THE ARCHITECTS' JOURNAL

standard contents

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

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

IHVE	Institution of Heating and Ventilating Engineers. 49, Cadogan Square.	Sloane 1601/3158
IIBDID	Incorporated Institute of British Decorators and Interior Designers. 100 Park Street, Grosvenor Square, W.1.	Mayfair 7086
ILA	Institute of Landscape Architects. 12, Gower Street, W.C.1.	Museum 1783
I of Arb	Institute of Arbitrators. Hastings House, 10, Norfolk Street, Strand W.C.2.	Temple Bar 4071
IOB	Institute of Builders. 48, Bedford Square, W.C.1.	Museum 7197
IQS	Institute of Quantity Surveyors, 98, Gloucester Place, W.1.	Welbeck 1859
IR	Institute of Refrigeration. Dalmeny House, Monument Street, E.C.3.	Avenue 6851
IRA	Institute of Registered Architects. 47, Victoria Street, S.W.1.	Abbey 6172
ISE	Institute of Structural Engineers. 11, Upper Belgrave Street, S.W.1.	Sloane 7128
LDA	Lead Development Association. Eagle House, Jermyn Street, S.W.1.	Whitehall 7264/4175
LMBA	London Master Builders' Association. 47, Bedford Square, W.C.1.	Museum 3891
LSPC	Lead Sheet and Pipe Council. Eagle House, Jermyn Street, S.W.1.	Whitehall 7264/4175
MAFF	Ministry of Agriculture, Fisheries and Food. Whitehall Place, S.W.1.	Trafalgar 7711
MARS	Modern Architectural Research Group (English Branch of CIAM). Secretary: Trevor Dannatt, A.R.I.B.A., 71, Blandford Street, W.1.	Welbeck 4713
MOE	Ministry of Education. Curzon Street House, Curzon Street, W.1.	Mayfair 9400
MOH	Ministry of Health. 23, Savile Row, W.1.	Regent 8411
MOHLG	Ministry of Housing and Local Government. Whitehall, S.W.1.	Whitehall 4300
MOLNS	Ministry of Labour and National Service. 8, St. James' Square, S.W.1.	Whitehall 6200
MOS	Ministry of Supply. Shell Mex House, W.C.2	Gerrard 6933
MOT	Ministry of Transport. Berkeley Square House, Berkeley Square, W.1.	Mayfair 9494
MOW	Ministry of Works. Lambeth Bridge House, S.E.1.	Reliance 7611
NAMMC	Natural Asphalte Mine Owners and Manufacturers Council. 94/98, Petty France, S.W.1.	Abbey 1010
NAS	National Association of Shopfitters. 9, Victoria Street, S.W.1.	Abbey 4813
NBR	National Buildings Record. 31, Chester Terrace, Regent's Park, N.W.1.	Welbeck 0619
NCBMP	National Council of Building Material Producers. 10 Storey's Gate, S.W.1.	Abbey5111
NEFMAI	National Employers Federation of the Mastic Asphalt Industry. 21, John Adam Street, Adelphi, W.C.2.	Trafalgar 3927
NFBTE	National Federation of Building Trades Employers. 82, New Cavendish Street, W.1.	Langham 4041/4054
NFBTO	National Federation of Building Trades Operatives. Federal House, Cedars Road, Clapham, S.W.4.	Macaulay 4451
NFHS	National Federation of Housing Societies 12, Suffolk St., S.W.1.	Whitehall 1693
NHBRC	National House Builders Registration Council. 82, New Cavendish Street, W.1.	Langham 4341
NPL	National Physical Laboratory. Head Office, Teddington.	Molesey 1380
NRDB	Natural Rubber Development Board. Market Buildings, Mark Lane, E.C.3.	Mansion House 9383
NSAS	National Smoke Abatement Society. Palace Chambers, Bridge Street, S.W.1.	Trafalgar 6838
NT	National Trust for Places of Historic Interest or Natural Beauty. 42, Queen Anne's Gate, S.W.1.	Whitehall 0211
PEP	Political and Economic Planning. 16, Queen Anne's Gate, S.W.1.	Whitehall 7245
RCA	Reinforced Concrete Association. 94, Petty France, S.W.1.	Abbey 4504
RIAS	Royal Incorporation of Architects in Scotland. 15, Rutland Square, Edinburgh.	Fountainbridge 7631
RIBA	Royal Institute of British Architects. 66, Portland Place, W.1.	Langham 5721
RICS	Royal Institution of Chartered Surveyors. 12, Great George St., S.W.1.	Whitehall 5322/9242
RFAC	Royal Fine Art Commission. 5, Old Palace Yard, S.W.1.	Whitehall 3935
RS	Royal Society. Burlington House, Piccadilly, W.1.	Regent 3335
RSA	Royal Society of Arts. 6, John Adam Street, W.C.2.	Trafalgar 2366
RSH	Royal Society of Health. 90, Buckingham Palace Road, S.W.1.	Sloane 5134
RIB	Rural Industries Bureau. 35, Camp Road, Wimbledon, S.W.19.	Wimbledon 5101
SBPM	Society of British Paint Manufacturers. Grosvenor Gardens House, Grosvenor Gardens, S.W.1.	Victoria 2186
SE	Society of Engineers. 17, Victoria Street, Westminster, S.W.1.	Abbey 7244
SFMA	School Furniture Manufacturers' Association. 30, Cornhill, London, E.C.3.	Mansion House 3921
SIA	Society of Industrial Artists. 7, Woburn Square, London, W.C.1.	Langham 1984/5
SIA	Structural Insulation Association. 32, Queen Anne Street, W.1.	Langham 7616
SNHTPC	Scottish National Housing. Town Planning Council. Hon. Sec., Robert Pollock, Town Clerk, Rutherglen.	
SPAB	Society for the Protection of Ancient Buildings. 55, Great Ormond Street, W.C.1.	Holborn 2646
TCPA	Town and Country Planning Association. 28, King Street, Covent Garden, W.C.2.	Temple Bar 5006
TDA	Timber Development Association. 21, College Hill, E.C.4.	City 4771
TPI	Town Planning Institute. 18, Ashley Place, S.W.1.	Victoria 8815
TTF	Timber Trades Federation. 75, Cannon Street, E.C.4.	City 5040
WDC	War Damage Commission. 6, Carlton House Terrace, S.W.1.	Whitehall 4341
ZDA	Zinc Development Association. 34, Berkeley Square, W.1.	Grosvenor 6636

Operation Rescue

Hull Housing Committee's Experiment

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

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

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

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

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

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

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

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

A fully explanatory booklet is available on request.

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- **Plugs woodwork.** No need to use dowels. Where old hinge-plates, locks, etc. have been removed from doors, POLYFILLA will plug large holes and adhere firmly to the wood.
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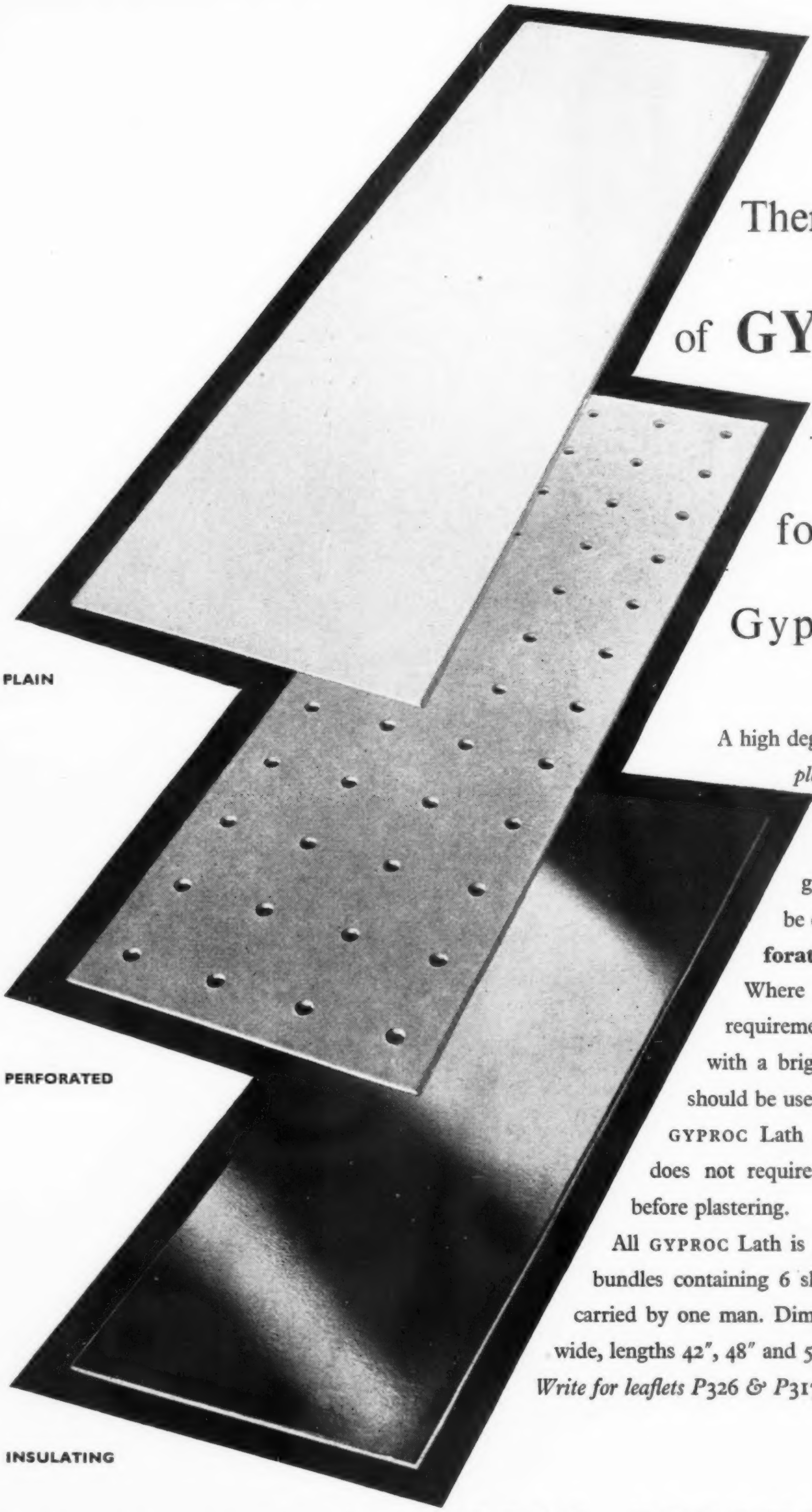

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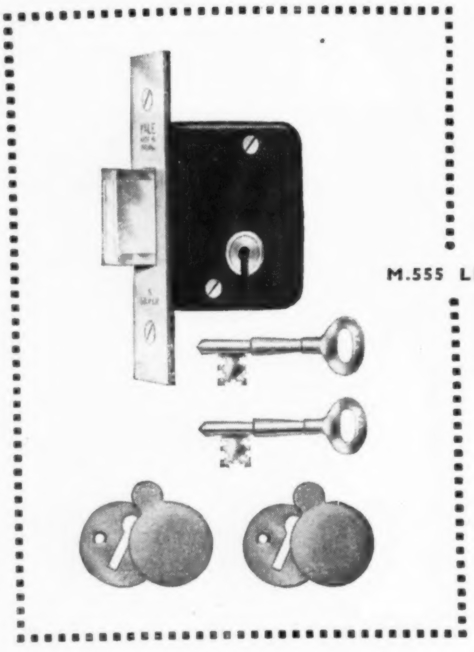
Head Office: Singlewell Road, Gravesend, Kent. *Telephone:* Gravesend 4251-4. *Telegrams:* Gyproc, Gravesend. Glasgow Office: Gyproc Wharf, Shieldhall, Glasgow, S.W.1. *Telephone:* Govan 2141-3. *Telegrams:* Gyproc, Glasgow. Midland District Sales Office: East Leake near Loughborough. *Telephone:* East Leake 231. London Office: Bath House, 82 Piccadilly, London, W.1. *Telephone:* Grosvenor 4617-9.

LPI

Free House!

It wasn't supposed to be an invitation. The trouble is so many old locks do no more than just keep the door closed (and sometimes not even that) whilst real security measures are non-existent. The safest course if you value your property is to re-equip all important doors inside and out with the world's most reliable locks – YALE. There are YALE locks and padlocks to meet every security risk. Here is an example:



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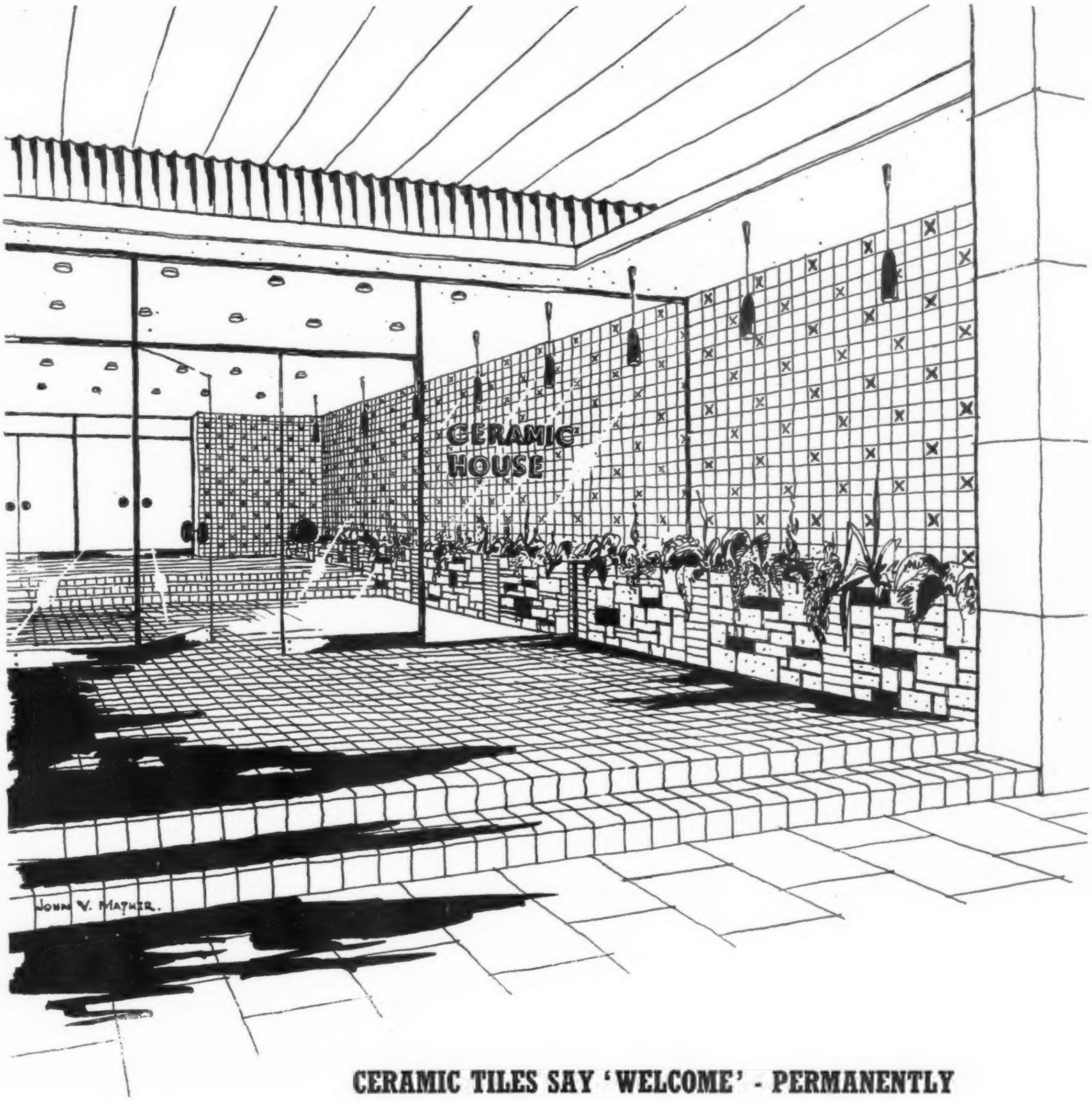
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HOUSE
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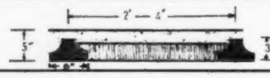
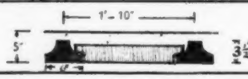
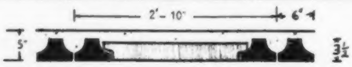
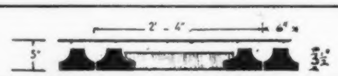
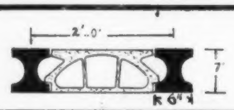
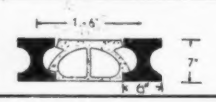
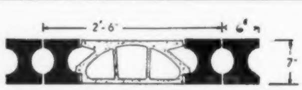
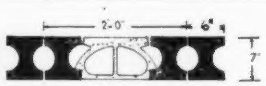
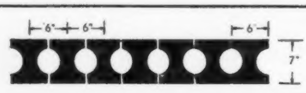
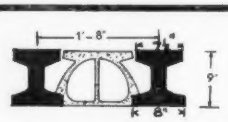
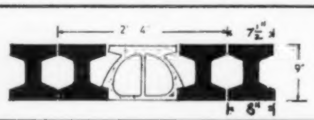
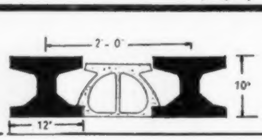
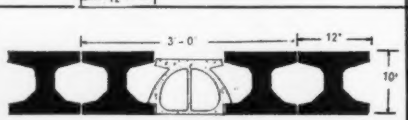
FLOORS & ROOFS

Depth	TYPICAL CROSS SECTIONS	Self Wt. per sq.ft.	Type	Superimp'd load lb./ft.2	30 lb.	40 lb.	50 lb.	60 lb.	80 lb.	100 lb	150 lb.	200 lb.
5"		36 lb	C5 Incl. 2" Structural Screed on 3" Wood Wool Slab	Case 1	12' 6"	12' 0"	11' 6"	11' 3"	10' 3"	10' 0"	—	—
5"		38 lb.		Case 2	13' 9"	13' 6"	13' 0"	12' 6"	11' 9"	11' 0"	—	—
5"		40 lb		Case 3	—	—	—	13' 9"	13' 0"	12' 3"	—	—
5"		42 lb		Case 4	—	—	—	—	—	13' 0"	—	—
7"		35 lb	X 7	Case 1	20' 6"	19' 6"	18' 8"	17' 9"	16' 5"	15' 3"	13' 3"	11' 11"
7"		36 lb.	do.	Case 2	23' 8"	22' 5"	21' 8"	20' 5"	18' 11"	17' 8"	15' 4"	13' 9"
7"		40 lb.	do	Case 3	25' 5"	24' 1"	23' 1"	22' 1"	20' 6"	19' 2"	16' 9"	15' 0"
7"		42 lb.	do.	Case 4	—	26' 9"	25' 7"	24' 6"	22' 9"	21' 4"	18' 8"	16' 9"
7"		60 lb	do	Case 5	—	—	—	—	—	—	25' 5"	23' 0"
9"		47 lb	X 9	Case 1	30' 5"	28' 10"	27' 10"	26' 6"	24' 9"	23' 2"	20' 4"	18' 4"
9"		53 lb.	do.	Case 2	35' 4"	33' 8"	32' 4"	31' 0"	29' 1"	27' 3"	24' 5"	21' 8"
10"		55 lb	I 10	Case 1	36' 9"	35' 2"	33' 10"	32' 7"	30' 5"	28' 8"	25' 2"	23' 0"
10"		60 lb.	do.	Case 2	41' 6"	39' 10"	38' 4"	37' 0"	34' 8"	32' 10"	29' 0"	26' 4"

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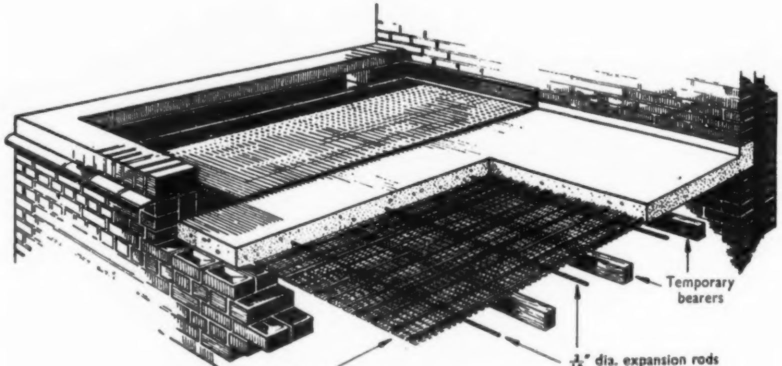
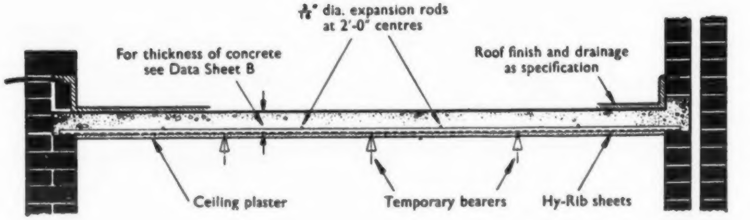




CROSS SECTION

Hy-Rib is a combined centering and reinforcement and eliminates close board shuttering. The Hy-Rib mesh provides a ready-formed key for the plaster ceiling.

Notes on the construction of Hy-Rib roof slabs are given on Data sheet B with maximum spans for slabs of various thicknesses.

HY-RIB FOR FLAT CONCRETE ROOFS

THE TRUSSED CONCRETE STEEL CO., LTD.
TRUSCON HOUSE, LOWER MARSH, LONDON, S.E.1
Telephone: WATerloo 6922

Data Sheet A

MAXIMUM CLEAR SPANS FOR SUPERLOAD OF 30 LB. PER SQ. FT.

(Allowance already made for self-weight and 26 lb. per sq. ft. finishes)

Concrete thickness	Hy-Rib alone		With rods		Minimum length to add to give adequate bearings for Hy-Rib sheets	Rod data—code used in table under "rods" heading
	28G	26G	26G	rods		
3"	6' 5"	7' 3"	7' 7"	a1	4"	Diameter:— a: $\frac{1}{4}$"
$3\frac{1}{2}$"	6' 9"	7' 8"	9' 0"	a2		b: $\frac{5}{16}$"
4"	7' 1"	8' 0"	10' 5"	b2		c: $\frac{3}{8}$" d: $\frac{7}{16}$"
$4\frac{1}{2}$"	7' 4"	8' 3"	11'10"	e1	5"	e: $\frac{1}{2}$" Spacing:— 1: $10\frac{1}{2}$" crs.
5"	7' 8"	8' 6"	13' 3"	e2		2: 7" crs.
$5\frac{1}{2}$"	7'10"	8' 7"	14' 8"	c3	6"	3: $3\frac{1}{2}$" crs.
6"	8' 0"	8'10"	15' 6"	d3		Lengths:—clear spans less 2' 0". (laid centrally)

HY-RIB SHEET DATA

Width of sheets is $10\frac{1}{2}$ in. with ribs at $3\frac{1}{2}$ in. centres.
Lengths are standardised:—26G. Hy-Rib: 6 to 16 ft. } in 1 ft. increments
28G. Hy-Rib: 6 to 9 ft.

