The Architects' Journal
November 1 1961 Vol 134 No 18 Price 1s

SfB (15)

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

These are the key to our library production programme, and each week we publish, with the normal AJ, a supplement dealing with one of these elements. Headings in bold type are those dealt with in previous issues. This week's supplement covers the second part of sfb (15). The remaining headings will be published in subsequent issues.

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

(11) Ground : General
(12) Drainage : General
(13) Retaining structures
(14) Roads and pavings: General
(15) Garden : General

(15)
Garden: Fences, gates, walls

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

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Architects and local authorities were asked if they would welcome a cold water cistern that was corrosion free, lightweight, strong, frost resisting and at no extra cost. The overwhelming majority said 'Yes'. The Osma reply—the 30/25 gallon polyester-glass fibre cold water storage cistern—it is the first of a series with varying capacities.

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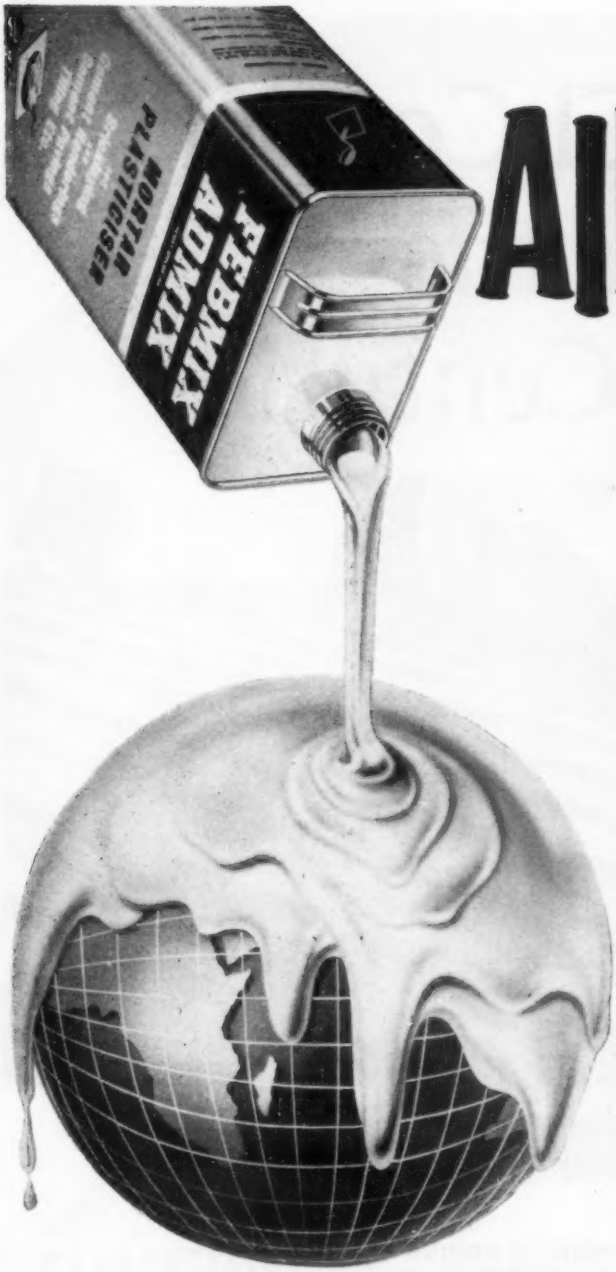

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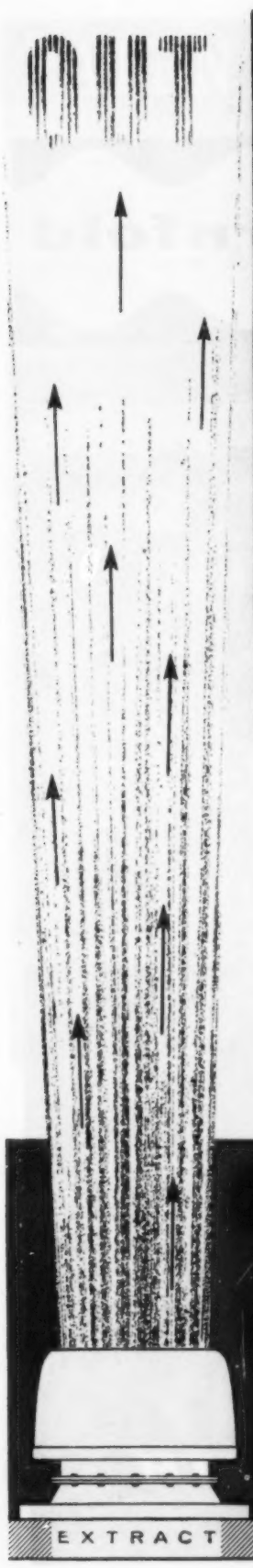

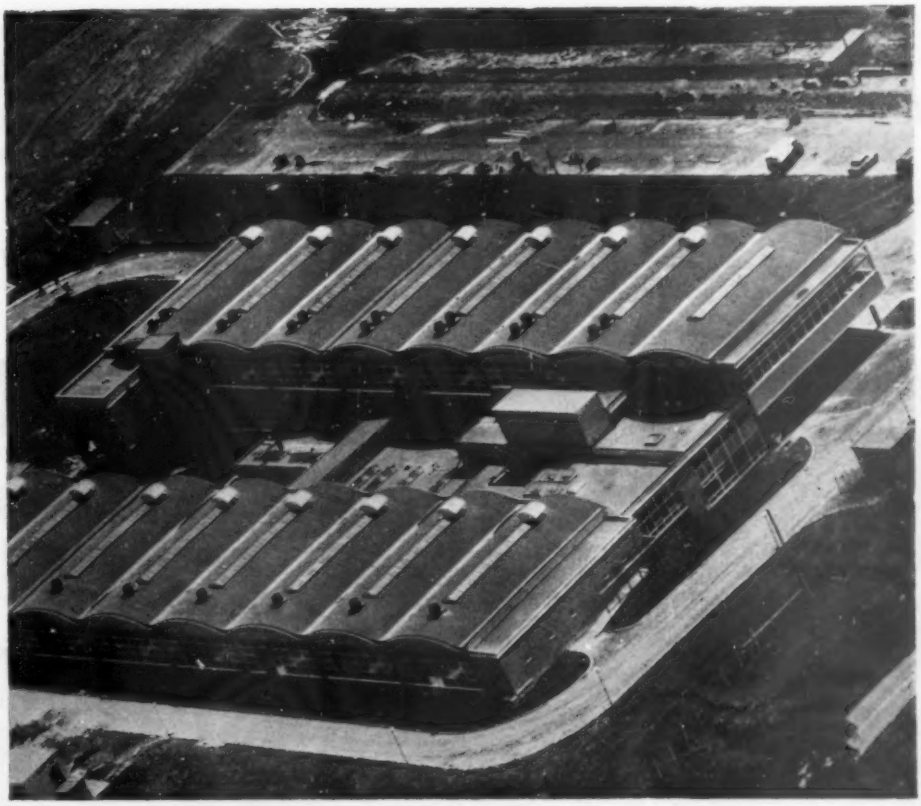

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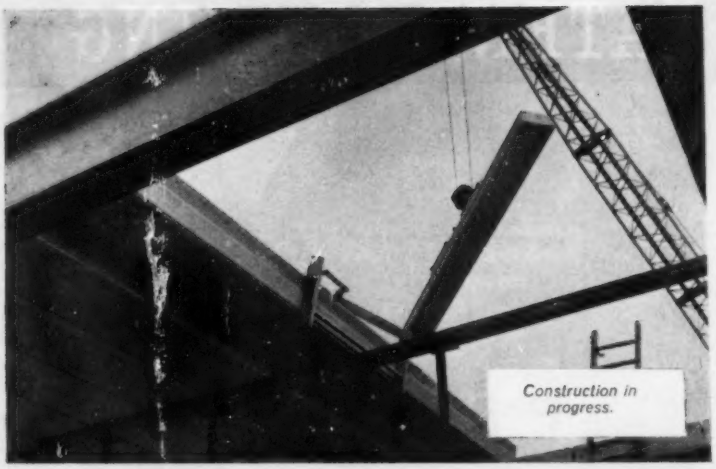

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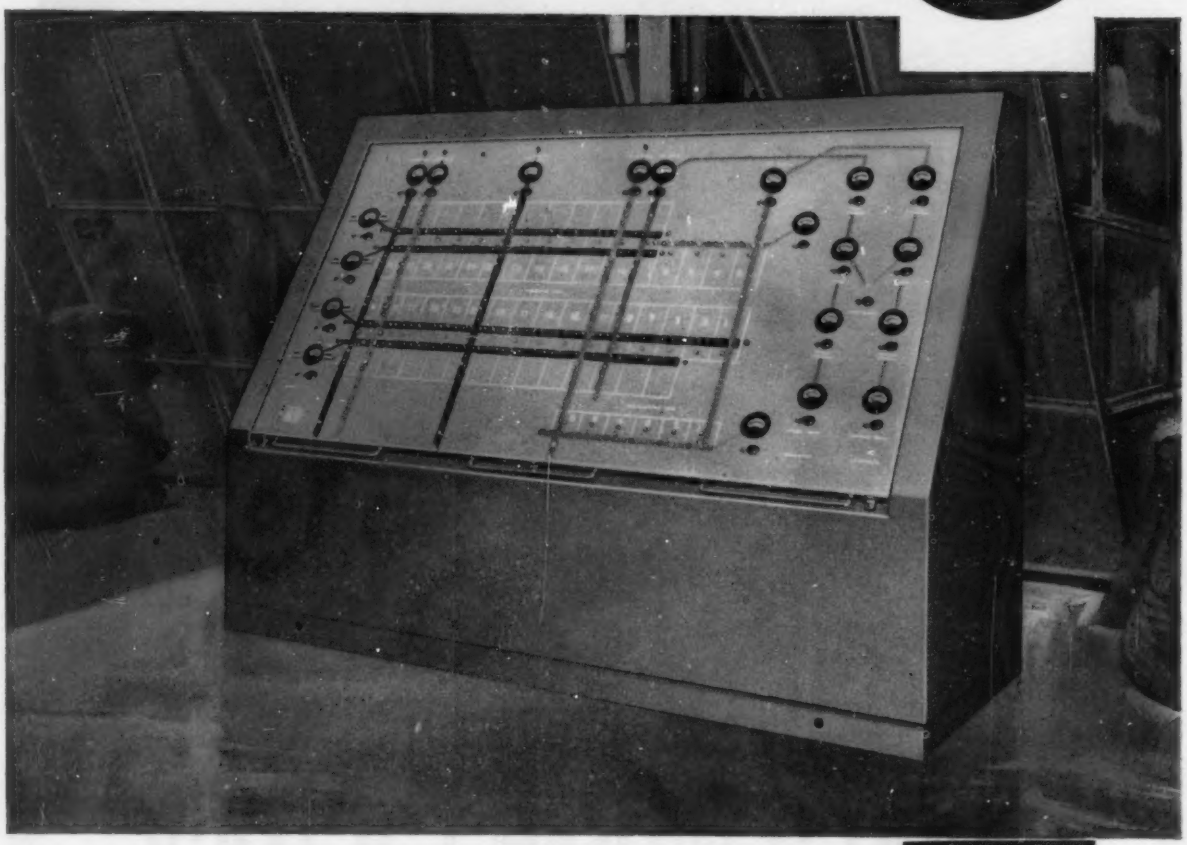

The panel is designed to control a number of conveyors operating a bulk storage plant consisting of 33 bins of 7½ tons capacity each.

Each bin has a pneumatically operated slide controlled by a solenoid operated air valve, making it possible to route material from any intake position to any one of the bins.

The panel comprises contactors controlling the solenoid air valves and starters with ammeters for the conveyor motors, dust extractor, etc. Full electrical interlocking of the conveyors and various safety features have been incorporated in the control circuits.

The mimic diagram on the sloping front of the panel gives a clear indication of the state of the plant which extends over an eight storey building. The position of the 100 slides is shown by means of indicator lights. In the event of any dangerous condition arising, an alarm signal is sounded and visible warning is given by flashing lights showing the position of the blockage.

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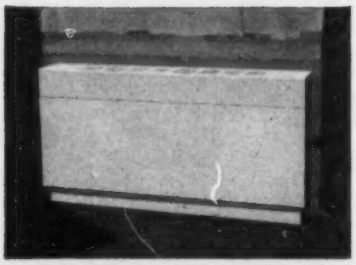

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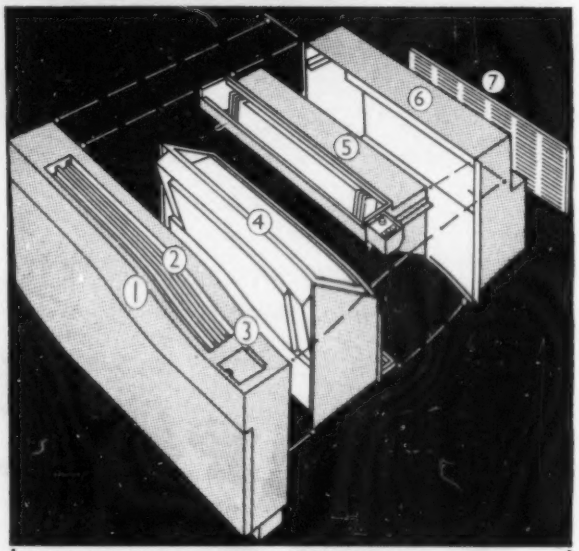

EXPLODED VIEW OF AIRAD CONDITIONER

(1) Room Cabinet—front panel snaps off for easy access to Air Filter, Heater Section and Cooling Chassis
(2) Discharge Grille—air to be conditioned enters Room Cabinet near bottom of front panel and returns to room through top Discharge Grille
(3) Controls—consist of 3-position selector switch for *off, cool* and *heat*, plus Automatic Thermostat which controls both heating and cooling
(4) Cooling Chassis containing Compressor, Cooling-Drying Coil, Condenser, 2-Stage Positive-Pressure Ventilation Unit and Air Filter which filters both room and ventilating air
(5) Heater Section—Circulating Fans and Heating Coil which uses steam, circulating hot water or electricity
(6) Wall Cabinet
(7) Outdoor Louvre—made of anodised aluminium for corrosion resistance

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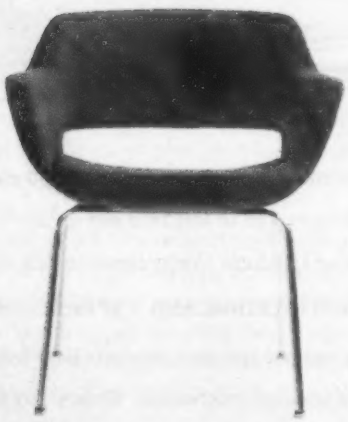

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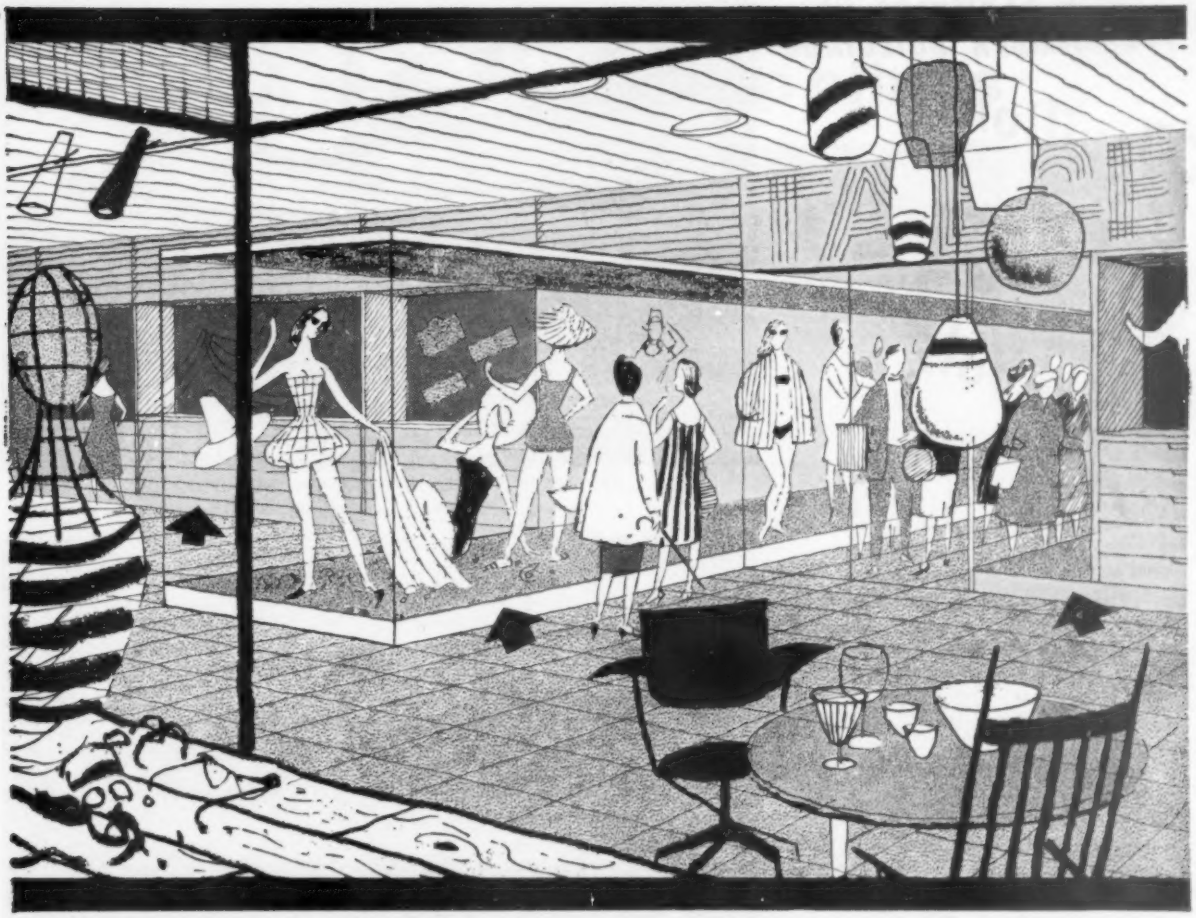

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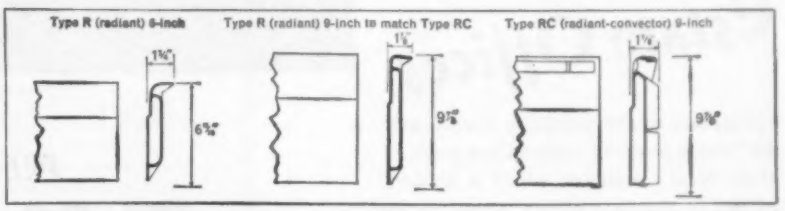

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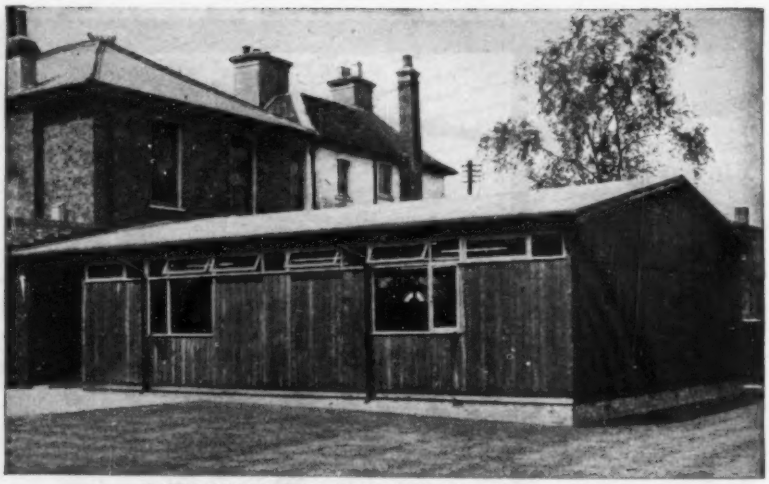

EXTENSION TO CENTRAL LIBRARY, SIDCUP, KENT.
Photograph by courtesy of The Chislehurst & Sidcup U.D.C.

DINING HALL FOR THE SACRED HEART CONVENT SCHOOL, HITCHIN, HERTS.
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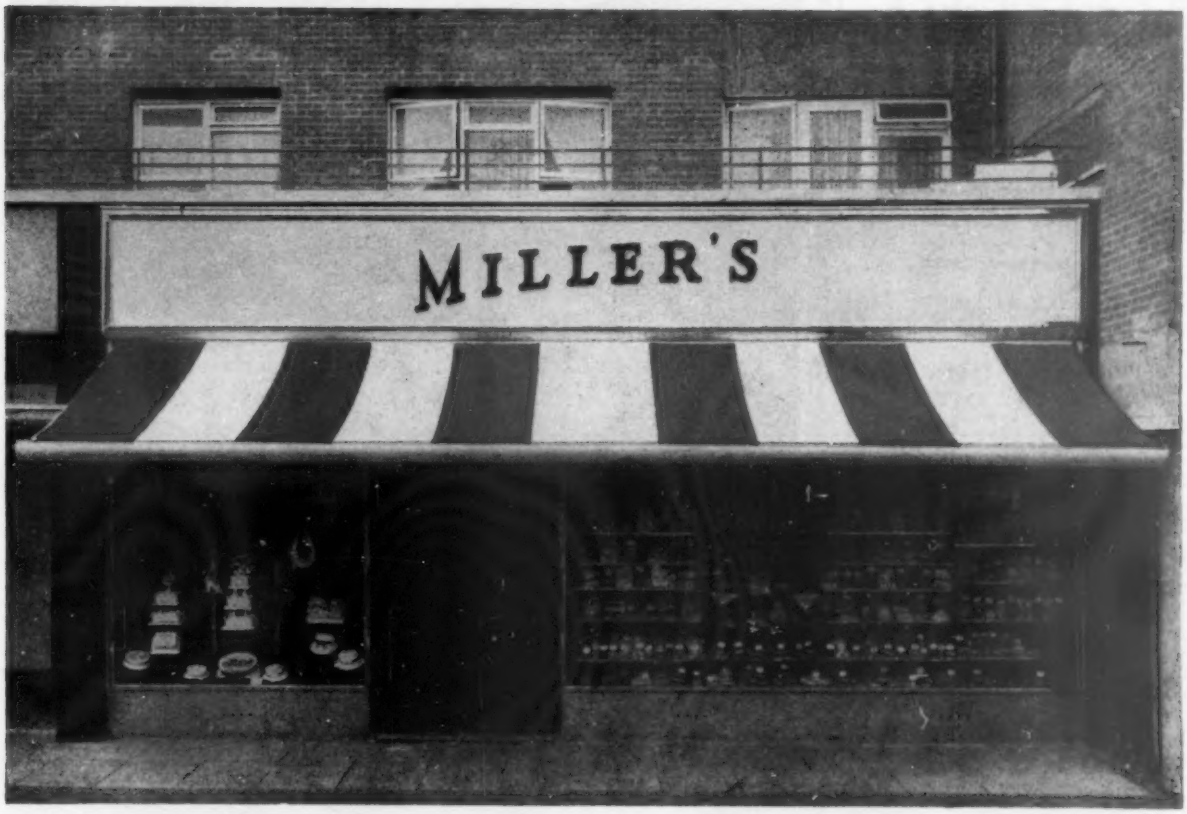

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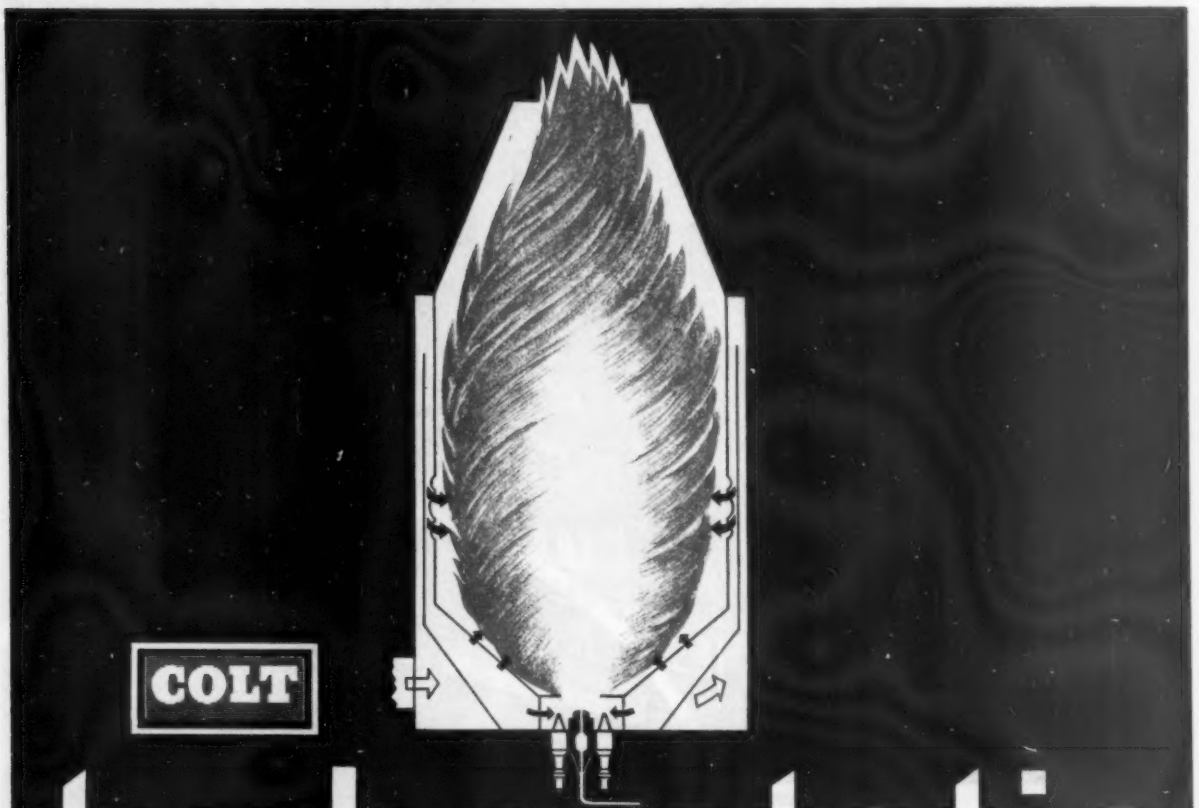

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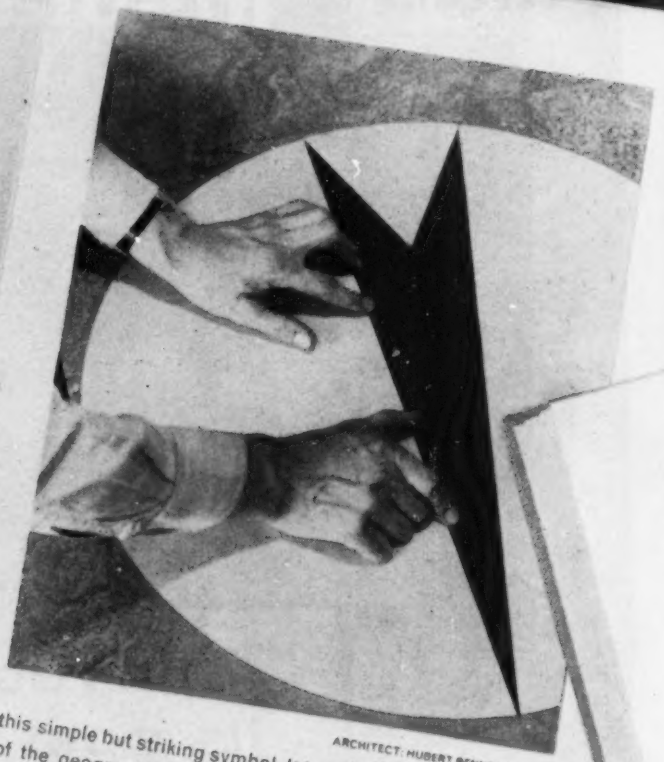
The Architects' Journal
November 1 1961

ARCHITECT: HUBERT BENNETT, FRIBA

would agree; whereas it is the *design* of the floor which
nearly dominates this 'general purpose' room in the Central
Vandsworth Evening Institute, London. The black marble
d grey marble Topline tiles—the LCC has used them in
ny of its schools—are by Michael Nairn of Kirkcaldy,
ose sheet linoleum, in white and deep pink, features in



ARCHITECT: HUBERT BENNETT, FRIBA

this simple but striking symbol. It has been set into the floor
of the geography room at Garratt Green, where it points
north: a permanent and precise reminder of the basis of all
geography, and at little cost, too. Nairn linoleum is well
suited to this which seems to show that, when you haven't
much money/choice/scope, a little imagination can do a lot

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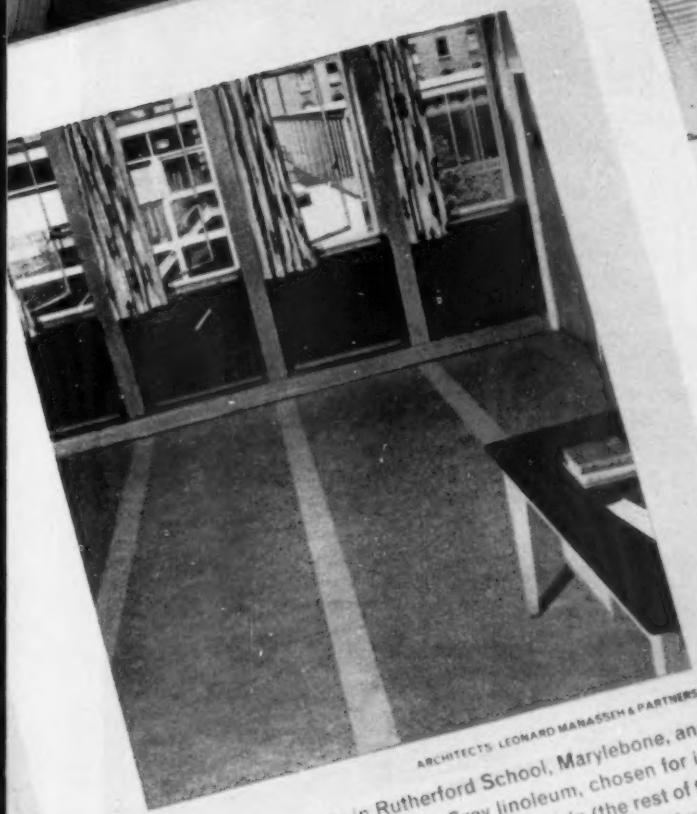

ARCHITECTS LEONARD MANASSEH & PARTNERS

of good. The floor is in Rutherford School, Marylebone, and the flooring is Nairn's Pebble Grey linoleum, chosen for its light-reflective qualities. Cut to a 3' 9" module (the rest of the roll was used as tiles elsewhere), it has strips of Blondwood lino in between, to line up with the structural mullions, thus lending a much-needed feeling of cohesion. The use

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of modules, in fact, is a valuable technique; the floor of th library at Sheffield University was entirely designed fo module of 5' 1½". Michael Nairn made some 20,000 sq yards of a special grey linoleum (this, of course, is o the few floorcoverings wide enough for such a big m to cover this job, and the result is this highly succ

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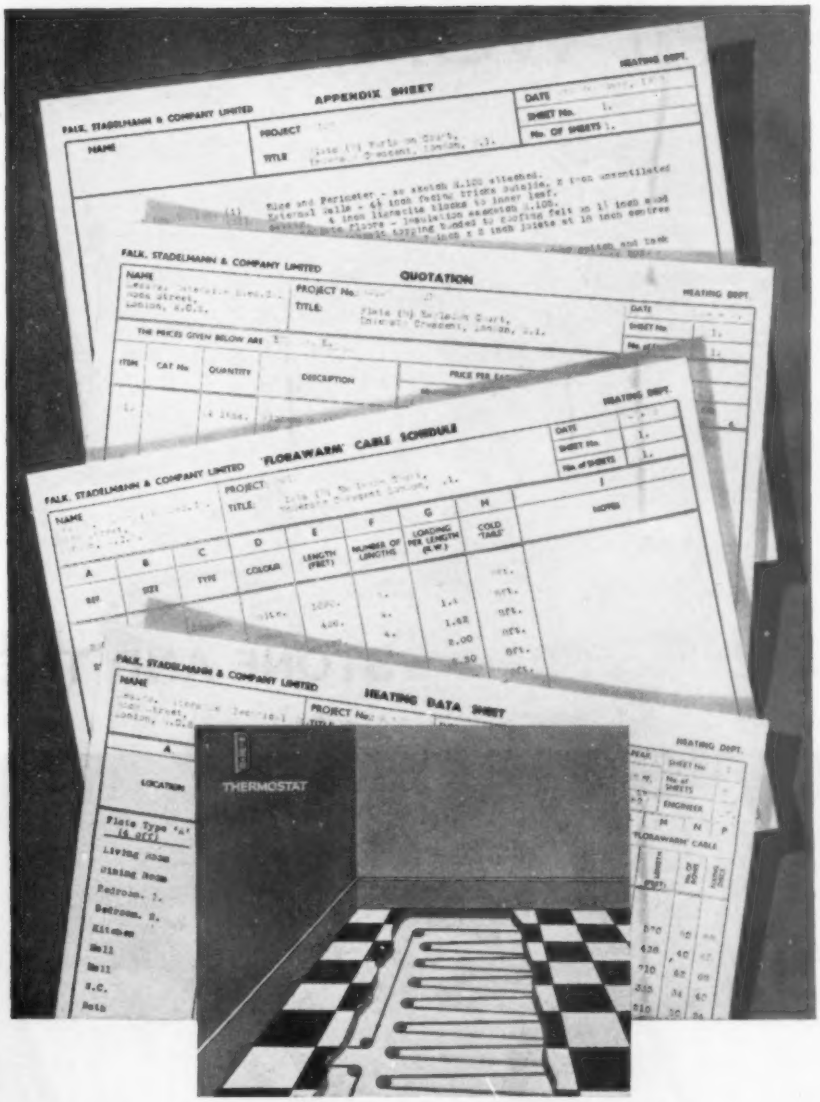

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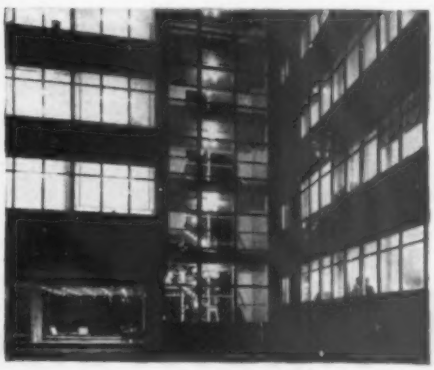

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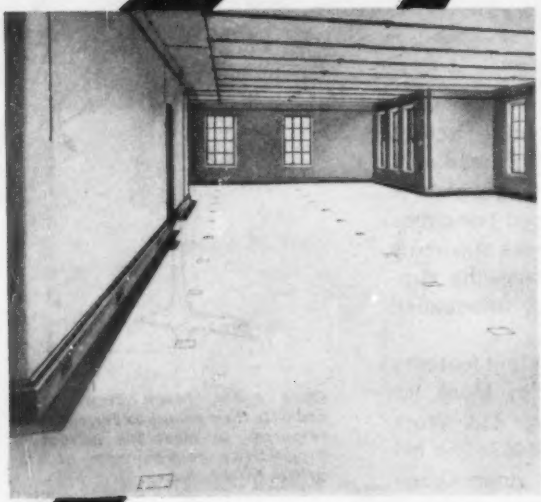

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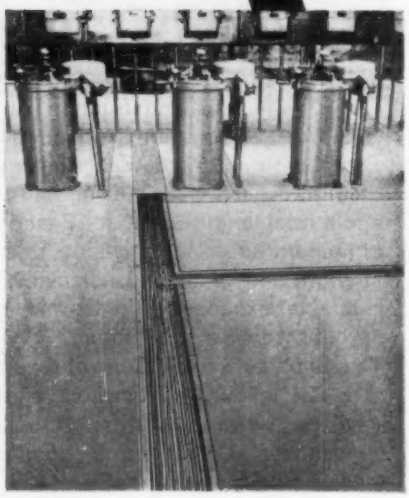

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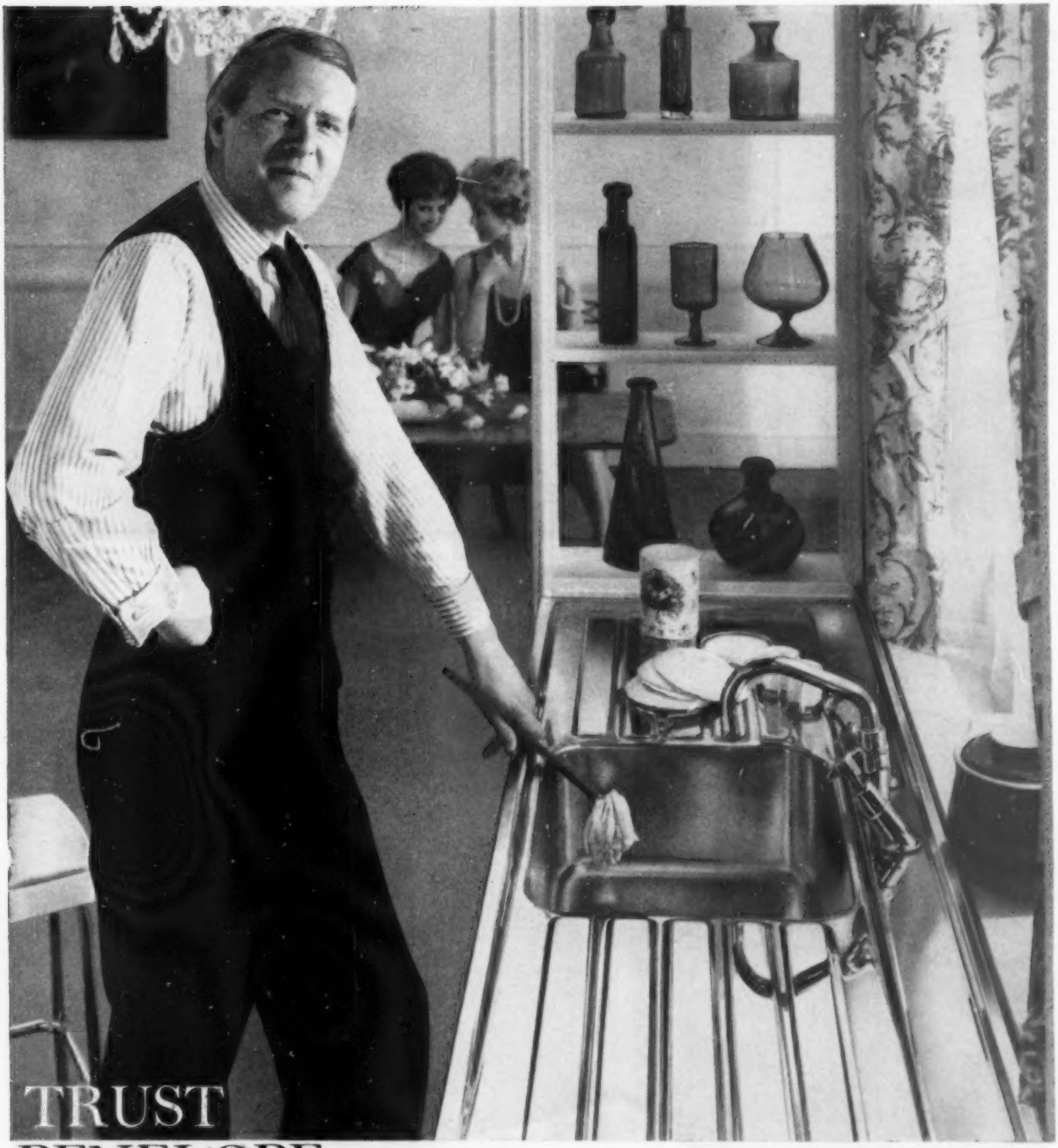

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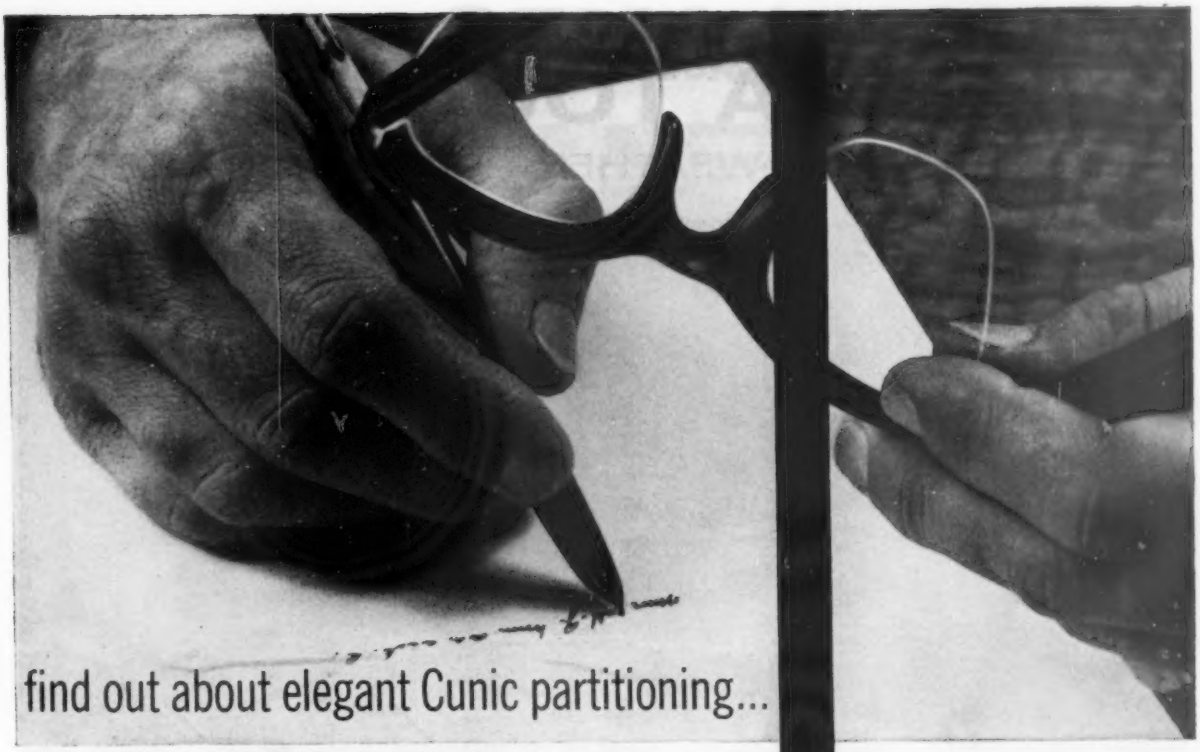

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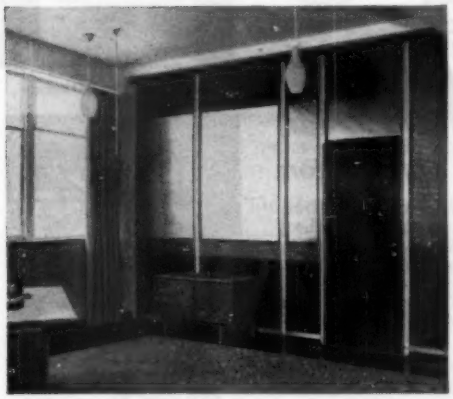

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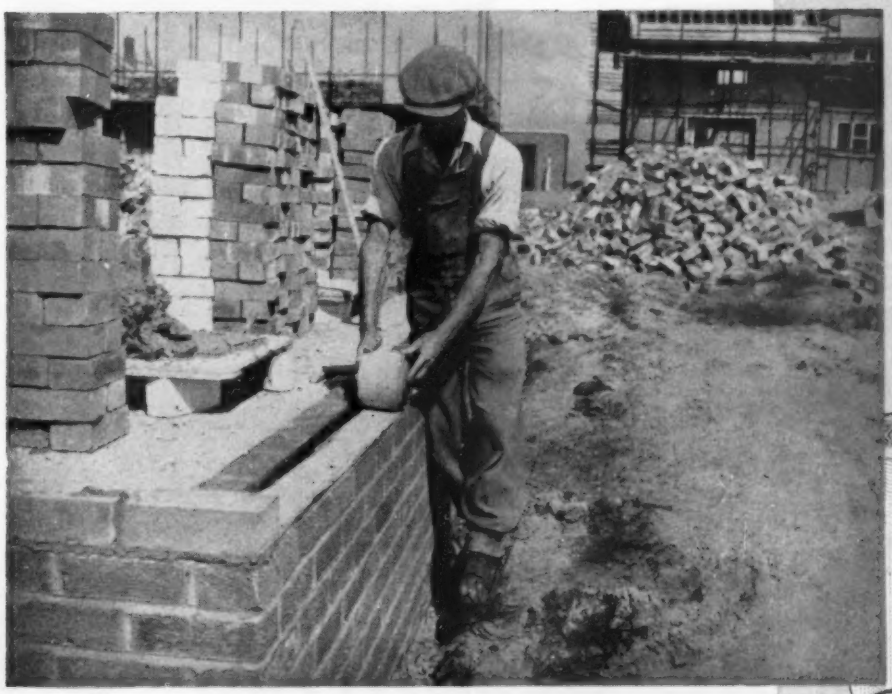

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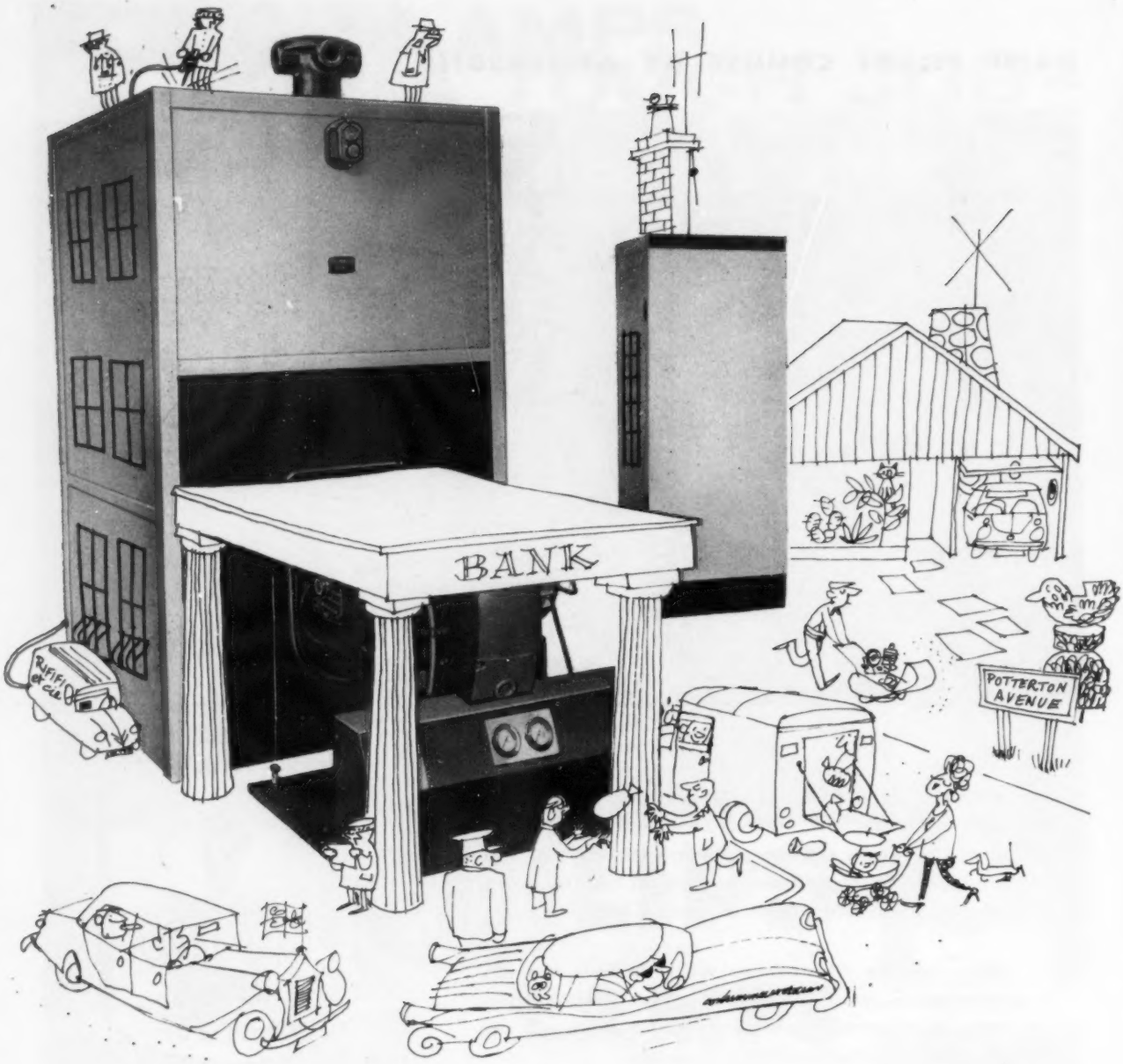

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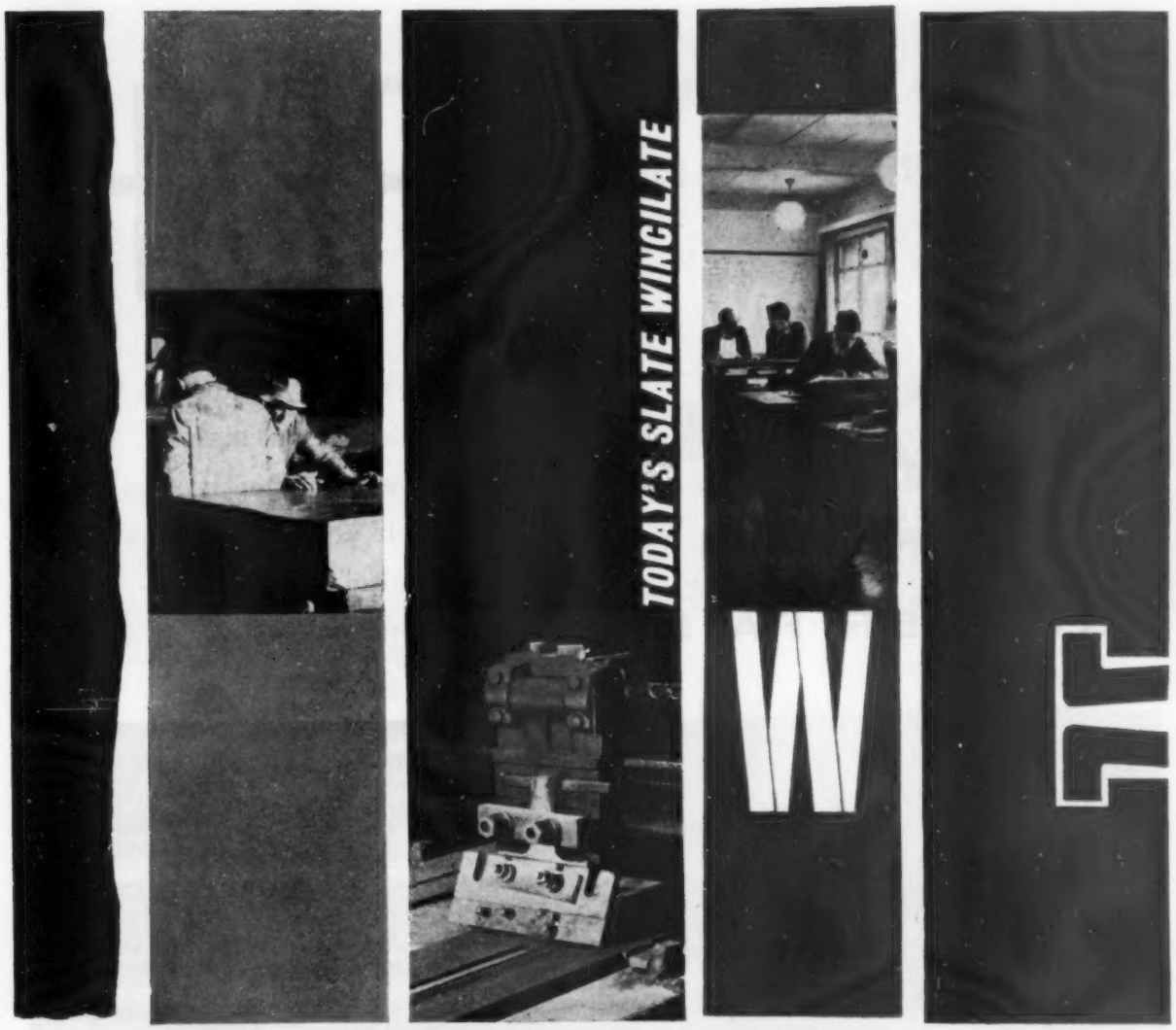

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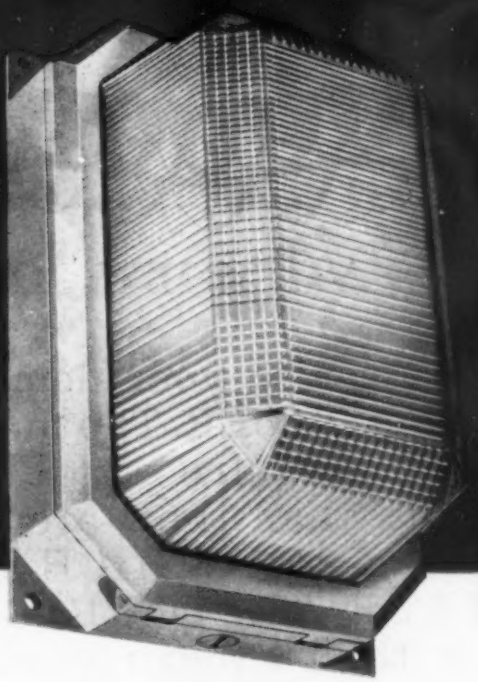

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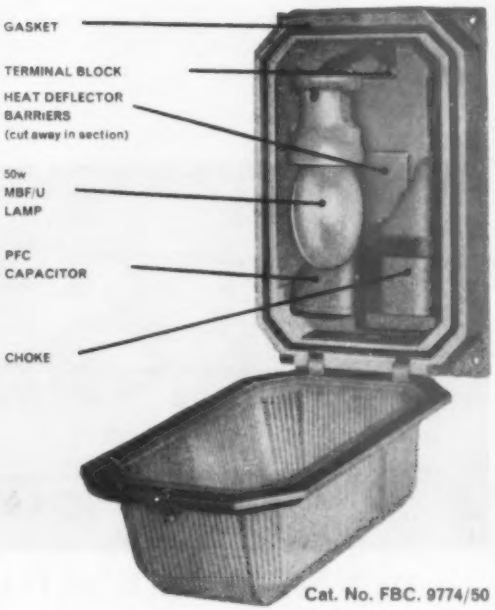

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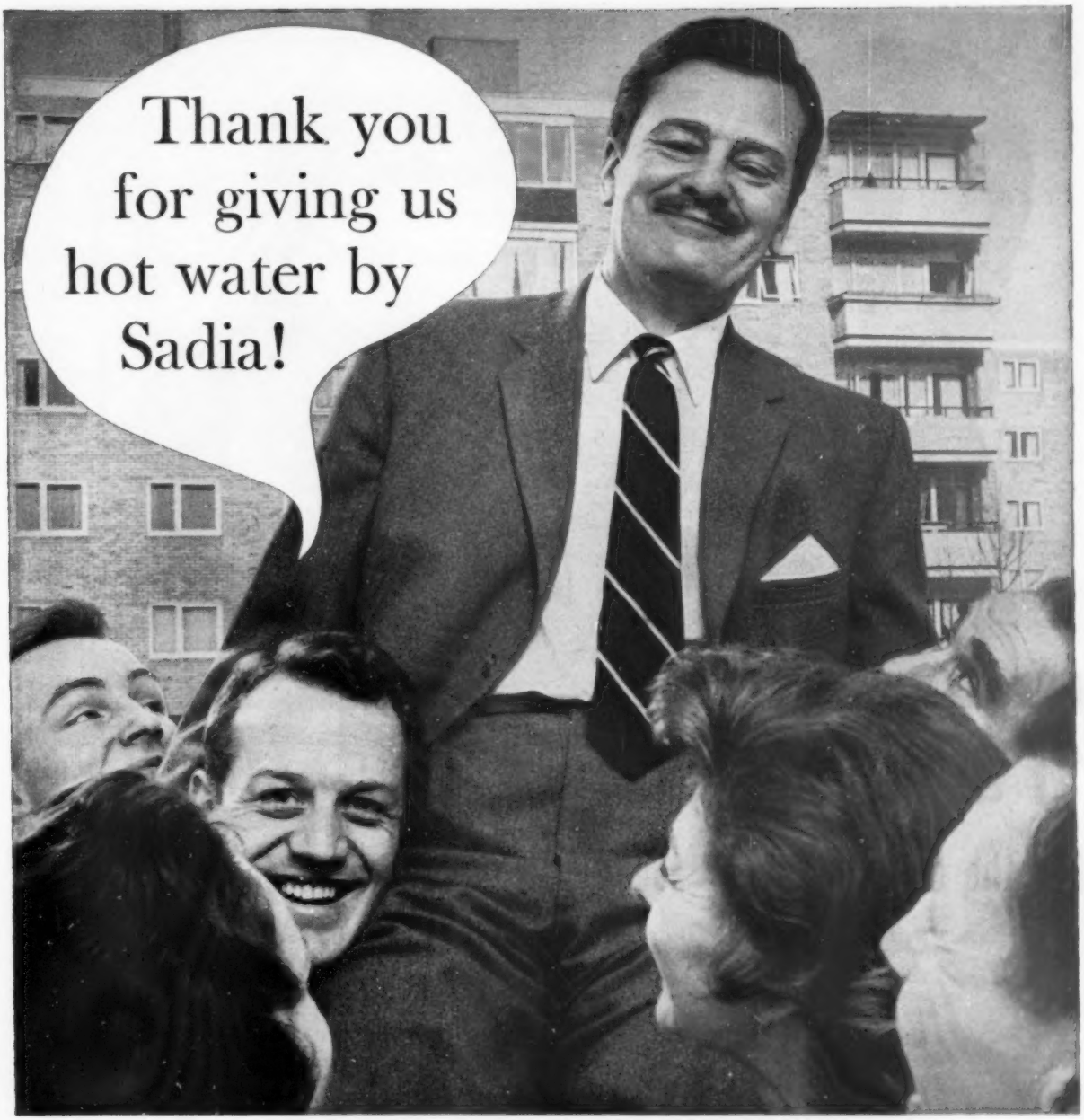

Judge the efficiency of hot water systems by the satisfaction or otherwise of the people who have to live with them. Ask any tenant of a Sadia equipped house or flat—you always get the same contented answers. Hot water by Sadia means no dirt, no work, negligible maintenance, and utter reliability—all at lowest running cost.

