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

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Major Buildings described: Details of Planning, Construction, Finishes and Costs Buildings in the News Building Costs Analysed

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

AAI ABS ABT ACGB

Architectural Association, 34/6, Bedford Square, W.C.1. Museum 0974
Association of Art Institutions. Secy.: W. Marlborough Whitehead, "Dyneley,"
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Architects' Benevolent Society. 66, Portland Place, W.1.
Association of Building Technicians. 1, Ashley Place, S.W.1.
Arts Council of Great Britain. 4, St. James' Square, S.W.1.
Architectural Students' Association. 33, Grosvenor Street, W.1.
Architectural Students' Association. 34/36, Bedford Square, W.C.1.
Architects' Registration Council. 68, Portland Place, W.1.
Langham 8738
Langham 5721
Building Apprenticeship and Training Council. Lambeth Bridge House, S.E.I.

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British Colour Council. 13, Portman Square, W.1. Welbeck 4185
British Cast Concrete Federation. 105, Uxbridge Road, Ealing, W.5. Ealing 9621
British Cast Iron Research Association. Alvechurch, Birmingham. Redditch 716
British Door Association. 10, The Boltons, S.W.10. Fremantle 8494
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Building Industries National Council. 11, Weymouth Street, W.1. Langham 2785
Board of Trade. Whitehall Gardens, Horseguards Avenue, Whitehall, S.W.1.
Trafalgar 8855 BID BINC BOT

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Building Research Station. Bucknalls Lane, Watford
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Civic Centre, Newport, Mon.
County Architects' Society. C/o F. R. Steele, F.R.I.B.A.,
County Hall Chichester. Chichester 3001 BRS BSA BSI BTE CABAS

CAS

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Reliance 7611 Design and Industries Association. 13, Suffolk Street, S.W.1. White Department of Overseas Trade. Horseguards Avenue, Whitehall, S.W.1. Whitehall 0540 Trafalgar 8855

EJMA English Joinery Manufacturers' Association (Incorporated). Sackville House, 40, Piccadilly, W.1. Regent 4448

**EPNS** FAS FASS

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English Johlery Manufacturers Association (Incorporated). Sakwhire House, 40, Piccadilly, W.1. Regent 4448 English Place-Name Society. 7, Selwyn Gardens, Cambridge. Faculty of Architects and Surveyors. 68, Gloucester Place, W.1. Welbeck 9966 Federation of Association of Specialists and Sub-Contractors, Artillery House, Artillery Row, S.W.1. Abbey 7232 Fibre Building Board Development Organization, Ltd. 47, Princes Gate, Kensington, S.W.7. Kensington, S.W.7. Kensington, S.W.7. Kensington, S.W.7. Kensington 4577 Federation of British Industries. 21. Tothill Street, S.W.1. Whitehall 6711 Regent 021 Federation of Coated Macadam Industries. 37, Chester Square, S.W.1. Sloane 1002 The Flush Door Manufacturers Association Ltd., Trowell, Nottingham. Ilkeston 623 Friends of the Lake District. Pennington House, nr. Ulverston, Lancs. Ulverston 201 Federation of Master Builders. 26, Great Ormond Street, Holborn, W.C.1. Chancery 7583 The Federation of Painting Contractors, St. Stephen's House, S.W.1. Whitehall 3902 Federation of Registered House Builders. 82, New Cavendish Street, W.1. Langham 4341 FBI FC FCMI FDMA **FMB** 

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Sloane 5615 ICA ICE Institute of Contemporary Arts. 17-18, Dover Street, Piccadilly, W.1. Grosvenor 6186
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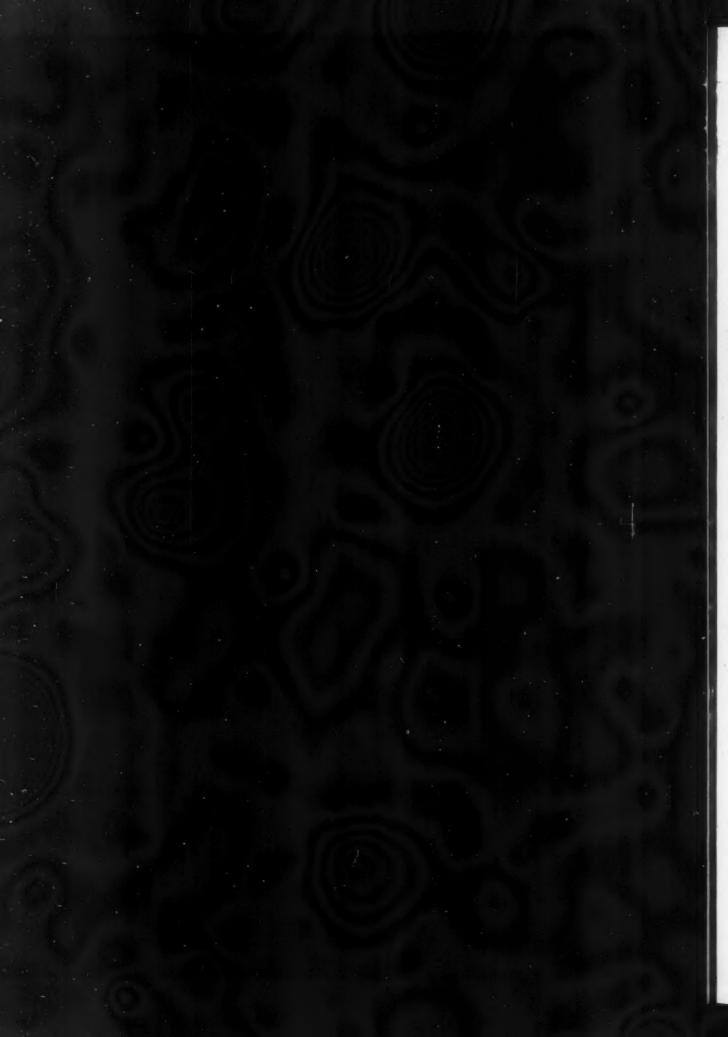
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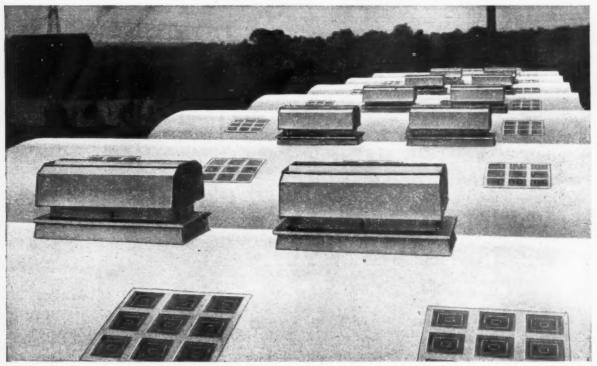




