures: General**
	ceilings: *solid* *suspended* *applied*	**SfB (25) Ceilings, suspended: General**
	MATERIALS FORM AND SHAPE DIMENSIONS: horizontal vertical openings: *size* *position* tolerances	

	ANTICIPATED MOVEMENT: deflection subsidence vibration				**SfB (2) Structures: General** Element Design Guide para 20–22 *CASSIE, W. F. and J. H. NAPPER Structure in building: chap 8. London, 1958, Architectural Press, 2nd edition [(2)]	
4 Statutory requirements		MINISTRY OF HOUSING AND LOCAL GOVERNMENT: Model by-laws—Series IV Buildings. 1953 edition, HMSO [Aa6]	LONDON COUNTY COUNCIL: London building (constructional) by-laws, 1952 [Aa6]	MINISTRY OF EDUCATION: Building Bulletin No 7 Fire and the design of schools. 1961, HMSO [Ab9]	DEPARTMENT OF HEALTH FOR SCOTLAND: Model building by-laws: Burghs 1954, reprinted 1957. HMSO [Aa6]	DEPARTMENT OF HEALTH FOR SCOTLAND: Model building by-laws: Counties 1954, reprinted 1957. HMSO [Aa6]
FIRE	Separating and fire division walls	32	5·27	Part III	32	38
		35	5·30		33	39
		36	9·02		34	40
		42	9·03		37	43
		43	9·04			
		44	9·05			
	Openings	42	9·07		33	39
			9·08		34	40
	Staircase enclosures	45	9·04		39	45
					80	82
STABILITY		Third Schedule cl 4 to 8 and 17	5·10 (4)		Schedule F cl 14	Schedule F cl 14
5 Extent of services	Outlets Light sources Heat emitters Transmission: *ducts* *pipes* *cables* Controls: *switches* *valves*				*FABER and KELL chap IV and VIII [(56)] *GRANT, B. Electrical installations: a handbook for architects and assistants: chap 3, 4 and 6. London, undated, Architectural Press [(63)] *BRITISH STANDARDS INSTITUTION CP 413 (1951) Design and construction of ducts for services [(5)] See also relevant EDGs **(51)** to **(68) Installations**	
6 Function of partition	CONSIDER: user requirements statutory requirements environmental hazards SELECT REQUIREMENTS: enclosure barrier to: *fire* *dirt* *radiation* filter to: *light* *heat* *sound* *air* *people* container of services support for fittings and furniture				*PHILLIPS, D. (editor) Partitions. *Architectural Design Supplement*, 1961, October [(22)] *BURGESS, R. A. Insulation of partitioning as a design factor. AJ, 1962, 10 January [**(22)**]	
7 Design life	Permanent: *complete in itself* *subject to extension*					

	Temporary: *subject to re-use elsewhere* *subject to rearrangement* *expandable* CONSIDER design life of building future extensions cost change of use change of occupancy	
8 **Assess special erection problems**	Access Speed Phasing Availability of: *labour* *materials*	*Determine in consultation with client*
9 **Desirable environment of paces enclosed**	TEMPERATURE: maximum minimum ILLUMINATION: intensity quality NOISE: acceptable level VENTILATION: rate	*BS CP 3: Chapter VIII (1949) Heating and thermal insulation: table 1 [Ab8] *ILLUMINATING ENGINEERING SOCIETY (IES) Code of recommendations for good interior lighting, 1961. London, 1961, The Society [Ab7] AJ Information Sheet No 1037 [**(21)**] *BS CP 3: Chapter 1 (c) (1950) Ventilation [Ab8]
10 **Degree of maintenance**	Environment Acceptable expenditure Prestige	*BUILDING RESEARCH STATION Principles of modern building: vol 1 chap 9 p 98–101. London, 1959, HMSO, 3rd edition [Bb]
11 **Allocated cost**	Proportion of cost within total as influenced by: CLIENT REQUIREMENTS: *prestige* *design life* *maintenance* *available funds* PERFORMANCE: *function* *appearance*	*Principles of modern building: chap 10 [Bb] *STONE, P. A. Cost prediction—a guide to design decisions. AJ, 1961, 2 March p 319–324 [Ba7]

Basic design decisions

12 **Assess degree of flexibility required**	HIGH little or no fixing into structure: use of pressure fixing provision for easy re-erection ceiling, floor and lighting units at modular intervals no penetration of ceiling or adjacent finishes minimum use of supplementary components easily adaptable make-up pieces minimum of services in partition maximum service access points in floor or ceiling uniform colour scheme durable surfaces to withstand rearrangement easily moved furniture panel module integrated with structural grid	*High degree of flexibility required only if rearrangement is necessary at least annually*
	PARTIAL permanent fixing to structure acceptable easy removal of panel units: panels independent of posts and channels ceiling, floor and lighting units designed for particular layout varied colour scheme acceptable services may be incorporated in partition permanent make-up pieces use of expendable components relationship with structural grid not vital panels units interchangeable horizontal service runs in head to allow flexibility of doors easy redecoration of panels necessary some penetration of finishes acceptable	*Partition layout not subject to great variation but function of partition highly variable*
	LOW permanent fixing to structure	*Normally considered permanent in position and function but may be*

	use of panels unnecessary penetration of finishes acceptable possibility of high insulation values no limitation on position of partitions, no services or openings	*removed without structural complications. Usually expendable*
13 **Determine position of partitions**	Planning requirements: *client* *statutory* *planning grid* Relationship with structure: *beams* *columns* *loadbearing walls* *cladding* *openings* Illumination Ventilation Location of services Degree of flexibility required	See para 4 above See para 3 above
14 **Insulation required** THERMAL	U value: *temperature difference* *heating system* *intermittency of use*	*BRS The thermal insulation of buildings: G. D. Nash; J. Comrie; H. F. Broughton: part I. 1955, HMSO [Ab9] **SfB (56) Installations, heating: General**
SOUND	dB reduction: *nature, intensity and duration of incident sound* *acceptable noise level*	*REED, K. T. Partitions and sound insulation. *Architectural Design Supplement*, 1961, October p 11 [(22)] *Sound insulation of office partitions. AJ, 1957, 19 September p 442–446 [Ab9] *BURGESS [**(22)**] AJ Information Sheet No 1037 [**(21)**]
15 **Determine height of partitions**	Insulation required Adjacent structure Ventilation Nature of enclosure Appearance	
16 **Determine acceptable mass of wall**	Sound insulation Radiation transmission Structural limitations: floor loading Flexibility required	AJ Information Sheet No 1037 [**(21)**] **STEWART, D. A. Shielding with high density concrete. AJ, 1961, 11 May p 693–696 [(22)E]
17 **Extent and location of openings**	CONSIDERATIONS: flexibility required illumination ventilation appearance access services sound transmission and heat loss means of escape TYPES: glazed areas doors hatches service openings louvres	
18 **Construction**	CONSIDER: degree of flexibility required design life cost appearance extent of openings strength and stability: *applied loading from fixtures and fittings* security insulation required fire resistance	*Principles of modern building [Bb] *NIELD, D. Walls and wall facings. London, 1949, Spon [(21)] *DAVIES, R. L. and D. J. PETTY Building elements: chap 7 p 153–173. London, 1960, Architectural Press, 2nd edition [Bb] *MOHLG Quicker completion of house interiors. 1953, HMSO [(98)] See para 16 above *BURGESS [**(22)**]

	acceptable mass erection: *speed* *trades involved* *availability of labour* programme: *time of erection* *time available for erection* relationship with adjacent elements facilities for services SELECT: bonded small unit stud panel: *post and panel* *panel to panel*	AJ Information Sheets Nos 1042 and 1043 [**(22)**] *PHILLIPS p 9 [(22)] *TANNER, G. C. A. Office partitions. *Architectural Review*, 1960, May p 355 [(22)]
19 **Determine element cost target**		*In consultation with quantity surveyor* *HOWARD, J. Cost analysis. *Architectural Design Supplement*, 1961, October p 13 [(22)]
20 **Type of partition**	Architect detailed Proprietary: *standard* *purpose-designed*	*TANNER *MORRIS, A. E. J. Partitioning systems. *Industrial Architecture*, 1960, November/December p 449–452 [(22)]
PROPRIETARY PARTITIONS 21 **Consult specialist subcontractor**	Obtain estimates on basis of sketch design and performance specification Compare prices with element cost target Choose proprietary standard partition or appoint subcontractor to prepare purpose-designed system	*LEACH, J. S. Demountable partition contracting. *Architectural Design Supplement*, 1961, October p 10 [(22)]

Detail design

22 **Examine service requirements**	Location and size of service entries, runs, controls and outlets *Concealed within:* PARTITION: panel framing duct chase CEILING FLOOR DUCT *Exposed:* PASSING THROUGH PARTITION SURFACE MOUNTED ON PARTITION	*PHILLIPS p 13 [(22)] *QUIRKE, P. The requirements of adaptable partitions. AJ, 1961, 20 December p 1261 et seq [**(22)**]
23 **Consider relationship with adjacent elements**	Finishes of adjacent elements: *continuous past edge of partition* *discontinuous* Treatment at suspended ceiling: *abutment* *penetration* CONSIDER: effect on flexibility relative movement initial cost future costs insulation requirements service requirements fire resistance	*QUIRKE [**(22)**] *MARINER, T. Theory of sound transmission through suspended ceilings and partitions. *Noise Control*, 1959, November p 13–18 [Ab9]
BONDED SMALL UNITS 24 **Choice of material**	CONSIDER: weight fire resistance sound insulation moisture movement thermal movement deliveries cost	*Principles of modern building: chap II [Bb] *MCKAY, W. B. Building construction: vol III p 43–48. London, 1959, Longmans Green & Co Ltd [Bb]

	strength and stability thermal insulation ease of cutting, chasing, nailing and screwing appearance if fairfaced suitability for applied finishes jointing methods junctions with adjacent materials	
	BRICKS, BLOCKS AND SLABS	AJ Information Sheets Nos 1042 and 1043 [**(22)**] *BS CP 122 (1952) Walls and partitions of blocks and of slabs [(21)] *DAVIES and PETTY p 153–160 [Bb]
	clay	*BS 657:1950 Dimensions of common building bricks (Fg2) *BS 1190:1951 Hollow clay building blocks [Fg] *BS CP 121·101 (1951) Brickwork [F]
	sandlime	*BS 187:1955 Sandlime (calcium silicate) bricks [Ff1] *NATIONAL BUILDING STUDY Special Report No 3 Sandlime bricks: G. E. Bessey. 1948, HMSO [Ff1]
	concrete: dense: *solid* *hollow* lightweight	*BS 1180:1944 Concrete bricks and fixing bricks [Ff2] *BS 2028:1953 Precast concrete blocks [Ff] *CEMENT AND CONCRETE ASSOCIATION (CCA) Concrete block walls. 1961, The Association [(22)]
	plaster glass	*BS CP 152:1960 Glazing and fixing of glass for buildings [Ro] *BS 1207:1953 Hollow glass blocks [Fo]
	SURFACE OF UNIT plain keyed *Consider:* appearance, if fairfaced suitability for applied finish	
25 **Determine thickness**	STABILITY: height length number and position of: *junctions* *changes in direction* MASS REQUIRED THICKNESS OF ADJACENT COMPONENTS	*NIELD p 262–263 [(21)]
26 **Jointing**	CONSIDER: strength size of units movement: *thermal* *moisture* fire resistance appearance	*BS CP 122 (1952): cl 3·013–3·030 [(21)] *Principles of modern building p 184–197 [Bb]
	SELECT: bond	*BS CP 122 (1952): cl 3·029 [(21)] *DAVIES and PETTY p 156 [(2)] *MINISTRY OF WORKS Advisory Leaflets No 16 Mortars for brickwork, 1959 [Dq4]
	composition of mortar reinforcement: *expanded metal* *straining wires*	*BRS Digest 126 (first series) Mortars for jointing [Dq4]
27 **Lintels over openings**	Determine size and material: *span* *partition finish* *partition thickness* *bearing required*	*BS CP 122 (1952): cl 3·014 [(21)]
28 **Junctions with structure**	Walls: *bonded* *scribed*	*BS CP 122 (1952): cl 3·076 and 5·026 [(21)]

	Floors: *directly on structural floor* *on plate* Ceiling CONSIDER: flexibility required stability fire resistance movement	
STUD PARTITIONS		
29 **Position of studs**	In line Staggered Consider sound insulation required	*MCKAY p 49–51 [Bb]
30 **Choose facing material**	CONSIDER: combustibility	*BRS National Building Studies Special Report No 22 Fire hazard of internal linings: D. Hird and C. F. Fischl. 1954, HMSO [Ab9] *DAVIES and PETTY p 172–173 [Bb]
	resistance to impact, abrasion, chemical attack, vermin cost appearance thermal qualities: *insulation* *movement* moisture movement fixing method jointing method	*DAVIES and PETTY p 165–172 [Bb]
	SELECT: plasterboard: *dry jointed*	*BRS Digest 9 (second series) Dry-lined interiors to dwellings [(42)Rh2] *BRS Digest 128 (first series) Jointing plasterboard, p 3 [R]
	skim coat plaster	*MOW Advisory Leaflet No 21 Plastering on plasterboard and insulating fibre building board, 1955 [P]
	plaster on lathing: *timber* *expanded metal*	*BRS Digest 14 (first series) Plastering on metal lathing [P] *BS 1369: 1947 Metal lathing (steel) for plastering [Pd2]
	clay *dovetail sheeting*	*BS 2705:1956 Clay lath [Pg2]
	timber: *strip* *board* *sheet*	*TIMBER DEVELOPMENT ASSOCIATION (TDA) publication TBL7 Plywood: revised 1961 [Ri4]
	fibreboard: *insulation board* *hardboard*	*MOW Advisory Leaflet No 17 Fixing fibre building board wall linings, 1960 [R] *HANDISYDE, C. C. Building materials: p 259–272. London, 1961, Architectural Press, 4th edition [D]
	asbestos cement plastic laminate	
31 **Construction**	SIZE AND SPACING OF: head sill studs noggings	*DAVIES and PETTY p 164 tables 30 and 31 [Bb]
	JUNCTION OF MEMBERS: butt nailed housed: *nailed* *dowelled* *wedged*	
32 **Consider protection against rot and insects**	Off-site treatment: *pressure impregnation*	*BS 1282: 1959 Classification of wood preservatives and their method of application [Du3]
	On-site treatment: *brushed* *sprayed*	*BS CP 112·100 (1952) Preservative treatments for timber in buildings [Du3] incorporated in BS CP 112 (1952)

		*TDA publication TBL8 Timber preservation [Du3]
PANEL CONSTRUCTION		
33 **Determine module**	Tolerances and clearances Structural grid Flexibility required Disposition and size of openings Appearance Position of services in: *partition* *ceiling* *floor* Overall panel thickness Overall partition thickness Ease of handling Strength and size of panel	*CARBERT-HARRIS, T. L., and H. W. HARRISON The co-ordination of dimensions in building. A system of preferred dimensions demonstrated in houses at Hatfield New Town. *The Builder*, 1961, 17 March p 515–520 [Ba4] *THOMAS, R. Machine building. *Architectural Design*, 1955, August p 246–251 [Ba4]
34 **Location of framing if any**	Exposed, concealed Spacing: *horizontal* *vertical* CONSIDER: appearance module	
35 **Framing**	COMPONENTS: types: *posts, transoms, sills, heads* form: *solid, hollow, split* considerations: *type and number of junctions* *access for services* *fixing and levelling devices* *intersections* MATERIALS: timber: *hardwood* *softwood* concrete aluminium steel: *rolled* *pressed* INTERSECTIONS: permanent demountable CHECK: continuity of services tolerances rigidity removal of panels	
36 **Panel**	FORM: homogeneous built-up MATERIAL: plaster plasterboard terrazzo ceramic tile timber *blockboard* *plywood* glass fibreboard hardboard chipboard metal: *steel* *aluminium* *bronze* asbestos cement plastic JUNCTIONS, panel to panel, panel to framing: butt interlocking: *mated* *lap* accessory: *post* *spline*	*COMMONWEALTH EXPERIMENTAL BUILDING STATION (Australia) Special Report No 20 Gypsum-plaster wall panels: D. V. Isaacs, 1959 [Rh2] *TDA TBL7 [Ri4] *HANDISYDE p 288–296 [D] *HANDISYDE p 259–272 [D] *PHILLIPS p 23–35 [(22)] *PHILLIPS p. 17–39 [(22)]

	cover strip *bead* *clip* *extruded gasket*	
JUNCTION WITH STRUCTURE		
37 **Ceiling junction**	Check provision for fire and sound insulation in ceiling void: *permanent barriers* *movable barriers* *insulated ceiling construction* *absorbent linings to soffit of floor* *baffles*	*QUIRKE [**(22)**]
38 **Fixings**	PRINCIPLES: positive fixing by perforation of structure positive location provided in structure support for pressure contact provided in structure METHODS OF LEVELLING: sliding joints jacks wedges springs FIXING bolts cast in floor for free-standing or barrier walls continuous slots or projections on a modular grid with or without removable cover strips floor or ceiling sockets at predetermined points bonding to walls screwed or nailed to battens or structure adhesives	Check: *reinforcement to suspended ceiling along lines of suspension or at predetermined points. Spreader battens or channels*
39 **Adjustment**	Provide means of adjustment to absorb dimensional variations: *sliding joints* *cover strips* *resilient gaskets* *scribing*	
FINISHES		
40 **Type**	INTEGRAL APPLIED: shop site Consider: *damage, defacement, appearance, flexibility, maintenance, method of application, cost*	**SfB (42) Finishes, internal: General**
41 **Treatment of arrises and internal angles**	Protection Ease of cleaning Safety Type of finish	
OPENINGS		
42 **Linings and door frames**	CONSIDER: partition thickness and finish size of opening fire insulation appearance flexibility required type and weight of door draught exclusion acoustical sealing DECIDE: erection: *built-in* *applied* extent: *height of opening* *height of partition* material: *timber* *metal* *concrete* *terrazzo*	**SfB (32) Doors: General** *BS CP 122 (1952) p 93 [(21)] *WHITELEY, P. Draught exclusion and weatherstripping. *Architectural Review*, 1957, August p 142–143 [Ab9] *BS 1567:1953 Wood door frames and linings [(32)] *DAVIES and PETTY p 380–381 [(2)] *BS 1245:1951 Metal door frames (steel) [(32)]

	shape and size	*The stops should be worked out of the solid and the frame impregnated for one-hour type doors* (BS 459: Part 3: 1951 Plywood faced fire-check flush doors and wood and metal frames (half-hour and one-hour types) [(32)] *WHITELEY
	method of sealing	
43 **Select skirtings**	TYPES: flush recessed projecting coved applied built-in integral CONSIDER: floor finishes wall finishes junctions with door frames appearance provision for services cleaning and washing height method of removal provision for adjustment to suit variable thickness of floor finish	*BS 1246:1959 Metal skirtings, picture rails and beads [(45)] *BS 584:1956 Wood trim [(45)] *QUIRKE [**(22)**]
CHECK GENERALLY		
44 **Thermal insulation**	IF THERMAL INSULATION IS OF IMPORTANCE: calculate the additional thermal insulation required over and above that existing in the materials essential in the construction ACHIEVE THIS U VALUE BY: rigid thermal insulating sheet materials use of multi-cavity construction cavity filling with quilt or granular materials application of reflective surface material to faces of cavities or external faces	The thermal insulation of buildings part I [Ab9]
45 **Condensation**	Check that there is no risk of interstitial condensation or face condensation if the temperature difference between the faces is great. If risk present, then overcome by: incorporation of a moisture vapour barrier and its correct location use of water-absorbent finishes increased overall U value	*BRS Digest 23 (first series) Condensation problems in building [Ab9]
46 **Sound insulation**	Check insulation of partition Examine insulation loss due to: *openings* *cracks* *by-pass through suspended ceilings*	*BS CP 3: Chapter III (1960) Sound insulation and noise reduction: appendix D and F figs 4 and 5 [Ab9] *BURGESS [**(22)**]
47 **Amend and modify drawings as necessary**		
48 **Perform final cost check**		
49 **Prepare documents for final approval**	Client Relevant authorities Consultants Specialist suppliers to contractors	