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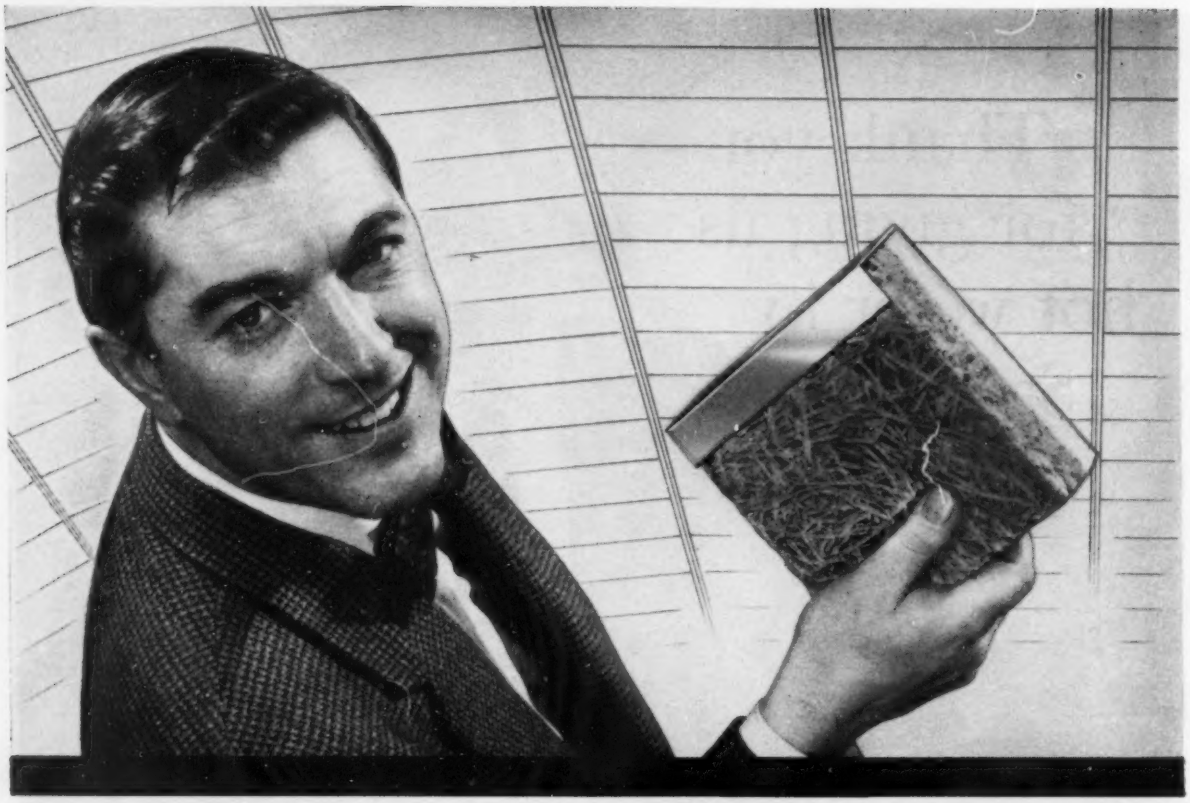

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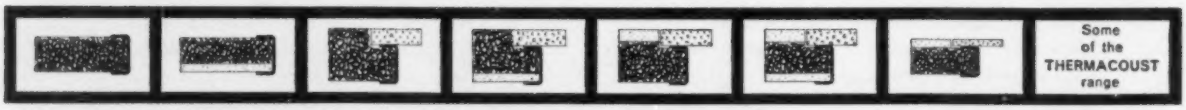

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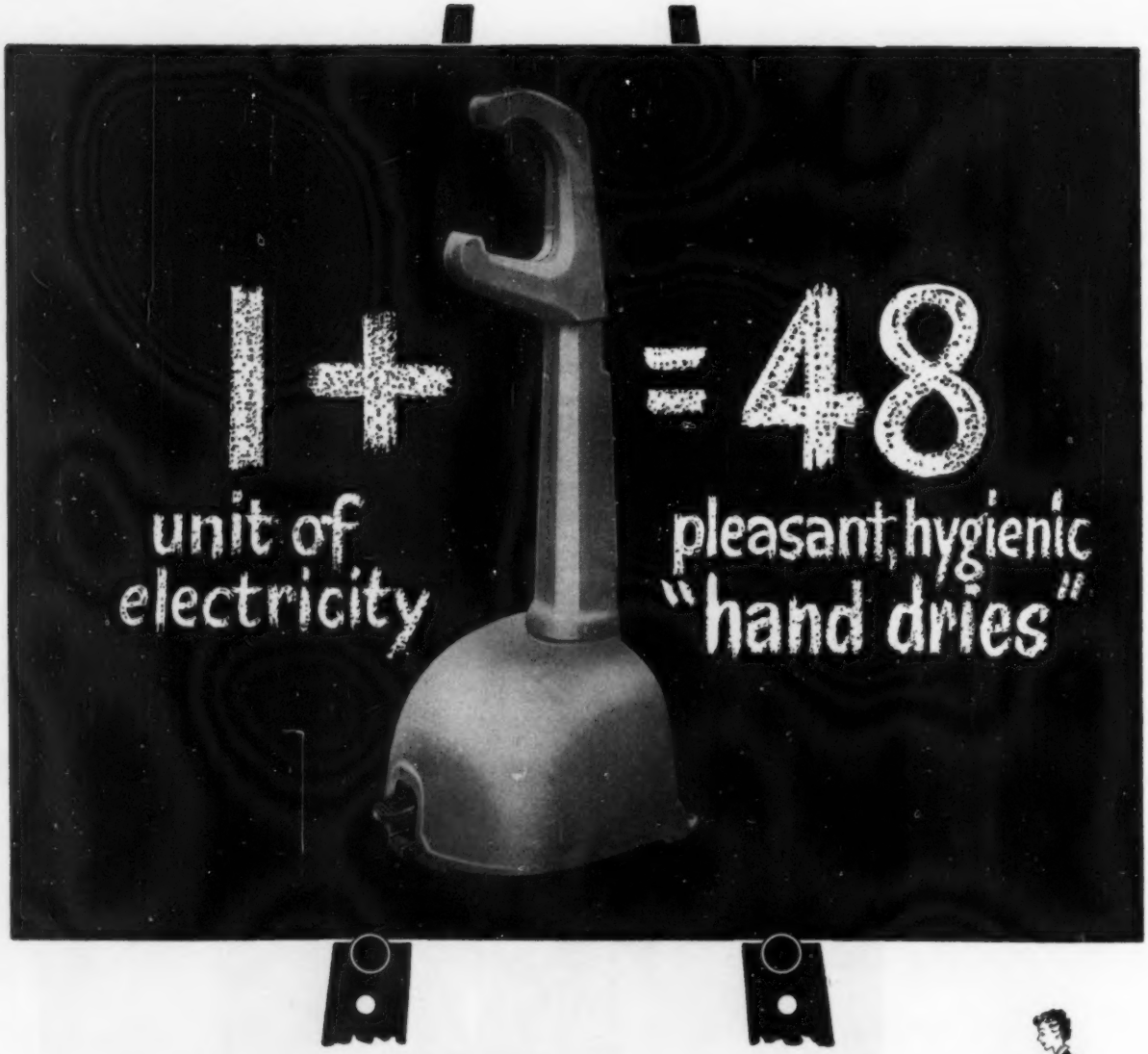

The 'ENGLISH ELECTRIC' hand drier will quickly pay for itself after installation, and provide trouble-free service with substantial savings in hand drying costs.

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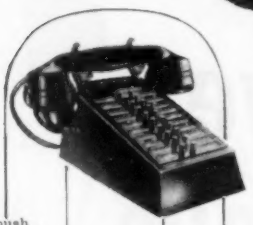

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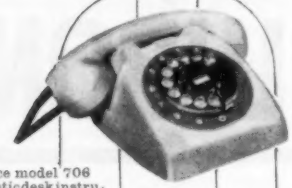
Subscriber Trunk Dialling



Reliance model 706 automatic desk instrument supplied in a wide range of colours to harmonise with modern office decor.

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News from Hull

Luxury Flats and Offices in a Nash Crescent

'Standard' equipment used extensively

architects :-
FITZROY ROBINSON & PARTNERS

main contractors :-
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plumbing sub-contractors :-
ELLIS (KENSINGTON) LIMITED

A new block of luxury flats and offices will shortly be completed in Park Crescent, W.1—the lovely crescent near Regent's Park, famous for its fine Nash houses. The west side of the crescent was heavily damaged by enemy bombing during the war, and to preserve the character of the crescent the frontage has been rebuilt exactly to the original Nash design.

The block, which has been developed by Portland Estates Ltd., provides over 55,500 square feet of office space. There are also on the site 92 luxury flats of one, two, or three rooms, kitchen and bathroom.

In each bathroom there is an elegantly styled 'Standard' Lowline bath finished with high quality porcelain enamel. The Lowline has three possible tap positions and hand grips are optional. The wash basin is the 'Standard' Kingston mounted on chromium plated legs (although it can be wall hung or fixed on a pedestal) made from durable vitreous china. The 'Standard' Kingston double trap siphonic low level closet suite, also of vitreous china, completes the sanitary fittings in these bathrooms. 'Standard' equipment has also been used extensively in the luxurious offices. Devonian wash basins, Vitural slab urinals and Sano wash down closet suites all made from vitreous china have been used in the washrooms.

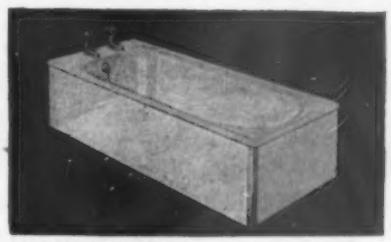
The advantages to the planner of using 'Standard' equipment in offices and domestic dwellings are obvious.

Firstly, the equipment is well designed. Both the Lowline bath and the Kingston range are outstanding examples of all that is best in modern bathroom equipment. The Vitural slab urinal is a great advance in existing urinal design and is the first full length slab to be made from vitreous china.

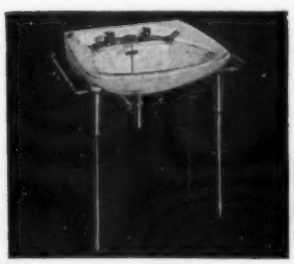
Secondly, 'Standard' items are made from vitreous china. This is more hygienic than ordinary ware—as it is non-absorbent, it is impossible for germs to lodge and breed in it.

Thirdly, 'Standard' equipment is extremely durable. It keeps its good looks for many years and replacement is rare so that it is more economical in the long term than other equipment. For these reasons 'Standard' sanitary fittings are being specified by architects for more and more hotels, public buildings, houses, factories, offices and schools, as each month passes.

546



The Lowline bath



The Kingston wash basin

The Kingston low level closet suite

The Vitural slab urinal

The Sano wash down closet suite

There is a simple solution to the problem of providing power points for electric dry shavers. Ordinary outlet sockets are neither safe nor convenient. But CHILTON Electric Shaver Sockets, which comply fully with BS. 3052, are approved for use in any room—including bathrooms. They are used in hotels, airports, clubs, ships, blocks of flats and private houses, and accommodate British 5 amp, Continental 6 and 10 amp and American 15 amp (flat pin) plugs IN A SINGLE SOCKET.

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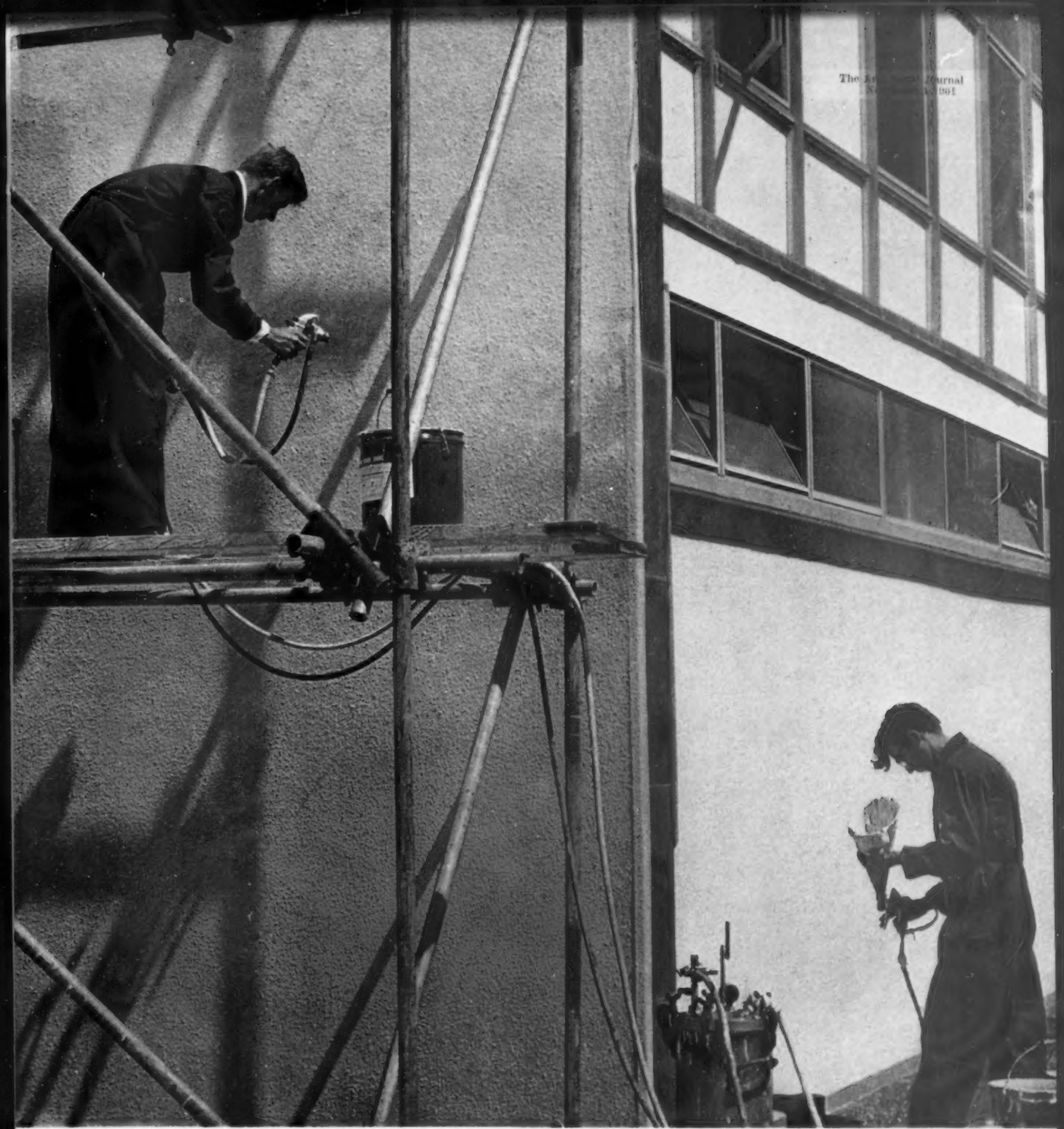

New office block for the Regent Oil Company No. 4 Depot, Nottingham. Nominated specialist 'Noxallac' contractor: T. E. Cundy & Son Ltd, Leicester

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Write to 'Bostik' Building Advisory Department, B.B. Chemical Company Ltd, Leicester.

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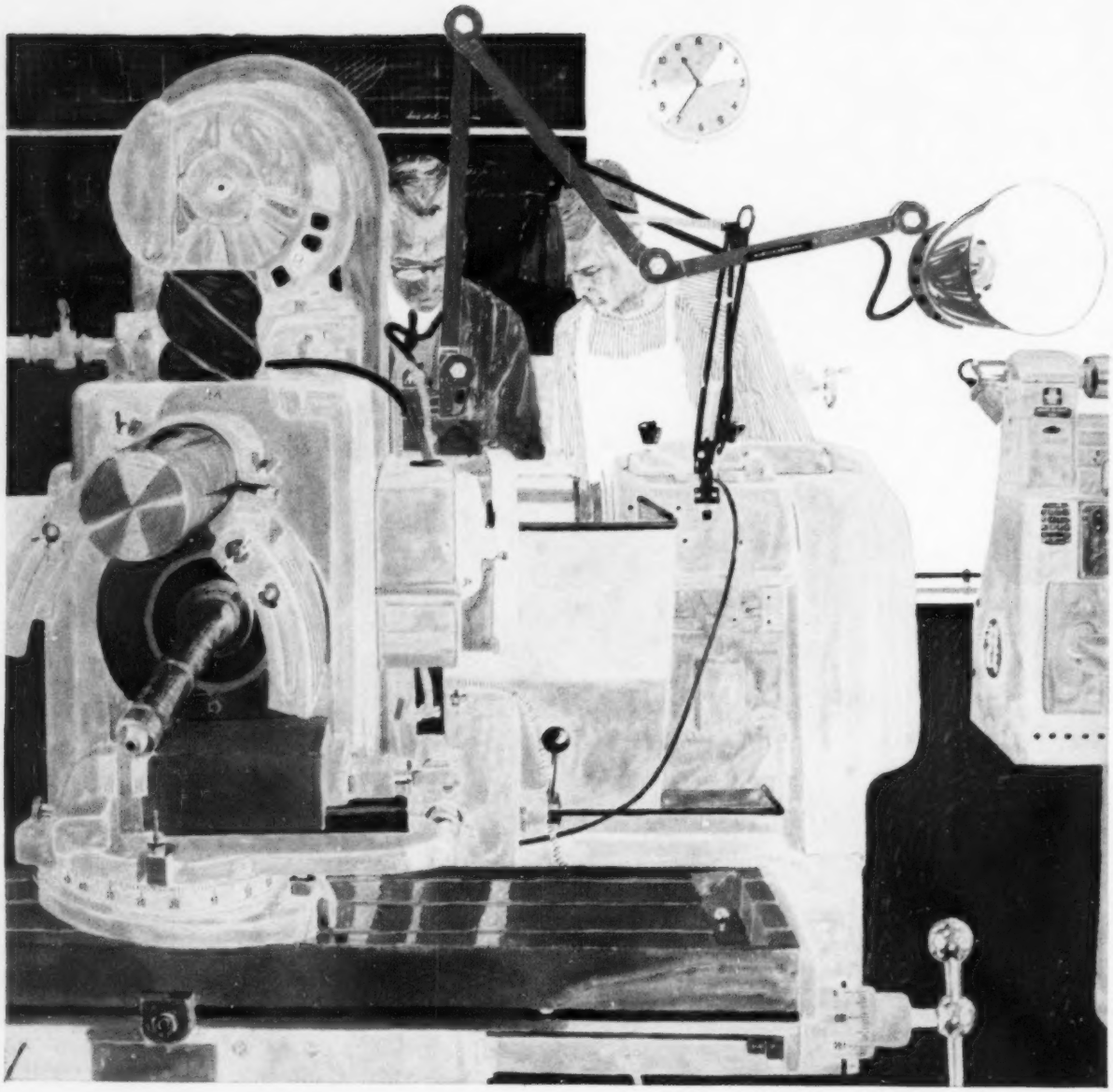
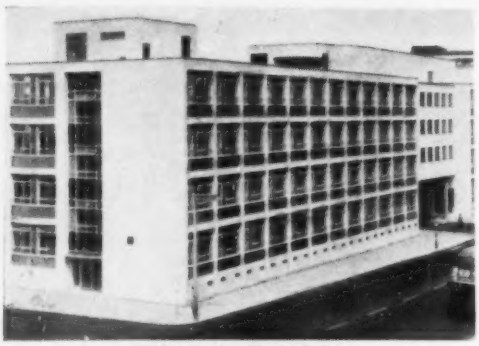
'Bostik' will be delighted to discuss your problems at the Building Exhibition, Olympia, 15th to 29th November, on Stand 165-166, Row D



LINOLEUM belongs to Modern Living



Main contractors Charles R. Price.

Ask any architect—he will tell you that today linoleum is one of the most versatile weapons in his creative armoury. Its applications are so wide. It expresses brilliantly the mood of any decorative theme—contemporary or period. And a constant flow of new colours and styles gives scope for endless variety of 'personalised' and novel designs. In other ways, too, linoleum belongs to modern living. It is so easy to care for—so quick to clean. It is quiet to the tread and no flooring equals linoleum for long wear . . . Always plan for linoleum. *Illustrated left: Queen Mary College, Mile End Road, London, makes extensive use of today's finest flooring—linoleum.*

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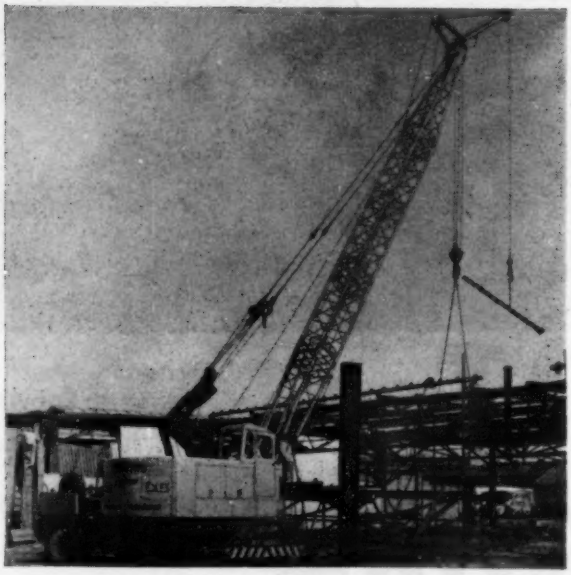

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WORKING WITH A WILL

"All clean and comfortable,
I sit down to write."
Letters of John Keats.

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

The link between cleanliness and comfort has been recognized for a considerable time; that between comfort and productivity for a much shorter period. Nevertheless, it is now well-established that workers produce more goods of better quality if their conditions are clean and congenial. There is not only the effect during their working hours to consider: good conditions mean less "time off" and good sanitation is the most important aspect of good conditions. Truly, if one is clean, then one is comfortable and can get down to work with a will.

Ceramic-Glazed Fireclay Sanitaryware accords well with modern concepts of industrial architecture. Just as the present-day factory is airy, spacious and well-lit, with a judicious use of colour in its decoration, so are modern designs of Fireclay Sanitaryware of simple and harmonious outline, free from complicated shapes which may create dust and germ traps, thus accentuating the gleaming, high-lustre glaze—as though inviting the user to challenge its sparkling cleanliness.

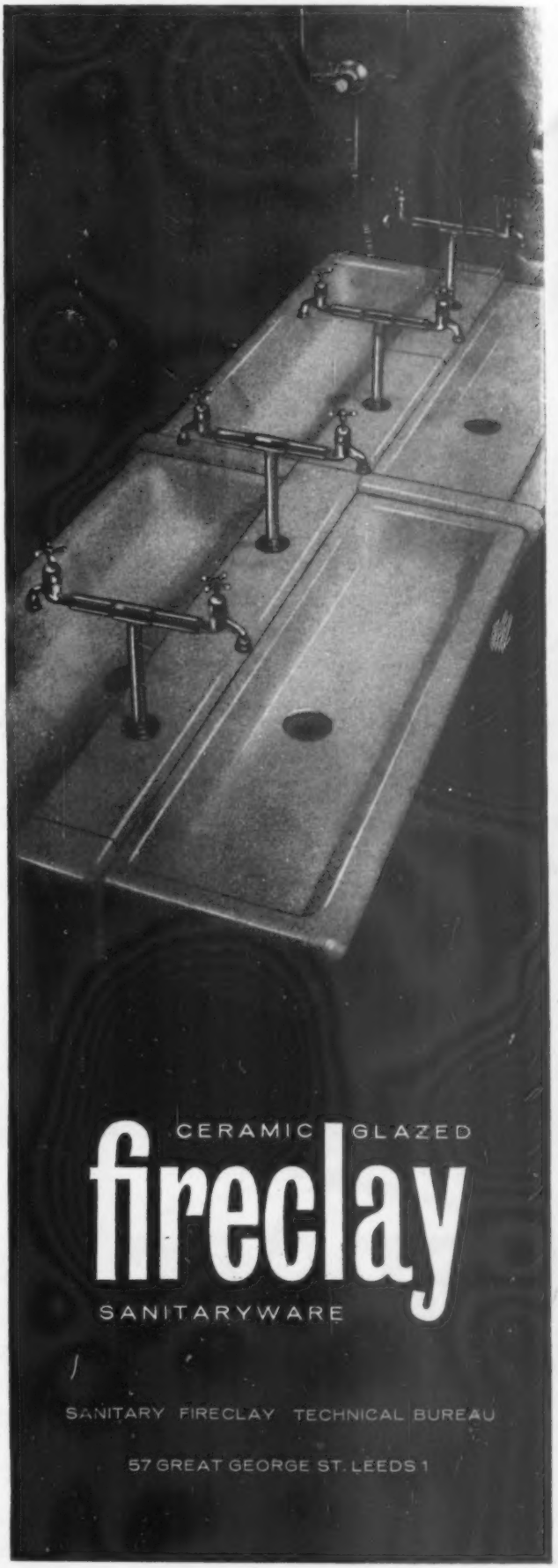
Fireclay Sanitaryware has a special contribution to make under the arduous conditions of factory installation, because it possesses unrivalled strength—the foundation of durability—and its hard, tough body is the ideal base for a vitrified glaze, the feature by which all sanitary ware is judged. This glaze is impervious to acids and alkalis and provides a smooth, glossy, china-like surface which retains its pristine sheen with a minimum of attention.

Ceramic-Glazed Fireclay covers a complete range of appliances for factory use, whether in canteen, wash-room, toilet or first-aid post. There are hand basins for individual or range mounting; island-type ablution troughs for coping with rush periods; water closets with corbel-type pans for easy floor cleaning; sinks with draining boards and work slabs for kitchens; hospital-type appliances backed by years of co-operation with Architects in the design of sanitary equipment for operating theatres and wards and therefore highly suitable for any kind of casualty and first-aid post. Many of these articles can be obtained in colour if desired.

In any factory in which the welfare of the employees is given due prominence (not only for their own sakes, but for its effect on industrial relations and productivity) a full range of good sanitary appliances is essential. The "dark, satanic mills" of the industrial revolution have been out-moded by the Factory Acts and the requirements of H. M. Inspectors but, apart from such considerations, it has been shown that there are tangible benefits to be derived from the generous provision of amenities. Such generosity is best expressed—in this context—by the installation of well-designed Ceramic Glazed Fireclay Sanitaryware, a real essential for the modern factory and equally so for schemes of modernisation.

A fully illustrated booklet, published in the interest of more and better hygiene and sanitation is available on request.

See the exhibits at the Building Centres, London, Manchester, and Bristol.



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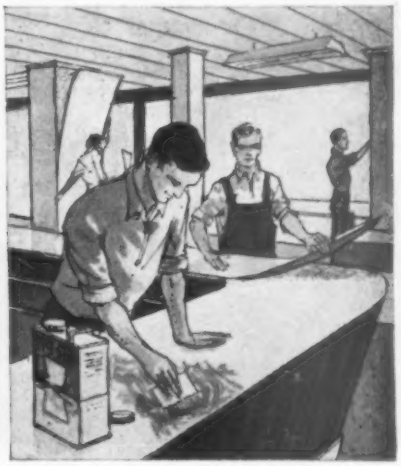

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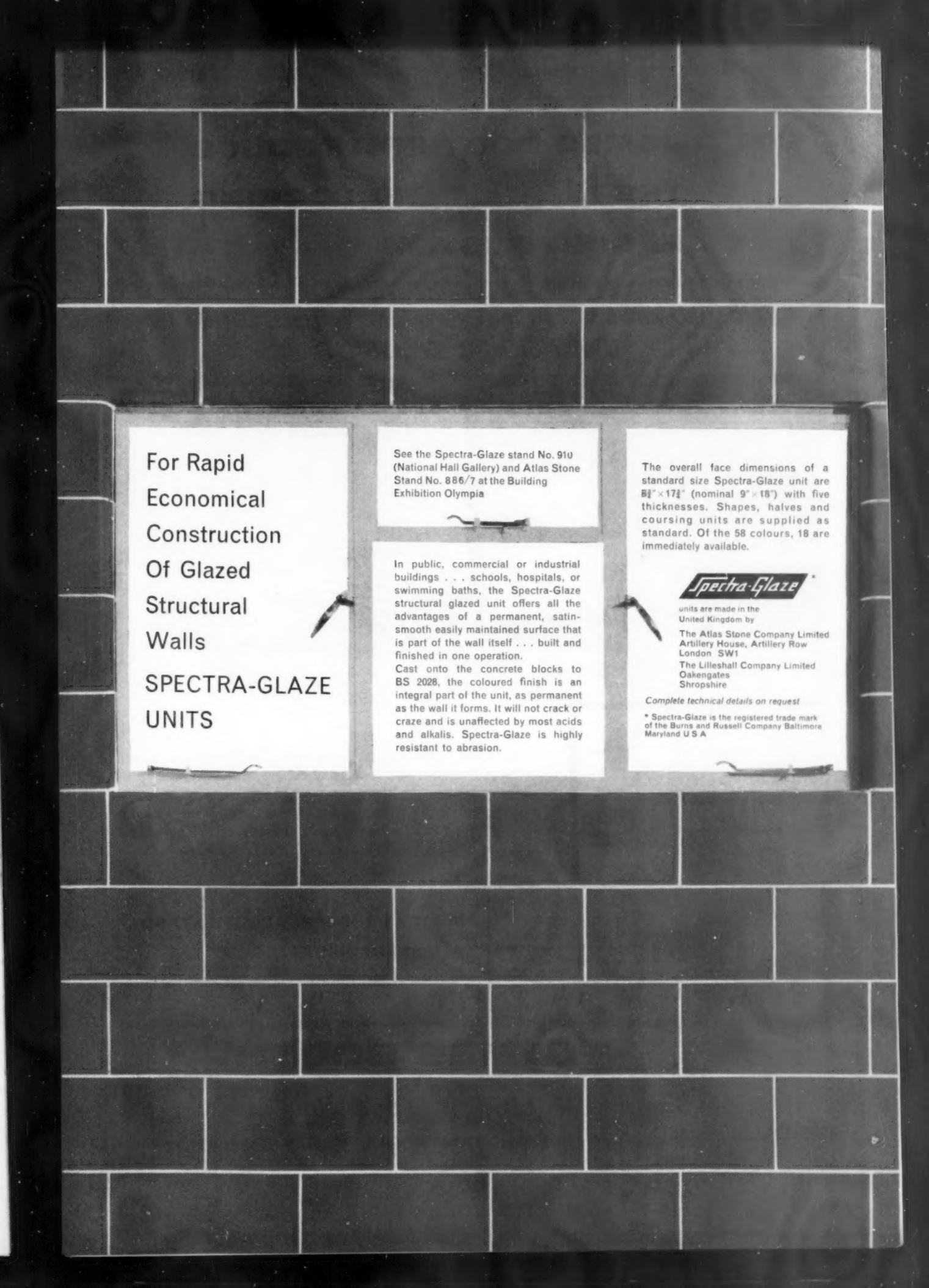
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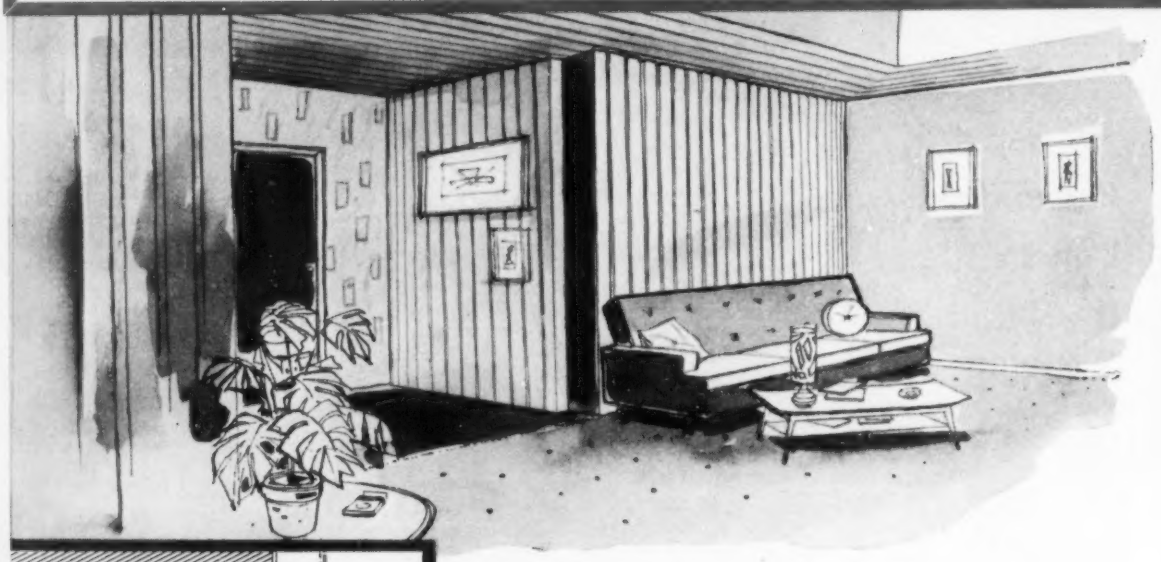

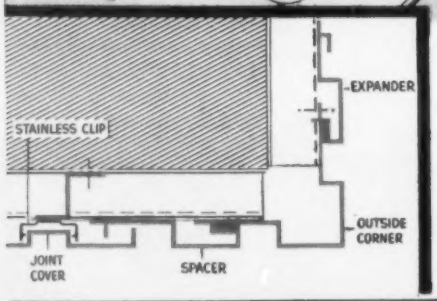

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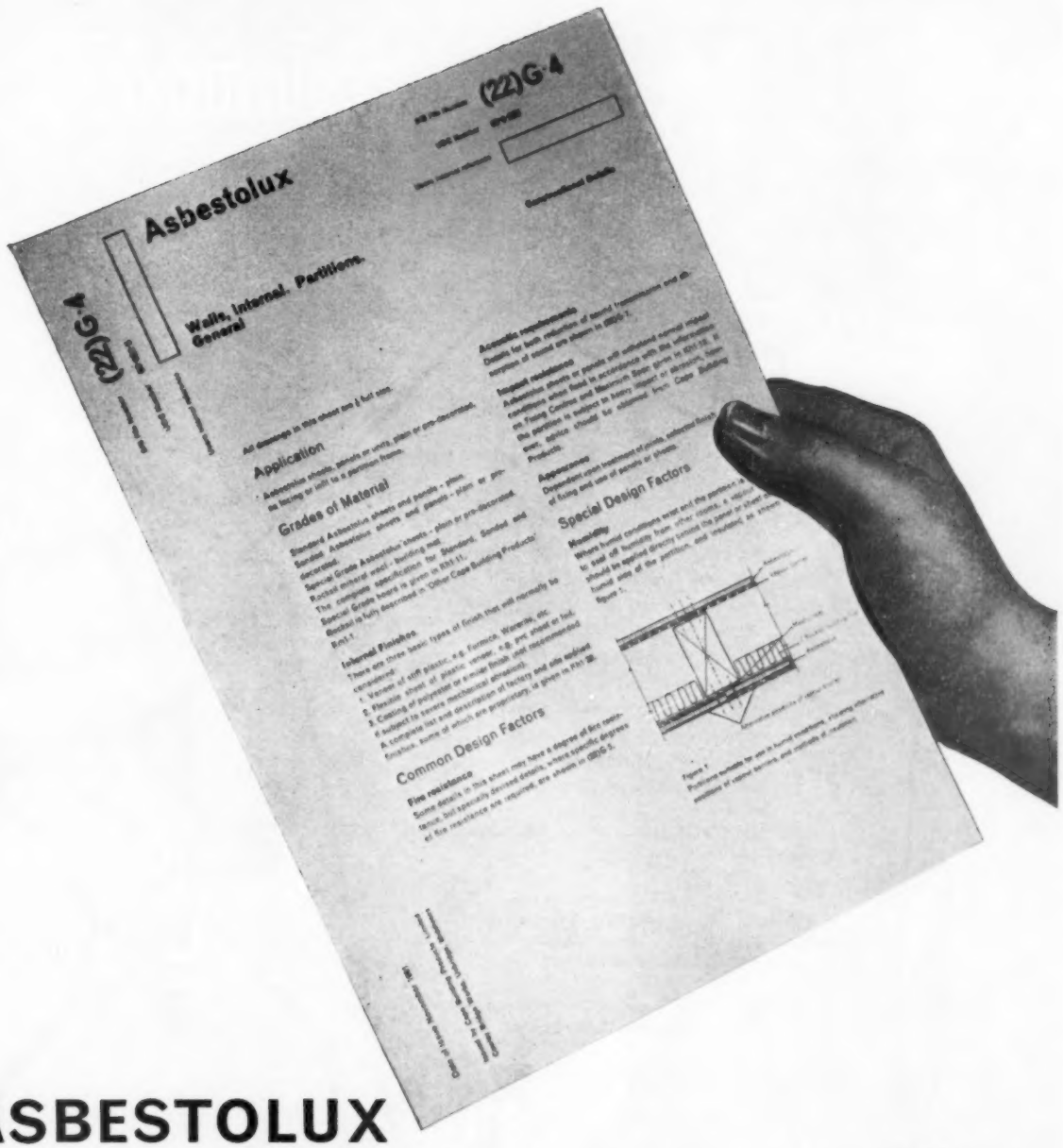

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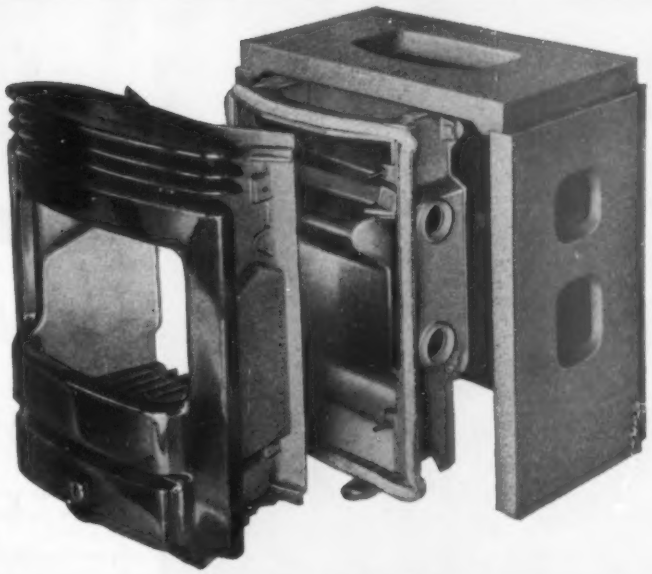

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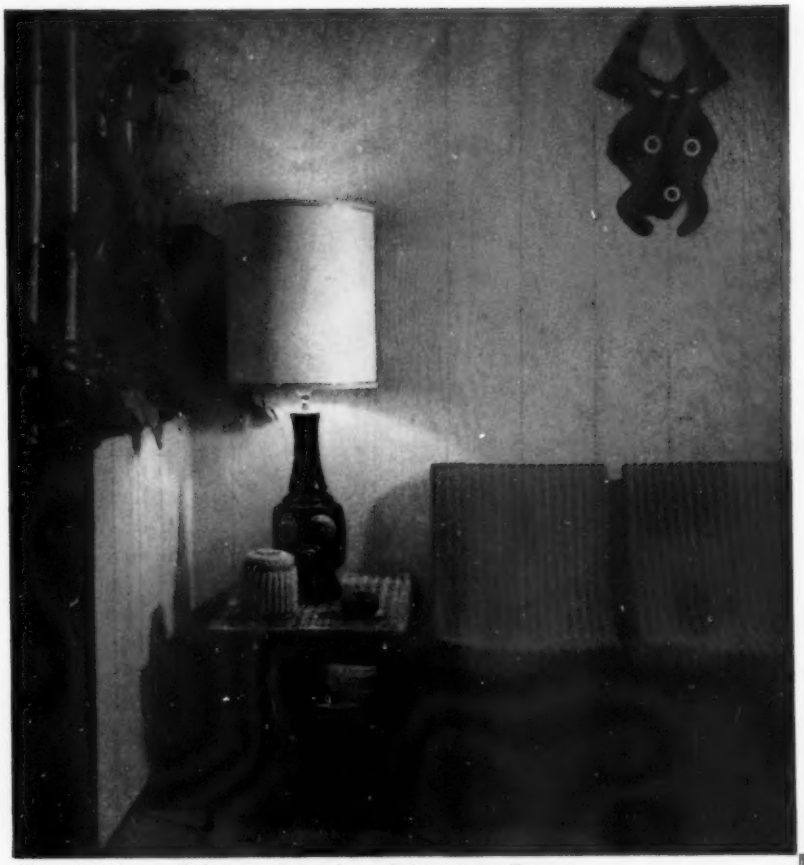

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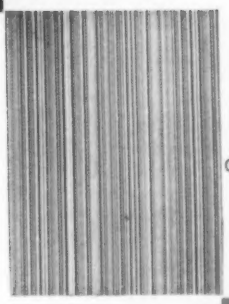

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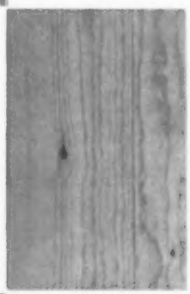

Knotty Pine

Etch Wood

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AJ

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NOT QUITE ARCHITECTURE

Ask the man who runs one

Student hostel; 200 students arrive, 200 students unpack; result, 200 trunks of assorted sizes to be tucked away for the duration of term; problem, design the storage accommodation.

So, filling my pipe with another satisfying bowlful I set out to consult my expert, a man who probably knew more about trunks/assorted/storage of than anyone else in the country—the man in charge of the left luggage department at Temple Meads Station.

I found my way to the appropriate counter which unexpectedly opened on to the street. A notice in regulation West Region brown said "Press," so I pressed. Miraculously a man appeared. He was carrying a numbered ticket in one hand and a brush dripping with what looked like wall-paper paste in the other.

"Good morning," I said.

He looked puzzled at first, probably because I was not looking at him over the top of a suitcase or even a duffel bag.

"I don't want to leave anything," I explained. "I'm an architect and I have to design a storeroom for luggage. I wondered if I could have a look at your storage racks and perhaps take down one or two details."

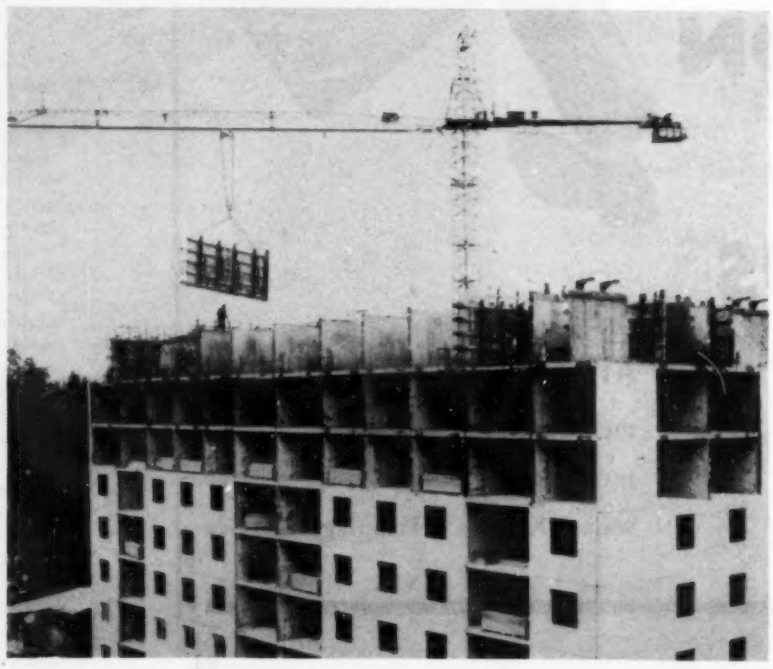
"You'll have to see the inspector about that," he said, trying unsuccessfully to rid himself of the paste brush. "Along to the right, through the arch, just say 'left luggage' to the man on the gate, and I'll meet you round the other side."

"Right you are," I said and set off. I called out "Left luggage" as instructed when I passed the barrier and the man in the sentry box didn't even look up so I

Large Prefabrication in Sweden

The "Skarne" system of large prefabrication now in use in Sweden was one of those illustrated by Bengt Axelson in a stimulating lecture at the Institution of Electrical Engineers on October 23, on "methods of housing construction in Sweden"

Its basis is an in-situ concrete tower, using slip-formwork, which forms the central core round which the building is constructed, and from the top of which a heavy crane operates. The central core is a stabilising element of the building and contains all services, stairs and lifts; the internal walls are generally load-bearing, the external walls non-load-bearing. Top, general view of a site at Nasbydal, Stockholm, with Skarne point blocks at all stages of construction; right, an exterior room-sized wall panel is lifted into place by the crane. These panels can be precast in factories on the site, or in permanent factories elsewhere. Large reductions in building time and manpower are claimed for these methods.



made a mental note of that for future occasions. Eventually my friend appeared, rid of the brush at last, and took me to his leader. I said my little piece again but the leader shook his head. "No unauthorised persons are allowed in the luggage room," he said, pointing out the words one by one on a nearby notice like a pantomime dame with a song-sheet.

"I see. And how can I become authorised?" I asked.

"You'll have to see Mr Girdlestone on platform 12."

"Platform 12?"

"Yes. Station master's office."

So off I set again, passed the new shining Pullman standing at number 1, through another arch, under the fan vaulting and so to platform 12. A haven this, pure undiluted Brunel, and not a train in sight. I found the office and inside it another counter with another plea to "Press" so I pressed again. A new member of the West Region staff appeared, female this time, with a mouthful of cheese and lettuce sandwich.

"Is Mr Girdlestone in, please?"

"He's gone for his lunch," she said, chewing steadily.

"When will he be back?"

"About two. Will you leave your name?"

"Brunel," I said, "Mr I. K. Brunel."

"Mr Girdlestone is out until two, apparently," I told the leader. "If I'm this way later I may call in again."

"Sorry about this, sir," he said, "but you see I've no authority myself . . . wait a minute though! *We* could take some dimensions for you, and *you* could stay on THAT side of the counter!"

"Wonderful!" I cried, realising that the break-through had come at last; the red tape was down.

"Harry!" called the leader and my first acquaintance reappeared. "Will you take some dimensions for the gentleman?" and then to me he added, confidentially, "Harry knows about inches and things."

Within minutes not only Harry but the entire staff of the department were crawling all over the racks yelling dimensions. "Two feet!" they yelled, "one foot four!" "One foot six!" "three feet . . . what? . . . no, THREE!"

I sketched, doodled and scribbled, collecting a dossier of design data on luggage racks. They loved it. Well, wouldn't you if you spent most of your time dodging ruptures?

The racks were of timber; sturdy, practical and economical. I noted it all, thanked them profusely and prepared to depart. But the leader was now in his stride and not easy to leave.

I thanked him again and turned resolutely away.

"Oh, by the way," he called after me, "we're having all this lot stripped out next month and replaced with aluminium."

As I passed the barrier on the way out I dropped my notes into a litter bin beside the man in the sentry box.

"Left luggage," I explained.

HERBERT KEMBLE

The Editors

A UNIVERSITY FOR HUMAN ENVIRONMENT

The new trio at the Architectural Association, Director Carter, Principal Allen and Secretary Wiltshire, are singularly fortunate in having as their first President Michael Austin-Smith, the first post-war-trained architect to reach this mind-stretching office. Their good fortune was amply demonstrated by Austin-Smith's presidential address last week.

The subjects he emphasised were, briefly, the architect's responsibilities to society, better organisation and the need for more research. This may sound somewhat familiar to AJ readers. The significance is, of course, that Austin-Smith has been trying to practise as he preaches in his own office, and his part in the RIBA's investigation into architects' practices has made him aware of the vast scope for improvement that exists everywhere. A man who has been face to face with the major problems has now been put into a position in which he can encourage something to be done about it. To get things done that is, if he gets active, critical but loyal support from his Council, and is not burdened with presidential social chores. He sees the need for architect specialisation, for the rigorous delegation of responsibilities to younger architects equipped to accept it, so that senior architects have more time to keep control at an over-all, strategic level of briefing, design and production. The final stage in the architect's career he sees as the feed-back into the office system of the information which has been proved in actual performance.

Michael Austin-Smith's answer to the problem of acquiring and implanting the additional knowledge required by architects today is in the establishment of mainly post-graduate departments of study, whose work would be carried out in a close relationship with the school and the AA members. To achieve this he envisages the AA affiliating with a university. He was prepared to accept the disappearance of the last independent architectural school for the very real advantages of a close relationship with a university: the guarantee of funds (even though they may have to be fought for with other faculties) from the University Grants Committee and of State grants for students.

Proud, poverty-stricken independence is not a future one would wish upon anybody, least of all such a unique and potentially vital body as the AA. We would hope, however, that administrators and educationists will have the wit and charity to look kindly on any overtures from the AA. It is slowly dawning on us that there is a science and art emerging which could create a visual and ordered environment, and enable the common man to live a full, complex and exciting life. But solutions will not be found without expenditure on a scale worthy of the aims, and freedom to experiment.

FINNIMINOR

Although it was heartening to see the splurge of new Continental economy cars at the Motor Show (and reassuring to see that most of the Detroit compacts have stayed compact, after all) it was utterly disheartening to see the way BMC have started messing up ADO 15 (Miniminor or Austin Seven, to you). One had hoped that Alec Issigonis's brilliant little box-on-wheels marked a break with the sick tradition of walnut fascias and Farina-and soda at Longbridge and Cowley, but apparently not. The Finniminor tragedy is made worse by the existence of proper variants on ADO 15, the souped-up Cooper version on the one hand, and the completely redesigned bodywork of Zagato's grand-touring Miniminor-Gatto, on the other. If only BMC had made the latter the basis of their Wolsley and Riley variants they would have had something better to offer than an old friend in a Guy-Fawkes mask and a bustle.

BACKS TO THE ARCH

Rearguard action to save Euston from the Philistines continued last week: on Tuesday morning the head of the demolition firm concerned, Mr. Valori, rang up anxiously to ask for news. He is as keen as anyone to preserve the arch and telephoned to say he had received an offer of a site to store it on, if only we could give him the go-ahead. He was dismayed that everything depended on Mr. Macmillan —"Hasn't he enough on his mind?" he asked reasonably. On Tuesday afternoon, however, Mr. M actually received a distinguished deputation to put the case for storing and re-erecting the arch. If no news has yet been received, demolition has now actually begun.

*

Having formed the habit now of asking pertinent questions on this subject, we are wondering where Hardwick's original drawings are—nobody seems to know — and whether anybody concerned has thought of having the building (it really is a building with rooms inside) drawn to scale now, so that at least a ghost of it remains? Nobody seems to know this either. We also wonder whether, when, or why not, an exhibition of the proposals for the new Euston Station is to be put on show for examination by a delighted or furious public? It is high time it became common practice for those who are responsible for spending public money on public buildings to put their plans on show.

RED SQUARES

The new Kremlin theatre, designed by Mikhail Posokhin, is, they say, a modern building and bears a remarkable resemblance to the UNO Assembly Hall in New York. Is it? or does it? Not likely. The *New Statesman* described it, oddly, as "starkly modern but not inelegant" (some implications may be studied here). A ban on decorative detail, even though one little frill on the skyline was irresistible—is no recipe for modern architecture. It merely produces a stripped classicism reminiscent of the efforts of Mussolini's architects.

*

The modern architects of the immediate post-revolutionary era in Russia were wildly ecstatic—a dangerous but cheerful condition: the present designers, released from the academic strait-jacket, evidently still need some loosening up.

cfv

The Council for Visual Education seems to have burst into renewed life, after some years in the doldrums: a letter in The Times last month appealed for £100,000 to enable it to get going again and its new secretary, Moira Matheson, has been telling me just what the Council plans to spend this money

The new meeting hall in the Kremlin with one of the old Gate houses alongside. See "Red Squares".

Two designs by David Rock for the Architects' Benevolent Fund Christmas cards: Above, "Medallion," from Henry VII's tomb in Westminster Abbey, purple on white, 6d: right, "Montage," based on the Church of the Holy Sepulchre in Jerusalem, dark red on gold card, 1s 6d

on, apart from an office, notepaper and salaries.

*

She tells me they plan to replace their previous bulky loan exhibitions of material (which were always popular in secondary schools but could be greatly extended), by selling sets of well-designed poster-size prints to anyone who wants an effective exhibition, and have started by producing one on "New Communal Buildings"—a fairly wide term for it includes Gatwick Airport and Denys Lasdun's flats in St James's Park. In black and white to start with, but colour will come with increased customers, and later there will be an exhibition of cfv exhibitions at the Building Centre to secure these.

*

Most generally interesting, perhaps, of the work already in progress is the slide index, which will make it possible to track down any slide on any architectural or allied subject, with details of how and where to hire it. Extraordinary as it may seem, no such index has ever been produced before. With the growth of colour photography and home projectors, the Council ought to be able to gather together splendid material and to use it widely if it can get a team of lively lecturers-accompanists. Any takers?

XMABS

For those who don't produce their own Christmas cards—and there must be some architects who don't—the ABS has this year produced three, of which two are shown here, none of which would disgrace either your choice or your mantelpiece. All three are architectural, religious in flavour and very agreeable. Next year, could the ABS perhaps bear in mind that there are quite a lot of non-Christian humanists among architects who would like to support the Benevolent Fund, but might prefer a secular greeting?

FOR GEORGE'S GRANDMOTHER

The moral is that little boys should not be given dangerous toys, said Belloc: talking of Christmas cards reminds me that BSI is just about to catch up, and British Standard on "Safety in toys" is to be published on December 1. Its recommendations cover pretty well everything you could think of—sharp metal, brittle plastics, inflammable materials and other hazards to be avoided. But one or two important dangers are overlooked. There are, for example, plastic toys on the market with small parts that are only jammed into place and can soon be removed and swallowed. Then there are cots with screws that even a one-year-old can remove and eat, while dismantling the whole thing.

The BS committee admits failure, so far, on one matter. It can't decide how doll's eyes can be made non-detachable and therefore non-swallowable. Any ideas.

WHICH OVEN?

One of my worries about Which, and consumer organisations generally, is their very narrow approach, their tendency to limit their terms of reference to what is obviously on the market (usually, just what is heavily advertised). The current Which, for instance, has done a good rough job on gas cookers, measuring their performance, durability, ease of use, and all that, but nowhere questioning the idiotic overall design of current cookers, whose low-placed oven ensures an annual rupture getting the Christmas turkey in and out. Not everybody has room for a high oven, admittedly, but quite a lot of people have. They are still manufactured, though companies seem very unwilling to admit this. Nevertheless, you can get one if you insist, and I would have thought that Which owed it to its readership to point out this fact before settling down to review the more obvious choices. Basic functional design is still the first consideration.

ASTRAGAL

LETTERS

Serf

Ben Smith, staff side seretary, Whitley Councils for the Health Services (Great Britain). Professional and Technical Staffs Council 'B.'

Eric de Mare, ARIBA

R. H. D. Park, ARIBA

A. Reginald Stamp, Chairman, Town Planning Committee, London County Council

Question of scale

SIR: The new salary scales proposed by AOA fascinate me. As chief assistant architect in the engineer's department of a district council with a population of 37,000 I consider that I should rate at least the lower group leader scale, with a maximum of £2,300, but this would give me more money than the council's engineer and surveyor, who on the present chief officers' scale based on population is entitled to £2,240.

All right, make me a chief officer, too. (I think I ought to be one anyway.) That makes me entitled, according to AOA, to up to £3,000. Still, there's no harm in that; "the scales proposed are almost entirely contained within the limits of those already in existence . . ."

The scales proposed may well be suitable for the larger authorities, from which all the members of the AOA council are drawn, but are completely unrealistic for any authority with a population of less than 45,000.

No architect can ever hope to make his career within one small local authority, but only in Local Government as a whole. Comparisons with the Civil Service or with nationalised industries are pointless. The salary scales are short because small authorities cannot afford to offer longer ones.

Promotion has to be achieved by changing jobs; this is recognised by the universally transferable superannuation and by the frequent offers of housing accommodation and help with removal expenses.

To avoid embarrassment to my chief, who I do not think would like to see his salary disclosed in a professional magazine, I should be glad if, if you think this letter worthy of publication, you were to print it over the pseudonym . . .

SERF

SIR: Your report on the approach of the Association of Official Architects to the Minister of Health, suggests that the Association is ignorant of the constitution of the Health Service Whitley machinery and does not understand that the present arrangements cater completely for all the salaries and service conditions requirements of hospital architects.

The Minister of Health, as the Association of Official Architects will quickly learn, has no power to vary the composition of the Staff Side of any Health Service Whitley Council. Only the councils themselves have such power, subject to the consent of the General Whitley Council, and this is not likely to be exercised where staffs are adequately represented by existing organisations.

In the particular case of the Professional and Technical Council "B," the organisations constituting the present Staff Side, and in particular those on the Staff Side of its Committee which deals with Regional Hospital Board Professional and Technical Staff, fully represent the views of architects in the service, as of the other professions, and, in addition, have experience of negotiations in this and allied fields over many years.

There is nothing in negotiations which architects can accomplish through an organisation such as the AOA, which they cannot accomplish through the present Staff Side of Committee F.

BEN SMITH

Nalgo House,
London NW1

SIR: Whilst I applaud your support for trade union action by the AOA, let us face the fact that they will inevitably have to drag along an army of other local authority workers to any salary negotiations.

At present the LAS seem to hire their architects as a body, at something like a third of the RIBA scale, and they cannot change this within their structure without antagonising other, more strongly entrenched professional groups. From my own (depressing) experience of haggling with an LA employer I concluded that the solution for the architect is to retain only the top echelon of architects inside the LA, acting more or less as clients to put the work out to private firms at scale rates. In practice, the recent building boom has brought this about to a limited extent, to the great benefit of all classes of the profession.

The engagement of a large part of the profession at cut rates in the base of the LA pyramid saps the living standards of the whole body.