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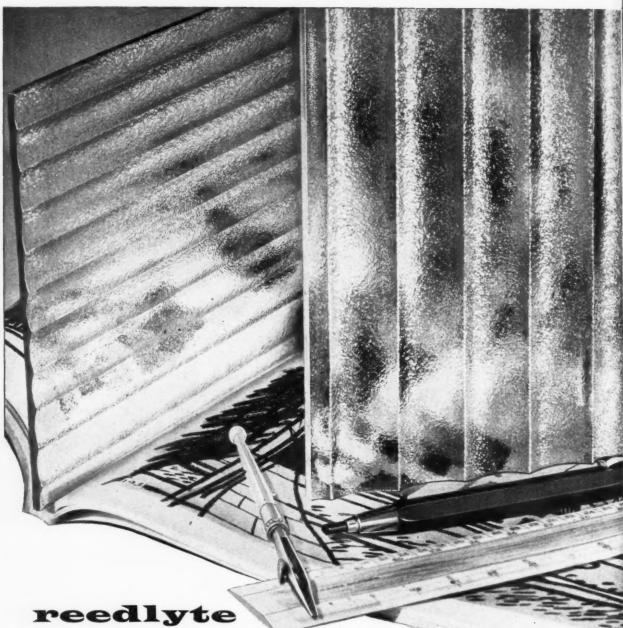


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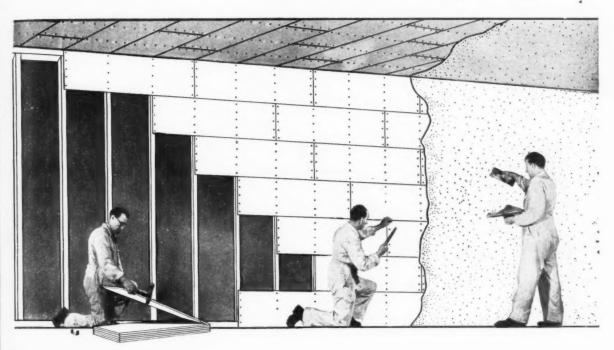


Fig. 1.

Diagrammatic representation of the correct application of GYPROC Lath

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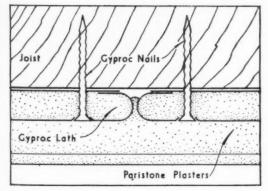


Fig. 2.

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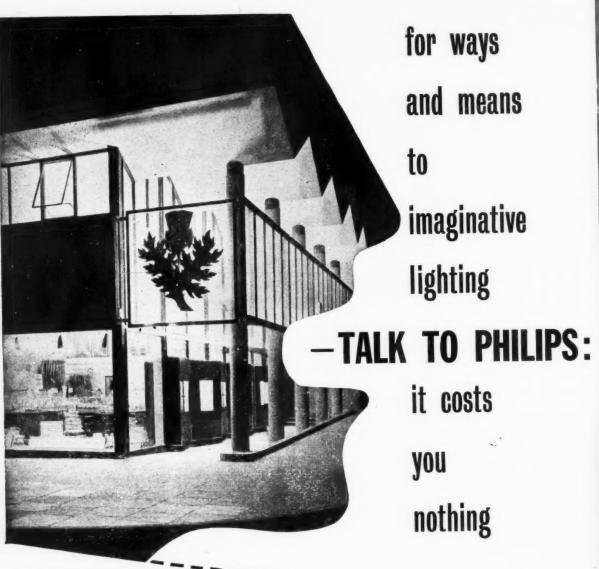
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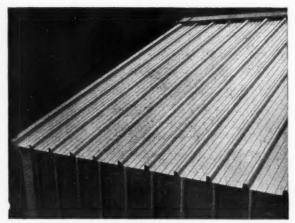


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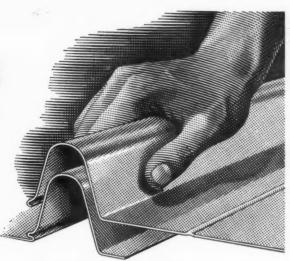
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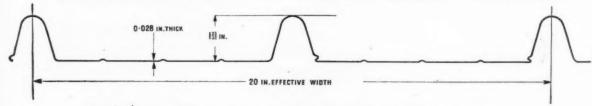
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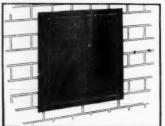




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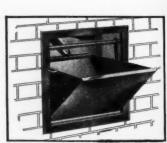