Specification

50 **Bonded small units**	Material: *name, number, grade, density, colour, finish*	*BS 1190:1951 [Fg]
	Thickness	*BS 187:1955 [Ff1]
	Jointing: *mix*	*BS 1207:1953 [Fo]
	materials	*BS 1180:1944 [Ff2]
	bonding	*BS 2028:1953 [Ff]
	Pointing: *during erection*	*BS CP 121.101 (1951) [F]
	on completion	*BS CP 122 (1952) [(21)]
	Fair face: *quality*	
	extent	
	Lintels: *material*	*BS 1239:1956 Cast concrete lintels [Gf2]
	dimensions	
	reinforcement	
	finish	
	Reinforcement: *material*	*BS CP 111 (1948) Structural recommendations for loadbearing walls [(21)]
	size	
	position	
	Pinning to top edges	
	Building into walls	
	Chases	
	Fixing brick or block: *size, position*	*BS 1180:1944 [Ff2]
51 **Timber**	Species	*BS 1186: Part 1: 1952 Quality of timber [Di]
	Moisture content	
	Acceptable condition	*BS CP 231 (1952) Painting [V]
	Size and spacing of members: *heads, sills, studs, braces, noggings, battens, grounds, posts, mullions, transoms*	*BS CP 112 (1952) The structural use of timber in buildings [Ab3]
	Preservatives: *material*	*BS 1317:1946 Wood laths for plastering [Pi2]
	application	*BS CP 112.100 (1952) [Du3]
		*BS 1282:1959 [Du3]
	Fixings: *method*	*BS 1202:1944 Wire nails and cut nails for building purposes [(20)]
		*BS 1579:1960 Connectors for timber [(20)]
	material	*BS 1210:1952 Wood screws [(20)]
	spacing	
52 **Sheet materials**	Material: *name, number, grade, density, colour, finish*	*BS 1142:1953 Fibre building boards [Rj1]
	Dimensions: *length, breadth, thickness*	*BS 1230:1955 Gypsum plasterboard [Rh2]
	Fixings: *method*	*BS 1455:1956 British-made plywood for general purposes [Ri4]
	material	*BS 2604:1955 Medium-density resin-bonded wood chipboard [Rj1]
	spacing	*BS 952:1953 Glass for glazing: classification and terminology (including thickness and tolerances) [Ro]
	applied mouldings, gaskets, beads	*BS 405:1945 Expanded metal (steel) for general purposes [Jd2]
	Treatment of angles	*BS 690:1953 Asbestos-cement slates and sheets [Nh1]
	Junctions of sheets	*BS 2572:1955 Phenolic laminated sheet [Rn6]
		*BS CP 152:1960 [Ro]
53 **Proprietary partitions**	Manufacturer	*PHILLIPS p 17–39 [(22)]
	Type: *name*	*TANNER [(22)]
	number	*MORRIS [(22)]
	colour	*Prefabricated partitioning. *Architect and Building News*, 1961, 13 September pp 412–414 [(22)]
	finish	
	Programme	
	Delivery	
	Storage and protection	
	Erection: *time*	
	responsibility	
	assistance	
	Making good	
	Integration with services	
	Tolerances and clearances	

Contract stage

54 **Consider factors likely to affect construction period**	Phasing of erection: brick and block partitions framing finishes: *application, protection* integration with services availability of labour	
55 **Contract**	FORM: within building contract separate contract CONDITIONS: time: *for tendering* *for erection* phasing maintenance period	*LEACH [(22)]
56 **Select and appoint specialist suppliers and subcontractors**	By competition By nomination	
57 **Programme**	Agree with general contractor, suppliers and subcontractors: erection procedure phasing ordering delivery dates provision of samples erection of sample structures site storage temporary protection integration with services	
58 **Supervise construction**	CHECK: materials: *type* *quality* dimensions: *setting out* *tolerances* *clearances* quality of workmanship	*MACFARLANE, A. A. Site supervision. London, 1956, Architectural Press [Bb]
59 **Carry out final inspection**	Ensure that moving parts operate correctly CHECK: defects from: *poor workmanship* *use of unspecified material* damage Prepare and hand to client: names and addresses of suppliers of proprietary components of wall instructions for rearranging demountable partitions	

AJ **SfB (22)**

Technical Study **UDC 69·022·5 Partitions : General**

Requirements of adaptable partitioning

Defining adaptability as an attribute combining the qualities of demountability and flexibility, Patrick Quirke examines in this Technical Study the influence adaptable partitions exert on planning dimensions of structure and partition, detailing of junctions with floor, walls and ceiling and accommodation of services.

The word demountable is loosely applied to a great variety of factory-made prefabricated partitions, all of which can be taken down and re-erected, some with difficulty and considerable disruption, others with comparative simplicity. Demountability alone is not sufficient to provide the flexibility of rearrangement and freedom of planning increasingly necessary in industry and commerce today; also required is the more complex attribute—adaptability. The ideal adaptable partition can be quickly and easily dismantled and reassembled to suit different layouts an indefinite number of times with the minimum of damage to itself and to the surrounding structure.

In practice this degree of adaptability is seldom either fully exploited or considered economically justified. This is not because such systems do not exist or cannot be designed, but is largely because the mechanics inevitably impose certain limitations and disciplines which are often neither fully appreciated nor provided for in the design of buildings intended to house this type of wall.

The most fundamental, and perhaps the most obvious, restriction imposed on a building by adaptable partitions is the need for an accurate and strictly modular framework into which partition units can be fitted with ease and precision. It is only by conforming to this basic discipline that the maximum degree of freedom of layout combined with simple and rapid rearrangement is economically and functionally possible. In order that the wall may be taken to pieces it must be composed of separable units: to be interchangeable, the overall dimensions and shapes of these units must be the same: any given length of wall or build-up of units, therefore, will fit exactly only into a space specifically related to the unit size of partition module.

The choice of module will determine the size of partition unit, and should be dictated primarily by planning requirements, such as width of corridors, sizes of rooms and function of the building generally. The following factors, directly affecting partition construction, should also be considered. Too large a module will result in unwieldy units that are difficult to handle, unless the panels are detachable (two men should be able to handle one unit). Too small a unit can become uneconomic because the additional number of units, and therefore connections, required in any given length of wall require increased site work.

Other considerations which may affect the choice of module, generally on economic grounds, are type of ceiling construction and associated components including lighting fittings, standard sizes of panel materials and finishes, glass sizes, and standard modules offered by proprietary systems. These further considerations are likely to become less valid as variety of materials and choice of systems on the market become increasingly wider.

Having established that adaptable partitions must be constructed on a modular basis and that internal dimensions

of any supporting structure will be affected accordingly, it is now proposed to examine in detail how the modular grid affects planning of buildings required to accommodate systems of this nature. This can best be explained by diagrams.

It is necessary first to establish the relationship between the grid lines and the partition itself, the key to which lies in the formation of right angle junctions at points of intersection. Fig 1 shows that the simple form of junction does not meet the requirements of a fully adaptable partition, basically because units A and B are not interchangeable, being of different lengths. Other shortcomings, such as the need for additional special components at corners and ends of runs, are also evident.

In order to attain complete interchangeability of units an arrangement such as that shown in fig 2 must be provided. This establishes the relationship between partition and grid lines which must now be related to the surrounding structure. There are many different ways of providing this type of junction but only two basic principles are involved so far as the grid structure relationship is concerned.

The first principle applies to systems employing junction posts as a means of supporting and linking units together (fig 3). With these systems, which usually incorporate jacking devices and therefore approach nearest to the ideal, it is necessary to provide between the peripheral lines of the partition grid and the finished face of the adjoining structure a clearance sufficient to accommodate the post. This distance will vary according to the precise details of the system employed; as a general guide, it should be equal to half the thickness of the partition plus a clearance sufficient to absorb inaccuracies or irregularities in the main structure (fig 4).

With systems designed on the second principle (fig 5), that is with units individually supported, normally by fixings at floor and ceiling and merely linked by distance pieces at junctions, it is not necessary to provide a clearance between peripheral module lines and the finished face of the building (fig 6). Whichever system is adopted, however, the relationship between main structure and partition grid is a critical factor and it may be necessary to decide the thickness of partition required in the early design stages of a project.

Abutments with the vertical surfaces of the structure should, wherever possible, be restricted to the perimeter of the building. Any internal obstructions such as columns, unless they conform to modular dimensions, should be positioned well clear of the partition grid lines (fig 7).

Any interruption of these lines (fig 8) will disrupt the system by introducing odd-sized make-up panels, besides adding considerably to the cost. Similarly, an external wall with an irregular profile internally (fig 9) would present an unsuitable surface against which to place a partition.

On the other hand, it is obviously not only undesirable but also unnecessary to provide completely flat and uninterrupted wall surfaces throughout the building, but at all points of intersection with the modular grid a reasonable width of straight and vertical surface against which to place partitions must be provided. This might take the form of a deep mullion or permanent make-up panel (fig 10).

On a point of detail, consideration should be given to the design of skirtings. The projecting type (fig 11) is generally less satisfactory than the recessed type (fig 12). The projection of the former forces the partition away from the main wall surface, leaving an awkward shaped gap normally too large to be dealt with simply by means of resilient strips. With the latter type a partition can be butted up directly to the main wall surface and the small recess at skirting level easily sealed with a resilient packing. Further-

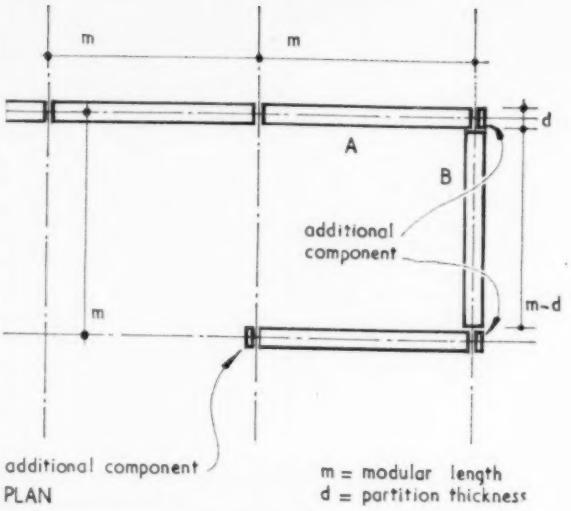


Fig 1 Junctions requiring partition units of varying widths

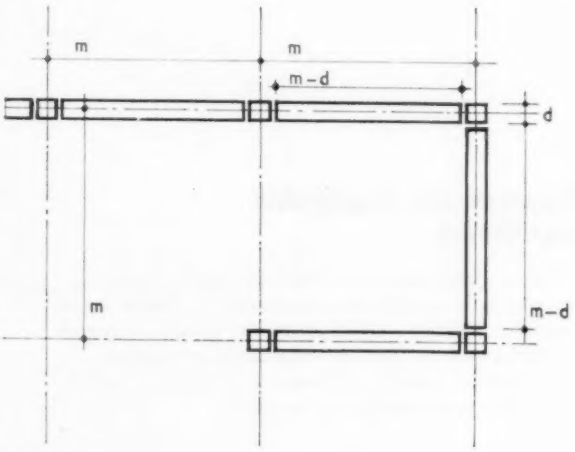


Fig 2 Junctions employing partition units of standard widths

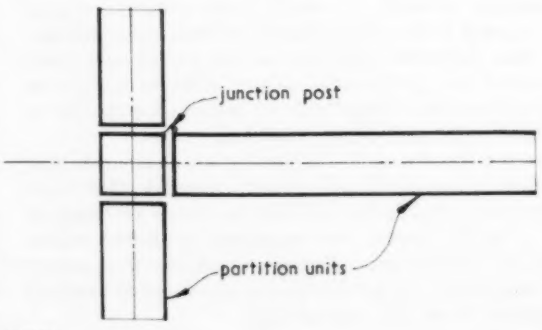


Fig 3 Use of junction post at three-way junction

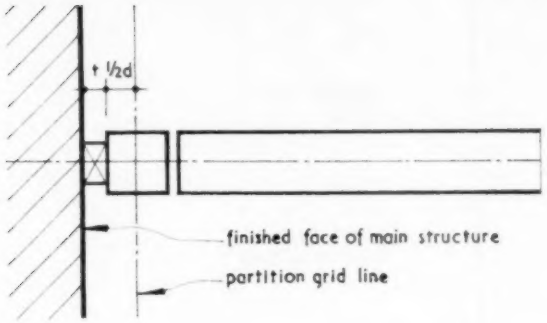


Fig 4 Use of junction post at walls

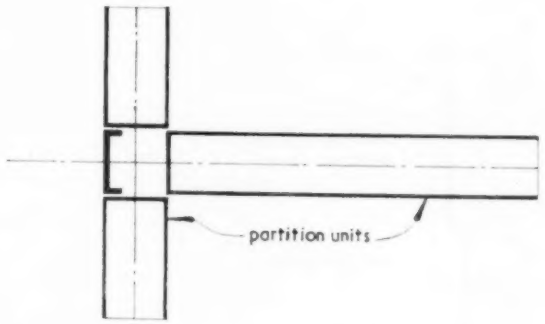


Fig 5 Use of distance piece at three-way junction

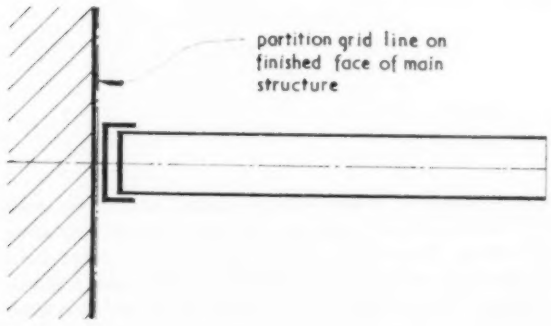


Fig 6 Use of distance piece at walls

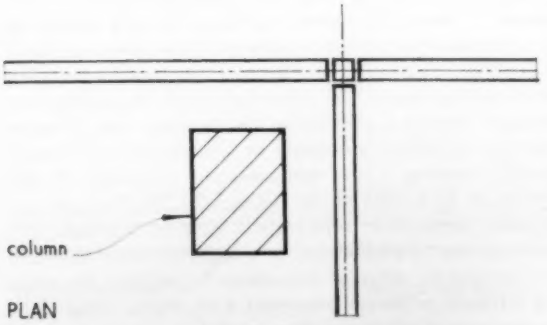


Fig 7 Relationship with structure: avoiding column

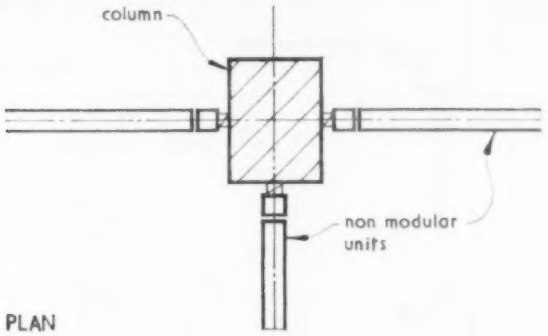
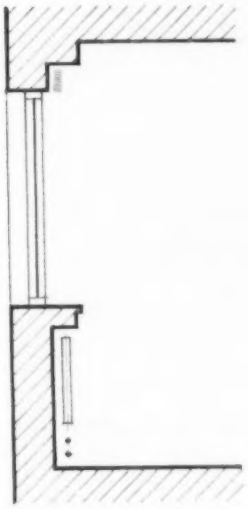


Fig 8 Relationship with structure: meeting column



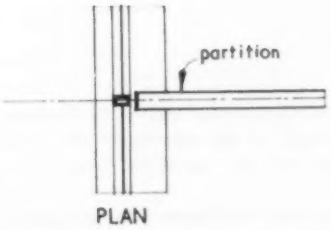


Fig 9 Junction of partition unit with irregular wall profile

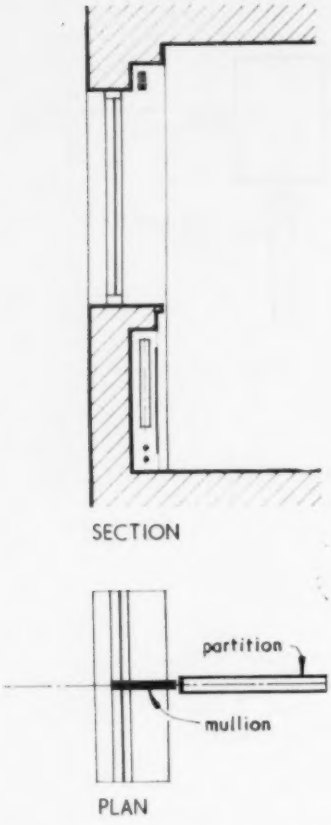


Fig 10 Use of make-up panel at irregular profiles

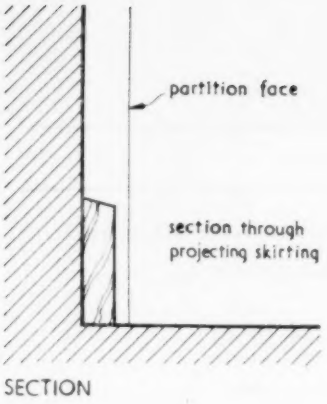


Fig 11 Projecting skirting

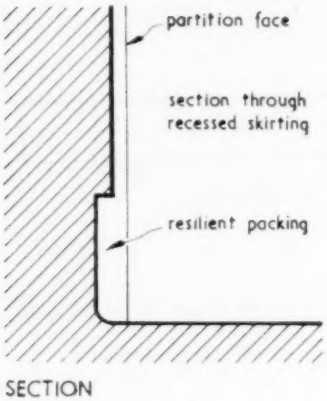


Fig 12 Recessed skirting

more, electrical services are frequently housed in the base of a partition, thus the height of the skirting to the main building may be dictated by the partition design if a consistent level is desired.

So far it has been shown how the demands of adaptable partitions affect the design of the walls of a building. Provided that this point is considered early enough in the design process, the requirements are straightforward and easily met.

The demands on the ceiling are rather more complex and, because of the multiplicity of functions ceilings may be called upon to fulfil, are sometimes more difficult to satisfy. A true and level surface, free of obstructions, is a first essential. In addition, the ceiling must be capable of providing a measure of lateral support to a partition and, if jacks are used, adequate resistance to the upward thrust exerted.

A flat structural slab ceiling offers one simple and economic answer so far as partitions are concerned, provided that special precautions are taken to ensure a level soffit. Prestressed units are particularly difficult in this respect, owing to the variable degree of camber normally experienced.

Ceilings may have several other functions to fulfil besides providing support for partitions. In many instances some form of suspended ceiling will be required, which may itself have to be partially demountable. In principle the most satisfactory solution lies in the provision of some form of suspended modular grid framework, sufficiently rigid to withstand the various forces exerted by a partition and, at the same time, capable of supporting detachable ceiling panels, light fittings and other components associated with ceiling construction.

Unfortunately, most ceiling panels are extremely light in weight and sometimes actually perforated for acoustic reasons; thus they present very little resistance to the passage of sound. In addition, therefore, the grid framework may also have to provide a barrier to the transmission of sound from one room to another over the top of a partition via the ceiling space. The isolated cell construction (fig 13), although offering a solution to the problem, may in some cases be considered too costly or unnecessarily elaborate, besides requiring careful and complete integration of any services to be housed in the ceiling void. In these circumstances a compromise solution will have to be sought and some sacrifice in adaptability or sound insulation accepted.