It would incidentally be interesting to know what profits the new towns make on the services of their architects to private industrial concerns, etc, and where these profits go. Clearly their architect staffs as a whole do not receive the benefit of the substantial fees they earn and which they would receive if they acted outside the official set-up.

R. H. D. PARK

Basildon, Essex

Mumford and money

SIR: Learned Prof Mumford may be, but someone must ask the question: Why does he never get down to brass tacks? Money manipulation is now the basic problem, but he avoids it. The subject is taboo. Why?

Don't ask the economists for they talk in tongues. Ask the psychiatrists.

If we still expect to create a culture worth having under the existing self-immolating and restricting credit monopoly with its philosophy of rewards and punishments, ceaseless toil, power, frustration and aggressive competition, we must all be dotty beyond redemption.

ERIC DE MARÉ

London W11

Too High? Too Late!

SIR: My attention has been drawn to the reference made in this proposed development in the ARCHITECTS' JOURNAL of October 18 (page 648).

It is stated that Arthur Swift and Partners had worked for three years with the clear understanding that the Council would approve a tall block on this site and reference is then made to "a belated policy switch on the matter."

Policy decisions on any particular site are, of course, matters for the Council's Town Planning Committee. No application for consideration by the Committee was made until April of this year. The considerations which the Council takes into account when dealing with applications for high buildings were published in 1956 and have been well publicised since. The first of these is whether the building would disrupt the pattern of existing development or obtrude itself on the skyline to the detriment of existing architectural groups and landscapes.

As long ago as March, 1960, the architects for the developers were made aware in discussion with the Council's officers that any proposal for a high building on this site would be subject to very close scrutiny by all interested bodies in view of its effect on important skylines, and this point was very strongly emphasised during further discussion with the architects in March of this year, before the application was submitted.

It is unfortunate that the photograph which you have published does not show the effect on the skyline and the relationship of the proposed development to Somerset House as they would be seen from Waterloo Bridge.

REGINALD STAMP

The County Hall,
London SE1

NEWS

STANDARDS AND VALUES IN MOTOR AGE TOWNS

Colin Buchanan at the TPI

In giving the fifth triennial Rees Jeffreys lecture to the TPI on October 26 Colin Buchanan, speaking strictly personally on "Standards and Values in Motor Age Towns" gave a splendid sermon on the traffic problem, which he claimed was "not a traffic problem . . . so much as a social situation." These lectures, as he pointed out, are intended to deal specifically with "the design and lay-out of roads," but, quoting Rees Jeffreys' claim that "the building of roads—safe, adequate and pleasant— . . . is one of the surest ways to raise the standards of living, to advance civilisation and to promote the well-being of the people," Mr. Buchanan suggested that "events are taking a turn which not even Rees Jeffreys in all his wisdom foresaw." He therefore concentrated on these events.

"If asked to state in one sentence the basic problem which the motor vehicle poses for town planning," said Mr. Buchanan, "I would say that it lies in the challenge to the principle of compactness." The motor car had not caused sprawl—population increase, overcrowding and obsolescence had exerted pressures towards sprawl which the flexibility of the car had then encouraged: and if there was one thing planners agreed about it was that urban sprawl was a bad thing. He doubted, however, whether the public at large agreed, and—turning Devil's advocate—asked what was wrong with it.

"The natural drift in our affairs is towards sprawl," he said, "and any town-planner possessed of proper humility must question in his heart the wisdom of trying to reverse trends that seem inexorable." As car ownership in this country increased to American levels would there not be a strong tendency for a repetition of the developments that have taken place over there—considerable sprawl of suburban building based for communications on the household car or cars, with new shopping centres surrounded by ample car parks and tied together by express motorways? "Assuming that all this development were well done—the houses well designed and the gardens and settings well landscaped, where would the harm lie?" he asked. One heard of Los Angeles as "the ultimate horror of motorisation," but "four million middle-class Americans love it and many more are bursting to get into it. I find little to suggest that many of the features of Los Angeles would not appeal very strongly indeed to large numbers of people in this country. Where then is the harm? Why not let the motor rip, taking us where it will with its spreading suburbia and regional shopping centres, even if it means giving up towns as we have known them in the past?"

He answered the argument briefly—perhaps feeling that he was faced by a converted audience on this occasion—by saying that town communities had served the world very well for a long time, and that the destruction of the countryside involved was "the finally convincing argument."

He went on to draw a scarifying but not exaggerated picture of the impact of the motor vehicle on the compact town environment today—the hideous accidents which we take so calmly, the noise, the nuisance, the disgusting fumes. "My submission is that the influences I have tried to describe, from danger and its attendant anxieties to the obscuring of the visual scene are now threatening the civilised function of urban areas: their insidiously numbing and paralysing effects prevent their recognition," he said. "They are brutalising influences breeding indifference to the appearance of places. We can litter London squares with cars, choke Queen Anne's Gate with them, pack Horse Guards Parade with them, turn Parliament Square into a ridiculous garden set in a turmoil of traffic, accept a hideous array of signs and signals, advertisements and filling stations and think nothing of it," he said—and Paris was still worse: the traffic moved at a speed which left the English visitor amazed, but only proved that measures to speed up the traffic were not by themselves in the best interests of urban life. "There is at least this merit in a street that is jammed to a standstill—you cannot be run over!"

Going on to point out that there is a prospect of doubling the number of vehicles circulating in Britain within 10 years, Mr Buchanan warned against "treating these problems as though nothing more were involved than the movement of vehicles. . . . Viewed more positively the traffic problem is a design problem; to devise arrangements of buildings, the spaces around them, access ways and circulation routes in a manner that will permit the fullest use of the motor vehicle while retaining or creating good urban environments." The term "environment" was rather vague, but obviously had much to do with the appearance and convenience of physical surroundings. If everyone went on wheels obviously the most convenient environment would consist of universal "drive-in" provision, but this was impossible because the space requirements would be far too large: therefore we had to accept the need for pedestrian movement, and having accepted it had to ensure a convenient environment for it. As far as visual aspect was concerned whose "eye-view" should count more—the pedestrian's or the driver's?

"I would unhesitatingly give pride of place to the pedestrian," said Mr Buchanan. "His great characteristic is that he can walk and talk and look around at the same time; he can take in wide views at a glance, he can stop to appreciate some point and thus absorb the subtleties of a scene. I therefore reach the paradoxical conclusion that the pedestrian's environment is of the greatest importance for the motor age. The term pedestrian segregation is much used in planning today but it conveys neither the right idea nor the whole idea: it is vehicular segregation that is required to achieve pedestrian liberation." As an example of the intolerable results of trying to combine the functions of a street he pointed to Oxford Street—"the most uncivilised street in Europe."

Mr Buchanan went on to outline the two-part problem of design involved in providing the right environment for civilisation, and drew an analogy between the circulation in a large building and traffic circulation in a town.

Taking the example of a hospital he pointed out "the wards and theatres and other accommodation units of the hospital constitute the essence of the building; the corridors and lifts are service utilities, vitally important but nevertheless secondary. The same relationship should apply in the city between environmental units and the distributory highways." In the same way the design of a hospital started with an environmental concept for the accommodation units: the redesigning of a town for motor traffic must start in the same way.

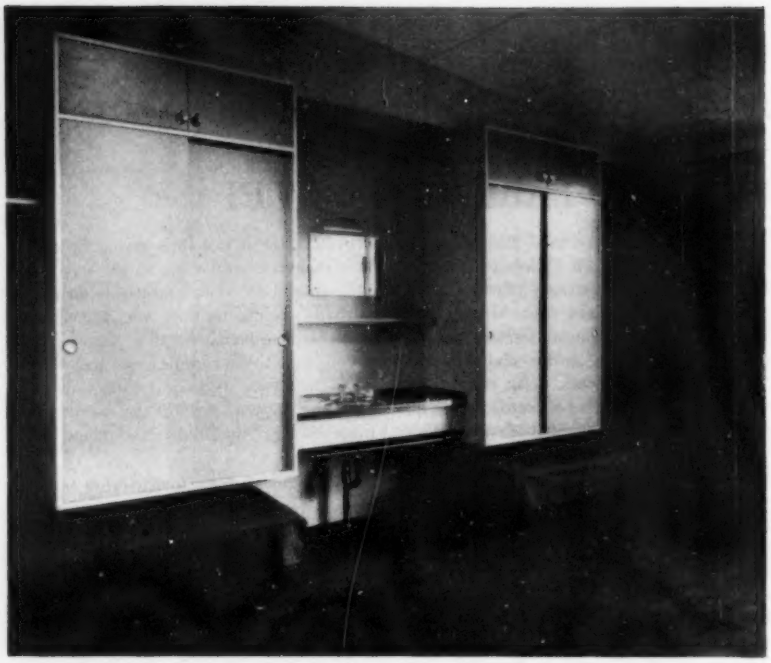
"Once environmental values have been chosen," he went on, "they condition the design. In the hospital they dictate the capacity of the wards, in the city they dictate the capacity for traffic. Indeed, so powerful an influence on design are the environmental requirements that I suspect in many cases in our towns it is going to be a matter of designing the environmental unit and then calculating how much traffic it will accommodate and accepting that as the limit rather than vainly trying to provide for incalculable and insatiable demands."

Of the traffic in any town, it was obvious that essential commercial, industrial and business vehicles must come before private cars. Presumably Mr Buchanan included public transport in this list of priorities.

He went on to say that "to extract the most from the motor" it would be necessary to think in terms of two planes of circulation with wheels below—"a basic arrangement with very great possibilities, but it is expensive and can be secured only by the reconstruction of sizeable areas. Whenever I mention this people say it is fantastic," he commented. "Well, let them say it, but let them realise also that in rejecting the idea they are also setting a strict ceiling to the exploitation

of the motor vehicle." Pointing again to the state of Oxford Street, he remarked that owing to piecemeal redevelopment the street was being rebuilt without any improvement of environment; if the south side went the way of the north a great opportunity to produce a magnificent shopping street would have been lost—and restriction of traffic would become inevitable, unless Rigby Childs' ingenious scheme for an elevated pedestrian mall was carried out at the cost of £10,000,000.

Concluding, Mr Buchanan said his lecture had been "an attempt to stake the claim of environment against the erosion of the motor vehicle": he would like to produce "an index that would convey the liveability of an area or a street in respect of the standards that are so vulnerable—safety, quiet and cleanliness of atmosphere." It would then be possible to compare one place with another and "a new criterion would be brought into use, to balance the one which has dominated for so long—the convenience of through-traffic."



Room for four privates designed by the WD Development Group

WD DEVELOPMENT GROUP

Accommodating the young soldier

The War Office last week opened up for inspection by the Press some new experimental accommodation designed by the Development Group of the Works Directorate for the single soldier, which makes clear that WD recognises the fact that the soldier of today is a young man with a working day and leisure time interests and standards similar to those of a young worker in office or factory. He likes to spend some of his time in a civilised domestic environment, and, though probably more gregarious than some, enjoys occasional quiet and privacy.

The new building contains eight suites of accommodation, each with its own entrance, and consisting of two bedsitting rooms each for four soldiers, and a single room for a corporal. Each man has a built-in wardrobe containing a hanging rail, four drawers and shoe rails; and above the bedhead he has a shelf, pin-up board, bedside light and a power point for ironing, shaving or wireless set. The divan bed can be turned through 90 deg. so that one end combines with the padded bedhead to form an easy chair, while the remainder, by fitting under the wardrobe, occupies a minimum of useful floor space. Every room also has a wash-hand basin with a shelf, mirror and towel rail, and an electrically heated drying cupboard where the men can hang wet clothes or washing they may have carried out themselves. A table and two chairs complete the room furniture. The floor finish is linoleum (hob-nailed boots are on the way out) and sloping ceiling of fibreboard.

Thought has been given to the quality of the lighting. The window and rooflight give an even 2 per cent daylight factor: for artificial light, there is a central fitting with adequate cut-off and an individual light for each man. The building is centrally heated by low-pressure hot water with convector units in each room.

Sanitary accommodation is shared by two groups of nine: with its relatively small number of fittings, it could not be called institutional and is no doubt a considerable improvement on existing practice, but the increase in height made necessary by the method of ventilation—clerestory louvres—has destroyed the domestic character achieved in the remainder of the building.

This improved accommodation—rooms for a smaller number of men, better fittings, furniture, and finishes—has been built for the same cost as the old style barracks (it was in fact a condition of the experiment that this should be so) and represents one more triumph for common sense and cost planning.

SPUR

Appeal to local councils

The Society for the Promotion of Urban Renewal (SPUR) last week sent out the following letter to the clerks of all borough councils and urban district councils with populations between 25,000 and 100,000.

"Dear Sir, This Society is a group of planners, architects, engineers, economists, sociologists and business men professionally engaged at a high level in town design and development, and is affiliated to the Housing Centre Trust. We are sending a copy of this letter to the Town Clerk of every town in England and Wales whose population is in the bracket 25,000 to 100,000, with an urgent request that it be brought before the appropriate Committee.

"We are doing this to draw attention to an opportunity, which once missed may not recur, to finance the replanning and rebuilding of the blighted and congested inner areas of these towns, and in doing so to relieve traffic congestion and increase the attraction of the town's established businesses, its good building and public spaces.

"The technique we advocate can be roughly described as "taking the rough with the smooth," or, precisely, so organising the purchase and sales of sites that profitable and unprofitable operations go hand in hand, thus benefiting the town both financially and architecturally. For its success it depends on this sequence of operations:

"1. The preparation of a large-scale phased three-dimensional renewal plan for the centre either by the planning authority's own officers or by a consultant architect/planner, with the advice of qualified commercial consultants, if necessary.

"2. The subdivision of the planned area into blocks large enough to be balanced financially as to profit-making uses (shops, offices, high-rental housing) and non-profit-making uses (roads and parking, open space, low-rental housing).

"3. The purchase by the local authority or by private developers, as may be practicable at the time, of each block as it becomes ripe for redevelopment, and

its rebuilding either directly or by competitive tender within the framework of the development plan.

What is the alternative? It is all too evident up and down the country, where local authorities have released those sites whose profitability is their vital asset, leaving the ratepayer and the taxpayer saddled with the cost of renewing the unprofitable sites, if and when they can afford to do so. The visible result can only be a patchwork of luxury and dilapidation and a commercial centre which as a mechanism fails to work, and as a piece of architecture fails to make any impact.

These considerations apply not only to towns whose centres require large-scale renewal, but equally to the smaller historic towns whose fine old streets are congested by parked vehicles, and whose beauty can only be restored by the opening up and redevelopment of back land. We are therefore urging local authorities, if they have not already done so, to press forward the preparation of imaginative and businesslike renewal plans. Applications critically affecting your town's whole future, which it would be most unwise to allow until such plans exist, may arrive in any post; so time is the essence.

(Mrs.) M. C. Baker,
Secretary.

ERA'S RESEARCH PROJECT

Overnight heating tailored for tomorrow's weather

The British Electrical and Allied Industries' Research Association has undertaken a major scheme of research to develop a system for suiting off-peak heating installations to our changeable weather.

In any off-peak heating installation, the storage medium, whether it be the concrete floor or block heaters, is charged overnight, and the difficulty is to determine the length of charge required to make up the losses during the following day.

With simple thermostatic control the installation is switched on as soon as the supply becomes available and off as soon as the air temperature rises to the design level. During mild weather this temperature may be reached in the early hours of the morning and be maintained until the supply ceases to be available. This is wasteful and some method is required to shorten the charging period during mild weather.

Instruments are available commercially which will either delay the switching-on time if the temperature at night is mild, or will "pulse" the system so that the ratio of the "On" pulses to the "Off" pulses varies with the external temperature. These instruments are sensitive only to the temperature at night, and can make no prediction as to the conditions during the following day, so that when a warm night is followed by a cold day, or vice versa, there may be trouble.

Now the idea is that the Meteorological Office would issue coded information relayed by telephone line or other means to an automatic receiver in each building, and that the switching-on time could be determined in accordance with this information.

Although the meteorological service can give a fairly accurate prediction of the weather conditions for 24 hours ahead, it is not known in detail how these conditions affect the heat loss from buildings. To solve this problem the ERA is erecting a five-storey concrete frame building with a different type of wall cladding on each floor. There is cavity brick, thermolite block, curtain walling, etc. During the next three years it is intended to record the amount of electricity needed to maintain constant temperatures within each of these spaces, and to co-relate these figures with measurements of external weather conditions.

It is hoped that this will give the ERA sufficient data to work out formulae, specific for each type of construction, which will translate coded meteorological information into a switching-on time.

An elaborate system such as this would be worth while only in large buildings, but it is possible that some simpler method might be adapted for smaller buildings. Even if this should not be possible, its usefulness for large buildings would be enormous.

NEW TECHNIQUE

Bison preferred dimension frame

A new technique for the construction of framed buildings was announced by Concrete Ltd on October 19.

The advantages and disadvantages of precast concrete construction have been stated in the AJ too often to be repeated here, but in this particular development Concrete Ltd claim to have provided a precast system which gives rationalization without regimentation.

This has been achieved by using certain standard moulds which still allow variation in heights and lengths of members. The system is limited to buildings of four storeys but within this limitation floors can be provided spanning up to 36 ft from back to front or 25 ft to a central support system when two bays are required side by side.

Columns cast to full height can be 10 ft, 12 ft 6 in, 15 ft, 17 ft 6 in, or 20 ft along the length of the building and in heights appropriate to the number of floors required with the lower storey of 10 ft, 11 ft, 12 ft, 13 ft, 14 ft, or 15 ft, and the upper storeys of 10 ft, 11 ft, or 12 ft.

Edge beams fit longitudinally between the columns and support the floor units and a variety of cladding systems. Alternatively a panel edge beam can be used providing both cladding and structure.

Staircases and lift shafts are available as precast members.

Concrete Ltd claim savings of 15 per cent to 20 per cent of structure cost relative to previous techniques arising from reduced effort in the drawing office, rationalisation in the factory, familiarity on the site erection, other trades flowing on more rapidly and provision for services within the structure.

RICS

Eric Lyons calls for better clients

When brash commercial exploitation stands for progress, and the Betjemanic depressives flourish, what solution can the architect offer?

Expressing alternately frustration and enthusiasm, Eric Lyons illuminated the problem and its answer in a lecture on "Speculative Building and Architect" to the Junior Organisation of Quantity Surveyors at the RICS on October 19.

The present architectural scene, he said, is a dismal one; people increasingly object to new building on principle. The fact that each man considers himself a housing specialist, having lived in a house, and the cynical attitude of the builder who knows what people want, discourage research. Yet values publicly upheld are not immutable. Things could be changed for the better—and would be accepted if only they were offered.

People have not always lived in semi-dets along the bypass. Group housing is not foreign to our tradition; nor is landscaping. The present-day house is in any case too small to stand as one of a row of separate, different houses. By grouping houses one can create effective spaces and worthwhile landscaping; it is an economy in land; one can use modern repetitive methods of constructions; one can lessen common running expenses and create a humane and urban environment.

Housing forms by far the greater proportion of the town; it is a part of the community; it is a problem that cannot be ignored; it demands responsibility. The building societies should realise that the Thirties have gone forever; the town planners should look again to their principles and dare to experiment.

Mr. Lyons heightened his argument with colour slides of Roehampton above the trees of Richmond Park, of semi-dets along the bypass, and of his own houses, glowing benignly through thickening shrubberies.

His real reason for coming, he said, was to invoke the audience's sense of responsibility. The architect is only as good as his client. How much longer must we endure the attitude of "safety

first"? When would we be allowed to use our resources?

A society that cannot see change as a constant opportunity and challenge can only be a decadent society. Lewis Mumford has said "Culture is not a set of books on a shelf, but a community of interests between people."

Among the questions at the end I record two phrases: "I think this is the best talk we have ever had," and "I work for a Building Society; people don't seem to realise that we're in business."

MARTIN RICHARDSON

ILA

Problems of growth

In the last 25 years, since the Institute of Landscape Architects was a small body of 30 members, the work of the profession has become increasingly specialised, G. P. Youngman pointed out in his presidential address to a general meeting of the ILA on October 5, but the work is all in the hands of a small number of older members who have the experience.

Mr Youngman pointed to the increasing landscaping of such large-scale schemes as power stations and arterial roads, and pointed out that courses for students were now available, but asked how younger people interested in this important field were to find the opportunities of getting the necessary practical experience, when most privately practicing landscape architects find themselves operating a one-man office without qualified assistants?

Open spaces in cities

The schizophrenic approach to the design of open spaces was condemned by all speakers at an enterprising symposium run by the Bristol and Somerset Society of Architects last week. Leslie Ginsburg, head of the Birmingham School of Planning and Landscape Architecture opened up the subject by suggesting that far too many areas were simply SLOAP—*space left over after planning*—whereas very often these spaces were more important than the buildings surrounding them.

Elizabeth Beazley emphasised the importance of treating ground pattern as the "fifth elevation" in the design of voids and spaces, while Paul Edwards, landscape architect in the City of Coventry, made an urgent plea for a comprehensive approach to the design of spaces—the need for design teams to include members of parks departments, administrators, and engineers, as well as town planners and architects. He also suggested that a basic training in horticulture, construction and design was essential to anyone concerned with open space design. This point was not contested by anyone present though few architects and planners seem willing to study the horticultural aspects of open space design.

On the need for segregation of people and vehicles all the speakers were unanimous. Bristol's own reconstruction is a lamentable example in this respect. Ginsburg said there were two kinds of space in cities—those for "congregation" and those for "circulation." Each requires different treatment but where both activities unavoidably occur in the same space then multi-level separation is essential. All stressed the new scale of cities, Edwards emphasising that not only were our cities growing, but so were populations, and so was leisure time; not nearly enough thought had been given to the kinds and amounts of spaces cities would need in the near future.

In her paper on "Floorscape," Miss Beazley had a great deal to say about scale, and about simplicity. There was a boldness and clarity in the design of the great Baroque spaces, such as the nine acres of paving before St. Peter's, Rome, while on a smaller scale the traditional use of the right materials by local craftsmen created intimate floorscapes of a purely functional nature that were very beautiful. Nowadays we had become too fussy; using all sorts of materials without a real appreciation of their function.

There were too many meaningless patterns of cobbles that tripped you up, channels that didn't carry water, flagstones not laid where people walked, and bollards whose only purpose was to satisfy the architect's whim. Her pungent illustrations drove these points well home. She called for a broadness and simplicity of approach in design, to avoid the present tendency towards timidity and pettiness, and for a direct approach with a basically practical attitude to materials.

Mr G. P. Youngman, President of the ILA, chaired the general discussion on the three main papers with great charm. Broad ideas and detailed knowledge on aspects of townscape, planting, and floorscape flowed among the 120 participants during the afternoon, and several important points emerged:—

- need to overcome danger of "stereotyping" open space designs and wasting land, especially in housing layouts because of the rigid application of bye-law requirements—frequently outdated—on splays, sightlines, verges and materials used for kerbs.
- need for planting more large trees in cities to act as foils to buildings as well as acoustic insulation to traffic. But the planting must be planned in advance with the engineer responsible for underground services and highways so that trees will be able to mature to their full size without damage.
- need for more careful use of water in towns: fountains meant to catch the sun look sad in the rain and dirt gathers all too easily in still pools. Daily attention is necessary if ornamental water in cities is to look clean and fresh.
- more attention must be paid to the possibilities of the maintenance and financing of incidental open spaces in housing areas by the owners and/or occupiers of the dwellings, both to inculcate a sense of responsibility and to lessen the cost to the city. Most authorities are unwilling to take over spaces which private developers would include in their layout, while few developers care to go to the trouble of arranging leases or covenants for tenant control of open spaces. In the past this method has given us such spaces as Bedford Square, the Circus at Bath, and—close to this symposium—the squares of Clifton.

The Lord Mayor of Bristol had opened the symposium with pertinent remarks on citizen responsibility for looking after their open spaces, and called on designers to create more adventure playgrounds where children could enjoy the "Tarzanic" life without wrecking the place. He did not suggest from where the money might come.

POST-GRADUATE TRAINING

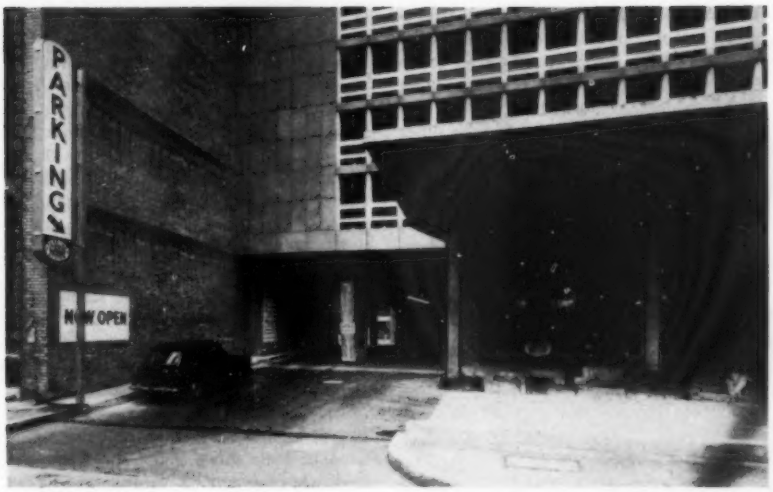
Conference at the RIBA

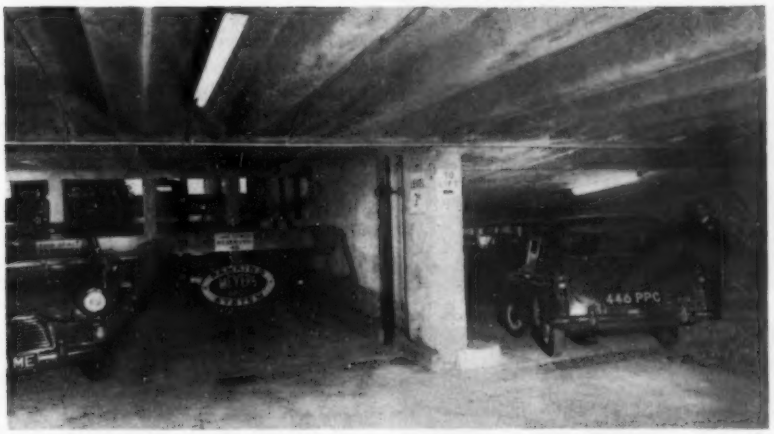
The heads of most of the recognised architectural schools gathered on October 19 and 20 at the RIBA, for a conference on post-graduate training, organised by the RIBA under the chairmanship of Professor Richard Llewelyn Davies.

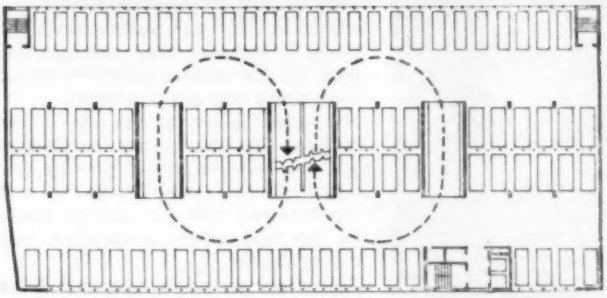
In addition to architects attending, there were people from other disciplines, some of whom made really valuable contributions. Thursday's sessions were devoted to discussing "the objects and forms of post-graduate training," and "standards of selection and achievement in post-graduate work"; and Friday's to "The staff and facilities needed for post-graduate work, and its relation to research," and to the question of refresher courses.

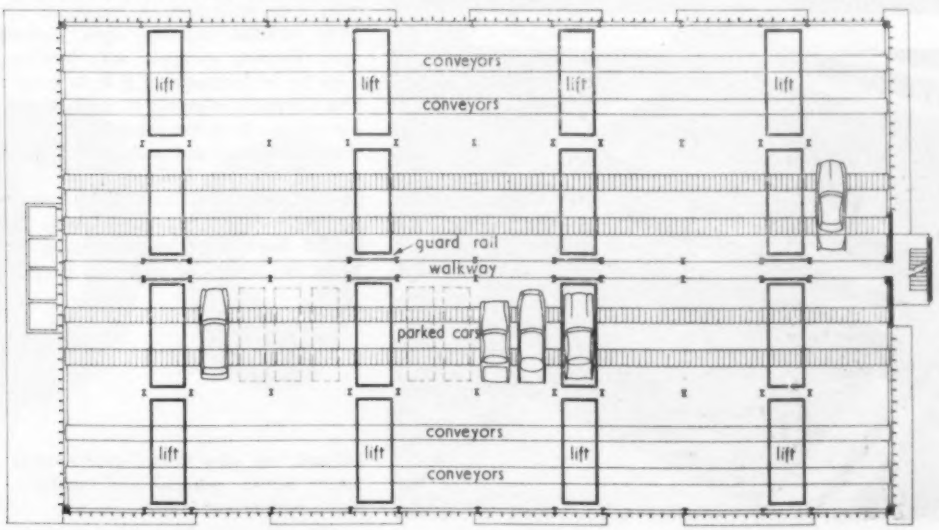
Professor Nash, of King's College, London, Dr Lea, of BRS, and the AA's Dr Konigsberger were able to show how post-graduate training and research are being dealt with in disciplines with already flourishing traditions in this field. But the architects present, on the whole, seemed to lack insight into the new and complex ideas which intensive research and study reveal.

The quality of contributions to the discussion varied considerably: some gave the impression that the basic aims and objectives of the conference were not clear to the speakers, but the chairman









was usually able to get the discussion back onto the rails. One wishes him well in the preparation of the report on this conference, and hopes it will stimulate another, which might start, perhaps, with its terminology and objectives more clearly defined, as a result of the experience gained during these two days.

MULTI-STOREY GARAGES

Two London versions

Increasing numbers of the 5,000 parking places in the streets of the City of London are being regulated by meters set at two- or five-hour periods. Although these meters are designed to accommodate visitors to City offices many are nowadays occupied by commuting cars whose drivers secretly feed the meters or play a regular and idiotic game of musical cars. Either way the outcome is clogged streets.

To combat this problem the City Corporation has designated nine sites for multi-storey car parks, and together with the Route 11 park they will hold 5,000 cars. The first two multi-storey parks to be built are a pre-cast concrete ramp-type, self-park garage in Aldersgate designed by Oscar Garry and Partners and a steel-frame mechanical "Zidpark" by C. Edmund Wilford and Son in Upper Thames Street. Both have just been opened. Another ramped park is now under construction near London Bridge and one more awaits Ministerial sanction.

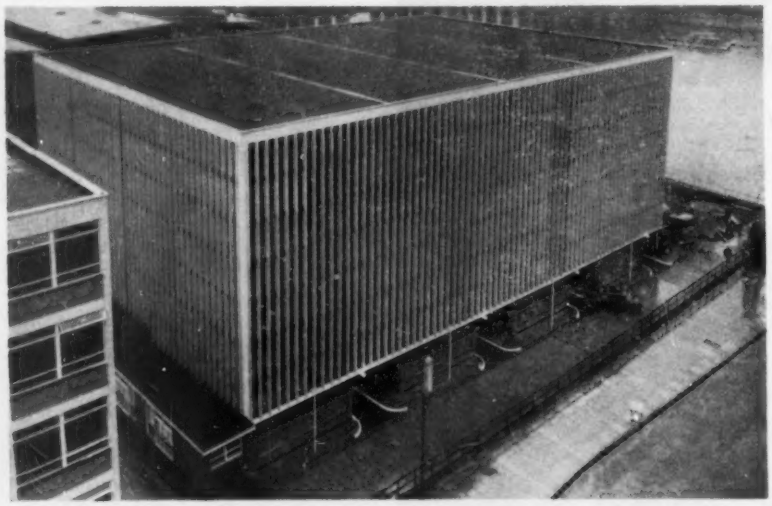
All these sites are on the perimeter of the City and all have their capacity limited by the requirement that they should be capable of filling half their

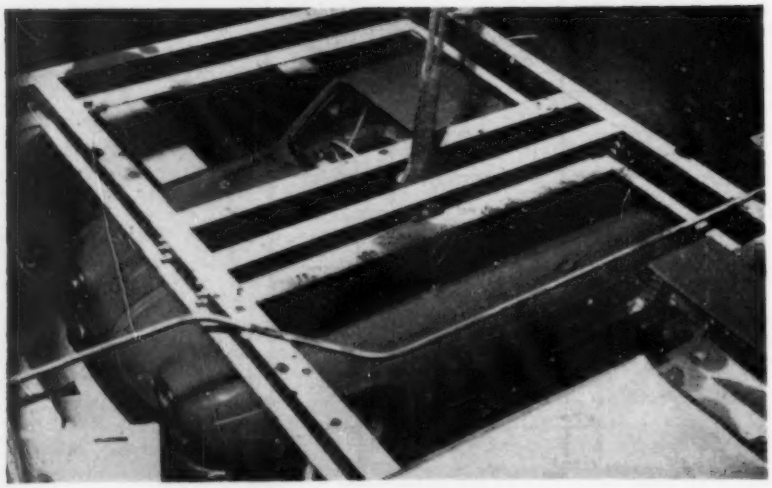
Above, entrance and—seen from the ramp—parking spaces of the Aldersgate garage, and, left, typical floor plan. Below, typical floor plan of the Zidpark

berths in half an hour. This is the City Corporation's ingenious method of evading the issue of radically improving traffic flow.

At present four main types of multi-storey parks exist: ramp-type with self-parking, ramp-type with attendant parking and mechanical parks with gantry lifts or vertical lifts and horizontal roller conveyors. Developers are free to propose which they wish to the City Planning Officer.

The self-parking ramp-type, as at Aldersgate, accommodates vehicles at the lowest density (circulation space totals 42 per cent and the fatigue of ascending limits floors) but low initial cost and low overheads compensate for this. Its other characteristics are: cost can be as low as £400 per berth if finishes are rigorously cut; three attendants can run the park, one giving tickets, one overseeing parking, and one cashier; a rate of intake of over eight cars per minute is believed possible although this figure is estimated and has not been tested. However, circulation patterns impose rigidity on site planning; at least 7 ft headroom is desirable and large parking berths are also necessary to provide for the incompetence of the average driver (attendant parking overcomes this shortcoming although exposing possessions to pilfering and incurring a higher wages bill reputedly not compensated for by increased capacity).





The mechanical garage with vertical lift, as at Upper Thames Street, accommodates cars at higher density (circulation occupies only 20 per cent and up to 12 floors are possible) but suffers higher initial and maintenance costs. Other characteristics are that floor heights need be little more than car height; the structure need not be rectangular in plan and can fully occupy irregular sites; different banks of lifts can rise to different elevations and site work above foundation level is dry. However, optimum density and efficiency are possible only if there are no height restrictions; one and possibly two men are required per bank of four lifts plus a cashier (although fully automatic coin operation is technically possible); minimum cost is estimated at £700 per berth; elaborate electronic and mechanical machinery needs maintenance; power or mechanical failure can upset parking; radical changes in car configuration could be disruptive.

These are some factors affecting the design of the garages. Fortunately their logic was permitted to express itself when the City Corporation withdrew its stipulation that car parks should be glazed to look like office buildings and when the LCC accepted open-sided design and drafted new fire regulations.

Aldersgate Garage, on the edge of the Barbican site, has capacity for 700 cars and was built—largely of pre-cast concrete—by the Fram Group. It cost approximately £500 per parking space, but this sum includes a showroom and quality finishes.

The garage comprises nine half floors with 7-ft headroom, a basement for large vehicles and an open parking roof. Existing parapets will, however, have to be increased to 6 ft to meet a City Corporation ruling to conceal roof-parked cars from the ground.

Above the basement and ground floors every floor of the building is split laterally into two levels and divided structurally into three bays 223 ft long. The middle bays cover ramps running between the levels and split-level parapets

Zidpark: top, view from Upper Thames Street; centre, entrance and control panel; bottom, car in lift

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and are supported on *in situ* columns at 16 ft 8 in centres. These columns support band beams 5 ft wide. The main parking spaces are the flanking bays spanned by 33 ft pre-tensioned T-beams resting at their outer ends on beams supported by structural mullions. The T-beams were cast in iron moulds and have rounded soffits. They are pointed with mastic to make them waterproof and covered with a 2-in monolithic screed. The mullions are white concrete pre-cast in fibreglass moulds. Two rows of safety rails of the same material traverse the mullions and have cherry-coloured enamelled steel panels glazed into them.

Although the enclosed basement of the building has forced ventilation and sprinklers, the open upper floors do not; the whole building is fire resistant for two hours.

Along the Aldersgate frontage a 40-ft set back leaves space for petrol pumps covered by a cantilevered roof. Cars enter the garage directly from the street, pass a ticket booth and climb a 1-in-10 longitudinal ramp to get to the first parking deck. All subsequent ramps are shorter, graded 1-in-9.2 and run laterally between split-levels. Manœuvering and circulation tracks along the levels are 20 ft wide; parking berths are 7 ft 4 in wide. Climbing and descending routes are segregated and seem unhorrific. Two passenger lifts are sited inaccessibly at the north end of the building to comply with fire regulations and have the pay booth next to them on the ground floor. Unfortunately the garage's trim Aldersgate façade is interrupted by a cluttered stair and lift well and a projecting showroom and office block, the inarticulation of which tells of the clients' changing intentions. The rear elevation and the relief treatment of the pre-cast cladding panels on the south are, however, excellent. The contract was completed in 21 months. Parking costs 1s an hour and 5s per day.

The Upper Thames Street garage is radically different. It is a conventional bolted steel frame with vertical lifts housing 464 cars on seven stories and a basement. Sheet steel floors interlined with asbestos are provided, but only to stop oil and water from dripping. The garage cost over £850 per berth partly on account of the finishes demanded by the City Corporation.

The entry route encircles the whole building before leading to the lift entrances. This ensures that cars are quickly cleared from the street in rush hours. Indicators tell approaching drivers which bank of lifts to enter and an attendant inside indicates which lift platform. (Experience should permit cars parked for longer times to be given more remote berths.) Every lift serves 30 berths arranged two on either side on all except the ground floor but one berth in each stack must always be left empty to permit shunting. Cars are rolled sideways off the lifts by twin synchronised roller-conveyors invented by a French engineer, M Andre Thaon. (Myton Limited have British rights to the patent and this is its first application.) Every lift and its conveyors is an independent unit controlled electronically from a panel on the ground floor. The average time taken to load, park and return is 60 seconds, although the longest operation involving the release of a car from an inside berth takes 2 min 34 secs. Cars can be parked at the rate of eight a minute. A taller structure with faster lifts could have been built but for the 80-ft limit imposed in the neighbourhood of St. Paul's. The longest cars are too long to fit the lifts but 34 additional stations for such cars are provided in bays under the approach to Southwark Bridge.

The trim of the park is smart and in keeping with the engineering function. Even the plastic-covered steel fins put on to fulfill the City Corporation's demand for concealment are neat. The garage shares the site with an office block, a club and a petrol station incorporating washing and lubrication bays, the total contract value of which was £750,000. Pile-driving difficulties in the spongy course of the old Walbrook resulted in the garage taking 24 months to complete. The steel superstructure however was erected in six months. Parking in it costs 1s 6d per hour (minimum two hours) and 10s 6d per day.

T. BENDIXSON

ALMSHOUSES CONFERENCE

Housing for old people

An appeal to charitable almshouse trusts to build new dwellings for old people, for which they would get the £24 a year subsidy available under the current Housing Bill, was made by Dame Evelyn Sharp, Permanent Secretary to the Ministry of Housing and Local Government, addressing the annual meeting of the National Association of Almshouses in London on October 17.

The clamorous need for flats and cottages for the old would continue to increase, and the estimate of 50,000 more dwellings needed every year for the next 10 years made by the National Corporation for the Care of Old People was, she thought, "on the modest side." There were now nearly 7 million people in this country of "old-age-pensionable age"; in 10 years' time the number would be 8 million.

Local authorities were building nearly 30,000 dwellings a year for the old. "It is not enough. What they are doing needs supplementing," she said. "The contribution voluntary bodies can make is nowhere more important."

To stimulate voluntary effort the Government was making a £25 million grant, and was anxious to see an extension of trusts providing building for old people.

Urging the improvement of existing almshouses, Dame Evelyn hoped that by this time next year all the trusts would have brought their houses up-to-date or have plans for doing so.

She welcomed the association's Architects' Panel as an "excellent idea and one which, I am sure, has proved of great value."

NEW COURSE

Cost planning for quantity surveyors

The College of Estate Management is producing a post-qualification postal course in cost planning, consisting of 11 papers prepared by 10 contributors and a summary of their arguments. This will be supplemented by a one-day conference next spring, held at the college, at which it is hoped that the contributors will all be present.

Fee for the course is 10 guineas, and fuller details are available from the Secretary, College of Estate Management, St Alban's Grove, London, w8.

Correction

A misplaced line introduced an error into the Association of Official Architects statement on salaries, AJ, 18.10.61, p. 655. The recommended structure of scales should have read:

Architect	£1000-£1500
	£1500-£2000
Senior architect	£2000-£2300
	£2300-£2500
Principal architect	£2500-£3000

Deputy and chief officer

Salaries of chiefs and deputies are beyond and above the AOA scales, and are negotiated by a separate Joint Council.

DIARY

Recent developments in Swedish housing: S H Senkowsky at TCPA Planning Forum, 28 King Street, Covent Garden, 6.30 pm.

NOVEMBER 6

Office lighting practice and equipment: exhibition by British Lighting Council Friends Institute, Moseley Road, Birmingham 12, 10 am to 8 pm.

Until NOVEMBER 4

New strategies for local authority building: lecture by Elizabeth Layton, RIBA.

NOVEMBER 7

Two to five in high flats: Eirene White, MP, at Housing Centre, 6.0.

NOVEMBER 7

Informal dinner for Gropius and discussion: Architectural Association at RIBA.

NOVEMBER 8

ACCOMMODATION FOR NURSING STAFF

Hospital Building Bulletin No 2

The second Hospital Bulletin to be published, *Accommodation for Nursing Staff* (published for the Ministry of Health by HMSO, 3s), is intended, like the preceding bulletin on operating theatres, to form part of an official information service for those concerned with the many aspects of hospital planning. These Bulletins deal with the design and layout of selected departments in a more detailed way than the Supplementary Building Notes.

The provision of living-in accommodation has been traditional in hospitals in this country, and today, despite the increasing trend towards non-residence, a certain percentage of accommodation is always required within the hospital precinct. This publication begins by describing the ideal siting factors for such accommodation, and goes on to examine individually the requirements of each grade of nursing staff in detail.

Throughout the booklet few reasons are given for the areas recommended and these certainly appear to be minimal. A student may perhaps be content to live in a room 12 ft x 9 ft but to expect a Sister, possibly of middle age, to exist in one room 10 ft x 14 ft is surely condemning her to live far below the standard of similarly qualified people outside nursing? Since a meagre salary probably prevents her obtaining better living-out accommodation it would seem essential that adequate facilities should be provided within the hospital for women of this grade. For quick reference the area recommendations for all grades of nursing staff are presented in tabulated form.

A comprehensive section on the planning of individual rooms and their combination into staircase clusters follows and is accompanied by very clear and simple plans and sections, illustrating the basic alternatives. These are not to be regarded as type plans and therefore presumably any revolutionary ideas would be welcomed! The concept of nurses' accommodation at present borders on that of a self-service hotel, without the latters' degree of flexibility. Unless it is certain that a particular building composed of single cells will always be required, a fairly high degree of flexibility within the plan itself would seem desirable.

A brief section outlines the minimum requirements of rented accommodation and then follows a general section that discusses finishes, sound control, ventilation, thermal insulation, and fire risks. The final section contains much useful information on the services and equipment necessary within nurses' residences. The type and temperatures of the central heating system and hot water supply are listed and the standard of illumination in various rooms given. A bibliography and an excellent index is provided.

BIRMINGHAM OVERSPILL

Midlands boil over

A request from the MOHLG to Midlands county councils to find land for some 100,000 private enterprise houses outside the west Midlands green belt, has provoked vigorous protests from the Midland New Towns Society, where the matter was raised at a conference at Leamington Spa last month by its secretary, Dr. D. E. C. Eversley, who painted a picture of a hoard of commuters pouring in to work across Birmingham's green belt, and "Americanising our countryside." The proposal, he said represented "a complete reversal of the Government's previously-declared policy and an utter negation of planning." He calculated that the population of villages and rural settlements in the area outside the Green belt would be doubled by this amount of private building, and foresaw "tremendous settlements . . . rather like Dorking, Reigate or Redhill" resulting. The areas where these houses would be sited, he believed, would be those which had rejected Birmingham's overspill previously, on social grounds, and were "now to be offered nice, clean middle-class people . . . who could afford to buy their own houses." New towns could not be successful if this kind of class segregation was encouraged.

The Ministry's letter was described as "horrifying some of us" by W. R. Scurfield, Clerk to Worcestershire County Council at a Press conference the following day. He commented that the total Midland overspill problem was about half a million people, but "the Government have now apparently abandoned attempting to have organised overspill for three fifths of them."

"We thought it was axiomatic that all the overspill populations would be set in areas where it could go with industry," Mr. Scurfield commented. "The heart of this matter is the problem of persuading industry to move out of Birmingham." He did not expect the compulsory movement of industry, but "it would be very much easier if the Government would talk in terms of larger new towns. If the MOHLG proposal came to fruition it would mean an increase of a third in the population of Worcester."

The actual letter from the Ministry was in the nature of a cautious probe: it asked officers of local planning authorities to investigate the possibility of finding sites for 100,000 new, privately built dwellings beyond the green belt and hoped "that development plans will eventually embrace this additional provision."

In a statement following the uproar over this letter, the Ministry issued a statement that no decision had been made "that would lead to any breach of good planning."

File this week

Garden: Fences, gates, walls, the subject of this week's Element File [sfB (15)], starts on page 843, but from the opposite page onwards the AJ is preclassified for tearing out and filing in sfB order. The subjects are as follows:

1. Technical Study (pages 819-822) **Structural Shells in Timber, 3.** This should be filed in sfB (27)Hi: UDC 69.024.4: 691.11, together with the two earlier articles in this sequence.

2. **Products File** (pages 823, 824). This is a record of new products and services on the market so arranged that it can be torn into A6 sheets. Each item is classified separately, so you can, if you like, cut the sheet and file each item in its correct place. Alternatively you can leave the sheet intact and keep it together with earlier and later sheets, either on a spike or under AA2 in your sfB file.

3. Building Study: Second series (pages 825-842). **Housing at Brandon Estate, Southwark.** This cost analysis and appraisal should be filed under sfB (98): UDC 728.2.

Then follows the Element File (pages 843-868): **Garden: Fences, gates, walls.** This should be filed under sfB (15): UDC 69.028.8. It comprises

4. Element Design Guide (pages 845-853).

5. Technical Study (pages 855-858). **Some typical fences, gates and walls.**

6. Four Information Sheets (pages 859-864) three on **Fences** and (pages 865-866) one on **Copings to garden walls.**

7. Working Detail (pages 867-868) **Screen fence: School in London N6.**

These components may either be kept as one block or they may be divided so that further items of the same kind (eg Technical Studies or Information Sheets) can be inserted in their right sequence.

NOTE—We regret that, due to a printer's error, the Information Sheets in last week's AJ were printed with the wrong text matter on their backs. These Sheets—both classified sfB(15): UDC 712.4 *Garden: General*—are No 1015: *Planting data*, and No 1016: *Definitions in tree-growing: Mixing of fertilisers.* They are reprinted this week in the four pages following page 842.

AJ SfB (27) Hi

Technical study UDC 69·024·4: 694·1
Roofs, structural, pitched: Shells

Structural shells in timber

3 Geometry (concluded) and construction

This week Hugh Tottenham and Charlotte Hume complete their conspectus of the possible geometric shapes of shells and consider some constructional aspects of shells made of timber*

3. *Saddle shapes*

The main categories of this group of shells are:—

(*a*) SINGLY RULED SURFACES. These are formed by moving a straight line along two different curves or along a curve and a straight line. In the latter case (which is the most common) the resulting form is a conoid. Conoids are mostly used where a high level of natural lighting is required, giving an interesting saw-tooth profile. Alternatively they have occasionally been used back to back giving a profile similar to a folded plate roof (Fig 8).

Conoids need to be supported at each corner, but are capable of spanning quite large areas; the ratio of width to span for each unit should be about 4 : 1. It is also possible to use conoids sectionally, in which case they can be cut to cover any regular or irregular plan area (Fig 9).

(*b*) DOUBLY RULED SURFACES. These are frequently loosely referred to as hyperbolic paraboloids. Most of these surfaces are in fact very similar to the true hyperbolic paraboloid and for the present purpose we shall refer to all of them as such. They are formed by distorting any four sided flat

*Earlier articles in this series were published on October 11 and 18 1961.

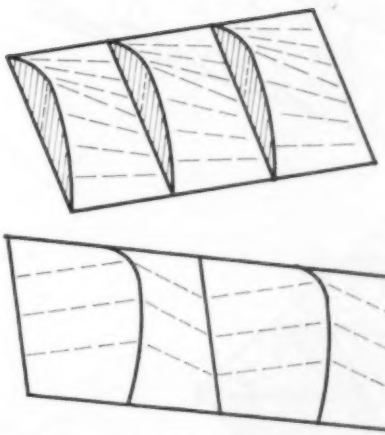


Fig 8 Conoid roofs: single ruled surfaces. Upper, conoids facing the same direction; lower, conoids back-to-back

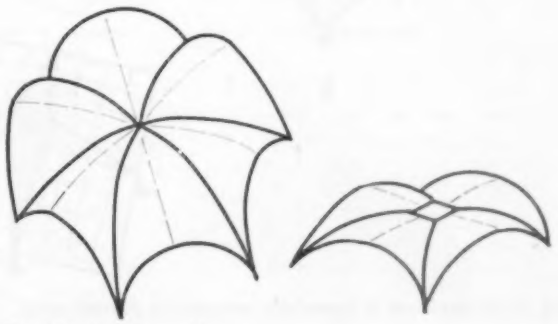


Fig 9 Sectional conoids

surface, ie altering the levels of the corners; and the curved surface is a result of the straight lines that join opposite edges. Any three-dimensional effect can be achieved by varying the planes of the edges, in other words by altering the distance between the high and low corners, or by deviations to the true plan form.

Multiple use of these units is of special interest for large industrial or commercial buildings because of the ease with which roof lighting can be incorporated (Fig 10). This, together with the small number of internal supports required and the low cost that can be achieved by repetitive use of standard units, has resulted in their increased application during the last few years. By grouping several units the volume of the building can be kept to a minimum and level eaves can easily be provided.

The great disadvantage of hyperbolic paraboloid shells is the necessity of restraining the two opposite corners, which can be done by means of tie-rods between low corners, struts between high corners or buttresses at low corners. The most economical method is to use tie-rods; but multiple units can be arranged so as to balance the thrust of each individual shell and make ties or struts unnecessary.

So far only the geometrical shapes of shells and their derivations have been discussed. Generally speaking structural shells are only sections of any given surface and it is therefore necessary to restrain the edges to retain the overall form. This can be achieved by means of edge beams, ties, struts or buttresses, or a combination of these. The main function of edge beams is to stiffen the perimeter of the shell, while the ties, struts or buttresses ensure that the geometric pattern is maintained. In a carefully thought out scheme these auxiliary components form an integral part of the design. Where several shells are employed, they can be arranged so that the edges of the separate units are mutually self-stiffening and the thrust from the units is self-equilibrating, thus avoiding internal edge beams, ties or columns.

Any type of shell can be constructed of almost any known

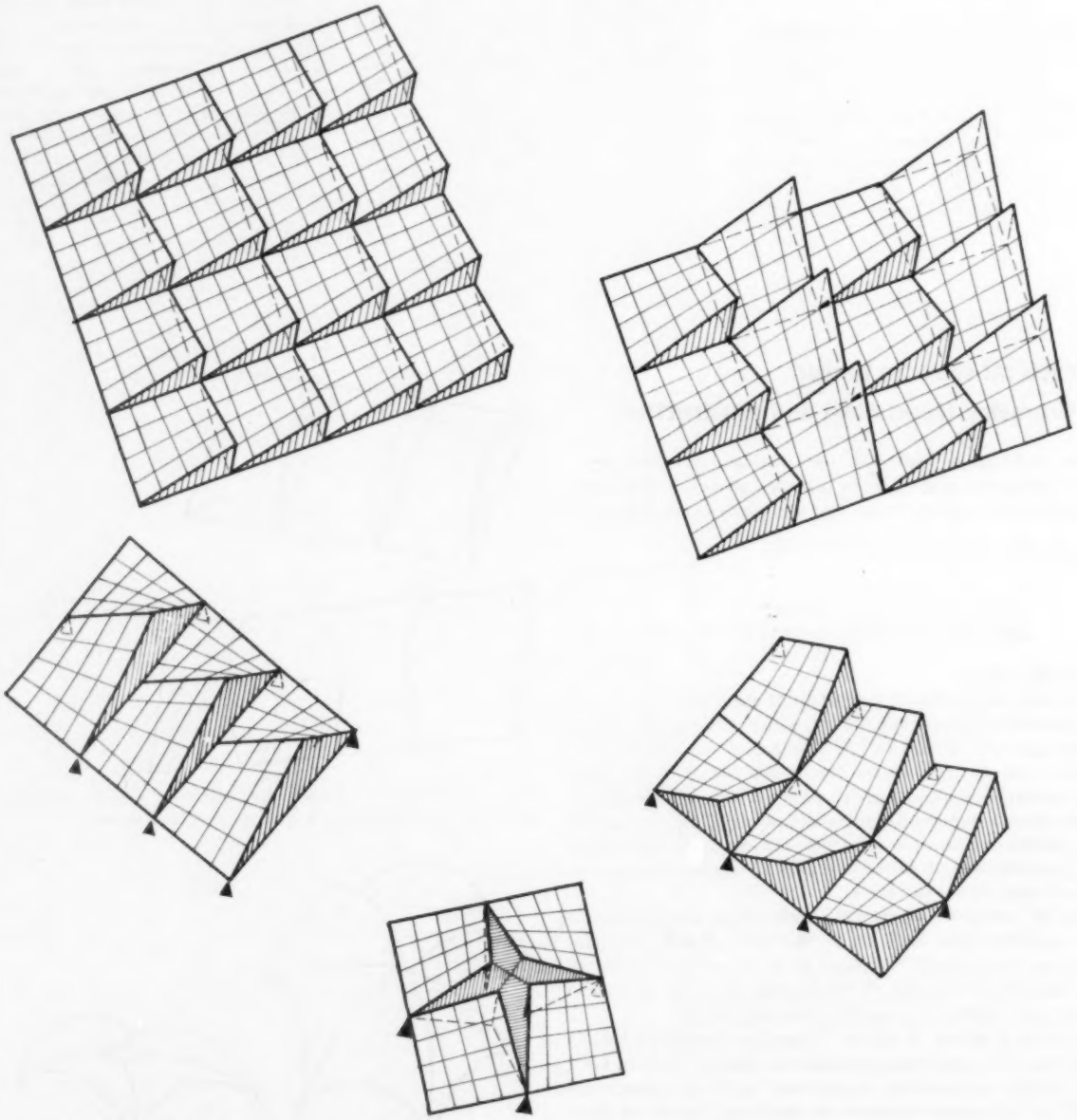


Fig 10 Multiple use of hyperbolic paraboloids. Shaded areas represent glazing

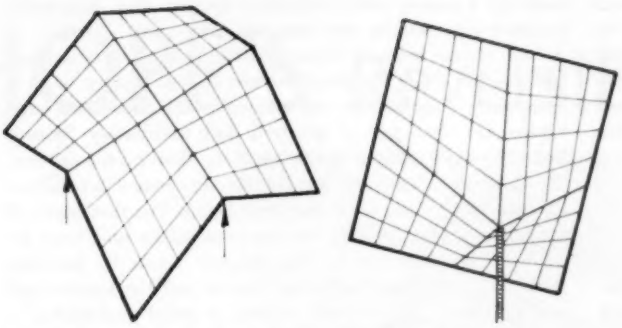
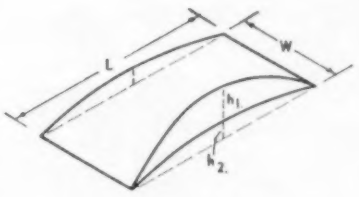


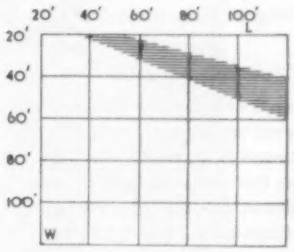
Fig 11 Two forms of hyperbolic paraboloid roof which need no ties. Left, where the roof is supported at the high points round the perimeter; right, where there is a central support

Tables and graphs showing economic dimensional range for different types of timber saddle shapes

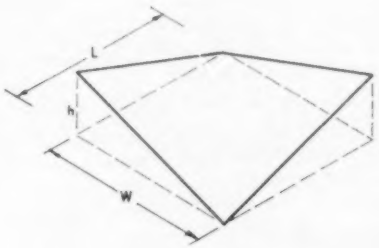
L	25′	30′	35′	40
W	60′	70′	80′	90′
h_1	3′	4′	4′ 6″	5′
h_2	10′	12′	13′ 6″	15′



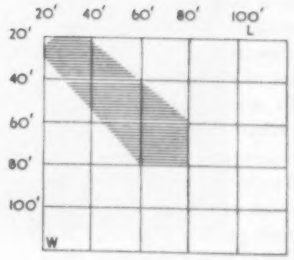
Conoid



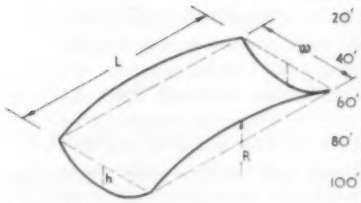
L	30′	40	60′	80′
h	7′	9′	15′	19′



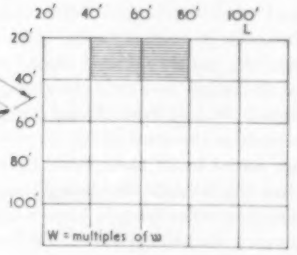
Hyperbolic paraboloid



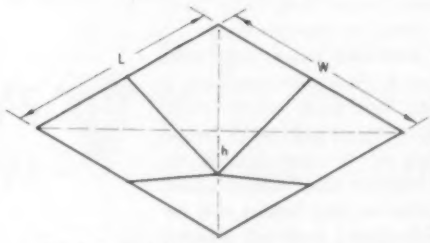
L	30′	40′	50′	60′
w	5′	6′	6′	7′
h	1′ 6″	1′ 9″	2′	2′
r	4′	6′	9′	9′



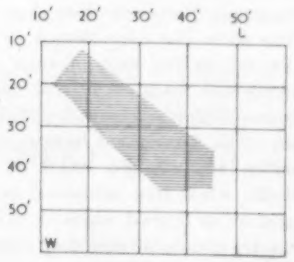
Hyperboloid of revolution



L	20′	30′	40	50′
w	20′	30′	40′	50′
h	5′	8′	11′	14′



Hyperbolic paraboloid umbrella



building material. It is not essential that the material possess any plastic characteristics. There is a tendency to consider shell roofs as synonymous with reinforced concrete, but both timber and steel have been used with great success and there is no reason to suppose that other metals such as aluminium, and certain types of plastics would not prove equally satisfactory.