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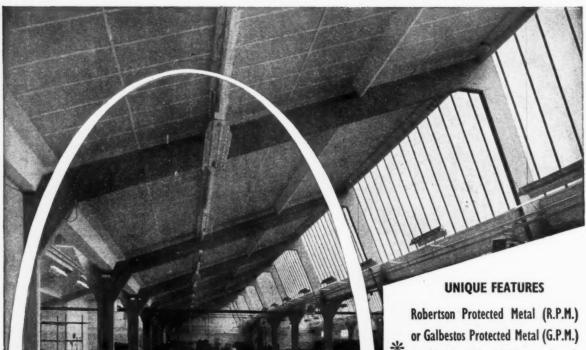
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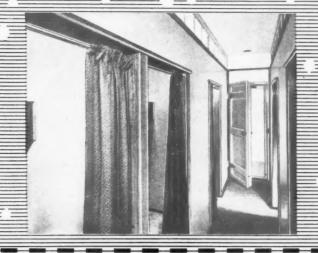
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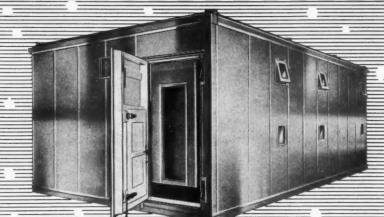
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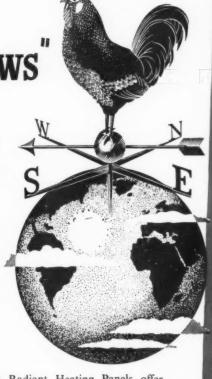
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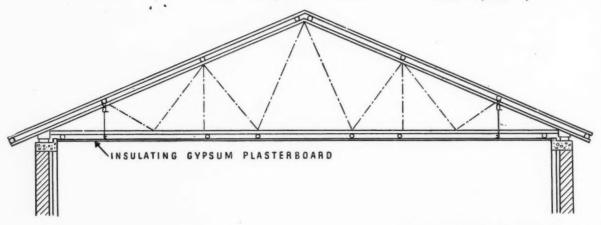
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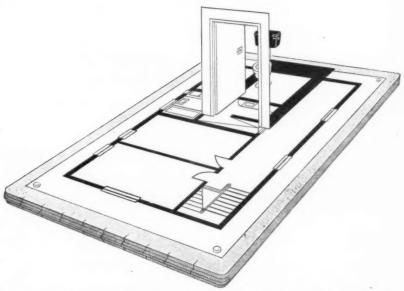
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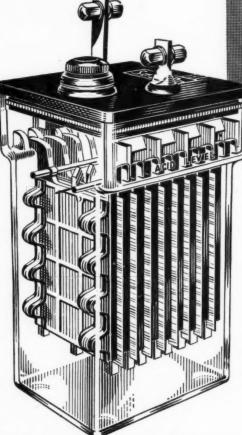
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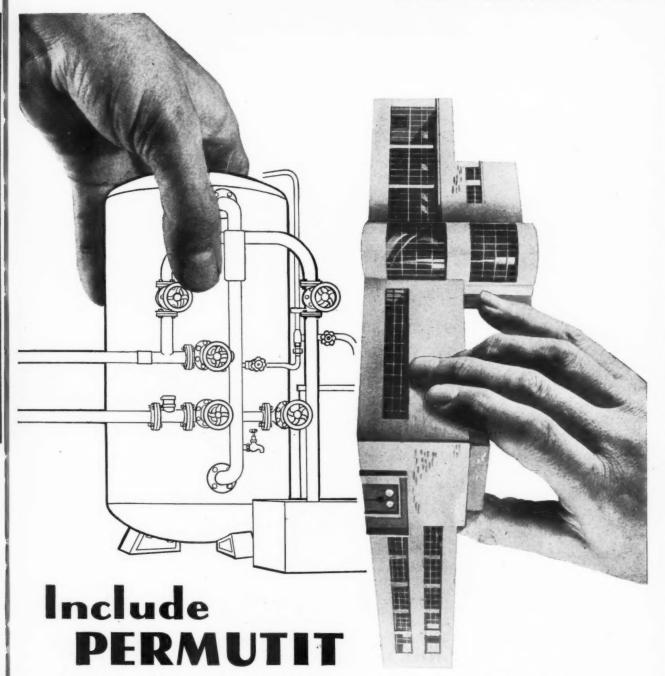
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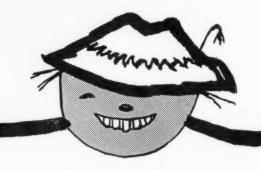
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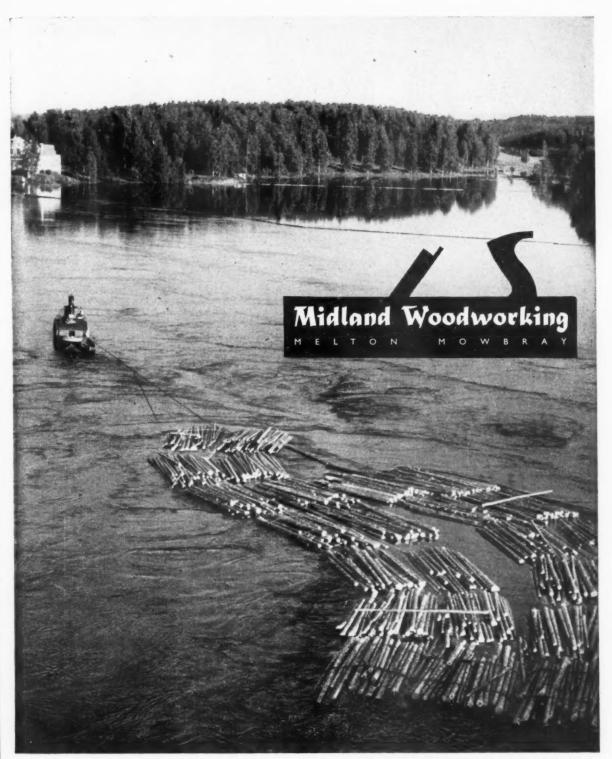