It is beyond the scope of this article to consider the many and intricate problems connected with ceiling design, the requirements of which are often conflicting and need careful consideration. It is clear, however, that adaptable partitions

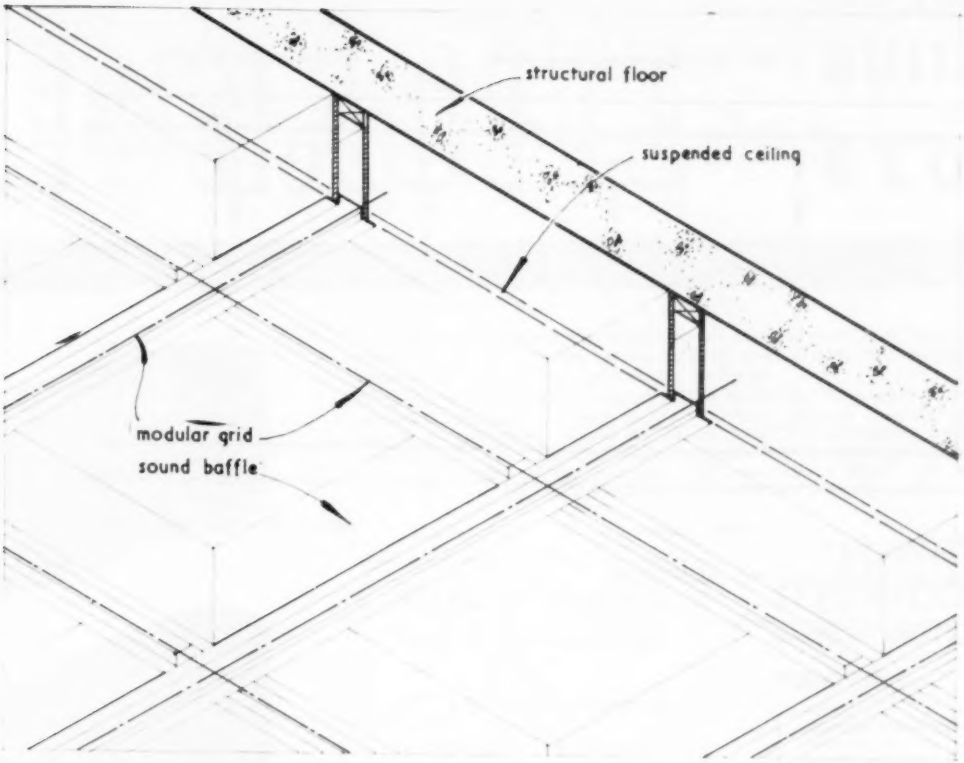


Fig 13 Suspended ceiling of isolated cell construction

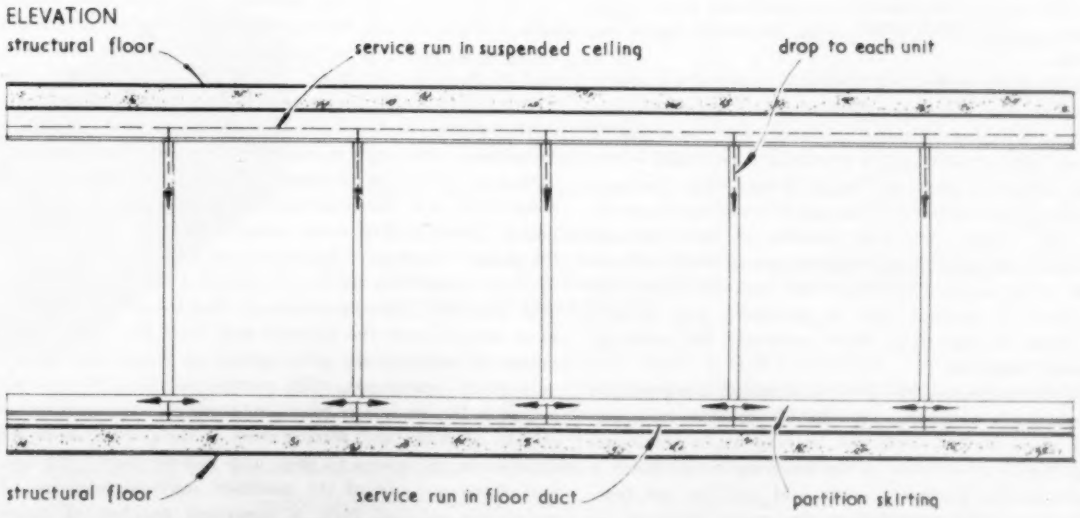


Fig 14 Access to services at all modular intersections

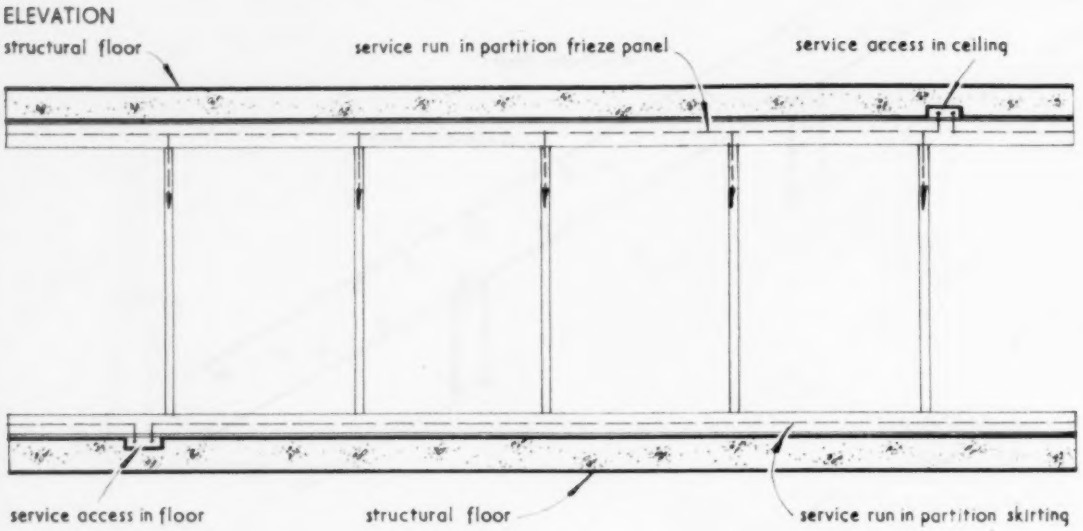


Fig 15 Service runs mainly confined to partition

impose their own particular set of conditions which must receive due consideration in the design process of the ceiling as a whole.

Lastly there is the question of accommodation of services in an adaptable partition. The introduction of any continuous wiring runs or pipework must inevitably add considerably to the time and trouble taken whenever a partition has to be moved. However quick and simple it may be to rearrange the partition itself, unless services can be rearranged equally quickly and simply, the full benefits of an adaptable system cannot be realised. Although in special circumstances it might be considered expedient to ban altogether the introduction of services into a partition, the benefits derived from having them there normally far outweigh such drastic measures.

The ease of rearrangement of services within the partition is a specialist's problem, capable of solution in many different ways and of no direct bearing on requirements affecting layout of services in the building itself. What is important is that points of entry and exit, to and from partitions, must be provided in the main structure so that connections can be made simply and easily whatever the layout may be.

Entry to a partition will normally be made from service runs in either floor or ceiling, or both. It is often convenient to separate power from lighting cables, the former being run in ducts in the floor, the latter in the ceiling; this enables more direct connections to be made to power points in the skirting and to light switches in posts or on panels. Telephone cables are required to be screened from electrical cables to avoid risk of interference due to induction, and connections will therefore have to be provided at separate points of entry. The most suitable location for these, as for power connections, is generally in the floor.

Wherever access to services is provided in the main structure, the most important factor is that the points of access must always lie on the modular grid lines. The number and extent of such points will depend on many factors not necessarily connected with partitions. The choice will generally lie somewhere between providing a comprehensive system of ducts and service runs in the parent structure with means of access to each unit independently (fig 14), and maximum use of the partition itself as a means of conveying services from a minimum number of entry points (fig 15). The disadvantages of the latter expedient from the point of view of adaptability are obvious.

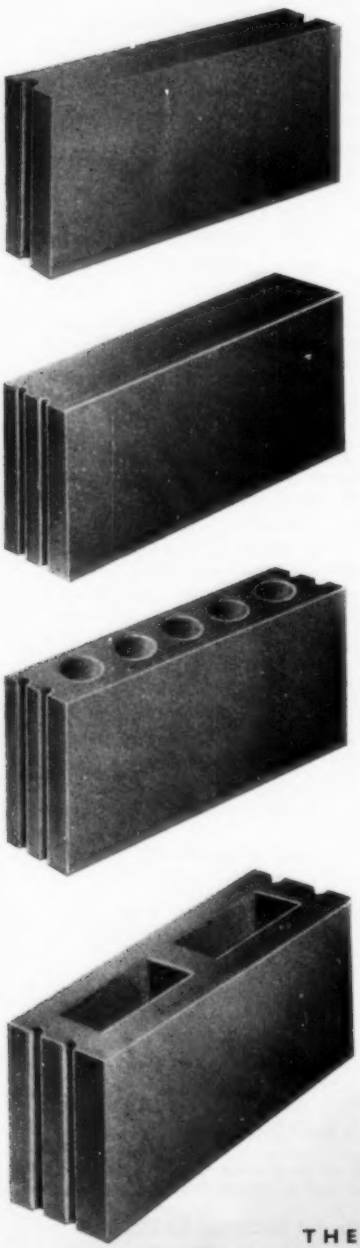
SfB (22) Ff4

LIGNACITE

REGD

BUILDING BLOCKS

LIGHTWEIGHT · INSULATING · FIRE RESISTING · LOADBEARING



LIGNACITE BLOCKS are suitable for all types of partitions, inner leaves and load bearing walls. They are extensively used in the construction of public, domestic, industrial and agricultural buildings.

SPECIAL PROPERTIES OF LIGNACITE BLOCKS. They can be sawn, chiselled drilled, channelled, screwed, nailed or bolted, showing a considerable labour saving for plumbers, joiners and electricians. Lighter fixings, e.g., skirtings, picture rails, doors and window-frames and electrical fittings may be nailed or screwed directly to the material. This material HOLDS nails and screws permanently as NO CORRODING chemicals are incorporated.

SIZES OF BLOCKS

from 18" x 9" x 2" nominal

to

18" x 9" x 9" nominal

HOLLOW BLOCKS with solid laying edges and cavities in most sizes.

ROCK FACED BLOCKS, RIDGED CAPPING BLOCKS, HALF BLOCKS AND CLOSURES ALSO AVAILABLE

TYPICAL EXAMPLE OF THERMAL CO-EFFICIENTS

	"U"
4" Lignacite skim plastered one side	·33
11" cavity wall 4½" brick, air space, 4" Lignacite skim plastered one side	·22
9½" cavity wall 4½" brick, air space, 3" Lignacite skim plastered	·25
11" cavity wall 5½" Rock-faced Lignacite, air space, 3" Lignacite skim plastered	·176

FOR FULL PARTICULARS AND DELIVERED PRICES PLEASE CONSULT OUR NEAREST WORKS OR LONDON SALES OFFICE

TECHNICAL SPECIFICATIONS

based on solid Lignacite

FACTS

1. DENSITY . . . . 80/90 lbs./cu. ft.
2. COMPRESSIVE STRENGTH at 28 days 500 lbs./sq. in.
3. DRYING SHRINKAGE. . . . 0.06%
4. MOISTURE MOVEMENT . . . 0.05%
5. THERMAL INSULATION . . . k = 2·08 per sq. ft. per hour per °F per in. thickness.
6. COMBUSTIBILITY · Meets combustibility requirement of B.S. 476 : 1953 part 1. "Fire Tests on Building Materials and Structures".
7. SPREAD OF FLAME . . . As detailed in appendix to B.S. 476 : 1953 — Class 1.
8. FIRE RESISTANCE . Resistance of test wall 4½" thickness with one face skim-plastered as detailed in B.S. 476 : 1953 part 1, equals 4 hours 7 minutes.
9. SOUND REDUCTION . . Sound reduction of party walls constructed of two leaves 4½" Lignacite Blocks with 2" cavity 51 decibels over 100-3,200 cycles per second.

DETERMINATIONS

Items 1-7 . . . Messrs. Ellis Research and Testing Laboratories Ltd.

Item 8 . . . Department of Scientific and Industrial Research and Fire Offices' Committee Joint Fire Research Organisation.

Item 9 . . . Building Research Station.

Thickness of Lignacite	"U"
2"	0·51
2½"	0·45
3"	0·41
4"	0·34
4½"	0·33
4½"	0·32
6"	0·26
9"	0·188

Cavity wall of 4½" brick externally, sealed 1" air space, 4½" Lignacite with plaster skim coat internally. "U" 0·21.

THE LIGNACITE GROUP OF COMPANIES

LIGNACITE (NORTH EASTERN) LTD., Whitley Bridge, Nr. Goole, Yorks. Telephone: Whitley Bridge 354/5

LIGNACITE (NORTH LONDON) LTD., Meadgate Works, Nazeing, Essex. Telephone: Hoddesdon 4441/2

LIGNACITE (HOME COUNTIES) LTD., Bracknell, Berkshire. Telephone: Bracknell 666

LIGNACITE (FORDINGBRIDGE) LTD., Fordingbridge, Hampshire. Telephone: Fordingbridge 2177

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PILKINGTON BROTHERS LIMITED
Manufacturers of all types of structural glass
St. Helens, Lancashire (Tel: St. Helens 4001)
London Office and Showrooms:
Selwyn House, Cleveland Row, St. James's, S.W.1
(Tel: WHItehall 5672).

SfB (22) Ro2

PILKINGTONS' CATHEDRAL, FIGURED ROLLED AND REEDED GLASSES FOR PARTITIONS

—Divide Space, Share Light

Specify Pilkingtons' Patterned Glasses—Cathedral, Figured Rolled or Reeded for partitions, which are discreet, decorative and make the maximum use of natural lighting.

These glasses, one surface of which has a specific texture (Cathedral) or pattern (Figured), or straight parallel flutes (Reeded), obscure vision in varying degrees according to the depth and configuration of the pattern. The light transmission generally decreases as the degree of obscuration and diffusion increases. All the Cathedral and Figured patterns have been classified according to their powers of diffusion and obscuration, the gradation being from A-a (low) to E-e (very high). Where privacy is of paramount importance, choice should be restricted to the higher range. (Classification of the ribbed or reeded patterns is impracticable).

The patterns have been segregated into three groups in conformance with the sales tariff.

PATTERNS	NORMAL MAXIMUM SIZES	AVERAGE DIFFUSE LIGHT TRANSMISSION	POWER OF DIFFUSION	POWER OF OBSCURATION
GROUP 1				
Flemish Large	120" x 48"	85%	A	a
*Flemish Small	120" x 48"	85%	A	a
Glasgow Hammered	120" x 48"	83%	A	a
*Festival	120" x 48"	82%	B	c
*Hammered No. 2	120" x 48"	85%	B	c
*Arctic Large	120" x 48"	80%	C	c
Arctic Small	120" x 48"	80%	C	c
*"STIPPOLYTE"	120" x 48"	75%	E	d
Rolled	120" x 48"	80%	—	—
GROUP 2				
Plain Cathedral	100" x 48"	85%	A	a
*Reedrop	100" x 48"	85%	A	a
Rimpled	100" x 48"	85%	A	a
*Frostlyte	100" x 48"	85%	B	c
*Pacific	100" x 48"	85%	B	c
*Shiplyte	100" x 48"	85%	B	c
*Atlantic	100" x 48"	85%	C	c
*Coralyte	100" x 48"	75%	D	d
Sparkel	100" x 48"	75%	E	d
*Borealis	100" x 48"	70%	E	e
Fluted Rolled No. 1	100" x 48"	85%	—	—
GROUP 3				
*Spotlyte	120" x 48"	85%	B	c
Hammerstripe	120" x 48"	82%	C	c
Pinstripe	120" x 48"	82%	C	c
Luminating	120" x 48"	77%	—	—
*Broad Reeded	120" x 48"	85%	—	—
*Cross Reeded	120" x 48"	83%	—	—
*Narrow Reeded	120" x 48"	85%	—	—
*Broad Reedlyte	120" x 48"	83%	—	—
*Narrow Reedlyte	120" x 48"	83%	—	—

NOMINAL THICKNESS: ALL PATTERNS: ¼".

"$\frac{3}{16}$" substance also available in the patterns marked with an asterisk.

Enquiries for ¼" substance should be submitted.

APPROX. WEIGHT PER SQ. FT.: ¼"—1½ LB.

Please refer any kind of problem in the use of these—and any other—glasses to our Technical Service staff. Just telephone Selwyn House, St. Helens, or any of our provincial depots. Supplies are available through the usual trade channels.

PILKINGTON BROTHERS LIMITED

AJ SfB (22)
Information Sheet No 1042 UDC 69·022·5
Partitions: Blocks

PARTITIONS: BLOCKS 1

This Sheet, one of a series on partitions, describes the properties and general characteristics of clay and concrete blocks. It should be read in conjunction with Sheet Nos 1043 and 1044.

Definitions

Block: A walling unit, the height of which is greater than its width when laid on its normal bed.

Partition: A vertical division in a building, usually of light construction, which is not designed to carry a superimposed structural load, except when specially described as loadbearing.

British Standards

BS Code of Practice CP 122:1952, *Walls and Partitions of Blocks and Slabs* is the relevant code. British Standards for the various types of block are as follows:

Hollow clay blocks: BS 1190:1951, *Hollow Clay Building Blocks.*

Open-textured concrete blocks: BS 2028:1958, *Precast Concrete Blocks.*

Autoclaved aerated concrete blocks: BS 1364:1947, *Aerated Concrete Building Blocks (Dimensions only).*

Design Considerations

Sheet Nos 1043 and 1044 comprise a table which lists a number of proprietary blocks at present on the market. The table gives comparative data on the properties of these blocks. Although these Sheets are concerned primarily with non-loadbearing partitions, many of the blocks listed are capable of being used in loadbearing walls and manufacturers should be asked to stipulate whether their blocks may be used for loadbearing walls. Many of the manufacturers of the non-loadbearing blocks listed also make loadbearing blocks. Crushing strengths are given.

Weight of partition: For the purpose of design the following tables from CP 122:1952 give weights of partition (ie block plus mortar joint), unplastered, for various thicknesses of block.

Clay and diatomaceous earth

Nominal thickness of block (in)	Weight (lb/sq ft)	
	Clay blocks	Diatomaceous earth blocks
2	7·8 to 12·0	5·3 to 6·3
2½	10·0 to 14·0	6·7 to 8·0
3	10·0 to 16·6	8·0 to 9·5
4½	11·7 to 23·5*	10·2 to 13·5*
6	22·4 to 31·0	—

* These values are assessed as no information is yet available regarding the actual weights of 4½in blocks.

Concrete

Type of block	Thickness (in)	Weight (lb/sq ft)			
		Gravel, stone or air-cooled slag aggregate	Clinker aggregate	Foamed slag, expanded clay or slate aggregate	Pumice aggregate
Solid	2	24	15	12	11
	2½	29	19	15	14
	3	35	23	18	16
	4½	50	32	25	23
Hollow	2½	22	14	11	10
	3	26	17	13	12
	4½	37	24	19	18
	8½	77	50	38	35

Sound reduction: The following table from the Code lists the sound reduction values for clay and concrete blocks of various thicknesses. Sound insulation of block partitions depends principally on the weight, although it is not proportional to it. Doubling the weight, for instance, increases the degree of insulation by only 5 decibels.

Construction*	Thickness without plaster (in)	Weight including plaster (lb/sq ft)	Estimated average sound reduction for frequencies 100 to 3,200 cycles per second (dB)
Hollow clay	2, 2½, 3	15 to 27	35
	4½	20 to 34	35 to 40
	8½	50	45
Hollow concrete	2½	21 to 24	35
	2½	32	40
	3	23 to 27	35
	3	36	40
	4½	29 to 47	40 to 45
	8½	48 to 60	45
	8½	87	45 to 50
Solid concrete	2	22 to 34	40
	2½	25 to 29	40
	2½	39	40 to 45
	3	28	40
	3	33 to 45	40 to 45
	4½	35 to 42	40 to 45
	4½	60	45
	6	55	45

* Plaster thickness (total for both sides) 1in.

PARTITIONS: BLOCKS 1

Thermal insulation: The thermal insulation value of a wall construction is generally critical only when the wall is external. If blocks are to be used for the inner leaf of external cavity wall construction, the U-value of the whole construction can be calculated from the k-values as follows:

Assume a cavity wall comprises 4½in brick outer skin, 2in cavity, 4in lightweight concrete block inner skin, finished with ⅝in plaster.

assumed k-value of brick 8·00; 1/k=0·125
" k-value of block 1·70; 1/k=0·588
" k-value of plaster 3·34; 1/k=0·300
" resistance of 4½in brick=4½×0·125 =0·56
" resistance of cavity =1·00
" resistance of 4in block=4×0·588 =2·35
" resistance of ⅝in plaster=⅝×0·30 =0·19
" resistance of internal wall surface =0·70
" resistance of external wall surface =0·30

Total air-to-air resistance 5·10

$$U = \frac{1}{\text{total resistance}} = 0{\cdot}20$$

Fire resistance: The fire resistance of blocks should be derived from tests carried out to BS 476:1953, part 1, *Fire Tests on Building Materials and Structures.* Partitions of lightweight concrete give, weight for weight, higher fire resistance than those of dense concrete or brickwork; hollow clay or concrete blocks have a similar advantage. Manufacturers should be asked to supply fire resistance ratings for their blocks according to the BS.

Services: Owing to the brittleness of hollow clay blocks the Code recommends that, where it is known that cutting for services is necessary, provision should be made for doing this, either by building those parts of the partition temporarily in sand instead of mortar or by permanently constructing them in a material more easily cut than hollow clay blocks.

Partition thickness: Clause 5.10(4) of the London Building (Constructional) By-Laws, 1952, sets down a method for determining the thickness of a non-loadbearing partition relative to height or width. This clause states that a non-loadbearing partition which is (a) adequately restrained on all four edges and (b) otherwise restrained or buttressed to the satisfaction of the district surveyor shall have a thickness not less than 1/40 its height or length, whichever is the less, and that thickness may include not more than ½in cement render on each face.

Notwithstanding the above, the Code stipulates that for various thicknesses of block, one dimension, either the length or the height, should not exceed the following:

2in blocks 8ft
2½in blocks 10ft
3in blocks 12ft
4½in blocks 15ft
6in blocks 20ft
8½in blocks 25ft.

Lintels: The tables below give lintel sizes for openings in partitions, using either reinforced concrete or ms angle lintels. All lintels should have an end bearing of not less than half the length of the block or not less than 6in whichever is greater.