CONSTRUCTION DATA

1. All Hy-Rib sheets to be well interlocked and punched or wired together at 2' 0" centres along all side laps.
2. $\frac{3}{16}$" dia. expansion rods to be placed on the Hy-Rib sheets at right angles to the ribs at 2' 0" centres and wired thereto at every sixth rib (1' 9" centres) with 17 gauge wire. Laps 12" minimum and staggered.
3. During concreting, the Hy-Rib sheets are to be well supported by means of temporary bearers spaced at intervals not greater than those given in the following table:

Gauge of Hy-Rib	Thickness of Concrete						
	3"	$3\frac{1}{2}$"	4"	$4\frac{1}{2}$"	5"	$5\frac{1}{2}$"	6"
26G.	2' 6"	2' 4"	2' 2"	2' 0"	1' 10"	1' 8"	1' 6"
28G.	2' 3"	2' 1"	1' 11"	1' 9"	1' 7"	1' 5"	1' 3"

The spacing must be reduced by 4" for every 1" thickness of wet concrete screed or finish placed in the same operation and which is extra to the thickness of concrete given in the span table above. The temporary bearers may be formed of rough timbers, tubular scaffolding or patent propping and after concreting these bearers must be left in position for the same length of time as would be necessary for a timber shuttered slab.

4. P.C. Concrete mix 1:2:4 throughout. The thicknesses of concrete shown in the span table above are minimum and concrete or screed for forming drainage falls or finishes must be additional.

FOR CONSTRUCTION DETAILS SEE DATA SHEET A

HY-RIB FOR FLAT CONCRETE ROOFS

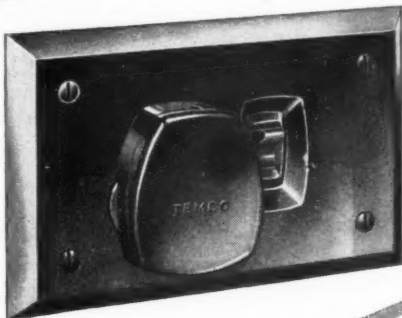
THE TRUSSED CONCRETE STEEL CO., LTD.
TRUSCON HOUSE, LOWER MARSH, LONDON, S.E.1
Telephone: WATerloo 6922

Data Sheet B

TEMCO

A.C. SWITCH SOCKETS AND PLUGS

Right at every point!



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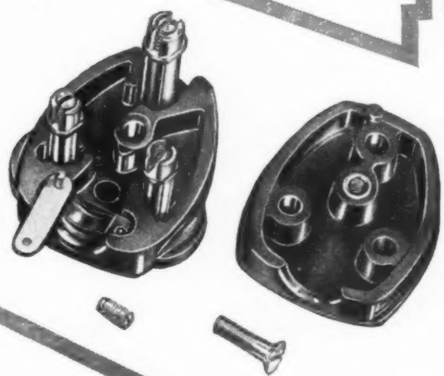
TEMCO A.C. Switch Sockets are small, attractive and individually packed. They conform to British Standards and I.E.E. Wiring Regulations.

WIRING RIGHT

Easy wiring is a notable feature of the new TEMCO A.C. Switch Sockets and Plugs. Heat Resistant Back Plates for the Surface Types are available to form an enclosure for the Cable Sheath.



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A J

THE ARCHITECTS' JOURNAL

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A CINERAMIC SURVEY

Fame at last! ASTRAGAL has achieved the improbable honour of being mentioned in a *General History of Architecture*. The honour is due to the industrious, erudite and highly controversial Bruce Allsopp, of the University of Durham, whose new book, coming on top of the grand overhaul of Simpson now in progress, and Hugh Braun's *Historical Architecture* of a couple of years back, seems to suggest that great Cineramic surveys of the architectural past are the order of the day.

*

ASTRAGAL is not really sufficient of a historical expert to justify inclusion in such a work, and modestly has no intention of trying to assess its overall value, but there looks like being some lively skirmishing around some of the opinions with which Mr. Allsopp has diversified his text. Supporters of Mackintosh and Victor Horta will surely have a few things to say about the statement that Art Nouveau was "constructionally unsound," several people will have quite a lot to say about his opinion of the Baroque—". . . a sterile movement, or at least it could bring forth nothing but monstrosities."; of the High Renaissance ". . . restrained to the point of dullness."; that Lutyens was better than Voysey; that for architects the dissolution of the monasteries "must have been a very distressing event"—surely the nearest things to architects in the middle fifteen-hundreds were to be found in the Thorpe and Smythson families, who appear to have done rather well out of the monastic loot.

*

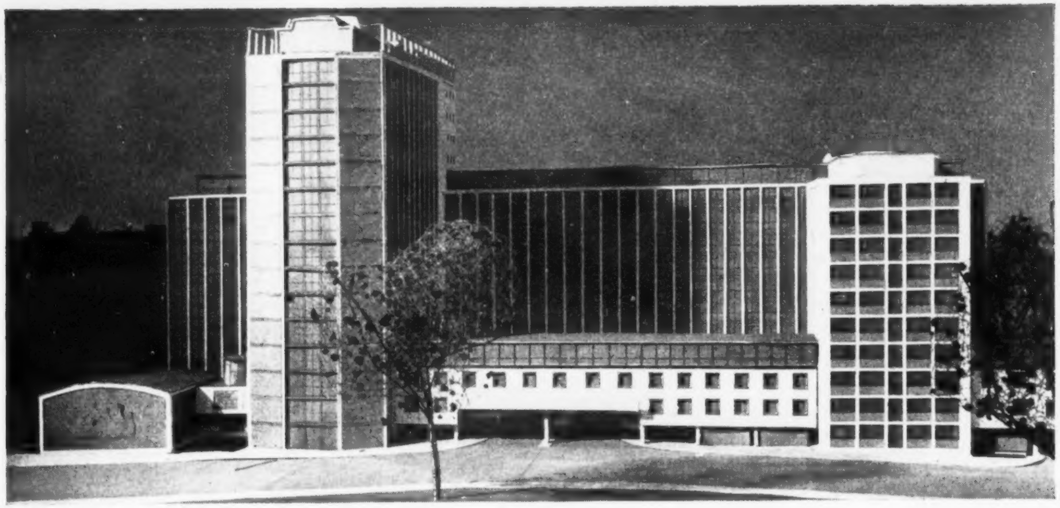
Mr. Allsopp has every right—and ASTRAGAL'S encouragement—to dissent from fashionably-held opinion, but his grounds must be relative to the ascertainable facts, proportionately deployed. And one cannot help wondering about his sense of proportion when in his chapter on the architectural revolution of our own times he does not even mention Gropius and appears to consider Erich Mendelsohn more worthy of illustration than Le Corbusier. At this ASTRAGAL, notoriously a slave to the fashionably unfashionable, boggled.

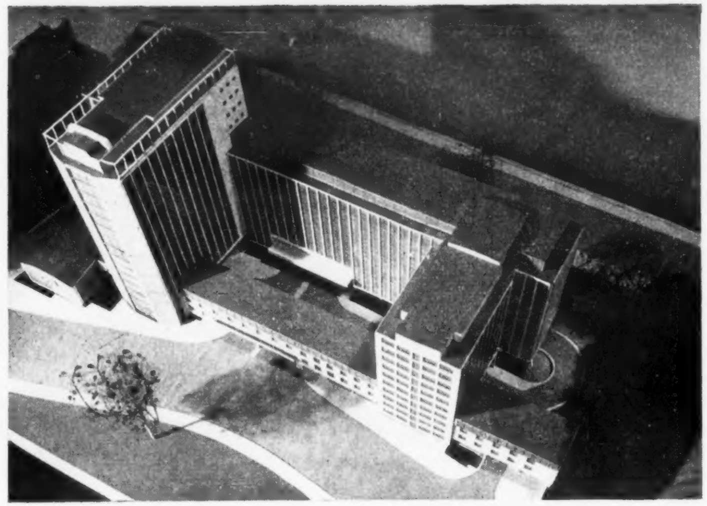
FILM AS AN OUTRAGE WEAPON

Those who have an institution or a service to sell to the public—civic design, say, or the architect in house-building—are apt *not* to think of a two-reel colour film as a way of selling it. We have seen too many dreary shorts exhorting us to do this, stop that, admire the other. But the trouble doesn't necessarily lie with the short film as such—and ASTRAGAL feels particularly strongly about this after seeing *Man of Action*, a short intended to stir up citizen feeling against urban squalor. (ACTION is the American Council to Improve Our Neighbourhoods.) Although this film was made specifically for American consumption, about a specifically American problem, and will never, presumably, have a normal screening over here, bodies like the CPRE, the proposed Council of Civic Design, the Public Relations Committee of RIBA, Outrage-fighters and so forth, should at least try to organize some limited showings for interested bodies.

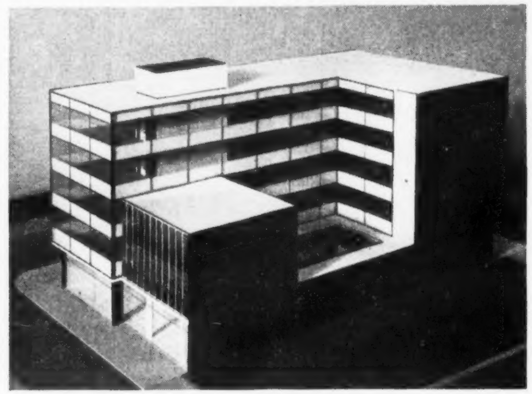
*

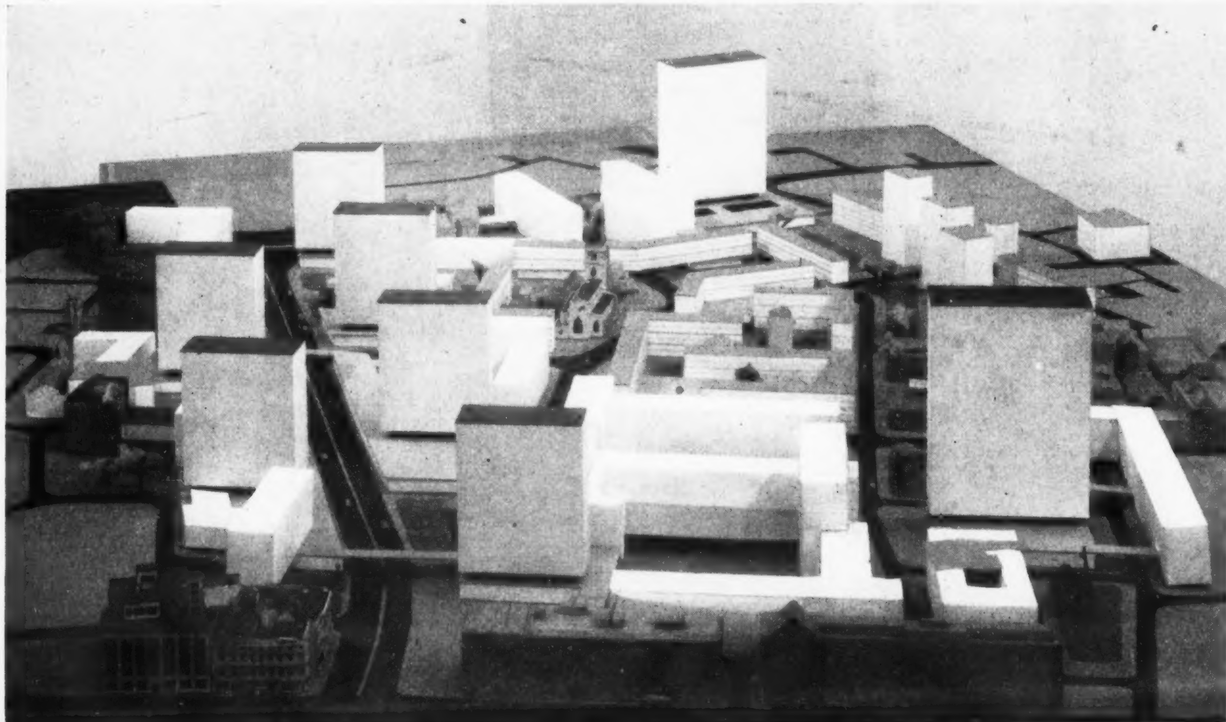
Man of Action is a marvellous example of how to sell a serious theme without being dreary about it, the rather high-toned commentary being nicely balanced against a beautifully-drawn animated fable of urban rehabilitation, and a witty, pretty and highly hummable musical score. To bone-head groaners who will want to reply that we don't have these brilliant American Public-Relations men over here, and, in any case, the cost . . . there is one simple reply. ASTRAGAL was only able to see this film because it was made in England, with English technicians and musicians, designers and animators. Made here because ACTION is, like all bodies of its kind, not very affluent and work of this kind costs half as much here as in the States. Now get in there, do-gooders!





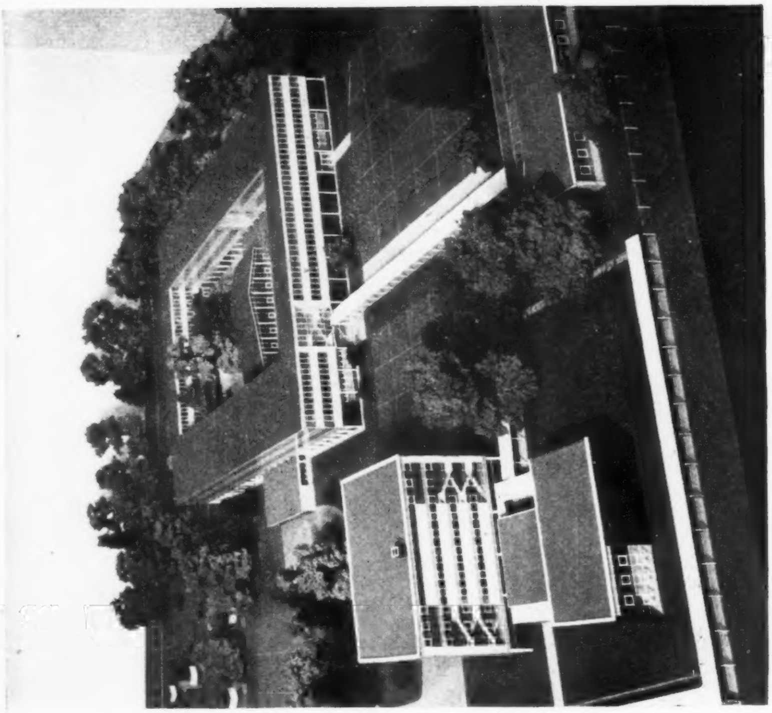
LONDON OF THE FUTURE ON VIEW AT THE BUILDING CENTRE

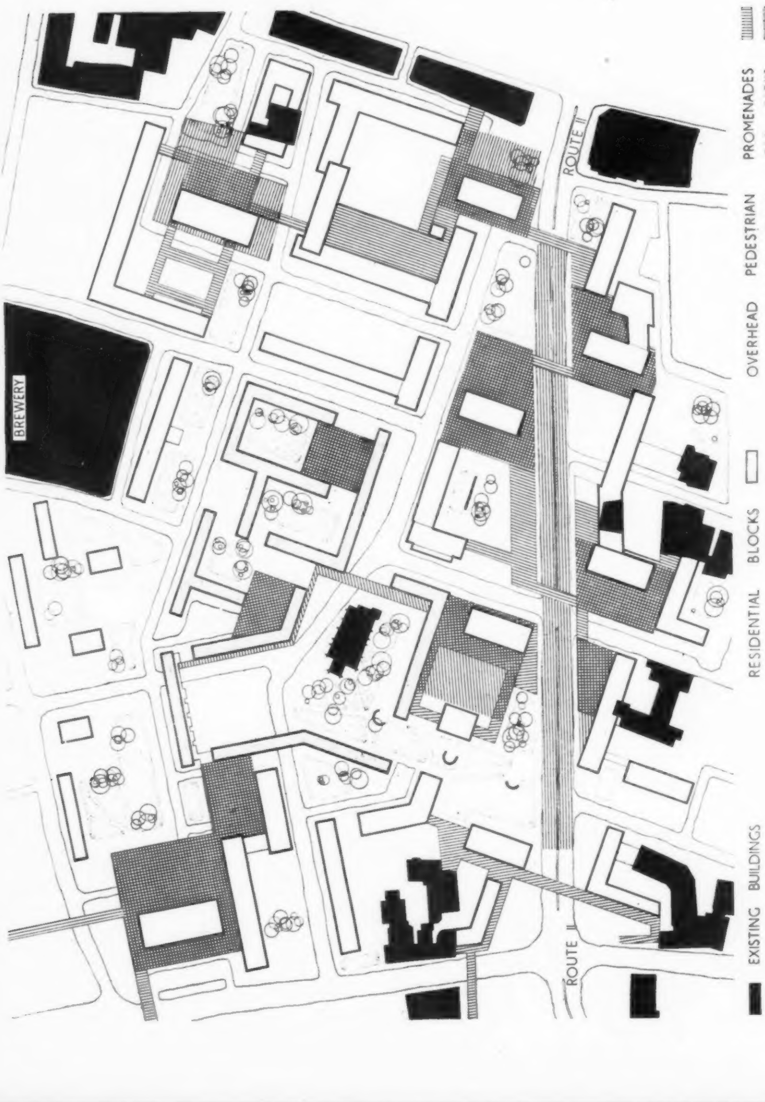




Top, left and right, offices by Guy Morgan and Partners for a site in Knightsbridge opposite the top of Sloane Street. Above, offices in New Cavendish Street by Gollins, Melvin, Ward & Partners. Left and below left, model and plan of the proposals, proposed jointly by the LCC and the City Corporation, for the Barbican area. Note the extensive basement car parks and high-level pedestrian ways. Below, the Kingswood Drive Secondary School, Alleyn Park, Dulwich, by Dr J. L. Martin, architect to the LCC.

area. Note the extensive basement car parks and high-level pedestrian ways. Below, the Kingswood Drive Secondary School, Alleyn Park, Dulwich, by Dr J. L.





PUGIN REVISITED

More concerned with Lord Shrewsbury and Bishop Milner than its ostensible subject, Pugin, the lecture by T. S. R. Boase, the president of Magdalen College, given recently at the Courtauld Institute, struck ASTRAGAL as particularly interesting for the way in which it played up the influence of internal Catholic squabbles on Pugin's development. Histories of early Victorian Gothic tend to have a lot to say about ecclesiology and the Anglican's Camden Society, but very little about the equivalent disputes and polemics inside Catholicism—the attempt by Pugin, Ambrose Phillips and others to get rid of "Hired sopranos and protestant fiddlers," and other "Italianisms," and to reintroduce Sarum Use, Choir screens, the full English Surplice, plain-song, and so forth.

*

Brompton Oratory was the tombstone of all these hopes, and it was probably just as well that Pugin was safely dead by the time it was completed. Even before 1850 Pugin was ruefully observing that the Camden wing of the Anglican Clergy were more receptive to his ideas that was his own persuasion, and it was in the Church of England that his ideas were posthumously to find their fullest expression.

*

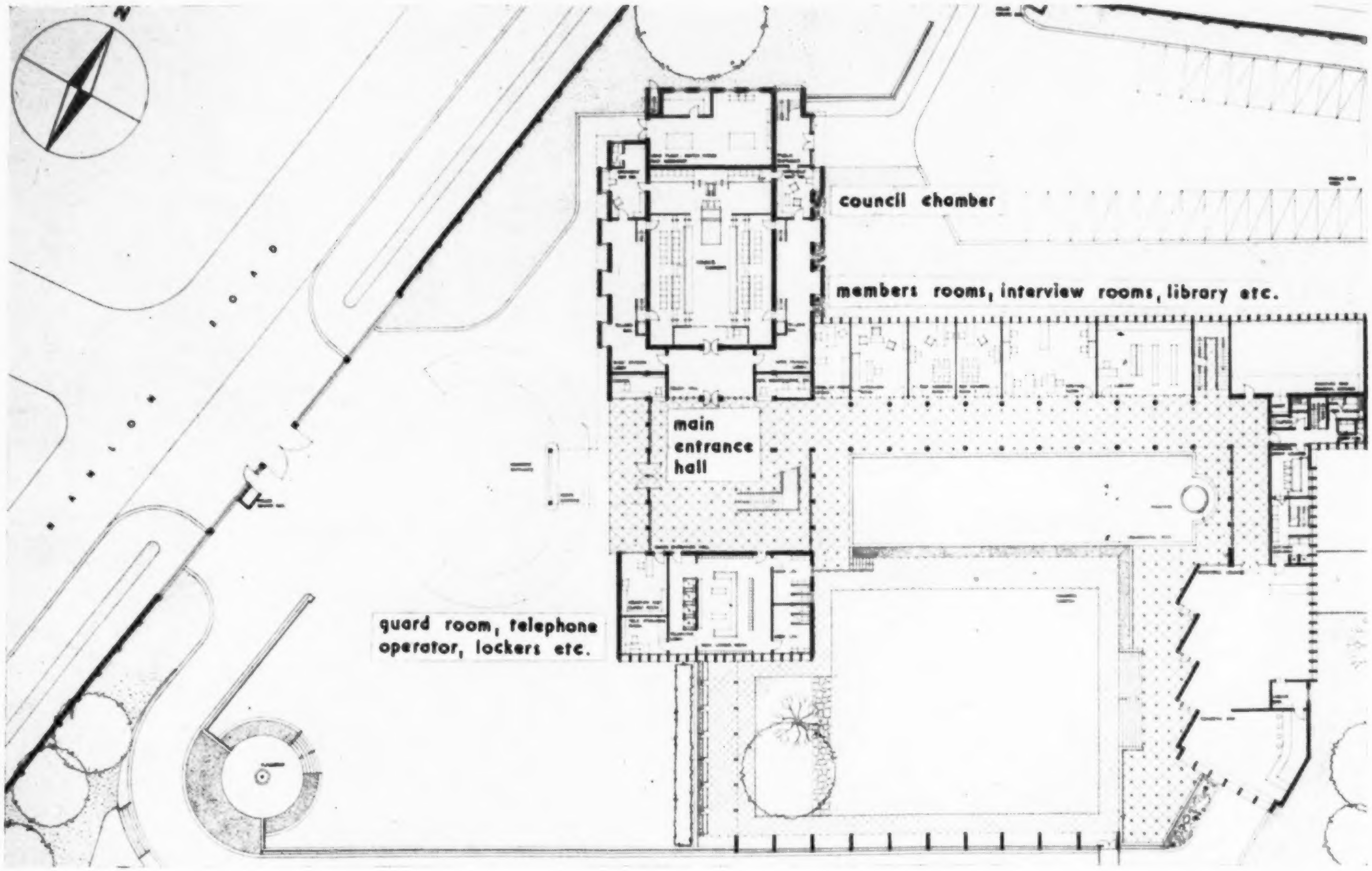
Moral for all Reformers—you can't win. Footnote, for amateurs of Victorian opinion at its craziest. Prof. Boase quoted an un-named ecclesiologist for the dictum that, though Middle Pointed was the only true Christian style in architecture, Romanesque "might suit in New Zealand."