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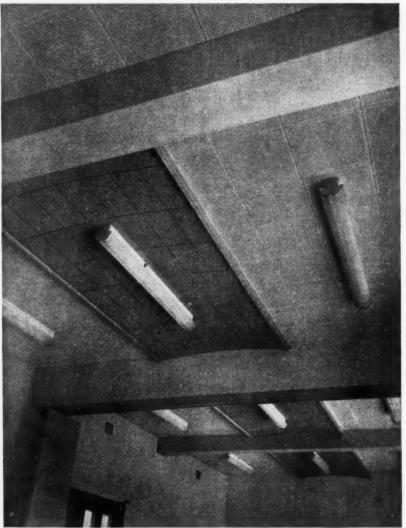
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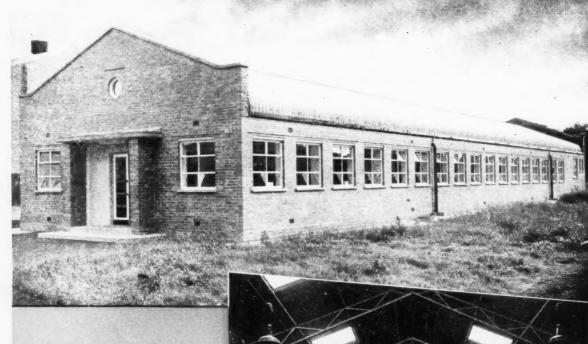
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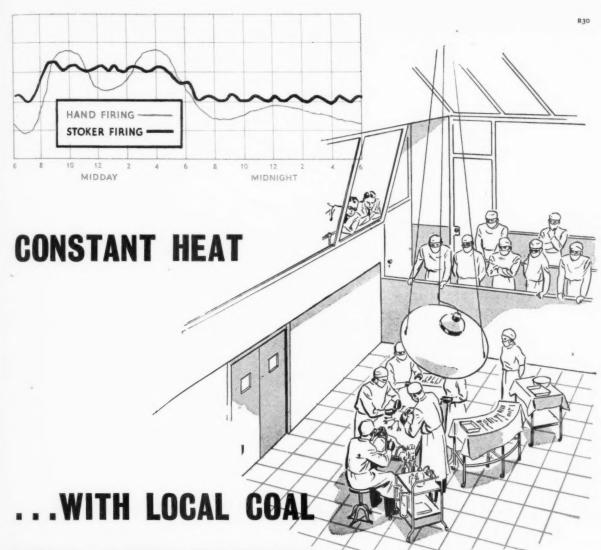
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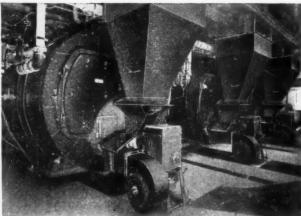
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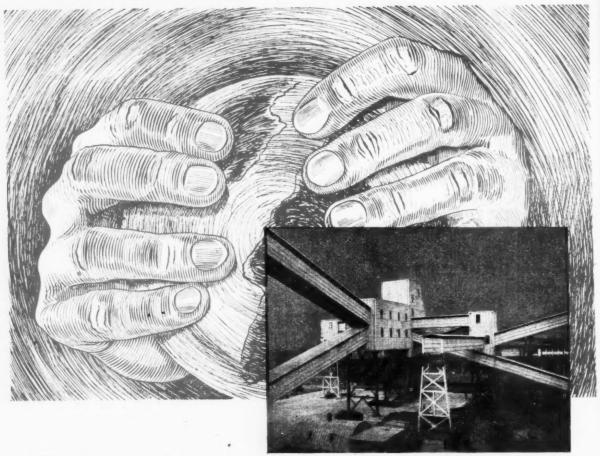
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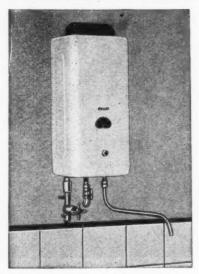
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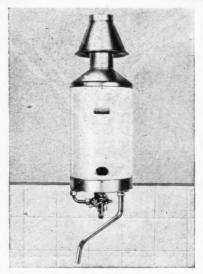
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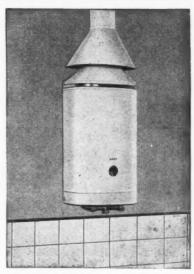
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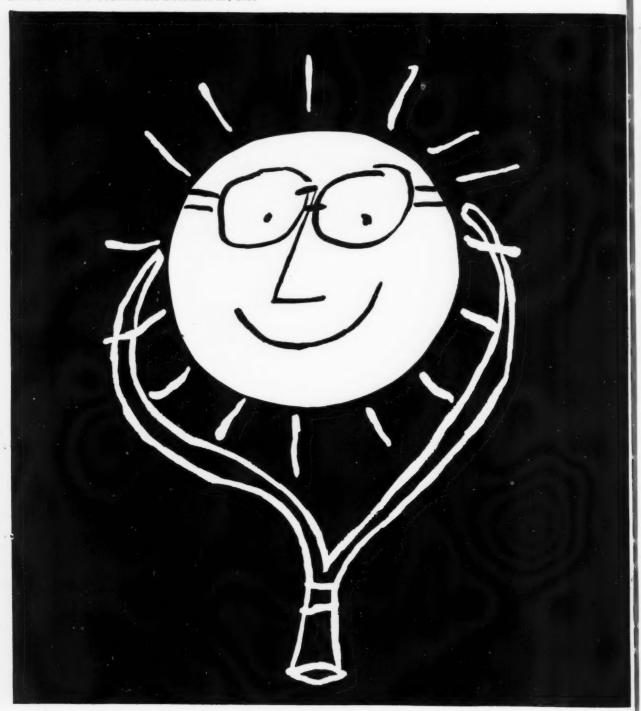
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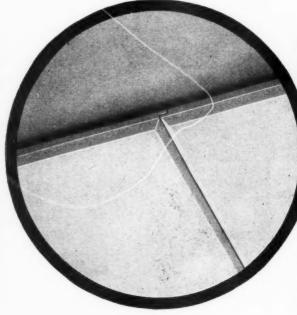
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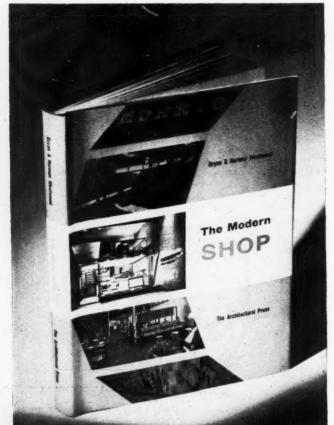
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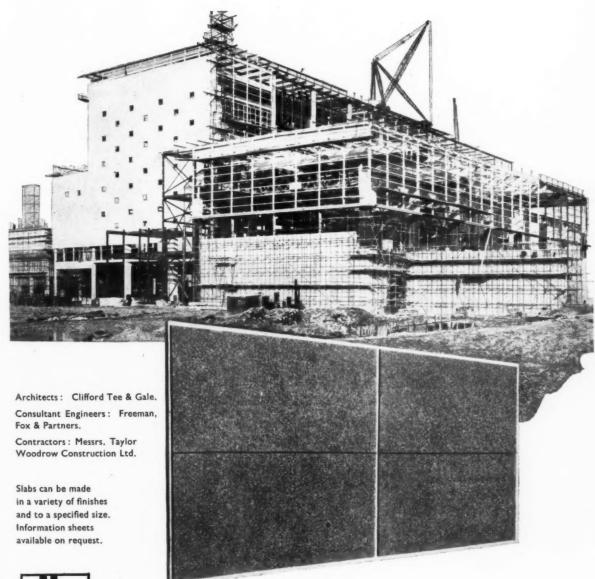
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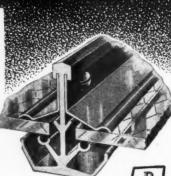
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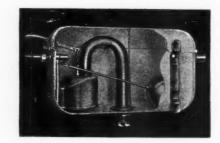
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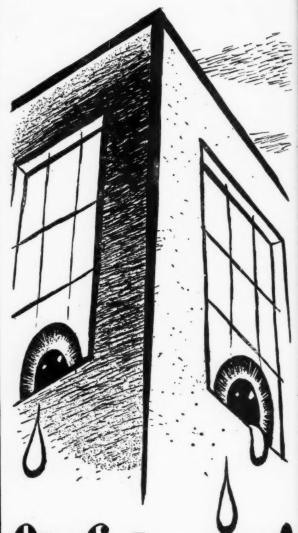


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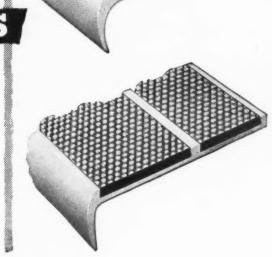
### You asked for these . . .

# New, first-time-ever

NOSING



Here is news! In addition to their famous aluminium nosing, Ferodo Limited can now supply Stairtreads in two new, attractive metals—silver bronze and manganese bronze. Both are available in a wide range of sections, and, of course, with any of the seven Ferodo moulded tread colours, plus brown fabric! Whatever the mood of your interior design there must be a Ferodo Stairtread that will blend in with the colour scheme.



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### Plan for Linoleum for good looks and long life

Linoleum has this happy knack: it creates an atmosphere of quiet luxury far beyond its modest cost. This delightful example of linoleum-in-action at the White House—a block of residential flats in Regents Park, London—clearly has the 'million-air', yet no flooring is so reasonable in initial cost, so economical to maintain, so investment-wise in terms of long life and resistance to wear. And certainly no other flooring puts such a vast range of colour and such scope for personal just patterns at the architect's command.