Without embarking on new materials there is still scope in using combinations of materials that have already been used and about whose behaviour a great deal is known.

The main difference between reinforced concrete and timber shells and steel or other metal shells is that with the first two, the shell consists of a complete membrane forming a continuous smooth surface, while with metals the shell consists of a grid forming the curved surface to which sheeting materials have to be applied.

All shells, because of their shape, are self-draining: rainwater will find its own way to the low points where in most cases the supports occur and where the rainwater can easily be dispersed. Other considerations such as heating, lighting, thermal or sound insulation, etc, can be incorporated in the roof structure without any difficulty as long as these are taken into account at the design stage.

Construction of timber shells

Basically timber shells consist of two essential parts; the shell membrane and the edge stiffeners or ties. The membrane is normally built up of two or more layers of boards; as the main strength of the timber is in the direction of the fibres, and as these run along the length of the boards, the direction of the different layers must vary to ensure that adequate strength is provided in all directions. These layers must also be satisfactorily fastened to each other so as to form one curved sheet. The membrane could be compared to a large sheet of plywood moulded to the correct shape, with thicknesses and direction of the grain in each veneer arranged to give the maximum advantage for any given set of circumstances.

In certain cases local stiffness is the main requirement rather than strength. In such cases small ribs are more economical than an additional layer of boards. For example, 2 in by 6 in ribs at 4 ft centres have greater stiffness than a sheet of timber 2 in thick. The cost of making ribs is, however, greater than that of forming a shell so that in fact ribs are only used where they can be of standard shape. In practice ribs will normally be used on all vault-shaped shells and on very shallow dome-shaped shells.

Initially it was thought that in a hyperbolic paraboloid roof the easiest method would be to run the boards parallel to the edges (ie along the straight lines which generate the form). It has been found in practice, however, that the boards in the shell which do not run along the straight lines are easier to fix than those that do. This is due to the fact that the straight line boards have to be given a slight twist whereas other boards have negligible twist but have to be given a slight curvature. It is very much easier to hold in position a board which is curved than one which is twisted. Today, most hyperbolic paraboloid timber shells have their boards in directions other than along the straight lines.

The form the edge beams or stiffening beams take will depend on the type of shell used. Generally speaking a hyperbolic paraboloid will have laminated timber edge beams, which are best placed partly above and partly below the shell. Laminated beams, too, will be most suitable to stiffen the straight edges of conoids and dome-shaped shells, while ties, laminated arches or ring beams will be used at all curved edges. A vault-shaped shell will usually require comparatively deep edge stiffeners and in this case built-up I-beams with laminated flanges and diagonally boarded webs will be more economical.

As lamination requires controlled conditions, all laminated components must be manufactured in the factory or in a temporary shop on site, never in-situ. The fabricated edge beams are then put in position and adequately braced. Next the scaffolding is erected and the shell profile set out. This is geatly assisted by having the edge beams in position. Construction of the shell can then begin. The first layer of boarding is laid directly on the scaffolding and may be temporarily fixed to it. The boards must be securely fastened to edge and stiffening beams and the second and any successive layer usually nailed or glued and nailed to the first until the required thickness of shell has been built up. Care must be taken that the boards are not pulled up tight so as to allow for a certain amount of movement that may occur due to variations in the moisture content of the timber. Finally a trimming piece is placed above the shell and is secured through the shell into the edge beam, this may be designed so that it forms, structurally, part of the edge beam.

The scaffolding can then be removed, except in cases where two or more shells buttress one another. In such cases it is most important that the scaffolding for adjacent shells is not removed too soon.

It is difficult to generalise on the type of connection to be recommended between the shell roof and its supporting members. The joints will need to be designed with special reference not only to the type of shell, but also to the nature of the substructure and material used.

It is most important to ensure that at all stages during construction the work is protected from the weather and the permanent roof finish applied as soon as practicable. The waterproofing membrane must be flexible to allow it to follow the shape of the shell easily. Mineral based bituminous felt and hessian reinforced mastic emulsions have been used successfully and research is being carried out into the use of plastics, either in a rigid form or as a spray. Thin metal sheeting of copper, zinc or aluminium offer a possible alternative. Copper has in fact been used and has proved very satisfactory. But its use is limited by economic rather than structural considerations.

HOPE'S Reversible Windows

SUMMIT COURT, Shoot-up Hill, Willesden
J. C. Morris, B.Sc., M.I.C.E., M.I.Struct.E., M.I.Mun.E., F.R.S.H., Boro' Engineer & Surveyor
T. N. I'Anson/R. W. Hallam, A/A.R.I.B.A., Chief and Deputy Architect

Casements are reversible through 180° for easy cleaning and painting from inside and fitted with a patent releasable safety arm which will restrict the opening to a few inches for ventilation and also secure the casement in the reversed position. Fixed sublights below casements provide additional safety and convenience.

HOPE'S WINDOWS
The Name Guarantees

Send for List 380
HENRY HOPE & SONS LTD
SMETHWICK, BIRMINGHAM
LONDON: 17 BERNERS ST., W.1

SfB (52) In6

UDC 696·121:691·175

More plastic rainwater goods

The Aspect rainwater system is made from unplasticised pvc and has a full range of components. Gutters are 4 in half round with 2½ in downpipes, the gutters being a snap fit in the fixing brackets, which are screwed to the fascia board and have a neoprene sealing strip already fitted. Standard gutter lengths are 6 and 12 ft to fit the bracket spacing of 3 ft, downpipes are up to 18 ft. Both are easily cut to length. Downpipes are fixed with holders and a single concealed screw, the result, as can be seen in the photograph, being very neat. Standard colour is a medium blue-grey, though black will be available in the New Year. Painting is of course possible, but would seem misguided with a material which does not need it. The catalogue (A4 and SfB) is very well set out with excellent drawings. Price is about the same as cast iron, but the manufacturers believe that the ease of fixing should make it slightly cheaper when installed. The system is made by Allied Structural Plastics and is distributed by the

UAM Group, Tolpits, Watford, Herts

Aspect guttering and downpipe

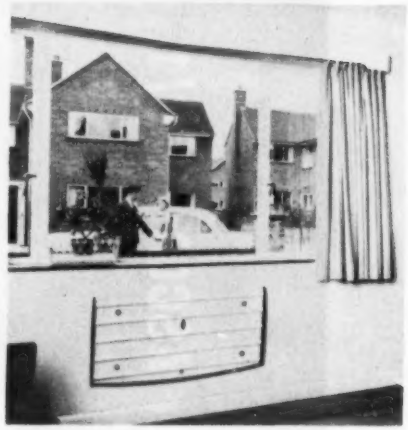
SfB (56)

UDC 697·273·86

Electric heaters

The illustration on the right shows a wall-mounted version of the Heatrae Sleekline electric panel heater range, which is also made in free-standing models. Three standard sizes are produced, with loadings of 400, 600 and 800 watts. All models have a three heat control switch but can equally well be used with thermostats.

Heatrae Ltd, Norwich, Norfolk



Heatrae Sleekline panel heater

SfB Gil

UDC 694·4

Timber beams

The Corrply beam is an I section member which is produced by a continuous automatic process and can therefore be sold at a low price of less than 10s a foot run for the heaviest sections. The beam is built up from natural timber top and bottom chords with a plywood web. The web is 6 mm boil resistant ply corrugated in a ratio of 1 to 12 between the height and length of the corrugation. This web is glued and pressed into pre-cut grooves on the chords so that any end movement of the plywood is restrained and shear stresses are eliminated in the glueline between chord and web. The beam contains no nails or other connectors and can therefore be cut wherever is necessary and worked as natural timber. The beams are made in six depths from 12½ to 15½ in and at 2 ft centres can be used for flat roofs with clear spans up to 34 ft or up to 20 ft for floors. Lateral restraint can be provided by noggings running between the bottom flanges.

Corrply beamed roofing

The Rainham Timber Engineering Co Ltd, Ferry Lane, Rainham, Essex

Products File by Brian Grant

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

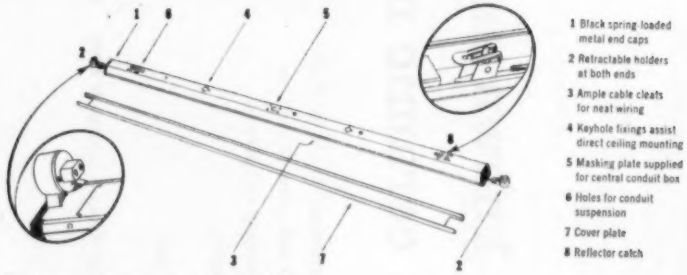
SfB (63)

UDC 621·3.032

Fluorescent lighting

The GEC has just introduced a new range of fluorescent lighting fittings in various lengths up to 8 ft and in single or two-tube units. Various types of reflector and diffuser are available, and prices start at just over £3. Tube replacement is particularly easy.

The General Electric Co Ltd, Magnet House, Kingsway, London WC2



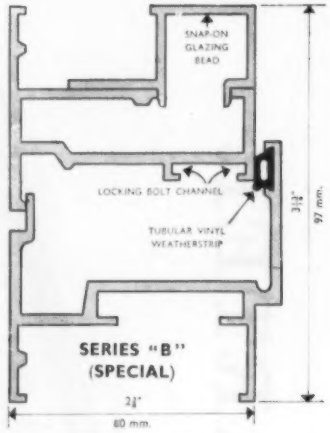
GEC's new fluorescent lighting holder

SfB (31)

UDC 69·028·2: 691·771

Aluminium windows

The introduction of a Swiss design of window was mentioned in these notes at the beginning of last year, and a leaflet (A4 and SfB) has now been issued describing them quite fully. The A series provides a choice of single or double glazing, inward or outward opening, and inside or outside glazing, with side and top or bottom hanging arrangements, or with vertical or horizontal pivots opening through 90°. The larger sizes of the pivoted types have a two-point locking device.
Series B windows are horizontal or vertical 180° reversible and arranged for inside glazing with double units. They are secured at all corners when closed to give even bedding on all sides. Windows can be supplied in natural mill finish, but plain anodising is strongly recommended, with black or gold as alternatives if colour is required. The windows are sold under the trade name of Continental.



Heywood-Helliwell Ltd, Bayhall Works, Huddersfield

SfB (82)

UDC 651·2

Filing systems

Architects who are doing their duty and filing not only these notes but almost all the rest of the AJ as well might do worse than have a close look at Sankey-Sheldon's Eyemaster system, which is capable of endless extension. The frames of the system have galvanized steel uprights slotted at 1½-in centres to allow the height of the cross rails to be adjusted. The uprights have a height of 93 in and the cross rails, from which the filing containers are hung, have a width of 36 in, a standard frame holding 80 containers. Base, top and end panels are made in veneered hardwood, but the frames can be extended indefinitely and the absence of intermediate side panels allows the filing sequence to run the full length of the installation without interruption. Containers are made 14 and 12 in deep to take foolscap or A4 size, and various other types of shelf and rack can be seen in the illustration. These can be used for books or samples and seem to me a useful addition to the system.

Sankey-Sheldon Ltd, 22 Kingsway, London WC2

Eyemaster filing system

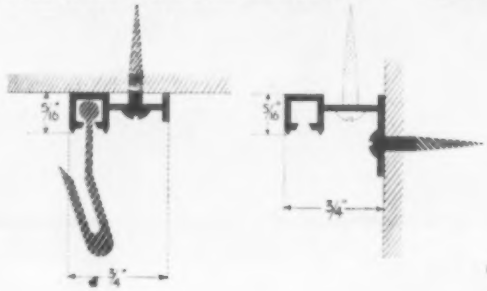
SfB (72)

UDC 645·33

Curtain track

The sections below show the Ghost curtain track, which is made in two versions for fixing to horizontal or vertical surfaces. The track is made of aluminium alloy and the combined hooks and runners are in plastic. The section is small enough to make pelmets unnecessary, and as the running surface is internal it does not collect dust and the rest of the track can be painted, or anodised gold if required. Fixing is by screws at 1-ft centres, and the track will fit tight between window reveals, as a slot is provided in each length of track for the insertion of the runners. Standard lengths are available up to 12 ft at a price, delivered, of about 2s 2d a foot, including hooks, screws and end stops.
A limitation is that the track cannot be joined and should be used only for straight runs, as it is not easy to bend. A4 size leaflet.

Haggard, Robinson & Co Ltd, 6 Stanley Park Road, Wallington, Surrey



Ghost curtain track

AJ SfB (98)

Building Study: 2nd series UDC 728·2 Flats: General

	for	LONDON COUNTY COUNCIL R. J. ALLERTON, DIRECTOR OF HOUSING
	designed by	H. BENNETT, ARCHITECT TO THE COUNCIL (in succession to SIR LESLIE MARTIN) F. G. WEST, DEPUTY K. J. CAMPBELL, PRINCIPAL HOUSING ARCHITECT (in succession to H. J. WHITFIELD LEWIS) J. WHITTLE, ASSISTANT HOUSING ARCHITECT (in succession to M. C. L. POWELL)
+	architect in charge	E. E. HOLLAMBY
	assisted by	D. STAMP D. M. GREGORY-JONES
	together with	D. A. WOODS G. A. KNOPP A. P. CHAPMAN JEAN MACDONALD ELISABETH PARSONS C. R. WHITTAKER IRMA STYPULKOWSKA J. M. GOOCH G. T. H. JURY
•	town planning	L. W. LANE, SENIOR PLANNING OFFICER
	assisted by	E. G. SIBERT G. I. CLOTHIER C. R. WHITTAKER
	quantity surveyors	M. F. RICE, PRINCIPAL QUANTITY SURVEYOR ARCHITECT'S DEPARTMENT GEORGE CORDEROY & CO RIDER, HUNT & PARTNERS
+	structural consultants (tower blocks)	FELIX J. SAMUELY & PARTNERS
	remainder	J. H. HUMPHREYS, SENIOR STRUCTURAL ENGINEER, ARCHITECT'S DEPARTMENT
+	servicing consultants	J. RAWLINSON, LCC CHIEF ENGINEER L. J. FOWLER
	landscaping	L. HUDDART, CHIEF OFFICER OF PARKS

Housing at Brandon Estate, Southwark

Although the cost analysis covers only the 18*-storey tower blocks, the appraisal in this building study examines the whole estate, which is the first of a number of areas where the* LCC *is combining redevelopment with rehabilitation of existing houses, with the broad aim of creating new open spaces within high density areas*

Brandon's six white towers mark a new stage in LCC *progress towards the regeneration of south London*

APPRAISAL

Although inter-war office building and the blitz submerged most of the towers, domes and steeples which once dominated the skyline of Wren's London, ten years ago St Paul's, Big Ben, the Victoria, London University and Westminster Cathedral towers were still landmarks, rising out of the six-to-ten storey mass. But in the last few years the panorama of London seen from Hampstead, Blackheath or the Crystal Palace has been transformed, as the revision of fire regulations released a spate of tall towers. In a sense, the contrasts of Wren's skyline have been regained, but on a much grander scale. Now Vickers and Shell, symbolically, dwarf all the monuments of Church, State and learning.

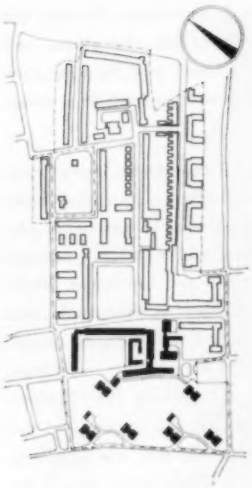
The LCC has recently contributed the Welfare State's first major addition to the new power symbols of the Metropolis. Brandon's six white towers, together with the South Bank, Elephant and Rotherhithe developments, mark a new stage in the LCC's slow but steady progress towards the regeneration of the decaying and formless mass of south London. But these 170-ft towers, which crop up often and dramatically in the view from many unexpected places (identifying Southwark and giving the lost motorist his bearings for the first time in the brick jungle of south London) are not justified merely on symbolic or shape-giving grounds. Their primary function was to achieve a high density in the first part of a large redevelopment and slum-clearance scheme. To minimise "decanting", the local people displaced by the first stage of demolition were all given the option of returning to Brandon, where the completed scheme houses some 600 more people on the site than were there before. The second function of the towers is to create new open space, extending Kennington Park and opening it up to the surrounding areas.

This is the first, and most clearly viable, part of the case for mixed development at Brandon. The second rests on the argument for rehabilitation, made out for 182 existing 3-4-storey terrace houses. Leaving the economics of the argument on one side, its key point is the deliberate retention of links with the past, to avoid eradicating altogether the memory and sense of place of the older environment. The architectural skill with which this rehabilitation has been carried out, and the physical adequacy of the 330 new flats and maisonettes contrived within the 182 old shells, seem to justify this case at Brandon. But it has brought some problems in its train.

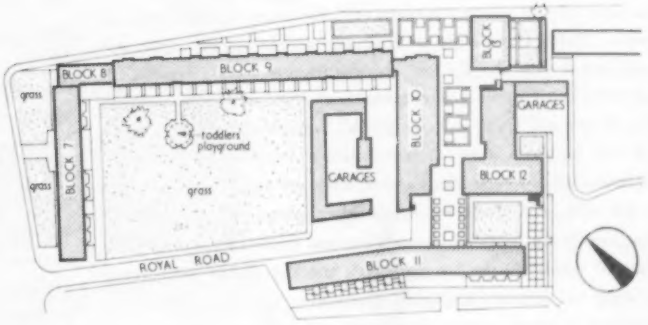
Rehabilitation implies the retention of much of the existing street pattern. To quote the Council's press statement on Brandon: "In a scheme using existing estate roads it may be impossible to provide an ideally comprehensive system of independent footpaths. However by closing certain roads, through traffic has been canalised in Cooks Road and every effort has been made to cater imaginatively for the pedestrian . . . a third of the inhabitants will in fact have uninterrupted pedestrian access to shops and open space." If the strongly expressed comments of some of the remaining two-thirds were canalised into a public opinion survey on this subject, Cooks Road (which bisects the estate) might yet be closed to through traffic, as it should be; and some nearby residents also want through traffic blocked by a bollarded pedestrians-only section halfway along Lorrimore Road.

To have closed Brandon entirely to through traffic, turning the whole estate into a Radburn "superblock," would have involved the revision and improvement of roads elsewhere in the district; and this, in turn, would need to be done as part of a larger roads plan for London. No such plan exists. The compromise solution to the problem of pedestrian-vehicular segregation adopted at Brandon was therefore inevitable. But each area of comprehensive central redevelopment that gets built before a greater London roads plan is drawn up will not only be in some degree vitiated by the lack of an overall roads plan, but may also jeopardise or conflict with the long-term needs of the plan. Cooks Road and other minor internal roads within the Brandon estate are now unfortunately popular as short cuts for several cross-currents of peak hour through traffic. At present they fulfil needs that should be met by larger-scale roads, outside and between residential areas.

Car ownership may well treble itself within fifteen years. How long must we wait for the Government and the LCC to grasp what this must mean, and plan for it? The LCC has recently drastically raised the quantity of car parking space in residential areas and begun to aim at 1 space for every 2 dwellings. Brandon so far has 150 car spaces (88 garages and 62 off-street hard-standings), for 1,389 dwellings. The crux of the car space problem is financial. Local authorities, hamstrung by ministerial parsimony, have to choose between providing enough for present needs (implying a long-term shortage of space) or something like enough for the future (implying a short-term wastage). By the time Brandon is complete, the LCC will be faced with the

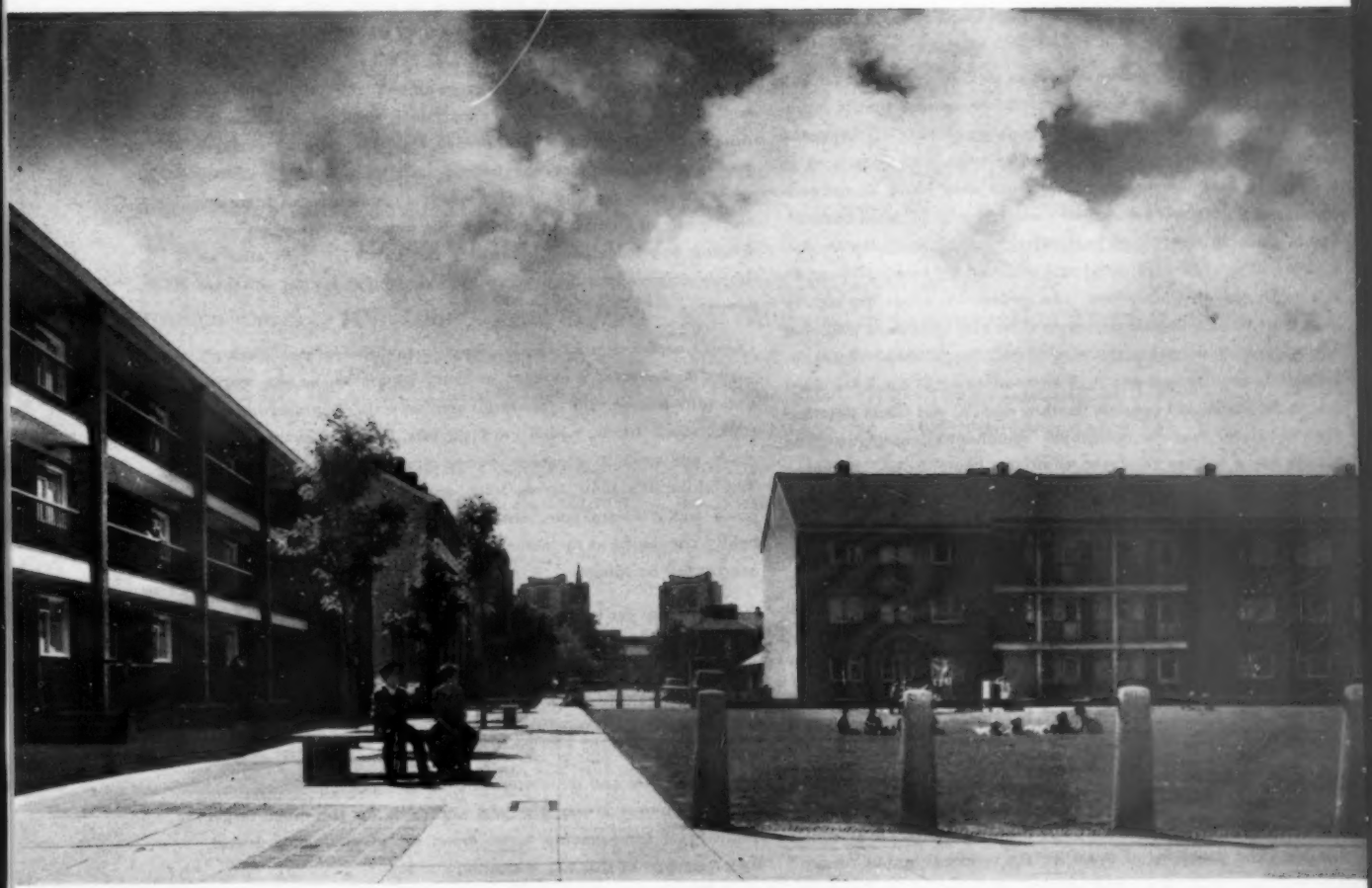


Block plan
Scale: $\frac{1}{1000}$" = 1' 0"]



Plan of housing group round shopping centre
[Scale: $\frac{1}{200}$" = 1' 0"]

Pedestrian entrance to the estate from the square at the east end. With the motor car debarred, the whole square is a safe play area



Brandon's six white towers mark a new stage in LCC *progress towards the regeneration of south London*

APPRAISAL

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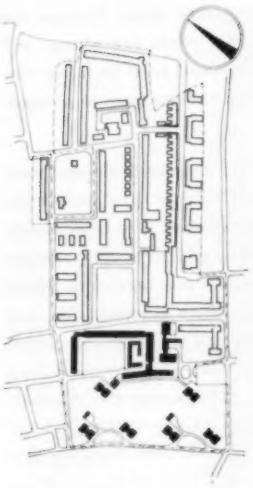

Block plan
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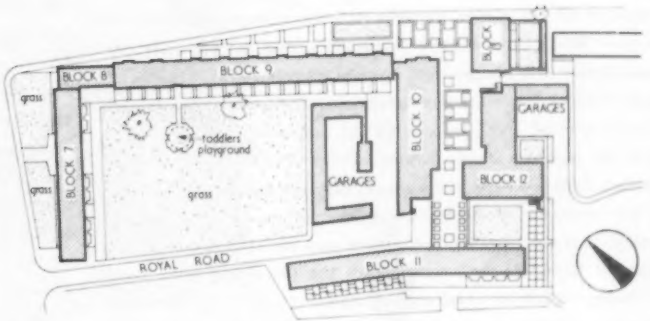

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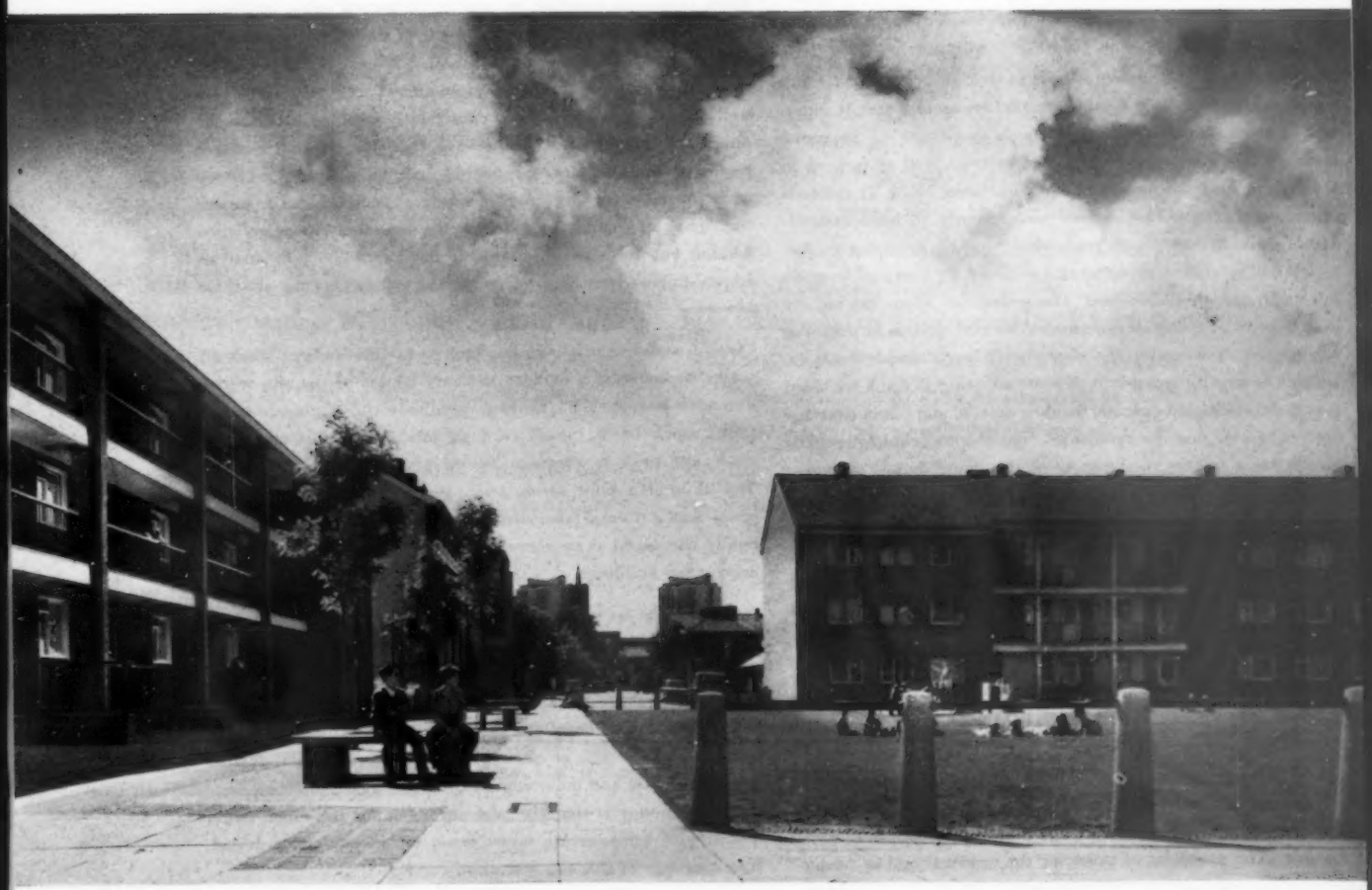

need for an agonising reappraisal of its car space provision.

If the main arguments (on density, on rehabilitation, and the familiar social arguments for keeping larger dwellings for families with children near the ground) for mixed development are accepted, must we also accept the form that this mixture has taken at Brandon? The scheme contains buildings of one-storey (cottages for old people, garages etc), two-storeys (links and old people's flats), three-storeys (staircase access terrace flats, and maisonettes over shops), four-storeys (maisonettes), five-storeys (a point-block), seven-storeys (three maisonettes over old people's flats at ground level, in long block), ten-storeys (point block), and the eighteen-storey towers. Below five-storeys roofs are pitched, with few exceptions above, they are flat. Roof structures on the taller, flat roofed buildings take various forms, some very conspicuous and curious, some plain and unobtrusive. If all the external materials used were listed, the list would read like a building exhibition catalogue of cladding materials. There is, therefore, a great variety of colours and textures, as well as of height and form, throughout the scheme.

Can a visual unity be achieved, out of such great diversity? Or, put more rudely, just how mixed can mixed development get, without becoming visually incoherent? These questions are not easily answered; and since Brandon is far from complete, it is probably too early to begin to judge it as a new and comprehensive urban environment. The scheme is large enough to contain, even to necessitate, a variety of elements. The juxtaposition of the various heights of buildings is systematic, considered and picturesque; it is not anarchic or accidental. One must also make some allowances for the intractable planning and architectural problems posed by the acquisition and phased development of a large scheme by stages and for the problems of maintaining a consistent approach in a sizeable design team over a long period (work on Brandon began in 1954-5).

If, so far, parts of Brandon appear to lack an evident order and coherence, it must at the same time be recognised that it represented a conscious attempt to embody something of the visual intricacy and complexity which characterise, and attract us, in the organic and slow-grown parts of our older cities. It succeeds in this, to a greater extent than most recently planned environments built in one piece, particularly in the shopping centre, which will soon be completed and enclosed by new buildings on the north side of Cooks road. The pedestrian space has rightly been kept to a functional minimum. The LCC architects prepared a standard drawing for the shopfronts, but allowed the shopkeepers to modify and adapt it while adhering to some standard materials, stallboard heights, window details, and fascia lettering derived from one recommended merchant's catalogue. The results are a tribute to the sense of this compromise, achieving diversity within unity. One of the LCC's consultant designers, Anthony Holloway, has been very busy, contributing acid-etched glass to the pub windows, sgraffito murals to the recessed top floor of the 10-storey point block, an illuminated sign to the clubroom, a fine broken tile mural (commemorating the great Chartist gathering on Kennington Common), and a banal pub-sign. The design and choice of pavings have received the careful thought they deserve; and, apart from the street lights by the borough council, the problems of lighting have been neatly solved.

An unforeseen—and to the residents, undesirable—result of all this is that the shopping piazza has become an evening rendezvous for youngsters, drawn like moths to the light from all over south London. The problems of noise for the residents and of "order" for the police and caretakers, are sometimes acute. Perhaps the youth centre about to be built just outside the piazza will provide at least a partial answer. The present need for a full-time youth organiser in the clubroom seems obvious even to a casual Friday-night visitor.

The deliberate seeking after variety degenerates sometimes, especially in the design of individual buildings, into what looks like an exaggerated fear of monotony, reflected in some strangely inconsistent and unprincipled detailing and a wilfully random choice of finishes. Examples of this are the Lorrimore Street elevation of the area office and depot, which is lamentable, and the 7-storey block between the towers and the shopping centre. This block, which visually bisects the towers when viewed from within the estate (thus deliberately diminishing the dramatic contrast between the sharp verticality of the towers and the horizontal forms of the other buildings) is very disconcerting. Its kinked plan disrupts the insistent regularity of the rest of the layout. Its frame-and-panel central bays, enclosing lifts and stairs, disrupt the hole-in-wall treatment of its elevation to the park, and look as if they should have occurred over the open way through to the shopping centre, but somehow slipped to one side. The lift machinery protuberance above is uncomfortably related to their bays. The sharp differentiation of the top floors (for secondary means of escape reasons) and of the ground floor from the expression of the intervening floors, give the block the appearance of having had different architects dealing with its several parts. The ground floor looks like a vestigial survival of an earlier block-on-pilotis conception, inappropriate to its indiscernible cross-wall structure. More criticisms could be made, but these are enough to indicate a type of criticism which could with equal justice or injustice be applied to several other buildings. An exception, however, must be made of the 17-storey towers, a new type plan developed for Brandon, which, apart from the formalism of the tapering barrel-vaulted roof structures, are well conceived as a whole and consistently detailed. Basic to the design of these towers is the idea that all external surfaces requiring maintenance are behind balconies. This does away with the need for any cradled window cleaning, and increases the feeling of security by reducing the sensation of vertigo when looking out from the windows of the flats. The cost analysis which follows provides more detailed information on these towers.

Careful and imaginative detailing and conscientious clerk-of-works supervision is evident in every aspect of the site works. Concrete paving, flint cobbles, granite setts, engineering and reject stock brick, stable yard paviors, brushed concrete and grass are used to create a varied and functional floorscape. The children's play areas, with stockades, tunnels, dragons, pools and a totem pole, are a pleasure to watch in use, and boldly conceived as an element in the ground pattern seen from nearby tall buildings.

It is too early yet to judge the contribution of the Parks' Department's planting to the scheme. But one hopes that the kind thinking responsible for the formal rose beds surrounding the single-storey old people's dwelling at the north end of the scheme will not recur elsewhere; and that money will be found for many more trees. The LCC is concerned to strike a proper balance between capital and maintenance costs in site works. Long term value for money is the strongest argument for the much larger quantity of semi-mature forest trees, set in paving or gravel, that a scheme of this size warrants.

Who specified this wastepaper basket....?

He was a very talented architect, who knew all about design and quite a bit about comfort, but he missed a vital point. Design has three dimensions; comfort has four—length, breadth, depth and **human nature**. His client could never have kept a grate like this stoked. It was bound to end up as an ornate wastepaper basket.

At least there was no attempt to solve the problem in a plain-blunt functional way. This was a period fireplace and quite unashamedly decorative. You couldn't use an electric heater with it. Or could you?

Yes, if it was the right kind of electric heater. A Magicoal period fire is quite the best compromise in a situation like this. Nothing else re-creates the atmosphere of the original fireplace so cleanly and so easily. May we send you a catalogue? Better still, why not visit our showrooms in Newman Street?

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and TODAY

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PACIFIC COAST HEMLOCK has a high strength-to-weight ratio and is available in long lengths, precision machined to uniform cross section. Surfaced Hemlock makes for accuracy and labour economy on the building site, whether it is employed for traditional house carcassing or Western frame construction. With these qualities — plus ease in handling and good woodworking properties — it is the perfect choice for off-site component structural units. Don't gamble — specify PACIFIC COAST HEMLOCK for homes which offer the security your clients will value over the years.

BCLMA

BRITISH COLUMBIA LUMBER MANUFACTURERS ASSOCIATION

1, GROSVENOR SQUARE, LONDON, W.1

82

One of the several playgrounds for small children, inventively detailed and much enjoyed—but is the obtrusive fence (which mars its visual relation to the buildings and the rest of the landscape) really necessary? The climbable totem pole was carved by George Mitchell

Rehabilitated houses in Lorrimore Road. If current freehold market values were anything to go by, these houses would now be "worth" £6,000 at least

Maisonettes on the west side of Lorrimore Square. When the square is completed by similar maisonettes on all four sides, private balconies of the north and east sides will face into the square and the west and south will face out. For the visual unity of the square, the access galleries are divided into bays by brick piers of the same width as those between the private balconies

One new idea developed at Brandon needs to be singled out for comment, since it is so obviously good that the visitor is unlikely to realise that it is new. This is the creation of a number of small and secluded courtyards, well planted and paved, with seats. Possibly it has just been the planners phrase "public open space" that has hitherto blinded housing architects to the need for this kind of small, still space. Where private gardens are few and small, as they usually are at this density, and large buildings enclose or stand freely in large spaces, these courts are an essential amenity. Their invention at Brandon is a good example of the thoughtfulness and humanity of its planning: it is also a minor triumph over the Housing Manager's somewhat morbid predictions of immorality in all sheltered corners. (In this connection, the management's decree that the four "bachelor" apartments on the top floor of each of the towers should be let either all to men or all to women in any one block is curious. There is a quaint naiveté about this edict.)

It may seem strange for an appraisal to omit any discussion of the internal planning of dwellings, but LCC type plans are, or should be, well known by now. Those used at Brandon exhibit the ingenuity and economy we now take for granted in LCC schemes but there is little new about them. Nor can there be, without a prolonged struggle, within the tightly defined limits of the type plans accepted by the Housing Committee. These have become, over the last decade, a rigid "brief" which is badly in need of a thorough re-examination. Ministry and LCC space standards and rules governing the planning of internal space have become straitjackets restricting thought and invention, which deserve to be criticised and attacked in more detail and at more length than this appraisal permits; and such criticism would have to be preceded by thorough user studies of the type considered essential for our school-building programme, but so far scarcely begun for housing. The LCC has an obligation to all other authorities, by virtue of its own massive achievement in housing since 1950, to carry on essential research in this field, which the Ministry itself should have begun years ago.

Despite these criticisms, the scheme remains an important essay by the LCC to create a community in the true sense of the word rather than a mere housing estate. The diversification of design, although it has sometimes degenerated into inconsistency, reflects the provision for a wide variety of social activities including such features as the public library, tenants' club, doctor's surgery, home for old people, youth club and so on, as well as the designation of a site for a new comprehensive school. This is a positive attempt to overcome a major failure of so much inter-war housing in the London area.

CLIENT'S REQUIREMENTS

The brief provided for the redevelopment and rehabilitation of a 56-acre site in the inner London Borough of Southwark which was zoned for residential purposes at a density of 136 persons per acre. After allowing for the terraces of houses earmarked for rehabilitation and providing sites for three new schools, a youth club and an old persons' home, the area available for new housing development (including eight new shops, a pub, library and tenants' clubroom) was about 26 acres. Because of the lower density in the rehabilitation sectors, a higher density was required in the major area of new development. The council's general planning policy in relation to the siting of high blocks was an important factor influencing the siting of the six 18-storey blocks, which are the subject of this article. They are located at the southern part of the site, overlooking the extension being formed to the open space of Kennington Park.

SITE

South-east of Kennington Park this is the first of a number of areas where the LCC is pursuing a policy of housing redevelopment combined with rehabilitation of old but structurally sound houses which lack modern amenities. In 1951 when the council purchased the estate there were 1,074 old houses, 40 shops and 22 other premises, occupying an area of 56 acres. Work was put in hand to recondition about 500 houses, to convert or rehabilitate a further 183 and to clear approximately 26 acres for complete redevelopment. About two-thirds of the new development is now complete.

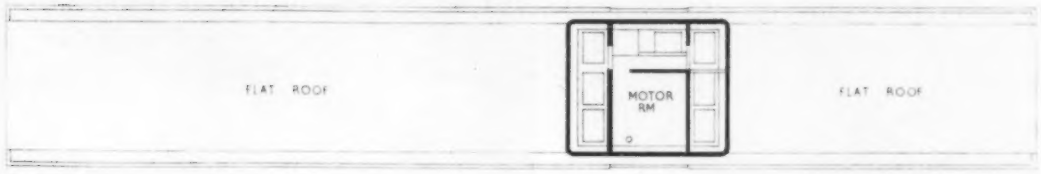
PLANNING AIMS OF WHOLE ESTATE

The tower blocks have been placed at the Kennington Park end of the redevelopment area. When the extension to the park is completed, the open layout made possible by building high will permit views of the park from the centre of the estate and direct pedestrian access to it through the landscaped area in which the towers are set. In addition to playgrounds and generous provision of open space, a new square is being created to the scale and proportions of the characteristic older London squares. At the heart of the estate, and forming its social focal point, is a new shopping centre, with its point of entry marked by a ten-storey tower block of flats. Here a traffic-free piazza, made lively by colourful murals in the daytime and by illuminated signs at night, with shops flanking it on two sides, new library, clubroom and pub, and the surrounding residential development. In an area criss-crossed with existing roads it is perhaps not feasible to provide an ideally comprehensive system of independent footpaths. However, by closing certain roads, through-traffic has been canalised in Cooks Road and every effort has been made to cater imaginatively for the pedestrian: a third of the inhabitants will in fact have uninterrupted pedestrian access to shops and open space.

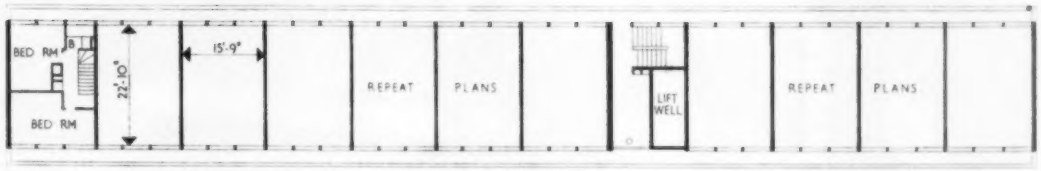
The overall redevelopment plan comprises six 18-storey point blocks, a further fifteen blocks of flats (one of 10 storeys, two of 5 storeys, eight of 3 storeys and four of 2 storeys), as well as eight 4-storey blocks of maisonettes, one 3-storey block of maisonettes over shops, and one 3-storey and two 7-storey blocks of flats and maisonettes. Five blocks of terraced houses and five blocks of old people's dwellings complete the scheme for a total of 1,059 new dwellings, giving accommodation for approximately 3,740 persons, plus 1,212 in the rehabilitation areas.

Within the estate, a new church, incorporating a youth club on the ground floor, has been built by the Church of England authorities to replace the bombed church of St. Paul's, Lorrimore Square. There is an existing Roman Catholic Church, and the estate is also catered for by another Protestant church and church hall on the periphery. Sites have been reserved for a nursery school, two primary schools and a comprehensive high school. The council also aims to provide a youth club and an old people's home is planned.

Other features include 12 shops (including 4 retained in the rehabilitated area); a doctor's surgery; 88 garages; 62 off-street parking spaces; 429 tenants' stores; 9 toddlers' playspaces;



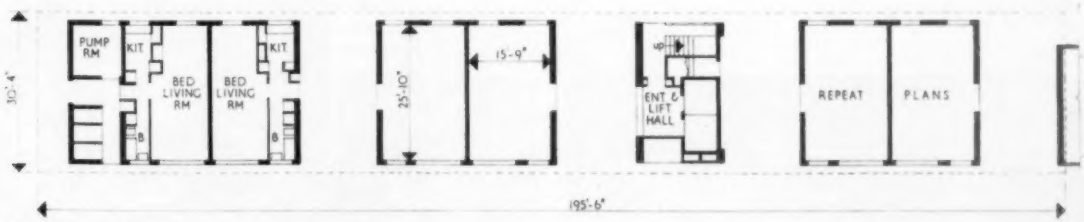
Roof plan



Plan, sixth floor

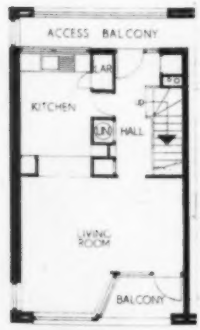
Plan, second and fourth floors

Plan, first, third and fifth floors

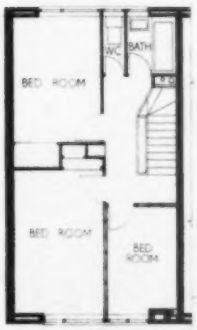


Ground floor plan [Scale: $\frac{1}{16}$" – 1' 0"]

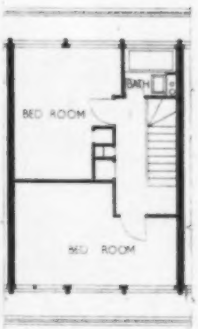
7-storey maisonette block (block 7)



Lower floor plan



Upper floor plan, second and fourth floors

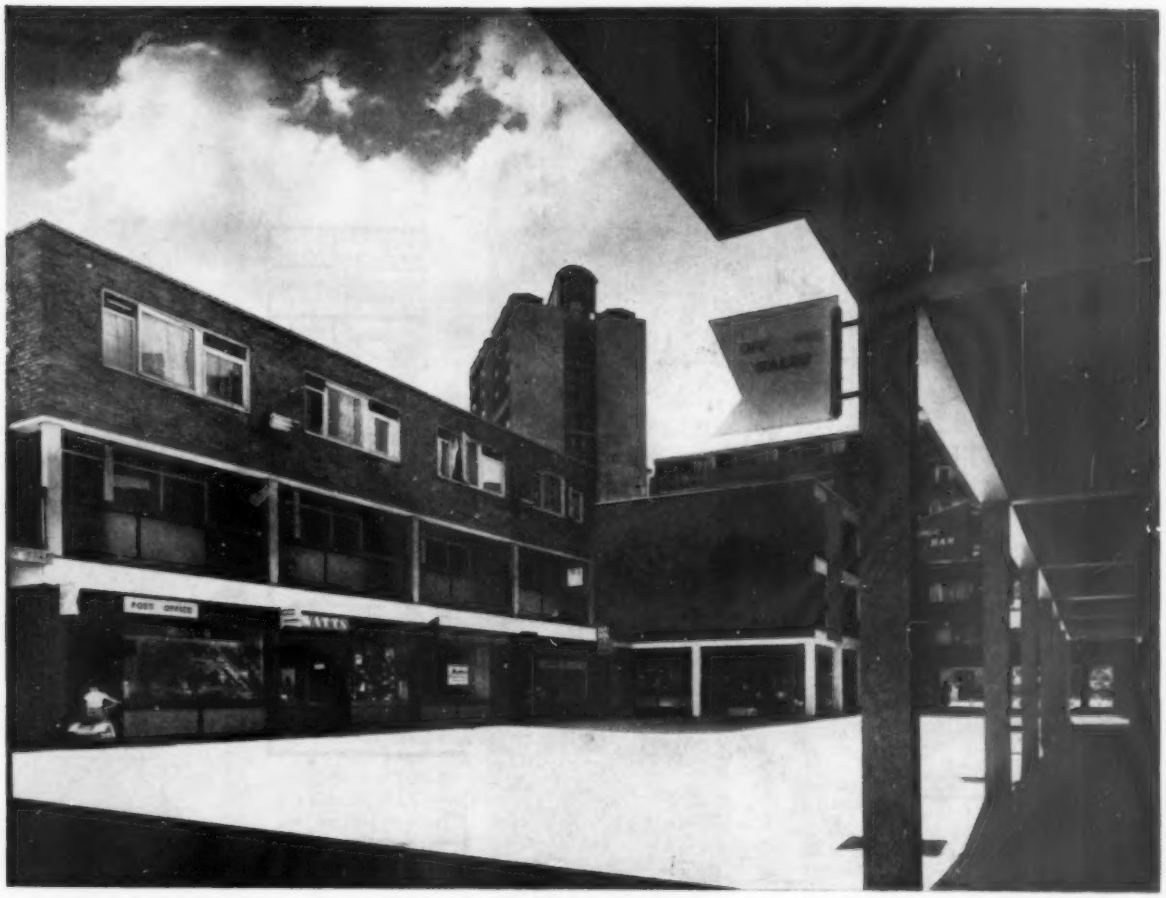


Upper floor plan, fifth floor
[Scale: $\frac{1}{16}$" – 1' 0"]

One of the children's play areas

Seats, trees, grass and paving, replacing s'um streets. Is Brandon a vindication of Mumford's view that 100–150 people per acre¾ is a maximum for social and physical health?

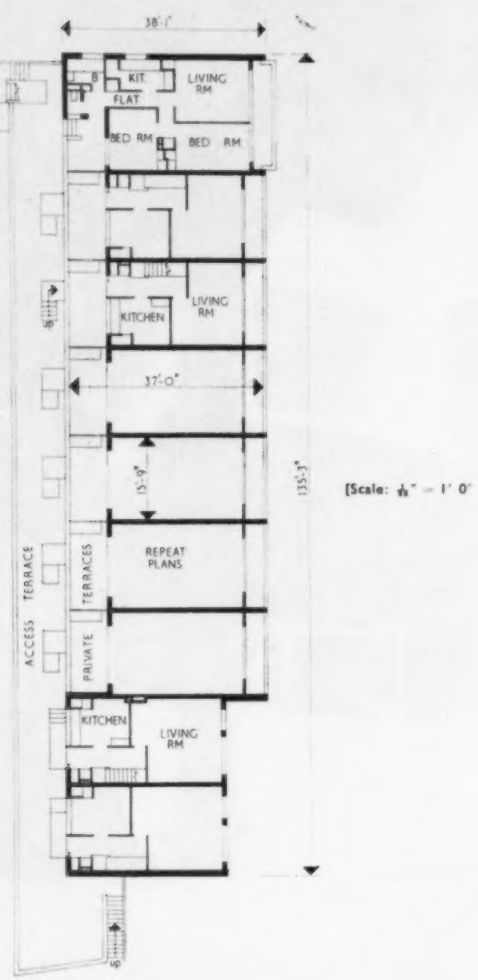
The shopping centre, a compact pedestrian precinct, with the way through at the far end straight out into Kennington Park



Detail of the shopping centre

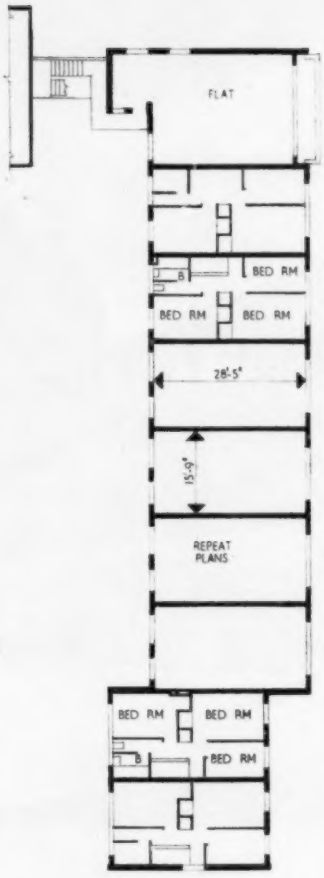
Entrance to the shopping piazza from Kennington Park. The space will soon be enclosed by new buildings at the far end. Careful planning and detailing behind the shops have almost completely solved the visual problem of service areas which has defeated the architects of most other post-war shopping precincts

Public house with flats over

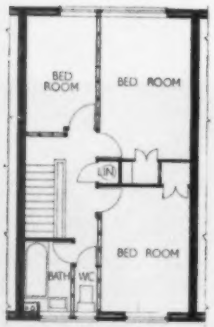


[Scale: $\frac{1}{16}$" = 1' 0"

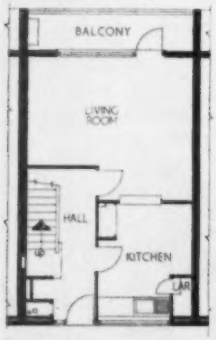
First floor plan



Second floor plan

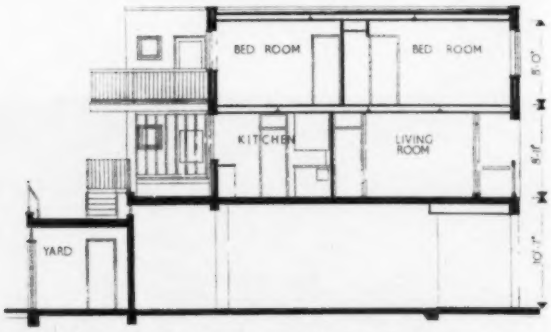


Upper floor plan



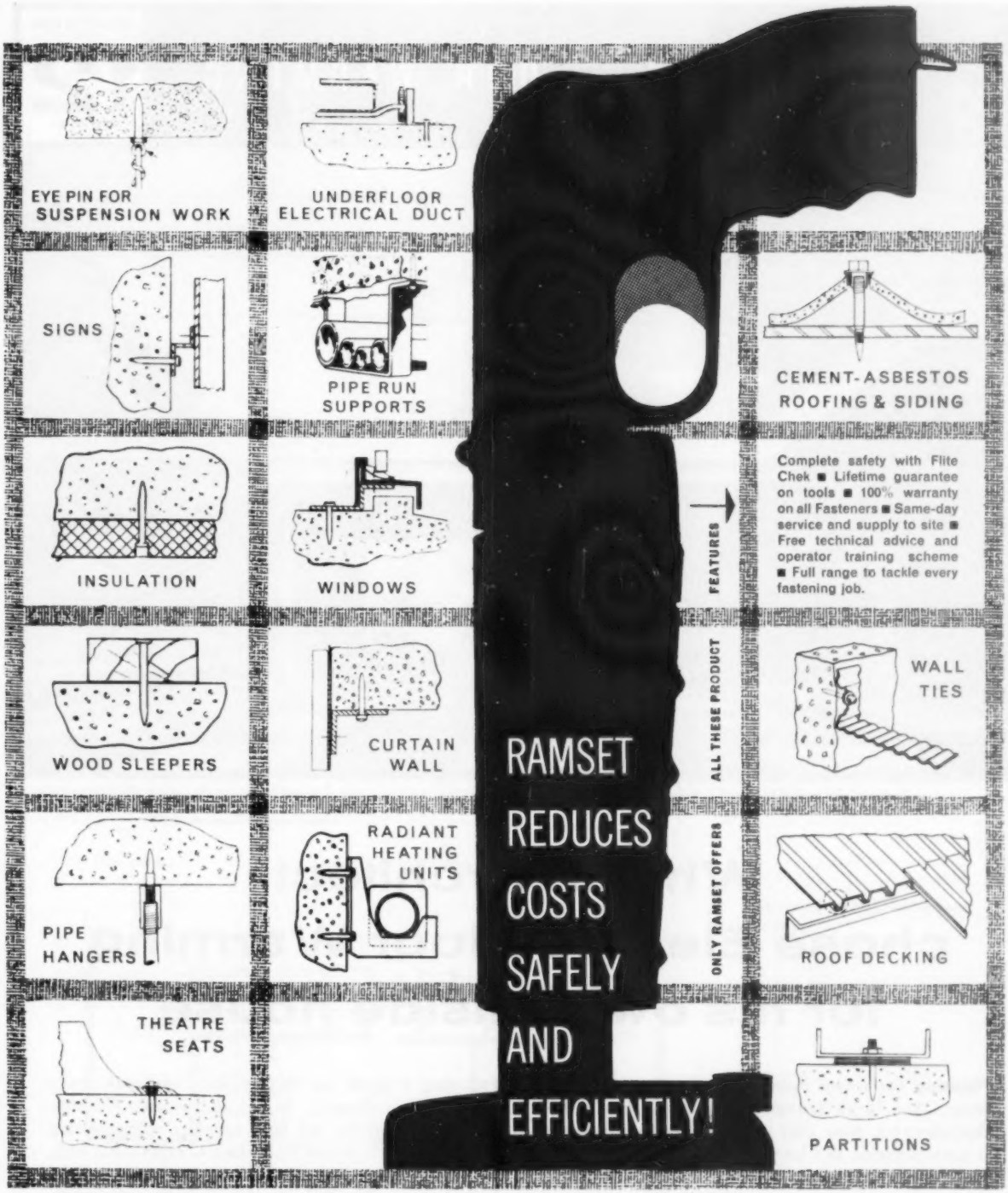
[Scale $\frac{1}{16}$" = 1' 0"]

Lower floor plan



Section through block with shops on the ground floor

Three-storey block in shopping centre (block 10) consisting of shops with maisonettes



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The unique speed, efficiency and safety features of the Ramset powder-powered fastening system can save you pounds on all fastening costs. An operator using Ramset to fasten conduit, for example, can achieve a rate of 100 fastenings an hour, and it's fastening for keeps. No wonder that today's up-to-the-minute contractor recognises the Ramset Jobmaster and its extensive range of fasteners as the premier tool of its kind.

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ELECTRIC FLOOR WARMING

INFORMATION SHEET 12 SfB (56)

Designed and owned by Derek Lovejoy, M.A., A.R.I.B.A., DIP: T.P., M.T.P.I., F.I.L.A., 'New England' dominates its site in the Surrey Hills.

Why an Architect chose Electric Floor Warming for his own hillside house

Planning one's own house is every young architect's dream. And Derek Lovejoy says even as a boy he had ideas about his. Now, after a number of years' experience in town planning and landscape architecture, his ideas have taken exciting shape in 'New England'. Most basic element in its design is the electric floor warming system–cheap and easy to install, clean, noiseless, invisible.

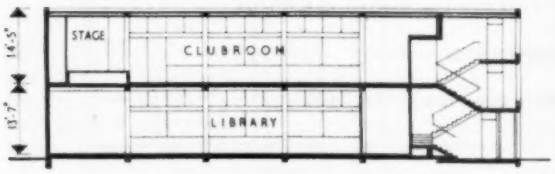
Running such a house presents its own special problems. The living room, for instance, is 40 feet long—21 feet of which consists of sliding plate-glass walls. (See illustration.) The master bedroom has similar glass walls. For heating such large, exposed areas efficiently and economically, electric floor warming is ideal. Thermostats in every room regulate temperatures. A time switch controls the whole system so as to take advantage of cheaper off-peak rates.

Enjoying a home like this involves less work, more comfort when electricity is part of the plan. The simplicity of electricity—for floor warming, water heating and cooking too—means more space to experiment with, uncomplicated by flues, chimney breasts, radiator pipes or fuel stores. The flick of a switch powers the whole house. Extra refinements become possible: such as New England's 'anticipator thermostat' in the garden and an ingenious lighting system, which includes dramatic floodlighting at night.