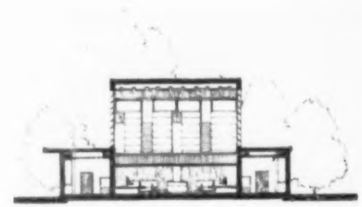
ASTRAGAL

We very much regret that, in common with many other periodicals the Journal is prevented by the printers' dispute from appearing in its normal size and on the customary publishing date. Periodicals printed in the country are able to appear normally, but it is probable that the Journal, which is printed in London, will be unable to publish any normal issues until the dispute ends or circumstances change.

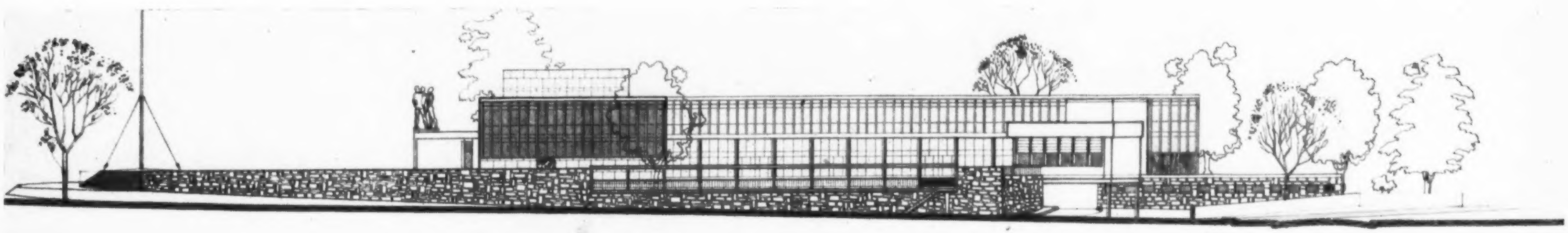
WINNING DESIGN FOR KAMPALA COMPETITION

This is the design for a legislative council building in Kampala, Uganda, which won Edward D. Mills & Partners the first prize of £750 in a competition assessed by H. Thornley Dyer. Other prizewinners' names were published in our last issue.

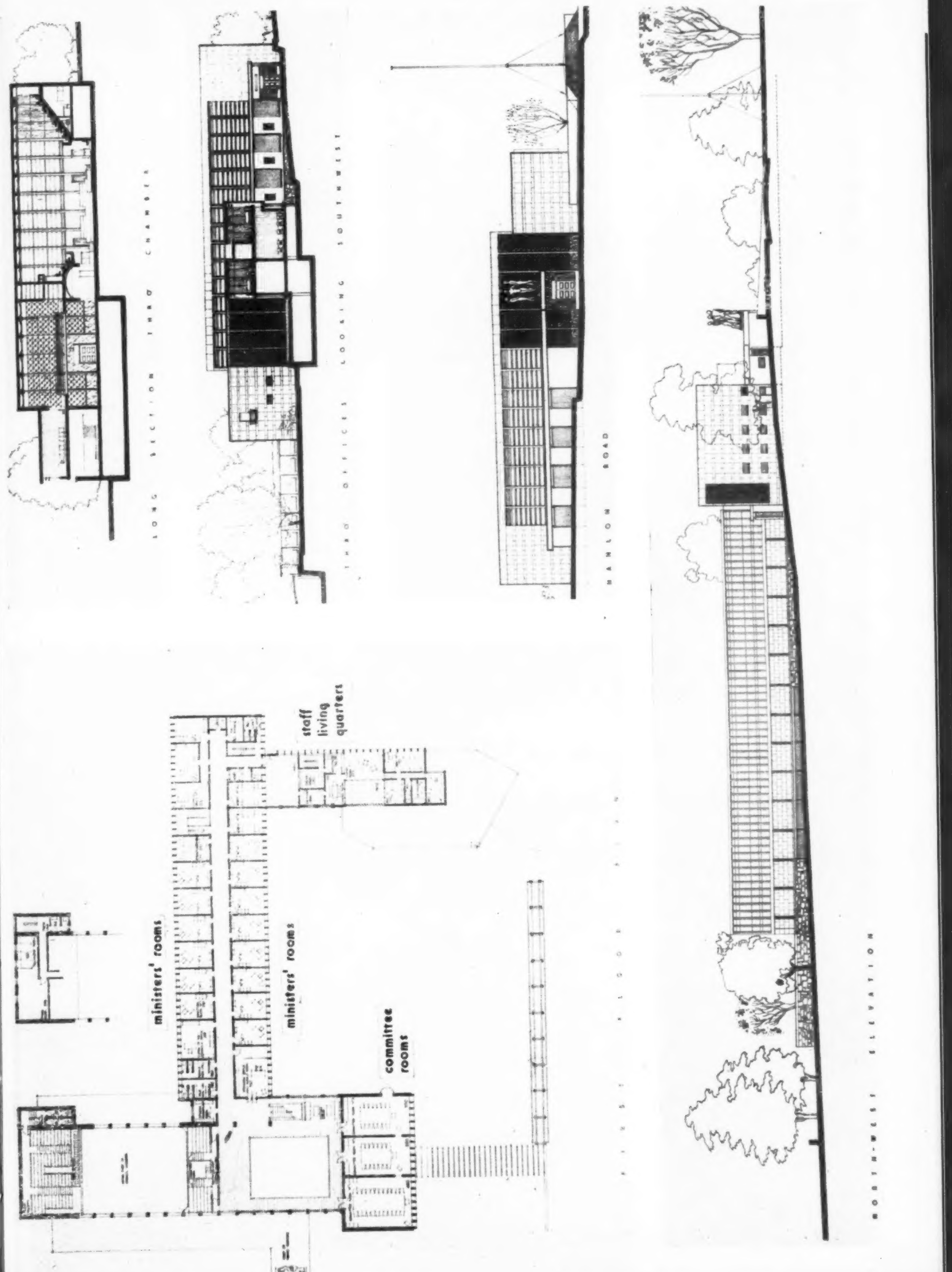


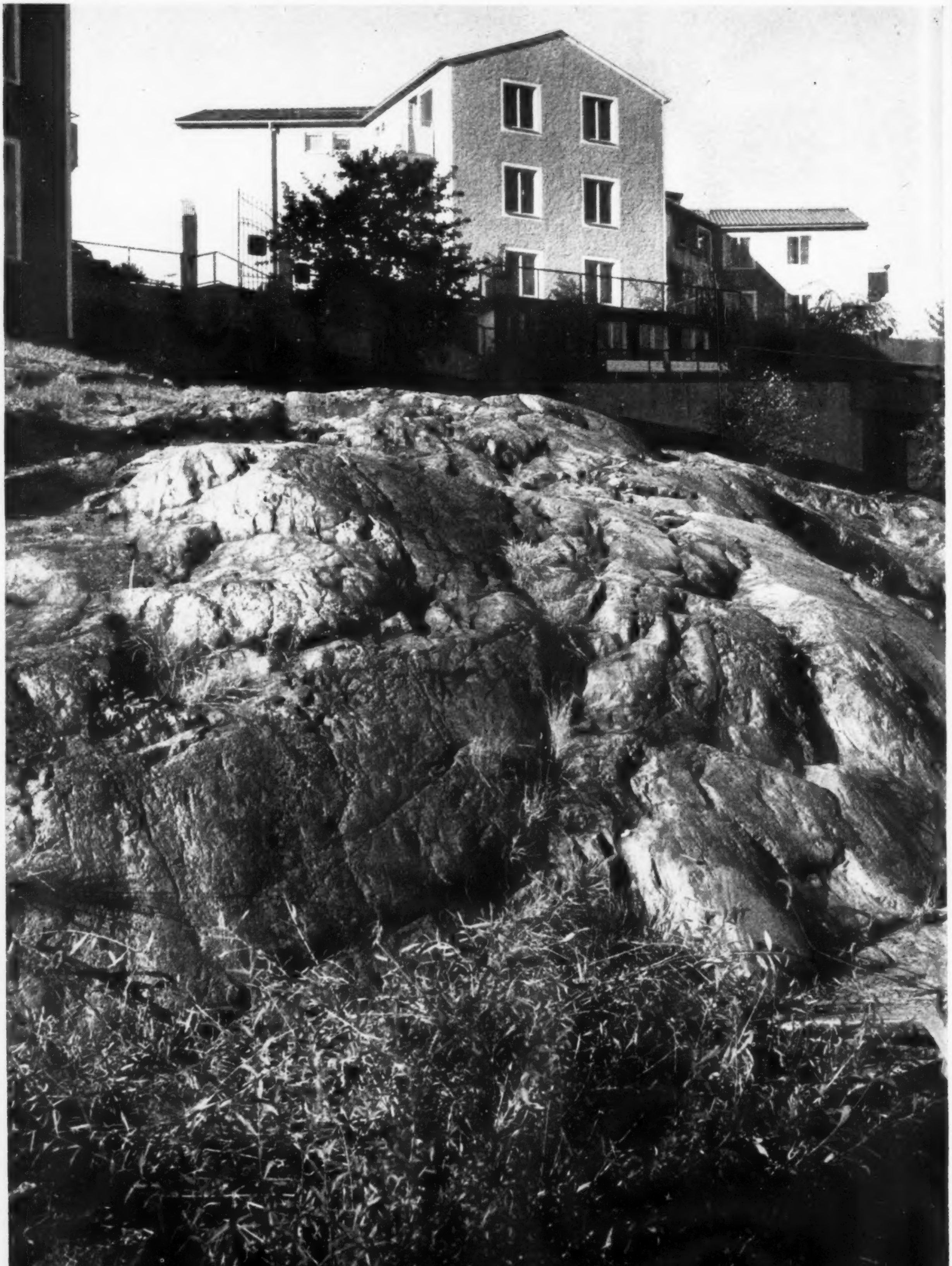


CROSS SECTION



SOUTH-EAST ELEVATION


LONG SECTION THRO' CHAMBER
THRO' OFFICES LOOKING SOUTHWEST
HANLON ROAD
SOUTH-EAST ELEVATION
ministers' rooms
ministers' rooms
staff living quarters
committee rooms
FIRST FLOOR PLAN
NORTH-WEST ELEVATION



Why is it that much of the best housing in this country is put up with little thought for the creation of an attractive environment? Ian. C. McHarg believes that it is due to fear of costs—a fear based on ignorance rather than knowledge. In this article he examines costs for the landscaping of five well-designed housing estates. If these costs support the fears of developers, then—in Mr. McHarg's words—" we must consign present and future housing to permanent aridity " and resign ourselves to never achieving even the standards of, for example, the Swedes at Grondal, Stockholm, opposite page, and other enterprising European countries, as shown below.

A SURVEY OF LANDSCAPING COSTS

CAN WE AFFORD OPEN SPACE?

By Ian C. McHarg

Examples of housing in Denmark and Sweden, Switzerland and the Netherlands have elicited a widespread and deserved acclaim; yet all too often this appreciation fails to distinguish that the merit of such housing lies less in the buildings as exercises in architecture than in the quality of the total environment created. In these much admired North European projects, it is the unity of open space and building with the development of open space as an integral element of the environment which is the key to their distinction.

In terms of internal space standards, British municipal housing is without peer, in terms of design it is not remarkably below prevailing North European standards, but when the quality of the total housing environment is examined, it is obvious that British practice falls far below the standards of Scandinavia, Switzerland and Holland.

This invidious disparity is directly attributable to the general failure of British site planning but even more particularly to that failure to recognize the vital role of open space in housing. In the Swedish estates of Grondal, Friluftstaden, and in the Dutch Frankendaal, it is the site plan and the development of open space which explains the distinction of these projects; there the development of the landscape is an integral element in the design of the project. This is in direct contrast to the majority of British practice in which the development of open space is conceived as an additive function. Open space is conceived as a residue and as such its development can be omitted—ostensibly on grounds of cost.

Yet this attitude is contrary to the best British traditions of housing. The history of housing reform during the past century has been mainly a movement to improve standards of open space. That housing which has brought prestige to British architecture—the 18th and 19th century residential squares of London, Bath and Edinburgh—is remarkable for both the provision of open space and the quality of its design. The Garden City Movement, however regarded today, represented the peak of British influence in the field of housing; here, too, the distinction lay, not in the architecture, but rather in the quality of the environment created. Welwyn and Letchworth are distinguished by the provision, organization and design of open space which has now realized a lush, foliate landscape and a humane

In the Grondal, top, Friluftstaden, centre and Frankendaal estates, it is the site plan and the development of open space rather than the buildings as exercises in architecture which explains their distinction.

environment. Yet the mass of British municipal housing fails to attain either the urbanity and humanity of the 18th and 19th residential squares or the leafy romanticism of the Garden Cities.

While the Scandinavian designers interject buildings into the natural landscape and achieve a dramatic unity of site and structure, in Britain the *genius loci* is usually erased and a monotonous stencil of houses superimposed on the landscape. In the Netherlands, where the site seldom contains any distinguishing features, the conscious development of open space in housing creates an attractive total environment. In similar British situations, too often the environment consists of a dreary pattern of houses aligning the street.

Traditionally, the reform movements in British housing have been concerned with the provision of open space. That housing which has brought prestige to British architecture shows an emphasis upon the organization and design of outdoor space. The much admired foreign projects are distinguished mainly for the integration of open space and housing to create a dramatic unity of space and structure. In the face of these successes depending upon the development of open space, it is difficult to understand the chronic disinterest in the design of open space which has characterized the bulk of British housing for the past thirty years.

I submit that one reason for the disinterest is that municipal housing has never overcome its charity origins and it still carries the stigmata of subsidized housing. And, although hardly a major reason, it is surely contributory that those persons involved in the process of municipal housing—central and local government officials, architects, engineers and planners—seldom live in council houses. However, the one overwhelming reason for indifference to the development of open space in housing is the fear of costs. Local and central government officials are fearful of the capital cost of development, they baulk at the recurring cost of maintenance, and they have no solutions for the social problem of allocating responsibility for open space or the economic problem of maintenance. This attitude did not halt the creation of the 18th and 19th century residential squares, it did not obstruct the struggling, unsubsidized Garden Cities, it does not affect the design of excellent housing elsewhere in North Europe or in certain New Towns. There is, therefore, reason to doubt its applicability to the British situation. Indeed, I will say more, this attitude to cost is based on apprehension and ignorance rather than upon any precise knowledge of the actual costs involved.

This fear of costs has had many repercussions, it has bequeathed the nation a legacy of arid, ugly and socially unsatisfactory housing. The aridity stems simply from the lack of landscape treatment, but this is the most superficial weakness. The attitude to open space which avoids its development also inhibits innovations to the site plan. The cul-de-sac, green, single footpath access, double footpath access, service cul-de-sac, European and American internal courts—each of these site plan types requires the provision of a certain proportion of common open space to be designed, constructed and maintained by the housing authority. Such site plans represent improvements over the British Municipal Convention, but they tend to be rejected on the grounds of cost, supported by claims that landscape treatment is prohibitively expensive, or, in the case of common open space, that not only is such space wasteful and expensive to develop, but the associated social and administrative problems of vandalism, maintenance, and responsibility are insuperable.

It is important to determine if this prevalent and negative attitude is supported by objective evidence. The quality of British housing can be improved in many ways, improving the quality of environment by the development of open space is one of the most important. Objective information on the capital and maintenance costs of open space development can permit a more flexible attitude to new site-plan types, it can permit the organization of society in open space so as to intensify the sense of community, to satisfy the functions of active and passive recreation, to provide shade and shelter and to add grace to the residential environment.

If current prejudices and fears are supported by objective evidence on costs, then we must consign present and future housing to permanent aridity. If, in contrast, it is found that a wide range of open-space development costs only insignificant sums then the invidious comparisons with housing in Scandinavia, Switzerland and the Netherlands need not persist and we can return to our valid tradition in both urban and rural situations.

Landscape Test Plans

In order to obtain precise information on the capital and maintenance costs of open space development the technique used was to prepare a number of test plans, accompany each with a bill of quantities and despatch them to competent agencies—superintendents of the major municipal park systems, landscape contractors, New Town Landscape Architects—with the request that each bill of quantities be costed and an estimate of annual maintenance cost made for each plan.

The function of these plans was to obtain information on costs, not to demonstrate methods of developing open space. The assumption is that, given information as to costs, one designer can dispose a given quantity of materials to little effect, another designer can, with the same quantity of materials, significantly enhance the environment. The prime function of the test plans was to provide information on costs from which decisions on policy could be made and to demonstrate the relationship of certain types of open space development to unit area costs. Consequently, the test plans incorporate extant types of development and conventional plant materials.

The first test plan exemplifies typical two-storey municipal housing at 12 families to the acre. In this example only street planting, verge planting and non-apportioned corner interstices are planted and maintained by the municipality. This form is implicit in the bulk of municipal housing but seldom is the planting and maintenance realized.

Plan number two is identical with the first save that all open space between the house and the street is planted and maintained by the municipality. This form is meet-

"Capital costs to meet the standards of test plan 1, including the development of all open space between house and street can be achieved at a cost of 3d. in England and 2½d. in Scotland per house per week."

"Capital costs to meet the standards of test plan 2 including development of all open space between house and street can be achieved at a cost of 4d. in England and 2¾d. in Scotland per house per week."

"Standards of test plan 4, with open space developed between house and street in four storey construction can be met at costs of 1d. per house per week in both England and Scotland."

ing widening acceptance and is the norm for New Towns.

The third test plan varies from those preceding in several ways. Although an example of two-storey housing, its organization of open space is radically different from the previous examples. Epitomized in the Frankendaal, Amsterdam, by Merkelbach and Elling, all houses back to the street, face first on to small private open space; there is no common usable open space. Houses are disposed in two "L" shaped terraces, one of which is an inverted "L." Each common space enclosed by these terraces is 250 ft. by 140 ft. and contains a tot-lot and an adult conversation area to serve the abutting 36 families. All space, save private gardens, is designed as public open space and is planted and maintained by the housing authority. The density is 17 families to the acre.

Test plan number four is an example of typical uniform four-storey development in which flats face the street, the open space between house and street being ostensibly the responsibility of the municipality, while open space to the rear is consigned to a forest of drying green poles as private open space. The density is 28 families to the acre.

The final plan is a further example from Holland. Epitomized by the Klienpolder, Rotterdam, it consists of uniform four-storey development with flats backing upon the street, the open space extending from living rooms treated as common open space, incorporating children's play areas, adult seating areas, with all open space planted and maintained by the municipality. The density is 55 families to the acre.

In these plans there are two distinct qualities of landscape treatment; plans 1, 2, and 4 are typical of conventional British development in which either the majority or a large proportion of open space is private open space; there is no common usable open space, there are no communal facilities and planting is only decorative. In contrast, in plans 3 and 5, the majority of all open space is common, there are communal facilities—tot-lots, conversation areas—and both the organization of open space and its treatment are functional rather than merely decorative. Additionally, in these latter examples the provision of both inert and plant materials is more lavish than in the other test plans.

The "Landscape Costs" exclude the cost of land, the labour of bringing the site to final line and grade, and the cost of paths, but do include all treatment of common open space. In this category fall the costs of tilling and sowing, all plant materials—trees, shrubs, hedges, herbaceous, grass seed, stakes and their planting costs, all paving—sand boxes, sand, cost and labour, plus a contingency allowance for all costs, varying from 5 per cent. to 20 per cent.

The bills of quantities were costed and estimates for annual maintenance calculated by Directors of the Municipal Park Systems of London, Glasgow, Southampton, Edinburgh, Coventry, by the Landscape Architects in the New Towns of Harlow, Hemel Hempstead, Stevenage, Welwyn, East Kilbride and Glenrothes and by two landscape contractors, Maxwell M. Hart and Waterer, Sons and Crisp. The figures presented are averages obtained from these sources.

The survey, from which this article was developed, was conducted by the author when an official of the Department of Health for Scotland to ascertain objective information on the costs of development and maintenance of open space in housing.

Financial and administrative technique

There are certain financial and administrative techniques which are indispensable to the general acceptance and success of open space development in municipal housing. The first of these is the "Landscape Rent." This technique consists of meeting the capiital cost of open space development with a 60-year loan at 4½ per cent. as is usual in housing finance, meeting the recurring cost of maintenance with equity capital from a floating fund and retiring both costs by equal payments per house per week as landscape rent. This technique spreads the capital cost over the life of the house. The mortgage payments are made in equal weekly sums which offers the advantages of mortgage financing, common in housing, to the development of open space. The establishment of a landscape rent can reflect the ability of the tenant to pay, it creates a reciprocal client-entrepreneur relationship between tenant and housing authority, which, apart from its obvious merit, should militate against vandalism. The final advantage results from the separation of open space development from structure and service costs. Normally where a total sum is made available for land, house, utilities and open space, the latter is the inevitable victim of the inevitable economies. The landscape rent separates open space development into an independent account in which capital and maintenance expenditures are balanced by revenue from weekly landscape rents.

In addition, in the context of this article, the Landscape Rent offers an excellent means of evaluating the capital and maintenance costs of open space development in relation to ordinary shelter rent.

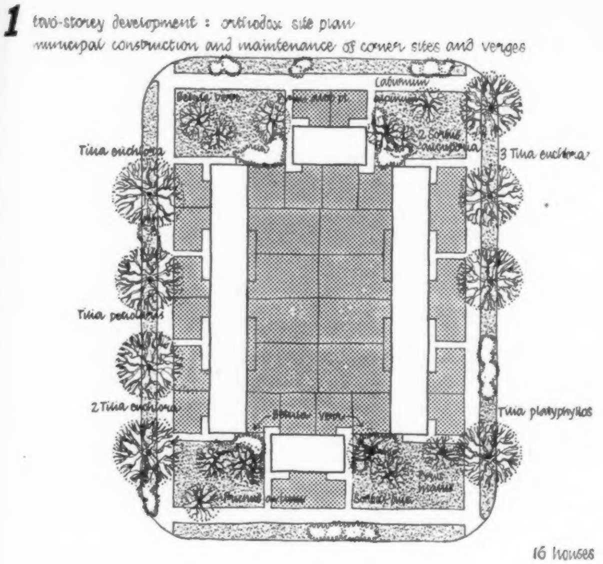
This technique does not lack precedents. In the residential squares of London, Edinburgh, and in the Garden Cities, it has long been usual to levy a charge upon tenants for the maintenance of open space in joint ownership. In Hemel Hempstead a sum of £12 approximately is allocated to the capital cost of landscape treatment per house and a charge of 9d. per house per week is levied for maintenance. But it is in the Netherlands that this technique is most widely practised. Originating in the post-war period, it has spread into general use for all municipal housing.