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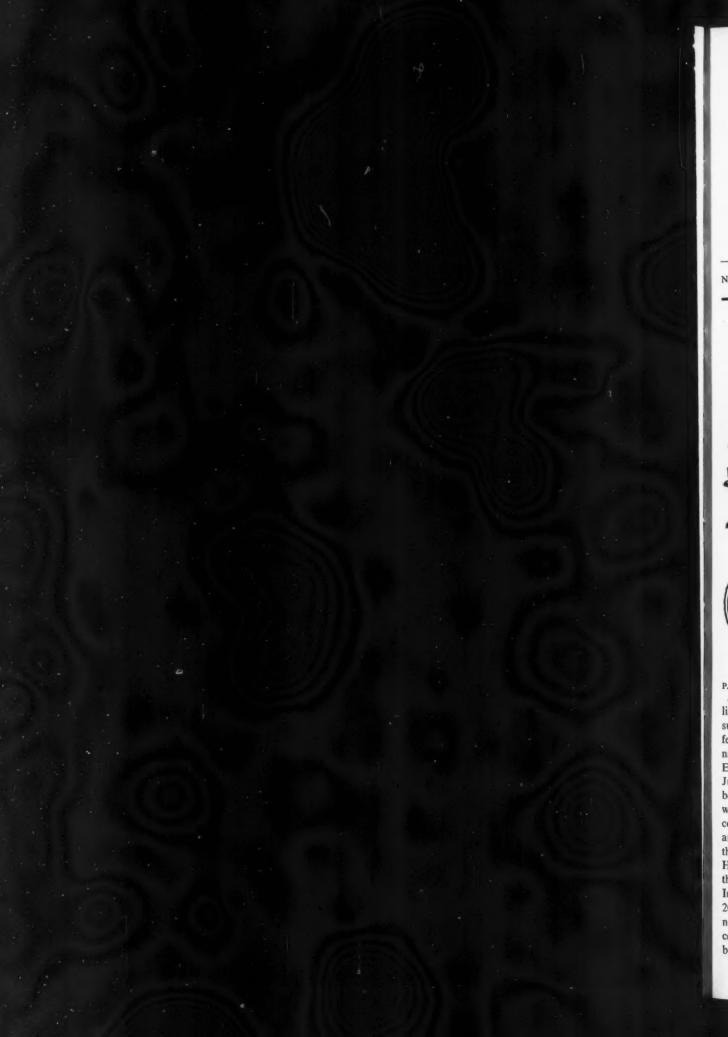




"THELMA" stands for The Linoleum Manufacturers' Association, 127 Victoria Street, London. S.W. I For further information write to the Association or to any of the following members:—

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

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PARIS IN JUNE

ASTRAGAL, who at this time of year likes being forced to think about next summer, went willingly to a Press conference in aid of the second International Building and Public Works Exhibition to be held in Paris next June. The first, as readers may remember, was held in Paris last June and was mainly remarkable for the almost complete absence of the English. As an Exhibition it is a cross between the Building Exhibition and the Ideal Home, for it differs from the first of these in being directed equally at the Industry and at the general public. 200,000 rolled up last year—which was not bad for a first venture—and 94 per cent. of the stand holders have already booked space for next time.

Paradoxically enough, at the very moment when the English are taking to high flats, the French are going for the suburban villa, and it is this distressing turn in French affairs which settles the character of the show. Though doubtless we are as good at making a suburbia as any nation, the fact remains that this grisly feat does not show our technical knowledge at its best. This does not altogether excusè our absence, however, for part of the next Exhibition is to be devoted to prefabricated houses for the tropics. However thankful we may be that we haven't got to live in our own prefabricated houses, they are still the best in the world and we are still the largest exporters. It would be a pity if we were to lose this market through failure to turn up at Paris in force.

A small note for the organizers of our own Building Exhibition: the stands are arranged by trade headings, so that when you want to see all the plumbing exhibits you haven't got to walk three miles and still miss half of them.

THE SOUTH AMERICAN WAY

"Latin America has developed certain features which are well worth the emulation, at least, of architects in other parts of the world. Henceforth it will be as desirable for architects to keep informed of developments there as in Europe or the United States." So said Henry-Russell Hitchcock at the RSA recently, and our thanks should go to that body for giving him an opportunity to keep us informed, and for realizing that his eye-witness knowledge of South America is an almost unexploited vein of Hitchcockian richness.

It was a characteristically forceful and

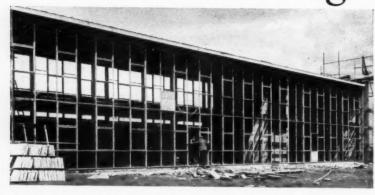
well-informed Hitchcock talk, with a sense of the variety of climate, social structure and political orientations which underlies the flourishing local variations which the modern movement sprouted in that "continent and a half." His detailed knowledge of local tendencies and practices, however, extended not only to forgotten men and little-known buildings, but also to such observations as that in Mexico things "are generally badly built" while in Bogota buildings are "beautifully finished," and construction is extremely sound—the kind of information that, as he said, photographs never give.

He also underlined the contribution of the concrete engineers like Delpini, in Argentina, and Felix Candela, whose work is not only extraordinarily bold and original, but also an exception to his observations about the badness of Mexican construction work. As also, indeed, is the work of Barragan, landscaper of the fabulous Jardines del Pedregal suburb outside Mexico City, whose own house, Professor Hitchcock observed, has workmanship such as "a Webb or Voysey might have appreciated," followed by the cryptic observation that "Barragan speaks no English."

SUBTOPIARY

After recommending the Sunday Times articles describing the fortunes of the Joneses in their attempts to build a house, ASTRAGAL was disappointed when he saw the final article in the series of eight on the planning of the garden. It contained a layout plan for the planting which is shown on page 861. The house was most sensitively designed by an anonymous architect

# WINDOGRID Curtain Walling



BRANDHALL COUNTY PRIMARY SCHOOL, OLDBURY



L. C. Lomas, F.R.I.B.A.
County Architect for Worcestershire

ANOTHER SCHOOL WHERE THE ENTIRE FAÇADE OVER 100 FT. LONG IS CLOTHED IN HOPE'S WINDOGRID. INSULATING PANELS WILL MASK THE FLOOR LINE, GIVING A PATTERNED SURFACE TO THE WHOLE ELEVATION

Send for List 295

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who produced a moderately contemporary design of traditional construction which was obviously shrewdly aimed to please the more forward-thinking of the *Sunday Times*' readers (indeed, he is the only professional consultant in the series who seems to have escaped criticism in the correspondence columns). After articles describing legal, financial, furnishing and decorating problems, a gardening consultant, again anonymous, was called in.