Reinforced concrete

Span (ft)	Depth of lintel (in)	Rods	
		Number	Size (in)
2	3	2	$\frac{5}{16}$
3	3	2	$\frac{3}{8}$
4	6	2	$\frac{3}{8}$
5	6	2	$\frac{1}{2}$
6	6	2	$\frac{5}{8}$
8	9	2	$\frac{5}{8}$
10	9	3	$\frac{5}{8}$

Mild steel angle

Span (ft)	Size of angle		
	Breadth (in)	Depth (in)	Thickness (in)
2	3	2	¼
3	3	2	¼
4	3	2	¼
5	3	2½	¼
6	3	3	¼
8	3	3½	$\frac{5}{16}$
10	3	4	⅜

Construction

Drying shrinkage and moisture movement: BS 2028:1953 stipulates the maximum permissible drying shrinkage of open-textured concrete blocks as being: for dense aggregate blocks (type A) 0·04 per cent, for lightweight aggregate loadbearing blocks (type B) 0·06 per cent, for lightweight aggregate non-loadbearing blocks (type C) 0·08 per cent. The BS lays down the method of selecting and testing of samples.

The average moisture movement of the dried specimens, used for determining drying shrinkage on immersion in water, should not exceed, according to the BS, 0·03 per cent for type A blocks and 0·05 per cent for type B.

Mortar: The Code lays down certain specific requirements. A cement mortar should be used only under conditions where a dense strong mortar is essential. Normally the mortar should be either (a) 1 part cement to 1 part lime to 5-6 parts aggregate or (b) 1 part cement to 2 parts lime to 8-9 parts aggregate. Type (a) should be used for loadbearing walls and partitions and with thinner blocks (2in) in non-loadbearing walls and partitions. Type (b) should be used for non-loadbearing walls and partitions. Hydraulic lime mortar of the proportions 1:2-3 is generally suitable for partitions. The richer mix should be used with the thinner (2in) blocks. Lime mortar, other than hydraulic, is not generally recommended for use with clay or concrete blocks in partitions.

Erection: Partitions of blocks should, generally, be erected before the application of finishes or decorations in their vicinity is commenced. Non-loadbearing partitions which are bonded or tied to the flanking structure should be erected at the same time.

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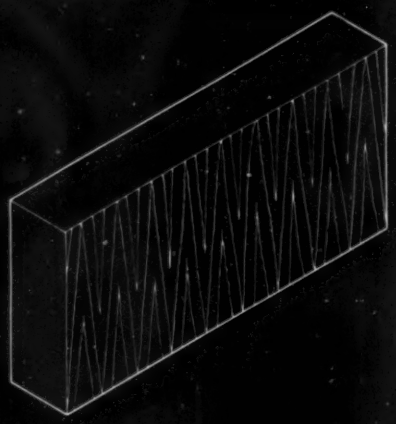
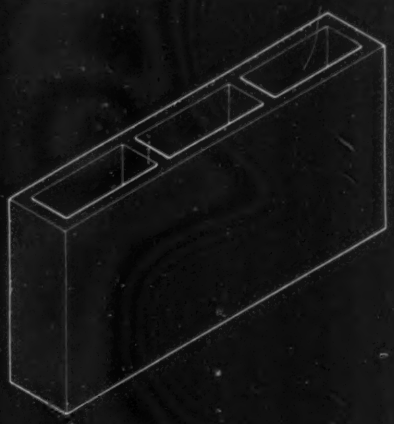
AJ SfB (22)

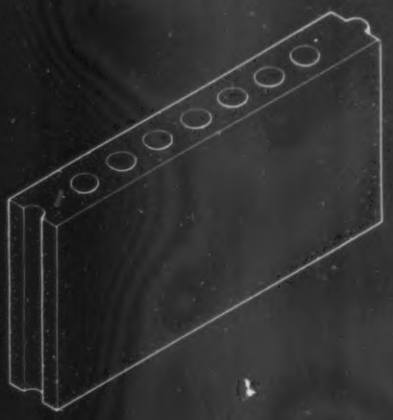
Information Sheet No 1043 UDC 69·022·5 Partitions : Blocks



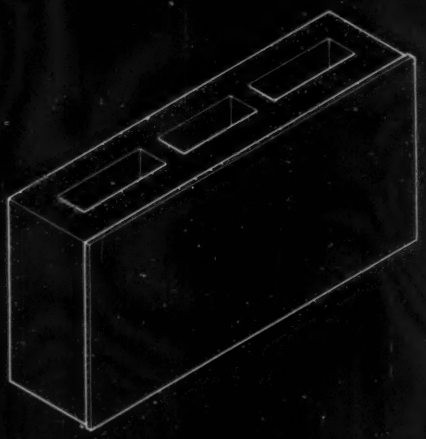
Celcon



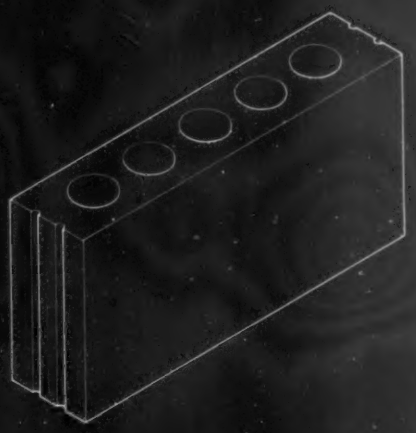
Thermapor



Broad - Acheson

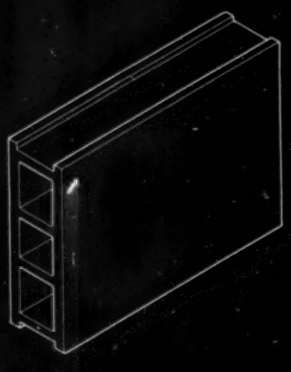


Spectra - Glaze

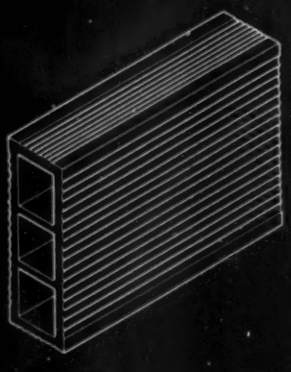


Lignacite

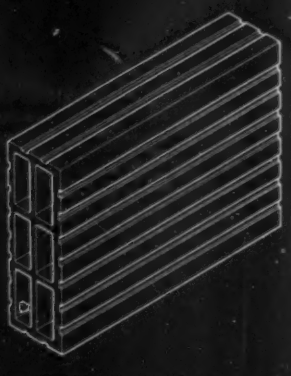
PROPRIETARY BLOCKS CONCRETE



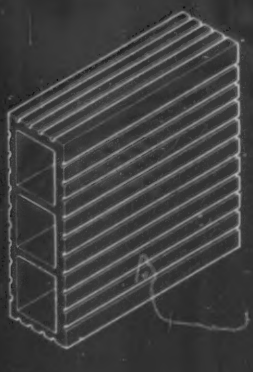
Phorpres



Salamander



Cranham (six-cavity)



Eecon

PROPRIETARY BLOCKS CLAY

This Sheet together with Sheets 1044 and 1045 contains two tables listing the properties of proprietary blocks for partitions. They should be read in conjunction with Sheet 1042. The tables list precast concrete blocks and clay and diatomaceous earth blocks. The relevant British Standards are BS2028:1953, *Precast Concrete Blocks*, BS1364:1947, *Aerated Concrete Building Blocks* (*Dimensions only*) and BS1190:1951, *Hollow Clay Building Blocks*. Crushing strengths are not critical in non-loadbearing partitions but where the figures are known or available they have been included. Some manufacturers prefer to state that the crushing strengths of their blocks satisfy the requirements of the relevant British Standards; the actual crushing strengths may, in many such instances, exceed the BS figures. The drawings on the face of the Sheet illustrate a number of the proprietary blocks included in the tables. Further information may be obtained from the following: Clay Products Technical Bureau, 30 Gordon Street, London WC1; Cement and Concrete Association, 52 Grosvenor Gardens, London SW1; Federation of Building Block Manufacturers, 11 Ravensbury Avenue, Morden, Surrey; Foamed Slag Producers Federation Limited, 260 Gray's Inn Road, London WC1

CONCRETE BLOCKS

Trade name	Form and composition	Finish	Dimensions (in)	Weight (lb/yd super)	Crushing strength (lb/sq in)	No per yard super	Fire resistance BS 476: 1953	k-value	Sound reduction (dB)	Workability
Aglite *Butterley Co Ltd*	solid block using Aglite sintered clay aggregate	fairfaced	18×9×3 4 6	136·8–189·6 183·2–253·6 274·4–380·0	600–800	8	1–2 hours 2 ,, 4 ,,	2·3–3·7	38–39 39–42 42–44	can be cut, chased, nailed
	hollow block as above	fairfaced	18×9×6 9	560–720 560–720	600–800	8	2 hours 2 ,,	— —	— —	can be cut, chased, nailed
Broad-Acheson *Broad & Co Ltd*	hollow block using crushed and graded powerhouse clinker	natural key for plaster	17⅝×8⅝×2 2½ 3 4¼ 6	100 118 136 180 240	500	8	1 hour 1 hour 2 hours	2·0		can be cut, chased
Celcon *Celcon Ltd*	solid block comprising cement, lime, pulverised fuel ash	textured	18×9×2½ 3 4 4½ 5 6 8 9	88 112 152 168 192 224 304 336	BS 2028: 1953 type A 500 type B 400	8	4in non-loadbearing 4 hours 4in loadbearing 2 hours	1·2	50 for 6in block	can be cut, chased, drilled, nailed
Cell Concrete *J. H. Sankey & Son Ltd*	solid block, aerated concrete comprising cement, lime, pulverised fuel ash	textured	18×9×2½ 3 4 4½ 5 6 8 9	92 112 152 168 184 224 304 336	600–800	8	4in non-loadbearing 4 hours	1·2	35–45	can be cut, chased, drilled
Cheetwood *The Cheetwood Co*	hollow block using Aglite sintered clay aggregate (also available as solid block to special order)	fairfaced	17⅝×8⅝×3 4 6 8¾		125 165 285 350	8	2 hours			can be cut, chased, nailed
Croft Adamant *Croft Granite, Brick and Concrete Co Ltd*	block using granite, breeze or Foamagg aggregate		17⅝×8⅝×2 2½ 3 4 4½			8				

CONCRETE BLOCKS *(continued)* **14.K7**

Trade name	Form and composition	Finish	Dimensions (in)	Weight (lb/yd super)	Crushing strength (lb/sq in)	No per yard super	Fire resistance BS 476:1953	k-value	Sound reduction (dB)	Workability
Flagreca *Flynn Bros*	block using lightweight aggregate	profiled or exposed aggregate face	18 × 6 × 3 4 18 × 9 × 3 4	162 216 162 216	600	12 12 8 8		2·0		
King Clinker *J. A. King and Co Ltd*	solid block using clinker aggregate	natural key for plaster	18 × 9 × 2 2½ 3 4 4½	105 131 157 210 223	585	8	incombustible within meaning of BS	4·1		
	hollow block as above	as above	16 × 9 × 6 18 × 9 × 9							
Kingsbury *Kingsbury Concrete Co Ltd*	solid block using crushed and graded furnace clinker aggregate		18 × 9 × 2 2½ 3 4	112·5 140·5 168·5 225	— 496 592 —					
	hollow block as above		18 × 9 × 6 9							
Kingsbury Thermal *Kingsbury Concrete Co Ltd*	hollow block as above		18 × 9 × 3 4 18 × 9¾ × 4	128 168 —	531 608 —					
Leca *Leca (Gt Britain) Ltd*	solid block using expanded clay aggregate	natural key for plaster	all sizes in BS 2028: 1953 (see Sheet 1042)	4in block weighs 135 lb/yd super			awaiting tests at time of going to press	1·4	52	easily sawn, chased, cut, nailed
	hollow block as above	as above	as above	4in block weighs 102 lb/yd super	exceeds 400 required by BS			1·1		as above

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Information Sheet No 1044 UDC 69·022·51 Partitions: Blocks

CLAY AND DIATOMACEOUS EARTH BLOCKS

Trade name	Form and composition	Finish	Dimensions (in)	Weight (lb/yd super)	Crushing strength (lb/sq in)	No per Yard Super	Fire resistance, BS 476:1953	k-value	Sound reduction (dB)	Workability
Lignacite *Lignacite Group of Companies*	solid block comprising graded wood, concrete, chemicals	plain-faced (natural key for plaster)	17⅞ × 8⅝ × 2 3 4 6 9	128 192 256 384 576	500	8	incombustible within meaning of BS Class 1 surface spread of flame	2·08	48	easily sawn, cut, chased, can be screwed direct without use of plugs
	hollow block as above	plain-faced	17⅞ × 8⅝ × 4 6 9	200 312 384	500	8	as above	1·8		as above
	solid block as above	rock-faced	9 × 9 × 4½ 18 × 9 × 4½	368 380	500	16 8	as above	2·08		as above
Melfil *Vitreous Concrete Ltd*	hollow blocks of pulverised fuel ash concrete	rough or smooth face	18 × 9 × 9 nominal	280		8				
Meta Mica *Wm Kenyon & Sons (Meta Mica) Ltd*	solid block comprising portland or aluminous cement and exfoliated vermiculite	natural key for plaster	17⅞ × 8⅝ × 2 2½ 3 4	61·5 77 92 123	400	8		0·70		easily sawn, cut, chased, nailed. Plugs required for screwing into block but not required for screwing through block into another material
Sankey's Hollow Clinker *J. H. Sankey & Son Ltd*	hollow block		17¾ × 8¼ × 2 2½ 3 4¼	100 125 150 200	— 325 550 680	8		— — 1·5 —		
Sankey's Hollow Flint Sand *J. H. Sankey & Son Ltd*	hollow block		17⅞ × 8¼ × 3 4¼	200 272	482 585			1·6		
Spectra-Glaze *Atlas Stone Co Ltd* *The Lilleshall Co Ltd*	hollow precast concrete block	thermo-setting resinous binder and glass silica sand glaze ⅛-in thick cast and fired on	17⅞ × 8¼ × 2⅛ 4⅛ 6⅛ 8⅛	138 179 224 299				1·4		
Thermalite *Thermalite Ytong Ltd*	solid block of aerated concrete using lightweight aggregate	textured	18 × 9 × 2½ 3 4 5 6 8½	94 112 152 188 224 318	800	8	4-in gives 4 hours			easily sawn, cut, nailed: screws can be inserted without plugs

PARTITIONS: BLOCKS 4

CLAY AND DIATOMACEOUS EARTH BLOCKS *(continued)*

Trade name	Form and composition	Finish	Dimensions (in)	Weight (lb/yd super)	Crushing strength (lb/sq in)	No per yard super	Fire resistance, BS 476:1953	k-value	Sound reduction (dB)	Workability
Thermapor *Chester Concrete Co Ltd*	hollow block using blast furnace slag	natural key for plaster	17⅞×8⅝×2½ 3 4	150 170 196	400 550 550	8	— — 2 hours			can be chased, nailed, plugged
Trianco *Trianco Ltd*	hollow block		18×9×8¾ 9 6 (two through cavities) 18×9×4½ (two blind cavities, other sizes)							
Truestone *The Hepworth Iron Co Ltd*	solid block using Aglite sintered aggregate	natural key for plaster	18×9×2½ 3 4 6	125 150 200 300	800	8	2½ hours 3 hours 4 hours 6 hours			can be chased, drilled, nailed
	hollow block as above	as above	18×9×4	168	750	8	4 hours			as above
Bimol *Refractulation Ltd*	hollow, diatomaceous earth		12×9×2 2½ 3 4	42 52·6 63 84	500–800	12		1·0 1·1 1·15 1·2		
Cranham *J. H. Sankey & Son Ltd*	hollow, extruded terra cotta	keyed or smooth	12×8⅝×2 2½ 3 4 4½	96 112 125 156 162	— — 1,170 — —	12		— — 1·8 — —		
Eecon *Prenton Brick and Tile Co Ltd*	hollow clay	keyed	9½×9½×2 2½ 3 4 6 (2 and 2½ in thick are non-loadbearing)	78 98 118 156 236	— — 760	14·36	4-in gives 1 hour			can be cut with bricklayer's hammer
Fosalsil *Molar Products Ltd*	hollow, diatomaceous earth		12×9×2 2½ 3 4 4½	57 64 75 86 100		12				

CLAY AND DIATOMACEOUS EARTH BLOCKS *(continued)*

Trade name	Form and composition	Finish	Dimensions (in)	Weight (lb/yd super)	Crushing strength (lb/sq in)	No per yard super	Fire resistance (BS 476:1953)	k-value	Sound reduction (dB)	Workability
Kimolo *British Uralite Ltd*	hollow, diatomaceous earth	keyed	12×9×2 2½ 3 4 4½	52·5 66 72·3 81·75 92	328	12				
Phorpres *London Brick Co Ltd*	hollow gault or weald clay (loadbearing)	keyed both faces	12×8⅝×2 2½ 12×9⅛×3	116–124	690	12	2 hours			can be drilled for fixings
		keyed one face	12×8⅝×2							
		smooth faced	12×8⅝×2 2½ 3 4	116–124 148–155	690 600		2 hours			
	as above (non-loadbearing)		12×8⅝×2½	94–97	500	12				
Sankey's Moler *J. H. Sankey & Son Ltd*	hollow, extruded diatomaceous earth	keyed or plain	12×9×2 2½ 3 4 4½	54 64 72 90 96	400	12		1·0 1·1 1·15 1·2 1·3	38–46	easily cut, chased nailed
Salamander *Wm Higgins & Sons (Manchester) Ltd*	hollow clay (non-loadbearing)	rough or smooth faced	12×8⅝×2 2½ 3 9½×9½×2½ 3	150 160 265·5 160 265·5		12				
	hollow clay (loadbearing)	rough or smooth faced	12×8⅝×4 6 12×9½×4 6	441 1012·5 441 1012·5		12	4-in gives 1 hour			
SGB *SGB (Dudley) Ltd*	fireclay	glazed both sides or single side in any desired colours	9×2⅞×2½	216		48				
Westblock *Western Counties Brick Co Ltd*	hollow clay	keyed or plain	12×8⅝×2½ 3 4	135 162 216	1,415	12				

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UDC

weyroc board products for partitioning

Weyroc board products, with their wide range of sizes and finishes, are ideally suited for use as internal partitioning materials.

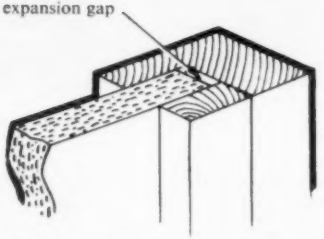
Suggested as suitable for partitions are

Weyroc '34' plain finish
Weyroc R.P. (ready to paint) filled surface for painted or lacquered finish
Weyroc V.S. veneered finish
Weydec and Hardec laminated plastic surfaced boards.

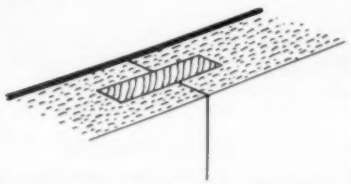
These products in 8′ x 4′ board size and in a variety of thicknesses are available ex stock. In addition, we supply Weyroc against specific requirements in cut size panels.

Larger or non-standard plain boards are easily fabricated in the workshop or on site by forming a plain butt joint, without the necessity for matching up grain. We also supply boards veneered with any available wood veneer, boards faced with thin plastic laminate, P.V.C. sheet or other decorative materials commonly used in the building industry. Weyroc products are used very effectively as structural materials and infillings in modern partition design, in association with other materials such as metal or glass. Enquiries concerning standard or non-standard products are welcomed, and we maintain a technical department to provide information to architects and others concerned with specifying these materials.