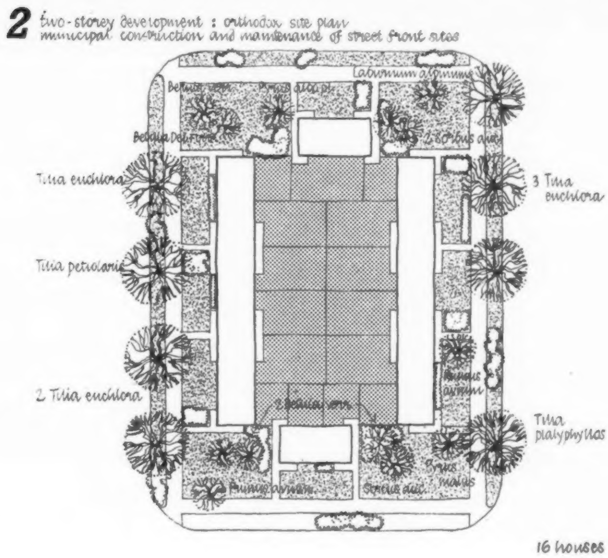
Vandalism is a vital consideration in this contest. As has been suggested, the payment of a landscape rent should tend to defer tenants from either practising or condoning vandalism. This is not enough. In typical municipal development it is difficult to induce a sense of responsibility in tenants for specific areas of open space. Yet, perhaps the most efficacious technique for reducing vandalism is to allocate specific areas of open space to the responsibility of abutting tenants.

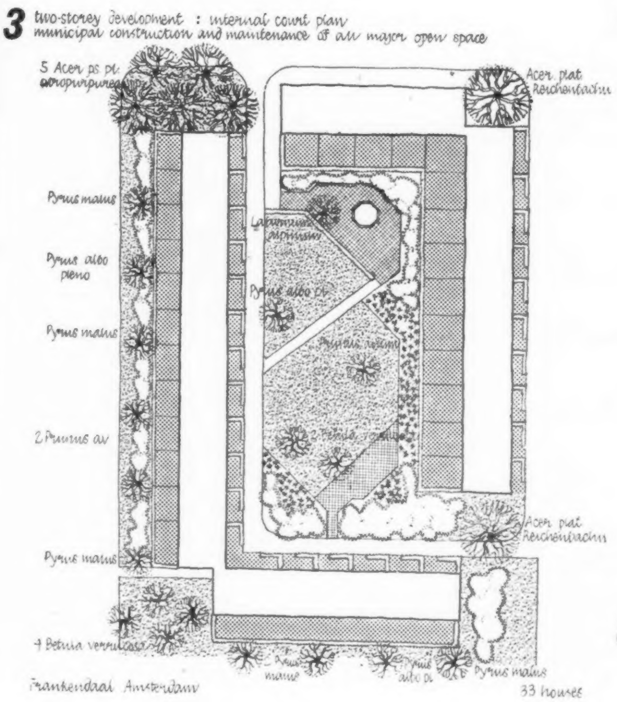
This method, combined with the landscape rent, must induce both an individual and collective sense of responsibility militating against vandalism. The technique of allocating responsibility to tenants for specific areas of open space presents no problems in the internal court site plans. All abutting tenants are responsible for the enclosed, common open space. In the internal court project, the Frankendaal in Amsterdam, there are further administrative techniques, designed to discourage vandalism. In each lease, tenancy is conditional upon agreement that common open space is the collective responsibility of all abutting tenants; that damage will be made good by equal fines imposed upon all abutting tenants; and finally that failure to pay any fine, so imposed, will result in summary eviction. This project is high subsidy housing for a working class population; initially there were cases of vandalism; damage was made good and the lease conditions imposed. In the subsequent three years there has been no single recurrence of vandalism.

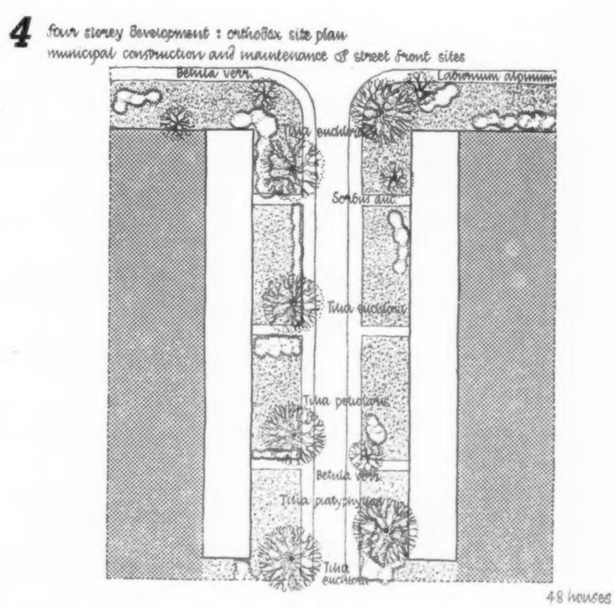
Each of these techniques—the landscape rent, the allocation of responsibility to tenants for specific areas of open space, the collective fine and powers of summary eviction—are important ingredients to the policy of introducing general landscape treatment to housing areas.

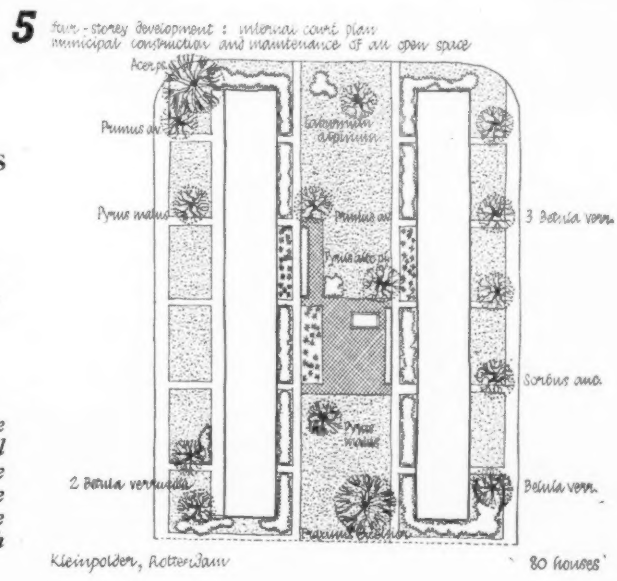
From these tables it is immediately apparent that when



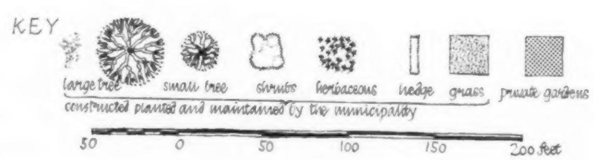








LANDSCAPE TEST PLANS



Above and right are the five test plans referred to on page 262 and subsequently. Comparative data on the capital costs and development for these plans are given in the twelve tables on the next page and on page 267. The plans are reproduced again, accompanied by a landscape specification, with average costs, for English and Scottish local authorities, on pages 269-275.

THE COST OF OPEN SPACE DEVELOPMENT

(i) Capital Costs

TABLE 1: CAPITAL COSTS PER HOUSE PER WEEK

	England	Scotland
	d.	d.
test plan 1	3	2½
test plan 2	4	2¾
test plan 3	7½	4½
test plan 4	1	1
test plan 5	1½	1

TABLE 2: RELATION OF OPEN SPACE TO HOUSE CAPITAL COSTS

	England				Scotland			
	Open space	House, £	%		Open space	House, £	%
	£ s. d.	£			£ s. d.	£	
test plan 1	14 1 4	1,500	0·91		11 11 6	1,500	0·77
test plan 2	21 2 0	1,500	1·40		12 14 7	1,500	0·85
test plan 3	34 0 0	1,500	2·26		20 16 8	1,500	1·39
test plan 4	4 13 10	2,000	0·23		4 12 7	2,000	0·31
test plan 5	7 0 8	2,000	0·35		4 12 7	2,000	0·31

TABLE 3: CAPITAL COSTS AND DEVELOPED AREA PER HOUSE

	Development area/house	Capital costs, house/week England	Scotland
		d.	d.
test plan 4	410 sq. ft.	1	1
test plan 5	450 sq. ft.	1½	1
test plan 1	1,067 sq. ft.	3	2½
test plan 3	1,156 sq. ft.	7½	4½
test plan 2	1,525 sq. ft.	4	2¾

TABLE 4: CAPITAL COST OF DEVELOPED OPEN SPACE PER ACRE

	Dev. Open Space/Acre	Capital Cost of Dev. Open Space/Acre England	Scotland
		£ s. d.	£ s. d.
test plan 1	11,700 sq. ft.	150 0 0	105 16 0
test plan 2	16,718 "	198 0 0	138 8 0
test plan 3	19,560 "	565 5 0	365 10 0
test plan 4	12,716 "	148 0 0	105 12 0
test plan 5	22,800 "	371 3 6	255 8 0

TABLE 5: CAPITAL COSTS AND DEVELOPED AREA PER HOUSE

	Test Plan	Dev. Area/House	Capital Costs House/Week England	Scotland
conventional development	4	450 sq. ft.	1	1
	1	1,067 "	3	2½
	2	1,525 "	4	2¾
Kleinpolder-Frankendaal development	5	410 "	1½	1
	3	1,156 "	½	4½

TABLE 6: CAPITAL COST OF DEVELOPED OPEN SPACE

	Test Plan	Dev. Open Space/Acre	Capital Cost of Dev. Open Space/Acre England	Scotland
			£ s. d.	£ s. d.
conventional development	4	12,716 sq. ft.	148 0 0	105 12 0
	1	11,700 "	150 0 0	105 16 0
	2	16,718 "	198 0 0	138 8 0
Kleinpolder-Frankendaal development	5	22,800 "	371 3 6	255 8 0
	3	19,560 "	565 5 0	365 10 0

TABLE 7: THE RELATIONSHIP OF CAPITAL COSTS TO DENSITY

	Test Plan	Density	Capital Costs England	Scotland
			d.	d.
conventional development	4	28	1	1
	2	12	4	2¾
Kleinpolder-Frankendaal development	5	55	1½	1
	3	17	7½	4½

(ii) *Maintenance Costs*

TABLE 8:

	Maintenance Cost per House per Week England	Scotland
	s d.	s d.
test plan 1	1 1	9¼
test plan 2	1 5¼	1 1½
test plan 3	1 5¼	10
test plan 4	6½	5
test plan 5	5	4

TABLE 9: THE RELATIONSHIP OF CAPITAL TO MAINTENANCE COSTS

	Capital Costs House Week	Per cent.	Maintenance Costs House Week
England	d.		s d.
test plan 1	3	23	1 1
test plan 2	4¼	25	1 5¼
test plan 3	7¼	42	1 5¼
test plan 4	1	15	6½
test plan 5	1¼	30	5
Scotland			
test plan 1	2¼	27	9¼
test plan 2	2¾	20	1/1½
test plan 3	4½	45	10
test plan 4	1	20	5
est plan 5	1	25	4

capital costs are financed by equal weekly payments over the life of the house, with a 60-year mortgage at 4¼ per cent., these weekly payments, even for the most lavish standards of development, are within the capacity of a widow's pension or income from National Assistance. It is a tragedy that sums of such insignificance have obtruded between the typical sterility of the past 30 years of municipal housing and the more humane environment realizable for such puny expenditures. These costs vary between 0·05 per cent. and 0·225 per cent. of the average national weekly income (Scotland 1954). If maintenance is not considered, if it is assumed that tenants can carry out maintenance either privately or by voluntary co-operation, then the capital cost of open-space development, even of the most lavish scale, offers no obstruction to its realization.

Tables 1 and 2 show that while the test plans incorporate a range of treatment from marginal to lavish, there is no corresponding range of costs at this low scale between the extremes of 1d. and 7d. per house per week.

No worthwhile economies can be achieved in this sector of capital costs. It is rather in an appreciation of the components of maintenance costs and the relation of density to all costs which offers opportunity for achieving economies.

While recognizing that capital costs are insignificant sums in terms of rent per house per week, there are nevertheless certain inferences to be drawn from them. The first point is to appreciate the qualitative difference in these various test plans. As can be seen from tables 4 and 5, plans 1, 2 and 4 represent a distinctly lower standard of open space, this provision and development is indicated by both the area and the cost of developed open space per acre. From these tables we can see that capital costs, within any type of development, correspond closely to the area of developed open space.

This general correspondence between developed area and capital costs for distinct levels of development introduces the relationship of density to capital costs. As this correspondence would lead us to expect, we can assume that by raising the residential density the standard of open-space development can also be raised without any increase in capital costs per house. Inversely, we can say that, assuming a constant standard of landscape treatment, capital costs per house will fall as density is increased.

The relationship of residential density to capital cost is a striking one. Test plan 4 illustrates the minimum open-space provision and the lower standard of open-space development in four-storey construction. The relevant figures are 12,716 sq. ft. of developed open space per acre at a cost of £105/acre (Scotland) and £148/acre (England). Test plan 5 provides 22,800 sq. ft./acre at £255/acre (Scotland), £371/acre (England), which indicates a provision of open space and standard of development more than twice that of test plan 4. Yet the capital costs per house per week are identical for Scotland and similar for England. The key to this paradox lies in the relative densities, 28 and 55 families per acre respectively.

TABLE 10: THE RELATIONSHIP OF DEVELOPED AREA TO MAINTENANCE COST

	Dev. Open Space/House	*Factor*	*Maintenance Costs House Week* England	*Maintenance Costs House Week* Scotland
			s. d.	s. d.
test plan 5	410 sq. ft.	4·1	5	4
test plan 4	450 ,,	4·5	6½	5
test plan 1	1,067 ,,	10·7	1 1	9¼
test plan 3	1,156 ,,	11·6	1 5¼	10
test plan 2	1,525 ,,	15·3	1 5½	1 1½

Table 10 demonstrates that maintenance costs correspond generally to units of area. The use of low maintenance materials—paving, ground covers, herbaceous—in plans 3 and 5—is also partially indicated by this table.

TABLE 11: THE RELATIONSHIP OF DENSITY TO MAINTENANCE COSTS

	Density	*Maintenance Costs, House/Week* England	*Maintenance Costs, House/Week* Scotland
		s. d.	s. d.
test plan 5	55 fam./acre	5	4
test plan 4	28 ,, ,,	6½	5
test plan 3	17 ,, ,,	1 5¼	10
test plan 2	12 ,, ,,	1 5½	1 1½

(iii) *Total Landscape Rents*

TABLE 12:

	Capital Costs	*England, House/Week Maintenance Costs*	*Landscape Rent*
		s. d.	s. d.
test plan 1	3	1 1	1 4
test plan 2	4	1 5½	1 9½
test plan 3	7½	1 5¼	2 0¾
test plan 4	1	6½	7½
test plan 5	1½	5	6½
		Scotland, House/Week	
	d.	s. d.	s. d.
test plan 1	2¼	9¼	11½
test plan 2	2¾	1 1½	1 4¼
test plan 3	4½	10	1 2½
test plan 4	1	5	6
test plan 5	1	4	5

This relationship can also be seen in examples of two-storey construction. Test plan 1 has a minimum provision and a standard of development of 11,700 sq. ft./acre at a cost of £105/acre (Scotland), £148/acre (England); test plan 3 incorporates twice this provision at three times the cost per acre—19,560 sq. ft. at £365/acre (Scotland) and £565/acre (England)—yet the respective capital costs are 2¼d. and 4½d. per house per week for Scotland, 3d. and 7½d. for England. The respective densities are 12 and 17 families to the acre.

There is, then, a straight line relation between provision and cost of development of open space and density. If we wish to ascertain the relationship of capital costs for two schemes at different densities and having distinct levels of open-space provision and cost of development, this can be obtained by establishing a factor for each from the following formula and relating them.

standard of open space provision, sq. ft. per acre   cost of open space development per acre

$\div$ density²

Thus the most important conclusions to be drawn from capital costs are that as weekly rents they are insignificant sums, that even the most prodigal development costs a paltry sum and offers no obstruction to its realization, that for any level of development, capital costs closely correspond to the units of area developed and, as a result, any predetermined level of open-space development can be realized at various capital costs, depending upon the residential density.

Traditionally, the design or planting of municipal house gardens has been based upon the attitude that capital costs—the purchase of trees, shrubs, hedges, herbaceous, annuals, grass seed, stakes, paving—represent a cash investment while the labour of continuous maintenance has no cash equivalent—it is leisure employment. While this is appropriate to private gardening, it is inappropriate to the situation where maintenance is done by the housing authority.

NOTE: The landscape test plans, with specifications and costs, which follow on page 269 and subsequently are not in numerical order, but in the order Plan 1, 2, 4, 3 and 5

Right: "Capital costs to realize the standards of the Frankendaal, test plan 3, can be met by capital costs of 7½d. per house per week in England, and 4½d. in Scotland".

Right: Closed communal garden, Schiedam. Above: Communal gardens, Kleinpolder, West Rotterdam. "Kleinpolder-type development, test plan 5, can be achieved at capital costs requiring payments of 1½d. per house in England and 1d. in Scotland."

In such a case the labour of maintenance is not a leisure occupation but employment with the same cash equivalent as capital investment. The attitude of the private gardener has been towards minimizing the capital investment with the effect of maximizing maintenance which has no apparent cost. In contrast where the same authority is responsible for both services, it is more economical to maximize capital investment with a view to minimizing the recurring cost of maintenance and the total investment.

Tables 8 and 9 show maintenance costs per house per week and the relation of capital costs to maintenance costs. It is seen that capital costs range from one fifth to a half of maintenance costs and average 25 per cent. It is obvious that it is the capital investment which determines the quality of the environment while maintenance only sustains that quality. Capital costs should logically be preponderant but in the British convention of open space development it is seen to be the contrary. In the case of the Frankendaal and Kleinpolder examples, however, it is shown that in both cases capital costs approach half the maintenance costs, twice as high a proportion as the average, but even these examples demonstrate an attitude to maintenance which is a residue from private gardening.

This attitude is particularly apparent in the use of lawn areas. Grass is the cheapest ground cover measured by capital cost alone but when the cost of maintenance is added it becomes almost as expensive as marble. Indeed it is the high recurring cost of maintaining grass which accounts for the greatest proportion of maintenance costs.

The average capital cost of tilling, sowing, seeding, rolling and purchase of grass seed disclosed by the survey was 1s. per sq. yd. The average cost of maintenance, involving mowing each two weeks, a total of 15 cuts during the season, was 7d. per sq. yd. When to this capital cost is added the recurring cost of maintenance over the 60-year life of the building, the total cost is 36s. per sq. yd.

By way of contrast the total cost of excavation, bottoming, providing and laying concrete slab paving averaged 16s. per sq. yd. with no significant future maintenance costs (in both categories 10 per cent. allowance for contingencies would cover repairs). Thus grass, as a surface, is over twice as expensive as precast concrete slab paving when the cost of maintenance is evaluated.

It is not suggested that these materials are interchangeable. Nevertheless, such a comparison gives greater freedom to the designer. It also indicates that green ground covers other than grass should be sought. There are, of course, many ground covers which, while unable to tolerate wear as well as does grass, can provide a green, textured surface. Where wear is not a consideration, many ground covers are not merely substitutes but rather superior materials to grass. The most obvious ones are ivy in variety, pachysandra, adjuga, hypericum; each provides a textured green plane but requires low maintenance.

Maintenance costs, as has been shown, are multiples of capital costs; this is at once illogical and unnecessary. It requires only an appreciation of the real expense of grass areas to substantiate the lack of logic; it requires only recognition of the economies realizable by the employment of ground covers and paving materials to prove the lack of necessity for this situation.

As we have seen, maintenance costs generally correspond to units of area, consequently with increased density, and a reduction of unit area per house, there is a corresponding reduction in maintenance costs. This holds true even when, as in a comparison of plans 2 and 3, the former provides only marginal development and the latter incorporates the highest standards. Yet the more lavish development is lower in cost; the respective densities are 12 and 17 families to the acre. As with capital costs, we can say that, assuming a constant standard of maintenance, costs per house will decrease as density is increased.

Capital and maintenance costs together provide the total landscape rents. Although the addition of maintenance has raised these sums beyond the initial insignificance of capital costs alone, it can be seen that they are still inconsiderable. Plan 5, which represents a standard of open space development, at its density, superior to the best British practice costs less than three cigarettes a week. Plan 3, irrespective of density, provides environment superior to any recent British project of municipal housing and costs the equivalent of ten cigarettes per week.

The inferences to be drawn from the total landscape rents closely correspond to those observed in the analysis of capital and maintenance costs. Total costs, as rents per house per week, are low. The range in quality of development does not show a corresponding range in costs. The difference between the environment and facilities offered by plans 1 and 3 is extremely wide, the difference in cost is a few pence per week. The relationship of density to cost is clearly reflected; plan 5 incorporates the higher standard of provision and development of open space in the four-storey examples but costs less than plan 4; plan 3, incorporating the highest standards of open space development in two-storey projects, is similar in cost to plan 2 which has a lower provision and quality of development.

These landscape rents do not support the widespread misapprehension and fear of the cost of open space development in housing, they are seen to be within the capacity of all but the most indigent, they do not offer any obstruction to the design of new and more satisfactory site plans incorporating common open spaces, or the employment of a wide range of plant and inert materials. I suggest that this information can be used to influence policy on the development of open space in housing, that it offers a new freedom to architects, landscape architects and planners. No longer can it be argued that the costs of open space development are such as to consign all past and future municipal housing to permanent aridity, or to inhibit the development of improved site plans. Accurate costs have been shown. The development of open space is cheap. Do the savings effected by omitting treatment justify the abject environment of typical municipal housing or the invidious comparisons with practice in Denmark, Sweden, Switzerland and the Netherlands?

In calculating landscape costs it is assumed that bringing the site to finished alignment and level- and spreading topsoil is a charge to housing. Landscape costs include any purchase of plant and inert materials, the labour cost of establishing them and the recurring cost of maintenance.