His plan is largely subtopian. The symmetrical, yew-flanked front lawn (spoilt as a lawn by having ridiculous flower beds bitten out of it) is formally placed before an asymmetric house. At the back of the house, the mere fifty-five foot garden is cut in half by a fence of cordon fruit trees, thus spoiling the long view from the living room which should contrast with the enclosed court-yard view. And the details—archway, bird bath, crazy paving, flower-edged car-entry—are pathetic.

Worse is the banishment of frame, vegetables and fruit bushes to the bottom of the garden. They are as unsightly, presumably, as the husband in his shirtsleeves, and therefore need to be banned. ASTRAGAL feels strongly about this particular article because the British are supposed to be good gardeners, and recent publications—such as Shepheard's *Modern Gardens* are undoubtedly influencing garden design for the better.

#### MASTERPIECES FOR LIVING IN

Browsing through recent American architectural journals, ASTRAGAL came across yet another good house by Marcel Breuer, but what caught his eye was not so much the excellence of the house as a note about the clients. I quote it:

"This is the owner's third house, not including one designed for them by Frank Lloyd Wright, but not built. Since they were quite happy that the house they had, and their requirements, had not changed, Mr. Bréuer naturally asked them why they wanted to build another house. They answered, quite simply, that they admired his architecture so much they wanted the experience of living in a house of his design."

This attitude towards domestic architecture as an art is a very American

one. ASTRAGAL recalls the story told by an English architect who visited one of Frank Lloyd Wright's best post-war houses near Minneapolis. "We asked Mr. Wright to build us a house over ten years ago," said the client. "We were quite settled in another house by that time but when he wrote to us saying he could now undertake the job we just had to build it. You never know, it might have been his last and we should never have forgiven ourselves."

#### GUNGA DIN II

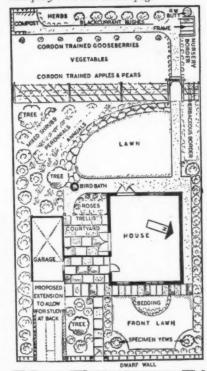
Flying like a Dutchman from Far East to far West and back again, the inestimable Robert Fitzmaurice visited England for a few days recently. Although still advising on building affairs, Fitz is now also an authority on solar energy-hence his visit west, to Phœnix, Arizona, where the recent conference on this subject was held, and at which he read a paper. Fitz's contribution was on the distillation of potable water from salt water. He has designed and perfected a solar still which will produce 1,000 US gallons of drinking water for one dollarsurely a remarkable achievement.

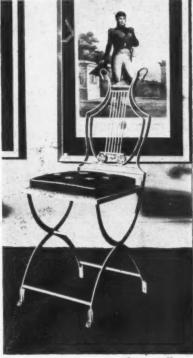
So architects whose projects for development in the more arid—if oily—areas of the world are limited by a water shortage can now take hope. For a low capital cost, provided an ocean is to hand, their clients need no longer bathe in milk.

Fitzmaurice, you may recall, now lives in Cyprus, which he finds conveniently central, and with the advantages of good sailing (in a glass-fibre dinghy), warm bathing, and a good local wine at 3s. 6d. a gallon. When questioned about the events which headline our newspapers, Fitz was quite unperturbed. If he had noticed them he was quite unimpressed. As one would expect from such an unaffected, simple, courteous man, he finds the Cypriots charming and helpful. Who would be otherwise to Fitz?

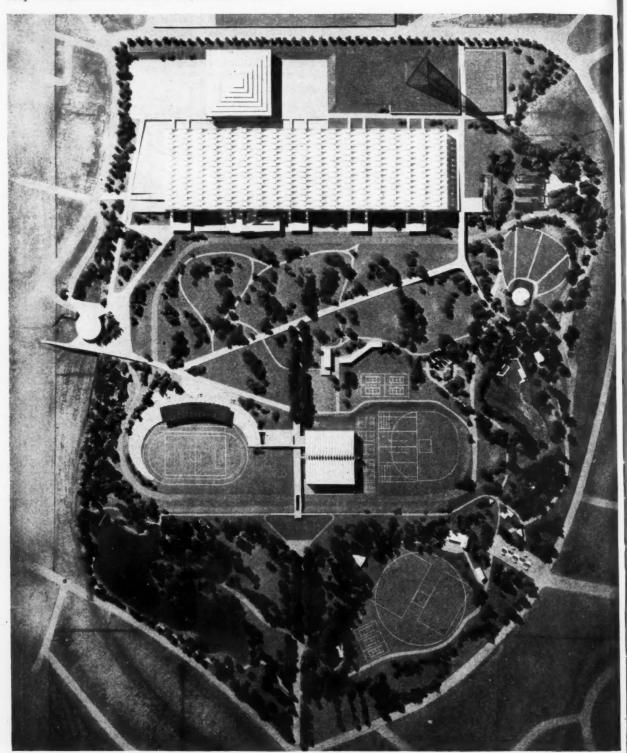
#### BIRD OUTRAGE

Attempts to encourage the planting of mixed woodlands, rather than monotonous fir plantations, on aesthetic grounds, have not met with much sucSubtopiary: see note on this page.





Two or three weeks ago Astragal visited the exhibition Elegances Militaires, and commented, among other things, on the admirable Napoleonic camp-chairs which furnished the Redfern Gallery for the occasion. Here, for the record, is one of these pioneer pieces of metal furniture seen against the background of a typical exhibit. The way in which the design of the chair combines featherweight functional form with adequate military symbolism should teach us a lesson two about demountable ceremonial structures.



### National Exhibition Centre

The LCC has approved, in principle, the building of a £7m. national exhibition centre near the proposed sports centre on the Crystal Palace site, Sydenham. There will be two main buildings: a simple square structure which will be used for "more intimate" exhibitions, and a large hall (705,000 sq. ft.), which can be seen in this picture between the small hall and the sports stadium. The white circle on the right of the model is an amphitheatre, the one on the left is a railway station. The scheme will be illustrated and described in next week's JOURNAL. (Architect to the Council: Dr. J. L. Martin; deputy architect, F. G. West; assistant architects, N. W. Engleback, B. G. Jones and M. J. Attenborough.)

The Editors

RESOLUTION FOR 1956

cess—but then the pleas of aesthetes rarely do. ASTRAGAL, having read the latest King Penguin,\* has spotted the topic which would fill with enraged appeals for mixed planting every correspondence column from the Naturalist via Country Life to The Times. The fact is that birds don't like large fir woods. That surely is a consideration which should rank higher than mere economic needs for pit-props and softwood.