Thinking of installing electric floor warming? Write to your Electricity Board for details

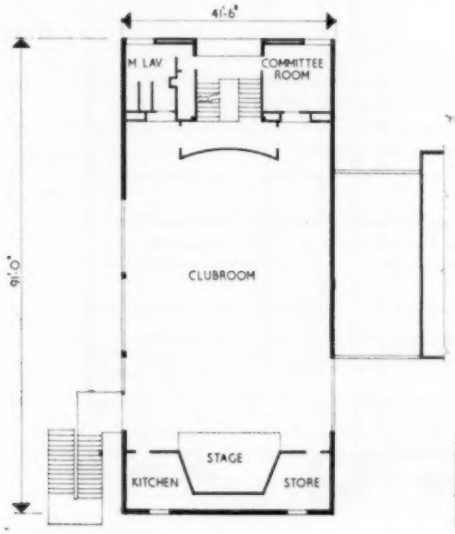
Issued by the Electrical Development Association, 2 Savoy Hill, London W.C.2

The buildings which enclose the shopping centre, from the "outside." The community hall is on the first floor, and the library on the ground floor, of the central building. When the planting has grown it will enclose a garden for the library

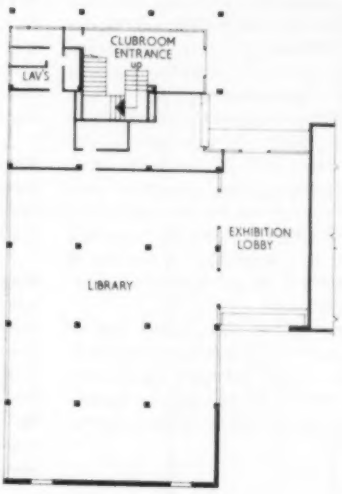


Section [Scale: $\frac{1}{16}$" = 1' 0"]

Community hall and public library (block 12)

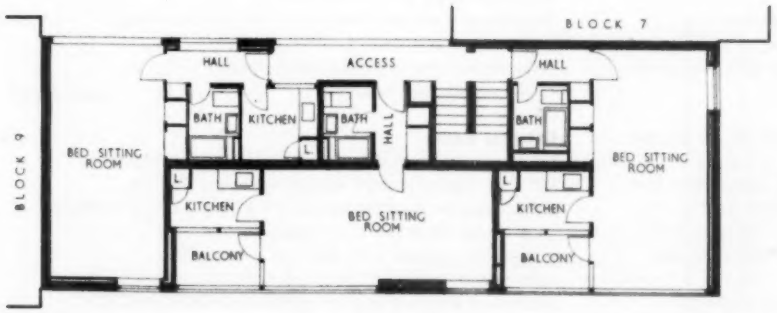


First floor plan

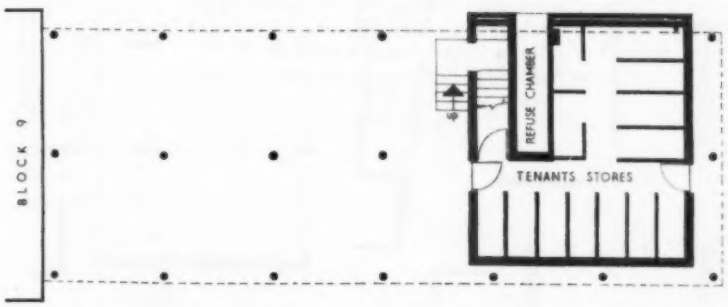


Ground floor plan

Two-storey corner infilling block (block 8)



First floor



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

4 fitted playgrounds; an estate boiler house providing heating and hot water for 558 dwellings in 11 blocks.

The density of population in the new development is comparatively high—41 dwellings (145 persons) to the acre—but this is counterbalanced by a lesser density in the rehabilitated area—32 dwellings (117 persons) to the acre, thereby achieving on average the planned figure of 38 dwellings (137 persons) to the whole estate.

PLANNING AIMS, TOWER BLOCKS

On a typical floor there are two pairs of flats approached from a common lobby served by two high-speed (300 ft a minute) lifts stopping at staggered floors. Both are "fire lifts"—ie subject to overriding emergency recall to ground level. The lobby has permanent natural cross-ventilation and gives access (via a small "cut-off" lobby serving as a smoke lock) to the single staircase, which, although screened, is open to the air. This staircase, with its 4-hour fire-resisting enclosure, is designed as a "fortress" from which the fire brigade could fight any outbreak. The flats are planned with living rooms and bedrooms facing east and west, while service rooms are planned to form a privacy barrier between them. Living rooms are lit from the ends of the kitchen balconies as well as from their main windows—providing two-way orientation and assisting a sense of spaciousness. This is also helped by the screen (glazed at high level and wall-papered below) between living room and kitchen. Both lifts terminate at the 16th floor, from which a circular stair leads to penthouse level, where four bed-sitting room flats are approached across their private "patios." In addition to the normal service rooms of a housing block, there is a store for boxes and similar large dry refuse that cannot go down the chutes, lavatories for the use of tradesmen, etc., and twin chambers for the pumps boosting the pressure on the hot and cold water mains.

All parts of the building requiring regular maintenance can be reached from one balcony or another. There is not a single window in the block which does not open on to a balcony. Apart from the value of the balconies for sitting out this arrangement contributes to a sense of security within the flat, and enables windows to be cleaned conveniently.

SUMMARY

Ground floor area: 3,766 sq ft (typical floor measurement within the external walls).

Total floor area: 63,677 sq ft (total net area of 51,062 sq ft within the dwellings).

Type of contract: Lump-sum based on LCC form of contract.

Tender date: November 1956.

Work began: July 1957.

Worked finished: First block December 1959, the remainder in 1960.

Tender price of foundation, superstructure, installation and finishes, including drainage to collecting manhole: £181,964 per block including an assessed proportion of the cost of the separate boiler house which also serves works outside the scope of this contract.

Tender price of external works and ancillary buildings, including drainage beyond collecting manhole: not applicable as the tender under consideration is only part of the complete development.

Total: £1,138,343 for the six tall blocks plus 156 tenants' stores, 10 garages, 2 playgrounds and 6 toddlers' play spaces.

COST ANALYSIS OF ONE BLOCK

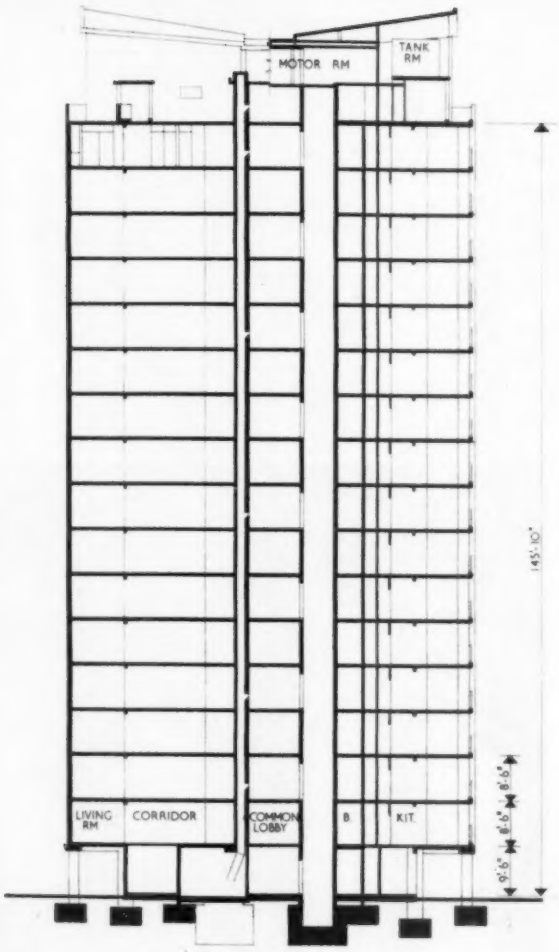
Based on tender.

(AJ revised elemental breakdown in use from November 10 1960.)

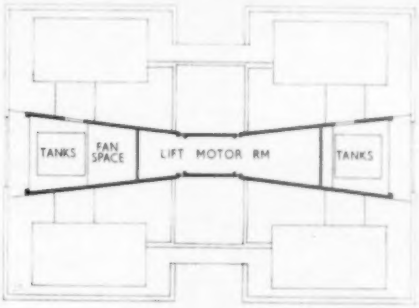
	Cost per sq ft s d
Preliminaries and insurance	3 5½
5·1 per cent of remainder of contract.	
Contingencies	8¼
Work below lowest floor finish	3 11¾
Cast in-situ bored piles 32 ft to 55 ft long taking working loads of 30 to 40 tons; approximately 180 per block. Lengths of piles vary to provide uniform settlement on all caps.	

STRUCTURAL ELEMENTS

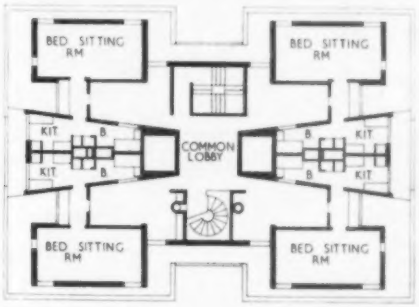
Frame	8 1¼
Reinforced concrete columns and beams with monolithic central core (lift shafts and bathroom enclosures). Exposed balcony columns precast, remaining columns in situ. Majority of beams are precast.	
Upper floors	5 0½
Mainly 4-in. in-situ concrete, 1½-in screed (mesh reinforced) on ¾-in glass silk quilt compressed to approximately ⅜ in.	
Roof	1 5¼
4-in in-situ concrete mainly covered with hessian reinforced bituminous felt, protected by 1-in concrete slabs. 272 sq yd, 108s 0d per sq yd. 4-in barrel in-situ concrete covered with asphalt; 90 sq yd, 109s 10½d per sq yd. 3-in multi-pitched in-situ concrete covered with asphalt; 93 sq yd, 72s 2½d per sq yd.	
Staircases	9½
One per block planned around central core 17 storeys high × 3 ft 4 in wide. Treads and risers in granolithic. No exposed strings. Soffits of smooth-faced painted concrete. Balustrades, mahogany handrail, mild steel core-rail and balusters.	
External walls	7 4¼
Precast concrete cladding rails, bolted to columns at 3 ft 6 in approximately vertical spacings. Slots in projecting nibs at upper ends of 3 ft 6 in × 2 ft 9 in cladding units locate the latter over dowels in cladding rails. Slots rammed with dry mix mortar after slabs packed to correct alignment. Bottoms of slabs secured by tongued and grooved joint with top of unit below, the tolerance between the two being taken up with an asbestos rope gasket; aerated concrete block inner skin; 1,780 sq yd, 113s 0¼d per sq yd. Facing brick cavity, aerated concrete block inner skin; 210 sq yd, 54s 7½d per sq yd. Includes 2s 6¼d per sq ft for precast concrete balcony units.	



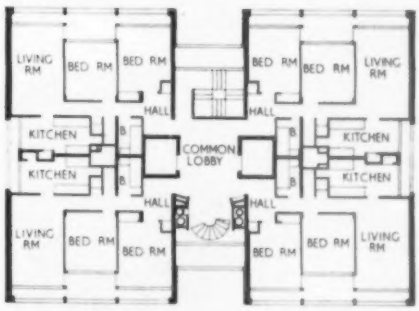
Section [Scale: $\frac{1}{32}$" = 1' 0"]



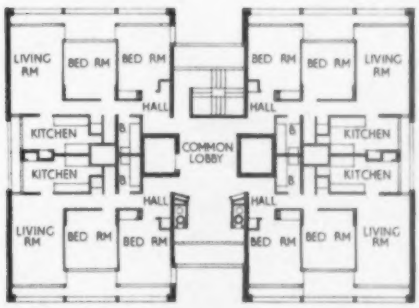
Plan through lift motor room



Plan, seventeenth floor



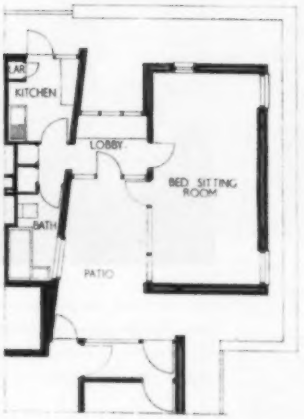
Plan of sixteenth floor



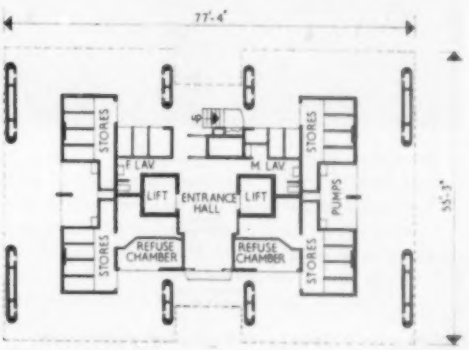
Typical upper floor and (below) ground floor plan

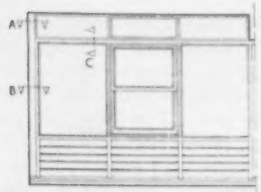
Tower blocks

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

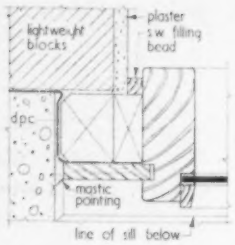


Plan of flats on seventeenth floor

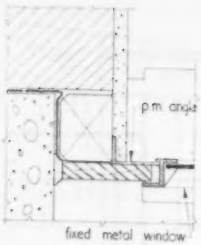




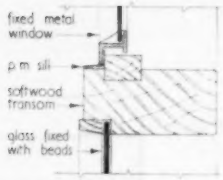
Key elevation [Scale: ¼" = 1' 0"



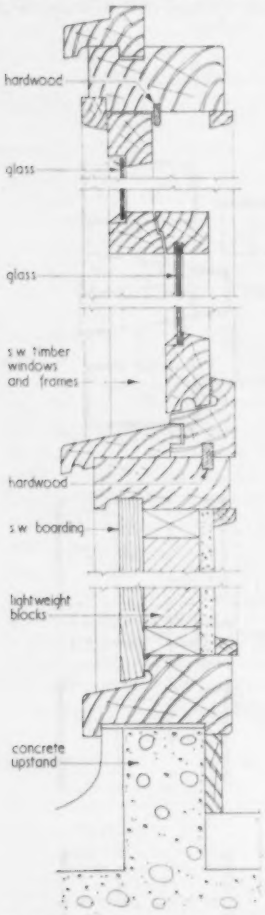
Section A



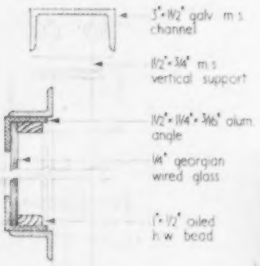
Section B



Section C

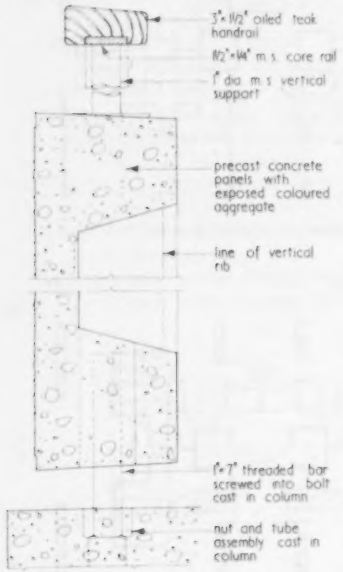


Vertical section through windows

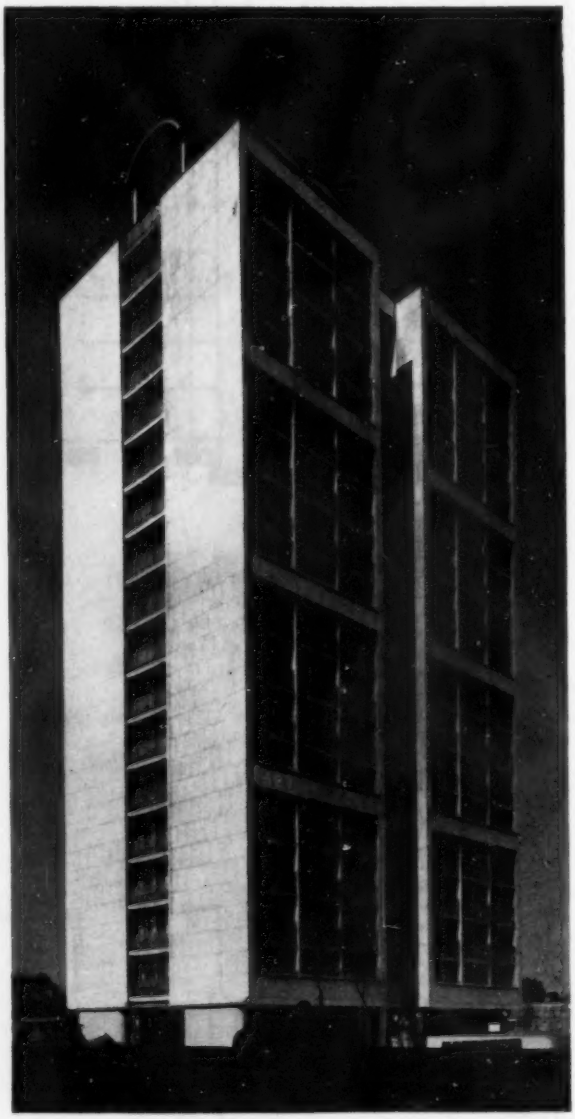


Detail of balcony balustrades

Details of typical windows and balcony fronts in tower block [Scale: 2" = 1' 0"]



Section precast balcony units fronting public areas



All windows are recessed behind balconies. This was a major basis for the detailed design of the tower blocks, carried out for structural reasons as well as to facilitate window cleaning and to give the tenants a sense of psychological security

Paths and play areas . . . " conceived as elements in the ground pattern seen from the nearby tall buildings." The deep beams at every fourth floor of the towers, have an important structural function (as well as an obvious aesthetic scale-giving function)—they transfer the loads of the columns they carry out to the flank walls, so that the columns themselves can be kept small, and the whole building supported on a minimum number of pilotis at the ground floor

Windows and external doors — s 5 d 2½

Wood casement; 85 sq ft, 16s 6¾d per sq ft.
Metal windows and doors; 3,777 sq ft, 23s 1½d per sq ft.
1¾-in teak door; 108 sq ft, 22s 4¼ per sq ft.
Infil panels in complete units including any doors or windows contained therein; varnished softwood frames, two-thirds glazed area fixed. Remaining glazed area painted vertically sliding sashes, under-window panels rebated painted softwood boarding, 2-in aerated concrete block nogging, plasterboard and skim coat under lining; 19,991 sq ft, 8s 9d per sq ft.

Partitions — 1 3½

Half brick wall; 249 sq yd, 22s 0d per sq yd.
Mainly 2-in clinker block; 4,227 sq yd, 10s 2½d per sq yd.

Internal doors — 2 1½

	Single	*Double*
Flush	664	128
Two panel	102	
Fire resisting	19	
Framed, ledged and braced	20	

Ironmongery — 11¼

Standard LCC anodised aluminium range.

Total of structural elements: 32s 3½d

FINISHES AND FITTINGS

Wall finishes — 2 1¾

Vermiculite plastering; 10,764 sq yd, 6s 9½d per sq yd.
Cement rendering; 3,386 sq yd, 8s 0½d per sq yd.
Decorative wall tiling; 15 sq yd, 212s 2¾d per sq yd.
Red quarry tiling; 39 sq yd, 33s 4½d per sq yd.

Floor finishes — 3 8

Thermoplastic tiles; 5,808 sq yd, 23s 2¼d per sq yd.
Boarded floor on counterbattens: 122 sq yd, 41s 3d per sq yd.
Sundry pavings, mainly granolithic; 1,280 sq yd, 25s 0½d per sq yd.
Skirtings: Painted softwood in flats, varnished hardwood in common lobbies and granolithic on stairs

Ceiling finishes — 8¼

Vermiculite plastering; 5,777 sq yd, 4s 9½d per sq yd.
Suspended ceiling; 195 sq yd, 35s 8½d per sq yd.

Decorations — 2 6½

Walls: plastic glaze in bathrooms, gloss paint behind sink and cooker in kitchen, rest of kitchen, hall, wcs emulsion, remainder of walls and ceilings, distemper, softwood gloss paint, hardwood varnished.

Fittings — 1 3

128 shallow wall units.
68 heating cupboards.

Total of finishes: 10s 3¼d

SERVICES

Sanitary fittings — 1 0¾

Type of fitting	*No of each type*
Sinks	68
Lavatory basins	70
Baths	68
Wcs	70
Urinal	1

Waste, soil and overflow pipes — s 8 d

4-in stack pipe and 2-in vent (2 per block).
6-in slow bend at base.
2 purpose-made prefabricated multi-branch cast iron units.
Wcs only vented.
Waste fittings, deep seal traps, copper waste pipes.

Cold water, hot water and heating — 7 6½

Heating by recirculating warmed air unit. Heat exchange unit served by hot water from central boiler house, using an oil-fired boiler. Some mains heat water via calorifiers in each flat.
Cold water feed to cylinders via break feed tanks in each flat (metered).
The appropriate assessed proportion of the boiler house cost only has been included in this figure, the remainder being applicable to work outside this contract.
No of cold water draw-off points: 277.
No of hot water draw-off points: 206.
Includes builder's work, 6½d.

Ventilation services — 6½

Mechanical ventilation to bathrooms and wcs, drying cabinets direct to air.
Galvanised metal trunking throughout.
4 main vertical ducts per floor linked at roof level to single fan chamber (1 fan plus stand-by).
Includes builder's work, ¾d.

Gas services — 2¾

No of outlets: 68 (1 per flat).
Includes builder's work, ¾d.

Electrical services — 3 11

Electric drying cabinets: 8½d.
Installation main vertical riser in trunking, remainder generally conduit: 2s 9d.
Includes builder's work, 5½d.

Special services — 6 4

2 eight-person lifts per block, 300 ft per minute stopping at alternate floors. Both are fire lifts.
Lift installation: 5s 8d.
Lightning conductor installation: 1½d.
Refuse disposal: 4¾d.
Includes builder's work, 2d.

Drainage — 3½

Total of services: 20s 7d

Total cost per sq ft based on net dwelling area

£181,964 (net cost, excluding external works) / 51,062 sq ft (net habitable area) = 71 3½

Total cost per sq ft based on gross floor area:

£181,964 (net cost, excluding external works) / 63,677 sq ft (measured inside external walls) = 57 0¾

Left and below, when the extension of Kennington Park is completed there will be no through roads or other buildings between it and the towers. The park is brought into the estate

Bed-sitting room of a penthouse flat in the 17-storey block. A small patio opens off the living room—an outdoor room completely shielded from the high winds

COST COMMENT

This form of housing is now a well-established building type, which only varies within certain relatively confined limits, so that direct cost comparisons can be made with considerable confidence. The major groups of elements of this analysis are compared with previously published examples in the following table.

	Roehampton	Wandsworth	Southgate	Brandon
Date of tender	Nov 1954	Aug 1953	Nov 1958	Nov 1956
Date published	5.11.1959	29.11.1956	23.3.1961	—
Preliminaries	3s 0½d	4s 8½d	5s 10½d	4s 1½d
Structure and foundations	33s 11½d	31s 11½d	31s 10½d	36s 3½d
Finishes and fittings	14s 10½d	11s 9½d	12s 6½d	10s 3½d
Services	18s 11½d	20s 11½d	25s 2d	20s 7d
Total	70s 10½d	69s 4½d	75s 5½d	71s 3½d

The main point which emerges from this comparison is that the structural costs are slightly higher than other examples. This would seem mainly to result from the system of external walling, windows and balconies adopted for the block, that the panel system, and the relatively large area of balcony provided are having their effect. But this is a matter which has been of considerable concern to the architects, with the aims of simplified erection, maintenance and amenity to the occupants. In compensation there are savings in comparison with the other examples, chiefly in terms of wall finishes. This is due to a reduction of area, resulting from the panel system adopted in association with the windows. Allowing for this factor, these four examples tend to show a remarkable uniformity of costs for many of the items.

CONTRACTORS

Blocks 1-6 (18-storey)

General: Wates Ltd. *Sub-contractors: Precast concrete cladding:* Saunders (Ipswich) Ltd. *Heating and ventilation:* Weatherfoil Ltd. *Mastic filling:* Mann-Reddington Ltd. *Lifts:* Express Lift Co Ltd. *Electric installation and lightning conductor:* R. C. Cutting & Co Ltd. *Light metalwork:* S. W. Farmer & Son Ltd. *Steel windows and doors:* Crittall Manufacturing Co Ltd. *Tar-paving:* A. C. W. Hobman & Co. Ltd. *Piling:* The Pressure Piling Co (Parent) Ltd. *Plumbing:* David F. Wiseman & Sons. *Prefabricated plumbing fittings:* Federated Foundries Ltd. *Joinery:* Rippers Ltd. *Heater cupboards and kitchen units:* John Dight Ltd. *Glazing:* Faulkner Green & Co Ltd. *Plastic wall glaze:* Plastic Surfaces Ltd. *Plastering:* T. F. Rooney & Sons Ltd. *Built-up roofing:* Associated Asphalte Co Ltd. *Tiling:* Herbert H. Nutman Ltd. *Painting and decorating:* J. W. Alder & Sons Ltd. *Plastic tile flooring:* The Armstrong Cork Co Ltd. *Lightweight and aerated concrete blocks:* R. J. Dance Ltd. *Asbestos cement window boxes:* G. R. Speaker & Co Ltd. *Toddlers play space equipment, seats and stockade and precast concrete feature:* E. C. Blackman Ltd, Kendell's Stone & Paving Co Ltd. *Glass fibre letter boxes:* Westpole Motors Ltd.

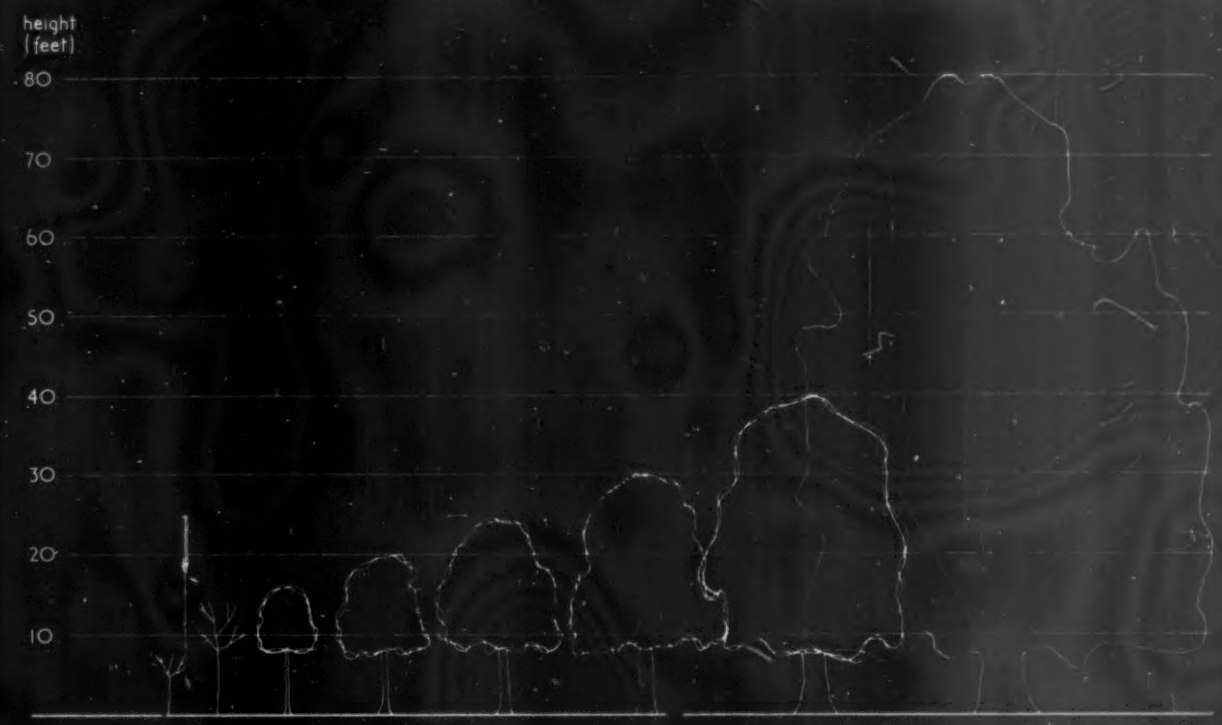
Blocks 7-13 Clubroom and library (includes shopping centre)

General: Tersons Ltd. *Sub-contractors: Steel casement windows and screens:* Ideal Casements (Reading) Ltd. *Joinery:* Davies Bros (Timber and Joinery) Ltd. *Tarpaving:* A. C. W. Hobman & Co Ltd. *Form work:* Scaffolding (Great Britain) Ltd. *Rod reinforcement:* Rom River Co Ltd. *Scaffolding:* Modern Scaffolding Ltd. *Balustrading:* F. Watson Steel Construction Ltd. *Linoleum:* Resilient Tile & Flooring Co Ltd. *Asphalting:* Natural Rock Asphalte Ltd. *Roof slating:* Williams, Smith & Evans Ltd. *Hardwood flooring:* Hollis Bros. Ltd. *Glazing:* Aygee Ltd. *Lightweight screeds:* Robert Whetstone & Co Ltd. *Felt roofing:* Pilkington's Asphalte Co Ltd. *Wall and floor tiling:* Parkinsons (Wall Tiling) Ltd. *Handrail mouldings:* Marley Tile Co Ltd. *Painting:* Jenner Bros (Ilford) Ltd. *Hot and cold rolled asphalt:* Hobart Paving Co Ltd. *Slabbed tile fireplace surrounds:* H. & C. Davis & Co Ltd. *Filling abandoned sewer:* The Cementation Co Ltd. *Plastering:* Macdonnell Bros Ltd. *Plastic tile flooring:* Marley Tile Co Ltd. *Plastic shop signs:* F. J. Bly & Co Ltd. *Illuminated fascia signs, decorative neon sign, etc:* R. Davidson Ltd. *Lifts:* Express Lift Co Ltd. *Electrical installation:* Electric Contracts (London) Ltd. *Lightning protection:* R. C. Cutting & Co Ltd. *Street lighting:* Harland & Wolff Ltd.

The Architects' Journal Information Library November 1 1961

AJ **SfB (15)**

Information Sheet No 1015 **UDC 712·4** **Garden: General**



height (feet)	8	14	16	20	25	30	40•
dia of root ball (feet)	-	-	3	4	5	7	9
average weight (ton)	-	-	½	1	2	4	10
average cost (£)	1	3	10	20	45	80+	200+

mature tree, 50 years old and 80 ft high (approx)

•trees up to 40'-0" high are transplanted as normal practice in U K and Europe, larger trees are transplanted only in America

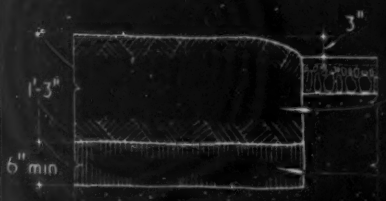
TRANSPLANTING OF TREES

trees growing over chalk or stony subsoil are shallow rooting and are easier to move than those having deep roots into clay or sand

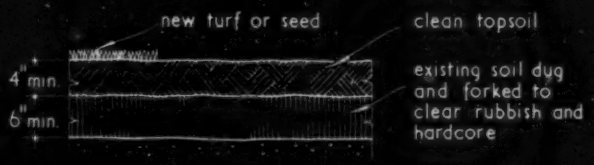
some species transplant more easily than others but there is no certainty about any

TREES TRANSPLANTED READILY		TREES TRANSPLANTED WITH DIFFICULTY
sycamore	willow	birch
chestnut	false acacia	beech
maple	poplar	hornbeam
alder	ash	oak
plane	lime	thorn
elm		all conifers

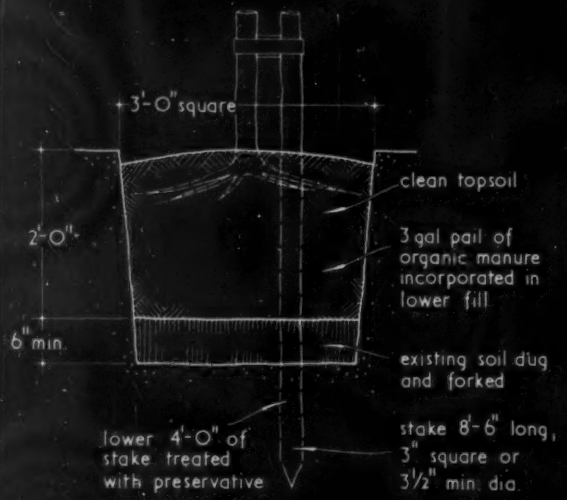
PLANTING DATA



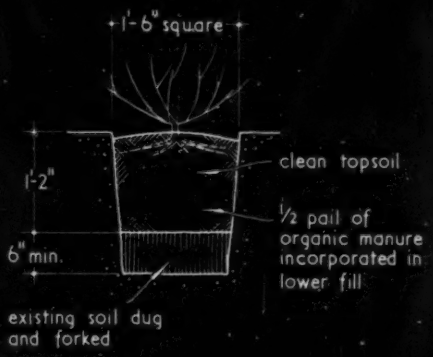
for planting
SOIL BEDS



for grass



TREE PITS



SHRUB PITS

PLANTING DATA

This Sheet provides general planting data for use by the architect or the landscape architect. The drawings and notes on the face set out comparative data for the transplanting of trees.
The drawings above illustrate suggested methods of preparing the ground for plants, grass, trees and shrubs.

Soil Beds

Soil beds for plants should be excavated to a depth of 12in. The existing soil should be dug and forked for a further depth of 6in. The excavated bed should then be filled with clean topsoil to a depth of 15in (raising its level, in effect, to 3in above normal ground level).

Tree Pits

Trees should be set at previous soil level. Stout ties should be provided to anchor the tree to its supporting stake at intervals of 1ft 3in and 5ft 0in above ground.

Shrub Pits

Shrubs should be set at previous soil level. If stakes are required these should be at least 5ft long by 1¼in diameter and should be included in the planting schedule.

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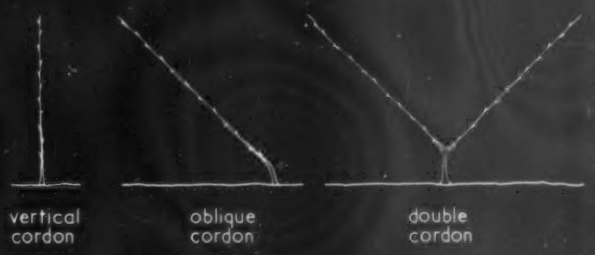
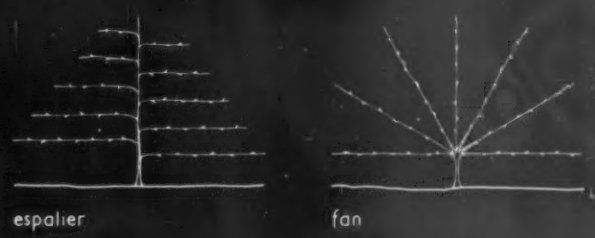
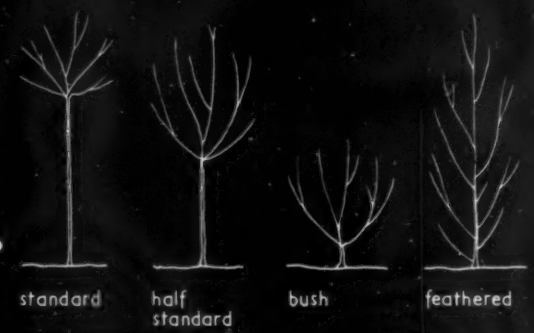
AJ SfB (15)

Information Sheet No 1016 **UDC 712·4** **Garden: General**

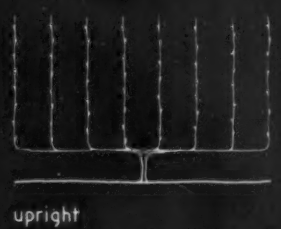
DEFINITIONS.



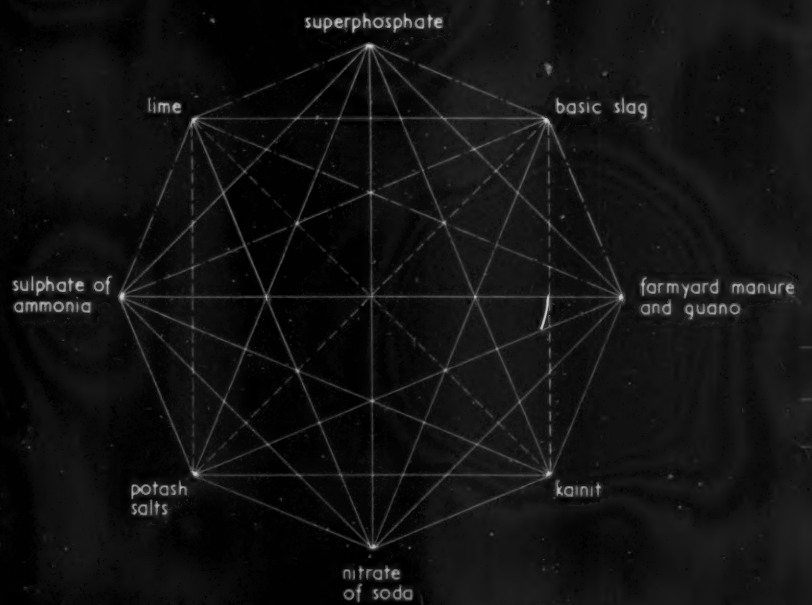




TREE SHAPES.



TRAINING OF FRUIT TREES.



MIXING OF MANURES AND FERTILISERS (GEEHENS' CHART)

DEFINITIONS IN TREE GROWING & MIXING OF FERTILISERS

DEFINITIONS IN TREE-GROWING: MIXING OF FERTILISERS

This Sheet comprises (a) definitions of terms used in landscape work and (b) data on the mixing of manures and fertilisers.

Definitions

The following definitions are illustrated in the diagrams on the face of the Sheet:

leader: the main vertical stem of a plant.
lateral: side shoots growing horizontally.
sucker: a shoot from the roots of a plant away from its stem.
root pruning: reducing the extent of roots.
top grafted: graft made at the top of a long stem.
bottom grafted: graft made just above ground level.
stock: common plant stem on to which another species is grafted or budded.
root ball: the soil kept around the roots of a pot plant when lifted from the ground, or from a pot.
standard: tree with a clear stem (usually 5 ft or more) before the first branch.
half-standard: tree with a short stem (midway between 'standard' and 'bush').
bush: tree with a group of stems from ground level.
feathered: tree with single stem branched from the ground.

cordon:
double cordon:
espalier:
fan:
upright:

} forms adopted by fruit trees as a result of pruning and training.

The mixing of manures and fertilisers

The diagram on the face (Geehen's chart) is intended to show which manures and fertilisers may be mixed together at any time, which may be mixed only immediately before spreading and which must never be mixed.

The chart is reproduced from *Tropical Planting and Gardening* (4th edition) by H. F. Macmillan, by courtesy of the publishers, Macmillan & Co. Ltd.

AJ SfB (15)

Garden : Fences, gates, walls

Robert Haynes the author of the EDG and Technical Study in this supplement is deputy county architect with Buckinghamshire County Council (chief architect and planner Frederick Pooley, FRIBA, FRICS, AMTPI)

(15) *Garden: Fences, gates, walls*

This Element File deals with those items forming divisions of external space which act as barriers or filters to people, animals and vehicles.

The file contains a Design Guide giving the procedure and references for the design of the element, a technical study describing some common types of fence and wall, and three Information Sheets based on the British Standard specification for fencing.

AJ **SfB (15)**

Element Design Guide **UDC 69·02** & **Garden: Fences, gates and walls**

(15) Garden: Fences, gates and walls

Bibliographic references (third column) are graded as follows:
* General reference of value to every architect and which he may wish to possess
** Specialised reference normally used by consultant or architect with special knowledge of particular aspects of building
*** Highly specialised references and research papers which would not be of value to the architect unless working with a consultant
Figures in square brackets are SfB references to the publications mentioned. References in **bold type** are to AJ Element Files

1 **DEFINITIONS**		*CORKHILL, T. A concise building encyclopaedia, p. 336, London 1960, Pitman [Bb] BRITISH STANDARDS INSTITUTION *BS 2847:1957 Glossary of terms for stones used in building [Aa1]
Data required		
2 **Assess type and nature of environment**	LOCATION: general—industrial, urban, coastal, rural particular—landscape adjoining buildings, walls, fences, and gates with reference to materials: *colour, texture, scale* jointing and pointing, local traditional use ATMOSPHERIC POLLUTION—acidic, alkaline, none SUNSHINE INTENSITY RAINFALL PREVAILING WINDS—direction, velocity EXPOSURE OF SITE PROXIMITY OF TREES, WATER SITE LEVELS SUBSOIL	*BS CP 3 Chapter IX:1950 Durability, Appendix VI [Bc7] *BUILDING RESEARCH STATION, Principles of Modern Building, London 1959, 3rd edition, Vol. 1, DSIR, HMSO, Chapter 9, Durability, composition and maintenance [Bb] **DSIR WARREN SPRING LABORATORY. The investigation of atmospheric pollution. Report on observations in the year ended March 31 1958 (31st report) 1960 [Ab1] METEOROLOGICAL OFFICE, London Road, Bracknell, Berks. **SfB (11) Ground: General** EDG para 8
3 **Determine limitations**	Imposed on: HEIGHT WIDTH EXTENT OF FOUNDATIONS AND METHOD OF CONSTRUCTION POSITION AND PROJECTION OF SUPPORTS MATERIALS SIZE OF OPENINGS POSITION OF OPENINGS GATE SWINGS COPING TREATMENT AND WALL/FENCE TOP	
4 **Legal requirements**	Relative to: position of boundary, hedge grower/ditch, ownership of wall/fence, safety of public and/or animals, rights of light, rights of air, rights of access permanent right of access for public undertaking, LOCAL BY-LAWS, public right of way, exit to highway, sight lines, aesthetic considerations, building and improvement lines	**Halsbury's laws of England, Vol 3 (Boundaries), pp. 353–391, London 1953, Butterworth & Co. (Publishers) Ltd, 3rd edition [Aa5] Town and Country Planning Acts [Aa5]
5 **Determine cost limitations**	Assess proportion of total net capital cost to be allocated to walls, fences, gates Assess on basis of capital cost approximate maximum annual expenditure on maintenance: *renewal of applied finishes, cleaning and washing, repairs, maintenance of moving parts of gates*	*MINISTRY OF EDUCATION Building Bulletin No 4, Cost study 1957, 2nd edition [Ba7]. *This is only an introduction to the subject*

6 Determine user requirements

Relative to:

LOCATION
adjacent hedges, trees, buildings, fences, gates and walls

FUNCTION OF WALL/FENCE
physical barrier to: adults, children, wild animals, stock, dogs, vehicles, balls, wind, frost, snow, rain, sun, dazzle
a filter to: people, animals, vehicles, perambulators, light, air
relative to: use, aspect, prospect, season, climate

VISUAL CONSIDERATIONS:
link, decorative screen, definition of ownership, local tradition in design and use of materials, local materials (colour, texture, scale), prestige, privacy

INITIAL COST

LONG-TERM MAINTENANCE

Basic design decisions

7 Determine appearance, materials and workmanship

Relative to:

LOCAL TRADITION

ADJOINING LANDSCAPE
hedges, walls, fences, gates and doors, buildings

*BEAZLEY, E. Design and detail of the space between buildings. London 1960, Architectural Press [(14)]
An excellent book for reference; critical, informative, with a wealth of photographs and line drawings and diagrams. Including bibliography and specifications

LOCAL MATERIALS: colour, texture, scale, jointing and pointing

*WARD, MARY, Gates and fences, *Arch Review*, No 688 (April 1954), p 277–281 *gives examples of traditional solutions* [(15)]

ULTIMATE DECAY: pleasing or unpleasing, avoidable or unavoidable

FUNCTION

EFFECT OF CAST SHADOWS

PENETRATION OF SIGHT, LIGHT

CONTRAST OF STRUCTURAL ELEMENTS (fences and walls with openings and gates)

DETERMINE TYPE OF FENCE AND GATE

Architect detailed

AJ Information Sheet No 1017 Fences 1 [(**15**)]

Proprietary—standard
purpose designed

AJ Information Sheet No 1018 Fences 2 [(**15**)]

AJ Information Sheet No 1019 Fences 3 [(**15**)]

Vernacular

*BEAZLEY p 156–160 (rubble stone) [(14)]

*EDLIN, H. L., Woodland crafts in Britain, London, 1949, Batsford [Di]
An account of the traditional uses of trees and timber in the British countryside. Good photographs and description of techniques

*TIMBER DEVELOPMENT ASSOCIATION (TDA) Timber fencing and gates for agricultural and open space purposes London, undated, TDA [(15)]
An excellent booklet with illustrations, descriptions and specifications of timber fencing in general use

8 Determine method of erection

Using hand tools / power tools } *for excavation, tensioning, transport of materials*

From inside site—from outside site

relative to: type of machine, size, height and track width
means of access to site, conditions of ground
extent of foundations relative to boundary
access over adjoining ownerships for erection

Detail design

WALLS

9 Determine material

FACTORS: appearance, cost, maintenance, durability, availability, strength, weathering qualities

TYPES: BRICK plain/ornamental

NATIONAL FEDERATION OF CLAY INDUSTRIES (NFCI) Brick information sheets, No 12 Mortar and jointing, Nos 1–8 Bricks and bond [Fg]
Brickwork Design and Construction, reprint articles from the Brick Bulletin on bonding, mortar and protection and repair of ancient brick [Fg]

BLOCK concrete, art. stone
STONE wet laid, dry laid

*YORKE, F.R.S. Specification, p 449 (Mason) London, 1961, Architectural Press [Ba5]

CONCRETE in situ
EARTH COB, CLUNCH, PISE
TURF
RENDERED BRICK (block, concrete)

BRS Principles of modern building, p 102-116 (concrete and mortar) [Bb]

*PRINCIPLES OF MODERN BUILDING, Chap. 18 [Bb]
*BRS digest 17 Colourwashes (including paints) on external walls, 1952 [Vv6]
*BRS digest 126 Mortars for jointing, 1959 [Dq4]
*BRS digest 62 p 1 Masonry cement, 1954 [Dq2]
*BRS digest 131 p 4 Proprietary mixes and aerated ('plasticised') mortars, 1960 [Dq4]

TREATMENT: surface texture, size of units, patterning, colour, bonding and coursing

10 Determine construction

Consider:
Function
Location
Appearance
Material
Length
relative to: height and thickness, frequency and size of piers, reinforcement, protection of ends, expansion joints

SfB (21) Walls: External loadbearing: General
BEAZLEY p 135–160 [(14)]
*BRS digest 6 The avoidance of cracking in masonry construction of concrete or sand-lime bricks, 1957 (F]
*CP 111: 1948 Structural recommendations for loadbearing walls [Ab3]
*CP3: Chapter V 1952 Loading [Ab3]
*MITCHELL, G. A., and A. M. MITCHELL Advanced building construction, London, 1947, Batsford o/p [Bb]

SELECT FACING

Determine: minimum thickness of facing material, joint of facing to backing
Relative to: weight, composition of backing or core, differential movement

Faced walls
Rendered walls
Flint walls
Sandwich walls—wet or dry

11 Foundations

Determine: material, mix, depth below ground, stepping, dimensions, reinforcement

SfB (16) Foundations: General
generally foundations for walls are concrete, sometimes stabilised earth, and occasionally large stones

Relative to: nature of subsoil, strength, proximity of trees or water, adjacent cultivation, by-laws, legal restrictions, level, drains below foundations

SfB (11) Ground: General
*BRS digest 3 House foundations on shrinkable clays, 1959 [(16)]
*BRS digest 9 Building on made-up ground or filling, page 3 (design of foundations) 1960 [(16)]

12 DPCs

Determine material relative to: movement, position in wall (top and/or bottom), cost
asbestos, bituminous felt, non-ferrous metal
engineering brick, asphalt, slate, stone (non-porous)

*BRS digest 11 Damp-proof courses in parapet walls—(coping), 1949 [L]
*BRS digest 68 Damp-proof courses, page 3 (lead and copper) 1954 [Ld]

13 Base protection

For protection against: moisture, rodents, traffic abrasion
By means of: tar bands, rendering, facing, water tables (cobble and stone paving), mowing strips

SfB (15) Garden: General EDG para 73

COPINGS

14 Determine materials

SURFACE TEXTURE	BEAZLEY, p 126-133 [(14)]
PROFILE	AJ Information Sheet No 1020 Copings [(**15**)]
OVERHANG	
WEATHERING, THROATING AND DRIPS	
COLOUR	
relative to: appearance, appearance of walls, cost, maintenance, durability, availability, strength, weathering, security	
SLATE	AJ Information Sheet 5. Bl slate [Fe5]
TERRACOTTA	*BS 1233:1945 Clayware copings [Fg]
STONE	*BS 1235:1945 Natural stone copings [Fe]
ART STONE	*BS 1217:1945 Cast stone [Df2]
CONCRETE	*BS 1234:1945 Cast concrete copings [Fj2]
TILE	*WILLIAMS-ELLIS, C. and J. and E. EASTWICK-FIELD Building in cob, pisé and stabilized earth, p 101 (tiles, thatch), London 1950 Country Life Ltd [Dg1]. *A comprehensive and well illustrated account of the techniques of building with earth*
THATCH	
BRICK	*NFCI Brick information sheet 1 Brick copings [Fg2]
ASBESTOS CEMENT	
CAST IRON	
LEAD	
ALUMINIUM	
ZINC	*ZINC DEVELOPMENT ASSOCIATION Information Sheet 9 Porch hoods 1957 [(38)] Information Sheet 10 Zinc weatherings 1957 [48] Md7 *BS 849:1939 Plain sheet zinc roofing [Md7]
COPPER	*BS 1569:1949 Copper sheet and strip for roofing [Md5] *COPPER DEVELOPMENT ASSOCIATION Copper roofing, London 1959 The Association [Md5]
WOOD	

15 Security precautions

By means of:	
broken bottles	
chevaux-de-frise	*Chevaux-de-frise: revolving iron spikes surmounting coping or wall*
iron spikes	

16 Determine method of jointing

Units to each other, adjacent walls, wall below
At corners, ends and intermediate features
Relative to: exposure, thermal movements, physical damage
By means of: mortar, screws, nails, dowels, cramps, straps

LEVELS

17 Assess effect of changes of level in:

LONGITUDINAL SECTION	Consider: GRADIENT, SUBSOIL, MOVEMENT, MATERIAL, CONSTRUCTION—size of unit, horizontal courses, undulating courses. In relation to: foundations, DPC, coping, jointing
CROSS SECTION	Determine: THICKNESS, CONSTRUCTION, REINFORCEMENT. Relative to: thrust of ground behind wall, live/dead load on ground behind wall, weight of wall, water pressure, vegetation. Assess effects of water behind wall: staining, cracking,

SfB (13) Retaining structures EDG para 1-12

	damage to materials and jointing (directly or indirectly) Determine means of disposing of water: vertical DPC (slate, metal, bituminous felt, applied compound, plastic), open vertical joints, weep holes, clay pipe inserts, french drain, land drain	
18 **Openings in walls**	Determine height and width relative to: APPEARANCE PURPOSE size of creatures and/or vehicles passing through TYPE OF GATE OR DOOR TO BE FITTED VIEW Determine construction, material, size, reinforcement of the lintel, arch or overthrow Determine method of protecting opening: stone quoins, wood/metal lining, bollards, kerbs, carriage stones, railings	E & O E Planning. London 1959 Iliffe [Bb] See para 33 below
FENCES AND RAILINGS GENERALLY		BEAZLEY [(14)] AJ Information Sheet No 1017 [(**15**)] AJ Information Sheet No 1018 [(**15**)] AJ Information Sheet No 1019 [(**15**)]
19 **Determine material**	In relation to: function, location, appearance, prestige, length, strength durability, availability, cost—*capital, maintenance*	*Abnormal loading on top or bottom horizontal members*
20 **Determine**: FORM	In relation to: function, location, appearance (prestige, proportion of solid to void), method of assembly, public safety (including stock)	
HEIGHT	Relative to: size of members, spacing of members } vertical and horizontal frequency and type of supports projection of stays	
METHODS OF JOINTING	Members, panels, end fixing, fixing to ground or coping, depth in ground	
TOP TREATMENT	In relation to: security, public safety, weathering, strength	*a fence may be:* *climbable* *unclimbable—with safety* *without safety*
WROUGHT IRON MILD STEEL CAST IRON RAILINGS	Determine type and spacing of members in relation to these materials and considerations given in paras above	*BAYLISS, JONES & BAYLISS LTD., Wolverhampton. Catalogue 60, Fencing, gates and ironwork [(15)] *A very good catalogue of all types of metal fencing with photographs, drawings, enlarged details and specifications, and recommendations for use, also catalogue* 51 *BS 1722:1951 Part 8, Mild steel or wrought iron continuous bar fences (confirmed 1959) [(15)]. Part 9, Mild steel or wrought iron unclimbable fences (confirmed 1959) [(15)] *METAL AGENCIES CO LTD (MAC), Avon Works, Winterstoke Road, Bristol 3. Standard catalogue [(15)]. *A most informative builders' merchant's and manufacturer's catalogue, covering most forms of fencing and gates, with drawings and photographs, specifications and prices* *BOULTON & PAUL LTD, Riverside Works, Norwich. Catalogue—Fencing [(15)]. *A well produced catalogue of all types of fencing*
21 **Decide method of**	JOINTING: Wiring, welding, bolting, screwing, riveting, wedging, nibs MOUNTING Driven in, driven in with thrust plate, concreted in, set in lead or mortar, rag bolted TOP TREATMENT Plain points, split points, spears, bows, cranked points,	

balls, knobs and decorative finials, plain bar, revolving chevaux-de-frise

FINISHING

Finish ex-works, uncoated, oiled, jet varnished, coated black bituminous paint or red oxide, hot dipped galvanised — *BRS Digest 66. Corrosion stains on plaster, p 2 (galvanised steel) 1954 [Ao2]

zinc sprayed, plastic coated — *BRS Digest 64. Painting metals in buildings, p 3 (galvanised steel painting) 1954 [Vv6]

Final finish — *BRS Digest 85, p 2 (Sprayed metal coatings) 1956 [Aa2]

NET CHAIN LINK POST AND WIRE FENCES

*BS 1722:1951 Fencing, part 1, Chain link. Part 2, Woven wire. Part 3, Strained wire [(15)J]
*BEAZLEY [(14)]
MAC catalogue [(15)]
*CHAIN LINK FENCING LTD, Kings Langley, Herts. Specification leaflets dealing with chain link fencing and and steel gates [(15)]

22 Determine material and size of structure

Wood
Reinforced concrete
Metal
Sizes for: *posts*,
stays,
dropper — *A dropper is a light vertical member between posts, not secured to ground*

MATERIAL OF NET — Rope, nylon, chicken wire, expanded metal
GAUGE OF WIRE — Relative to: spacing of posts and droppers, mesh size, number of horizontal wires, type of horizontal wires
METHOD OF TENSIONING — Straining eyebolts, radisseurs, tractor
FIXING TO GROUND — Driven in, driven in with thrust plates, augered or dug hole (backfilled, concreted)
FINISH — To wire: *galvanised, galvanised and painted, galvanised and plastic-coated* — *Aluminium and stainless steel nets are also available*
Metal posts: *galvanised, painted*
Timber posts: *preservatives, painted, charred ends*
TOP TREATMENT — Cranked or straight, plain or barbed wire

TIMBER FENCES AND RAILS

23 Materials

HARDWOODS:
oak, chestnut, larch — *not necessarily preserved*
ash, hornbeam, beech, lime, birch, sycamore, elm — *need preservatives*
cedar (other imported hardwoods suitable but not commonly used)

BEAZLEY p 161–174 [(14)]
TDA. Timber fencing and gates for agricultural and open space purposes Timber fencing and gates for housing and other buildings. London, undated, The Association [(15)Hi]
MAC Ltd, catalogue [(15)]
Advice from Rural Industries Bureaux

SOFTWOODS:
Douglas fir, silver fir, Scots pine, Austrian pine, Corsican pine, spruce

24 Types

Cleft spile and wire
Sawn oak pale
Closeboarded
Horizontal weatherboarded
Post and rail: morticed—trellis
nailed—rustic
Cleft post and rail
Interlapped
Wattle: osier, hazel
relative: height
size of members
spacing of members
frequency of posts

*BS 1722:1951 Fencing. Part 4 Cleft chestnut pale
Part 5 Close boarded
Part 6 Wooden palisade
Part 7 Wood post and rail [(15) Hi]