Landscape Specification			Average costs for English Municipal and New Town Corporations			Average Costs for Scottish Municipal and New Town Corporations		
Item	*Number*		*Unit cost*	*Sub total*	*Total*	*Unit cost*	*Sub total*	*Total*
			£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d	£ s d.
1	6	Tilia euchlora, 10 ft.–12 ft.	1 0 0	6 0 0		16 0	4 16 0	
	1	Tilia petiolaris, 10 ft.–12 ft.	18 0	18 0		16 0	16 0	
	1	Tilia platyphyllos, 10 ft.–12 ft.	18 0	18 0		16 0	16 0	
	4	Betula verrucosa, 10 ft.–12 ft.	10 6	2 2 0		12 6	2 10 0	
	1	Betula Delavayi Forrestii, 10 ft.–12 ft.	1 10 0	1 10 0		17 6	17 6	
	3	Sorbus aucuparia, 10 ft.–12 ft.	15 0	2 5 0		13 6	2 0 6	
	1	Laburnum alpinum, 10 ft.–12 ft.	1 0 0	1 0 0		15 0	15 0	
	1	Prunus avium, 9 ft.–10 ft.	10 6	10 6		17 6	17 6	
	1	Pyrus malus, standard	15 0	15 0		17 6	17 6	
	1	Pyrus albo pleno, standard	15 0	15 0		17 6	17 6	
	20	Stakes, felt and clout tacks	3 0	3 0 0		1 9	15 0	
		Labour cost of planting trees	—	7 19 0		8 0	8 0 0	
				27 12 6	27 12 6		24 16 0	24 16 0
2	225	Mixed shrubs of undernoted species and varieties:	3 6	39 7 6		4 6	50 12 6	
		Cornus alba Kerria japonica						
		Cornus mas Mahona aquifolium						
		Crataegus monogyna Pieris floribunda						
		Crataegus oxycanthioides Pieris japonica						
		Cytisus albus Rhus typhina						
		Cytisus praecox Rosa canina Andersonii						
		Forsythia spectabilis Spartium Junceum						
		Forsythia suspensa atrocaulis Syringa vulgaris						
		Kalmia latifolia Ulex europaeus plenus						
		Labour cost of planting shrubs		16 17 6		9	8 11 2	
				56 5 0	56 5 0		59 3 8	59 3 8
3		Grass seed for 1,500 sq. yds.				2½	15 12 6	
		tilling, sowing and rolling, 1,500 sq. yds.	1 6			11	68 15 0	
				112 10 0	112 10 0		84 7 6	84 7 6
4		Contingencies (England 20%, Scotland 10%).						
		for replacement of trees						
		for replacement of shrubs		5 18 9	5 18 9		2 9 9	2 9 9
		for resowing grass		11 5 0	11 5 0		5 18 4	5 18 4
		for additional topsoil		5 12 0	5 12 0		8 8 9	8 8 9
		Total Capital Cost			219 3 3			185 4 0
5		Estimated cost of annual maintenance			44 15 6			32 1 4

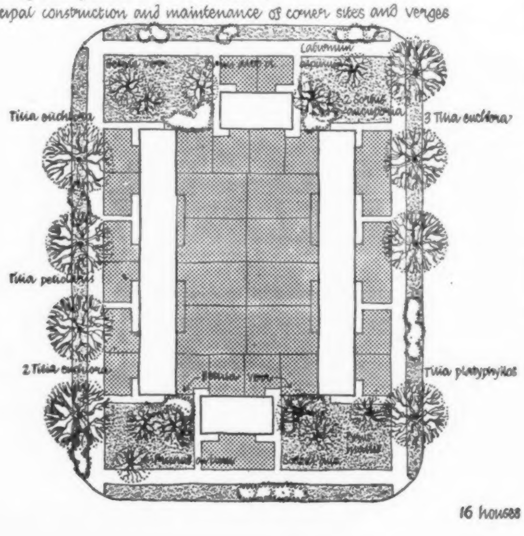
Landscape Rent per House per Week

	£ s. d.
Capital cost for 16 houses	219 3 3
Capital cost per house	13 13 11½
Assuming loan with 60-year amortization at 4¼ per cent. interest: half yearly payments = £13·698 × 0·0231 = £0·316	
weekly payments = £0·316 ÷ 26 = 3d.	
Thus capital costs can be retired by a weekly payment per house of 3d.	
Maintenance cost, per annum for 16 houses	= 44 15 6
Maintenance cost per annum per house	= 2 15 1½
Maintenance cost per house per week	= 1 1
Capital cost = 3d.	
Maintenance cost = 1s. 1d.	
Landscape Rent .. 1s. 4d. per house per week.	

Landscape Rent per House per Week

	£ s. d.
Capital cost for 16 houses	185 4 0
Capital cost per house	11 11 6
Assuming loan with 60-year amortization at 4¼ per cent. interest: half yearly payments = £11·575 × 0·0231 = £0·2673	
weekly payments = £0·2673 ÷ 26 = £0·0102	2½
Thus capital costs can be retired by a weekly payment per house of 2½d.	
Maintenance cost per annum for 16 houses	= 32 1 4
Maintenance cost per annum per house	= 2 0 1
Maintenance cost per house per week	= 9¼
Capital cost = 2½d.	
Maintenance cost = 9¼d.	
Landscape Rent = 11¾d. per house per week.	

two-storey development : orthodox site plan
municipal construction and maintenance of corner sites and verges



16 houses

landscape test plan

1

Landscape specification			Average costs for English Municipal and New Town Corporations			Average costs for Scottish Municipal and New Town Corporations		
Item	*Number*		*Unit cost*	*Sub total*	*Total*	*Unit cost*	*Sub total*	*Total*
			£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1	6	Tilia euchlora, 10 ft.–12 ft.	1 0 0	6 0 0		16 0	4 16 0	
	1	Tilia petiolaris, 10 ft.–12 ft.	18 0	18 0		16 0	16 0	
	1	Tilia platyphyllos, 10 ft.–12 ft.	18 0	18 0		16 0	16 0	
	4	Betula verrucosa, 10 ft.–12 ft.	10 6	2 2 0		12 6	2 10 0	
	1	Betula Delavayi Forrestii, 10 ft.–12 ft.	1 10 0	1 10 0		17 6	17 6	
	3	Sorbus aucuparia, 10 ft.–12 ft.	15 0	2 5 0		13 6	2 0 6	
	1	Laburnum alpinum, 10 ft.–12 ft.	1 0 0	1 0 0		15 0	15 0	
	2	Prunus avium, 9 ft.–10 ft.	10 6	1 1 0		15 0	1 10 0	
	1	Pyrus malus, standard	15 0	15 0		17 6	17 6	
	1	Pyrus albo pleno, standard	15 0	15 0		17 6	17 6	
	21	Stakes, felt and clout tacks	3 0	3 3 0		1 9	1 16 9	
		Labour cost of planting trees		8 8 0		7 6	7 17 6	
				28 15 0	28 15 0		25 10 3	25 10 3
2	325	Mixed shrubs of undernoted species and varieties:— Cornus alba, Kerria japonica Cornus mas, Mahonia aquifolium Crataegus monogyna, Pieris floribunda Crataegus oxycanthioides, Pieris japonica Cytisus albus, Rhus typhina Cytisus praecox, Rosa canina Andersonii Forsythia spectabilis, Spartium Junceum Forsythia suspensa atrocaulis, Syringa vulgaris Kalmia latifolia, Ulex europaeus plenus	3 3	52 16 3		4 6	73 3 6	
		Labour cost of planting shrubs		24 7 6		6	8 2 6	
				77 3 9	77 3 9		81 6 0	81 6 0
3		Grass seed for 2,075 sq. yds.	1 6			2½	21 12 3	
		Tilling, sowing and rolling, 2,075 sq. yds.				7½	65 10 0	
				155 12 6	155 12 6		87 3 3	87 3 3
4		Contingencies (England 20%, Scotland 5%)						
		for replacement of trees		5 15 0	5 15 0		1 5 6	1 5 6
		for replacement of shrubs		10 11 3	10 11 3		4 1 3	4 1 3
		for resowing grass, 5 per cent.		7 15 6	7 15 6		4 7 1	4 7 1
		for additional topsoil						
		Total capital cost			285 13 0			203 13 4
5		Estimated cost of annual maintenance			60 8 2			46 16 0

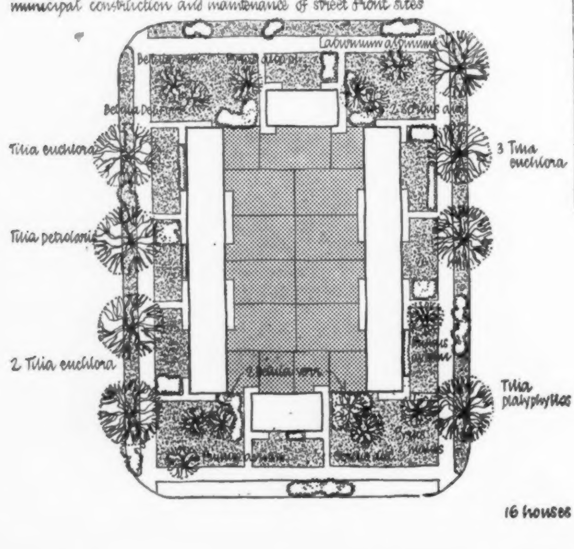
Landscape Rent per House per Week (English)

	£ s. d.
Capital cost for 16 houses	285 13 0
Capital cost per house	17 17 0
Assuming loan with 60 year amortization at 4¼ per cent. interest half yearly payments = £0·411 weekly payments = 4d.	
Thus capital costs can be retired by weekly payment per house of 4d.	
Maintenance cost per annum for 16 houses	= 60 8 2
Maintenance cost per annum per house	= 3 15 6
Maintenance cost per house per week	= 1 5½
Capital cost = 4d.	
Maintenance cost = 1s. 5½d.	
Landscape rent = 1s. 9½d. per house per week	

Landscape Rent per House per Week (Scottish)

	£ s. d.
Capital cost for 16 houses	=203 13 4
Capital cost per house	= 12 14 7
Assuming loan with 60 year amortization at 4¼ per cent. interest half yearly payments = £12·729 × 0·0231 = £0·2940 weekly payments = £0·2940 ÷ 26 = 2¾d.	
Thus capital costs can be retired by weekly payment per house of 2¾d.	
Maintenance cost per annum for 16 houses	= 46 16 0
Maintenance cost per annum per house	= 2 18 6
Maintenance cost per house per week	1 1½
Capital cost = 2¾d.	
Maintenance cost = 1s. 1½d.	
Landscape rent = 1s. 4¼d. per house per week	

two-storey development : orthodox site plan
municipal construction and maintenance of street front sites



landscape test plan

2

Landscape specification			Average costs for English Municipal and New Town Corporations			Average costs for Scottish Municipal and New Town Corporations		
Item	*Number*		*Unit cost*	*Sub total*	*Total*	*Unit cost*	*Sub total*	*Total*
			£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1	4	Tilia euchlora, 10–12 ft.	1 0 0	4 0 0		16 0	3 4 0	
	1	Tilia petiolaris, 10–12 ft.	18 0	18 0		16 0	16 0	
	1	Tilia platyphyllos, 10–12 ft.	18 0	18 0		16 0	16 0	
	2	Betula verrucosa, 10–12 ft.	10 6	1 1 0		12 6	1 5 0	
	1	Sorbus aucuparia, 10–12 ft.	15 0	15 0		13 6	13 6	
	1	Laburnum alpinum, 10–12 ft.	1 0 0	1 0 0		15 0	15 0	
	1	Prunus avium, 9–10 ft.	10 6	10 6		15 0	15 0	
	11	Stakes, felt and clout tacks	3 0	1 13 0		1 9	19 3	
		Labour cost of planting trees		4 8 0		7 6	4 2 6	
					15 2 6		13 6 3	13 6 3
2	300	Mixed shrubs of undernoted species and varieties:	3 6	52 10 0		4 9	71 5 0	
		Cornus alba / Kerria japonica						
		Cornus mas / Mahonia aquifolium						
		Crataegus monogyna / Pieris floribunda						
		Crataegus oxycanthioides / Pieris japonica						
		Cytisus albus / Rhus typhina						
		Cytisus praecox / Rosa canina Andersonii						
		Forsythia spectabilis / Spartium Junceum						
		Forsythia suspensa atrocaulis / Syringa vulgaris						
		Kalmia latifolia / Ulex europaeus plenus						
		Labour cost of planting shrubs		22 10 0			10 5 0	
				75 0 0	75 0 0		81 10 0	81 10 0
3		Grass seed for 1,800 sq. yds.				2¼	18 15 0	
		Tilling, sowing and rolling 1,800 sq. yds.	1 6			11	82 10 0	
				135 0 0	135 0 0		101 5 0	101 5 0
4		Contingencies (England 20%) Scotland 10% average,						
		for replacement of trees		3 0 10	3 0 10			
		for replacement of shrubs		15 0 0	15 0 0			
		for resowing grass 5 per cent.		6 0 9	6 0 9			
		for additional topsoil					26 12 9	26 12 9
		Total Capital Cost			249 4 1			222 4 0
5		Estimated cost of annual maintenance			69 6 6			52 0 0

Landscape Rent per House per Week (English)

	£ s. d.
Capital cost for 48 houses	249 4 1
Capital cost per house	5 3 10
Assuming loan with 60 year amortization at 4¼ per cent. interest half yearly payments = £5·191 weekly payments = £0·0045 = 1d.	
Thus capital costs can be retired by weekly payment per house of 1d.	
Maintenance cost per annum for 48 houses	= 69 6 6
Maintenance cost per annum per house	= 1 8 1¼
Maintenance cost per house per week	= 6½

Capital cost = 1d.
Maintenance cost = 6½d.

Landscape Rent = 2s. 7½d. per house per week

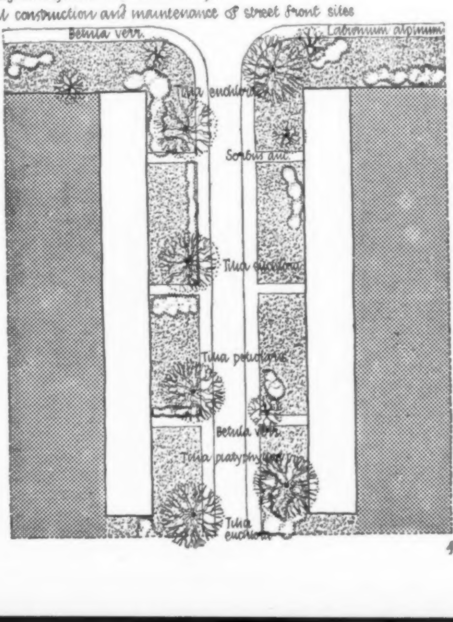
Landscape Rent per House per Week (Scottish)

	£ s. d.
Capital cost for 48 houses	222 4 0
Capital cost per house	4 12 7
Assuming loan with 60 year amortization at 4¼ per cent. interest: half yearly payments = £4·629 × 0·0231 = £0·1069 weekly payments = £0·1069 ÷ 26 = 1d.	
Thus capital costs can be retired by weekly payment per house of 1d.	
Maintenance cost per annum for 48 houses	= 52 0 0
Maintenance cost per annum per house	= 1 1 9
Maintenance cost per house per week	= 5

Capital cost = 1d.
Maintenance cost = 5d.

Landscape Rent = 6d. per house per week

four storey development : orthodox site plan
municipal construction and maintenance of street front sites



48 houses

landscape test plan

4

landscape test plan 3

LANDSCAPE TEST PLAN 3

Item	Number	Landscape specification	Average costs for English Municipal and New Town Corporations: Unit cost	Sub total	Total	Average costs for Scottish Municipal and New Town Corporations: Unit cost	Sub total	Total
			£ s. d.	£. s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1	5	Acer pseudoplatanus pl. atropurpurea 12 ft.–14 ft.	2 0 0	10 0 0		1 1 0	5 5 0	
	2	Acer platanus Reitenbachii, 12 ft.–14 ft.	2 0 0	4 0 0		16 0	1 12 0	
	6	Pyrus Malus, standards	15 0	4 10 0		17 6	5 5 0	
	3	Pyrus albo pleno, standards	15 0	2 5 0		17 6	2 12 6	
	3	Prunus avium, 9 ft.–10 ft.	10 6	1 11 6		15 0	2 15 0	
	6	Betula verrucosa, 10 ft.–12 ft.	10 6	3 3 0		12 6	3 15 0	
	1	Laburnum alpinum, 10 ft.–12 ft.	1 0 0	1 0 0		15 0	15 0	
	26	Stakes, felt and clout tacks	3 0	3 18 0		1 9	2 5 6	
		Labour cost of planting trees		5 8 0		7 6	9 15 0	
				35 15 6	35 2 9		33 10 0	33 10 0
2	750	Mixed shrubs of undernoted species and varieties:—	3 3	121 17 6		4 0	150 0 0	
		Cornus alba — Kerria japonica						
		Cornus mas — Mahonia aquifolium						
		Crataegus monogyna — Pieris floribunda						
		Crataegus oxycanthioides — Pieris japonica						
		Cytisus albus — Rhus typhina						
		Cytisus praecox — Rosa canina Andersonii						
		Forsythia spectabilis — Spartium Junceum						
		Forsythia suspensa atrocaulis — Syringa vulgaris						
		Kalmia latifolia — Ulex europaeus plenus						
		Labour cost of planting shrubs				4	12 10 0	
				56 5 0	178 2 6		162 10 0	162 10 0
3		Grass seed for 2,800 sq. yds.				2	23 6 8	
		Tilling, sowing and rolling, 2,800 sq. yds.	1 6			8	93 6 8	
				210 0 0	210 0 0		116 13 4	116 13 4
4		460 yards run, hedging, Crataegus monogyna, 2½ ft.–3 ft.				2 0	46 0 0	
		Lavour cost of planting hedge				3	5 15 0	
					117 0 0		51 15 0	51 15 0
5		Mixed herbaceous of undernoted species, 220 sq. yds.	5 0	55 0 0				
		Achillea — Iris						
		Asters (Amellus) — Kniphofia						
		Astilbe — Lupins						
		Campanula — Paeonia						
		Coreopsis — Pyrethrums						
		Delphiniums — Solidago						
		Geum — Spiraea						
		Helenium — Vebascum						
		Heuchera — Veronica						
		Labour cost of planting herbaceous			55 0 0		47 2 0	47 2 0
6		350 sq. yds. of paving consisting of 2 ft. × 2 ft. pre-cast concrete slabs set in sand on a bottoming of ashes. Cost of labour and materials	1 2 0	385 0 0	385 0 0	13 0	227 10 0	227 10 0
7		Sandbox.	1 0 0	10 0 0		9 0	4 10 0	

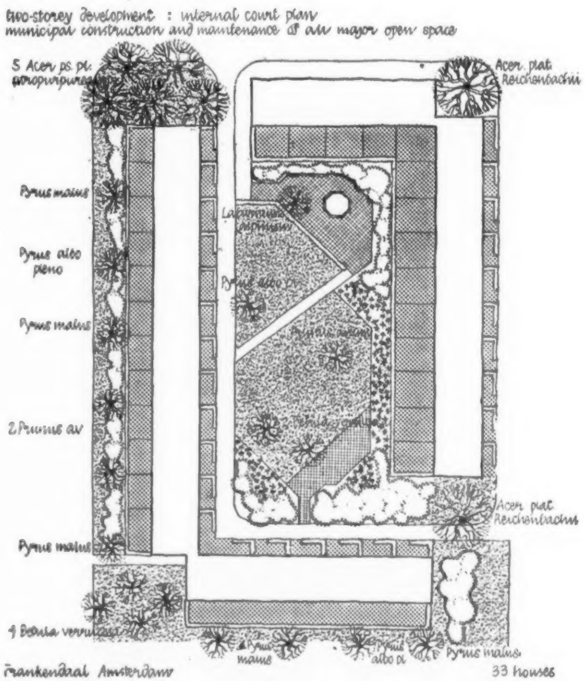
7		Sandbox.	1 0 0	10 0 0				
		Excavation, 10 cu. yds.		8 5 0		9 0	4 10 0	
		Mass concrete foundation, 15 sq. yds.	2 9	2 9 6		7 0	5 5 0	
		52-ft. run, precast concrete kerb	16 0	8 0 0		1	7 16 0	
		10 tons washed pit sand		5 0 0		6 0	8 0 0	
		Labour costs						
				33 14 6	33 14 6		25 11 0	25 11 0
8		Contingencies (England 20%, Scotland 5%)						
		for replacement of trees		7 0 6	7 8 6	1 13 6		1 13 6
		for replacement of shrubs		35 12 10	35 12 10	8 2 6		8 2 6
		for replacement of herbaceous plants		23 8 0	23 8 0	4 14 3		4 14 3
		for replacement of hedges		23 8 0	23 8 0	2 11 9		2 11 9
		for resowing grass				5 16 8		5 16 8
		for additional topsoil						
		Total Capital Cost			1103 17 1			687 10 0
9		Estimated cost of annual maintenance			124 2 7			71 10 0
				385 0 0	385 0 0		227 10 0	227 10 0

Landscape Rent per House per Week

	£ s. d.
Capital cost for 33 houses	1103 17 1
Capital cost per house	33 9 0
Assuming loan with 60-year amortization at 4¼% interest, half-yearly payments = £0·7726	
Weekly payments = 7¼d.	
Thus capital costs can be retired by weekly payment per house of 7¼d.	
Maintenance cost per annum, 33 houses =	£124 2 7
Maintenance cost per annum per house	3 15 2¾
Maintenance cost per house per week	1 5¼
Capital cost = 7¼d.	
Maintenance cost = 1s. 5¼d.	
Landscape Rent = 2s. 0½d.	

Landscape Rent per House per Week

	£ s. d.
Capital cost for 33 houses	£687 10 0
Capital cost per house	20 16 8
Assuming loan with 60-year amortization at 4¼% interest half-yearly payments = £20·833 × 0·0231 = £0·4812 weekly payments = £0·4812 ÷ 26 = 4¼d.	
Thus capital costs can be retired by a weekly payment per house of 4¼d.	
Maintenance cost per annum for 33 houses	£71 10 0
Maintenance cost per annum per house	2 3 4
Maintenance cost per house per week	10
Capital cost = 4¼d.	
Maintenance cost = 10d.	
Landscape Rent = 1s. 2¼d. per house per week	



landscape test plan 5

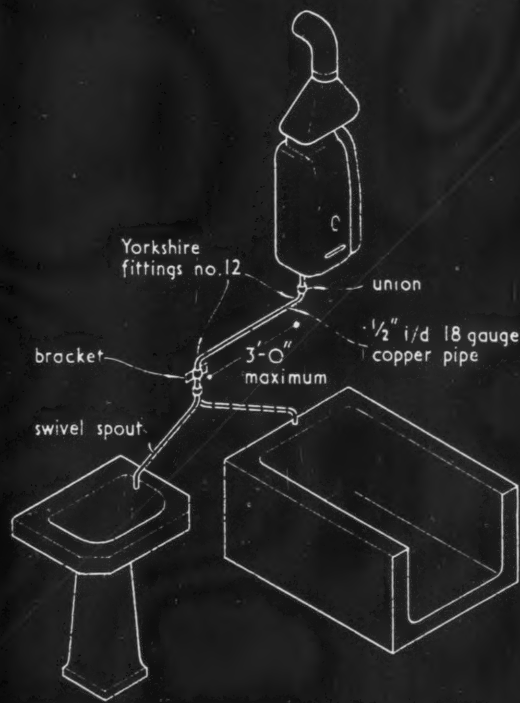
Item	Number	Landscape specification	English: Unit cost	English: Sub total	English: Total	Scottish: Unit cost	Scottish: Sub total	Scottish: Total
			Average costs in English Municipal and New Town Corporations			Average costs in Scottish Municipal and New Town Corporations		
			£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1	1	Acer pseudoplatanus, 10 ft.–12 ft.	10 6	10 6		15 0	15 0	
	1	Fraxinus excelsior, 9ft.–10 ft.	10 6	10 6		10 0	10 0	
	6	Betula verrucosa, 10 ft.–12 ft.	10 6	3 3 0		12 6	3 15 0	
	1	Sorbus aucuparia, 10 ft.–12 ft.	15 0	15 0		13 6	13 6	
	1	Laburnum alpinum, 10 ft.–12 ft.	1 0 0	1 0 0		15 0	15 0	
	2	Prunus avium, 9 ft.–10 ft.	10 6	1 1 0		15 0	1 10 0	
	3	Pyrus malus, standards	15 0	2 5 0		17 6	2 12 6	
	15	Stakes, felt and clout tacks	3 0	2 5 0		1 9	1 6 3	
		Labour cost of planting trees		6 0 0	17 10 0	7 6	5 12 6	
							17 9 9	17 9 9
2	275	Mixed shrubs of undernoted species and varieties: Conus alba, Kerria japonica, Cornus mas, Mahonia aquifolium, Crataegus monogyna, Pieris floribunda, Crataegus oxycanthioides, Pieris japonica, Cytisus albus, Rhus typhina, Cytisus praecox, Rosa canina Andersonii, Forsythia spectabilis, Spartium Junceum, Forsythia suspensa atrocaulis, Syringa vulgaris, Kalmia latifolia, Ulex europaeus plenus	3 6	48 2 6		4 6	61 17 6	
		Labour cost of planting shrubs		20 12 6		6	6 17 6	
					68 15 0		68 15 0	68 15 0
3		Grass seed for 2,275 sq. yds.				2	18 19 2	
		Tilling, sowing and rolling 2,275 sq. yds.	1 6	170 12 6	170 12 6	8	75 16 8	
							94 15 10	94 15 10
4		30 yards run hedging, Lonicera nitida, 2 ft.–2½ ft.	5 6			2 0	3 0 0	
		Labour cost of planting hedge		8 5 0	8 5 0	3	7 6	
							3 7 6	3 7 6
5		Mixed herbaceous of undernoted species, 110 sq. yds.: Achillea, Iris, Asters (Amellus), Kniphofia, Astilbe, Lupins, Campanula, Paeonia, Coreopsis, Pyrethrums, Delphiniums, Solidago, Geum, Spiraea, Helenium, Vebascum, Heuchera, Veronica	5 0	27 10 0				
		Labour cost of planting herbaceous			27 10 0		23 5 4	23 5 4
6		200 sq. yds. of paving consisting of 2 ft. × 2 ft. precast concrete slabs set in sand on a bottoming of ashes						
		Cost of labour and materials	18 0	180 0 0	180 0 0			130 0 0

Architects' Journal March 8 and 15, 1956

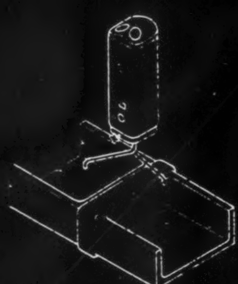
WATER HEATING | UNITS | GAS 32.C22

The Architects' Journal Library of Information Sheets 559. Editor: Cotterell Butler, A.R.I.B.A.