ASTRAGAL suspects, however, that the reason this book has been sent to him for review is because it contains a number of coloured illustrations of woodland birds by architect Peter Shepheard. The originals were on view at a recent AA reception, and it is comforting to find that, despite the low price, relatively little has been lost in the process of reproduction. Peter Shepheard's



paintings reproduce rather better, in fact, than even John Gould's plates which appeared, much reduced, in the companion volume *Garden Birds*. The accompanying text, by Phyllis Barclay Smith, is adequately informative and written in a sweetly naïve style. For instance: "Moulting is a serious business for a bird . . ."

**ASTRAGAL** 

MASTER Plan for the whole country, its regions, cities, towns, villages and rural areas is necessary for the satisfactory continuance of statutory development planning." Thus Sir Patrick Abercrombie concluded his paper to the TPI on December 8 which was titled: "Where does Planning Stand Today." His paper will be published in the JOURNAL shortly. It forms, together with Paul Brenikov's article on the recent National Conference of the TCPA. published this week, a most critical and stimulating appraisal of the present day position of planning and of its prospects. The hub of all planning controversies today would seem to be the motor car. (That is, if one accepts an expanding economy.) It is reasonable to speculate what, with present trends, the conditions in town centres will be like at peak hours when the bulk of the population possess cars. Will we be tearing down blocks in central areas to provide car parks? Will we be building super markets in the outer suburbs to cater for car-driving shoppers? And will the ambition of every wage-earning family-man be a small, detached, American-style, two-bedroom house with a car-port? Will this country, through the expediency of having to marshal millions of cars along low-grade roads, have succumbed entirely to the American standards of car-ridden subtopia, of which we already have more than a fore-taste?

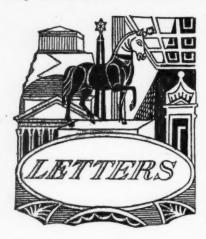
What is the policy of the Ministries of Local Government and Transport? Are they hoping that when conditions get too bad the forebearing British will leave their cars at home and use public transport to work? Do they hope that the present wage-earner in central areas will never learn to expect the suburban pleasures which the middle-class now enjoy, but will instead move one jump ahead and acquire the sophisticated taste for truly urban living now the delight of some of the wealthy? There is a most enjoyable job for some of the Ministries research workers, if they are still employed, to plot the various trends of demand in a nation with a rising standard of living and show what, in terms of roads, decentralisation (or the reverse) housing accommodation, and scope for industrial expansion the country will need in the next decade. We all know that too many people are chasing too little land. Those who have read the Architectural Press' book, Outrage, know what the consequential dangers are. What we need from the Ministries is an assurance that they are all working to a master plan. This may mean green belts, but it does not mean commuting from the farther side of them. It may mean moving industry out of the London region, as well as out of London, and getting the BOT and the LCC to work together to achieve it, of which co-operation there is not enough evidence. It means a national policy for planning. The surveys and development plans have largely been submitted. Could not the government and ministerial resolution for 1956

be a master plan for this country.

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re on

\* Woodland Birds by Phyllis Barclay Smith, 16 plates by Peter Shepherad. Penguin Books, 5s. 8d.



H. Osborn, A.M.I.C.E., A.M.I.Struct.E.

H. L. Waterman, A.M.I.Struct.E.

W. A. Henderson, A.R.I.B.A.

J. M. Berry-Clarke

Reyner Banham, B.A.

L. Massey, A.R.I.B.A.

#### Steel Misused

Sir,—May I congratulate you on your timely leader in the AJ for December 8 on "The Misuse of Steel."

The wastage of steel throughout the country, due to construction of many buildings in steelwork, where reinforced concrete would have been equally suitable, must run

to many thousands of tons and makes Mr. Butler's attempt at saving metal by taxing pots and pans look rather silly.

On October 27 I wrote to the Minister of Works suggesting that he convene a meeting of all the professional and commercial bodies concerned in building relating to steel, to tackle this problem of wastage and shortage and to advise the industry, through the represented bodies on the committee, how to make substantial economies in steel used for home consumption. Every ton of steel saved at home means an extra ton for export to pay our way in the world.

The reply I received to my suggestion was to the effect . . . "that it is considered, in the circumstances, that it would be inopportune to adopt it at the present time.

May I suggest that if the Minister is not prepared to give the lead, those interested in this vital matter should organize themselves to tackle it with all haste, to assist the national economy and alleviate the uncer-tainty in the industry due to shortage of steel.

H. OSBORN.

Kent.

SIR,—May I be permitted, as a practising engineer not in the pay of the "handful of steel masters," to disagree with your assertion that structural steelwork is neither cheaper nor quicker to build than structural concrete? The problem of economy facing architects and engineers is threefold:

1. Cost. Speed.

3. Materials.

And the answer rarely satisfies all three.

1. The cost of the framework will depend on: (a) The grid chosen; and (b) fire protection regulations.

In the case of (a) the larger the grid the more favourable becomes the use of steel-work, owing to the smaller sizes necessary of sections and hence, for given headroom clearance the lower in height, and the cheaper will be the building.

(b) Office buildings today, depending on their size, need only a half hour or one hour resistance, and only hollow protection to the steel is needed, which is cheaper than solid casing or structural concrete.

2. By a little forethought and advance order of the steelwork before the main contractor is appointed, it is usually possible to arrange delivery and erection of the frame when required. There is no disputing the fact that when the steel arrives on site. its erection is vastly quicker than structural concrete, provided the steel is not afterwards solidly cased in concrete.

3. Provided the first two criteria are satisfied, the architect and engineer are not faced today with artificial restrictions on the use of steel that existed formerly. These restric-tions resulted in many ingenious but shockingly uneconomic structures simply to overcome the steel shortage.

I think the real reason is one of those that you suggested, namely too much building, and in perhaps six months time when the measures to restrict credit start to show effect, there will probably be a considerable

H. L. WATERMAN.

Surrey.

[The fundamental point of our argument is that by using structural concrete in place of structural steelwork, at least twice as many multi-storey buildings can be made, for the same amount of steel, without any increase in cost or in time taken to complete the buildings. Obviously it is quicker to erect a steel framework of beams and columns, but even if no concrete casing is required, a considerable amount of work is still necessary before the building is finished. In structural concrete the building carcass is usually completed floor by floor, and the finishing trades are able to follow up more The suggestion that given a large enough grid the structural depth required for steelwork is more favourable than concrete, ignores completely the possibilities of using beamless floors or prestressing. We in of the handful of steel masters." What we would suggest, however, is that comparative analysis of alternative designs in structural steelwork and structural concrete for office buildings would soon reveal which was the best material to use; the steel masters should then arrange their programme accordingly.

#### No Atomic Secrets

SIR,-In commenting on some of those present at the Architects' Benevolent Society's Ball, the Daily Mail mentioned me as "a man whose mind is full of atomic power-station secrets.'