½″ expansion gap

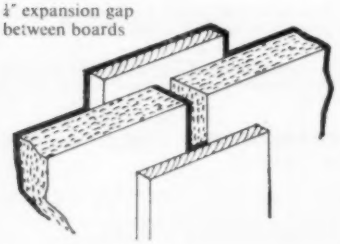


Board thickness 18mm and above requires upright spaced at approximately 4ft centres ; below 18mm thickness upright spacing should be at approximately 2ft centres

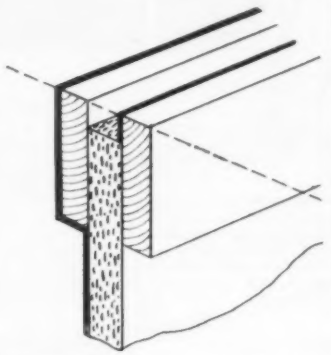


tight vertical joints may be employed if cumulative expansion can be accommodated. This is particularly useful where 25mm or 31mm thickness is required

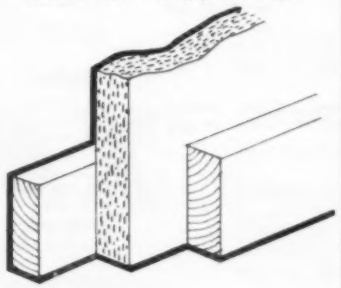
¼″ expansion gap between boards



Normal methods of construction can be used

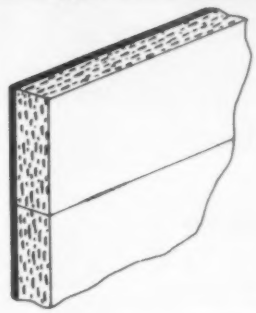


allow ½″ expansion gap at ceiling



no expansion gap at floor level

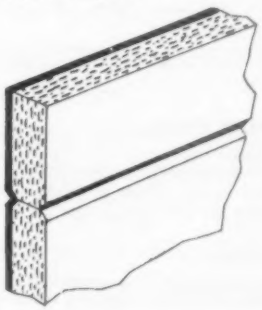
For details of double skin construction, thermal insulation and accoustic applications please see Data Sheet WPP/JAN/62



Where applicable additional height can be gained by a plain butt and glued joint without reference to grain

or

if using veneered Weyroc or Weydec a slight V



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AP 109

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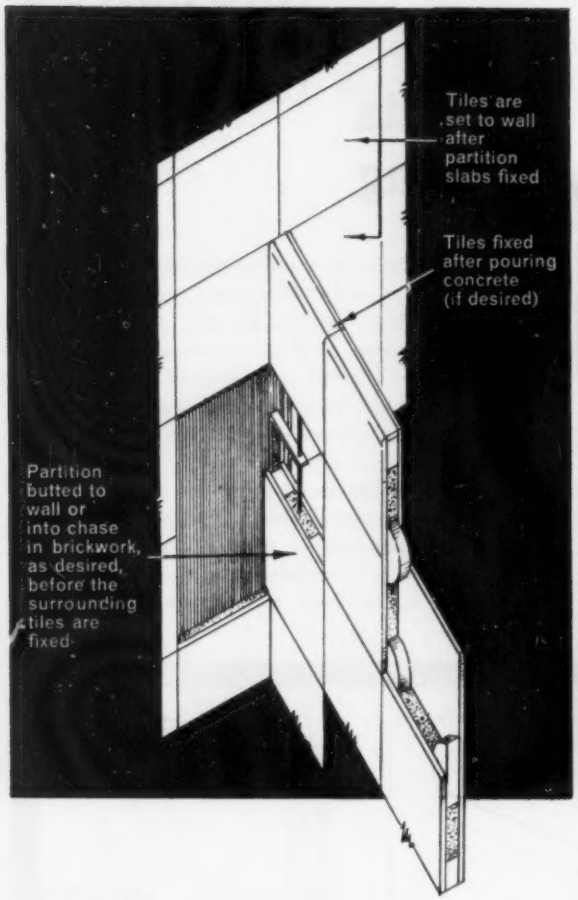
PILKINGTON'S PREFABRICATED TILED PARTITIONS



DESCRIPTION

Prefabricated tile panels, comprising two outer surfaces of glazed ceramic tiles fixed together by ceramic spacer discs set at the intersections of the tile joints to form a doublesided hollow panel. Panels are fastened together in position on site and a cement fill is poured into the cavity between the two tile backs to form a thin tiled wall of great structural strength. The panels can be supplied in any colour or decoration available on our standard ranges.

TECHNICAL DATA — Following types available:

Panel comprising $\frac{3}{4}$" spacers with 6" x 6" x $\frac{1}{4}$" tiles and R.E. unfilled weight per yard super—49lbs. Overall thickness $1\frac{1}{4}$", width of gap between tiles—$\frac{1}{4}$".

Panel comprising $\frac{3}{4}$" spacers with 6" x 6" x $\frac{3}{8}$" tiles and R.E. unfilled weight per yard super—68lbs. Overall thickness $1\frac{1}{2}$", width of gap between tiles—$\frac{1}{4}$".

Panel comprising 1" spacers with 6" x 6" x $\frac{3}{8}$" tiles and R.E. unfilled weight per yard super—72lbs. Overall thickness $1\frac{3}{4}$", width of gap between tiles—1".

MAXIMUM SIZES:

Nominally	6' 0" x 3' 0"
Actual size with joints	6' 0$\frac{1}{4}$" x 3' 0$\frac{1}{4}$"

N.B. Other sizes are made to specification. Each 6" tile takes up 6$\frac{1}{16}$" with joints.

STRENGTH:

Tests have shown that filled partitions withstand an impact of 50 ft.lbs. This is more than three times the shock which can be given by a man falling freely against a partition panel.

ADVANTAGES:

1. They are composed entirely of ceramic material and concrete and have all the consequent advantages of these materials.
2. They are made of light weight units which are easily transported and erected.
3. They are speedy to erect.
4. They are strong, yet because of their small overall thickness they save space.
5. They give correct spacing of tiles and smooth flat surfaces on both sides of the partition.
6. Their dimensional accuracy makes assembly easy.
7. They can be designed to fit in with any tiling scheme.

PROCEDURE FOR ORDERING: A scale drawing of the proposed installation must be provided. The units required will be manufactured to the drawing and despatched with a fixing drawing suitably marked to facilitate assembly on the site.

It is essential to ensure that there is sufficient headroom available to allow concrete to be poured into the partitions after erection.

PRICES:

All Partitions made up from 6" × 6" tiles. One square foot of Partition contains 2 sq. ft. of tiles.

Supplied in units of up to 6' x 3' as required.

Prices for supply are available on application.

Firm prices for supply and fixing should be obtained through Tiling Contractors or Builders' Merchants.

SPECIFICATION: Should be described as a Pilkington's Prefabricated Tile Partition, stating size, thickness and colour of tiles to be used.

INSTALLATION: Installation of Partitions can be seen at the Manchester, Glasgow and Bristol Building Centres, and at our Head Office and our London Office.

REFERENCE TO CATALOGUE: For fuller details a Partition Brochure can be sent on request.

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UDC	69.022.5

PILKINGTON'S TILES LIMITED,
Clifton Junction, Manchester. Telephone: Swinton 2024-7 and 2841-2 Telegrams: Tileries, Manchester.
London Office: 27b Old Gloucester St. W.C.1. Tel: Holborn 2961. Glasgow Office: 251, St. Vincent St. C2. Tel: City 6395
A member of the British Ceramic Tile Council.

BARBOUR INDEX FILE NO. 83

SfB (22) R14

Prefabricated components make PLYMAX cubicles

simple to specify

easy to erect

W.C. Compartments · Showers · Cubicles in

PLYMAX

THE VENESTA METAL FACED PLYWOOD

...and a specialised PLYMAX for a specialised job

LEAD PLYMAX for X-Ray protection

High quality lead sheet cemented between plywood — Lead Plymax — offers an easy method of providing X-Ray protection. This particular form of PLYMAX is fully detailed in a booklet available on request.

The architect who decides on PLYMAX cubicles does more than save himself needless work on the drawing board; he saves time and labour on the site. They arrive prefabricated, ready for immediate erection. They are rigid and light in weight and easy to handle. They are simple to clean and offer a good surface for paint or cellulose. Samples of PLYMAX, together with full details, will be sent on request.

VENESTA PLYWOOD LIMITED

Plywood Division, Vintry House,
Queen Street Place, London EC4 Tel: Central 3040

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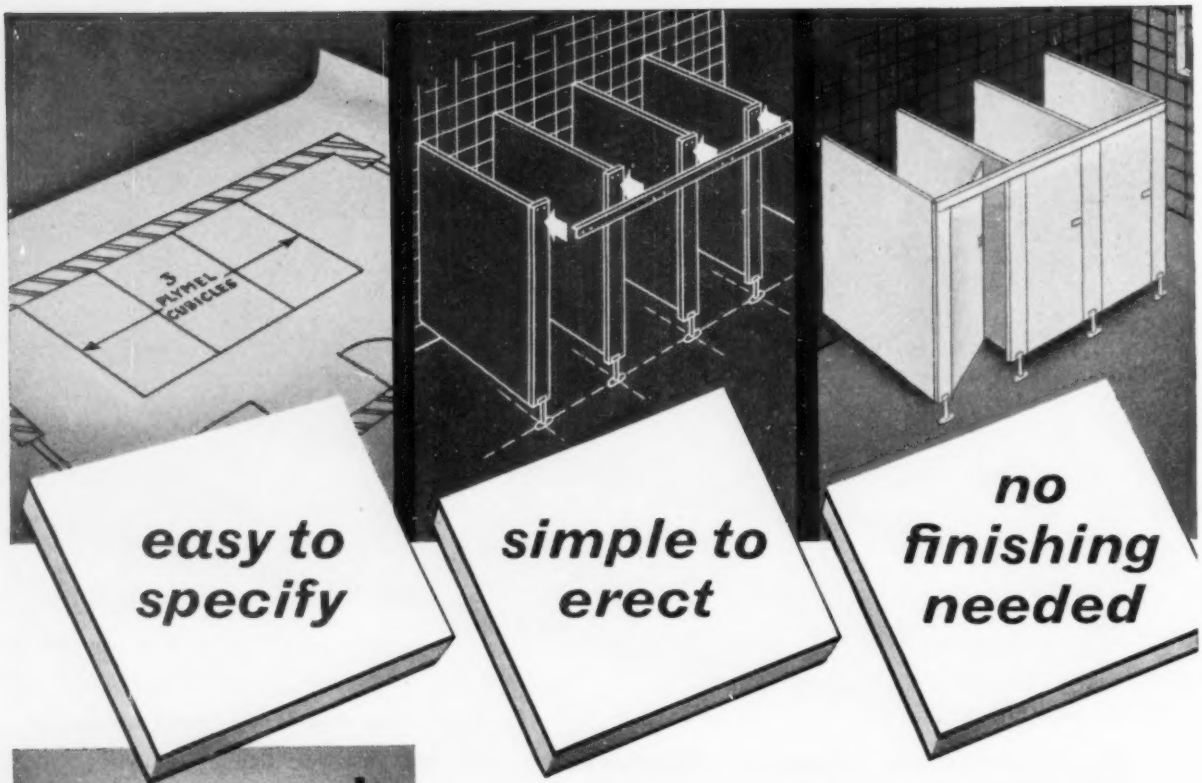
Plymel*

now in a range of colours

UNIT COMPARTMENTS

save work at every stage



W.C. Compartments and shower cubicles in Plymel, the new melamine-faced material by Venesta Plywood Limited, are prefabricated in standard units to save hours of your time.

On the drawing board, you simply specify 'Plymel cubicles' and there is no need for further detail. On site, these rigid, lightweight, prefabricated units are easy to handle—they arrive dismantled ready to erect and they *need no painting*. Once erected, they are resistant to moisture and corrosion—easy to keep clean with the minimum of effort.

For samples, and full details of

Cubicles, W.C. and Shower Compartments

in PLYMEL, write for leaflet (L11)

VENESTA PLYWOOD LIMITED

Vintry House. Queen Street Place, London, E.C.4. CENtral 3040 T.A. 2402

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despatched in 14 days from receipt of order and site sizes

PLYMAX QD

Quick Delivery
WC COMPARTMENTS

Plymax "Q/D" Compartments are of the proven quality and design of Plymax Type "G" W.C. Compartments which architects have widely specified with great saving of time for the past eight years—but there is a difference. We will guarantee despatch within 14 days from receipt of order and site sizes if you will accept the standard specification. They arrive prefabricated ready for immediate erection and for fixing to a plain wall by secret cleats. Ask us to send you full details.

STANDARD SPECIFICATION

Material: ¾" chipboard covered two sides with aluminium or galvanised steel.

Size: 5 ft. from front to rear. 6 ft. 5 ins. high including 6" ground clearance. Centres 2 ft. 6 ins. to 3 ft. in half inch stages.

Fittings: Standard 3" loose pin hinges. Barrel bolt or indicator bolt. Secret fixing cleats. Pedestal.

A VENESTA PRODUCT

VENESTA PLYWOOD LTD. Vintry House, Queen Street Place, London, E.C.4. Telephone CENtral 3040

A585

SfB (22) Rj1

PLIMBER

WOOD CHIPBOARD
–for building and furniture

PLIMBER 45

now in thicknesses ½" ⅝" ¾"
all in the "standard" sizes
4' x 4' 6' x 4' 7' x 4' 8' x 4'
9' x 4' 10' x 4' 12' x 4' 16' x 4'

PLIMBER JG

now in thicknesses
9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 mm.
all in the "standard" sizes
4' x 4' 6' x 4' 7' x 4' 8' x 4' 9' x 4' 10' x 4'

WOOD VENEERED PLIMBER

now in thicknesses ½" ⅝" ¾"
"standard" sizes 2' x 4' 4' x 4' 6' x 4' 8' x 4'

HANDISIZE PLIMBER

in thicknesses 11 mm. and 17 mm.
4' x 3' 4' x 2' 4' x 1' 2' x 2' 2' x 1' 4"

Quotations can be given for other sizes in all grades.

For prices, Technical Information Sheets, stockists:

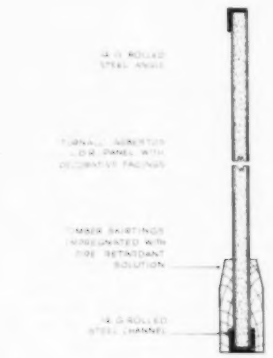
BRITISH PLIMBER LIMITED
Rainham, Essex. Rainham 5262

SfB (22) Rh1

NON-COMBUSTIBLE ASBESTOS SHEET MATERIALS FOR FACING METAL AND TIMBER FRAMED PARTITIONS AND FOR THE CONSTRUCTION OF SINGLE-LEAF DEMOUNTABLE PARTITIONS.

TAC

Note: Metal or timber framing or other supporting units not supplied by T.A.C.



1 "TURNALL" ASBESTOS LOW DENSITY RIGID PANELS for the construction of Type A single-leaf partitions in accordance with B.S. 476.

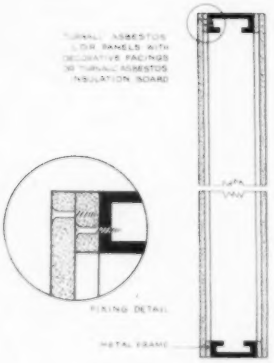
MAXIMUM HEIGHT (floor to ceiling)	
Not exceeding 8ft	Over 8ft and up to 10ft.
(a) $\frac{3}{4}$" core with $\frac{1}{16}$", $\frac{1}{8}$" or $\frac{1}{4}$" veneer on both sides	(a) $\frac{3}{4}$" core with $\frac{1}{16}$", $\frac{1}{8}$" or $\frac{1}{4}$" veneer on both sides
(b) $\frac{1}{2}$" core with $\frac{1}{4}$" veneer on both sides.	(b) $\frac{3}{4}$" core with $\frac{1}{4}$" veneer on both sides

THERMAL TRANSMITTANCE

Construction	'U' value
$\frac{3}{4}$" material veneered on both faces	0·41 Btu in/ft²h°F

FIRE RESISTANCE = $\frac{1}{2}$ hour

DOORS Single-leaf Fire-check doors can be supplied in this material * see publication B 109



2 TYPE B METAL FRAMED PARTITIONS faced with "TURNALL" Asbestos L D R Panels or "TURNALL" Asbestos Insulation Board in conjunction with asbestos fillets.

MAXIMUM HEIGHT (floor to ceiling) — as required — framing to suit

THERMAL TRANSMITTANCE

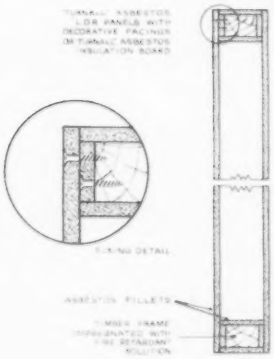
Construction	'U' value
(a) Faced both sides with $\frac{3}{4}$" material with 3" air space	0·31 Btu in/ft²h°F
(b) Faced both sides with $\frac{1}{2}$" material with 3" air space	0·29 Btu ,,

FIRE RESISTANCE

$\frac{3}{4}$" sheets with $\frac{3}{4}$" fillets — One hour's fire protection
ditto with 1" thick glass fibre or mineral wool infilling = two hours

$\frac{1}{2}$" sheets with $\frac{1}{2}$" fillets — Two hours
ditto with 1" thick glass fibre or mineral wool infilling = four hours

see publication B



3 TYPE C TIMBER FRAMED PARTITIONS faced with "TURNALL" Asbestos L.D.R. Panels or "TURNALL" Asbestos Insulation Board in conjunction with asbestos fillets.

MAXIMUM HEIGHT (floor to ceiling) — as required — framing to suit.

THERMAL TRANSMITTANCE

Construction	'U' value
(a) faced both sides with $\frac{3}{4}$" material with 3" air space	0·31 Btu in/ft²h°F
(b) faced both sides with $\frac{1}{2}$" material with 3" air space	0·29 Btu in/ft²h°F

FIRE RESISTANCE = One hour

DECORATION AND APPLIED FINISHES. "TURNALL" Asbestos L.D.R. Panels are bonded with a variety of decorative veneers: Plastic, Wood, Asbestos-cement veneer, Metal, Decorative sheets of resin-bonded glass fibre, natural grey asbestos cement veneer suitable for painting etc.

OTHER MATERIALS. In addition to the materials shown in the illustrations A, B, & C, the following Asbestos-cement sheet materials are eminently suitable for facing partitions and are available in a variety of sizes, colours and textures:

"TURNALL" Granitone Decorated Sheets see pub. no. B.119
"TURNALL" Asbestos Partition Board see pub. no. B.108
"TURNALL" Asbestos Wood see pub. no. B.87

"POILITE" Asbestos-cement Flat sheets (Fully Compressed)*
" " " " " (Textured)*

* These sheets are available with "TURNALL" "COLOURGLAZE" or "HAMMERGLAZE" Finishes. (see pub. nos. B.57 & B103).

TURNERS ASBESTOS CEMENT CO. LTD. A Member of the TURNER & NEWALL Group
TRAFFORD PARK, MANCHESTER 17. Tel. TRAfford Park 2181. London, Tel. Waterloo 4712 and at Birmingham, Bristol, Cardiff, Glasgow

SfB (22) Rk4

STRAMIT

COMPRESSED

STRAW SLABS

"Stramit" is a building slab manufactured from selected farm straw by a patented method of pressure plus heat. The result is a 2" thick, rigid, dry-construction slab equally suitable for new structures or for repairs or conversion of existing buildings. It is available in standard widths of 4′ 0″, lengths of 6′ 0″, 8′ 0″, 9′ 0″, 10′ 0″ and 12′ 0″, and in a variety of grades and finishes suitable for partitions of every kind. Lesser widths than 4′ 0″ and other lengths are available to order.

PROPERTIES

Weight:
Approx. 3.8 lb. per sq. ft.

Strength:
Approx. 2½ to 3 times stronger in width than in length; modulus of rupture 600 lb. and 187 lb. per sq. in. under test (B.R.S.).

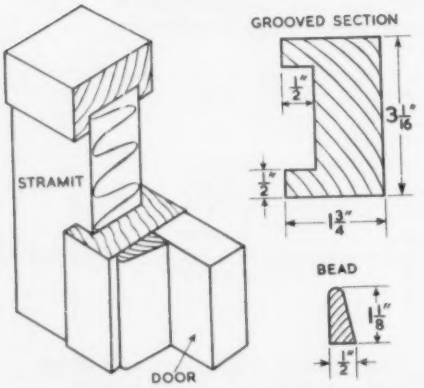
Thermal Conductance:
At 2" standard thickness, 0.30 — better than an 11" cavity brick wall.

Sound Insulation:
The mean sound reduction factor is 30 db.

Fire Resistance:
Untreated, "Stramit" in timber framing satisfies BS476 1953 for fire resistance of the half-hour grade. With a skim-coat of plaster one hour's fire resistance is obtained.

Spread of Flame:
With the normal paper liner, "Stramit" satisfies BS476 for Class 3 Spread of Flame (medium). A treated liner or a skim-coat of plaster brings it into Class 1 (very low).

ACCESSORIES



In addition to the grooved sections illustrated above a wide variety of other types of fixing accessory can be utilised. These include aluminium sections, timber 'F' joints, quadrant moulds, etc. For full details, including drawings showing build-up and erection details, send for our technical brochure on partitions.

Data Sheet for

STRAMIT PARTITIONS IN TIMBER FRAMING OF GROOVED SECTIONS

The method of partition construction illustrated opposite consists of various timber grooved sections and "Stramit" partition-grade slabs. This form of construction is most suitable for use where partitions of 9′ 0″ or over in height are required.

As the top drawing shows, a timber batten to which the skirting may be fixed is secured at floor level and takes the base of the "Stramit". At the wall-line, an upright grooved section piece runs from the base timber to the ceiling and takes the side of the "Stramit". Similar vertical back-to-back grooved sections spaced at intervals receive 4′ 0″ wide "Stramit", and carry the partitions for the required distance. Grooved sections surmount the "Stramit" at the required height for glazing and on these the glazing is mounted by means of timber beading. Further grooved sections above the glazing take the "Stramit" to ceiling-level, where it is secured by a timber plate and lining section which finishes off the partition. Details of fixing at junctions, etc., are shown in drawings 1 to 6.