Determine where RC posts, rails or gravel boards should be used in lieu of timber—appearance, cost, maintenance
*PENNINGTON A. M. Concrete fences

	wind loading on posts end treatment of verticals	p 36 *et seq*, London 1950, Concrete Publications Ltd [(15)]. *A useful and compact book describing the types of concrete fencing now in use, together with an account of methods of manufacture*
25 **Methods of joining members**	Nailing Screwing Bolting } size/type/material/frequency Timber connectors Galvanised strapping (racecourse rails) Wiring	
26 **Finishes**	Determine preservative treatment: pressure application brushing or spraying dipping and steeping open tank method Determine decorative treatment: paint coloured preservatives varnish oil	*BEAZLEY, p 162–163 [(14)] *MINISTRY OF AGRICULTURE, FOOD AND FISHERIES. Fixed equipment of the farm. No 17 Preservation of timber and metal 1952, Leaflet 11-1958 [Du3] *BS 1282:1959. Classification of wood preservations and their methods of application [Du3] *BS 144:1954. Coal tar creosote for the preservation of timber [Du3] *BS 913:1954. Pressure creosoting of timber [Du3] *FOREST PRODUCTS RESEARCH LABORATORY. Record No 9, Methods of applying wood preservatives 1 (non-pressure), J. Ryan 1936 [Du3]. Record No 17 Wood preservatives, N. A. Richardson 1946 [Du3]. Leaflet No 11, The hot and cold open tank process of impregnating timber 1958 [Du3]
CONCRETE FENCES 27 **Determine height, type, appearance**	Location and function, size of units (palisade, post and panel), profiling, patterning, texture Colour, availability or proprietary makes	*PENNINGTON [(15)]
HEDGES 28 **Determine material relative to**	Function Location Appearance Speed of growth Ultimate height Ultimate thickness Maintenance: regular (clipping) periodic (cut and lay)	**SfB (15) Garden: General** EDG para 145 *EDLIN, Chapter X (Hawthorns and hedgecraft) [Di] *PROCKTER, N. S. Garden hedges, London 1960, Collingridge [(14)]
POSTS AND BARRIERS 29 **Bollards, barriers, stiles, footway guard posts**	Determine height and section Size and distance apart Reinforcement Surface decoration Profile Colour Preservation and surface treatment Fixing to ground Relative to: function, location, appearance, material, resistance to impact, direction of maximum impact, ease of replacement and movement, prohibiting the passage of vehicles and animals, with or without illumination	*BEAZLEY [(14)] MONO CONCRETE CO LTD, Horton Road, W. Drayton. Paved areas (concrete bollards) [(14)] *Photographs and drawings of concrete bollards* *GEO H. GASCOIGNE CO LTD, Reading, Leaflet and detailed drawings of KEE KLAMP pedestrian guard railings [(34)] *PENNINGTON [(15)] *METAL SECTIONS LTD, Oldbury, Birmingham "Metsec" guard rails (vehicular) catalogue [(34)]. *Leaflet giving details and recommended fixing for steel traffic guard rail*
30 **Materials**	Timber, concrete in-situ or pre-cast, cast iron, wrought iron, mild steel, rubber, fibre glass, high tensile wire or steel, non-ferrous alloy	

HOARDING		
31 **Temporary barriers fencing**	Hurdles—gate type	*EDLIN chapter XII (hurdles) [Di]
	wattle	*BEAZLEY [(14)]
	iron	BOULTON AND PAUL catalogue [(15)]
BARRIERS AND FENCING	Determine: material, height, size of members or units and weight relative to: function, appearance, expectation of life, initial cost, maintenance costs, ease of erection and transport, safety of public and animals	
TYPE	Pedestrian rails, posts and chains	
	Roadworks barriers	
	Building site—fencing	*CHAIN LINK FENCING LTD Leaflet 5, Building site compound fencing [(15)]
	steel mat	
	chain link	
	plywood	
DETERMINE GROUND FIXING AND FIXING TO EACH OTHER	Sockets—open, closable	
	Weighted feet, legs, hooks, stakes, chains, skids, screws, wheels, bolts	
32 **Method of marking projections for public safety**	Paint—white, red, fluorescent	
	Scotch tape	
	Electric light—mains, low voltage	
	Oil lamps	
	Relative to: function (screen, advertisement), appearance, expectation of life, re-use of components, wind pressure, poster size, publicity value, legal restrictions	
GATES AND DOORS		References generally as for fences
33 **Decide**: TYPE	Relative to: function, location and local tradition, appearance, type of wall/fence in which it is placed, maximum size of vehicles/creatures passing through, weight, levels of adjacent ground	*BEAZLEY [(14)] MAC catalogue [(15)] BAYLISS JONES AND BAYLISS catalogue [(15)]
MATERIAL	Determine height and width	BOULTON AND PAUL catalogue [(15)]
	Size and spacing of members	
	Material: wood, metal, composite	
OPERATION	Method of hanging, closing, locking, raising, keeping open	
	Resistance to damage and ease of repair	
	Method of removal and adjustment	
34 **Consider frame to opening**	Size and type of posts and frames, pier caps, finials	
	Relative to: function, appearance, strength, adjacent wall/fence, material, scale, weathering	
	Consider range of fittings required	

Specification

35 **Consider the more common defects**	If unacceptable, detail and/or select material to prevent: COPINGS: staining, oxidisation and frost damage, staining below coping joints, mechanical damage, staining above DCP	
	WALLS: efflorescence on brickwork, pointing and jointing	*BRS digest 126 page 4 Efflorescence in cement mortar [Dq4]
	discoloration due to rainborne salts	*BRS digest 25/102 The selection of clay building bricks, 1950 p 2 (efflorescence in clay bricks) [Fg2]
	cracking, pattern staining and disintegration of rendering	
	breakdown of integral colour in rendering	
	exposed aggregate staining	*BRS digest 17. Colour washes (including paints) on external walls (efflorescence) 1952 [Vv6]
	retaining wall discoloration	
	rising damp—sulphate attack	
	mud stains at base	*BRS digest 20. The weathering, preservation and maintenance of natural stone masonry part 1 1950 p 6 (efflorescence in stone masonry) [Fe]
	water erosion	
	settlement cracks	
	expansion cracks	*BRS digest 90. Colourless waterproofing treatment for damp walls, 1956 p 3 [Dv6]
	rodent attack at base	
	mechanical damage to corners and ends	*BRS digest 20 and 21. The weathering, preservation and maintenance of natural stone masonry part 1 and 2 1950 [Fe]
	rust staining	*BRS digest 3 [(16)]
	FENCES, METAL: rust and corrosion: *at joints below horizontal members*	*BRS digest 97, p 3. Rust stains on concrete 1957 [Aa2]
	in fixings to ground, walls, copings	*BRS digest 64, p 1 Painting metals in buildings [Vv6]

		*BRS digest 85, p 2. Sprayed metal coatings 1958 [Aa2]
	bending of horizontal members staining below supports salt water corrosion windborne sand erosion breakdown of paint wear on lower horizontal rails	*BRS digest 8. The use of copper and galvanized steel in the same hot water system, 1958, p 3 (galvanised steel corrosion) [(53)]
	FENCES, WOOD: insect and/or fungus attack rot at joints, fixings, ground level and below ground	*BRS digest 111. Corrosion of non-ferrous metals. 2 (corrosion of galvanized steel) 1958 [Dd] *BRS digest 66, p 3. Crazing of concrete products, 1954 [Df]
36 **Clause headings**	Access to site; guarantees; samples; attendances on specialists; provision of scaffolding, hoists; storage of materials; protection during delivery and erection; final cleaning; copings, plinths, cappings and finials; flashings and DPC's; bricks, blocks, stone; jointing, pointing, colour and mix; concrete mix; gates and doors; fittings and ironmongery; painting	

Contract stage

37 **Select and appoint specialist suppliers and subcontractors**	Obtain competitive estimates from specialist sub-contractors Appoint specialist sub-contractor (proprietary system) after examination of estimates by quantity surveyor	*Estimates for proprietary fencing on basis of rough plan showing line of fence, with positions of any curves, hollows, banks, openings, and gates clearly marked and specification*
38 **Ensure that client owns site**	Obtain permission to enter site and/or adjacent sites in order to erect fencing	
39 **Agree with general contractor specialist suppliers and sub-contractors**	Erection programme Delivery dates Provision of samples. Site storage—temporary protection	
40 **Supervise erection**	Ensure fence follows legal boundary or is within site Check setting out	

SfB (15)

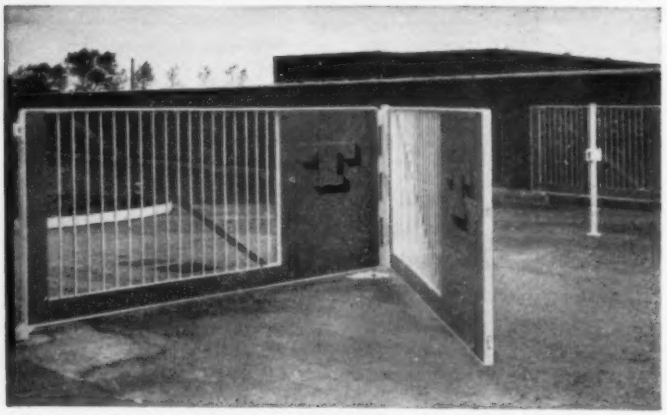
BAYLISS, JONES & BAYLISS LIMITED

HEAD OFFICE: VICTORIA WORKS, WOLVERHAMPTON
TEL: WOLVERHAMPTON 20441
LONDON OFFICE: GKN HOUSE, 22 KINGSWAY, LONDON, W.C.2
TEL: CHANCERY 1616

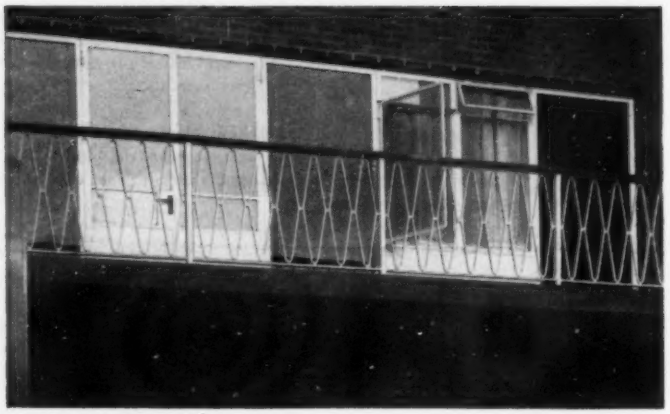
Fencing, gates and wrought ironwork

Bayliss, Jones and Bayliss Limited make Ornamental Gates, Entrance and Garden Gates, Iron and Wire Fencing, Chain Link and Corrugated Sheet Fencing, Barrier Railings, Balcony Balustrades, Bridge Parapet Railing, and any kind of Decorative Wrought Ironwork—either to meet special requirements or to standard specifications. BJB also make steel fabrications of up to 50 tons in weight and many types of forged and formed steel components.

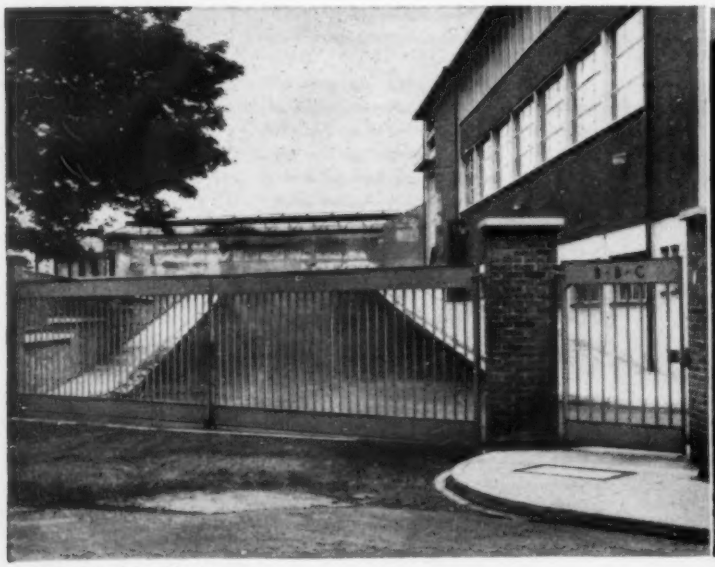
FOR FURTHER INFORMATION, WRITE FOR DESCRIPTIVE BROCHURES.



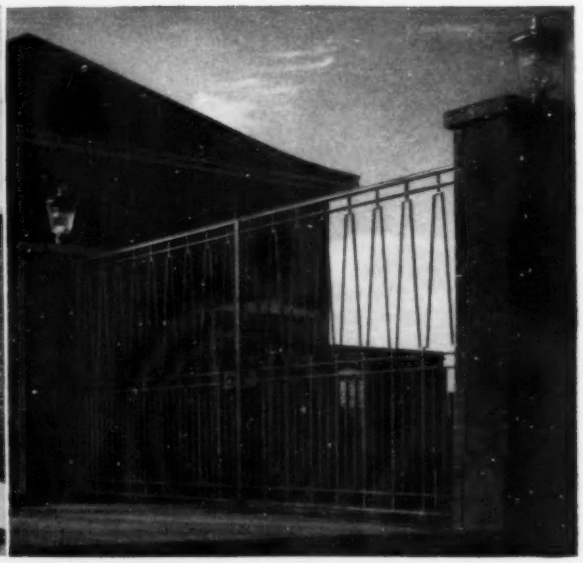
Technicolor Ltd., Harmondsworth, Middlesex



Hotel Leofric, Coventry



B.B.C. Television Centre



Staffordshire Territorial and Auxiliary Forces Association T.A. Centre, Wolverhampton

AJ SfB (15)
Technical study UDC 69·028·8 Garden : Fences, gates and walls

Some typical fences, gates and walls

The following notes by Robert Haynes are intended only as a guide to some of the many methods and materials available for fencing and walling, more detailed information can be obtained from the references given in the Element Design Guide. Prices quoted are approximate and, unless otherwise stated, ex-works; in practice they will vary from job to job, depending upon manufacturer, finish and location, but they should enable the architect to form an assessment of relative costs.

Over the years, designs for fences, gates and walls have been evolved by trial and error and many of the designs are still in use today. Experiments have been made to find new forms and new applications for traditional materials. The Timber Development Association has produced new designs for fences which still await field testing; the Rural Industries Bureau has developed interesting variations on traditional timber and iron fences and gates; the Cement and Concrete Association has on permanent exhibition at Wexham Springs a range of concrete units for solid walls, screen walls and panelling and there seems to be an almost limitless variety of possible shapes, profiles, textures and colours obtainable in this material.

BRICKWORK

For free-standing walls, bricks should have high resistance to frost and should be laid in mortar which is not too rich. Some recommended mixes are given in the following table taken from Elizabeth Beazley's book, The Design and Detail of Space Between Buildings.

Material	*Position*	*Cement/lime/sand*
Clay bricks (in free-standing walls)	1 On sheltered sites, built in summer	1 : 2 : 9
	2 On normal sites or built in winter	1 : 1 : 5-6
Flint-lime bricks	—	1 : 2 : 8-9
		1*: 2½ or 3
Concrete and sand-lime bricks	Free-standing walls as 1 above	1 : 2 : 8-9
	ditto as 2 above	1 : 1 : 5-6
Bricks generally	Below dpc	
	Copings	1 : — : 3½
	Retaining walls in clay bricks	
Clay engineering bricks	General and retaining walls	1 : — : 3

*Hydraulic (blue lias) lime is particularly suitable for some flint-lime bricks; when a gauging of cement is not necessary.

A dpc about 6 in above ground level is usually considered essential; the need for a coping is often a matter of opinion. In view of the many successful walls built in the past without a coping its selection or rejection will usually depend upon site conditions, aesthetic considerations and local tradition.

Half-brick walls 6 ft high, with piers at 9 ft centres are common. Nine-inch walls are more satisfactory, both in appearance and from a practical point of view; they can be built up to 6 ft high without piers, except in the most exposed positions. Six-inch concrete foundations 18 in to

24 in below ground level are adequate for average soils but on shrinkable clay greater depth may be required. English, Flemish, English garden-wall, Flemish (Sussex) garden-wall and rat-trap bonds have been used with success in free-standing walls.

STONE WALLS

Traditional techniques for construction, bonding and jointing have been developed in most stone districts and these serve, if not as a copy, at least as a guide. Rubble walls are most common, varying from 18 in to 24 in thick at base. Foundations are often large stones or 6-in concrete. Quarry waste, small stones and flints are set in a weak mix against a 4½ in brick backing. Brick piers and lacing courses break the surface into panels which not only reduce risk of cracking but make less obvious the variations in colour, texture and pointing which are often unavoidable in a long length of wall.

CONCRETE

In situ

Use: in association with buildings and retaining walls or on large projects where cost of shuttering can be justified.

Specification: reinforced: 6 ft high, 6 in thick, 3·5 lb steel a sq yd. unreinforced: 6 ft high, 12 in thick.

Expansion joints: ½ in every 30 ft for reinforced, in every 15 ft for mass concrete walls.

Various finishes can be obtained by using unwrot green timber for shuttering, pouring against rubber mats or plastic forms and by the usual methods of exposing the aggregate after the shuttering has been struck.

Concrete blocks

These fall into four groups: plain, pierced, profiled, exposed aggregate blocks.

They can be laid as:

a 4 in wall buttressed at 7 ft 6 in centres

an 8 in solid wall, unbuttressed

a facing to bricks or blocks

a cavity wall

permanent shuttering to in-situ concrete

Plain blocks are used largely for industrial and agricultural work. 18 in × 9 in × 4 in solid blocks cost about 8s a yd; 18 in × 9 in × 9 in hollow blocks cost about 13s a yd.

Rock-faced profiled may cost up to 20 per cent more.

Pierced, profiled and exposed aggregate blocks may be obtained in a wide range of shapes, textures and colours. Sizes vary with each manufacturer, the commonest sizes being: 18 in × 9 in × 3 or 4 in: 18 in. × 6 in × 3 or 4 in: and plates 15 in × 6 in × 1½ in.

" Dri-Crete " blocks: a dry construction suitable for straight or serpentine free-standing walls.

Specification: available in 9 in and 5½ in walling units, plain faced, single weather boarded and double weather boarded. Complete with coping and intermediate piers.

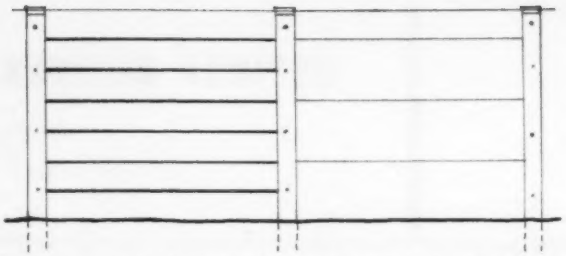
Pier spacing for 6 ft high wall at 30 ft for 9 in and 15 ft for 5½ in.

Cost, delivered 30 miles, about 16s 6d a yard for 5½ in, 22s a yd for 9 in. For double weather boarded 18s and 23s 6d respectively.

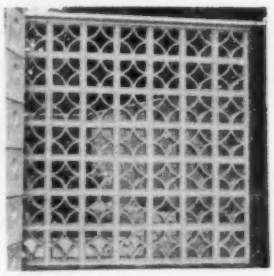
Post and panel walling

Uses: for general agricultural, industrial, and domestic use, where a thin, easily erected and easily repairable wall is required.

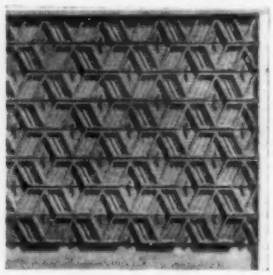
Specification: bays 4-6 ft wide. Heights generally 2 ft 6 in-6 ft. Concrete posts set in concrete 2 ft in ground. Posts rebated or provided with bolts and clips for panel fixing. Panels about 2 in thick by 18 in high (weight not more than 150 lb for handling by two men).



Concrete post and panel fence; left, weatherboarded, right, plain



Pierced concrete blocks



Profiled concrete units

Price for 6 ft by 6 ft bays from 20s a yd.

Finishes: with the cheaper ranges, plain faced, rock faced, brick faced and weather boarded finishes are available in a variety of colours. This type of walling can be produced in colours, textures and patterns, similar to those developed for concrete cladding; some of these designs are shown in photographs above.

TIMBER FENCING

Interwoven panels

Uses: a cheap and easily erected fence for domestic use and for anti-dazzle screens.

Specification: four types available: interlaced, overlap, " Superlap," waney-edge overlapped larch. Sizes 2 ft-6 ft or 7 ft high, 6 ft wide, available in creosoted deal or western red cedar.

Posts 3 in × 3 in set approx 2 ft into the ground: deal (cheaper) or cedar or oak (long-lasting but twists).

Cost for 6 ft × 6 ft creosote deal panel 33s; western red cedar 67s.

Panels should be fixed clear of the ground by beads to allow for movement.

Close boarded and oak pale fences

See AJ Information Sheets 1017 and 1019 for details of construction and dimensions.

Cost, in kit form, per 10 ft panel with about 6 ft high concrete post 77s; with oak post 85s.

Post and rail fences

See AJ Information Sheets 1017 and 1019 for details of construction and dimensions.

Cost in kit form, with 3 ft high 2 rail posts at 8 ft centres : oak 46s; cedar 67s.

Palisade fences

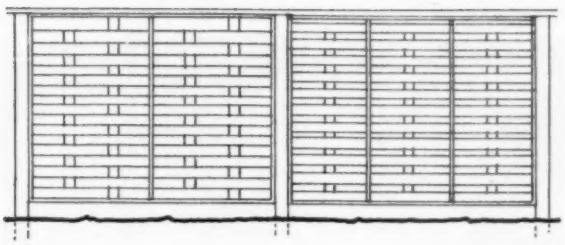
See AJ Information Sheets 1017 and 1019 for details of construction and dimensions.

Cost, in kit form, 6 ft high posts at 10 ft centres : oak posts, deal paling, about 78s per panel.

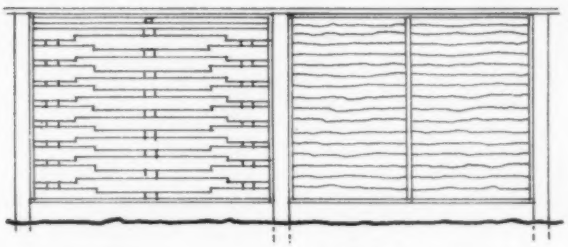
Cleft chestnut fencing

See AJ Information Sheets 1017 and 1019 for details of construction and dimensions.

Cost, 4 ft. 6 in at 3 in spacing, from 6s a yd.



Interlace *Overlap*



"Superlap" *Waney-edge larch*

METAL FENCING

Unclimable angle iron pale fencing

Uses: For general use, where vertical bars must resist bending. This fence is self-adjusting to site gradients.

Specification: Available from 4 ft–8 ft high in 9 ft bays with pales 1 in × 1 in and 1½ × 1½ in at 6 in centres. Tops plain pointed or split.

Tee standards and flat stays with thrust plates. Price for 6 ft high about 72s a yd delivered. Gates to match, 9 ft wide, £36 a pair

Corrugated pale fencing

Uses: A strong unclimable fence, favoured by public undertakings for surrounding points of danger. It is self adjusting, usually riveted, but can be supplied with bolt and nut fastening for ease of packaging and despatch.

Specification: Available from 5 ft–9 ft with pales at 6 in centres. Tops single or triple pointed. Angle horizontals 1½ in × 1½ in—2 in × 2 in tee standards or rsj's, angle stays and intermediate feet. Price for 6 ft high about 84s delivered. Gates to match, 9 ft wide, £34 a pair.

Corrugated sheet fencing

Uses: For sites requiring a fence that is virtually unclimable and cannot be overlooked. This type can be despatched loose and assembled on site.

Specification: Generally available in heights from 5 ft–10 ft above ground, with plain or serrated tops. The fence is made up in 9 ft bays with 2 or 3 horizontal angles to which sheets are fixed with hook bolts. Sheets are galvanised, usually 22 G. Aluminium sheets can be supplied in areas of high atmospheric pollution.

Fixing to ground by tee standards with wing and base plate or bearing thrust plate and angle stays. Gates to match, 10 ft wide, £40 a pair, 12 ft wide, £44 a pair. Price for 6 ft high about 60s a yd delivered.

This fence has great wind resistance and must be fixed very securely.

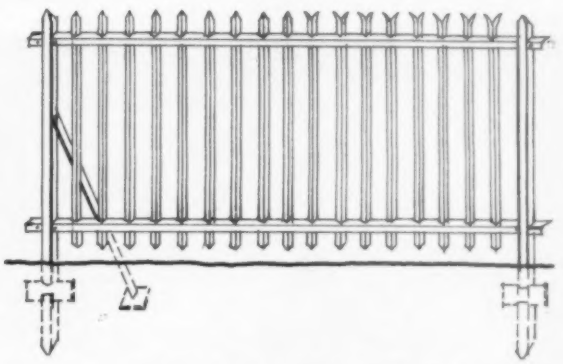
Chain link fencing:

See AJ Information Sheets 1017 and 1018 for details of construction and dimensions.

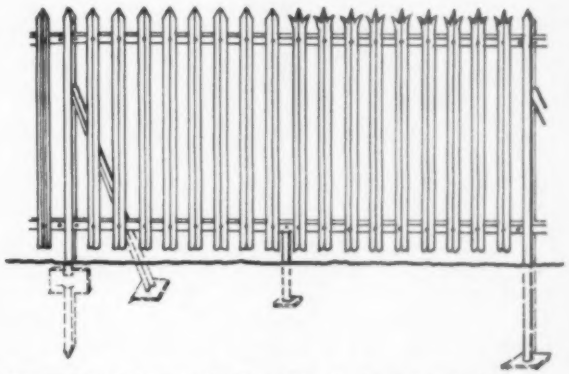
Continuous bar fencing:

See AJ Information Sheets 1017 and 1019 for details of constructions and dimensions.

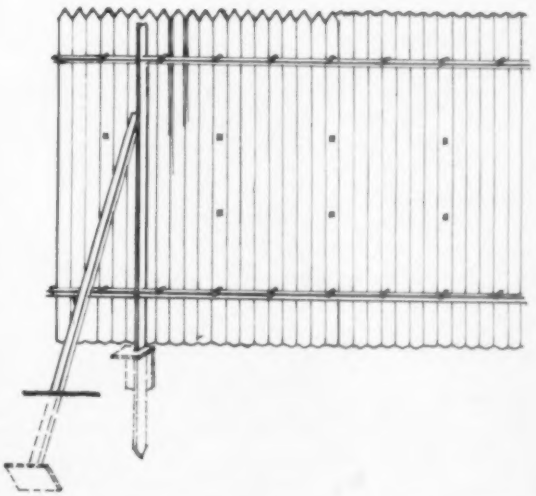
3 ft 6 in high 5-bar from about £1 a yd, delivered.



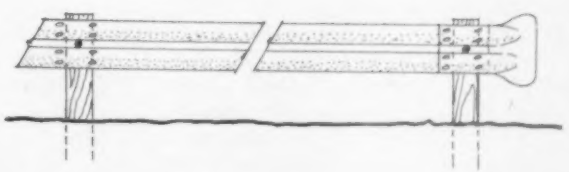
Unclimable angle iron fencing; left, plain top, right, split top



Corrugated steel pale fencing; left, single pointed, right, double pointed



Corrugated sheet fencing; left, serrated top, right, plain top



Crash barrier on timber posts

Unclimable fencing:
See AJ Information Sheets 1017 and 1019 for details of construction and dimensions.
6 ft high round bars at 5 in centres, pointed tops, from about 74s delivered.
Ditto, single bow tops, from 82s delivered.
Ditto, square bars, pointed tops, from approx 86s a yd delivered.

Strained wire:
See AJ Information Sheets 1017 and 1018 for details of construction and dimensions.

Woven wire:
See AJ Information Sheets 1017 and 1018 for details of construction and dimensions.

Crash barriers:
Softwood posts creosoted 8 in × 6 in at about 10 ft 6 in centres, 5 ft 6 in long, set 3 ft 4 in into ground.
Metsec guard rails, fixed 1½ in below top of post and secured with ⅝ in × 9½ in bolts.

MAINTENANCE AND REPAIR

Concrete spurs
Use: Repair of rotted timber posts or for fixing posts clear of ground in first instance.
Specification: Length 4 ft section 5 in — 4 in square with two ½ in bolts at 15 in centres.
Post secured with large washers under bolt heads, spurs set 2 ft in ground and concreted in.

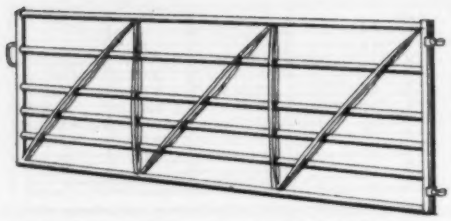
Auxiliary gate-post
Use: Repair of rotted gateposts.
Specification: Heavy g. steel, galvanizing optional. 5 ft 3 in long, 60s ex works; 7 ft long, 73s ex works.
This post can be fitted to a defective gate-post or to a new post. There is provision for vertical adjustment to the gate. Manufactured by Woburn Engineering Ltd.

Arris rail fixing bracket
Repair of rotted arris rails.
Specification: Cast iron. Provision for bolt or screw fixing to post.
This bracket secures the arris rail, when the tongue has broken, without dismantling the fence. It can also be used on new fences. Made by Carden Heating and Fireplace Co. Ltd.

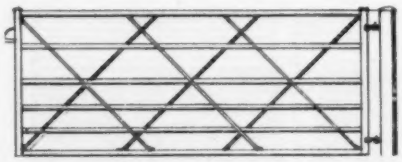
Concrete arris rail:
Use: Rot-proof rail for use with above bracket.
Specification: Metal channel is cast into rail and boarding is fixed by ordinary wood screws.

GATES

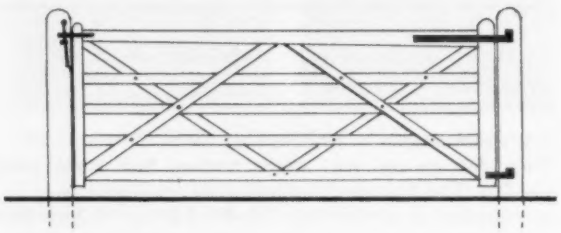
All gates should hang well, open, close and fasten easily, and be of sufficient strength for the use to which they will be put. They should be as light as possible and, in positions where maintenance may be infrequent, moving parts should be few.
Hanging.—Farm gates are usually hung on hooks, screwed, welded, bolted or spiked to the post. Vertical adjustment is desirable in yards where a periodic build-up of the ground level is anticipated. By fixing the hooks 1 in to 1½ in out of line the gate can be made self-closing. An extending bottom hinge will raise the head of the gate to overcome a rise in level inside the gateway (but will also slightly reduce width of opening). Hinges are available with top or bottom adjustment to compensate for sagging in the gate.
Fastening.—Vertical spring latches are common on timber gates. Metal gates are often fitted with automatic latches, or fixed latches which entail lifting the gate to close it.
Timber field gates are available up to 12 ft in width, although 10 ft is probably the optimum economical size.
Specification: Width 10 ft height 4 ft hanging stile 5 in × 3 in, shutting stile 3 in × 3 in; top rail 5 in × 3 in tapered; lower rails 3 in × ¾ in; braces 3 in × 1¾ in and bolted at intersections; posts 7½ in × 7 in; spring latch and double strap hinges approximate cost in oak, erected complete, £20.
Metal field gates are available up to 15 ft wide to allow passage of the largest agricultural machine.
Specification: Width 15 ft; height 3 ft 9 in; frame and intermediate tubes 1 7/16 in overall diameter; bracing: solid round ms; hanging stile, fully adjustable 1½ in square slotted tube. Approximate cost: black bituminous finish, £9 7s, galvanised £13 13s.



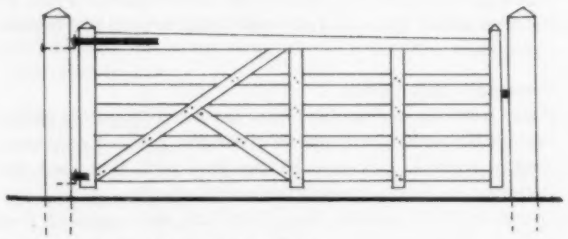
"TT" general purpose gate: 10 ft to 15 ft



"TX" general purpose gate: 9 ft to 12 ft



Diamond braced



Variation: hung to open both ways

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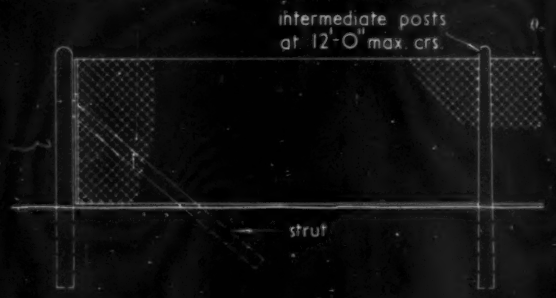
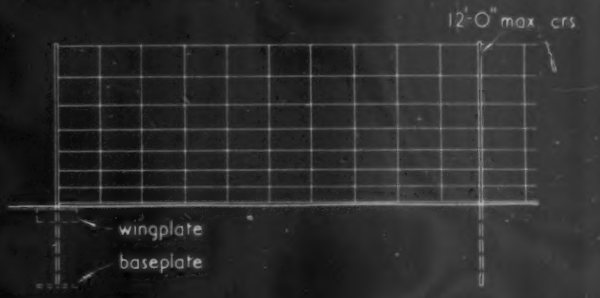
Information Sheet No 1017 **Gardon : Fences, Gates and Walls**

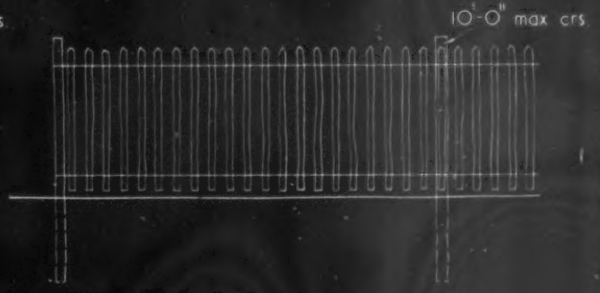


CHAIN LINK.

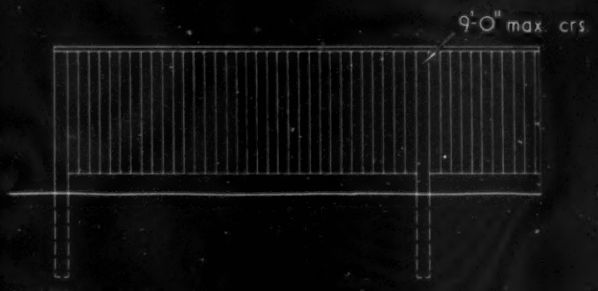


WOVEN WIRE.

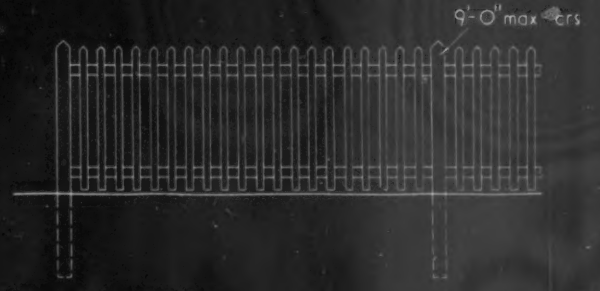
STRAINED WIRE.



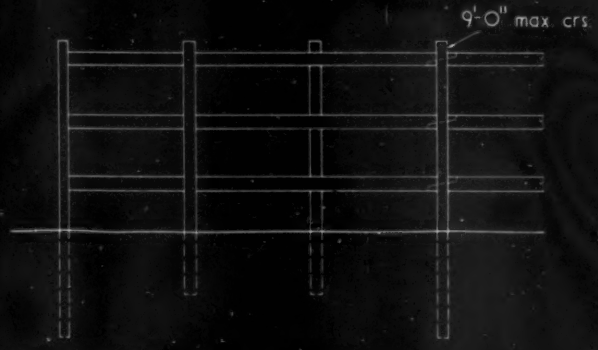
CLEFT CHESTNUT PALE.



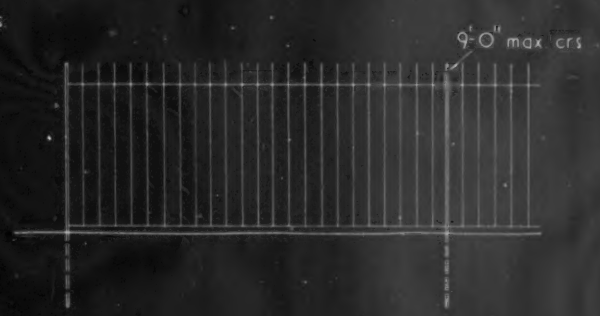
CLOSE-BOARDED.



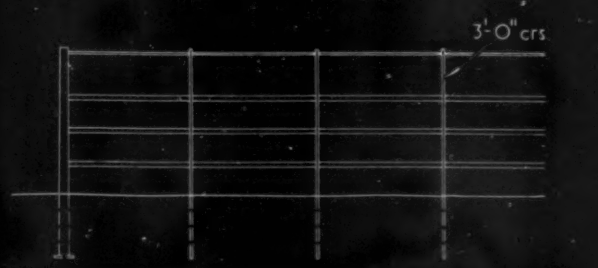
TIMBER PALISADE.



TIMBER POST AND RAIL (MORTISED).



M.S. OR W.I. UNCLIMBABLE.



M.S. OR W.I. CONTINUOUS BAR.

The information given in this series of Sheets on fences is based on information contained in B.S.1722 : 1951, Parts 1-9.

FENCES 1: GENERAL DATA

This Sheet gives notes on the construction of various types of fence and should be read in conjunction with Sheets 1018 and 1019. Type examples are illustrated on the face of this Sheet. BS 1722:1951 (parts 1 to 9) describes requirements of manufacture and erection, and the tables given on Sheets 1018 and 1019 are based on this standard.

The Use of Timber

The life of a timber fence is governed by the rate of decay of the wood. This decay is not likely to be uniform, however. Timber in contact with the ground will rot first (at the point where the post enters the ground). If timber is to be used in its natural state, it is advisable to have a more durable timber for posts than for rails.

Species: The following table is based on information contained in the Ministry of Agriculture and Fisheries leaflet no 6 *Farm Fences* in the series *Fixed Equipment of the Farm*. It sets out the degree of durability of various species of timber suitable for fences.

Durable[1]	Non-durable[2]		
	A[3]	B[4]	C[5]
oak Spanish chestnut larch	spruce Douglas fir	ash elm Scots pine silver fir	alder beech hornbeam birch sycamore maple lime horse chestnut

[1] Suitable in their natural state for posts in the ground, stakes and rails, but highly resistant to impregnation with preservative.

[2] Having a short life as posts in the ground unless treated with preservative.

[3] Taking preservative well under pressure.

[4] Taking preservative well under pressure and better than in an open tank. (See *Preservation*)

[5] Taking preservative well in an open tank.

Preservation: Apart from pressure treatment in a special plant, timber can be preserved by applying creosote, using one of the following methods:

(*a*) Surface treatment by brush or spray.

(*b*) Dipping. Timber is soaked in the creosote, but the process is slow. Some timbers are highly impermeable and may be unaffected even after 6 months soaking.

(*c*) The open tank method. Timber is immersed in cold creosote which is gradually heated to 180-200 deg F. This temperature is maintained for 1 to 2 hours and then the creosote is allowed to cool. Absorption takes place during cooling. The timber is then removed and allowed to drain. The process takes about 24 hours.

Types of Fence

Chain link: Straining and intermediate posts may be of concrete, timber or steel. Straining posts are necessary at ends and corners of fences, at changes in direction and at a maximum spacing of 75 yards in straight lengths of fence. They should be sunk in the ground to a depth of 2ft 0in for fences up to 4ft 0in high and 2ft 6in for fences over 4ft 0in. Concrete or timber straining posts should have flat bases. They should be set in holes 1ft 6in square and surrounded at the base with weak concrete (1 part cement to 10 parts aggregate) for half of their height below ground, the remaining height being filled with earth and well rammed. A steel straining post should be fitted with a steel base plate, 10in by 10in by $\frac{3}{16}$in thick, and a wing plate, 9in by 6in by $\frac{3}{16}$in thick. Two wing plates, at right angles to one another are required for a corner post.

Each straining post should be provided with a strut to counteract the direction of strain (*ie* each strut to a straining post is in line with the direction of the run of fencing secured to that post). In the case of concrete or timber, the strut should abut the post at a point within the top third of the height of post above ground. They should be sunk 1ft 6in in the ground and set in weak concrete as for the posts themselves. A steel strut should abut the post within the top quarter of the height above ground.

Intermediate timber or steel posts may be pointed at the ends to facilitate driving into the ground. They are not normally set in concrete.

Woven wire: Straining posts, struts, and intermediate posts may be of concrete, timber or steel. Erection is the same as for chain link fences.

Strained wire: As for chain link fences.

Details of fence heights and post sizes for chain link, woven wire and strained wire fences are given in the tables on Sheet No 1018.

Cleft chestnut pale: Posts and struts may be of concrete or timber. Erection is as for chain link fences.

Close-boarded: Posts may be of concrete or timber. It is advisable to set posts in concrete as described for chain link fences. Gravel boards should be 6in by 2in minimum reinforced concrete, with hole at each end for $\frac{5}{16}$in dia bolt, or 6in by 1$\frac{1}{4}$in timber, with hole at each end for $\frac{5}{16}$in dia bolt when used with rc posts.

Timber palisade: As for close-boarded fences.

Timber post and rail: The main posts should be spaced at 9ft centres maximum and should be set or driven into the ground to a depth of 2ft 6in. Intermediate posts, sometimes known as prick posts, should be set or driven into the ground to a depth of 1ft 6in.

Ms or wi unclimbable: Standards should be spaced at 9ft 0in centres maximum. There are a number of proprietary fences of this type available and manufacturers' catalogues should be consulted.

Ms or wi continuous bar: Standards should be spaced at 3ft 0in centres and should be driven into the ground to a depth of 1ft 6in to 2ft 0in.

Details of fence heights and sizes of members for cleft chestnut pale, close-boarded, timber palisade, timber post and rail, ms or wi unclimbable and ms or wi continuous bar are given in the tables on Sheet 1019.

FENCES 2: CHAIN LINK, WOVEN WIRE AND STRAINED WIRE

26·C4

CHAIN LINK

Height of top of mesh at posts (ft in)	Mesh			Line wires	
	width of roll (in)	Size of mesh (in)	Gauge	No	Gauge
3 0	30	3	8	2	8½
3 6	42	2	10½	2	9½
3 6	54	1¼	14½	2	10½
4 0	48	2	10½	2	9½
4 0	48	3	8½	2	8½
4 6	54	2	10½	3	9½
4 6	54	1½	12½	3	9½
5 0	60	2	10½	3	9½
5 0	60	2	10½	4	9½
5 0	60	1½	12½	4	9½
6 0	72	2	10½	4	9½

Type of post	Height of top of mesh at posts (ft in)	Number of holes for line wires	Intermediate posts		Straining posts		Struts	
			length (ft in)	section (in)	length (ft in)	section (in)	length (ft in)	section (in)
Concrete	3 0	4	5 3	at base: 4½×4½	5 3	5×5	5 3	4×3
	3 6	2	5 9	4¾×4¾	5 9	5×5	5 9	4×3
	4 0	2	6 3	4⅞×4⅞	6 3	5×5	6 3	4×3
	4 6	3	6 9	5×5	7 3	5×5	6 9	4×3
	5 0	3	7 9	5¼×5¼	7 9	5×5	7 9	4×3½
	6 0	3	8 9	5⅝×5⅝	8 9	5×5	8 9	4×3½
Steel	3 0	2	5 0	1¾×1¾×3/16	5 0	2×2×¼	5 0	1½×1½×3/16
	3 6	2	5 6	1½×1½×3/16	5 6	2×2×¼	5 6	1½×1½×3/16
	4 0	2	6 0	1¾×1¾×3/16	6 0	2×2×¼	6 0	1½×1½×3/16
	4 6	3	6 6	1¾×1¾×3/16	7 0	2×2×5/16	6 6	
	5 0 (2in mesh)	3	7 6	1¾×1¾×3/16	7 6	2½×2½×¼	7 6	1¾×1¾×3/16 with brace 1¼×1¼×3/16
	5 0 (1½in mesh)	5	7 6	1¾×1¾×3/16	7 6	2½×2½×¼	7 6	
	6 0	8	8 6	1¾×1¾×3/16	8 6	2½×2½×5/16	8 6	
	6 0	8	8 6	2×2×¼	8 6	2½×2½×5/16	8 6	
Timber	3 0	—	5 0	3×3	5 0	4×4	5 0	3×2
	3 6 (2in mesh)	—	5 6	4×3	5 6	4×4	5 6	3×2
	3 6 (1½in mesh)	—	5 6	3×3	5 6	4×4	5 6	3×2
	4 0	—	6 0	4×3	6 0	4×4	6 0	4×3
	4 6	—	6 6	4×3	7 0	5×5	6 6	4×3
	5 0	—	7 6	4×4	7 6	5×5	7 6	4×3
	6 0	—	8 6	5×4	8 6	5×5	8 6	4×3

WOVEN WIRE

Height of top of mesh at posts (ft in)	Number of horizontal wires	Width of roll of mesh (in)	Gauge of wires				Spacing of vertical wires (in)	Spacing of horizontal wires from top (in)
			Top and bottom		Intermediate			
			s.w.g	in	s.w.g	in		
2 6	5	30	10	0·128	12½	0·098	12	9, 8, 7, 6
3 0	6	35½	8, 10	0·160, 0·128	11, 12½	0·116, 0·098	12	9, 8, 7, 6, 5½
2 8	8	31½	10	0·128	12½	0·098	6 or 12	6, 5½, 5, 4½, 4, 3½, 3
3 9	8	45	8	0·160	11	0·116	12	9, 8, 7, 6, 5½, 5, 4½
4 1	9	49	8, 9	0·160, 0·144	11, 9	0·116, 0·144	12	9, 8, 7, 6, 5½, 5, 4½, 4

WOVEN WIRE (continued)

Type of post	Height of top of mesh at posts (ft in)	Number of horizontal wires	Intermediate posts		Straining posts		Struts*	
			Length (ft in)	Section (in)	Length (ft in)	Section (in)	Length (ft in)	Section (in)
Concrete	2 6	5	4 9	at base: $4\frac{3}{8}\times4\frac{3}{8}$	5 3	5×5	4 9	4×3
	3 0	6	5 3	$4\frac{1}{2}\times4\frac{1}{2}$	5 9	5×5	5 3	4×3
	2 8	8	5 0	$4\frac{1}{2}\times4\frac{1}{2}$	5 6	5×5	5 0	4×3
	3 9	8	6 0	$4\frac{3}{4}\times4\frac{3}{4}$	6 6	5×5	6 0	4×3
	4 1	9	6 3	$4\frac{7}{8}\times4\frac{7}{8}$	6 9	5×5	6 3	4×3
Steel	2 6	5	4 6	$1\frac{1}{2}\times1\frac{1}{2}\times\frac{3}{16}$	5 0	$2\frac{1}{2}\times2\frac{1}{2}\times\frac{5}{16}$	4 6	$1\frac{3}{4}\times1\frac{3}{4}\times\frac{3}{16}$
	3 0	6	5 0	$1\frac{1}{2}\times1\frac{1}{2}\times\frac{3}{16}$	5 6	$2\frac{1}{2}\times2\frac{1}{2}\times\frac{5}{16}$	5 0	$1\frac{3}{4}\times1\frac{3}{4}\times\frac{3}{16}$
	2 8	8	4 8	$1\frac{1}{2}\times1\frac{1}{2}\times\frac{3}{16}$	5 2	$2\frac{1}{2}\times2\frac{1}{2}\times\frac{5}{16}$	4 8	$1\frac{3}{4}\times1\frac{3}{4}\times\frac{3}{16}$
	3 9	8	5 9	$1\frac{1}{2}\times1\frac{1}{2}\times\frac{3}{16}$	6 3	$2\frac{1}{2}\times2\frac{1}{2}\times\frac{5}{16}$	5 9	$1\frac{3}{4}\times1\frac{3}{4}\times\frac{3}{16}$
	4 1	9	6 0	$1\frac{1}{2}\times1\frac{1}{2}\times\frac{3}{16}$	6 6	$2\frac{1}{2}\times2\frac{1}{2}\times\frac{5}{16}$	6 0	$1\frac{3}{4}\times1\frac{3}{4}\times\frac{3}{16}$
Timber: sawn posts	2 6	5	4 6	at base: 3×3	4 6	4×4	4 6	3×2
	3 0	6	5 0	3×3	5 6	4×4	5 0	3×3
	2 8	8	4 8	3×3	5 2	4×4	4 8	3×2
	3 9	8	5 9	4×3	6 3	5×5	5 9	4×3
	4 1	9	6 0	4×3	6 6	5×5	6 0	4×3
Timber: round posts	2 6	5	4 6	$7\frac{1}{2}$ to $8\frac{3}{4}$	4 6	15 to 16	4 6	9 to 10
	3 0	6	5 0	girth at	5 0	girth at	5 0	girth at
	2 8	8	4 8	mid-length	4 8	smaller	4 8	mid-length
	3 9	8	5 9	($2\frac{1}{2}$ dia	6 3	end (5 dia	5 9	(3 dia
	4 1	9	6 6	approx)	6 6	approx)	6 6	approx)

STRAINED WIRE

Type of post	Height of top wire (ft in)	Number of holes for wires	Intermediate posts		Straining posts		Struts*	
			Length (ft in)	Section (in)	Length (ft in)	Section (in)	Length (ft in)	Section (in)
Concrete	3 6	5	5 9	at base: $4\frac{3}{4}\times4\frac{3}{4}$	6 3	5×5	5 9	4×3
	3 6	6	5 9	$4\frac{3}{4}\times4\frac{3}{4}$	6 3	5×5	5 9	4×3
	4 0	6	6 3	$4\frac{7}{8}\times4\frac{7}{8}$	6 9	5×5	6 3	4×3
	4 6	8	6 9	5×5	7 3	5×5	6 9	4×3
Steel	3 6	5	5 6	$1\frac{3}{4}\times1\frac{3}{4}\times\frac{3}{16}$	6 0	$2\frac{1}{2}\times2\frac{1}{2}\times\frac{5}{16}$	5 6	$1\frac{3}{4}\times1\frac{3}{4}\times\frac{3}{16}$
	3 6	6	5 6	$1\frac{3}{4}\times1\frac{3}{4}\times\frac{3}{16}$	6 0	$2\frac{1}{2}\times2\frac{1}{2}\times\frac{5}{16}$	5 6	$1\frac{3}{4}\times1\frac{3}{4}\times\frac{3}{16}$
	4 0	6	6 0	$1\frac{3}{4}\times1\frac{3}{4}\times\frac{3}{16}$	6 6	$2\frac{1}{2}\times2\frac{1}{2}\times\frac{5}{16}$	6 0	$1\frac{3}{4}\times1\frac{3}{4}\times\frac{3}{16}$
	4 6	8	6 6	$1\frac{3}{4}\times1\frac{3}{4}\times\frac{3}{16}$	7 0	$2\frac{1}{2}\times2\frac{1}{2}\times\frac{5}{16}$	6 6	$1\frac{3}{4}\times1\frac{3}{4}\times\frac{3}{16}$
Timber: sawn posts	3 6	—	5 6	$3\frac{1}{2}\times3\frac{1}{2}$	6 0	6 dia	5 6	$3\frac{1}{2}\times3\frac{1}{2}$
	4 0	—	6 0	4×4	6 6	6 dia	6 0	4×4
	4 0	—	6 6	4×4	7 0	6 dia	6 6	4×4
Timber: round posts	3 6	—	5 6	$7\frac{1}{2}$ to $8\frac{3}{4}$ at	6 0	15 to 16 at	5 6	9 to 10 at
	4 0	—	6 0	mid-length	6 6	smaller end	6 0	mid-length
	4 0	—	6 6	($2\frac{1}{2}$ dia approx)	7 0	(5 dia approx)	6 6	(3 dia approx)

* Suitable for use in level ground when fixed at an angle of 45 deg. Where struts of these lengths are impracticable, the lengths necessary for the site conditions must be specified.

FENCES 3: TIMBER, STEEL

26·C5

CLEFT CHESTNUT PALE

Type of post	Height of top of pales (ft in)	Number of holes for line wires	Intermediate posts		Straining posts		Struts	
			Length (ft in)	Section (in)	Length (ft in)	Section (in)	Length (ft in)	Section (in)
Concrete	3 0	2	5 3	at base: $4\frac{1}{2}\times4\frac{1}{2}$	5 9	5×5	5 3	4×3
	3 6	2	5 9	$4\frac{3}{4}\times4\frac{3}{4}$	6 3	5×5	5 9	4×3
	4 0	3	6 3	$4\frac{7}{8}\times4\frac{7}{8}$	6 9	5×5	6 3	4×3
	4 6	3	6 9	5×5	7 3	5×5	6 9	4×3
	5 0	3	7 9	$5\frac{1}{4}\times5\frac{1}{4}$	7 9	5×5	7 9	$4\times3\frac{1}{2}$
	6 0	3	8 9	$5\frac{3}{4}\times5\frac{3}{4}$	8 9	5×5	8 9	$4\times3\frac{1}{2}$
Timber	3 0	—	5 0	girth at mid-length $7\frac{1}{2}$ to 9	5 0	girth at top: 9 to 10	5 0	girth at top: $7\frac{1}{2}$ to 9
	3 6	—	5 6	$7\frac{1}{2}$ to 9	5 6	9 to 10	5 6	$7\frac{1}{2}$ to 9
	4 0	—	6 0	$7\frac{1}{2}$ to 9	6 0	9 to 10	6 0	$7\frac{1}{2}$ to 9
	4 6	—	6 6	$7\frac{1}{2}$ to 9	7 0	10 to $11\frac{1}{2}$	6 6	9 to 10
	5 0	—	7 0	9 to 10	7 6	10 to $11\frac{1}{2}$	7 0	9 to 10
	6 0	—	8 0	9 to 10	8 6	$11\frac{1}{4}$ to 14	8 0	10 to $11\frac{1}{2}$

TIMBER,† CLOSE-BOARDED

Height of top of boarding (ft in)	Number and size (in) of triangular rails*	Concrete posts		Timber posts	
		Length (ft in)	Section (in)	Length (ft in)	Section (in)
3 6	2†/3×3	5 3		5 6	4×4
3 6	2 /3×3	5 3		5 6	5×4
4 0	2†/3×3	5 9	$5\frac{1}{2}\times4\frac{1}{2}$	6 0	5×4
4 6	2 /3×3	6 3	rectangular	6 6	5×4
5 0	3 /3×3	7 3	or chamfered	7 6	5×4
5 6	3†/3×3	7 9		8 0	5×4
6 0	3†/3×3	8 3		8 6	5×4
6 0	3 /$3\frac{1}{2}\times3\frac{1}{2}$	8 3		9 0	6×4

TIMBER PALISADE

Height of top of palisades (ft in)	Size (in) and spacing of pales	Number and size (in) of rails	Concrete posts		Timber posts	
			Length (ft in)	Section (in)	Length (ft in)	Section (in)
3 6	3 in, $2\frac{1}{2}$ in × $\frac{3}{4}$ in at 6 in, 5 in centres respectively	2/3×3	5 6		5 6	4×4
3 6		2/3×3	5 6		5 6	5×4
4 0		2/3×3	6 0		6 0	5×4
4 6		2/3×3	6 6	$5\frac{1}{2}\times4\frac{1}{2}$ rectangular or chamfered	6 6	5×4
5 0	as above or 2 in × 2 in triangular section	2/3×3	7 6		7 6	5×4
6 0		3/$3\frac{1}{2}\times3\frac{1}{2}$	8 6		8 6	6×4

* Rectangular rails may be used if required

† Timber gravel boards for use with timber posts only may be 6in by 1in section

TIMBER POST AND RAIL

Type	Height to top of rails (ft in)	Main posts		Prick posts		Sections of rails* (in)	Spacing of tops of rails from top of post
		Length (ft in)	Section (in)	Length (ft in)	Section* (in)		
mortised	3 9 4 3	6 6 7 0	6×3 6×3	5 6 6 0	as for rails	$3\frac{1}{2}\times1\frac{1}{2}$ (hardwood) $4\times1\frac{1}{2}$ (softwood)	3, 12, 12, 11 3, 14, 14, 12
nailed	3 9 4 3	6 6 7 0	6×3 6×3	— —			3, 12, 12, 11 3, 14, 14, 12

MS OR WI CONTINUOUS BAR FENCES

Height of fence (ft in)	Horizontals				Spacing of bars from top (in)
	No	Dia of top bar	Lower bars		
			Round (in dia)	Flat (in)	
3 6	4	$\frac{5}{8}$	$\frac{5}{8}$	$1\times\frac{1}{4}$	12, 11, 9
4 0	6	$\frac{3}{4}$	$\frac{5}{8}$	$1\times\frac{1}{4}$	11, 10, 8, 6, 6
4 0	5	$\frac{7}{8}$	$\frac{3}{4}$	$1\frac{1}{4}\times\frac{1}{4}$	12, 11, 9, 8
4 0	6	$\frac{7}{8}$	$\frac{3}{4}$	$1\frac{1}{4}\times\frac{1}{4}$	11, 10, 8, 6, 6
4 6	6	$\frac{3}{4}$	$\frac{5}{8}$	$1\times\frac{1}{4}$	12, 11, 9, 8, 6
4 6	6	$\frac{7}{8}$	$\frac{3}{4}$	$1\frac{1}{4}\times\frac{1}{4}$	12, 11, 9, 8, 6

Height of fence (ft in)	Standards						Pillars (length: ft in/ weight)
	Flats (in)		Tees (in)		Bulb tees or H sections (lb/ft)		
	Intermediate	Joiner	Intermediate	Joiner	Intermediate	Joiner	
3 6	$1\frac{3}{8}\times\frac{5}{16}$	$1\frac{1}{2}\times\frac{3}{8}$	$1\frac{1}{2}\times1\frac{1}{2}\times\frac{3}{16}$	$1\frac{3}{4}\times1\frac{3}{4}\times\frac{1}{4}$	1 9	2 1	5 0/98lb
4 0	$1\frac{1}{2}\times\frac{5}{16}$	$1\frac{3}{4}\times\frac{3}{8}$	$1\frac{1}{2}\times1\frac{1}{2}\times\frac{3}{16}$	$1\frac{3}{4}\times1\frac{3}{4}\times\frac{1}{4}$	1 9	2 1	5 9/105lb
4 0	$1\frac{1}{2}\times\frac{3}{8}$	$1\frac{3}{4}\times\frac{3}{8}$	$1\frac{1}{2}\times1\frac{1}{2}\times\frac{3}{16}$	$1\frac{3}{4}\times1\frac{3}{4}\times\frac{1}{4}$	1 9	2 1	5 9/105lb
4 0	$1\frac{1}{2}\times\frac{3}{8}$	$1\frac{3}{4}\times\frac{3}{8}$	$1\frac{1}{2}\times1\frac{1}{2}\times\frac{1}{4}$	$2\times2\times\frac{1}{4}$	2 5	3 2	5 9/105lb
4 6	—	—	—	—	—	—	6 6/1cwt

MS OR W1 UNCLIMBABLE FENCES

Height of fence (ft in)	Length of standard (ft in)	Thickness of standards and horizontals (in)		Vertical bars in each length of 9ft 0in					
				section		no		centres	
		for round bars	for square bars†	round (in dia)	square (in sq)	round	square	round (in)	square (in)
4 0	5 9	$1\frac{1}{2}\times\frac{3}{8}$	$\frac{3}{8}$	$\frac{5}{8}$	$\frac{5}{8}$	22	21	$4\frac{5}{8}$	$4\frac{7}{8}$
4 6	6 3	$1\frac{1}{2}\times\frac{3}{8}$	$\frac{3}{8}$	$\frac{5}{8}$	$\frac{5}{8}$	22	21	$4\frac{5}{8}$	$4\frac{7}{8}$
5 0	7 0	$1\frac{3}{4}\times\frac{3}{8}$	$\frac{7}{16}$	$\frac{3}{4}$	$\frac{3}{4}$	21	19	$4\frac{7}{8}$	$5\frac{5}{8}$
5 6	7 6	$1\frac{3}{4}\times\frac{3}{8}$	$\frac{7}{16}$	$\frac{3}{4}$	$\frac{3}{4}$	21	19	$4\frac{7}{8}$	$5\frac{5}{8}$
6 0	8 0	$1\frac{3}{4}\times\frac{3}{8}$	$\frac{7}{16}$	$\frac{3}{4}$	$\frac{3}{4}$	21	19	$4\frac{7}{8}$	$5\frac{5}{8}$
7 0	9 0	—	$\frac{7}{16}$	—	$\frac{7}{8}$	—	17	—	6

* Sizes for rectangular sections are given but half-round or cleft rails and prick posts may be used cut from poles of 4in dia (hardwood) or $4\frac{1}{2}$in dia (softwood)

† The width of the standard should allow a margin of not less than $\frac{3}{16}$in of metal on each side of the hole for the vertical bar, whether the latter is square to or diagona to the horizontals: the horizontals should be the same width as the standards

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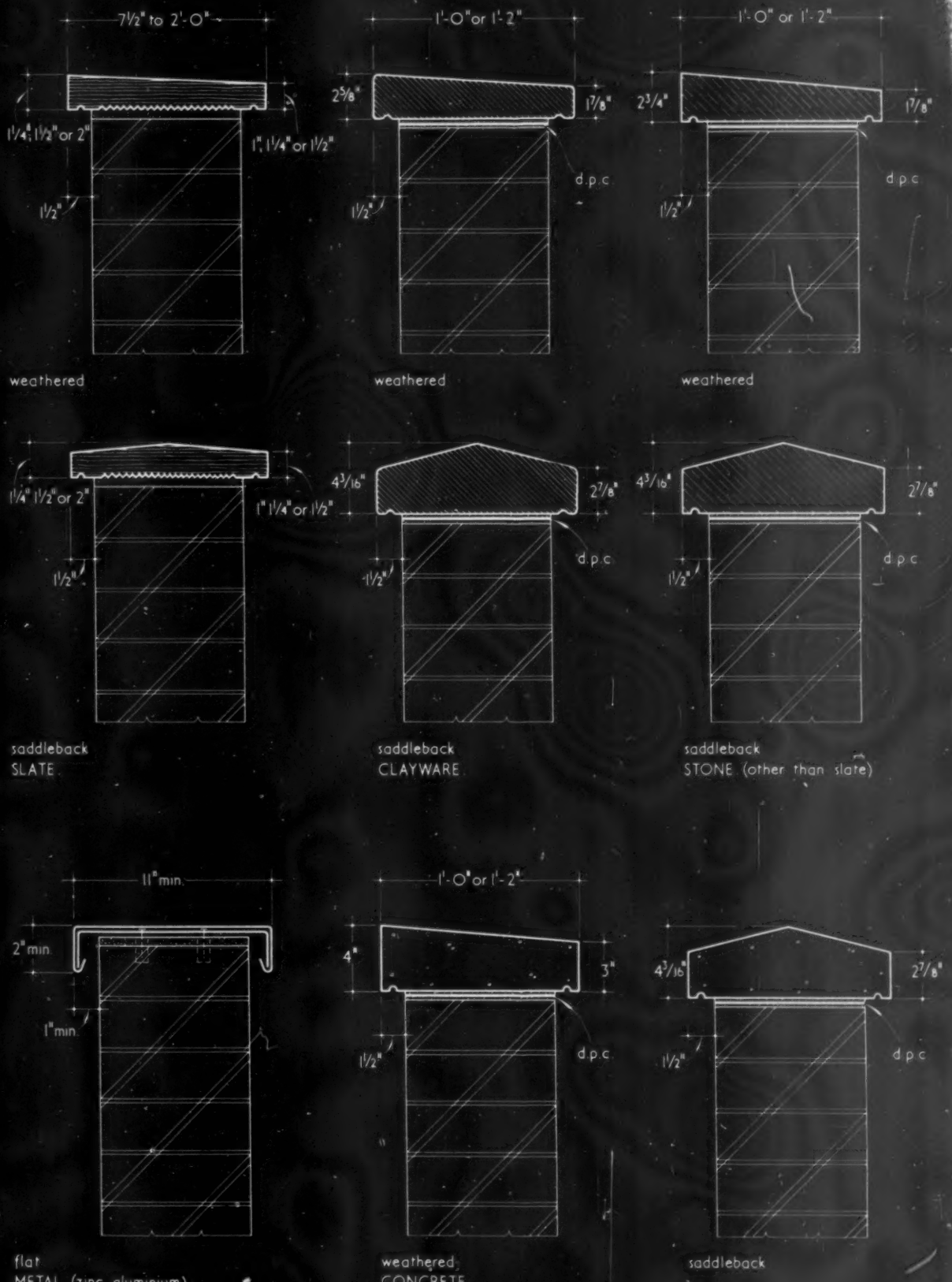
AJ SfB (15)

Information Sheet No 1020 **Garden : Fences, Gates and Walls**



COPINGS TO GARDEN WALLS : MATERIALS, DESIGN AND FIXING.