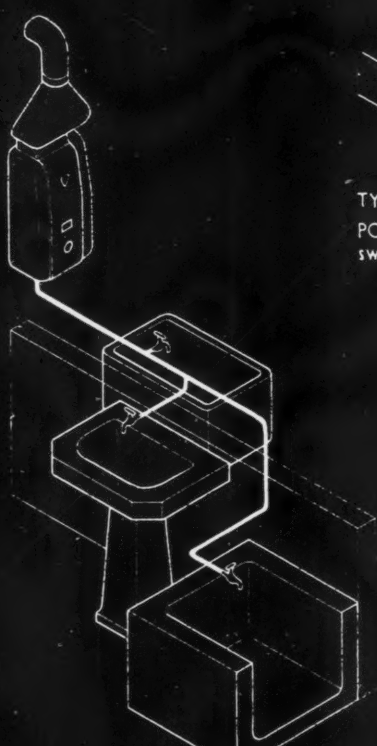
TYPE SG.32/1 LARGE SINGLE POINT HEATER.
swivel spout serving bath and basin



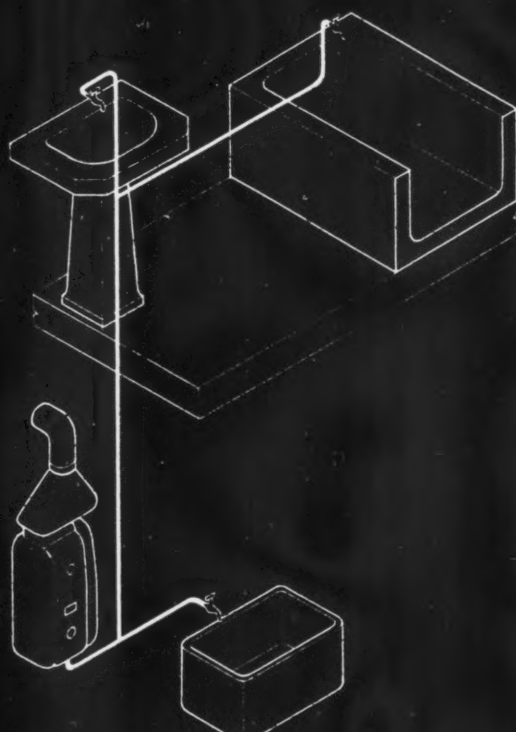
TYPE SG.32/1 LARGE SINGLE POINT HEATER.
extended swivel spout serving bath and basin



TYPE 503/0 SMALL SINGLE POINT HEATER.
swivel spout serving two sinks



TYPE 709 MULTI-POINT HEATER.
typical flat installation



TYPE 709 MULTI-POINT HEATER.
typical two-storey house installation

ASCOT INSTANTANEOUS GAS WATER HEATERS : TYPICAL INSTALLATIONS. Manufacturer : Ascot Gas Water Heaters Ltd

32.C22 · ASCOT · INSTANTANEOUS GAS WATER HEATERS : SELECTION OF HEATERS

This Sheet is intended as a guide to the selection of suitable Ascot instantaneous gas water heaters for specific purposes. The diagrams illustrate typical heater installations; the types shown are described in detail on Sheets 32.C20, 32.C21 and 32.C24.

Ascot instantaneous gas water heaters are designed to heat water to a maximum of 100° F. above supply temperature except type RS.52/1 which will provide boiling water. The hot water service is instantaneous and unlimited and, irrespective of variations in demand, a high overall operating efficiency is maintained. Gas is only consumed when hot water is required and standby losses are reduced to a small pilot flame.

Single Point Heaters

These are of the open outlet type and must on no account be connected to any restriction in the form of taps, piping or fittings.

To facilitate hot water supply to two adjacent fitments, single point heaters are fitted with swivel spouts which are available in different lengths.

Type SG.32/1: Large single point bath heater.
Output: 1·3 gal./min. raised through 100° F.,
or 3·25 gal./min. raised through 40° F.

The top left-hand diagram shows a typical installation serving bath and adjacent basin; the top right-hand diagram shows an alternative arrangement using an extended swivel spout, the fittings for which are available from the manufacturers. The heater can also be installed to serve two adjacent sinks or a large sink in laboratory, workshop, etc.

Types 503/0, 503/1 and 503/2: Small sink heaters.
Output: 0·5 gal./min. raised through 100° F.,
or 1·25 gal./min. raised through 40° F.

These heaters are suitable for a kitchen sink, cloakroom basin or similar fitting, the centre diagram showing an installation serving two adjacent sinks.

Type RS.52/1: Small sink type boiling water heater.
Output: 2½-3 pints/min. of boiling water,
or 0·5 gal./min. raised through 104° F.,
or 1·3 gal./min. raised through 40° F.

The heater is designed for domestic use and is not suitable for continuous use in cafes or restaurants or where the water pressure exceeds 120 lb./sq. in.

Multi-point Heaters

These are of pressure proof design and can supply up to three taps connected to the heater outlet. They should be installed close to the most frequently used draw-off tap (normally at the kitchen sink) with all draw-off runs as short as possible to ensure no wastage of gas and an immediate hot water supply.

Types 709 and 709B: Multi-point heaters.
Output: 1·25 gal./min. raised through 100° F.,
or 3·25 gal./min. raised through 40° F.

The lower diagrams show typical flat and two-storey house installations. The heater will supply hot water to three cloakroom basins in schools, offices, etc., and also two showers or a ·Quickspray· Wash Fountain. (See subsequent Sheets in this series.)

Factors Governing Choice

Number of points to be served: Single point heaters whether large or small can only serve one sink, bath or basin except where two points can be reached by a swivel spout outlet. A multi-point or several single-point heaters should be used for supply to distant draw-off points.

Rate of flow: The supply of hot water from an instantaneous heater cannot be exhausted, but the speed of delivery is limited by the size of the heater. A small heater is more efficient for limited intermittent demands than a large one and the heater, therefore, should not be larger than necessary to meet the maximum demand.

A comfortable bath temperature is 105° F., but the water should enter the bath at 120° F. to make allowance for heat losses. The times taken in supplying bath water requirements at this temperature, using heaters type 709, 709B. are given below.

Size of bath	Hot water required	Approximate time taken.
6 ft.	30 gal.	15 min.
5 ft. 6 in. ..	20 gal.	10 min.
5 ft.	15 gal.	7½ min.

Distance between points to be served: Many Water Authorities restrict the length of hot water draw-off piping from a multi-point heater in order to avoid wastage of water and the respective bye-laws should be consulted in this connection. In addition, long draw-off runs reduce the overall operating efficiency of the installation and runs approximating the maximum should be suitably lagged. Where the draw-off run from a multi-point heater would be in excess of the permissible maximum, a bath heater, type SG.32/1, should be used to serve the bath and adjacent basin and one of the 503 sink heaters, or boiling water heater type RS.52/1, used for kitchen service.

Ventilation: Adequate ventilation must be provided in any room in which an instantaneous gas water heater is installed. (See subsequent Sheets in this series.)

Flue

In the selection of heaters type SG.32/1, 709 and 709B to serve a point or points, the location of the flue (which is an essential requirement) should be considered at the initial conception of the installation. The flue installation must be efficient. (See subsequent Sheets in this series.)

Alternative Systems

Multi-point heaters are particularly suitable for connection as an ancillary to a solid fuel fired boiler installation, for summer use when the boiler supply is not required or for occasional winter use when it is not convenient to stoke the boiler. (See British Standard Code of Practice C.P. 332.201 : 1947.) For full details of alternative systems, see subsequent Sheets in this series.

Compiled from information supplied by :
Ascot Gas Water Heaters, Ltd.
Head Office and Works : 255, North Circular Road, Neasden, London, N.W.10.
Telephone : Willesden 1234.
Telegrams : Gascot, Phone, London.
Branch Offices and Service Depots : Belfast, Birmingham, Bournemouth and Glasgow.
Service Depots : Bristol, Cambridge, Manchester, Oxford, Southampton, Stoke-on-Trent and Jersey.

BUILDING BOARD | GENERAL DATA

The Architects' Journal Library of Information Sheets 560. Editor: Cotterell Butler, A.R.I.B.A.

TRADE NAME	DESCRIPTION AND APPLICATIONS	THICKNESS	WEIGHT PER SQ. FT.	STANDARD SIZES
Bowater insulation board	made from long tough wood fibres — cellular construction internal use only for sound and heat insulation: for ceilings, wall linings, permanent shuttering to concrete, floor underlays	1/2 in.	0·7 lb.	6ft. 0in., 8ft. 0in., 9ft. 0in., 10ft. 0in. and 12ft. 0in. long x 2ft. 0in. and 4ft. 0in. wide 8ft. 0in. long x 3ft. 0in., 3ft. 4in. and 3ft. 6in. wide
		3/4 in.	1·0 lb.	
Bowater standard hardboard	a highly compressed fibreboard giving a high degree of resistance to wear and moisture for all internal uses: wall linings and partitions panelling, flush doors, furniture etc.	1/8 in.	0·68 lb.	6ft. 0in., 8ft. 0in., 9ft. 0in., 10ft. 0in. and 12ft. 0in. long x 4ft. 0in. wide 6ft. 6in. long x 2ft. 6in. wide 8ft. 0in. long x 5ft. 0in. wide
		3/16 in.	1·0 lb.	6ft. 0in., 8ft. 0in., 9ft. 0in., 10ft. 0in., and 12ft. 0in. long x 4ft. 0in. wide 8ft. 0in. long x 5ft. 0in. wide
Bowater leathergrained hardboard	as Bowater standard hardboard but with one surface patterned during manufacture to produce a leather-grain effect	1/8 in.	0·68 lb.	6ft. 0in. and 9ft. 0in. x 4ft. 0in wide 8ft. 0in. long x 5ft. 0in. wide
Bowater reeded hardboard	a standard hardboard patterned during manufacture with lengthwise reeds, 3/4 in. wide for internal uses: dados, wall linings, partitions fascias, counter fronts etc.	1/8 in.	0·68 lb.	6ft. 0in. and 9ft 0in. long x 4ft. 0in. wide
Bowater perforated hardboard	a standard hardboard perforated with 3/16 in. holes at 1/2-in. or 3/4-in. centres for internal uses: window displays, exhibition stands, 'pegboards' etc. board perforated at 1/2-in. centres for facing fibrous sound-absorbents	1/8 in.	0·62 lb.	6ft. 0in. and 9ft. 0in. long x 4ft. 0in. wide
Bowater super hardboard	similar material to standard hardboard but hardened by a special process to give superior strength and surface for internal or external use: concrete form-lining, floor covering etc.	1/8 in.	0·72 lb.	6ft. 0in., 8ft. 0in., 9ft. 0in., 10ft. 0in. and 12ft. 0in. long x 4ft. 0in. wide 8ft. 0in. long x 5ft. 0in. wide
		3/16 in.	1·05 lb.	

BOWATER BOARDS: RANGE, STANDARD SIZES AND TYPICAL APPLICATIONS.

Manufacturer: Building Boards Division, Bowaters Sales Company Limited.

15.B1 BOWATER BOARDS: RANGE, STANDARD SIZES AND TYPICAL APPLICATIONS

This Sheet supersedes Sheet 15.B1 published 26.5.55 and tabulates the range of Bowater insulation and hardboards and gives standard sizes, properties and typical applications for each type.

Bowater insulation boards have a low thermal transmission value (conductivity k = 0·35 B.t.u./ft.^{2} hr./deg. F. 1 in. thickness). The sound absorption coefficient is 0·30 (average) on 2 in. by 1 in. nominal battens at 1 ft. 4 in. centres. As a base for plaster these boards minimise drumming.

Thermal conductivity of a sample of Bowater ½ in. insulation board (approximate density of insulation board : 16½ lb. per cu. ft.):

Cold face temperature		Hot face temperature		Thermal conductivity	
				Gram. cals. per sq. cm. per second for 1 cm. thickness and 1 deg. C. difference in temperature	B.Th.U. per sq. ft. per hour for 1 in. thickness and 1 deg. F. difference in temperature
Deg. C.	Deg. F.	Deg. C.	Deg. F.		
18	64	30	86	0·00012	0·35

Bowater standard hardboard: This is manufactured entirely of wood fibres highly compressed to give a high degree of resistance to wear and moisture. The board is of a homogeneous nature and rich brown in colour, glazed on one face and textured on the other. Although the natural finish is pleasing, it also provides an excellent base for all forms of decoration, as described on Sheet 15.C4. Boards can be cut and worked with ordinary woodworking tools and can be bent to any reasonable curve without steam.

Bowater leathergrained hardboard: This is similar to standard hardboard but one surface is patterned during manufacture to represent a leather grain.

Bowater reeded hardboard: Standard hardboard patterned during manufacture with lengthwise reeds, ¾ in. wide.

Bowater perforated hardboard: Standard hardboard perforated with $\frac{3}{16}$-in. holes at ½-in. or ¾-in. centres.

Bowater super hardboard: This is similar to standard hardboard, but possessed of greater strength, moisture resistance and wearing properties. It is specially recommended for concrete form lining, floor covering, van bodies and all external uses.

Compiled from information supplied by:

Building Boards Division,
Bowaters Sales Company Limited.
Address : Bowater House, Stratton Street, London, W.1.
Telephone : Mayfair 8080.

Irish Wallboard Company Limited.
Address : Athy, County Kildare.
Telephone : Athy 80.

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28 Victoria Street, Westminster, S.W.1. Telephone: ABBey 6542

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7		Sandbox	1 0 0	8 0 0				
		Excavation, 8 cu. yds.						
		Mass concrete foundation, 12·5 sq. yds.		6 17 6				
		45 ft. run, precast concrete kerb	2 9	2 1 3				
		8 tons washed pit sand	16 0	6 8 0				
				5 0 0				
					28 6 9			21 2 6
8		Contingencies (England 20%, Scotland 5%)						
		for replacement of trees		3 10 0	3 10 0		17 6	
		for replacement of shrubs		13 15 0	13 15 0		3 8 9	
		for replacement of herbaceous		5 10 0	5 10 0		2 6 6	
		for replacement of hedges		1 12 6	1 12 6		3 3	
		for resowing of grass } 5 per cent.						
		for additional topsoil		8 5 6	8 5 6		4 14 9	
							11 10 9	11 10 9
		Total Capital Cost			533 12 3			370 6 8
9		Estimated cost of annual maintenance			87 8 6			69 6 8

Landscape Rent per House per Week

	£ s. d.
Capital cost for 80 houses	533 12 8
Capital cost per house	6 13 5

Assuming loan with 60 year amortization at 4¼ per cent. interest, half yearly payments = weekly payments = 6·67 × 0·0231 = 10·006 = 1½d.

Thus capital costs can be retired by weekly payments of 1½d.

Maintenance cost per annum, 80 houses

Maintenance cost per annum, per house

Maintenance cost per house per week

Capital cost	= 1½d.
Maintenance cost	= 5d.
Landscape Rent	= 6½d.

Landscape Rent per House per Week

	£ s. d.
Capital cost for 80 houses	370 6 8
Capital cost per house	4 12 7

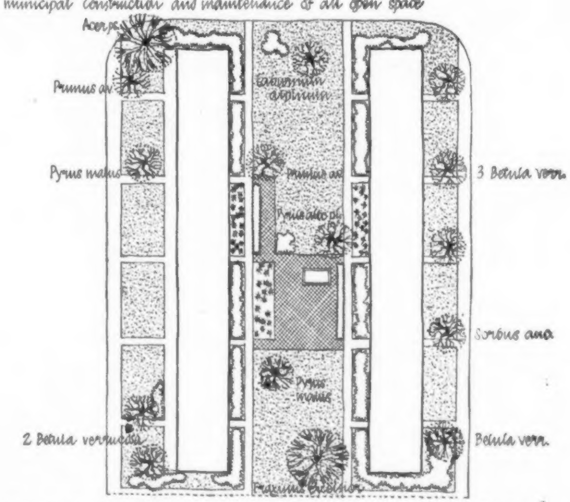
Assuming loan with 60 year amortization at 4¼ per cent. interest, half yearly payments = £4·629 × 0·0231 = £1069

Weekly payments = £0·1069 ÷ 26 = £0·004

Thus capital costs can be retired by a weekly payment per house of 1d.

Maintenance cost, per annum for 80 houses	= 69 6 8
Maintenance cost, per annum per house	= 17 4
Maintenance cost, per house per week	= 4
Capital Cost	= 1d.
Maintenance Cost	= 4d.
Landscape Rent	= 5d. per house per week

four-storey development : internal court plan
municipal construction and maintenance of an open space



Kleinpolder, Rotterdam
80 houses

TECHNICAL SECTION

CURRENT PRICES FOR MEASURED WORK

Prepared by Davis, Belfield & Everest, chartered quantity surveyors

Prices are for work executed complete and are for an average job in the London area. All prices include overhead charges and profit for the general contractor. Current prices of materials and rates of wages last appeared in the JOURNAL *for February* 9

PRELIMINARIES

To all valuations for measured work add for Preliminaries, Water and Insurances, according to the nature of the job (say)		10%

EXCAVATOR

Excavation

N.B.—The following prices are applicable to hand excavation in heavy soil.

Surface digging, 6″ deep	Yd. super	1/1
Ditto, 12″ deep	,,	2/2
Excavating not exceeding 10′ 0″ deep to reduce levels	Yd. cube	8/10
Excavating not exceeding 5′ 0″ deep to form basement	,,	10/-
Ditto exceeding 5′ 0″ and not exceeding 10′ 0″ deep ditto	,,	14/5
Excavating not exceeding 5′ 0″ deep to form surface trenches	,,	12/2
Ditto exceeding 5′ 0″ deep and not exceeding 10′ 0″ deep ditto	,,	16/8
Excavating not exceeding 5′ 0″ deep to form basement trench commencing 10′ 0″ deep	,,	21/1

Disposal

Returning, filling and ramming around foundations	Yd. cube	3/11
Wheeling excavated soil not exceeding 100 yards and depositing	,,	4/5
Ditto and spreading and levelling	,,	5/9
Ditto, ditto, and consolidating to make up levels under floors and pavings	,,	7/4
Filling into lorries and carting away	,,	14/1

EXCAVATOR—(*continued*)

Planking and Strutting

Planking and strutting to sides of surface or basement excavation not exceeding 5′ 0″ deep	Ft. super	-/7
Ditto not exceeding 10′ 0″ deep	,,	-/9
Planking and strutting to sides of surface trenches not exceeding 5′ 0″ deep (both sides measured)	,,	-/2
Ditto not exceeding 10′ 0″ deep (ditto)	,,	-/3

Hardcore

Hardcore filled in, in layers, each layer well rammed with a mechanical rammer	Yd. cube	19/2
Bed of ditto, 4″ thick	Yd. super	3/2

CONCRETOR

Concrete (Basic Prices)

Portland cement concrete 1 : 3 : 6 with 1½″ coarse aggregate in foundations and masses exceeding 12″ thick	Yd. cube	68/10
Ditto 1 : 2 : 4 with ¾″ coarse aggregate ditto	,,	75/2

Add to basic prices for:—

Working around rod or mesh reinforcement	,,	4/5
Being in beds less than 12″ thick (6″-12″)	,,	2/3
Ditto less than 6″ thick (4½″-6″)	,,	6/8
Being in small quantities not exceeding 3′ cube	,,	17/9
Being in suspended floors and roofs	,,	13/4
Being in walls not exceeding 6″ thick	,,	22/2
Ditto exceeding 6″ but not exceeding 12″ thick	,,	15/6
Ditto exceeding 12″ thick	,,	11/1

CONCRETOR—*(continued)*

Add to Basic Prices for:—

Being in lintels, beams, etc., not exceeding 72 sq. in. sectional area	Yd. cube	33/3
Ditto exceeding 72 and not exceeding 144 sq. in. sectional area	,,	26/7
Ditto exceeding 144 sq. in. sectional area	,,	22/2
Being in columns not exceeding 72 sq. in. sectional area	,,	42/2
Ditto exceeding 72 and not exceeding 144 sq. in. sectional area	,,	33/3
Ditto exceeding 144 sq. in. sectional area	,,	26/7

Formwork

Flexible formwork to soffits of barrel vault roofs....	Yd. super	20/-
Close boarded formwork and supports to soffits of floors not exceeding 12′ high	,,	16/7
Ditto to vertical faces of walls (both sides measured)	,,	16/9
Ditto to sides and soffits of lintols and beams	Ft. super	2/5
Add to the above for wrot boarded formwork and rubbing down concrete	Yd. super	3/-

Reinforcement

⅝″ to 1″ diameter mild steel rod reinforcement, hooked, bent and tied at intersections as required and fixing in concrete	Cwt.	56/9
½″ diameter ditto	,,	63/5
¼″ diameter ditto	,,	82/1
Steel wire mesh fabric reinforcement to B.S. 1221, weighing 4·71 lb. per yard super, well lapped at joints and embedded in concrete	Yd. super	3/9
Ditto weighing 9·32 lb. per yard super ditto	,,	7/3