TYPICAL SPECIFICATION NOTES

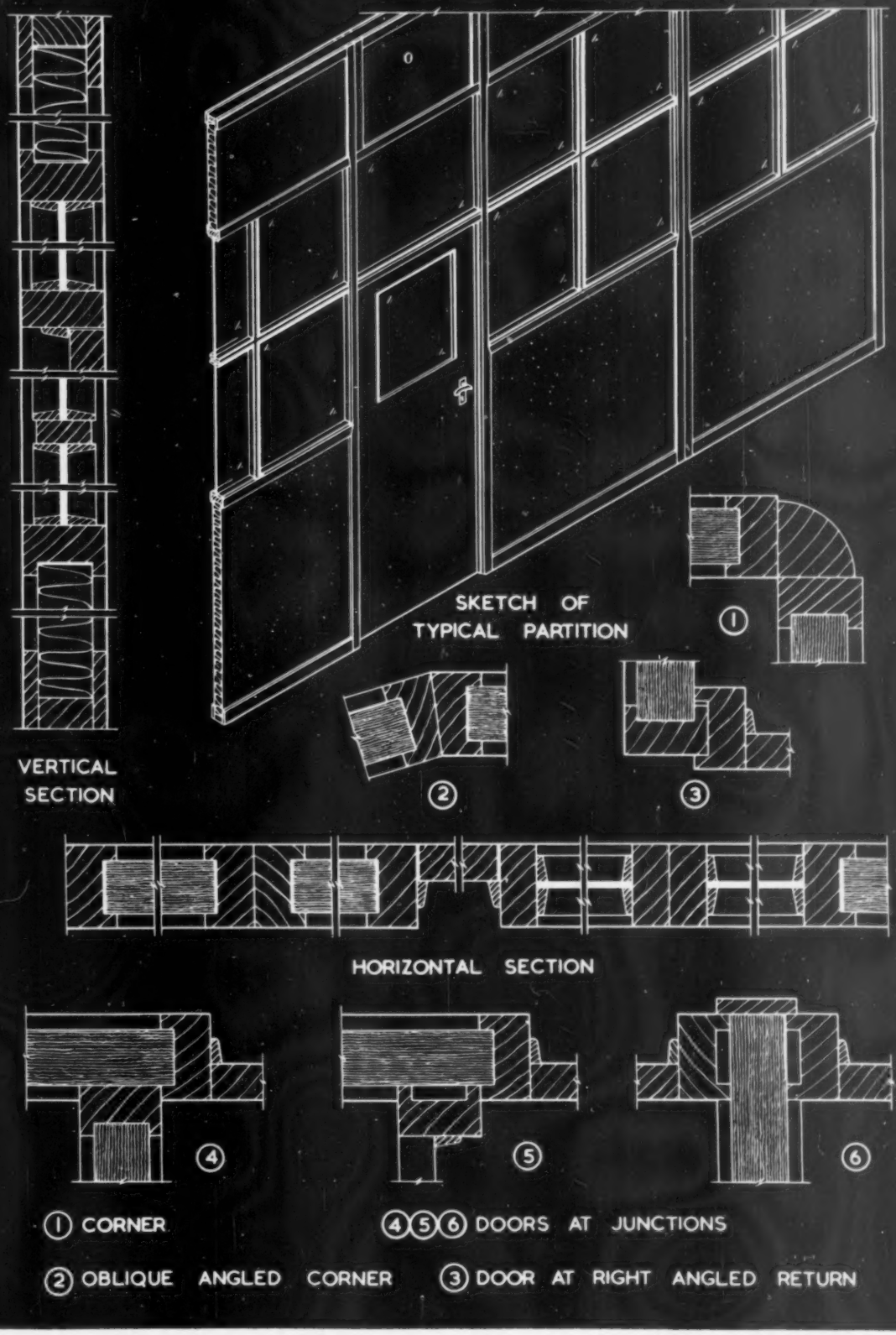
Provide and fix "Stramit" timber grooved sections framed in as posts and intermediate rails to partitions, the intermediate posts formed of two grooved sections screwed together, with "Stramit" filler sections framed in as rails to bottom and top. Plug framing to floors, walls and ceilings. Supply and fix ½" and 2¾" "Stramit" timber skirtings and cover beads at top on both sides of partitions. Cut off tongues from grooved sections where necessary around open panels for glazing. Provide and fix 2" plain liner grade "Stramit" slabs in bottom and top rows of panels. Panels shall be in 4′ 0″ widths except where necessary to make up lengths; panels shall be set out symmetrically to each partition with make-up widths at each end. Supply and fix "Stramit" bead sections around doors; form panels for glazing with 1" × 2" "Stramit" timber filler sections framed in and provide "Stramit" bead sections around both sides of openings. Provide and hang 6′ 6″ × 2′ 6″ × 1⅜" hardboard-faced doors in openings.

This data sheet refers to partitions in a timber framing of grooved sections only. For similar information on partitions in extruded aluminium framing, timber 'F' joints, timber quadrant moulds, and on Stramit 'Movaflush' demountable partitions, send for the latest Stramit technical brochure on partitions.

STRAMIT BOARDS LTD., COWLEY PEACHEY, UXBRIDGE, MIDDX.

Telephone: West Drayton 3751 (10 lines)

Stramit: Compressed Straw Slab Partitions SfB (22) Rk4

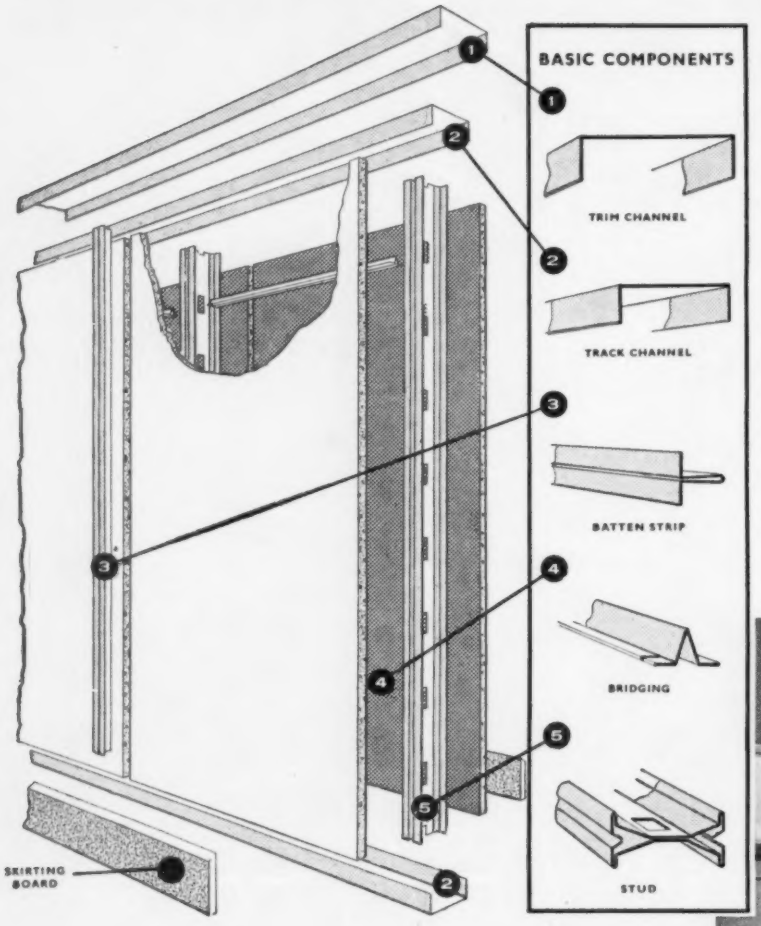


One of the TOMO Group of Companies

SfB (22)

permalock demountable partitions

a product of The Expanded Metal Company Ltd.



FEATURES

SERVICE Permalock partitions are backed by a complete service. The Expanded Metal Company will design, take-off quantities, estimate, install, glaze, and paint. Prompt quotation, delivery and installation are assured.

EASE OF ERECTION Permalock partitions are constructed from a few lightweight basic components, and simplicity guarantees efficient and speedy installation, with minimum disturbance.

DEMOUNTABILITY Permalock partitions can be quickly dismantled and re-erected elsewhere with very little or no wastage.

FIRE RESISTANCE Permalock partitions can also be installed to give a half or one-hour fire resistance grading, and the system can consist entirely of incombustible framing and facing materials.

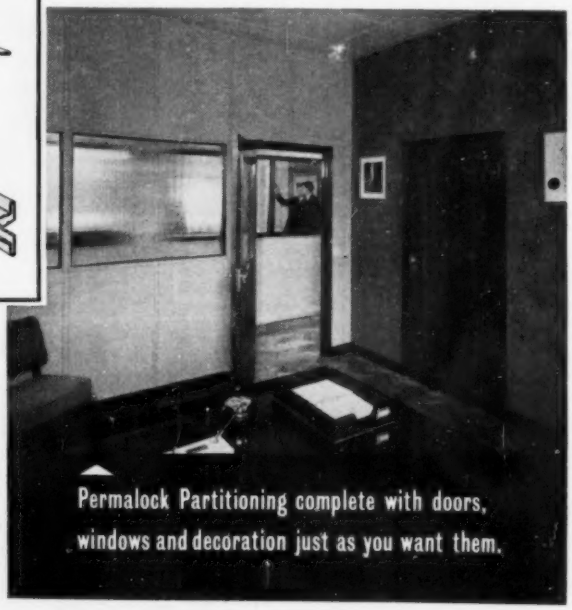
SOUND REDUCTION Permalock partitions of standard construction with ½" Plasterboard on both faces show an average transmission loss of 36.5 decibels within the range 100-3,200 cps on tests made by the AIRO Research Station.

ECONOMY Permalock partitions incorporate a simplicity of design which enables fast production and installation resulting in very economical prices.

STRENGTH & WEIGHT Permalock partitions have been designed to give a lightweight installation but also to resist impact and vibration. (Details of impact tests available on request).

CONCEALED SERVICES Permalock partitions are hollow and the studs are provided with regularly spaced, punched openings; the space between the panels can be used for the passage of electrical wiring. Junction boxes and switches can be located at any convenient position either vertically or horizontally.

FLEXIBILITY Permalock partition components are easily cut on site for chasing around pipes, beams, radiators, and other services.



Permalock Partitioning complete with doors, windows and decoration just as you want them.

Designed specifically to meet present day demands, the Permalock system offers demountable partitions of excellent quality for new buildings and conversion work. Although low in price compared with other demountable systems, Permalock maintains high standards of durability and finished appearance. Economical because the skilful original design of accurate mass produced components allows installation on site with speed and unequalled simplicity. Permalock partitions minimise transmission of noise. Any problems from enquiry to completion are resolved by the Permalock Service.

patents pending

permalock partitioning – durable, demountable

A PRODUCT OF THE EXPANDED METAL COMPANY LTD.

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CARDIFF 33757 • EXETER 55466 • GLASGOW Possil 8597 • LEEDS 25343 • MANCHESTER Central 9855
NEWCASTLE 810308 • NOTTINGHAM 42897

OR WRITE TO: THE EXPANDED METAL COMPANY LIMITED · 16 CAXTON STREET · LONDON · S.W.1

SfB (22) Md2

WILLIAMS & WILLIAMS

Roften Modular Partitioning

Roften Modular is a comprehensive system of steel partitioning for offices and factories. It is designed in accordance with the recommendations of the Modular Society to a basic 4″ plan grid. It is quickly erected and dismantled, and all parts are readily interchangeable.

Material and Manufacture
Roften Modular Partitioning is made from mild steel of suitable gauge, phosphated, primed and stove enamelled at the Works. The various profiles are made on Yoder cold rolling machines, and the high degree of accuracy achieved ensures complete interchangeability of components.

Weight
This varies according to the requirements of individual jobs, but an average figure is 5 lbs. per sq. ft.

Types and Sizes
Type 1 Double Panelled with removable skirtings and plinths.
Type 2 Double Panelled with continuous base channels.
Type 3 Single Panelled with continuous base channels.

Widths
Standard module 40″ (24″ and 48″ widths also available in 4″ increments).

Heights
Free standing 7′ 2″, 8′ 2″, 9′ 2″, 10′ 2″ (or with special make up panels to ceiling).

Barrier Partitioning
42″, 58″, 70″. Partitions can be solid panelled to ceiling height, fully glazed floor to ceiling, or glazed above 3′ 6″ dado height. Doors can be hinged single and double leaf, double or single action swing or sliding. Vertical or horizontal sliding hatches also available.

Fixing Methods
Floor fixing is by means of rawlplugs or screws depending on floor finish. Ceiling fixing is by a continuous channel fixed by rawlplugs, screws or toggle bolts according to ceiling construction.

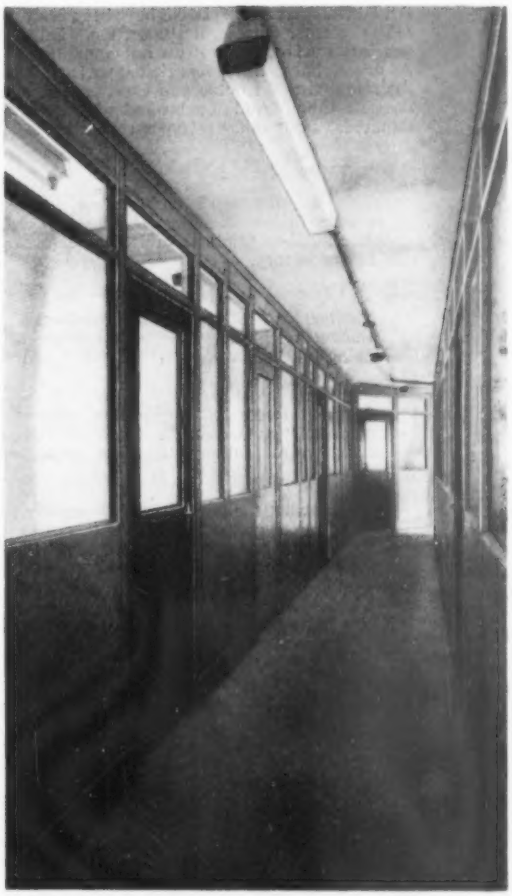
Insulation
Double panelled types include infilling of cellular construction resin bonded and an average sound reduction of 25 decibels is achieved. Higher sound insulation factors are achieved by special treatments including double glazing.

Finish
The high grade mild steel is degreased, phosphated, primed and finally stove enamelled in a range of six standard colours.

Colours
The standard colours available are

B.S. 6.069 Birds Egg	B.S. 9.095 Light Grey
B.S. 6.066 Pebble	B.S. 9.096 Dark Grey
B.S. 4.054 Sunlight	B.S. 7.077 Tranquil Blue

For any installation any two colours can be selected from the above range, plus Black for skirtings if required. (Other B.S. colours can be supplied if required).



Williams & Williams Roften Modular Partitioning at the new offices of Clifford Bloxham & Partners Ltd., advertising agents, Wellington House, Upper St. Martin's Lane, W.C.2.

Availability
Supplied and fixed by Williams & Williams Ltd.

Prices and Delivery
Prices inclusive of delivery and erection at any site can be obtained on application to any of the following addresses:

HEAD SALES OFFICE AND WORKS,
ROFTEN WORKS, HOOTON, WIRRALL, CHESHIRE.
Tel. Willaston (Wirrall) 2171/5

SOUTHERN DIVISIONAL SALES OFFICE,
37-39 HIGH HOLBORN, W.C.1. *Tel.* HOLborn 9861

NORTHERN DIVISIONAL SALES OFFICE,
WELLINGTON BUILDINGS, THE STRAND,
LIVERPOOL 2. *Tel.* Maritime 1061/3

WILLIAMS & WILLIAMS *forward looking building products*

We are members of the Modular Society.
BARBOUR INDEX NO. 245

WILLIAMS & WILLIAMS ALSO MAKE STEEL AND ALUMINIUM WINDOWS · PATENT GLAZING · WALLSPAN CURTAIN WALLING · CUBICLES

SfB (22) Gd2

Art Metal SECTIONAL PARTITIONING

ART METAL PARTITIONS have been designed for subdividing offices, stores, schools, hospitals, etc. Being constructed from standard steel sections you are not committed to your first layout. As needs change the same original parts can be re-arranged with the minimum of trouble and expense . . . and in the shortest possible time. Additional standard parts can be supplied as required. Four different types of partitions are available.

" R " TYPE

This is single-wall construction. Available ceiling or cornice height. Standard heights are 7′ 3½″, 8′ 9″ or 10′ 0″. Intermediate heights easily obtainable as posts are drawn in our factory.

" D " TYPE

Similar to " R " type, but double-wall. Panels are 1¾″ thick to height of 3′ 6″ (then glass or steel above), the interior being packed with " STILLITE " MINERAL WOOL.

" EYE-LINE " TYPE

This is " screening " rather than what is generally understood as " partitioning ". It is 5′ 4″ high, i.e., at eye-level. Ideal where semi-private offices or sections are required.

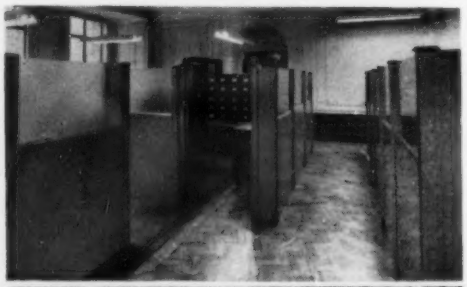
" BARRIER " TYPE

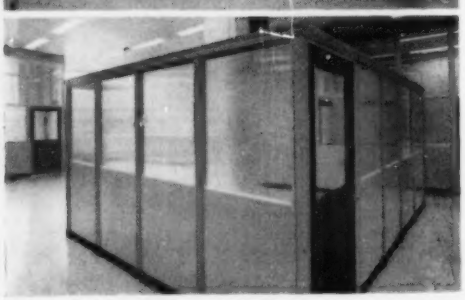
This is what the name indicates—merely a barrier. It can be of any height, generally 42″. It is often used to divide up showrooms and offices into sections without impeding the view over the whole floor space.

" D " Type partitioning at Standard Telecommunication Laboratories Ltd.

Top: Eye-Line partitions at The Temperance Permanent Building Society.

Centre & Bottom: Partitions at the Sun Life of Canada Assurance Co. Ltd.





CONSTRUCTIONAL DETAILS

PANELS

Made in various standard sizes (from 15″ to 45″ wide in multiples of 5″). Upper portion may be glazed or solid steel.

ADJUSTABLE WALL FILLERS

Enable the partitions to fit any space without the expense of specially manufactured panels.

FINISH

All partitions are finished two coats synthetic stoved enamel which are easy to keep clean. They can be enamelled in any colour to harmonise with any scheme of interior decoration.

GLAZING BEADS

Glass is held in position by means of snap-on beadings. This is more satisfactory than the screw-on type of glazing bead and gives a better appearance.

POSTS, CORNICES, PANELS AND DOOR FRAMES

These all interlock and are retained in position by means of keys and friction devices. No bolts or nuts are visible, giving neat appearance. Cover moulds are snapped into place and all connections are concealed. All cover moulds and cornices are drawn sections to give true profiles. . . .

ELECTRIC WIRING

Electric wiring may be carried inside the posts and cornice sections, eliminating the need for conduits. Posts are prepared to receive switches.

TRANSOMS AND SLIDING HATCHES

Transoms may be provided, also vertical and Horizontal sliding hatches, with or without a shelf beneath.

Send for Catalogue 615 and information to—

ART METAL

199-203, Buckingham Palace Road, London, S.W.1.

Telephone SLOane 5201

FWS

SfB (22)

Consult

Compactom

who plan

and build

partitions

and acoustic

ceilings

in all

materials

Informative brochure
available on request

COMPACTOM

COMPACTOM LTD.
OXGATE LANE · CRICKLEWOOD
LONDON · N.W.2 · GLAdstone 6633

Yes, indeed, Wilson seems to be doing pretty well. Just look at those panelled walls . . . sheer luxury! The chap must be a business genius.

Truth of the matter is, Wilson is no genius. He's just a good businessman. He knows that a good-looking office is good for his Company's prestige and not only that . . . it's good to work in. Most people realise that, but Wilson went one better . . . he went to Walways. Wilson soon discovered that the *Walways System of Executive Partitioning* costs no more than ordinary partitioning, but it has that wonderful ' luxury look '.

More than that, *Walways* have an exclusive method of erection that makes them more economical than other systems. In fact, Wilson being a methodical man, has listed fourteen separate advantages of Walways Executive Partitioning. Perhaps he is a genius after all!

If you would like to study for yourself the fourteen advantages of the Walways system, please write or telephone to:—

Walways

EXECUTIVE PARTITIONS

Waddells (Stratford Steel Equipment) Ltd.
Stirling Corner,
Boreham Wood, Herts.
Telephone: Elstree 5441.

GO ONE BETTER—GO TO WALWAYS!

SfB (22)

DECOR IN STEEL!

WOOD GRAIN PLASTIC VENEER
(with realistic grain emboss).