21.Z1

COPINGS TO GARDEN WALLS: MATERIALS, DESIGN AND FIXING

This Sheet describes the materials which may be used for copings and indicates the range of sizes available.

The primary purpose of a coping is to protect the top of a wall from the penetration of water. It may also serve the purpose, if required, of throwing the water clear of the wall, by overhanging the wall face. As few materials used for copings are impervious, they must be assisted in their function of protecting the top of the wall by the provision of a damp-proof course. Slate or metal do not require a dpc.

Materials

The most common materials for copings are slate, clayware, stone (other than slate), metal and precast concrete. BS 1233-35:1945 sets down the range of profiles and sizes for clayware, precast concrete and natural stone. The drawings on the face of this Sheet show all the above materials and provide a comparative guide as to profile, size and detailing.

It is also quite usual to use brick on edge as a coping and from the point of view of appearance this is often the preferable material. However, as the detailing of this type of coping is entirely up to the designer on any job and not dependent on what may be described as proprietary products (*eg* those covered by the BS) they are not considered here.

Slate: This material is scored on the underside to provide a key for bedding and is usually polished smooth on all exposed faces. A slate coping should be bedded on ½in thick cement mortar (1 part cement to 3 parts sand) and joints between lengths of coping kept as tight as possible (approximately ⅛in) and pointed with mastic. Lengths should be dowelled together with circular slate dowels. Hook cramps (non-ferrous) should be provided at 10 or 12ft centres in the length. They should be $\frac{3}{16}$in diameter and 2in to 3in long. Copings can be supplied drilled for dowels and cramps. Further details are contained in Information Sheet 5.B1.

Clayware: Normal clayware copings are of two types: splayed (weathered) and saddleback. Terra cotta, stoneware and faience may be of three types: splayed, saddleback or clip. The latter profile allows the coping to fit over the wall and provides a more secure fixing. Copings should be bedded in 1:3 cement mortar.

Stone (other than slate): Basic profiles are shown on the face. Details of bedding and fixing are given in Information Sheet 14.P5.

Precast concrete: Copings should be bedded in 1:3 cement mortar.

Metal: Metals suitable for copings are zinc, copper and aluminium. They may be used in one of two ways: either applied direct to the top of the wall (as illustrated on the face and suitable for aluminium or zinc) or fixed over a timber or concrete coping. The latter provides firmer support to the metal at the edges but the former results in a thinner line along the edge and, from the point of view of appearance, may be preferable. In the case of the metal coping illustrated, the top of the wall is first screeded to a level surface. Metal straps, 4in to 6in wide and spaced at 2ft centres approximately for zinc and 2½in wide at 1ft 6in centres for aluminium, are then plugged to the brickwork and the metal coping fitted over them.

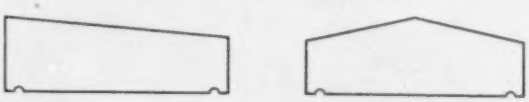
Copper: 26 swg copper is adequate for copings generally. Nails or screws should be copper or brass.

Zinc: No 12 or no 14 gauge should be used. Nails should be zinc or galvanised iron.

Aluminium: Aluminium is available in a number of alloys and it is advisable to consult the Aluminium Development Association. Under normal conditions SIC (99 per cent purity) or NS3 (1½ per cent manganese alloy) are recommended. Aluminium should not contact copper or copper-base materials. Iron and steel in contact with aluminium should be galvanised. Aluminium should be protected from cement or lime in mortar by a coat of bitumen paint or zinc chromate primer.

General Characteristics

Profiles: The traditional cross-sectional profiles for copings (as described in the British Standards) are weathered and saddleback.



weathered saddleback

There are variations of the latter but the normal symmetrical profile is the only one shown on this Sheet. In addition to these two profiles, the impervious materials (*ie* slate and metal) may be used with a flat, rectangular profile. This is not advisable for the other materials.

Sizes: The thickness of a coping is generally determined by the nature of the material. Thus slate for example may be used in thinner thicknesses than other stones due to its greater crushing strength. The standard widths available for clayware, precast concrete and stone are related to brick wall dimensions, taking into account overhang which is normally 1½in on either side.

Tolerances: The BS allows the following tolerances on the standard sizes of the various copings:

Clayware, ± ⅛in on all dimensions of 6in. The tolerance on other dimensions to be in the same proportions.

Precast concrete, ± $\frac{1}{16}$in on the profile; ± ⅛in on the length.

Stone (other than slate), ± $\frac{1}{16}$in on all dimensions 4ft or less; ± ⅛in on all dimensions over 4ft.

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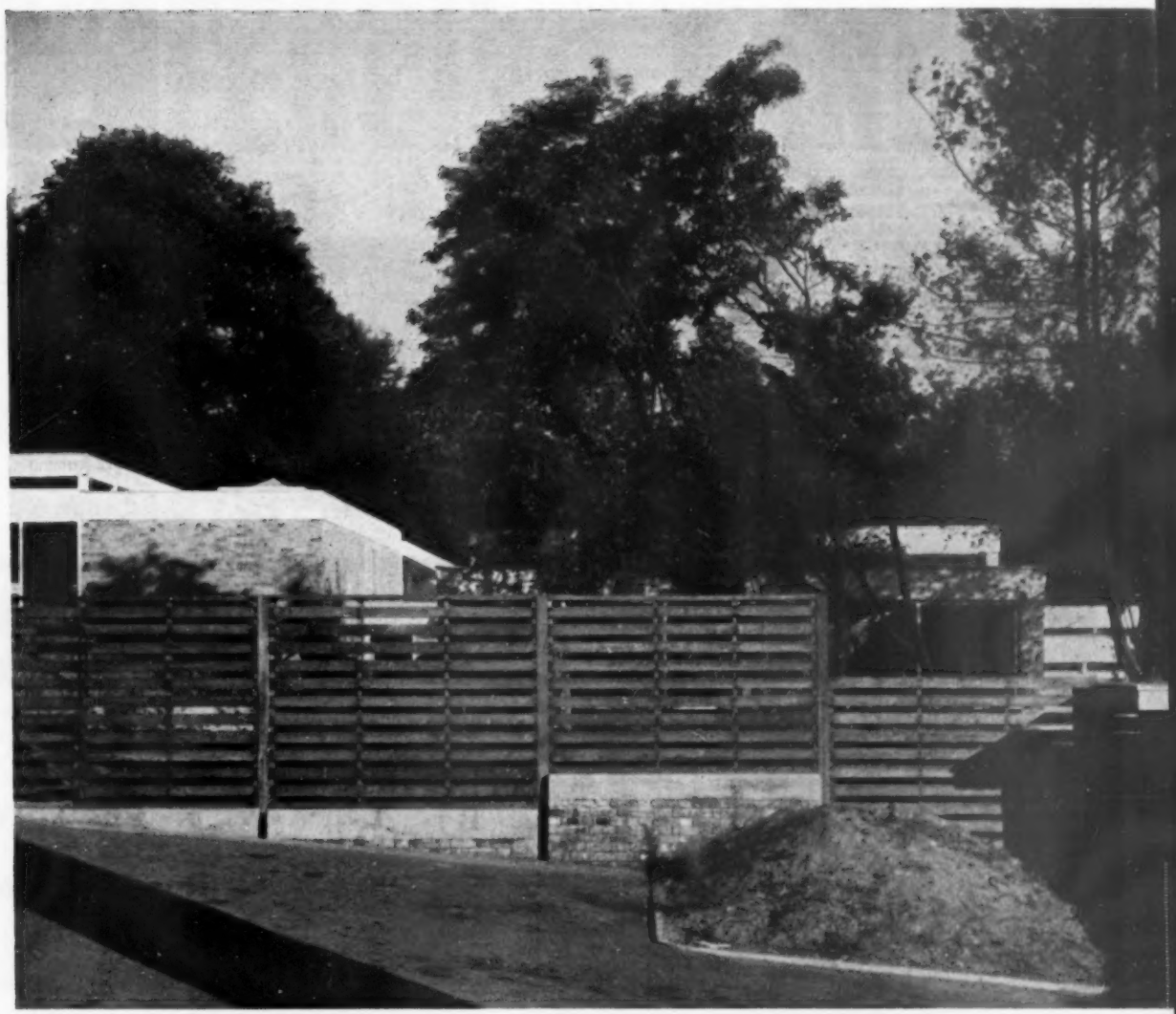
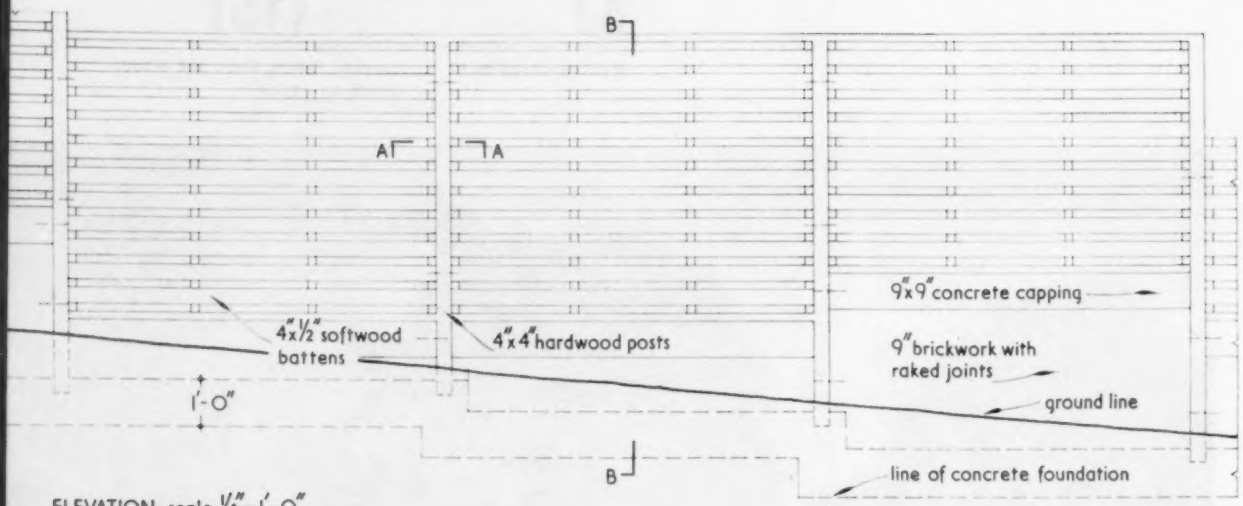
Working Detail No 5 **Garden: Fences, Gates and Walls**
U.D.C. 69·023·8



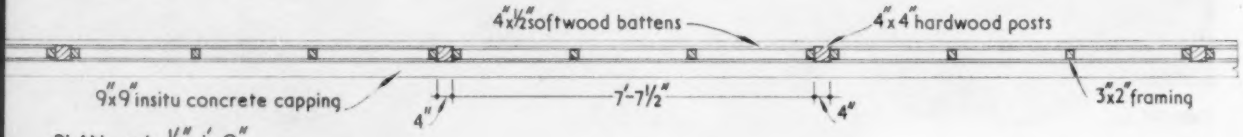
Screen fence: School in London, N6

Stephen Gardiner, architect

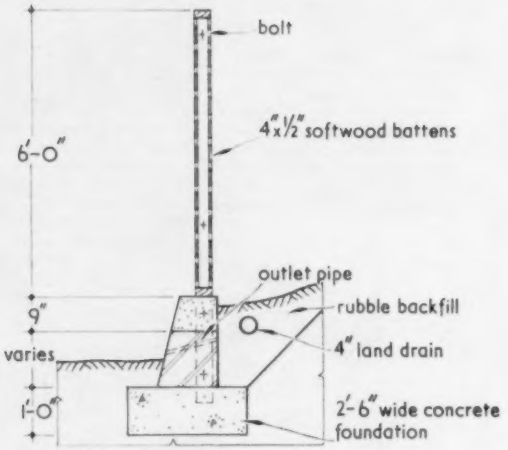
It will be seen from the photograph that the hardwood posts are set between lengths of the base wall. These posts are anchored to the brickwork and concrete of the base wall by means of ragbolts and their bases are set in the concrete foundation (see drawing).



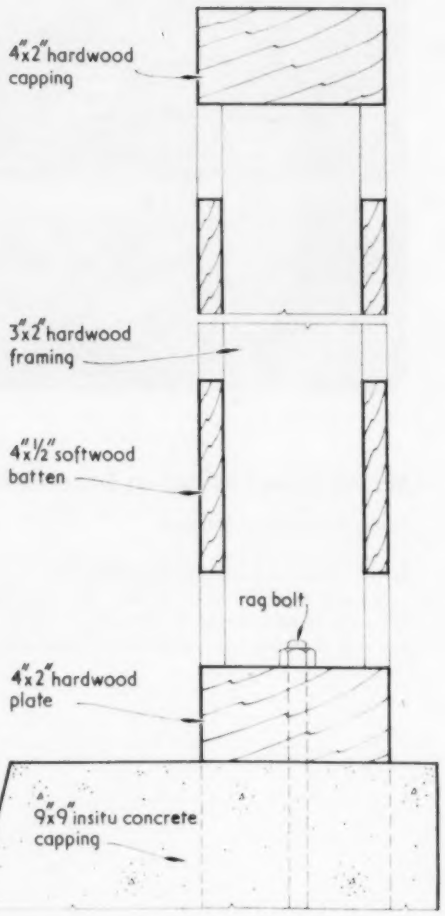
ELEVATION. scale ¼"=1'-0"

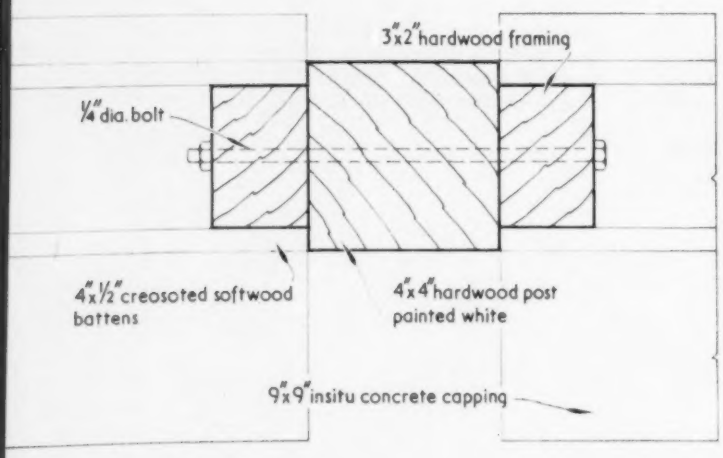


PLAN. scale ¼"=1'-0"



SECTION scale ¼"=1'-0"





PLAN AT A-A. scale ¼ full size

SECTION B-B. scale ¼ full size

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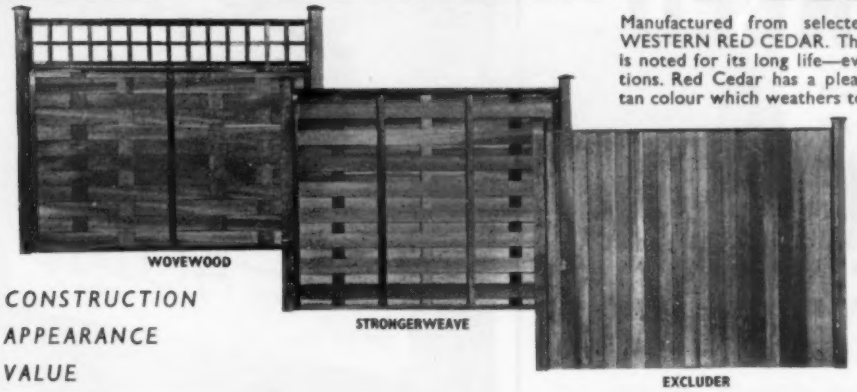
NEW! CEDAR FENCING PANELS



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It is now recognised by planners and local authorities that imaginatively-designed children's playgrounds and adult recreation spaces should be regarded as an essential amenity for all urban areas of any size, whether new or old; but so far very few really successful examples have appeared in the British Isles, and children in towns and cities continue, at their peril, to play their games in streets and on roads. On the Continent, in Scandinavia and in the U.S., however, the subject is being tackled with the seriousness and care that it deserves, and there are many interesting and successful solutions to be seen.
This book, after short introductory essays written by two of Europe's leading playground designers, consists of photographs and plans of a great variety of interesting examples taken from many countries. Each of the schemes illustrated is accompanied by a short explanatory text, together with notes on constructional details. Examples shown range from the smallest and most inexpensive to large schemes covering many acres, and they contain a wide variety of ingenious ideas, constructions and equipment for play and recreation.

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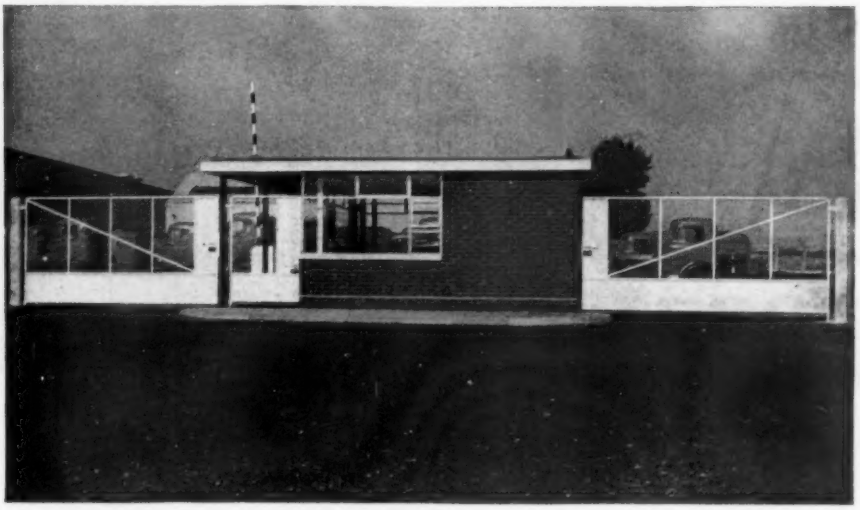

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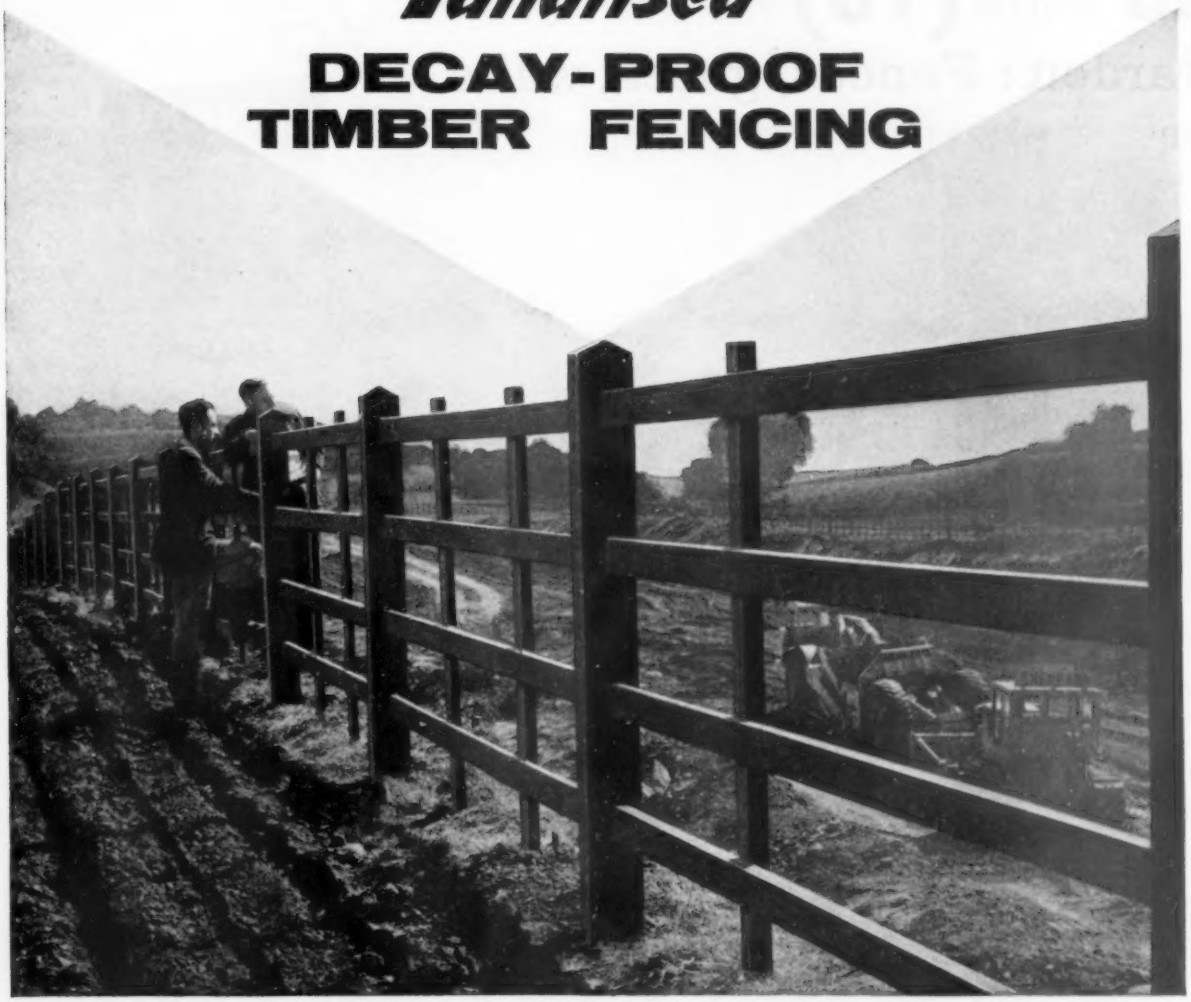

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Garden : Fences, gates, walls

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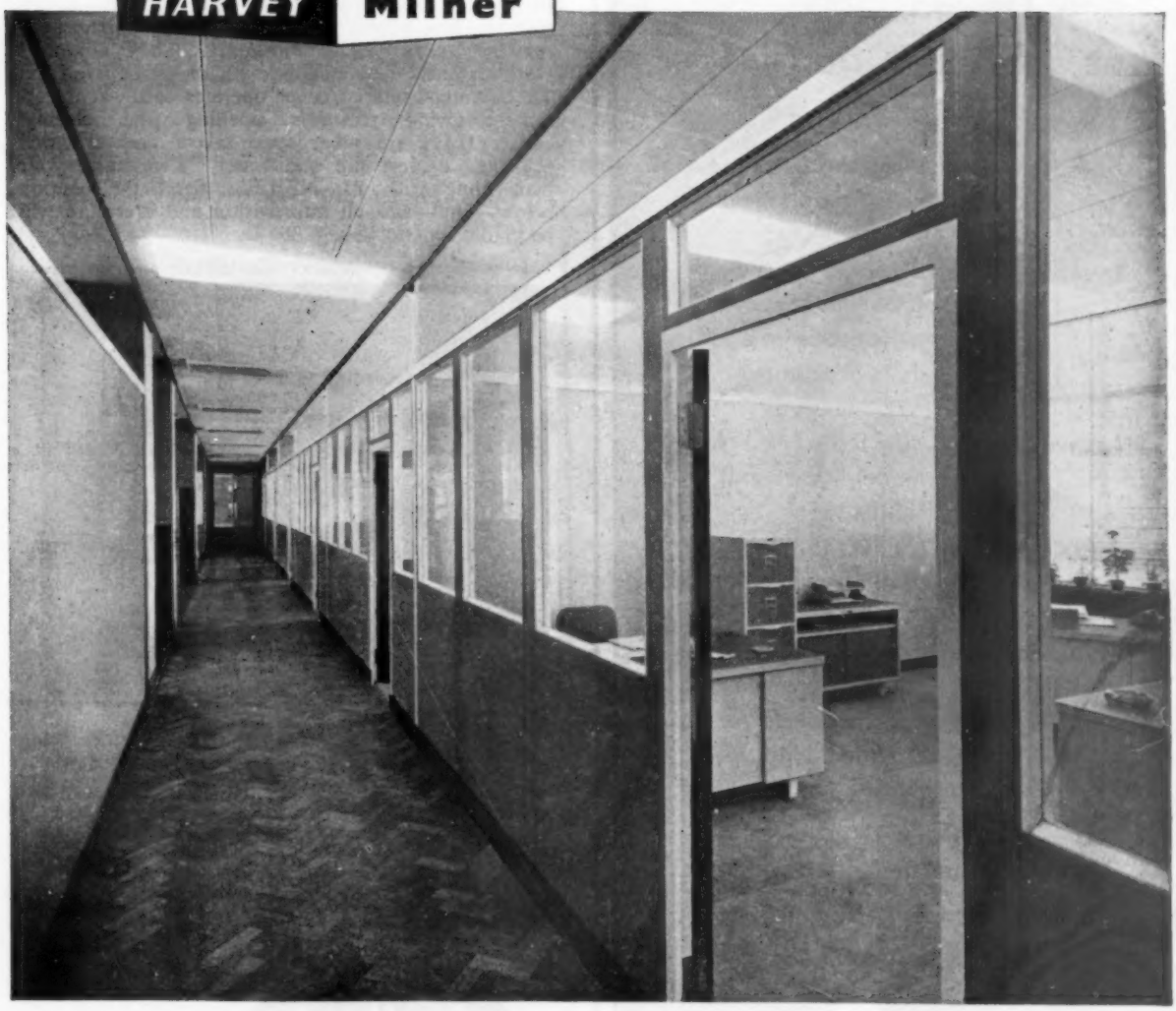

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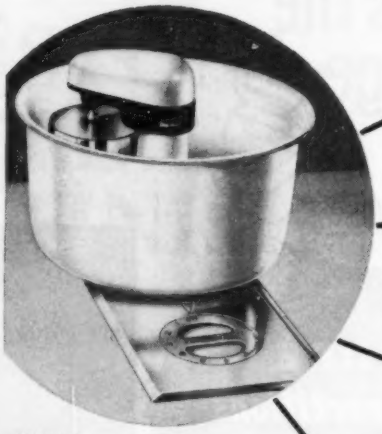

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TEN LABOUR SAVING ATTACHMENTS

THE BUILT-IN

Cannon Power-Maid

MULTI-PURPOSE KITCHEN HELP

The Cannon Multi-purpose Power-Maid is of revolutionary design, making possible the use of 10 labour saving attachments.

It can be fitted to all types of cabinets and counter tops, on tables and in drawers. Virtually out of sight, the Power-Maid is completely out of the way when attachments are not in use, but is always ready at a moments notice to provide all the power for today's most wanted labour-saving attachments

EASY TO INSTALL. *Figs. 1 & 2. Using template provided, mark out and cut cabinet top. Figs. 3 & 4. Apply sealing compound, fit Power-Maid and clamp in position. (Screw in switch housing). Figs. 5 & 6. Remove nameplate, make electrical connection and replace.*

SEE IT AT THE BUILDING EXHIBITION
STAND 1058-1060, FIRST FLOOR, EMPIRE HALL, OLYMPIA

POST NOW To CANNON (Dept A.J. 4/11)
DEEPFIELDS, BILSTON, STAFFS
Please send me full particulars.

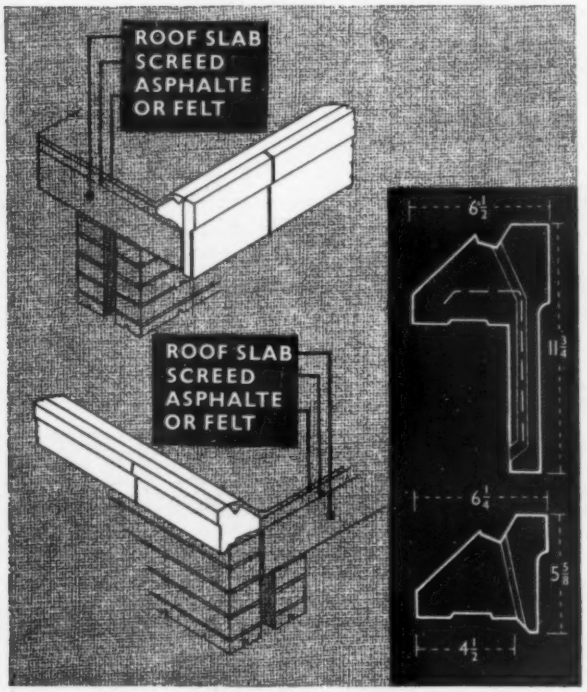
Name.....

Address.....

.....

..... County.....

Flat roof fascia units



1 FOR OVERHANGING EAVES

The use of this unit enables a perfectly uniform edge to be provided for a roof slab. Site labour is reduced and costly form work eliminated. Standard units are 2 ft. in length. Closers supplied as necessary.

Prices: Natural Concrete finish: 6s. 5d. per ft. Delivered to site.
Artificial Stone finish: 6s. 9d. per ft. Delivered to site.

2 FOR FLUSH EAVES

This unit replaces the conventional parapet and coping and makes possible a considerable cost saving. Standard units are 2 ft. in length. Closers supplied as necessary.

Prices: Natural Concrete finish: 4s. 6d. per ft. Delivered to site.
Artificial Stone finish: 4s. 9d. per ft. Delivered to site.

Please mail further details of the Flat Roof Fascia Units to:-

NAME _____

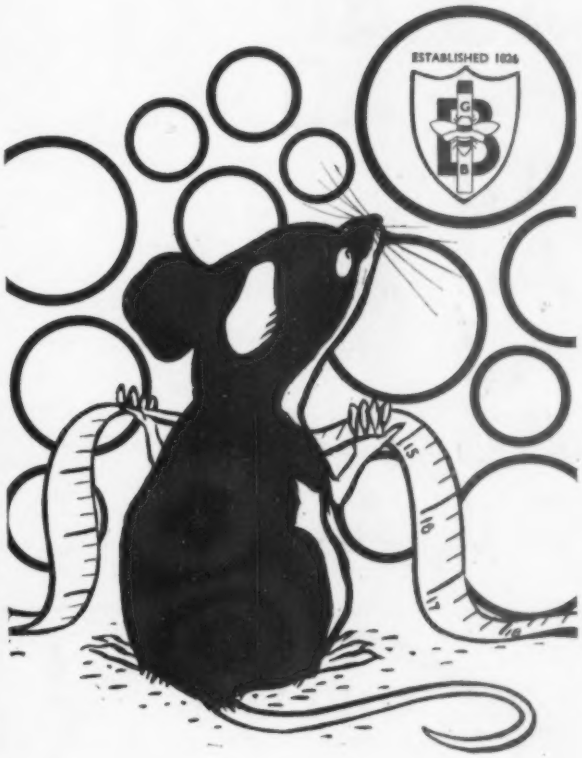
ADDRESS _____

A.J.

FINLOCK GUTTERS LIMITED
FINLOCK HOUSE, FRANT ROAD, TUNBRIDGE WELLS, KENT.
Telephone: Tun. Wells 3396/9.

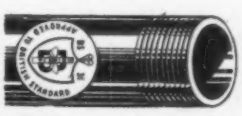
SUPER STEEL CONDUIT

to B.S. 31



In a variety of diameters

. . . from ⅜ inch to 2½ inches in light or heavy gauges. Furnace welded Burn Conduit is distributed from wholesalers throughout the country to give you rapid delivery.



GEORGE BURN LIMITED

TUBES

GEORGE BURN LTD. City Tube & Conduit Mills, Smethwick, Birmingham.
Telephone: Smethwick 1511 (5 lines)

GB59

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Architect required for The Architects' Journal editorial staff. Must be intensely interested in building costs and techniques and the preparation of technical information. Please write giving details of experience, age and salary required to the Editor, The Architects' Journal, 9-13 Queen Anne's Gate, London SW1.

CLASSIFIED ADVERTISEMENTS

Advertisements should be addressed to the Advertisement Manager, "The Architects' Journal," 9, 11 and 13, Queen Anne's Gate, Westminster, S.W.1, and must reach there by first post Friday morning for inclusion in the following Wednesday's paper.
Replies to Box Numbers should be addressed care of "The Architects' Journal," at the address given above.

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

Public and Official Announcements

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

COUNTY BOROUGH OF BOOTLE
APPLICATIONS ARE INVITED FOR THE FOLLOWING PERMANENT POSTS IN THE ARCHITECTURAL SECTIONS OF THE BOROUGH ENGINEER & SURVEYOR'S DEPARTMENT

(*a*) PRINCIPAL ASSISTANT ARCHITECT (Housing Section) within Grade A.P.T. V (£1,310—£1,480).
(*b*) PRINCIPAL ASSISTANT ARCHITECT (Schools Section) within Grade A.P.T. V (£1,310—£1,480).
(*c*) ASSISTANT ARCHITECT (Schools Section) Grade A.P.T. III (£960—£1,140).

In both Sections there is a continuing programme of work comprising major educational buildings, a variety of housing including multi-storey dwellings and interesting work for other Committees of the Council.

Applicants should possess appropriate R.I.B.A. qualifications and in the case of appointments (*a*) and (*b*) which will be next in seniority to the respective sectional heads, should be fully experienced in design and administration.

The appointments will be subject to the provisions of the Local Government Superannuation Acts, N.J.C. Conditions of Service and to one month's notice.

Applications on forms obtainable from Mr. T. W. Crookdake, A.M.I.C.E., M.I.Mun.E., A.R.I.C.S., A.M.T.P.I., Borough Engineer and Surveyor, Town Hall, Bootle 20, Lancs, must be returned to him not later than Monday, 13th November, 1961.

HAROLD PARTINGTON,
Town Clerk.
S9783

COUNTY BOROUGH OF BOOTLE
PRINCIPAL PLANNING ASSISTANT
A.P.T. V, £1,310—£1,480 per annum

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

Candidates should have passed the Final examination of the Town Planning or other appropriate Institution and possess experience in the Office of an Urban Planning Authority.

Commencing salary within the range of Grade A.P.T. V, £1,310—£1,480 according to qualifications and experience.

Applications on forms obtainable from Mr. T. W. Crookdake, A.M.I.C.E., M.I.Mun.E., A.R.I.C.S., A.M.T.P.I., Borough Engineer and Surveyor, Town Hall, Bootle, 20, Lancs, should be returned to him not later than Monday, 13th November, 1961.

HAROLD PARTINGTON,
Town Clerk.
S9784

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

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

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

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

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

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

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

BOROUGH OF WORKSOP
APPOINTMENTS IN THE BOROUGH ENGINEER'S DEPARTMENT

Applications are invited for the following appointments:—

ASSISTANT ENGINEER: Salary A.P.T. Grade IV (£1,140—£1,310).

Applicants must hold either an engineering degree, the Testamur of the Institution of Municipal Engineers or be qualified for Associate Membership of the Institution of Civil Engineers and have at least five years' experience, including pupilage.

ARCHITECTURAL ASSISTANT: Salary A.P.T. Grade IV (£1,140—£1,310).

Applicants must be Chartered or Registered Architects.

The posts are superannuable and the successful applicants will be required to pass satisfactorily a medical examination.

Housing accommodation will be provided and removal expenses will be paid, if required by successful married applicants.

Applications, stating age, qualifications, experience and accompanied by the names of two referees must reach the undersigned not later than noon on Friday, the 3rd November, 1961.

RUSSELL C. PHARAOH,
Town Clerk,
Town Hall,
Worksop.
12th October, 1961. 9794

COUNTY BOROUGH OF WEST HAM

The Borough Architect and Planning Officer invites applications from suitably qualified personnel for the following vacant established posts in his Department:

(*a*) GROUP ARCHITECT, £1,485—£1,670 p.a. and Car Allowance.
(*b*) SENIOR ASSISTANT ARCHITECTS, £1,400—£1,565.
(*c*) ARCHITECTURAL ASSISTANT, £1,140—£1,480 and L.A.
(*d*) ASSISTANT PLANNING OFFICER, £1,140—£1,310 and L.A.
(*e*) ARCHITECTURAL ASSISTANT, £645—£1,140 and L.A.
(Point of entry in scale according to qualifications and experience.)

An expanded programme of work, including numerous official buildings, Fire Stations, Primary and Secondary Schools, high density housing, and Town Centre Redevelopment, is on hand.

Applications, giving details of qualifications and experience (together with names of two referees) to Thomas E. North, O.B.E., F.R.I.B.A., Dist.T.P., M.T.P.I., 70, West Ham Lane, Stratford, E.15, by 13th November, 1961. 9806

METROPOLITAN BOROUGH OF ISLINGTON
BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT

Applications are invited from persons not more than 50 years of age for the following appointments:—

ARCHITECTURAL STAFF (Permanent):
(*a*) 2 SENIOR ARCHITECTURAL ASSISTANTS, A.P.T. V (£1,310/£1,480 p.a.)
(*b*) 3 ARCHITECTURAL ASSISTANTS, A.P.T. III (£960/£1,140 p.a.)
All Plus London Weighting.

Applicants for:
(*a*) should be Associate Members of the R.I.B.A. with wide experience including multi-storey housing;
(*b*) should have passed the Intermediate examination of the R.I.B.A. and be suitably experienced.

Application forms, returnable by first post on MONDAY, 13th NOVEMBER, 1961, obtainable from the Borough Engineer and Surveyor, Town Hall, Upper Street, N.1.

H. DIXON CLARK,
Town Clerk.
S9849

COUNTY BOROUGH OF GREAT YARMOUTH
EDUCATION COMMITTEE
SCHOOLS ARCHITECT'S DEPARTMENT
APPOINTMENT OF ARCHITECTURAL ASSISTANT

Applications are invited to fill two vacancies for ARCHITECTURAL ASSISTANTS within A.P.T. Grade II (£815—£960).

Previous experience in Local Government is not essential.

Applications, stating age, qualifications, experience, details of past and present employment together with the names of two referees should reach the Schools Architect, 22, Euston Road, Great Yarmouth, Norfolk, by the 8th November, 1961.

D. G. FARROW,
Chief Education Officer.
22, Euston Road,
Great Yarmouth. 9841

METROPOLITAN BOROUGH OF CAMBERWELL
APPOINTMENT OF ARCHITECTS IN BOROUGH ARCHITECT'S DEPARTMENT

The Borough Architect, having an interesting programme of housing and public buildings and a senior staff producing good contemporary work, requires ASSISTANTS from good Schools of Architecture to back them up.

Newly elected Associates may expect a salary starting at £1,005 per annum and more for those with several years' experience: those who lack only the Professional Practice examination would commence at £840 to £855 per annum.

To arrange an interview write to Town Clerk, Town Hall, S.E.5. TC9424

DURHAM COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT
APPOINTMENT OF ARCHITECTS AND QUANTITY SURVEYORS

Applications are invited for appointments on the permanent staff on Grades J.N.C. "A" (£1,300—£1,565), A.P.T. V (£1,310—£1,480), A.P.T. II (£815—£960), and A.P.T. I (£645—£815).

The vacancies on Grades J.N.C. "A" and A.P.T. V are for QUALIFIED ARCHITECTS (A.R.I.B.A.), the senior grade being reserved for those capable of acting as Group Leaders on an extensive building programme. The vacancies on A.P.T. I and II are for PARTLY QUALIFIED ARCHITECTS (Inter. R.I.B.A.) who are looking for posts which will lead on qualification to opportunities for advancement to more senior grades.

There are also vacancies for QUALIFIED QUANTITY SURVEYORS (R.I.C.S.) on Grade A.P.T. V and PARTLY QUALIFIED QUANTITY SURVEYORS (Inter. R.I.C.S.) on Grades A.P.T. II and I.

A five-day week is in operation; staff canteen facilities are available and assistance in obtaining rented housing accommodation will be given.

The department will be transferred to a new building during 1962. The New County Hall, which is attractively sited on the fringe of Durham City, will provide first class working conditions and staff welfare facilities.

Application forms and full particulars may be obtained from the County Architect, South Street, Durham.

Personally canvassing members of the Council is prohibited and the Council may declare any candidate infringing this rule to be disqualified for appointment.

J. T. BROCKBANK,
Clerk of the County Council.
S9834

FACULTY OF ARCHITECTURE
TOWN PLANNING AND BUILDING
KWAME NKRUMAH UNIVERSITY OF SCIENCE & TECHNOLOGY, KUMASI, GHANA

Applications are invited for the following post in the above University:

LECTURER IN BUILDING SCIENCE

Applicants should hold:—
(*a*) An honours degree in Building Technology, or
(*b*) Associate Membership of the Institute of Builders, or
(*c*) Corporate Membership of a professional institution, or other suitable qualification.

Applicants for this post must have had at least three years' professional experience plus at least one year's teaching experience.

Applicants for this post should also have an interest in Building Research. A Building Research Group has been formed within the Faculty of Architecture, Town Planning and Building which will offer opportunities for individuals or group research for members of staff.

The salary scale for the post is as stated below and the point of entry will depend on qualifications and experience.

£1,386 × £66—£1,848 × £99—£2,508.

A children's allowance of £G50 per annum for each child resident in Ghana and of £G100 per annum for each child being educated overseas, up to a maximum of five children under the age of 21.

Appointments are on contract, normally for a period of five years in the first instance, and may be renewed for a further period. An appointment may be resigned on giving three months' notice.

The University is fully residential and members of staff are housed in pleasant modern bungalows on the spacious campus. Climate conditions are good.

Annual leave with tourist air passages for three years in every four is granted to a member of staff, his wife and up to five children.

Application forms and an information brochure may be obtained from the Assistant Registrar, Kwame Nkrumah University of Science and Technology, 29, Tavistock Square, London, W.C.1, who will also be glad to answer any questions either about the work of the Department or about living conditions in Ghana. No application for forms will be entertained after 17th November. 9932

THE URBAN DISTRICT COUNCIL OF ESTON
APPOINTMENT OF
JUNIOR ARCHITECTURAL ASSISTANT
(Grade A.P.T. II, £815—£960)

Applications are invited for the above appointment.

Applicants should have housing experience and preference will be given to candidates who possess an appropriate qualification.

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

Applications, giving age and details of training, qualifications and experience, together with the names of two referees, should reach me by 13th November, 1961.

The Council will consider favourably where necessary a request for housing accommodation.

N. C. HARRISON,
A.M.I.C.E., M.I.Mun.E.,
Engineer and Surveyor.
Town Hall,
Fabian Road,
South Bank,
Middlesbrough. 9934

BOROUGH OF HARROW

Applications are invited for appointments on the Architectural staff of the Borough Engineer and Surveyor's Department, which is engaged on a varied programme of municipal building schemes.

ARCHITECTURAL ASSISTANTS, A.P.T. III/IV (£960 to £1,310 p.a. plus London "weighting"). Commencing salaries will be in accordance with qualifications and experience, but applicants who are qualified will be given additional responsibilities and may be placed in A.P.T. IV (£1,140 to £1,310 per annum). The Council may be able to help with housing accommodation in the light of the applicant's circumstances.

A contribution towards removal expenses will be considered.

The appointments are subject to the Local Government Superannuation Acts and to the National Joint Council's Scheme of Conditions of Service.

Forms of application may be obtained from me, and must be returned not later than 10th November, 1961.

DAVID PRITCHARD,
Town Clerk.

Harrow Weald Lodge,
Harrow Weald,
Harrow. 9914

STAFFORDSHIRE COUNTY COUNCIL
COUNTY PLANNING AND DEVELOPMENT DEPARTMENT

Applications are invited for the appointment in the County Planning and Development Department of a SENIOR PLANNING ASSISTANT on A.P.T. Grade V (£1,310—£1,480 per annum). The commencing salary will depend on qualifications and experience.

The successful applicant should have a final professional qualification in planning, architecture or landscape design and should be experienced in planning administration. Particular responsibilities of the post include Development Control in relation to Design and Amenity, Caravans and Advertisements, advising on amenity questions arising out of the Development Plan especially in relation to Village Plans.

The Council are prepared to grant lodging allowance of 35s. per week for a period of six months and second class railway travel home every two months during the initial six months to married applicants maintaining a home outside the geographical county. Consideration will also be given to the granting of financial assistance in appropriate cases towards removal expenses.

Applications, giving details of age, education, qualifications, present and previous appointments, experience, and the names of two persons to whom reference may be made, should be sent to D. W. Riley, County Planning and Development Officer, 41a, Eastgate Street, Stafford, not later than 13th November, 1961.

Relationship to any member or senior officer of the County Council must be disclosed. Canvassing will disqualify.

T. H. EVANS,
Clerk of the County Council.
9915

METROPOLITAN BOROUGH OF BATTERSEA

Applications are invited for the permanent appointment of ASSISTANT BUILDING SURVEYOR, A.P.T. Grade V (£1,310—£1,480 per annum—plus London weighting of £45 per annum).

Applicants must have passed the Final Examination of the Royal Institution of Chartered Surveyors and have experience in maintenance, alteration and conversion works.

Commencing salary according to experience, previous Local Government service not essential.

The appointment is subject to the Local Government Superannuation Acts 1937-1953.

Further particulars and application forms may be obtained from the Borough Engineer & Surveyor, Town Hall, Battersea, S.W.11.

Closing date for applications is 20th November, 1961.

C. M. W. S. FREEMAN,
Town Clerk.
S9928

CITY OF SHEFFIELD
CITY ENGINEER & SURVEYOR'S DEPARTMENT
AREA PLANNING OFFICER, GRADE B

Applications are invited from suitably qualified persons for the above appointment on the staff of the City Engineer and Surveyor and Town Planning Officer (Mr. C. R. Warman, B.Sc., M.I.C.E., M.I.Mun.E., M.T.P.I.).

The post is established in Grade B (£1,480—£1,670 p.a.).

Candidates should have a Town Planning qualification and an architectural or other suitable additional qualification would be an advantage.

The commencing salary will be in accordance with experience and qualifications.

Contribution will be made towards approved removal expenses.

Superannuable post, N.J.C. Conditions of Service, medical examination.

Applications, stating age, education and training, qualifications, experience, present and past appointments (with dates and salaries) and quoting the names of two referees, should be submitted to the undersigned by the 27th November next.

JOHN HEYS,
Town Clerk.

Town Hall,
Sheffield, 1. S9958

GLAMORGAN COUNTY COUNCIL invite applications for:

(*a*) A.P.T. V PLANNING ASSISTANT at Headquarters, County Hall, Cardiff. Salary £1,310 to £1,480 p.a.

(*b*) (*i*) A.P.T. IV ASSISTANT AREA PLANNING OFFICER, Western Area, Neath. Salary £1,140 to £1,310 p.a.
(*ii*) A.P.T. IV PLANNING ASSISTANTS at Headquarters, County Hall, Cardiff. Salary £1,140 to £1,310 p.a.

(*c*) A.P.T. III PLANNING ASSISTANT at Headquarters, County Hall, Cardiff. Salary £960 to £1,140 p.a.

Applicants for post (*a*) should have passed the Final Examination of the Town Planning Institute or other approved professional body; for posts (*b*) should hold qualifications similar to (*a*) or be University Graduates with five years' experience, including the period spent on theoretical training; and for post (*c*) the Intermediate Examination of an approved professional body, with five years' experience.

Note: Suitably experienced applicants not possessing the qualifications indicated, may be considered for posts (*b*) and (*c*).

Applications, stating age, qualifications and experience, with names and addresses of two referees, should be addressed to the County Surveyor and Planning Officer, County Hall, Cardiff, and be received by Wednesday, 8th November, 1961.

RICHARD JOHN,
Clerk of the County Council.
9930

HAMPSTEAD BOROUGH COUNCIL
ARCHITECTURAL ASSISTANTS required in the Housing Architect's Department for new development including multi-storey blocks of flats. Salary will start at a point within A.P.T. Grades I-IV (£645—£1,310 per annum plus London weighting) according to qualifications and experience. Local Authority experience not essential. Group system of working. Advances for house purchase up to 100 per cent. of valuation will be considered in suitable cases. Applications with names of two referees to Town Clerk, Town Hall, Haverstock Hill, N.W.3. TC7886

ROYAL BURGH OF DUMFRIES
DEPUTE BURGH ARCHITECT

Applications are invited from Qualified Architects, preferably with experience in Redevelopment Work.

The appointment, within the salary scale £1,280—£1,430 (by 3 increments of £50), will be subject to the Town Council's Superannuation Scheme and N.J.I.C. Conditions of Service, and the successful applicant will require to pass a medical examination.

If required, the tenancy of a Council house will be given to the successful applicant.

Applications, stating age, qualifications and experience, and the names of two referees, should be lodged with the undersigned not later than 7th November, 1961.

GEORGE D. GRANT,
Town Clerk.

Municipal Chambers,
Dumfries.
16th October, 1961. S9818

CRAWLEY DEVELOPMENT CORPORATION
CHIEF ARCHITECT'S DEPARTMENT

Applications are invited for the following appointments:—

(*a*) ASSISTANT ARCHITECT, Grade A.P.T. III/IV (£960—£1,310 p.a.).

(*b*) JUNIOR ASSISTANT ARCHITECT, Grade A.P.T. I/II (£645—£960 p.a.).

Candidates for post (*a*) must be Associates of the R.I.B.A., and for post (*b*) to Intermediate R.I.B.A. standard.

The Architect's Department is at present engaged upon a varied and interesting programme of housing, commercial and industrial projects, and a swimming bath. Five-day week. Housing may be provided.

Details of appointment and application forms obtainable from H. S. Howgrave-Graham, A.R.I.B.A., Chief Architect, Crawley Development Corporation, Broadfield, Crawley, Sussex. Closing date 13th November, 1961. S9827

A vacancy exists for an ASSISTANT ARCHITECT in the office of the Architect, British Railways, Eastern Region.

Applicants should be qualified (A.R.I.B.A.) and have a lively approach to the design of buildings coupled with a sound knowledge of their construction. The office encourages assistants to take responsibility at every stage of a project.

Salary range £1,070—£1,145.

Applications should be made in writing to the Architect, Chief Civil Engineer's Office, King's Cross Station, London, N.1. S9912

WORCESTERSHIRE COUNTY COUNCIL

Applications are invited for the following posts:—

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

(2) ARCHITECTURAL ASSISTANT, Grade A.P.T. II (£815—£960).

Financial assistance is given for removal expenses and lodging allowances and the Council may be able to assist with housing accommodation. Further particulars and forms of application should be obtained from L. C. Lomas, F.R.I.B.A., County Architect, 14, Castle Street, Worcester, not later than 15th November, 1961. (S.185.) S9879

BOROUGH OF EALING
ARCHITECTURAL ASSISTANT within Scale A.P.T. IV, according to experience (£1,185—£1,355 inclusive). Must have recognised architectural qualifications.

JUNIOR ARCHITECTURAL ASSISTANT, A.P.T. I (£645—£815) plus London weighting.

Full particulars and forms of application from: Borough Engineer, Town Hall, Ealing, W.5. Closing date: 6th November, 1961.

E. J. COPE BROWN,
Town Clerk.
S9803

HEREFORDSHIRE COUNTY COUNCIL
APPOINTMENT OF DEPUTY COUNTY ARCHITECT

Applications are invited for the above appointment (whole-time) on the salary scale £1,800—£2,050 (plus travelling and subsistence allowances) from Fellows or Associates of the R.I.B.A.

Further particulars and forms of application (returnable by 30th November, 1961) may be obtained from the Clerk of the Council, Shirehall, Hereford. 9920

COUNTY BOROUGH OF STOCKPORT
PLANNING ASSISTANT
GRADES A.P.T. III-IV, £960—£1,310

Applications invited for the above appointment in the Redevelopment Section of the Borough Surveyor and Planning Officer's Department from Chartered Town Planners or Landscape Architects who should preferably have had urban renewal experience. The Department is engaged upon a series of major development schemes including the redevelopment of the town centre and the person appointed will be a member of a small progressive team working on positive projects. Commencing point within the grades according to ability and experience. The post is terminable by one month's notice and subject to N.J.C. Conditions of Service and medical examination. Loan available for house purchase. Applications, outlining personal particulars, qualifications, present and previous appointments with dates and salaries, experience and names and addresses of two referees to Borough Surveyor and Planning Officer, Town Hall, Stockport, by 20th November, 1961. Canvassing disqualifies. Applicants must state if related to any member/senior officer of Council. S9910

CITY OF ROCHESTER
ARCHITECTURAL ASSISTANT
GRADE A.P.T. II (£815—£960)

Applications are invited for the appointment of Architectural Assistant in the City Surveyor's Department.

Candidates should have general experience, including the preparation of drawings and specifications, and should have passed the Intermediate Examination of the Royal Institute of British Architects or hold a qualification of equivalent standard. The commencing salary will be according to qualifications and experience.

Housing accommodation will be provided if required, and removal expenses refunded after twelve months' service. Five-day week.

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

Applications, stating age, training, qualifications, present and previous appointments and experience, together with the names and addresses of two persons to whom reference may be made, should be delivered to J. A. Peel, A.M.I.C.E., M.I.Mun.E., City Surveyor, 66, Maidstone Road, Rochester, not later than Wednesday, 22nd November, 1961.

PHILIP H. BARTLETT,
Town Clerk.