BRICKLAYER

Common Brickwork

		Flettons	Rough stocks
Reduced brickwork one brick thick in cement-lime mortar (1 : 3 : 9)	Yd. super	31/5	38/-
Add to the above:—			
If in cement mortar (1 : 3)	,,	-/3	-/3
If circular on plan to flat sweep	,,	5/2	5/7
Ditto to quick sweep	,,	10/4	11/1
Half brick wall in cement lime mortar (1 : 3 : 9)	,,	17/1	20/4
Ditto built fair and pointed both sides with a neat flush joint	,,	19/4	22/8
One brick wall built fair and pointed both sides with a neat flush joint....	,,	37/3	43/10
11″ hollow wall with 2″ cavity and galvanized iron twisted ties	,,	37/1	43/8

Engineering Brickwork

		Lingfield Engineering Wirecuts	Blue Pressed bricks
Reduced brickwork one brick thick in cement mortar (1 : 3)	Yd. super	47/3	83/10
Half brick wall in cement mortar (1 : 3)	,,	25/6	44/1
Ditto built fair and pointed both sides with a neat flush joint	,,	27/8	47/1
One brick wall built fair and ditto	,,	52/1	89/4

Sundries

Extra for internal fair face and flush pointing	Yd. super	1/3
Horizontal damp-proof course of two courses of slates and bedding and pointing	Ft. super	4/-
Ditto of hessian base bitumen well lapped at joints	,,	-/10
Fixing only metal window, size 1′ 8″ × 4′ 0″, including cutting and pinning lugs to brickwork, bedding frames and pointing in mastic one side	Each	9/2
Ditto, 3′ 3″ × 4′ 0″ ditto	,,	14/2
Ditto, 6′ 6″ × 4′ 0″ ditto	,,	25/-

Partitions

		2″	2½″	3″	4″
Clinker concrete solid partition blocks to B.S. 2028 (Type B and C) and setting in cement mortar	Yd. super	8/8	10/1	11/11	14/6
Hollow clay partition blocks to B.S. 1190, keyed on both sides and ditto	,,	9/4	10/4	12/-	14/11
Moler hollow partition blocks, keyed on both sides and ditto	,,	20/-	21/6	23/4	28/1

BRICKLAYER—*(continued)*

Facings

		Ordinary facings, p.c. 256/6 M.	Ordinary facings, p.c. 271/4 M.	White glazed facings p.c. 1,504/- M for stretchers 1,480/6M for headers and pointing with white cement
Extra over common brickwork built with bricks p.c.113/- M for facings as described and pointing with a neat weathered joint:—				
To solid wall in Flemish bond	Yd. super	15/8	16/9	92/8
To cavity wall in stretcher bond	,,	12/10	13/8	74/4
To ditto in Flemish bond with snapped headers	,,	15/3	16/3	—
Half brick wall in facings in stretcher bond built fair and pointed one side with a neat weathered joint	,,	28/7	29/5	—
Ditto pointed both sides	,,	29/9	30/6	—
One brick wall in facings built fair and pointed one side	,,	53/3	54/10	—
Ditto pointed both sides	,,	54/5	56/-	—
Brick on end flat arch in facings 4½″ on soffit and 9″ high and pointing	Ft. run	3/4	3/5	—
Brick on edge coping to 9″ wall with two courses plain tiles under, laid breaking joint, two cement angle fillets and pointing	,,	5/6	5/7	—

ASPHALTER

Tanking

		To B.S. 1097	To B.S. 1418
Horizontal asphalt tanking in three thicknesses on brick or concrete	Yd. super	18/5	29/5
Vertical ditto	,,	23/8	33/7

Roofing

		To B.S. 988	To B.S. 1162
¾″ asphalt flat in two thicknesses on and including felt underlay	Yd. super	13/2	22/1
Asphalt skirting 6″ high with angle fillet at bottom and rounded top, turned into groove	Ft. run	2/4	2/7
Asphalt fascia 6″ high with solid water check roll at top and undercut drip at bottom	,,	4/6	5/3

DRAINLAYER

Trenches and Beds

N.B.—The following prices are applicable to hand excavation in heavy soil, only requiring planking and strutting for depths of 3′ or more.

		4″	6″
Excavate trenches for 4″-9″ pipes, including planking and strutting, filling in and ramming, and wheeling and spreading surplus:—			
For each 12″ in depth, for trenches not exceeding 3′ 0″ deep	Yd. run		3/7
Ditto for trenches exceeding 3′ 0″ and not exceeding 5′ 0″ deep	,,		5/-
Ditto for trenches exceeding 5′ 0″ and not exceeding 10′ 0″ deep	,,		8/-
6″ concrete (1 : 3 : 6) bed and benching for pipes	Yd. run	9/4	10/11
6″ ditto, and surround	,,	15/2	18/3

Drains

		3″	4″	
Clayware butt-jointed land drains and laying in trench	Ft. run	-/5	-/6	
		4″	**6″**	**9″**
"Seconds" quality glazed stoneware socketed drains and laying and jointing in trench	,,	2/3	3/3	5/4
"British Standard" quality ditto	,,	2/8	3/11	6/7
Extra on "Seconds" quality for bends	Each	3/7	5/3	15/2
Ditto "British Standard" quality ditto	,,	4/5	6/6	19/4
Extra on "Seconds" quality for equal single junction ...	,,	6/1	8/9	19/-
Ditto "British Standard" quality ditto	,,	7/5	10/10	23/9

DRAINLAYER—(*continued*)

		4"	6"	9"
Cast iron socketed drains to B.S. 437 and laying and jointing in trench	Ft. run	12/8	19/1	37/11
Extra for short radius bend	Each	26/1	62/10	165/6
Extra for single junction	„	47/9	105/2	273/8

Fittings, etc.

		4"	6"
Glazed stoneware trapped gulley with galvanized grating and outlet and setting in concrete	Each	25/–	46/5
Ditto with vertical inlet ditto	„	31/1	52/7
Cast iron trapped gulley with high invert, grating, and 4" outlet and setting in concrete	„	73/8	—
Ditto with vertical inlet ditto	„	84/–	—
Glazed stoneware intercepting trap with inspection arm, stopper and chain and fixing in manhole and jointing to drain	„	79/4	92/4
Brown glazed stoneware half round straight channels and bedding and jointing in cement mortar	Ft. run	2/1	3/1
Ditto ordinary channel bend and ditto	Each	6/2	8/8
Cast iron coated single seal manhole cover and frame to B.S. 497 Grade C and setting frame		24" × 18"	24" × 24"
in cement and cover in grease	„	47/3	69/9
Galvanized ditto	„	79/3	120/3

PAVIOR

Cement and sand (1 : 3) floated screed to receive pavings		¾"	1"	1¼"
	Yd. super	3/10	4/8	5/3
Ditto trowelled smooth to receive linoleum	„	4/3	5/1	5/8
Cement and sand (1 : 3) paving trowelled hard and smooth	„	4/3½	5/1½	5/8½
Granolithic paving (1 : 2½) laid on concrete		1"	1¼"	1½"
	„	6/8	7/7	8/6
½" red composition paving to B.S. 776 laid on prepared screed	Yd. super			16/7
⅝" terrazzo paving (Portland cement and spar aggregate) laid on prepared screed	„			34/2
Extra for white or cream cement	„			5/3
⅛" rubber flooring in all colours, laid on prepared screed	„			55/2
⅛" × 12" × 12" rubber tile flooring ditto	„			45/8
3/16" × 12" × 12" cork tile flooring (brown shades) laid in mastic on prepared screed, surfaced and polished....	„			45/11
6" × 6" red quarry tile paving to B.S. 1286 laid on prepared screed with			⅝"	⅞"
straight joints	Yd. super		26/9	30/3
6" × 6" buff quarry tiles as last	„		30/3	34/4
2½" (finished) gravel path laid on prepared bed, well watered and rolled to cambers and falls	„		3/–	

MASON

Portland stone and all labours in pilasters, and quoins	Ft. cube	49/7	
Ditto in jambs, lintols, etc.	„	51/10	
Ditto in arches	„	65/–	
Ashlar av. 6¾" on bed with plain dressed face....	Ft. super	29/3	

		Portland	Artificial
Portland stone or artificial stone to B.S. 1217:—			
4½" × 4" sill, sunk, weathered, throated and grooved for water bar, set and jointed in cement mortar	Ft. run	10/3	4/5
9" × 3" ditto	„	13/6	6/9
2" × 12" Coping, weathered and twice throated, set and jointed as last	„	12/–	5/10
3" × 12" Ditto	„	16/2	8/11
5" × 12" Saddle back coping twice throated, set and jointed as last	„	25/4	13/7
6" × 12" Ditto	„	32/–	15/4

SLATER, TILER AND ROOFER

Slates

		20" × 10"	16" × 10"
Best Bangor slates to B.S. 680 laid with 3" lap, each slate nailed with two stout copper nails	Square	351/9	283/6
Ditto hung vertically to dormer cheeks and gables	„	357/–	291/4

SLATER, TILER AND ROOFER—(*continued*)

Tiles

		Hand made	Machine made
Best sand faced plain (nibbed) tiles to B.S. 402, 10½" × 6½" laid to a 4" gauge with each tile in every fourth course nailed with galvanized nails	Square	205/9	185/3
Ditto hung vertically to dormer cheeks and gables to 4½" gauge with each tile nailed with galvanized nails	„	225/9	203/9
Berkshire hand made sand faced red pantiles 14½" × 10" laid to 2½" head and 1½" side laps, each tile in every third course nailed with galvanized nails	Square		205/3
Ditto to mansard slopes....	„		221/–
Bridgwater hand made Double Roman red sandfaced tiles 16½" × 14" laid to 3" laps, each tile in every course nailed with galvanised nails	„		139/8
Concrete plain (nibbed) tiles to B.S. 473, 10½" × 6" laid as before described for plain tiles....	„		121/9
Ditto hung vertically to dormer cheeks, and gables, ditto	„		150/2
Concrete interlocking tiles 15" × 9" laid to 3" lap, each tile in every third course nailed with galvanized nails	„		94/6
Ditto to mansard slopes ditto	„		100/9

Asbestos Cement

6" corrugated asbestos cement sheeting fixed to wood roofs with galvanized drive screws and washers with a side lap of 1½ corrugations and an end lap of 6"	„	110/9
6" ditto but fixed vertically	„	121/3
Add to both last if fixed to steel purlins or sheeting rails with galvanized hook bolts	„	5/3

Felt

		Two layer	Three layer
Reinforced bituminous roofing felt laid with 3" laps and nailed to rafters at 18" centres with galvanized clout nails	„		21/3
One-ply bitumen felt to B.S. 989 laid on concrete. Each layer bedded in hot bitumen	Yd. super	9/5	12/7
Extra on last for finishing with granite chippings	„	–/9½	–/9½

CARPENTER

Carcassing

Softwood, sawn and fixed, in plates, sleeper joists and lintols	Ft. cube	16/5
Ditto in floor and ceiling joists	„	18/6
Ditto in stud partitions, purlins and struts	„	20/5
Ditto in rafters, framing and ridge	„	20/3
Ditto in hip and valley rafters including cutting rafters to sizes	„	22/9

Battening and Boarding

		Roof slopes	Vertical hanging
¾" × 2" battens nailed to softwood for 20" × 10" slates to 8½" gauge	Square	32/3	34/5
Ditto 16" × 10" slates to 6½" gauge	„	42/–	45/2
¾" × 1½" ditto for 10½" × 6" tiles to 4" gauge (4½" for vertical hanging)	„	54/7	52/6
		Roof slopes	Mansards
¾" × 2" ditto for 14½" × 10" pantiles to 12" gauge	„	23/1	25/3
¾" × 1½" ditto for 15" × 9" concrete interlocking tiles to 12" gauge	„	18/4	19/5
		¾"	1"
Roof boarding in batten widths close jointed and fixed to flat or sloping roofs	„	122/–	151/8
Ditto tongued and grooved and prepared for felt roofing including firring to falls	„	181/4	212/6
Sawn gang boarding fixed to joists in roof	Ft. super	1/4	1/8
Wrot and crosstongued eaves soffit	„	2/2	2/6
6" wrot and grooved eaves fascia planted on	Ft. run	1/–	1/2

Wall and Ceiling Boards

		Vertically	Soffits
½" fibre board to B.S. 1142 fixed with galvanized flat headed nails to softwood	Yd. super	6/–	6/2
3/16" asbestos cement flat sheeting to B.S. 690 fixed as last	„	7/8	8/1
¼" ditto	„	9/1	9/7

JOINER

Floors and Skirtings

(All thicknesses stated are nominal)

		⅞"	1"	1¼"
Plain edge softwood flooring in batten widths nailed to floor joists	Square	152/-	169/3	203/6
Tongued and grooved ditto	„	162/3	180/3	216/-

1" double grooved and tongued and grooved wood block floor laid herringbone with two-block border, set in hot mastic composition on prepared screed and wax polished:—		
Swedish softwood	Yd. super	29/-
European beech	„	34/2
English oak	„	46/3
European oak	„	41/-
Burma teak	„	46/3
Australian jarrah	„	37/10

		Sectional area	
		3" to 6"	Over 6"
Softwood skirtings with splayed or molded top edge, planted on (per inch sectional area)	Ft. run	-/2¾	-/2¼
Extra for grounds plugged to brickwork	„	-/8	

Windows in Softwood

		1½"	2"
Rebated and molded softwood fanlights and casement sashes divided into squares for glass	Ft. super	2/10	3/4
Extra for hanging	Each	5/6	5/6
Cased frames with 6" × 3" oak sill and 2" molded double hung sashes including pulleys, line and weights	Ft. super	—	11/-

N.B.—The above prices are for purpose made joinery. Standard pattern casement windows and double hung sashes and frames to B.S. 644 are cheaper.

Doors in Softwood

		1½"	1¾"	2"
Framed ledged and braced doors filled in with 1" T. & G. and V-jointed boarding and hanging	Ft. super	4/5	5/7	5/7
Four-panel door, square both sides and hanging	„	4/5	5/7	5/7
Ditto molded one side	„	4/8	5/10	5/10
Ditto molded both sides	„	4/11	6/2	6/2

N.B.—The above prices are for purpose made doors. Standard panelled doors to B.S. 459 are cheaper.

1⅜" standard flush doors 2' 6" × 6' 6" internal pattern	Each	49/7
2" ditto 2' 9" × 6' 6" external pattern	„	76/7

Linings, Frames, etc., in Softwood

		Sectional area	
		Up to 6"	6" to 12"
Window and door linings etc. (per inch in sectional area)	Ft. run	-/4	-/3½
Frames wrot all round and framed (ditto)	„	-/3	-/3
Mullions, transomes and cills (ditto)	„	-/3½	-/3½
		2" to 4"	4" to 6"
Moldings, architraves, etc. (ditto)	„	-/4¾	-/4
		Thickness	
		1"	1¼"
6" Window boards with rounded nosings, tongued at back and including bearers	„	2/10	3/1
Extra for each additional 3" width	„	-/6½	-/8

Shelving and Fittings in Softwood

		¾"	1"
Shelving of 2" slats spaced 1" apart on bearers (measured separately)	Ft. super	2/-	2/5
Shelving on ditto	„	2/2	2/9
Cross tongued shelving on ditto	„	2/5	3/-
Shelving 9" wide on ditto	Ft. run	1/10	2/2
2" shelf bearers plugged to walls	„	-/7	-/10
The following in framed up cupboard fittings:			
T. & G. & V-jointed back	Ft. super	3/4	4/2
Cross tongued top, bottom shelf or division	„	3/5	4/3
1¼" flush cupboard doors	„		5/3
Labour rebate or groove	Ft. run		-/2
Labour cross-grain	„		-/2½
1" × 2" bearers screwed on	„		-/8

N.B.—The above prices are for purpose-made cupboard fittings. Standard pattern kitchen fittings to B.S. 1195 are cheaper.

IRONMONGERY

		Soft-wood	Hard-wood
3" steel butts (medium quality)	Pair	5/6	6/9
4" ditto (ditto)	„	7/4	8/11
Double action floor springs and top centres including filling boxes with oil P.C. 149/3	Each	184/3	190/10
Overhead check action door springs, P.C. 66/8	„	85/10	90/-

IRONMONGERY (*continued*)

		Soft-wood	Hard wood
6" barrel bolts. P.C. 5/6	Each	7/10	8/5
Cupboard locks. P.C. 8/2	„	12/9	14/-
Norfolk latches. P.C. 5/6	„	11/1	12/9
Cylinder night latch. P.C. 15/11	„	23/9	25/10
Mortice latch. P.C. 9/4	„	15/3	16/11
Rim lock. P.C. 10/-	„	14/9	16/-
Mortice lock. P.C. 15/2	„	22/11	25/1
Door furniture. P.C. 24/-	Set	27/8	28/-
Sash fasteners. P.C. 9/-	Each	11/11	12/7
Casement fasteners. P.C. 7/11	„	10/3	10/9
Casements stays. P.C. 11/6	„	14/2	14/8

STEEL AND IRONWORKER

Structural Steelwork

The following prices are for Basic sections only. Prices for other sections vary roughly in proportion to the price of the steel ex mills—see "Current Market Prices of Materials."

		£	s.	d.
R.S.J.—in steel framed structures hoisted and fixed complete	Ton	66	0	0
Riveted compound girders including plates and rivets	„	77	0	0
R.S. stanchions including caps, bases, cleats, etc.	„	76	0	0
Riveted compound stanchions ditto	„	80	10	0
Riveted roof trusses with flat and angle members, plates, cleats, etc., 30' span	„	108	0	0
Ditto 40' span	„	102	0	0

Sundries

Simple wrot iron balustrades fixed complete (excluding mortices etc.)	Cwt.	12	2	0
Bolts with heads, nuts and washers and fixing	„	12	2	6

PLASTERER AND TILE FIXER

24 gauge expanded metal lathing and fixing to softwood soffits	Yd. super	6/-

Lime and Gypsum Plaster

Three coat lime and two coat "Sirapite" or similar gypsum plaster:—		Lime	"Sirapite"
On brick walls and partitions	Yd. super	6/10	5/3
On concrete soffits including hacking	„	8/3	7/7
On soffit of E.M.L. (measured separately)	„	7/1	8/3

⅜" Gypsum plasterlath fixed to softwood soffits, in accordance with manufacturer's instructions, finished with setting coat of suitable plaster	Yd. super	8/2
Plaster moulded cornice or cove (per inch in girth)	Ft. run	-/5

Cement Rendering

Rendering in Portland cement lime sand (1:1:6) and setting in Keenes cement on brick walls and partitions	Yd. super	6/6
Portland cement and sand (1 : 3) plain face trowelled smooth on ditto	„	6/-
Portland cement and sand (1 : 3) screed for tiling on ditto	„	3/2

Wall Tiler

6" × 6" × ⅜" standard quality white glazed wall tiles set and jointed on prepared screed	Yd. super	43/-
Ditto eggshell matt or glossy glazed enamelled	„	55/2

EXTERNAL PLUMBER AND COPPERSMITH AND ZINC WORKER

		Flats	Gutters, flashings, etc.	Stepped flashings
Milled sheet lead and labour	Cwt.	236/3	252/-	266/3
24 S.W.G. sheet copper and labour	Ft. super	6/9	7/1	7/4
23 S.W.G. sheet copper and labour	„	7/-	7/4	7/7
14 gauge zinc and labour	„	2/10	3/1	3/3
20 S.W.G. super purity aluminium and labour	„	5/-	5/1	5/1
20 S.W.G. commercial quality aluminium and labour	„	3/11	4/-	4/-

Rainwater Pipes and Gutters

		3"		4"	
		With holder-bats	With nails	With holder-bats	With nails
Cast iron medium section ($\frac{3}{16}$" metal) R.W. pipes and jointing and fixing to walls with pipe nails and distance pieces or holderbats (cutting and pinning holderbats measured separately)	Ft. run	5/9	4/7	6/10	5/9

EXTERNAL PLUMBER AND COPPERSMITH AND ZINC WORKER—(*continued*)

		3" With holder bats	3" With nails	4" With holder bats	4" With nails
		24 G.		20 G.	
Pressed steel R.W. pipes and ditto	Ft. run	4/1	3/5	5/10	5/-
Asbestos cement R.W. pipes and ditto	,,	3/1	—	5/-	—
		4" ⅛"	4" 3/16"	6" ⅛"	6" 3/16"
Cast iron half round eaves gutter and jointed and fixed with brackets to fascia	,,	3/5	3/10	4/11	5/10
Ditto O.G. ditto	,,	3/8½	4/8	5/4	7/2
18 Gauge pressed steel half round ditto	,,	3/-		4/-	
Ditto O.G. ditto	,,	3/7		4/11	
Asbestos cement half round ditto	,,	2/7		3/11	

Soil and Ventilating Pipes

		3"		4"	
Lead soil, waste and ventilating pipes (17 lb. per yard for 3" and 22·8 lb. per yard for 4" diameter) fixed to walls with lead tacks and brass screws	Ft. run	14/6		20/3	
		Heavy 13/64"	Medium 3/16"	Heavy 13/64"	Medium 3/16"
Medium or heavy section cast iron soil, waste and ventilating pipes with caulked joints, fixed to walls, with pipe nails and distance pieces	,,	6/1-	5/7	7/11	7/7

INTERNAL PLUMBER

Lead Pipes

Prices are based upon the following weights per yard.