STELVETITE FINISH
(in a wide range of modern colours).

also BAKED-ON ENAMEL

Rowe

New styling offers new opportunities to the architect

Steel Partitions . . . in Reception? What sort of an impression is that going to make? When they're ROWE Partitions – a very favourable impression indeed! Because ROWE have succeeded in doing what nobody else has done: in producing Steel Partitions that look – *and feel* – the last word in luxury. Partitions that look like rich natural wood. Or like finely moulded plastic. Yet with all the supreme practical virtues that only steel can offer. ROWE STEEL PARTITIONS offer you the best of both worlds. Use them in Reception . . . in the Boardroom . . . in fact, wherever you want to make a lastingly favourable impression.

Rowe Industries produce a complete range of steel partitions, of many varied types, for offices, factories, public buildings, etc., and will be very pleased to discuss your enquiries without obligation.

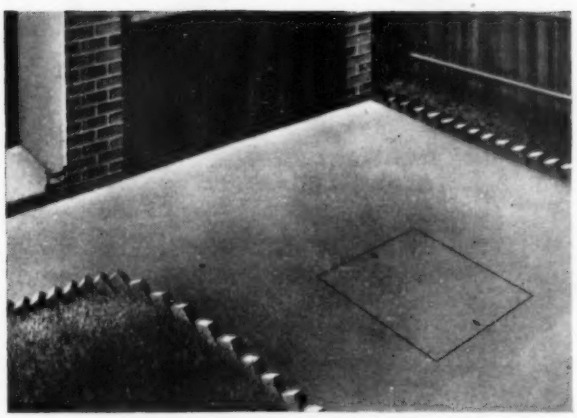
Full details will be sent on request

ROWE INDUSTRIES (KIRKBY) LTD. KIRKBY INDUSTRIAL ESTATE, LIVERPOOL Telephone: SIMonswood 2451.
AND AT 10 DOVER STREET, LONDON W.1, and 59 CALTHORPE ROAD, BIRMINGHAM, 15

AJ SfB (22)

Partitions : General

END



In places like these

fit

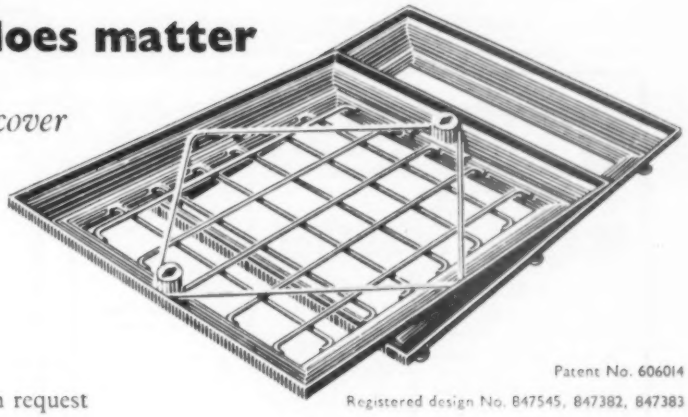
BROADSTEL

MANHOLE AND ACCESS COVERS

The design of the Cover does matter

No dearer than an equivalent cast iron cover

Standard Covers ex stock
packed in cases



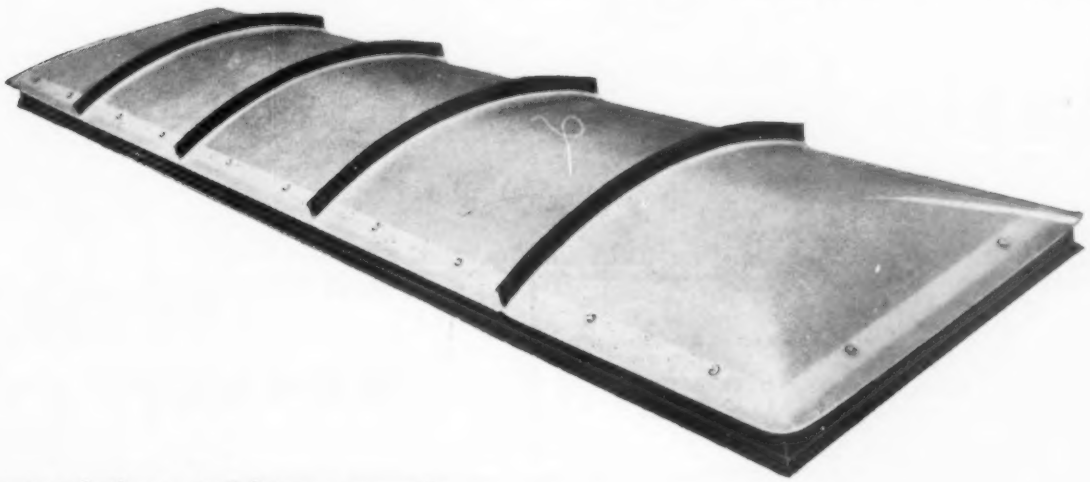
Patent No. 606014
Registered design No. 847545, 847382, 847383

BROADS

Full details sent on request

MANUFACTURING CO. LTD. 4 SOUTH WHARF, PADDINGTON, W.2 Telephone: PADdington 7061 (20 lines)

Continuous unit Rooflights and Domes in Litex Fibreglass Perspex and Glass



All forms of glass and ferro concrete

Sole agents for Queenstown metal curbs and ventilators

LENSCRETE LTD

Queen's Circus London SW8 Tel.: MAC 1063

CLASSIFIED ADVERTISEMENTS

CHRISTMAS PRESS SCHEDULE

Normal printing arrangements have been altered to allow for the Christmas holiday. The latest dates for receiving advertisements for the following issues are:
December 27 issue—Monday, December 18.
January 3 issue—Friday, December 29.

Advertisements should be addressed to the Advt. Manager, "The Architects' Journal," 9-13, Queen Anne's Gate, Westminster, S.W.1.

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

AIR-MAIL SERVICE available on request.

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

Public and Official Announcements

36s. per inch; each additional line 3s.

CITY OF GLASGOW
ARCHITECTURAL & PLANNING DEPARTMENT
ASSISTANT ARCHITECTS
Salary up to £1,560 p.a.

This comprehensive office has an extremely interesting and vast programme of work to carry out during the next twenty years or so. The architectural and planning works include comprehensive redevelopment of urban areas, multi-storey buildings, schools of all types, colleges and various civic buildings.

The salary scale for these assistantships is up to £1,560 per annum with placing according to experience. Preference given to young and enthusiastic qualified men who have the ability but lack a real opportunity to apply it. There will be scope for personal initiative in this office.

A five-day week is in operation and the usual conditions concerning Superannuation apply.

Advances up to 100 per cent of valuation will be made available, where needed, for the purchase of suitable houses in or near Glasgow by successful applicants.

Please apply on application forms from the Principal Administrative Officer, 20, Trongate, Glasgow, C.1.

A. G. JURY,
City Architect & Director of Planning.
S9917

CORPORATION OF LONDON

The City Planning Department requires STAFF to assist on a number of planning projects at present in hand and others in course of preparation. These include the Barbican Commercial Zone where separated walkways are planned for a large area and the Tower of London Precinct. The work is varied and interesting and appeals to qualified Assistants with a fresh but disciplined approach to planning design.

Grade II/III, £990 × 10 increments to £1,310 p.a. (Two posts.)

Please apply in writing to the City Architect, Corporation of London, Guildhall, E.C.2, stating experience, present salary, etc. (no forms are issued). The posts are permanent and superannuated. S1442

BOROUGH OF SCUNTHORPE
(Area 7,895 acres — Population 67,257 — Rateable Value £1,562,541)
APPOINTMENT OF CHIEF PLANNING AND BUILDING ASSISTANT
J.N.C. SCALE "A" (£1,310—£1,565 per annum)

Applications are invited for the above appointment in the Borough Engineer and Surveyor's Department, the commencing salary to be fixed within the scale according to qualifications and experience.

The person appointed will be a sectional head responsible to the Borough Engineer and Surveyor for the Planning and Building Surveying work of the Department.

Previous experience gained in a senior post of a local authority planning office is essential; applicants must be A.M.T.P.I., and the possession of an additional architectural and surveying qualification would be an advantage.

Housing accommodation available, if required, and approved removal expenses reimbursed in full. A car allowance and five-day working week apply.

Further information concerning this appointment may be obtained from F. J. Bowyer, A.M.I.C.E., M.I.Mun.E., Borough Engineer and Surveyor, Laneham Street, Scunthorpe, to whom applications stating age, details of present and past appointments, training, qualifications and experience, together with the names of two persons to whom reference may be made, should be sent on or before Wednesday, 3rd January, 1962. S1514

EDINBURGH CORPORATION

Applications invited for two SENIOR PLANNING ASSISTANTS, salary scale £1,210—£1,435 p.a. Applicants should have passed the Final examination of the Town Planning Institute or equivalent and have had good general experience in town planning. The posts are pensionable and subject to a medical examination.

Apply by letter giving full particulars, together with copies of two recent testimonials, to the Town Planning Officer, City Chambers, Edinburgh, not later than 15th January, 1962. 1600

LINDSEY COUNTY COUNCIL
PLANNING DEPARTMENT

Applications are invited for the following appointments in the Development Plan and Design Section:—

(*a*) SENIOR ASSISTANT—Architect J.N.C. Grade A (£1,415—£1,565).
(*b*) SENIOR ASSISTANT—A.P.T. V (£1,310—£1,480).
(*c*) ASSISTANT—A.P.T. II (£815—£960).
(*d*) JUNIOR ASSISTANT—Misc. III/A.P.T. I (£555—£815).

Duties of the posts and qualifications expected of applicants are:—

(*a*) To lead and direct staff responsible for architectural control; the preparation of advisory layouts for major town and village extensions; detailed site planning and three dimensional aspects of central area redevelopment schemes. A.R.I.B.A. and preferably A.M.T.P.I.

(*b*) Leader of a team on review of the County Development Plan—mainly Town Map preparation and amendment, and village plans. A.M.T.P.I.

(*c*) Surveys, base maps and statistics required for work under (*b*) above. Intermediate T.P.I.

(*d*) General duties as surveyor and draughtsman. Previous service in planning, architect's or surveyor's office or Geography Degree for A.P.T.I.

Financial assistance available in posts (*c*) and (*d*) towards post entry training by T.P.I. Diploma course at Nottingham. Essential user's car allowance 10 h.p. for appointments (*a*) and (*b*).

Commencing salary within advertised grades in all cases will have regard to qualifications and previous experience.

Council will pay 75% of necessary removal expenses to successful candidates.

Superannuation and national conditions of service as approved by the County Council. Canvassing will disqualify. Relationship to any member or senior officer of the Council to be disclosed in writing.

Applications, with particulars of age, training, qualifications and experience and names of two referees to County Planning Officer, County Offices, Newland, Lincoln, not later than 1st January, 1962. 1469

COUNTY BOROUGH OF GREAT YARMOUTH
APPOINTMENT OF BOROUGH ARCHITECT

Applications are invited for this appointment from suitable qualified persons, who must be members of the Royal Institute of British Architects. This post is a newly created one, and the successful candidate will be required to advise the Council on the establishment of the department which will absorb the present architectural staff employed by the Council.

This appointment is subject to the conditions laid down by the Joint Negotiating Committee for Chief Officers of Local Authorities, it is superannuable and subject to a medical examination and to three months' notice on either side.

The salary will be within the scale prescribed commencing at £2,170, and rising by four increments of £75. An essential car user's allowance will be paid in accordance with the Council's scale (Scale B, £180 per annum).

Candidates must state whether or not they are related to any member or senior officer of the Council, and canvassing will disqualify.

Applications in writing, giving age and all relevant details of previous experience, and the names of two referees, must reach the undersigned by the 5th January, 1962, and must be endorsed "Borough Architect."

FARRA CONWAY,
Town Clerk.
Town Hall,
Great Yarmouth.
6th December, 1961. S1523

AMENDED ADVERTISEMENT
BOROUGH OF MORECAMBE AND HEYSHAM

Applications are invited for the position of SENIOR ARCHITECTURAL ASSISTANT at a salary in accordance with grades A.P.T. III/IV (£960—£1,310), starting salary dependent upon qualifications and experience.

Application forms obtainable from the Borough Engineer and Surveyor. Canvassing will disqualify. Closing date 3rd January, 1962.

C. E. BOTTOMLEY,
Town Clerk.
8th December, 1961. 1551

SURREY COUNTY COUNCIL

Applications invited for the appointment of ASSISTANT ARCHITECTS Grade V (£1,310—£1,480 p.a. plus £45 p.a. London Allowance). Must be A.R.I.B.A. and capable of leading small team dealing with medium and large scale contracts.

Applications stating age, qualifications, education and experience, present salary and three copy testimonials, preferably one from present employer, to County Architect, County Hall, Kingston, as soon as possible. 1573

BOROUGH OF SCUNTHORPE
(Area 7,895 acres — Population 67,257 — Rateable Value £1,562,541)
APPOINTMENT OF

(*a*) SENIOR ASSISTANT ARCHITECT—Grade A.P.T. IV (£1,140—£1,310 per annum).
(*b*) ASSISTANT QUANTITY SURVEYORS—Grade A.P.T. I (£645—£815 per annum); A.P.T. II (£815—£960 per annum) and A.P.T. III (£960—£1,140 per annum).
(*c*) HEATING AND VENTILATING ENGINEER—A.P.T. III/IV (£960—£1,310 per annum).

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

(*a*) SENIOR ASSISTANT ARCHITECT—Grade A.P.T. IV (£1,140—£1,310 per annum). Applicants should be qualified Architects preferably with previous experience with Local Government.
(*b*) ASSISTANT QUANTITY SURVEYOR—Grade A.P.T. I (£645—£815 per annum). Some experience required in site measurement, interim valuations, abstracting and billing.
(*c*) ASSISTANT QUANTITY SURVEYOR—Grade A.P.T. II (£815—£960 per annum), for site measurement, interim valuations, abstracting, billing and taking off under supervision.
(*d*) ASSISTANT QUANTITY SURVEYOR—Grade A.P.T. III (£960—£1,140 per annum), for abstracting, billing and taking off for houses and public buildings of all types.
(*e*) HEATING AND VENTILATING ENGINEER—Grade A.P.T. III/IV (£960—£1,310 per annum). Applicants should be A.M.I.H. and V.E., and have experience in the design and supervision of heating installation schemes for public buildings.

For all appointments the commencing salary will be fixed within the Grade according to qualifications and experience.

Housing accommodation available, if required; approved removal expenses reimbursed in full and five-day working week.

Further information concerning any of the appointments may be obtained from F. J. Bowyer, A.M.I.C.E., M.I.Mun.E., Borough Engineer and Surveyor, Borough Surveyor's Department, Laneham Street, Scunthorpe, to whom applications stating age, details of present and past appointments, training, qualifications and experience, together with the names of two persons to whom reference may be made, should be sent on or before Wednesday, the 3rd January, 1962. 1515

LONDON COUNTY COUNCIL
ARCHITECT'S DEPARTMENT

ARCHITECTS required for interesting programme of alterations, adaptations and extensions to schools, welfare and children's homes, fire brigade stations and other buildings.

Salary up to £1,500. Candidates must be able to carry own jobs from sketch scheme to completion of contract.

Application form and particulars from Hubert Bennett, F.R.I.B.A., Architect to the Council, the County Hall, S.E.1, quoting (EK/A/3334/12/12a). S1478

ADMINISTRATIVE COUNTY OF LEICESTER

(*a*) PRINCIPAL ASSISTANT ARCHITECT (£1,410—£1,565).
(*b*) CHIEF ASSISTANT ARCHITECT (£1,310—£1,480).
(*c*) SENIOR ASSISTANT ARCHITECTS (£1,140—£1,310).
(*d*) ASSISTANT ARCHITECTS (£960—£1,140).
(*e*) ARCHITECTURAL ASSISTANTS (£815—£960).

Required for extensive school building programme and for design of New County Offices. Grading and commencing salary according to qualifications and experience. Applications to County Architect, 123 London Road, Leicester, giving qualifications and details of career to date. Removal expenses and lodging allowance may be paid to a married man. S1559

CITY OF LEICESTER EDUCATION COMMITTEE
LEICESTER COLLEGE OF ART
Principal: E. E. Pullee, A.R.C.A., F.S.A.E.

Applications are invited from Architects for the post of LECTURER AND STUDIO INSTRUCTOR in the School of Architecture. Applicants must have design ability of a high order and have special interest and experience in Structural Theory and Practice.

Salary: Burnham Technical Scale—£1,600 to £1,800 per annum.

Forms of application and further particulars may be obtained from the Registrar, Leicester College of Art, to whom completed forms should be returned as soon as possible. 1568

SURREY COUNTY COUNCIL

Applications invited for the appointment of ASSISTANT ARCHITECT on Grade IV (£1,140—£1,310 p.a. plus £45 p.a. London Allowance). Must be A.R.I.B.A. and have had experience in preparation of drawings and specifications and be capable of assuming responsibility for medium to large scale contracts.

Some housing accommodation available.

Applications, stating age, qualifications, education and experience, present salary and three copy testimonials, preferably one from present employer, to County Architect, County Hall, Kingston, as soon as possible, marked (H) in top left-hand corner. S1480

BOROUGH OF ROMFORD

Applications are invited for vacancies in the Architectural Section of the Borough Engineer and Surveyor's Department as under:—

(*a*) SENIOR PRINCIPAL ASSISTANT ARCHITECT, J.N.C. Scale "A" £1,370—£1,610 p.a. (including local "plusage").

(*b*) ASSISTANT ARCHITECTS, A.P.T. III/IV, £1,005—£1,355 p.a. (including local "plusage").

(*c*) ARCHITECTURAL ASSISTANTS, A.P.T. I/III, £660—£1,185 p.a. (including local "plusage").

Starting salary for these vacancies will be fixed having regard to qualifications and experience. The architectural section is engaged on an interesting programme of works, including swimming baths, community centre, central depot, sports buildings, multi-storey housing and redevelopment areas. A five-day week is in operation and consideration will be given to the provision of housing accommodation where appropriate and to the payment of removal expenses. In the case of appointments (*a*) and (*b*) an essential user car allowance will be granted.

Particulars and conditions of the appointments may be obtained from the Town Clerk, Town Hall, Romford, Essex, to whom applications are to be sent by Saturday, 30th December, 1961. 1560

Vacancies exist on the staff of the Architect, N.E. Region, British Railways, for the following:—

(*a*) LEADING ASSISTANT ARCHITECT, Salary Scale £1,230—£1,350.

(*b*) ASSISTANT ARCHITECT (two posts), Salary Scale £1,050—£1,125.

(*c*) ARCHITECT'S ASSISTANT, Salary Scale £925—£1,000.

The posts provide experience on a wide variety of building types, located in diverse areas of North East England, giving scope for innovation and original development.

Post (*a*) provides opportunity to control staff and for this post applicants must possess a Degree or Diploma in Architecture and be Associates of the R.I.B.A.

Applicants for post (*b*) must possess a Degree or Diploma in Architecture and be eligible (subject to professional practice) for election to A.R.I.B.A.

Applicants for post (*c*) must have passed the Intermediate Examination of the R.I.B.A. and be studying for the Final Examination.

Further particulars may be obtained from the Regional Architect, c/o Chief Civil Engineer, British Railways, York, to whom applications should be addressed by Wednesday, 27th December, 1961. 1550

CITY OF LANCASTER
CITY ARCHITECT'S DEPARTMENT

Applications are invited for the post of ASSISTANT ARCHITECT in the newly formed City Architect's Department. Salary within Grade A.P.T. IV (£1,140 to £1,310 per annum).

The post is Superannuable and subject to N.J.C. Conditions of Service. A five-day working week is in operation and housing accommodation is available if required.

Applications stating age, qualifications, experience, past and present appointments, together with two referees to whom reference may be made to be sent to Mr. E. A. Heppenstall, A.R.I.B.A., A.M.T.P.I., City Architect, Town Hall, Lancaster, by Tuesday, 2nd January, 1962.

J. D. WADDELL,
Town Clerk.

Town Hall,
Lancaster.
7th December, 1961 1555

CUMBERNAULD NEW TOWN

There are vacancies for qualified staff to be employed in the Department of the Chief Architect and Planning Officer on a wide variety of projects including housing, industry and commercial and public buildings.

ASSISTANT ARCHITECTS, Grade B, £1,310—£1,670.

ASSISTANT ARCHITECTS, Grade C and ARCHITECTURAL ASSISTANTS, Grade D, £645—£1,310.

ASSISTANT PLANNING OFFICERS, Grade C, £1,140—£1,480.

SENIOR LANDSCAPE ARCHITECT, £1,310—£1,670.

ASSISTANT LANDSCAPE ARCHITECT, £645—£1,310.

Five-day week.

Superannuation.

Assistance with housing accommodation will be given where appropriate.