Guildhall,
Rochester.
20th October, 1961. S9911

BOROUGH OF MARGATE
BOROUGH ENGINEER'S DEPARTMENT

The Council invite applications for the superannuable position of ASSISTANT ARCHITECT in the Borough Engineer's department on salary Grade A.P.T. V (£1,310 to £1,480 per annum).

Candidates for the appointment must be fully qualified architects and should have had considerable experience in multi-storey flats and housing generally.

The Council will assist in the provision of housing accommodation, and would consider assistance towards removal expenses. A five-day week is in operation.

Applications are to be received by the Borough Engineer, 38, Grosvenor Place, Margate, not later than 12 noon on Saturday, 18th November, 1961, and should give details of age, previous experience, present employment and the names of two referees.

T. F. SIDNELL,
Town Clerk.

40, Grosvenor Place,
Margate. 9887

EAST SUSSEX COUNTY COUNCIL

Applications are invited for the appointment of an ASSISTANT ARCHITECT, Grade A.P.T. V (£1,310—£1,480), on the permanent staff of the Architect's Department, dealing with a wide range of architectural projects.

Applications, giving the names of two persons to whom reference may be made, to be sent to the County Architect, County Hall, Lewes, Sussex, by 6th November, 1961. 9908

HUYTON-WITH-ROBY URBAN DISTRICT COUNCIL
ARCHITECTURAL AND HOUSING DEPARTMENT

Applications are invited for the following appointments:—

(*a*) SENIOR ASSISTANT ARCHITECT (A.P.T. V), £1,310 to £1,480. Candidates must be members of the R.I.B.A. Housing accommodation will be provided if required.

(*b*) ARCHITECTURAL ASSISTANT (A.P.T. I), £645 to £815.

The appointments will be subject to the Provision of the Local Government Superannuation Acts and N.J.C. Scheme of Conditions of Service as adopted by the Council, and will be terminable by one calendar month's notice on either side.

Applications, stating age, present position and salary, together with the names of two referees, to the Architect and Housing Director, Architectural and Housing Department, "Grasscroft," Archway Road, Huyton, by the 17th November, 1961.

D. WILLGOOSE,
Clerk to the Council.

Council Offices,
Derby Road,
Huyton. 9944

EASINGTON RURAL DISTRICT COUNCIL
ARCHITECTURAL ASSISTANT
GRADE A.P.T. II (£815—£960 per annum)

Applications are invited for the above-mentioned appointment in the Engineer & Surveyor's Department.

Applicants must be experienced in Municipal Housing and General Architectural Work and have the qualifications specified by the National Scheme of Conditions of Service for the grade concerned.

If required, housing accommodation will be provided.

The appointment will be subject to the Local Government Superannuation Acts and to the successful applicant passing a medical examination.

Applications on forms obtainable from the undersigned must be received by 17th November, 1961.

D. CONYERS KELLY,
Clerk of the Council.

Council Offices,
Easington,
Co. Durham. 9956

LIVERPOOL REGIONAL HOSPITAL BOARD
require
ASSISTANT REGIONAL ARCHITECT

Salary £1,825 × £75 (2) × £100 (2)—£2,175 in the Department of the Regional Architect, T. Noel Mitchell, B.Arch. (Liverpool), F.R.I.B.A.

Graduate of a recognised School of Architecture preferred. High design ability essential. The Department has Principal Assistants—each responsible for a section of work which includes major projects—these being assisted by a number of Senior and Assistant Architects.

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

Applications to reach me by 20th November, 1961, stating age, education, qualifications, present salary, experience, present and previous posts and names and addresses of three referees (two technical).

VINCENT COLLINGE,
Secretary to the Board.

55, Castle Street,
Liverpool, 2. S9878

LIVERPOOL REGIONAL HOSPITAL BOARD
require
ARCHITECTS

SENIOR ASSISTANT ARCHITECTS, £1,300—£1,600.
ASSISTANT ARCHITECTS, £905—£1,310.
ARCHITECTURAL ASSISTANTS, £625—£900.
ARCHITECTURAL DRAUGHTSMEN, £475—£685.

and

QUANTITY SURVEYORS

SENIOR ASSISTANT QUANTITY SURVEYOR, £1,300—£1,600.
QUANTITY SURVEYING ASSISTANT, £625—£900

in the Department of the Regional Architect, T. Noel Mitchell, B.Arch., F.R.I.B.A. Interesting new building is projected including new Hospitals and the complete replanning of a large number of older Hospitals covering a wide variety of building types.

Posts are superannuable and mileage allowances paid to approved car users.

Applications to reach me by 20th November, 1961, stating post applied for, age, education, qualifications, present salary, experience, present and previous posts and names and addresses of three referees (two technical).

VINCENT COLLINGE,
Secretary to the Board.

55, Castle Street,
Liverpool, 2. S9880

APPOINTMENT OF ARCHITECTS
LEEDS REGIONAL HOSPITAL BOARD

SALARIES UP TO £1,310 per annum will be paid to suitably qualified applicants.

Applications, stating age, qualifications, previous experience, together with names of two referees to the Secretary, Park Parade, Harrogate. 9909

NORTH RIDING COUNTY COUNCIL

Opportunities for applicants of initiative and drive, and who appreciate a five-day week in good working conditions, for dealing with a varied programme of work for all Committees of the Council.

Position within the salary range shown below will be given according to ability and qualifications.

ARCHITECTURAL ASSISTANT, Grade A.P.T. II/III, £815—£1,140.

Applicants for the above must have passed the Intermediate Examination of the R.I.B.A., and for appointment on A.P.T. III, Part I of the Final Examination of the R.I.B.A.

Application forms may be obtained from the County Architect, R. Allport Williams, Esq., M.B.E., B.Arch., F.R.I.B.A., County Hall, Northallerton. Completed forms should be returned to the Clerk of the County Council, County Hall, Northallerton, by the 10th November, 1961.

R. A. WOTHERSPOON,
Clerk of the County Council. 9881

HUDDERSFIELD COLLEGE OF TECHNOLOGY

Principal: DR. W. E. SCOTT, M.B.E.
School of Art: Headmaster: B. G. COPE, A.R.C.A., F.R.S.A.

Required January, 1962, Grade B ASSISTANT (MALE) IN ARCHITECTURE. Degree or Diploma in Architecture and/or A.R.I.B.A. qualification.

Salary (Burnham Scale): £700 p.a. by £27 10s. p.a. to £1,150 p.a. There are additions for approved qualifications and training and the commencing salary may include increments for approved industrial experience.

Forms of application and further particulars obtainable from the Principal, to whom applications should be returned without delay.

H. GRAY,
Clerk to the Governors.

19th October, 1961. 9876

NORTHUMBERLAND COUNTY COUNCIL
COUNTY PLANNING DEPARTMENT

(*a*) SECTION LEADER (DESIGN SECTION) (J.N.C. Scale "A," £1,380—£1,565).

Applications are invited from suitably qualified and experienced persons for the post of Section Leader in the Design Section of the County Planning Department. The work of the Section is varied but experience in the design of central area redevelopment schemes is of first importance.

(*b*) SENIOR ASSISTANT ARCHITECT (Grade A.P.T. V, £1,310—£1,480).

Applications are invited from suitably qualified persons for this appointment in the Design Section of the County Planning Department. The work will involve detailed design in connection with schemes of redevelopment and comprehensive schemes of new development in a wide variety of settings. Basic training in architecture is essential and experience in planning is desirable.

(*c*) SENIOR PLANNING ASSISTANT (Grade A.P.T. V, £1,310—£1,480).

Applications are invited from suitably qualified persons for this appointment in the Development Plan Section of the Planning Department. The successful applicant will be engaged on the preparation of Town Maps including schemes for the comprehensive redevelopment of central areas. Applicants should have experience in Town Map work and ability to put forward constructive suggestions for future planning policies.

The County Council operate a five-day week. The salary for each post will be fixed in accordance with previous experience and ability. Application forms and further details obtainable from the County Planning Officer, County Hall, Newcastle upon Tyne, 1. Applications to be returned not later than 13th November, 1961. 9885

CHERTSEY URBAN DISTRICT COUNCIL
APPOINTMENT OF ASSISTANT ARCHITECT

Applications are invited for the appointment of Assistant Architect at a salary in accordance with Grade A.P.T. IV (£1,140—£1,310 per annum).

The work is of an interesting character, principally multi-storey housing but designs are also to be prepared for a community centre.

This is the senior appointment in the Architectural Section.

Housing available if required.

The appointment is superannuable and subject to a medical examination.

Applications, giving details of experience, etc., to be sent to N. C. Goldsmith, M.B.E., M.I.Mun.E., Engineer & Surveyor, Chertsey Urban District Council, "The Orchard," Staines Lane, Chertsey, Surrey, not later than 15th November, 1961.

26th October, 1961. S9976

COUNTY BOROUGH OF EAST HAM
SENIOR ASSISTANT PLANNING OFFICER GRADE A.P.T. II—£815 to £960 (plus London weighting)

Vacancy in Borough Engineer's Department. Salary above minimum payable according to qualifications and experience.

A subsistence allowance may also be paid over a reasonable period to the person appointed if unable to obtain suitable housing accommodation, necessitating the maintenance of two homes.

Further details and application form returnable by the 11th November, 1961, from the Town Clerk, Town Hall, East Ham, E.6. 9942

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

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

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

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

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

(*e*) QUANTITY SURVEYING ASSISTANT (two posts), General Division/A.P.T. II, £220—£960 per annum.

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

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

Forms, obtainable from the County Architect, should be returned to the Clerk of the County Council, County Hall, Boston, Lincs., by 20th November, 1961. 9960

BOROUGH OF SLOUGH

ASSISTANT ARCHITECT required for housing, redevelopment, factories and general building works. Applicants should have good experience in design and supervision and must be A.R.I.B.A.

Salary on Grade A.P.T. IV of National Scales (£1,140—£1,310 per annum). Five-day week.

Housing accommodation provided for married candidate if required. Alternatively, married candidate who elects to provide his own accommodation but is unable to do so immediately, will be paid a subsistence allowance of 37s. 6d. per week and second-class return train fare home every two months for a maximum period of six months if he does not reside within reasonable travelling distance of Slough. Fifty per cent. of removal expenses paid.

Applications, stating age, qualifications and experience, and the names and addresses of two referees, to reach the Borough Engineer, Town Hall, Slough, Bucks., by 13th November, 1961. 9906

LONDON COUNTY COUNCIL
ARCHITECTS DEPARTMENT

Maintenance and Improvements Division requires ARCHITECTS, Grade I (£1,500 to £1,700) to work on a varied programme of alterations and adaptations to Council buildings other than housing.

Applicants must possess initiative, be capable of heading a group of eleven and be thoroughly conversant with supervision of works.

Form and particulars from Hubert Bennett, F.R.I.B.A., Architect to the Council (EK/A/2937/11), County Hall, S.E.1, returnable by 16th November. 9963

NORFOLK COUNTY COUNCIL
COUNTY ARCHITECT'S DEPARTMENT

Applications are invited for the following established posts:—

ASSISTANT ARCHITECT, Grade IV (£1,140—£1,310); must be qualified and have had good general experience.

ARCHITECTURAL ASSISTANT, Grade I (£645—£815).

QUANTITY SURVEYING ASSISTANT, Grade III (£960—£1,140); must have experience in taking off, abstracting, billing and checking final accounts.

Applications, giving details of training, qualifications, age, past and present appointments, and the names of three referees, to County Architect, 27, Thorpe Road, Norwich, by 14th November. S9907

BOROUGH OF WESTON-SUPER-MARE

Applications are invited for the position of ARCHITECTURAL ASSISTANT, Salary Grade A.P.T. III (£960—£1,140). J.N.C. Conditions, superannuated. Housing accommodation provided if necessary. Removal expenses repaid over a period of two years. Applications, stating age, education, qualifications, appointments held (with dates and salaries) and two referees to Borough Engineer, Town Hall, Weston-super-Mare, not later than 6th November, 1961. 9957

BOROUGH OF BASINGSTOKE
BOROUGH ARCHITECT'S DEPARTMENT

Applications are invited for the following appointments in the Architect's Department of this expanding town.

SENIOR ASSISTANT, Grade IV, within salary range £1,140—£1,310 according to experience. The successful applicant should be an Associate R.I.B.A. and will be required principally to assist in the design of an Indoor Swimming Pool, and must possess experience of this work. Casual user car allowance will be available for this post.

ASSISTANT ARCHITECT, Grade I, within salary range £645—£815 according to experience. Candidates should have reasonable training and experience.

Both posts are pensionable and subject to N.J.C. conditions.

Housing available in due course. Assistance with removal expenses. Five-day week.

Details giving qualifications, age, training, experience, etc., and names and addresses of two referees, to be sent to the Borough Architect, E. Almond, Dipl. Arch., A.R.I.B.A., Municipal Buildings, Basingstoke, Hants., by 14th November, 1961. S9938

CITY AND COUNTY OF BRISTOL
CITY ARCHITECT'S DEPARTMENT

Applications invited from persons with appropriate professional qualifications for the following permanent posts:—

ARCHITECTS:
SENIOR ASSISTANT ARCHITECTS—J.N.C. Scale "A" (£1,360/£1,565 p.a.) or A.P.T. V (£1,310/£1,480 p.a.).
ASSISTANT ARCHITECTS—A.P.T. IV (£1,140/£1,310 p.a.) or A.P.T. III (£960/£1,140 p.a.).
ARCHITECTURAL ASSISTANTS—A.P.T. II (£815/£960 p.a.).
JUNIOR ARCHITECTURAL ASSISTANTS—A.P.T. I (£645/£815 p.a.).
JUNIOR ASSISTANTS—General Division—Starting salary at 18 not less than £320 p.a. on scale rising (subject to qualifications) to £710 p.a.

QUANTITY SURVEYORS:
SENIOR QUANTITY SURVEYORS—A.P.T. V, IV or III as above.

Starting Grade for all posts according to qualifications and experience.

Housing accommodation will be provided for married men, if necessary, at an economic rent. Five-day week. Fifty per cent. of removal expenses.

Application form from City Architect, Council House, Bristol, 1, returnable by 16th November. 9902

RADNORSHIRE COUNTY COUNCIL

Applications are invited for the following permanent appointments on the established staff of the County Architect's Department:

ASSISTANT ARCHITECT. Salary Grade A.P.T. IV (£1,140—£1,310 p.a.).

Candidates must hold a recognised Diploma in Architecture and/or be A.R.I.B.A. and should have had considerable experience in the design and supervision of building works.

The Council have a varied and interesting building programme on hand including Junior and Secondary Schools, police houses, and old people's homes.

ASSISTANT QUANTITY SURVEYOR. Salary Grade A.P.T. II (£815—£960).

Preferably qualified to A.R.I.C.S. Intermediate standard or equivalent.

Duties will include abstracting and billing, site measurements and some taking off under supervision of the Chief Quantity Surveyor.

The appointments will be subject to the National Scheme of Conditions of Service; to the Local Government Superannuation Acts and to termination by one month's notice in writing by either party.

A lodging allowance, proportion of approved removal expenses and rail fare home every three weeks for a limited period will be paid to a married man appointed to these posts.

Applications, stating age, qualifications and experience, with the names and addresses of two persons to whom reference may be made, must be received by the undersigned by not later than the 16th November, 1961.

D. C. S. LANE,
Clerk of the Council.

County Hall,
Llandrindod Wells,
Radnorshire. S9972

RE-ADVERTISEMENT.

COUNTY BOROUGH OF WIGAN
APPOINTMENT OF PRINCIPAL PLANNING ASSISTANT

Applications are invited for the above appointment on the established staff of the Borough Engineer and Planning Officer. Salary Grade A.P.T. V (£1,310—£1,480 p.a.).

Applicants must be Associate Members of the Town Planning Institute or hold the Diploma in Town Planning, and experience on redevelopment schemes will be considered an advantage.

The Council are preparing large comprehensive development schemes and the appointment offers interesting and valuable experience in this aspect of town planning.

The provision of housing accommodation will be considered.

Applications, stating age, qualifications, experience, present and past appointments, present salary, and giving the names of two referees, should be sent to the Borough Engineer and Planning Officer, Municipal Buildings, Wigan, not later than 14th November, 1961.

ALLAN ROYLE,
Town Clerk.

Municipal Buildings,
Wigan. S9899

ARCHITECT
MINISTRY OF WORKS—GOVERNMENT OF UGANDA

Duties: General architectural duties covering a wide range of building projects under the supervision of the Chief Architect.

Qualifications: Candidates (male or female and aged 25-35) must be A.R.I.B.A. Experience of tropical problems an advantage.

Terms of Appointment: On contract for one tour of 21-27 months in the first instance. Salary in scale £1,266—£2,448 with 25 per cent. gratuity. Children's education allowances. Accommodation at moderate rental. Free passages. Outfit allowances. Generous leave. Free medical attention.

Apply Director of Recruitment, Department of Technical Co-operation, Carlton House Terrace, London, S.W.1. Quote RC.210/153/01/E.2 and give full names, age and brief details of qualifications and experience. 9897

ARCHITECT
PUBLIC WORKS DEPARTMENT
GOVERNMENT OF GAMBIA

Duties: To assist the present Architect and to take over his duties during his absence on leave. (The present Architect is in charge of the Architectural Branch, which employs six draughtsmen and carries out the planning and design of all Government architecture under the general supervision of the Director of Public Works.)

Qualifications: Candidates (aged 28-45) must be A.R.I.B.A. with five years' professional experience of architectural planning and design work.

Terms of appointment: On contract for one tour of 18-24 months in first instance. Salary in scale £1,042—£2,024 p.a. according to experience plus 25 per cent. gratuity. Free passages. Generous education allowances. Outfit allowance. Free medical treatment. Seven days home leave per month of service. Accommodation at moderate rent.

Apply Director of Recruitment, Department of Technical Co-operation, Carlton House Terrace, London, S.W.1, quoting RC 210/56/02/E2 and giving full names, age, qualifications and experience. 9896

CITY OF CHESTER
CITY ENGINEER & SURVEYOR'S DEPARTMENT

Applications, stating age, education, qualifications and experience, and the name of three referees, are invited for the following posts:—

(*a*) TWO SENIOR ASSISTANT ARCHITECTS, A.P.T. III-IV.
(*b*) ONE JUNIOR ARCHITECTURAL ASSISTANT, A.P.T. I-II.
(*c*) ONE ARCHITECTURAL DRAUGHTSMAN, Misc. V.

Housing accommodation will be available, if required, for posts (*a*) and (*b*). Commencing salary within the grades will be determined by qualifications and experience. The Corporation is engaged in a substantial building programme offering varied and interesting experience to successful applicants. Applications should be forwarded to City Engineer and Surveyor, 49, Northgate Street, Chester, by November 13th, 1961. S9893

EXETER CITY COUNCIL
CITY ARCHITECT'S DEPARTMENT

SENIOR ASSISTANT ARCHITECTS required on A.P.T. Grade III (£960 to £1,140) and A.P.T. Grade IV (£1,140 to £1,310) on the established staff to work on an interesting and varied programme of work. Entry point on the salary grade will depend on experience.

Provision of housing accommodation will be considered and removal expenses will be paid.

Applicants must be Associate Members of the R.I.B.A. N.J.C. Conditions of Service. Successful candidates will be required to pass a medical examination.

Applications, stating age, experience and qualifications, should be received by the City Architect, Municipal Offices, Exeter, not later than 17th November, 1961. S9964

Competition

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

THE UNIVERSITY OF LIVERPOOL

OPEN COMPETITION

Architects are invited to submit designs for halls of residence for 1,100 to 1,200 students on the Carnatic site at Mossley Hill, Liverpool. The cost of the works will be approximately £1,500,000.

Assessors:	Sir James Mountford, M.A., D.Litt., D.C.L., LL.D. (Vice-Chancellor).
	Donald Gibson, C.B.E., M.A., D.C.L., F.R.I.B.A., M.T.P.I.
	Professor Myles Wright, M.A., F.R.I.B.A., M.T.P.I.
Premiums:	£5,000; £3,000; £1,000. Further premiums, to a total not exceeding £2,000, may be awarded at the discretion of the Assessors for other designs of merit.
Sending in Day:	4 September, 1962.
Last Day for Questions:	1 January, 1962.

Conditions may be obtained, upon payment of a deposit of £3, from The Registrar, The University of Liverpool, Liverpool, 3. Quoting Reference RVCH/518/AJ. 9547

PUBLIC NOTICE

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

BIRMINGHAM REGIONAL HOSPITAL BOARD
10, Augustus Road, Birmingham 15
CHANGE OF ADDRESS

The address of the REGIONAL ARCHITECT'S DEPARTMENT including Little Bromwich Branch Office and the Furniture and Equipment Section is now:—

Empire House
159, Great Charles Street
Birmingham 3.
Telephone: CENtral 0365. 9977

Architectural Appointments Vacant

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

ARCHITECTS in Private Practice in London will pay £1,000 to £2,000 per annum to competent ARCHITECTURAL ASSISTANTS. Varied and interesting work in hand. Write stating age and experience and salary required to Box 9739.

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

A FEW vacancies still left for experienced and confident ARCHITECTS to fill positions of responsibility in a growing and varied practice with industrial and commercial work throughout the southern half of the country. Applicants must have initiative as well as architectural ability to carry through contracts up to £100,000, working directly with Principals but with minimum supervision. Apply in writing to Thomas Mitchell & Partners, 20 Bedford Square, London, W.C.1. TC7443

F. W. WOOLWORTH & CO. LTD.

KENSINGTON OFFICE—ARCHITECTS' DEPT.

ARCHITECTURAL ASSISTANTS required:

Five-day week, Superannuation Scheme, Dining facilities. Progressive salaries according to experience and qualifications.

Apply giving details of age and experience, and salary required, to:—

Staff Architect, 26/40 Kensington High Street, London, W.8. 9749

DYNELEY LUKER & MOORE require ARCHITECTURAL ASSISTANTS of Intermediate or Final standard. Good salary; five-day week; small congenial office; luncheon vouchers. Apply to 43, Welbeck Street, W.1. Telephone WELbeck 0657. TC9708

ARCHITECTURAL ASSISTANTS

INTERMEDIATE or Final standard, also DRAUGHTSMEN required in London for varied and interesting work. Salary up to £1,300 according to experience and ability. Five-day week, luncheon vouchers. Box 9718.

ASSISTANTS required of inter. standard in busy, small practice. Experience necessary in flats, houses and shops. Good draughtsmanship essential. Salary by arrangement according to qualifications and experience. R. Jelinek-Karl, F.R.I.B.A., 6, Buckingham Street, Strand, W.C.2. S9740

£850-£1,600. ARCHITECTURAL ASSISTANTS required. Long term prospects. Non-contributory pension and life assurance schemes. Five-day week. Telephone or write: Ronald Ward & Partners, 29, Chesham Place, Belgrave Square, S.W.1. Belgravia 3361 TC6105

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

CLIFFORD CULPIN AND PARTNERS need additional staff in their London and Hemel Hempstead offices. Men of about Intermediate standard particularly required to join small teams of keen men on important, varied projects. All must have a sound sense of modern design. 39, Doughty Street, London, W.C.1. CHAncery 5395. TC9379

ARCHITECTURAL ASSISTANTS required in Busy Bloomsbury office with varied practice. Good salary and prospects for suitable applicants. Five-day week. Write giving particulars of age, qualifications, experience, etc., to Box 918, c/o 7, Coptic Street, W.C.1. TC6647

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

MICHELIN

require

Senior Architectural and Civil Engineering Assistants

of Inter R.I.B.A. standard or equivalent for permanent appointments. They will be engaged on an extensive programme of building work in the United Kingdom and overseas.

Future construction includes production and workshop buildings, office and amenity blocks, training schools, stores, depots and warehouses.

Applicants should have several years' experience and be capable of taking charge of a project from its initiation to settlement of final accounts including general contract supervision.

The Company pays progressive salaries commencing at not less than £1,000 per annum with overtime where mutually agreed at premium rates.

Conditions include five-day week, pension and life assurance schemes. Houses or housing assistance if required with removal expenses paid. Three weeks annual holiday.

Apply to: **B. G. Tierney, Michelin Tyre Co. Ltd., Stoke-on-Trent, Staffs.** *quoting Ref. AJ/752A.*

WATES LIMITED
Birmingham

ARCHITECTURAL ASSISTANTS

required for housing, flats and shops mainly in redevelopment schemes. Good salaries offered for men with ideas and knowledge of construction. Five day week, superannuation bonus and other staff benefit schemes in operation. Attractive offices in pleasant surroundings.

Applications should be made to:

G. F. ELLIOT, Dip.Arch.Birm., A.R.I.B.A.,
Midlands Regional Architect,
WATES Limited,
Building and Civil Engineering Contractors,
94, Hagley Road,
Edgbaston, Birmingham 16.

or arrangements for interview can be made by telephone (Edgbaston 5731)

PRISON COMMISSION
HEAD OFFICE WESTMINSTER

ASSISTANT ARCHITECTS

Applications are invited from men aged 25 or over who are registered architects and have a good professional experience in housing, institution and general work. Duties concern design rather than execution of work. Five-day week. Four weeks and two days paid holidays plus 8½ days paid public and privilege holidays. Some travelling, subsistence allowance payable. Salary range £991—£1,490 including special London Weighting allowance. Starting salary according to age, qualifications and experience, and up to £1,400 for exceptionally qualified candidates. Possibility of pensionable posts; promotion prospects. Application forms and details from Ministry of Labour, Technical and Scientific Register (K), 28, King Street, London, S.W.1, quoting J,365/1A. Closing date 17th November, 1961.

COMMONWEALTH OF AUSTRALIA

NATIONAL CAPITAL DEVELOPMENT COMMISSION, CANBERRA

Applications are invited for the position of:—

SUPERVISING ARCHITECT/PLANNER

£A2426/2621

in the Civic Design Section to work under the direction of the Superintendent of Design. There will be opportunities for creative design work on large scale projects.

Qualifications: Appropriate professional qualifications. Experience in the design of major building projects and academic training in civic design desirable, together with a high degree of drafting ability.

Conditions: First class fares paid for successful applicant and his dependants. Salary determined according to qualifications and experience will be paid from the date of embarkation. A superannuation scheme applies; housing will be provided.

Applications: Should be made on forms obtainable from and returned to Recruitment Officer, Australia House, Strand, London, W.C.2, by 22nd November, 1961.

ERIC FIRMIN & PARTNERS require ASSISTANT of Intermediate or Final standard preferably with previous office experience for interesting variety of projects. Five-day week. Luncheon Vouchers, holiday arrangements respected. Salary by arrangement according to qualifications and experience. Write to Thavies Inn House, Holborn Circus, E.C.1, or 'phone CITy 8811. TC8904

SENIOR and JUNIOR ASSISTANT ARCHITECTS required with progressive outlook, for work on a wide range of projects. Starting salaries up to £900 for Intermediate standard and up to £1,250 for Final standard, according to experience. Five-day week. Box TC9219.

ELIE MAYORCAS requires ARCHITECTURAL ASSISTANTS with a minimum of three years' office experience in this country. Write, giving brief particulars of architectural education and experience, to: 13, David Mews, Baker Street, W.1. TC9442

EXPERIENCED ASSISTANT ARCHITECT required in West End office. Varied work, must be a competent designer and administrator. Opportunity for advancement to position of responsibility. Starting salary up to £1,250 according to experience. Luncheon vouchers. Five-day week. Box TC9218.

ASSISTANT required for varied practice—Finals standard. Apply: Barber, Bundy & Greenfield, 19, Quarry Street, Guildford. TC9677

ERIC LYONS has place for experienced ASSISTANT ARCHITECT who wants responsibility and opportunities. Brief particulars to: Mill House, Bridge Road, Hampton Court, Surrey. TC9542

WELLS, HICKMAN & PARTNERS require first-rate ASSISTANTS for varied and interesting work. Salary according to ability and experience. 'Phone: TERminus 1404. 9624

OSCAR GARRY & PARTNERS require ASSISTANTS of both Intermediate and Final standard, with at least two years' office experience in this country, to work on interesting projects in early design and contract stages. Five-day week, luncheon vouchers. Salary by arrangement, according to qualifications and experience. Phone WEL 2507 or write 65, Gloucester Place, London, W.1. TC9621

BRYAN AND NORMAN WESTWOOD require a SENIOR ASSISTANT ARCHITECT; salary around £1,200. Apply to 21, Suffolk Street, S.W.1. TRAfalgar 1106. TC9630

ARE you kept pinned to the Drawing Board day in day out? If so, we can offer you much greater scope in gaining all round experience and carrying through the varied duties of an ARCHITECTURAL ASSISTANT. Responsibility positively encouraged. Write telling us your experience with the usual particulars; it may well be to our mutual advantage (Box TC 9730) or Telephone MAYfair 3111.

WE have two vacancies in our rapidly expanding and long established practice, for ASSISTANTS of Intermediate standard with two or three years' experience. We can offer plenty of scope to the right applicants, and further their present experience both in the office and on the site. Please contact Box Tc9731 or Telephone MAYfair 9554.

ARCHITECTURAL ASSISTANTS urgently required for work on variety of industrial buildings, offices, laboratories, canteens, etc. Five-day week. Luncheon Vouchers. Pension Scheme. Salary range £850—£1,400. Write Elliott, Cox & Partners, 172 Buckingham Palace Road, S.W.1. for interview. S9700

ARCHITECT, experienced, school-trained Associate. Age 30/35, required for busy Manchester practice. Full details to Box S9772.

GOTCH AND PARTNERS, Architects, require SENIOR and JUNIOR ASSISTANTS in their London, Brighton and Bristol Offices. Five-day week. Luncheon vouchers. Good salary for enthusiastic and capable men. Reply: 8, City Road, E.C.1. S9583

£900 P.A. ARCHITECTURAL ASSISTANT required up to Intermediate standard for London Office. Some experience in shop and store design an advantage. Details to Box TC9660.

SENIOR ASSISTANTS required for work on large hospital programme, excellent opportunities for the right men. Salary £1,000—£1,400. Luncheon vouchers and five-day week. Write giving full particulars: Watkins Gray & Partners, 57, Catherine Place, S.W.1. TC9590

ARCHITECTURAL ASSISTANTS required with some office experience for varied Hospital and University works. Five-day week and superannuation scheme. Apply in writing, giving age, qualifications, experience and salary required, to Adams, Holden & Pearson, 38, Gordon Square, W.C.1. S9821

C.W.S. ARCHITECTS' DEPARTMENT
NEWCASTLE UPON TYNE

ARCHITECTURAL, QUANTITY SURVEYING and SHOPFITTING STAFF are required in busy office, dealing with commercial and industrial developments in the Northern Counties.

Senior Assistant Architects:
Salary range: £1,200—£1,500 (with prospects of promotion to higher grade) (Qualified and experienced in Shop and Store design).

Assistant Quantity Surveyors:
Salary range: £800—£1,200. Intermediate standard.

Shopfitting Draughtsmen:
Salary range: £800—£1,200.

Three weeks' holiday
Superannuation Scheme

Please apply to:
R. A. Thomas, A.R.I.B.A.,
Chief Architect,
C.W.S. Architects' Department,
90 Westmorland Road,
Newcastle upon Tyne, 1. S9682

SOUTH KENSINGTON

Opportunities for working in small groups in direct contact with jobs in hand, including multi-storey luxury private development, high block development, for Local Authorities and other interesting work. Positions are vacant for ASSISTANT ARCHITECTS having Intermediate and one-two years' experience. Write or 'phone R. Mountford Pigott and Partners, 3, Cromwell Place, S.W.7. KENsington 1242. S9641

ASSISTANTS of about Intermediate standard wanted to work directly with one senior. Salary according to ability. Phone Chancery 4725 or write Dalling and Partners, Chartered Architects, 14, Bloomsbury Square, London, W.C.1. TC9674

LEICESTER Architect requires an energetic ASSISTANT, near or recently qualified, to be engaged upon a variety of work. Apply giving qualifications, experience and salary required, to Douglas H. Smith, 61, Regent Road, Leicester. S9873

MORRISON AND PARTNERS urgently require young, qualified or near qualified STAFF with a keen and progressive outlook to assist with a varied and extremely interesting programme of work in various parts of the country. Excellent salaries, five-day week, superannuation, etc. Apply to Morrison and Partners, 103, Belper Road, Derby. S9822

LITTLEWOODS
Mail Order Stores Ltd.

have further vacancies for

(*a*) ***Qualified Architects***
Starting salaries of £1,250—£1,650

(*b*) ***Architectural Assistants***
Starting salaries up to £1,100 for those of Inter R.I.B.A. standard who are expecting to qualify.
Special additional consideration will be given to applicants with considerable experience but who do not intend to proceed to A.R.I.B.A.

(*c*) ***Architectural Draughtsmen***
Starting salaries £600—£900 per annum, according to experience.

We have an extensive and exciting building programme employing advanced methods of building structure, embracing the development of city centres. Duties include making periodic visits to other parts of the country to direct and supervise building construction.
The Company's conditions of employment include a five-day week, a generous sickness scheme and a contributory Pension and Life Assurance Scheme.

Write for application form to:—

Management Appointments Officer,
(REF:A/237/AJ)
Littlewoods Mail Order Stores Ltd.,
Spinney House, Church Street,
Liverpool, X.

CENTRAL ELECTRICITY GENERATING BOARD

MIDLANDS REGION

Fourth Assistant Engineer
(Drawing Office) - Civil

Applications are invited for the position of Fourth Assistant Engineer (Drawing Office) in the Regional Electrical Engineer's Department.

Candidates should possess a sound practical and technical training, and have experience of design and drawing work for R.C. foundations and building construction.

The work consists of preparation of drawings associated with the construction of H.V. Substations.

Superannuable appointment, commencing salary according to qualifications and experience within the range £920—£1245 per annum.

Apply, quoting vacancy number 224/61 MR on form A.E.6. available from the Regional Personnel Officer, 53, Wake Green Road, Moseley, Birmingham 13, by *10th November*, 1961.

ARCHITECTS AND ARCHITECTURAL ASSISTANTS.
Fairbrother Hall & Hedges, Edinburgh, require architects and architectural assistants for interesting work. Current projects include secondary and primary schools, industrial laboratories, factories, local authority housing and flats.
Pleasant working conditions, pension scheme, five-day week.
Good salaries offered.
Apply 27 Rutland Square, Edinburgh, 1.
Telephone FOU 1251. S9688

TWENTY TO THIRTY YEARS OLD qualified or near qualified ARCHITECTS offered TOP SALARIES by an expanding Midlands Office. Essential qualifications are first-class design ability and enthusiasm for progressive architecture and the development and use of advanced building techniques. Keen and congenial working conditions, five-day week, superannuation, allowances, etc. Possibility of help with housing accommodation. For further details write to Box S9823.

EXPANDING Brewery Architects Department requires SENIOR and JUNIOR STAFF of initiative, ability, and progressive ideas, to work on an interesting programme of Public Houses and Hotels.
Generous salaries according to ability and experience. Pension scheme. Study facilities for Junior Staff. Three weeks holiday for Senior Staff.
Write with full details to: The Leigh Area Architect, Peter Walker (Warrington) Limited, Leigh Brewery, Leigh, Lancashire. S9785

ARCHITECTURAL ASSISTANT
THE Architects Department of a large Retail Multiple Company with offices in the North East, require an Architectural Assistant of Intermediate to Final standard for interesting work throughout the country.
Applicants must be capable of preparing working drawings and details, and must be able to control building work from commencement to completion on site.
The position is permanent, and a Pension Scheme is available. The salary will be in the region of £1,100 per annum.
Written application should be sent, giving details of experience, to the Group Architect, Box S9788.

INTERMEDIATE-FINAL standard or qualified ASSISTANT required in small office. Salary £600—£1,000 according to experience. Apply Michael V. H. Watkins, A.R.I.B.A., 28, Walter Road, Swansea. S9797

ARCHITECT and ASSISTANTS required by DENIS A. BIRCHETT, F.R.I.B.A., to participate in a varied and interesting programme of work which includes commercial and industrial projects. Enthusiastic and capable men will be offered a good salary. Five-day week. Applications to be made in writing to 131, High Street, Brentwood, Essex, or by telephone, BRENTWOOD 4098. S9824

PROWTING ESTATES LTD.
require
ARCHITECTURAL ASSISTANTS
of Intermediate grade or above. Good salary, pension and bonus schemes. Apply in writing, stating age, experience and salary required, to Prowting Estates Ltd., Ruislip, Middx. 9819

INTERMEDIATE ASSISTANTS required immediately in an expanding practice, to work on large and varied contracts.
Good salaries commensurate with ability and experience paid to keen men capable of taking responsibility. Write or telephone Gerald Shenstone & Partners, 34, Bloomsbury Way, W.C.1. CHAncery 3444. S9816

ARCHITECTURAL ASSISTANTS required, Hospital, Commercial and Industrial work. Five day week, pension scheme, etc. Apply by letter to Teather & Hadfield, Yorkshire Insurance House, Market Place, Sheffield, 1. S9843

ARCHITECTURAL ASSISTANT required to carry out design work on large projects. Salary £1,000—£1,200 according to ability. Write giving details of design training and experience to: W. H. Rogers, 16, Mark Lane, E.C.3. 9830

VARIOUS grades ASSISTANTS required, salary range £900—£1,500. Fitzroy Robinson & Partners, 3, Gray's Inn Square, W.C.1. S9820

ARCHITECTURAL ASSISTANT required with sound general experience for varied work in busy West End practice. Salary by arrangement. Telephone: REGent 5006. S9847

POWELL AND MOYA require ARCHITECTURAL ASSISTANTS of all grades. Please write, giving brief details of experience, to 36, Great Smith Street, London, S.W.1. S9846

TRIPE & WAKEHAM, Chartered Architects, require an ASSISTANT with 3—5 years' office experience, to work in their London office. Salary by arrangement. Telephone: WELbeck 7744 or write to 16, Fitzhardinge Street, London, W.1., for an appointment. S9848

BUSY ARCHITECTS need help.
Current headaches (large hospital and university jobs) intensified by forestry housing, hospital additions, schools, filling stations, private and L.A. houses, etc. In fact, thoroughly interesting and varied practice.

Practice ranges over North Wales—base a typical seaside town. If you prefer, live in magnificent country nearby. Practical advantages—cheaper living, good schools. Gardens grow, children flourish. Sailing, shooting, climbing, fishing for outdoor types.

Help we have in mind is male, 30-40, with experience in private practice. Basic salary, £1,000—£1,200; profit-sharing scheme and Associate Partnership for right man after trial period. Tot it up—varied, interesting and responsible work, pleasant living and an excellent future. If you like the answer, write, giving the usual facts to Box S9814.

ARCHITECTURAL and Town Planning practice requires SENIOR ARCHITECT to take charge of a group working on central redevelopment. Five-day week, private pension scheme, overtime paid. Salary by arrangement. J. Seymour Harris & Partners, 3/4, Greenfield Crescent, Five Ways, Birmingham, 15. S9799

SENIOR ASSISTANT ARCHITECT required in Architects Department of a large Midlands Brewery Company.
Applicants must be Associates of the R.I.B.A. and must be competent designers and draughtsmen, previous experience of licensed property work is not essential. Applicant's age not to exceed 45.
Commencing salary up to £1,500 p.a. dependent upon experience. The Company operates a Non-contributory Pension Scheme and a five-day week.
Applicants to give details of age, training and experience. Box S9800.

SIR BASIL SPENCE requires qualified ASSISTANTS, preferably having experience of University work. Five-day week, luncheon vouchers, salary up to £1,500 according to experience. Write to Sir Basil Spence, R.A., 1, Fitzroy Square, London, W.1. S9802

FARMER AND DARK
have some vacancies for
QUALIFIED ARCHITECTS, age 25/35,
preferably with office experience
for varied and interesting home
and overseas work. Five-day week.
Apply to Romney House, Tufton Street, S.W.1.
Tel.: ABBey 6311. S9850

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Large Housing Developments,
Office buildings,
Flats,
Showrooms.

London office has vacancy
for experienced senior
assistant.

MUSeum 9952. 9916

£950-£1,500. ARCHITECTURAL ASSISTANTS with imagination and designing ability required to assist with large and important new developments in the central London Area. Telephone or write: Trehearne & Norman, Preston & Partners, 83, Kingsway, W.C.2. HOLborn 4071. TC9798

JACKSON & EDMONDS: Architects and Town Planning Consultants, invite applications for the following vacancies in their London Office:
(*a*) ASSISTANT ARCHITECTS: A.R.I.B.A. and School Diploma. Minimum office experience two years. Design ability essential.
(*b*) ASSISTANT ARCHITECTS: R.I.B.A. Intermediate. Minimum office experience three years.
The Contracts on which the office is engaged include Civic Buildings, Swimming Pools, War Office Buildings, an Arts Centre, Halls of Residence, New Town Centres, etc.
Five-day week, time off for study, Luncheon Vouchers, Pension Scheme.
Commencing salaries (*a*) £1,100 p.a., (*b*) £650 p.a. Applications to be made to the Secretary, 30 Gloucester Place, London, W.1. HUNter 1485. 9931

CARDIFF Rhymney Breweries Ltd. require SENIOR ARCHITECTURAL ASSISTANT. Four-figure salary by negotiation according to experience and qualifications, superannuation scheme. Car provided under a car maintenance scheme. Grant towards removal expenses will be made. Two Saturday mornings off in three. Three weeks' annual leave. Applications to Company Architect, Rhymney Breweries Ltd., Glyn Teg House, Ely, Cardiff. 9927

WOLVERHAMPTON. SENIOR and JUNIOR ASSISTANTS with enthusiasm and a keen sense of responsibility required in busy progressive office with a wide programme of work. Write or telephone for an interview to Diamond Redfern and Partners, 26a, Snow Hill, Wolverhampton. Telephone 27621 Wolverhampton. 9929

KEEN enthusiastic SENIOR ASSISTANT to join London firm as Associate Architect, age 30-45. Must be qualified, quick, accurate draughtsman, with experience in private practice, sound knowledge of L.B.A. and not afraid of hard work or overtime if necessary. Capable of taking charge of Contracts including survey, specification, site supervision and sub-contractors. Interesting varied work with excellent prospects for future. Good basic salary with percentage share of profits. Full details and earliest commencement date to Box S9926.

KNAPTON DEANE have vacancies for ARCHITECTURAL ASSISTANTS in all grades. Congenial conditions, interesting work, high salaries and opportunities for advancement. VICtoria 0053. S9924

PETER BAREFOOT requires Intermediate standard ASSISTANT, either four- or five-day week. Pleasant office, interesting projects. Write 22 Thoro'fare, Ipswich. 9923

INTERMEDIATE / FINAL standard ASSISTANTS required immediately. Good draughtsmanship essential. Salary by arrangement, Musman & Cousens, 12 Upper Berkeley Street, W.1. S9922

JUNIOR ASSISTANT with ability to work with minimum supervision and to handle the small jobs in the varied practice of a West-country office on the coast. Salary range £500—£650. Details and salary required to Box 9921.

EDINBURGH. ARCHITECTURAL ASSISTANTS required immediately for expanding practice. Please write giving details of age, experience, and salary required to Law and Dunbar-Nasmith 54 Frederick Street, Edinburgh. S9918

QUALIFIED ARCHITECTS experienced in administration of large building contracts required to fill positions of responsibility in a Birmingham office with a growing and varied practice. £1,500 p.a. Pension, life assurance and bonus schemes. Apply Box 9933.

ASSISTANT required for small office with interesting and varied work. Salary £1,000/£1,200.
Green, Lloyd & Son,
5, Pickering Place,
St. James's Street, S.W.1.
Telephone: WHitehall 8926. TC9842

ASSISTANT for pleasant country practice, must be good draughtsman or woman. Opportunity to visit and supervise work. Salary £750 to £1,000, according to capability. L. H. Bond & R. W. Read, 44, Castlegate, Grantham. TC9780

GEORGE, TREW & DUNN. We need help with many projects and invite your application to work with us. Please write, giving the usual details to 56, Eastbourne Terrace, W.2. TC9884

ARCHITECTURAL ASSISTANT, Intermediate standard required at once. Five-day week, luncheon vouchers, bonus scheme, non-contributory Nuffield medical scheme. Car available for holidays. Pleasant surroundings in Wimbledon area. George Watt & Partners, 146 Mostyn Road, S.W.19. Tel.: Liberty 8181. 9877

PERSONAL INTERMEDIATE ASSISTANT required for Architect in Holland Park Office in a private residence. Salary by arrangement. PAR 7042. TC9778

BIRMINGHAM — Frustrated ARCHITECTS seeking a change, with initiative to take responsibility, are invited to contact James A. Roberts, A.R.I.B.A., Lichfield House, Smallbrook Ringway, Birmingham, 5. Qualifications and salary are secondary to keenness, hard work and ability. Informal atmosphere in new modern offices. S9857

IMPERIAL CHEMICAL INDUSTRIES LIMITED
DYESTUFFS DIVISION
wishes to engage
ARCHITECTURAL DRAUGHTSMEN
for their Manchester Office.

Applicants should not exceed 35 years of age, hold a Higher National Certificate or Diploma and have some industrial experience.

Application forms may be obtained from Staff Department, Hexagon House, Blackley, Manchester, 9, quoting reference I/31/A. S9882

SENIOR ASSISTANT ARCHITECT required for Architect's Department of large retail department store group. Starting pay according to experience and qualifications. All workers are partners and share all profits, with good holidays, sick pay, shopping discount, subsidised meals and non-contributory pension scheme. Interesting and varied work embracing design of department stores, modern supermarkets, factories and private houses. Apply in writing giving full details, to Director of Personnel, John Lewis & Co. Ltd., Oxford Street, London, W.1. 9886

ARCHITECTURAL ASSISTANTS. Intermediate standard—for the Architect's Department of a large Property Company. Salary by arrangement. L.Vs. Apply: Hubert L. Meed, A.R.I.B.A., Artizans Group of Companies, 160, Brompton Road, S.W.3. S9888

A VACANCY exists for a SENIOR ASSISTANT in the office of Brunton, Baden Hellard & Boobyer, to eventually lead a design team under a Partner's overall control.

1. Professional qualification is necessary;
2. Experience of design, working drawings, and site supervision.

The job will involve design, working drawings, and site supervision of projects worth over £50,000 and the applicant will eventually be expected to run a job from taking Client's instructions to authorising the Final Account. When carrying out this work satisfactorily, he will be considered for Associate Partnership.

Knowledge of dry construction, interest in efficient building and management techniques is required. A minimum of five years' practical experience would seem necessary.

The salary scale envisaged is £1,400—£1,500 per annum at commencement and bonuses on office profit sharing system.

Applicant will be expected to supervise team of assistants and to encourage delegation of suitable responsibilities to those within the team.

The office is in S.E.12 and help will be given in respect of local accommodation, if required. Write with details of background or telephone LEE 0228. 9895

CROYDON. L. A. Macintosh & Haines require ASSISTANTS, Intermediate to Final standard, £700—£1,200 p.a. Five-day week, varied work and responsibility, contemporary design, good prospects in expanding practice. Telephone CRO 5780. TC9905

NEWCASTLE, NOW. Recently qualified ASSISTANT needed to take responsibility. Excellent conditions, excellent professional practice experience, sketch design to completion; College, Churches and Schools, all types including CLASP. David Brown, A.R.I.B.A., Chartered Architect, Lambton House, Lambton Road, Jesmond, Newcastle upon Tyne, 2. 9891

KEPPIE, HENDERSON & PARTNERS have vacancies for qualified and unqualified ARCHITECTURAL ASSISTANTS. Salaries in accordance with qualifications and experience. 21, Woodside Place, Glasgow, C.3. S9900

£1,600-£1,450-£1,000

ARCHITECTS and ASSISTANTS required in these grades by London private practice. Interesting work on jobs of all sizes and types, with opportunity to work with specialist groups on large projects. Non-contributory pension and Insurance scheme, and excellent new offices. J. G. L. Poulson, 15, Greycoat Place, S.W.1. Telephone: SULlivan 6308. 9892

NEWCASTLE UPON TYNE. ARCHITECTS and ASSISTANTS required for varied and interesting projects, excellent working conditions, five-day week, pension scheme, salary by arrangement in accordance with ability. Write giving details of age, training and experience to W. B. Edwards & Partners, Cathedral Buildings, Dean Street, Newcastle upon Tyne, 1 S9894

EXPERIENCED INTERMEDIATE ASSISTANTS required for all stages of various works including Public Buildings, Offices, Schools, Old People's Homes, etc. Ring WELbeck 8863. Luncheon Vouchers. Salary by arrangement, but not less than £750 per annum. S9898

DESIGN RESEARCH UNIT requires ASSISTANT ARCHITECTS. Good design sense and ability to take responsibility essential. Salary about £1,000 p.a. Write D.R.U., 37, Duke Street, W.1. S9904

ARCHITECTURAL ASSISTANT

RICHARD COSTAIN LIMITED have a vacancy for an Architectural Assistant at their new offices in Brixton, London, S.W. This company undertakes large projects in the Middle East, including housing schemes with civic and shopping centres, public buildings, hospitals and factories. Opportunities for overseas service may arise later.

Applicants, preferably aged 25-30, should be Intermediate R.I.B.A. standard. Please write or telephone stating age and giving details of experience to the:

PERSONNEL MANAGER,
RICHARD COSTAIN LIMITED,
111, WESTMINSTER BRIDGE ROAD,
London, S.E.1.
WAT 4977. 9968

NEW CO-OPERATIVE AVANTGUARD GROUP in formation.

Talented, enthusiastic, public spirited and analytically minded senior and junior architects, structresearch, competitions and practice for developing new constructive, creative concepts on hospitals, multi-storey blocks, dwellings, schools, town planning problems etc., should apply Box 9966.

INTERMEDIATE standard office trained ASSISTANT for small West End general practice. Must have three years' London experience and be able to work on own initiative under supervision of a principal. Box TC9903.

ARCHITECTURAL ASSISTANTS of Intermediate and Final standard required in our London Office. Posts are for men of initiative and salary according to experience. State and non-contributary private Pension Schemes, L.Vs, five-day week. Apply Box 9965.

NORTH LONDON. ASSISTANTS required, about R.I.B.A. Intermediate standard. Wide variety of interesting work. Five-day week. Facilities for part time day study. Apply C. E. Owen Ward, L.R.I.B.A., Midland Bank Chambers, Palmers Green, London, N.13. PAL 1186/7. 9967

FULLY Qualified and Intermediate ASSISTANTS required for interesting projects now in hand. Five-day week, Luncheon Vouchers and Pension Scheme, salary by arrangement. Gotch & Partners, 26, Regency Square, Brighton, Sussex. Phone Brighton 29381 for appointment, reverse charges. 9969

LAGOS Office of W. H. Watkins, Gray & Partners requires SENIOR ASSISTANT for responsible position. Varied and interesting work. Write giving full particulars of qualifications and experience to W. H. Watkins, Gray & Partners, 57, Catherine Place, London, S.W.1. TC9970

EDWARD D. MILLS & PARTNERS require additional staff. Opportunities for keen applicants wishing to take responsibility. Varying work including schools, churches, laboratories, industrial buildings and exhibitions. Write giving full details to 9/11 Richmond Buildings, Dean Street, London, W.1. S9973

INTERMEDIATE standard ASSISTANT required in small office for work on variety of jobs. Salary by arrangement. Write Brian Drury, A.R.I.B.A., 34 Selsdon Road, South Croydon. TC9974

KINGSTON-UPON-THAMES. ASSISTANT ARCHITECT, salary up to £1,500 per annum according to ability and qualifications, and JUNIOR ASSISTANT, salary up to £750, required in busy office. Interesting and varied work with opportunities for taking responsibility. Five-day week. Apply with full details of experience. Donaldson and Company, 75, London Road, Kingston-upon-Thames. Phone: KINgston 0751. TC9955

QUALIFIED and above INTERMEDIATE ASSISTANTS with experience and ability to assume responsibility, required at Charing Cross office. Interesting commercial and other schemes. Generous salaries. Pension and Life Assurance Scheme. Phone Riches & Blythin, WHItehall 7926. S9936

New Ideal Homesteads Limited

ARCHITECTS and ASSISTANTS

who are interested in the DESIGN, RESEARCH and DEVELOPMENT of Multi-storey projects and Contemporary Housing schemes, are urgently required by this progressive company.

SALARIES UP TO £1,650
according to experience

Apply in confidence to Chief Architect,
61 SOUTH STREET, EPSOM, SURREY.
or ring Epsom 1144

ARCHITECTS and ARCHITECTURAL ASSISTANTS

We have vacancies in the Architects' Department in LONDON & EPSOM for qualified men and those who have passed the Intermediate R. I. B. A. Examination.

These are permanent positions:

Luncheon vouchers, five day week, pension scheme.

Please write fully in confidence to the

Personnel Manager,
W. S. Atkins & Partners,
158 Victoria Street,
London, S.W.1

THE ARCHITECT AND THE ENGINEER

NORMAN & DAWBARN, Architects and Consulting Engineers, have for many years combined within one professional organisation the various design services essential to the development of complex building projects. We require ARCHITECTS and ARCHITECTURAL ASSISTANTS interested in the concept of Architect/Engineer co-operation. The present need is within the salary range of £1,200 to £1,500 but higher salaries will be considered where justified. The hours are from 9.15 to 5.30, the annual holiday is three weeks and luncheon vouchers are provided.

We have recently moved into large modern premises and completely re-equipped our offices, giving excellent working conditions and providing full scope for the integration of architectural and engineering effort. Those interested should write or telephone.

NORMAN & DAWBARN,
234-244 STOCKWELL ROAD, LONDON S.W.9.
Phone REDpost 3131

ARCHITECTURAL AND JUNIOR ARCHITECTURAL ASSISTANTS

The East Midlands Division of the National Coal Board has vacancies as follows:—

ARCHITECTURAL ASSISTANTS

(Salaries from £665—£1,275).

Commencing salary will depend on qualifications and experience within the scale of £665 by £30 to £1,000 or a range of £825 to £1,275.
Candidates should preferably be of R.I.B.A. Intermediate standard, although consideration will be given to those without this qualification who have considerable experience of the preparation of working drawings, specifications and general office routine under the supervision of a qualified Architect.

JUNIOR ARCHITECTURAL ASSISTANTS

Salary scale 84s. at 15, rising by annual increments to 228s. 6d. at age 25.
Preference will be given to those candidates with previous experience in an Architect's office.
Superannuation rights under Local Authority and certain other schemes are transferable.
Interesting, worthwhile work with the opportunity of acquiring wide experience on industrial and welfare buildings and the design of offices, laboratories, etc.
Applications, stating age and giving details of education, qualifications and experience should be made in writing to:

DIVISIONAL CHIEF STAFF OFFICER,
NATIONAL COAL BOARD,
EAST MIDLANDS DIVISION,
SHERWOOD LODGE, ARNOLD, NR. NOTTINGHAM
quoting S.V. 1156

Hospital Design

Appointment of

SENIOR ASSISTANT ARCHITECTS

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD

(Regional Architect: F. A. C. Maunder, R.S., Dip.Arch., F.R.I.B.A., A.M.T.P.I.)

The Board's programme of hospital building has again been greatly expanded and the architectural staff is being increased. The programme already includes complete new hospitals and there will be more in the years to come, as well as major reconstructions of existing hospitals.

In the first place the Board are seeking a number of SENIOR ASSISTANT ARCHITECTS who will work as members of architectural groups but will also have opportunities for individual activity. Responsibility for executive work of an increasingly advanced order will be available for officers with ability, initiative and ambition. Study and travel will be encouraged and the work of all officers will be acknowledged professionally. Candidates must be Registered Architects and should be of good graduate or professional status with some experience in architectural practice.

Salary scale: £1,350 by £60(5) to £1,650.

The posts are permanent and superannuable and subject to Whitley Council conditions of service. There are modern offices and a five-day week is normally worked.

Apply, stating age, qualifications (with dates) and experience, with names of two referees, to the Secretary, North West Metropolitan Regional Hospital Board, 40, Eastbourne Terrace, London, W.2, by 9th November, quoting reference number 992. Mr. Maunder will be pleased to answer telephone enquiries AMB 8011, Ext. 313.

Metropolitan Police

Architect and Surveyor's Department

Applications are invited for the following positions in connection with the design and erection of Police Stations, Single Men's Hostels, Police Housing and Magistrates' Courts and schemes for major alterations to various Police buildings within the Metropolitan Police District.

Leading Architectural Assistants

Salary: £1,048 per annum rising by annual increments to £1,220 per annum.
Qualifications: Inter R.I.B.A., H.N.C., or equivalent.

Architectural Assistants

Salary: £658 per annum at age 21 rising by annual increments to £1,048 per annum. (Maximum salary on entry £960 per annum at age 28 or over).
Qualifications: Inter R.I.B.A., O.N.C., or equivalent,

J. INNES ELLIOTT, B.ARCH., F.R.I.B.A.
Chief Architect and Surveyor.

Apply, giving details of training and experience, to:
Chief Clerk, Architect & Surveyor's Department, Office of the Receiver for the Metropolitan Police District, Tintagel House, Albert Embankment, S.E.1.

ASSISTANT ARCHITECT

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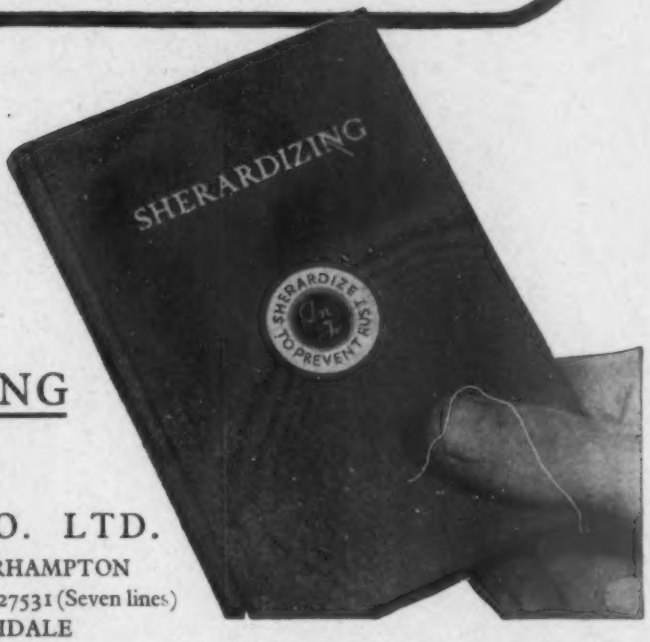

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