		½" lb.	¾" lb.	1" lb.	1¼" lb.
Supply		7	11	16	21
Distributing		6	9	12·5	16
Flushing and overflow		3	5	7	9
Waste and ventilating		—	—	—	7
		½"	¾"	1"	1¼"
Supply pipe in trench (measured separately)	Ft. run	4/7	6/11	9/10	13/-
Ditto fixed to walls and ceilings	,,	5/1	7/7	10/9	14/4
Distributing pipe fixed to walls and ceilings	,,	4/7	6/6	8/10	11/7
Flushing and overflow pipe ditto	,,	2/11	4/5	5/10	7/8
Waste and ventilating pipe ditto	,,	—	—	—	6/11
Joints to fittings	Each	5/9	6/9	7/4	8/1
Bends	,,	—	—	—	2/3
Branch joints	,,	7/3	8/6	9/-	10/7

Steel Tubes and Fittings

Galvanized steel tubes to B.S. 1387 Class C with screwed joints in red lead as supply pipe laid in trench (measured separately)	Ft. run	2/3½	2/7	2/9	3/4½
Ditto Class B ditto fixed to walls and ceilings as supply, distributing, waste pipe, etc.	,,	2/2	2/6	2/7½	3/3
Joints to fittings	Each	4/3½	5/-	5/10½	7/-
Bends	,,	—	—	4/3½	6/1½
Tee, equal or reducing	,,	2/6½	3/-	3/6	4/10

Copper Tubes and Fittings

Prices are based upon the following gauges :—

		½"	¾"	1"	1¼"
Supply		18	17	16	16
Distributing, waste, etc.		19	19	18	18
Copper tubes to B.S. 1386, as supply pipe laid in trench (couplings and trench measured separately)	Ft. run	2/5½	3/8	5/1	6/5
Ditto to B.S. 659 as distributing, waste pipes, etc., fixed to walls and ceilings. Couplings measured separately	,,	2/6½	3/1	4/3½	5/3
Brass compression type couplings—copper to copper	Each	5/4	6/3	8/7	10/10
Ditto bends	,,	6/11	8/2	11/8	14/6
Ditto tees	,,	9/-	10/2	15/6	22/4

Sanitary Fittings

		£	s.	d.
Fireclay sinks 24" × 18" × 10" including cutting and pinning brackets to tiled wall. P.C. 75/-	Each	5	16	0
Combined metal sink and drainer 42" × 18" × 8¼" to bearers (measured separately). P.C. 330/-	,,	19	0	0

INTERNAL PLUMBER—(*continued*)

		£	s.	d.
Fireclay lavatory basin 25" × 18" with taps and towel rail bracket including screwing brackets to tiled wall. P.C. 138/6	Each	8	15	0
Rectangular cast iron porcelain enamelled bath 5′ 6" long, with taps, and panels to side and one end fixed to framing (measured separately) P.C. 390/6	,,	23	0	0
Fireclay w.c. pan with trap, plastic seat, high level cistern and flush pipe, including screwing pan to floor and cistern brackets to backboard. P.C. 200/-	,,	12	10	0
Ditto with low level cistern P.C. 240/-	,,	14	10	0

GLAZIER

		To wood	To metal
18 oz. Ordinary quality sheet glass and glazing with putty in squares not exceeding 4 ft. sup.	Ft. super	1/3	1/6
24 oz. Ditto and ditto	,,	1/5½	1/8
32 oz. Ditto and ditto	,,	2/-	2/2½
⅛" figured, rolled, and cathedral—untinted and ditto	,,	1/8	1/9½
¼" rough cast and ditto	,,	2/-	2/2
¼" wired cast and ditto	,,	2/2½	2/5
¼" Georgian wired cast and ditto	,,	2/2½	2/5
¼" Georgian wired polished plate and ditto	,,	6/11½	7/1
¼" polished plate (glazing quality) and ditto (In squares 5-45 ft. super).	,,	6/11½	7/1

PAINTER

Whitening, Distemper and Paint on Walls

Prepare and twice whiten plastered ceilings	Yd. super	1/3
Prepare and twice distemper with washable distemper on plastered walls and ceilings	,,	1/10
Ditto on brick or concrete	,,	2/5
Prepare and paint two coats emulsion paint on plastered walls	,,	2/8
Prepare, prime, and paint two coats oil colour on plastered walls and ceilings	,,	4/11

Paint on Metal

		Basic price	Add for each additional coat
Prepare, prime, and paint one coat oil colour on general surfaces	Yd. super	3/2	1/6
Ditto metal casements	,,	5/-	2/3
Ditto members of roof trusses	,,	4/1	1/10
Ditto balustrades one side	,,	5/-	2/3
Ditto bars, etc., not exceeding 6" girth	Yd. run	-/10	-/4½
Ditto small pipe	,,	-/10	-/4½
Ditto large pipe	,,	1/8	-/9

Paint on Wood

		Basic price	Add for each additional coat
Knot, prime, stop and paint one coat oil colour on general surfaces of woodwork	Yd. super	3/6	1/5½
Ditto on skirtings, rails, frames, etc., not exceeding 3" girth	Yd. run	-/5½	-/2
Ditto ditto for each additional 3" in girth	,,	-/5	-/2
Ditto on sash squares one side	Dozen	4/9	1/10
Ditto on large sash squares one side	,,	8/6	3/3

Stain and Varnish on Wood

Prepare, size, stain and twice varnish on general surfaces of woodwork	Yd. super	3/11
Ditto on skirtings, rails, frames, etc., not exceeding 3" girth	Yd. run	-/6
Ditto ditto for each additional 3" in girth	,,	-/5½

F.R.I.C.S., F.I.Arb.

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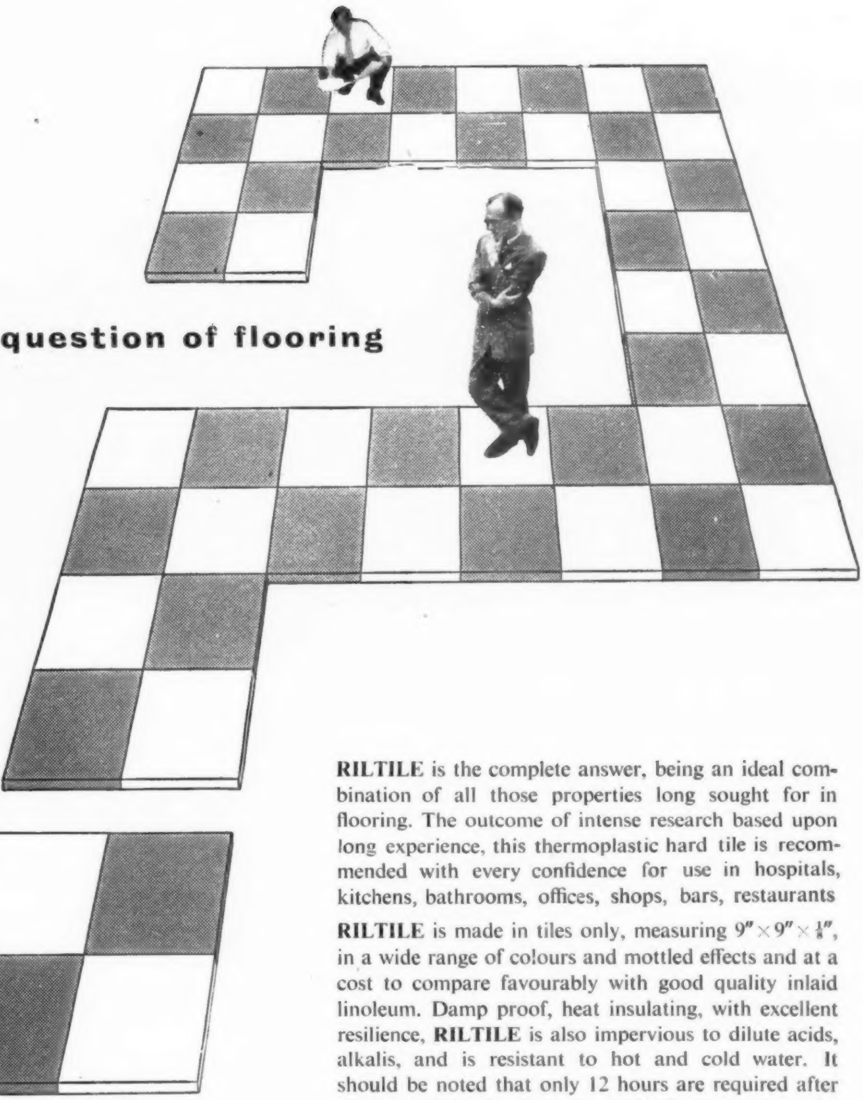
when it's a question of flooring



RILTILE is the complete answer, being an ideal combination of all those properties long sought for in flooring. The outcome of intense research based upon long experience, this thermoplastic hard tile is recommended with every confidence for use in hospitals, kitchens, bathrooms, offices, shops, bars, restaurants

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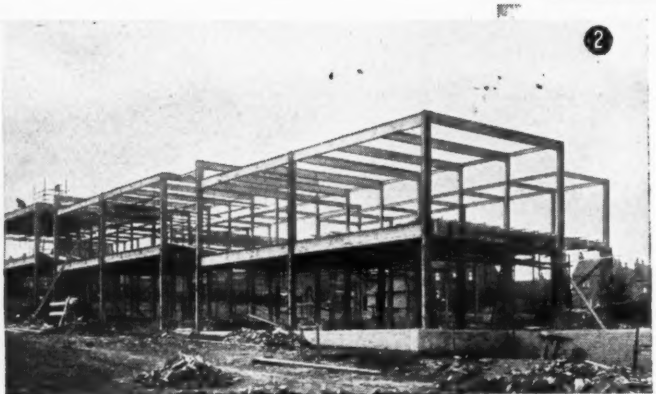

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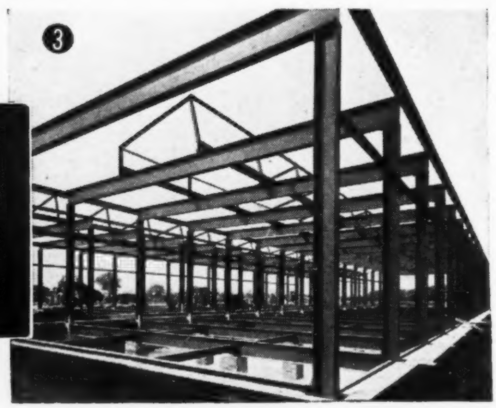

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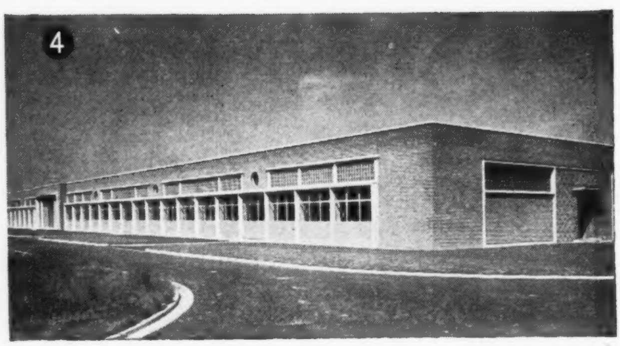

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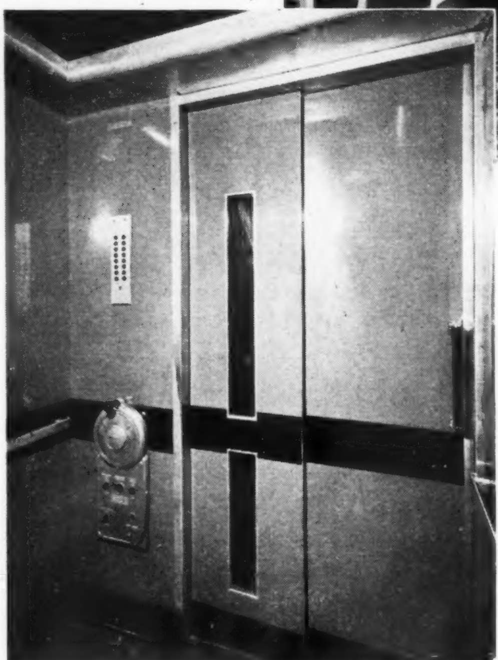
Lift Panelling at Mount Royal, W.1.



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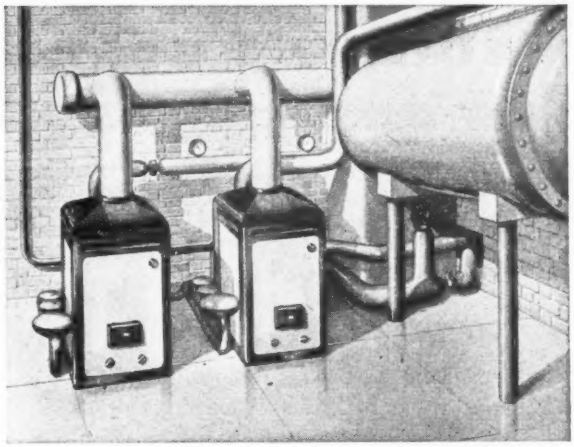

Gas-fired boilers

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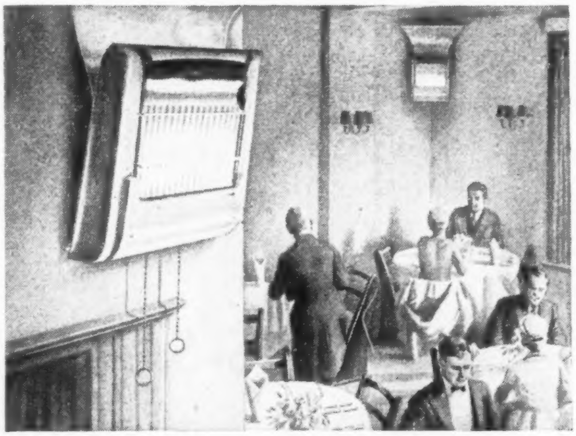
From swimming bath water to salt bath solutions, gas heating has no rival. Gas goes to work rapidly and is simple to operate. Whatever the quantity, whatever the liquid, it burns clean and constant to give you the precise heat you require.



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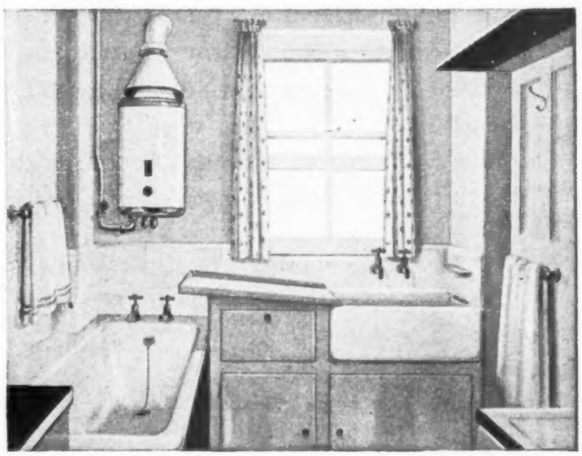
Gas can play an important part in improving housing conditions. Costs are kept low by use of existing gas supplies and absence of elaborate structural work. Gas adaptability is particularly suitable to the conditions found in 'Operation Rescue' properties, and, of course, the popularity of gas for water heating and cooking is unquestioned.



'Operation Rescue'

Apart from its smokelessness and cleanliness, gas gives you infinite, accurate and automatic controllability at every stage. Supply is assured and constant calorific value is guaranteed. And gas saves because it needs no stoking or storage space.

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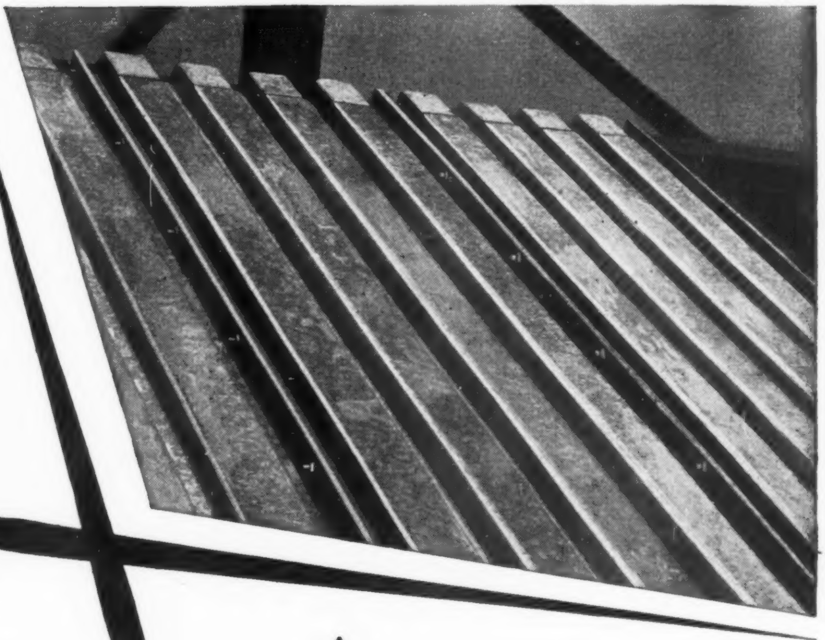
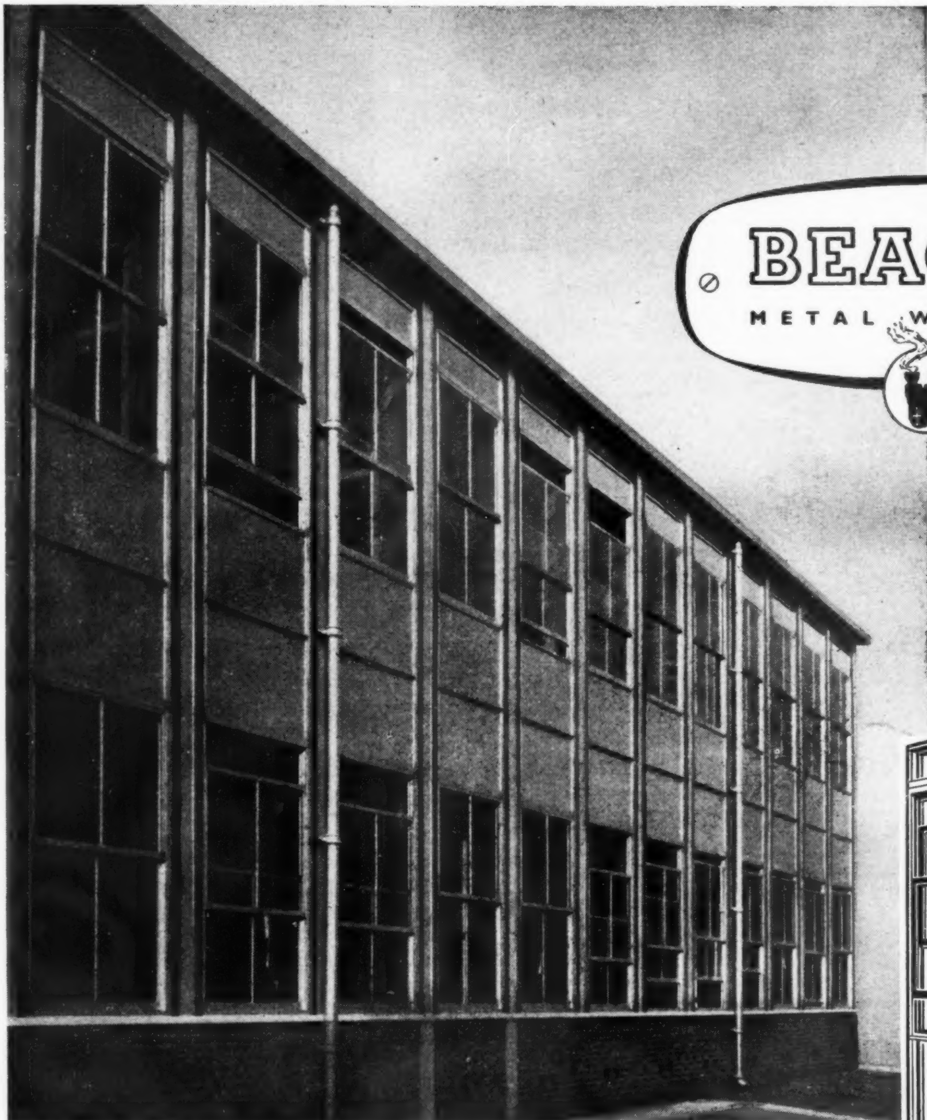
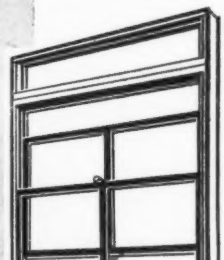




BEACON
METAL WINDOWS



Where first cost is not a primary consideration, the aluminium window has much to commend it. Indeed, when sliding sashes are required, aluminium is the logical — and perhaps the only entirely suitable — material. For the window which, year in and year out, must move at a touch should be built to the closest possible limits of accuracy. And for such a window, aluminium offers one further life-long advantage — its sliding surfaces need neither lubrication nor paint protection.

The Beacon Double-Hung Sash Units, installed in the new Lamp Works Offices of The British Thomson-Houston Co. Ltd., Rugby, and shown above, are typical of a number of similar purpose-made installations produced at our Bilston Works. The services of our experienced team of designers and engineers will be made available to all Architects and others engaged on any project requiring Metal Windows or Wall Cladding.

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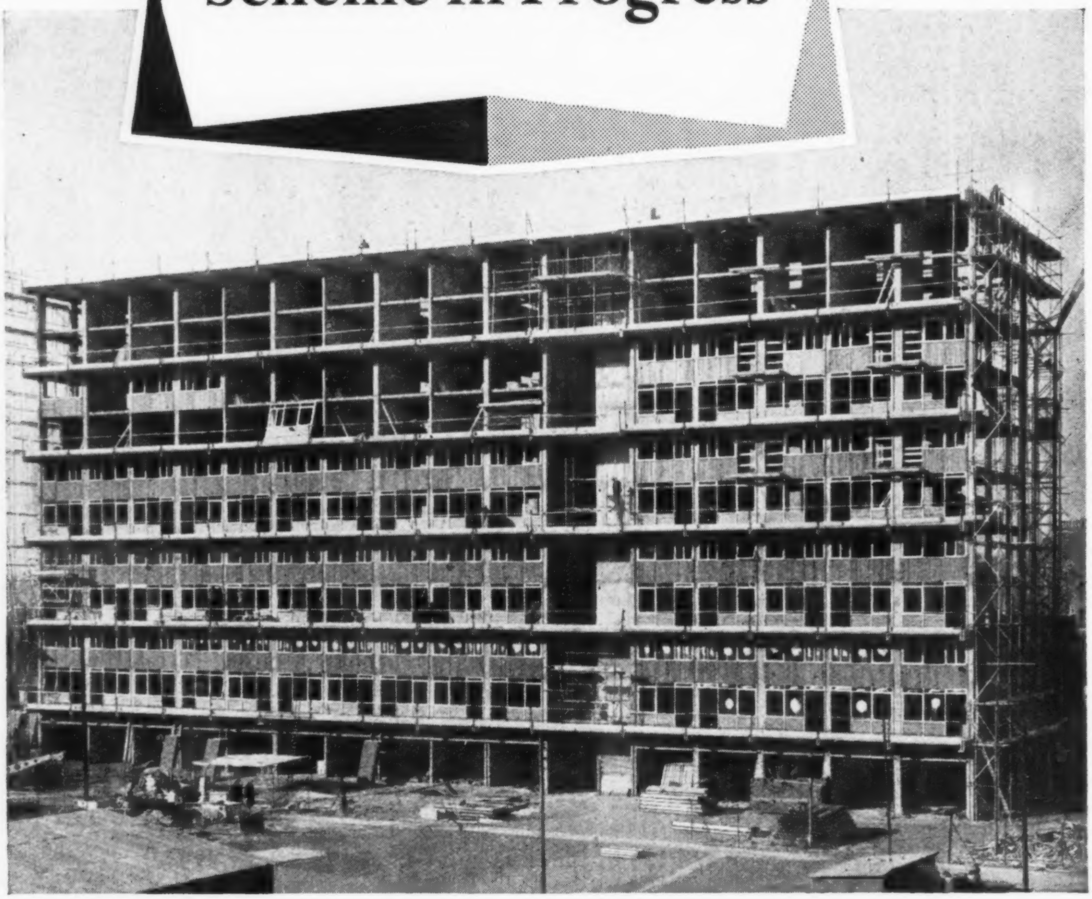
Scheme in Progress



Picton Street Development

An interesting departure in design and construction practice characterises the London County Council scheme at Picton Street, Camberwell, for 682 dwellings in maisonettes, flats, and terrace houses. The Company was nominated as contractor at the planning stage of the project, fourteen months before commencement of work on the site, working with the architect, consulting engineer and others in a design team.

In this way knowledge of new or alternative materials, component handling, and erection techniques, was available at the time when it could most profitably be used, and together with the Company's facilities for research and development has contributed in determining the final design.

Architect to the London County Council
Dr. J. L. Martin, M.A, F.R.I.B.A.

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