Application forms from General Manager, Cumbernauld Development Corporation, Cumbernauld House, Cumbernauld, Glasgow, to be returned by 5th January, 1962. 1547

SURREY COUNTY COUNCIL
COUNTY PLANNING DEPARTMENT

Applications are invited for the following post in the Development Plan Section at Headquarters at Kingston-upon-Thames:—

Grade III/IV (£960—£1,310 plus London Allowance). To be responsible for Development Plan work with particular emphasis on redevelopment at higher densities. Applicants must be Corporate Members of the Town Planning Institute.

Applications endorsed "Confidential—Vacancies" stating age, qualifications and experience with details of present post and salary and the names of two referees, should reach the County Planning Officer, "Elmhurst," Penrhyn Road, Kingston-upon-Thames, not later than 1st January, 1962. 1532

BASINGSTOKE DEVELOPMENT GROUP

Applications are invited for the post of SENIOR ARCHITECT/PLANNER to lead the Central Area design team of the Basingstoke Development Group, whose task is to design and implement a scheme for the expansion of the town from 25,000 to 75,000 by 1975.

The successful applicant will be required to direct the research work and to work with other teams to produce a comprehensive, three-dimensional solution as an integral part of the town design.

The post will carry a salary not exceeding £2,345, the commencing figure to be fixed according to experience and qualifications. Selected candidates will be appointed to the staff of the Hampshire County Council and will work under the direction of the Chief Architect/Planner for Basingstoke, Allan G. McCulloch, A.R.I.B.A., A.M.T.P.I.

The post is pensionable. Separation allowance and assistance with removal expenses will be paid in approved cases.

Applications, stating full details of age, education, qualifications and experience, including present grade and salary, and accompanied by a copy of one testimonial and the names of two referees, should reach the Clerk of the County Council, The Castle, Winchester, by 1st January, 1962. 1558

CITY AND COUNTY OF NEWCASTLE UPON TYNE
CITY PLANNING DEPARTMENT

Applications are invited from suitably qualified and experienced candidates for the following post in the recently formed City Planning Department.

LANDSCAPE ARCHITECT, Scale "B" (£1,410—£1,670 p.a.) preferably with A.I.L.A.

The successful candidate will be responsible for preparing a comprehensive landscape policy plan for the City and the integration and co-ordination necessary for the realisation of this plan.

Commencing salary according to qualifications and experience.

The appointment is subject to the National Scheme of Conditions of Service, the Local Government Superannuation Acts, the passing of a medical examination, and the giving of one month's notice of termination on either side.

In approved cases the Council are prepared to offer to successful candidates:—

(*a*) Payment of 50 per cent. of total removal expenses up to maximum grant of £50.

(*b*) The tenancy of a dwelling which might be bought on the open market and let at an economic rent.

(*c*) A loan under Council's Housing Mortgage scheme up to 100 per cent. of valuation.

Applications stating age, qualifications, present and previous appointments and salary, experience, and names of two referees, should reach the City Planning Officer, Wilfred Burns, M.Eng., Dip.T.P., A.M.T.P.I., A.M.I.C.E., 2 St. Nicholas Buildings, Newcastle upon Tyne 1, by Monday, 15th January, 1962. S1590

BOROUGH OF WIDNES
ARCHITECT'S DEPARTMENT

Applications, quoting two referees, are invited from candidates who have passed the R.I.B.A. Intermediate Examination for appointment to a vacancy for an ARCHITECTURAL ASSISTANT Grade A.P.T. II (£815—£960 p.a.).

N.J.C. conditions; Superannuation Scheme; medical examination; five-day week.

Applications to Borough Architect, Brendan House, Widnes Road, Widnes, by Tuesday, 2nd January, 1962.

FRANK HOWARTH,
Town Clerk.

Town Hall,
Widnes.
December, 1961. 1566

FOREMEN IN CHARGE OF LAYING-OUT WORKS, to supervise landscape contracts. Experienced in grading, cultivating, draining, turfing and planting. Up to 275s. Forms from Chief Officer, Parks Department (A.1/J/3291/12/12a), County Hall, S.E.1 (WATerloo 5000 ext. 8076). S1490

BOROUGH OF ILFORD
BOROUGH ENGINEER'S DEPARTMENT

Appointment of:

(*a*) SENIOR ASSISTANT ARCHITECT, Grade A.P.T. IV (salary £1,185—£1,355 p.a. inclusive).

(*b*) ASSISTANT ARCHITECT, Grade A.P.T. I/II (salary £685—£1,000 p.a. inclusive).

Candidates for appointment (*a*) should preferably be Associate Members of the R.I.B.A. and have suitable experience in the development of Council housing, multi-storey flats, schools and other public buildings.

Candidates for appointment (*b*) should have suitable training and experience.

The commencing salaries will be fixed within the scales, according to qualifications and experience. Five-day week.

The Council is prepared to consider, if necessary, the provision of housing accommodation in connection with these appointments.

Appointments permanent, 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 medical examination.

Application forms, obtainable from the Borough Engineer, P.O. Box 7, Town Hall, Ilford, should be returned not later than Monday, 1st January, 1962. 1569

KESTEVEN COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT
ASSISTANT ARCHITECTS AND ARCHITECTURAL ASSISTANTS

There are various architectural appointments vacant in the County Architect's Department within A.P.T. Grades I to V (£545—£1,480 per annum).

Five-day week. The County Council operates a five-day working week.

Car Allowance. In approved cases essential car allowances are paid to Assistants on Grade II and upwards. There is an assisted car purchase scheme.

Lodging allowance. The Authority will consider granting an allowance of 30s. per week for a maximum of six months to married members of staff unable to obtain suitable accommodation.

Removal expenses. The Authority will consider assisting with the payment towards removal expenses.

Why not telephone Mr. J. W. H. Barnes, F.R.I.B.A., County Architect, and discuss the possibilities with him?

Applications, together with the names and addresses of two referees, should reach the Clerk of the County Council, County Offices, Sleaford, Lincs., not later than the 16th January, 1962. S1587

CITY OF BRADFORD
ARCHITECTURAL ASSISTANTS
Grades A.P.T. III/IV (£960—£1,310)

Applications are invited for three vacant posts in the City Engineer and Surveyor's Department.

Applicants should be A.R.I.B.A. and have had experience in the design of houses, flats, shops and the layout of housing estates and redevelopment areas, have sound design ability and be experienced in the preparation of working and detail drawings.

Application forms, obtainable from the City Engineer and Surveyor, Town Hall, Bradford 1, together with three testimonials, must be received by the undersigned not later than 12th January, 1962.

HENRY PATTEN,
Town Clerk.

Town Hall,
Bradford 1. 1581

METROPOLITAN BOROUGH OF ISLINGTON
BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT

Applications are invited from persons not more than 50 years of age for the following appointment on the permanent staff.

One JUNIOR ARCHITECTURAL ASSISTANT, Grade A.P.T. II (£815—£960 p.a.) plus London weighting.

Applicants should have a sound knowledge of building construction with experience in the preparation of working drawings.

Application forms, returnable by first post on Monday, 8th January, 1962, obtainable from Borough Engineer and Surveyor, Town Hall, Upper Street, N.1.

H. DIXON CLARK,
Town Clerk.
S1593

HOLLAND COUNTY COUNCIL (Lincolnshire) invite applications for the following appointments:—

(*a*) SENIOR ASSISTANT ARCHITECT, Grades A.P.T. V. Scale "A" £1,310—£1,565 per annum.

(*b*) ASSISTANT ARCHITECT, Grades A.P.T. IV/V, £1,140—£1,480 per annum.

(*c*) ARCHITECTURAL ASSISTANT, Grades III/IV, £960—£1,310 per annum.

(*d*) QUANTITY SURVEYING ASSISTANT, Grades III/IV, £960—£1,310 per annum.

The N.J.C. Scheme of Conditions of Service, the provisions of the Local Government Superannuation Acts, and a medical examination will apply.

The County Council would be prepared to make a contribution towards the cost of removals.

Forms, obtainable from the County Architect, should be returned to the Clerk of the County Council, County Hall, Boston, Lincs., by 8th January, 1962. 1602

BOROUGH OF LEYTON
Non-County Borough in Essex
Population approximately 100,000

Applications invited for appointment of CHIEF TOWN PLANNING ASSISTANT. Salary Grade A.P.T. IV—£1,140 per annum rising to £1,310 per annum plus London weighting.

Applicants must hold suitable professional qualifications. National Conditions of Service, five-day week. Housing accommodation will be made available to the successful applicant if required.

Apply with details of experience and names of two referees, to Borough Engineer, Town Hall, Leyton, E.10, not later than Wednesday, 10th January, 1962.

D. J. OSBORNE,
Town Clerk.

Town Hall,
Leyton, E.10. S1601

CHELSEA BOROUGH COUNCIL

ARCHITECTURAL ASSISTANT (A.P.T. II, £815—£960 plus London "weighting") required in Borough Engineer and Surveyor's Department. Applicants must have a sound knowledge of architectural drawing, building construction and the measurement of existing buildings.

Forms of application from Borough Engineer and Surveyor, Town Hall, King's Road, S.W.3, to be returned not later than 5th January, 1962. 1502

CORPORATION OF BARKING
DEPARTMENT OF THE BOROUGH ARCHITECT
ARCHITECTURAL ASSISTANT, A.P.T.I
(£660—£840 per annum)

Applications are invited for the above appointment and should reach the undersigned in writing not later than seven days after the appearance of this advertisement.

The department has in hand an interesting programme of housing and educational projects and the person appointed will have an opportunity to gain good experience.

E. R. FARR,
Town Clerk.

Town Hall,
Barking. 1589

Competition

36s. per inch; each additional line, 3s.

THE UNIVERSITY OF LIVERPOOL

OPEN COMPETITION

Architects are invited to submit designs for halls of residence for 1,100 to 1,300 students on the Carnatic site at Mossley Hill, Liverpool. The cost of the works will be approximately £1,500,000.

Assessors: **Sir James Mountford, M.A., D.Litt., D.C.L., LL.D. (Vice-Chancellor).**

Donald Gibson, C.B.E., M.A., D.C.L., F.R.I.B.A., M.T.P.I.

Professor Myles Wright, M.A., F.R.I.B.A., M.T.P.I.

Premiums: **£5,000; £3,000; £1,000. Further premiums, to a total not exceeding £2,000, may be awarded at the discretion of the Assessors for other designs of merit.**

Sending in Day: **4 September, 1962.**

Last Day for Questions: **1 January, 1962.**

Conditions may be obtained, upon payment of a deposit of £3, from The Registrar, The University of Liverpool, Liverpool, 3. Quoting Reference RVCH/518/AJ. 9647

Architectural Appointments Vacant

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

ASSISTANT ARCHITECT urgently required in busy City Office. High standard of office and residential design essential. Salary £1,750 per annum plus Luncheon Vouchers. Increments and Bonuses. Long-term engagement for right man. Box S1488.

ARTHUR GUINNESS SON & CO. (DUBLIN) LTD. invite applications for appointment as an ASSISTANT ARCHITECT with a commencing salary between £1,000—£1,500 p.a., depending on age and experience.

An important part of the duties will be to advise on the interior planning and décor of public houses.

Applicants should be members of the R.I.B.A. or R.I.A.I. and have had several years' experience after qualifying.

Expenses will be paid if interviewed in Dublin.

Applications stating age, present position and salary, qualifications and experience should be addressed to:—

The Chief Engineer,
St. James's Gate,
Dublin, 8. 1489

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: Watkins Gray & Partners, 57, Catherine Place, S.W.1. TC9590

£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, 83, Kingsway, W.C.2. HOLborn 4071. TC9798

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. TC9970

£1,000—£2,000 p.a. will be paid to experienced competent ARCHITECTS by a private practice in the City of London. The work will be primarily on the drawing board on new and interesting projects of magnitude. A high standard of design and detailing ability is required. Please apply in writing to Box TC9360.

INTERMEDIATE TO FINAL ASSISTANTS required immediately. Salary from £1,000 onwards and luncheon vouchers. Theo. H. Birks, 38, Portland Place, London, W.1. LAN 7236. TC8906

£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. TC6105

EAST ANGLIA

QUALIFIED AND INTERMEDIATE ASSISTANTS required by Ind Coope (East Anglia) Ltd. Sound training and experience together with an interest in interior design essential. Salary range £800—£1,500. The Company operates a Pension Scheme with substantial widows' benefits in the event of death before or after retirement. Five-day week. Write, giving age, salary (at present, or required) and full details of training and experience to the Architect, Ind Coope (East Anglia) Ltd., The Brewery, Romford. S1528

BUSY and progressive private practice has vacancy for ARCHITECTURAL ASSISTANTS, preferably car drivers. Pleasant office and working conditions. Five-day week. Scope for initiative and responsibility on varied and interesting works including Domestic, Commercial, Industrial and Ecclesiastical, over wide area of the country. Commencing salary according to experience and ability up to £1,000 with good opportunity for advancement. Please apply giving fullest details to A. R. Laing, Deacon & Laing, 65 Goldington Road, Bedford. S1524

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ARCHITECTURAL ASSISTANTS, Junior and Senior, required. Salary range £500—£1,400, according to experience. Small but progressive office with excellent prospects to capable and enthusiastic applicants. Apply William H. Robbins, A.R.I.B.A., 77 Wigmore Street, London, W.1. Telephone: WELbeck 0274. S1482

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ARCHITECTURAL ASSISTANT, Intermediate to Senior standard, required in Architect's Department of S.W. London Brewery Company. Must be good draughtsman. Superannuation Scheme. Write stating age, qualifications (if any), experience, salary required. Box S1571.

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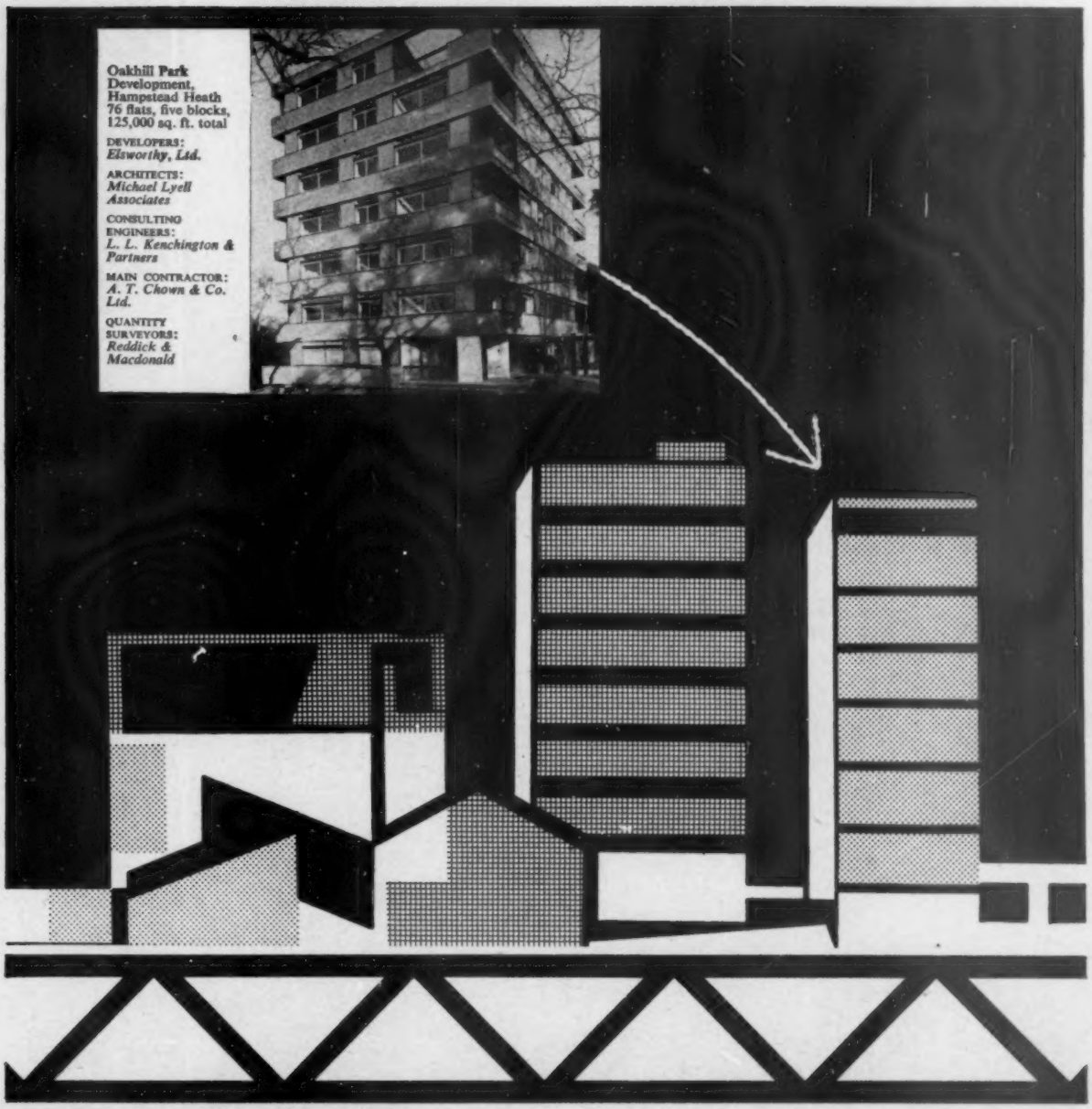

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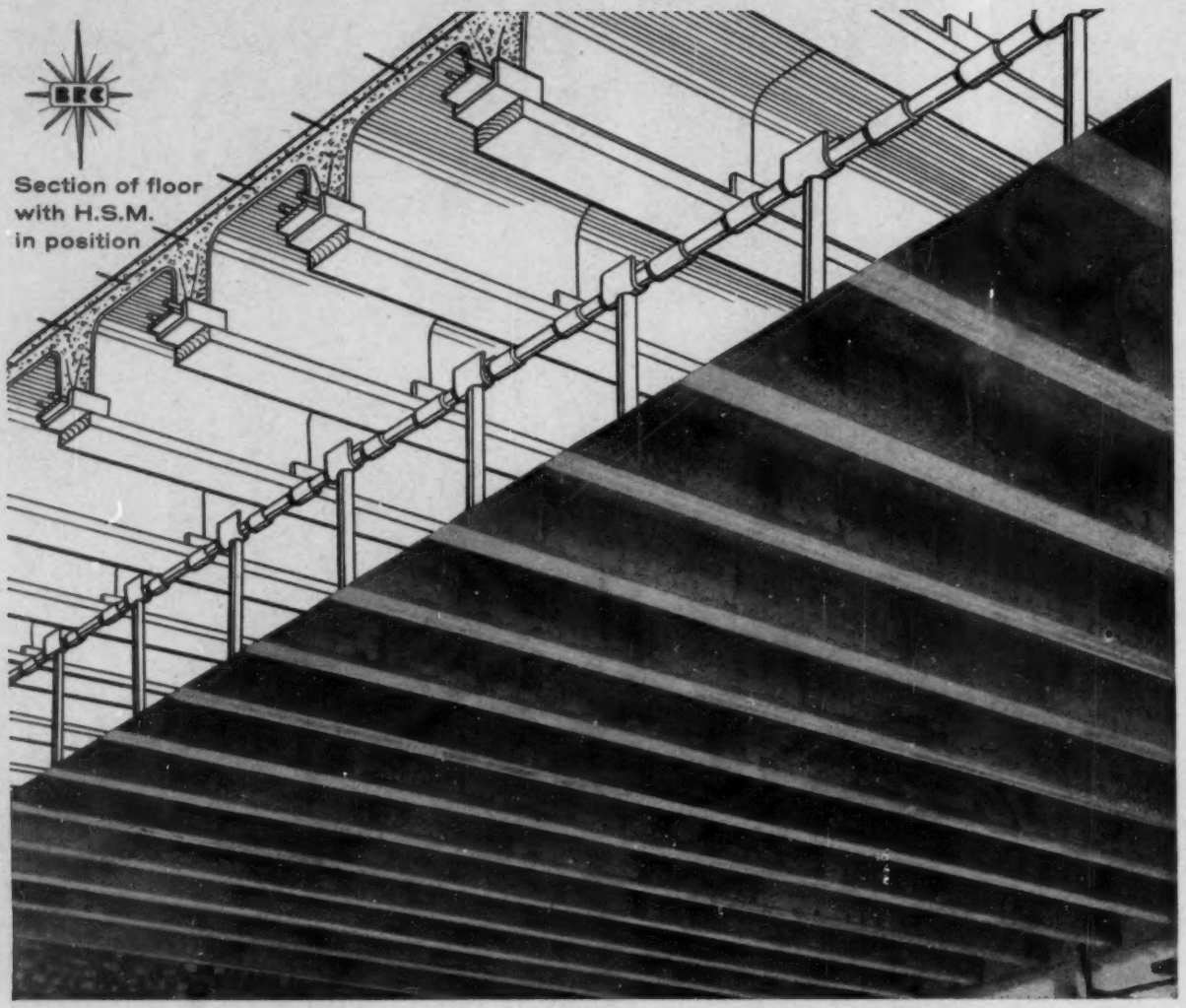

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