This statement is entirely untrue and can only have arisen from a brief visit to some of the atomic establishments which I made on behalf of the Architects' Journal order to write some general notes on the building problems and visual results. I should therefore be grateful if you could

print this letter in fairness both to those architects and engineers of A.E.A., C.E.A. and M.O.W. who can in fact claim expert knowledge in this field, and also in fairness to myself who most certainly does not.

W. A. HENDERSON.

London.

#### Why Pots At Potters Bar?

SIR,—I should like to make the following comments about the B.T.C.'s new station at Potters Bar, which you published on December 8.

To me the whole is reasonably pleasing,

but why put the plant pots in such a busy vicinity? They'll get biffed in no time. One other point please; that balustrade, what monotony—if so much advertisement is required would it not have been better to group the units into a single entity?

J. M. BERRY-CLARKE.

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Middlesex.

#### A Reply To Llewellyn Davies

SIR,-Though I am not an architect, I hope Llewellyn Davies will not mind if I ventifew thoughts on Mondriaan and architecture in reply to his letter chipping ASTRAGAL for his comments on Leslie Martin's broadcast.

He is right, of course, to refer Mondriaan back to the classical tradition—and that is precisely why one feels uneasy about setting up those prim rectangular compositions as models for contemporary architecture. There can be no doubt that Avant-garde architecture in this century has been heavily coloured by the classicist, Beaux-Arts tradition, but one should remember that the relationship between the new architecture and the old is rather equivocal. Let us simply recall that the architect who owes most to the Beaux-Arts, Le Corbusier, has been making reversed V-signs at Vignola all his life, and is still at it.

Classicism is indeed a discipline which supports the architect—but it supports him like a hangman's noose, round the neck. Mies's ability to go on breathing comes largely from his structural interests, which come, of course, from the anti-Classical, engineering

traditions of the Polytechnics and the great German Technical High-Schools. Classicism, like Romanticism and neo-Gothicism and the New Empiricism, is a backward-facing discipline, whereas we seek in architecture a mental discipline which shall at least be abreast of the main progressive branches of contemporary thought. These branches seem, at the moment, to be These branches seem, at the moment, to be taking a profoundly anti-classical turn, to reject perfected special cases (e.g. regular Euclidian geometry) however perfect and logical, and to prefer more general systems (e.g. topology) even if they cannot be employed with Euclidian tidiness.

Mr. Davies himself has contributed greatly to the introduction of this kind of allembracing mental discipline into architecture, and we owe him a debt of gratitude for having replaced the classical picture of circulation in hospitals as consisting of ideal ladies with lamps moving efficiently from ward to office, from office to operating theatre, etc., with a far more humane picture which includes errands so embarrassing that investigators were fobbed off with the

that investigators were robbed off with the story "going for a cup of tea."

But if this humane, statistical and essentially twentieth-century concept of function in buildings is to be tricked out in an aesthetic which has been dead since Sir John Soane, then the Davies connection are no better than Big Business neo-Georgians.
Whatever one thinks of the New Brutalists as architects, their performance as baro-meters of the climate of ideas is impeccable, and they have not designed a Miesian nor Mondriaanesque building since Hunstanton. Under the circumstances, the dead calm which followed ASTRAGAL'S pertinent enquiry might have been the silence of assent or might, at least, indicate that the Fitz-roy Street boys' belief that objectivity is rectangular has been shaken by recent polemics.

#### How To Stop Poaching

REYNER BANHAM.

SIR,-Perhaps if some of the overworked private architects gave some practical assistance to the young architect with bona fide intentions of establishing himself in practice the number of poached commissions would My own experience as a young private practitioner is that only three per cent. of architects who qualify each year have any hope of establishing themselves in their own practice. This fact is due to:

1. Established practitioners being reluctant

to sub-let commissions or even to recom-

mend a young architect when they themselves are overworked.

2. A rigid Code of Professional Conduct which makes it extremely difficult for the young architect to become known.

3. Little or no help from the RIBA or ellical societies.

allied societies.

4. Too few competitions.

No wonder the aspiring practitioner attempts practice in the security of other employment. Very few will risk themselves and their families in the hazardous undertaking of setting up practice on their own

L. MASSEY.

Manchester.

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#### MOHLG

#### Changes in Slum Clearance Compensation

Duncan Sandys, Minister of Housing and Local Government, has asked housing authorities in England and Wales to ensure that nothing is done, before legislation is enacted, to prevent or prejudice claims by people who might otherwise be entitled to benefit from the improved rates of slum clearance compensation which he foreshadowed in the House of Commons.

A new building for the BBC which is to be built next to Broadcasting House by the Prudential Assurance Co. Ltd. The architect is H. Fitzroy Robinson and the consultant is Sir Howard Robertson. The site for the new building was let to the BBC by the Prudential and is being leased by the BBC for a long term. The building, which was recently approved by the Royal Fine Arts Commission, will be used primarily to house administration

In his statement in the House, the Minister said that some action must be taken to mitigate the acute hardship which is inflicted in a limited number of slum clearance cases. He intended to introduce a Slum Clearance He intended to introduce a Slum Clearance Compensation Bill to effect certain changes in the existing terms of compensation. In a circular the Minister now directs housing authorities' attention to the period between his announcement and the day on which the Bill reaches the Statute Book.

The circular says, "Before any property likely to be affected by these proposals is demolished, steps should be taken to ensure that all necessary particulars are recorded to

that all necessary particulars are recorded to enable compensation to be assessed on the

Those who will benefit under the forth-coming Bill are:—

1. The owner-occupier who is today living in a slum house which he bought since the outbreak of war, and which is compulsorily purchased (or cleared or demolished).

2. The occupier (owner or tenant) of a small shop or business which forms part of a slum house.

3. The owner or tenant of a slum house which he has kept in good repair.

#### ABS

#### Successful Ball

The ABS Ball, which was held this month at Grosvenor House, was a great financial success as well as a social success. It is expected that the proceeds will reach £3,500,

#### BROWSERS INVITED

A reading room is provided by the JOURNAL'S publishers, The Architectural Press, in their house at 9, Queen Anne's Gate, S.W.1. The current list of the firm's publications which may be seen there includes books by or about Le Corbusier, Sigfried Giedion, Walter Gropius, Howard Robertson, Frederick Gibberd, F. R. S. Yorke, Alvar Aalto, J. M. Richards, John Piper, C. C. Handisyde and Peter Shepheard. These, and many others, together with Information Sheets, Working Details and back numbers of the JOURNAL and the Architectural Review may be browsed through in comfort. The room is open from Monday to Friday in office hours.

#### ARCUK

#### What You Mustn't Do

May an architect appear in a commercial television advertisement to say how satisfied he is with the advertiser's building materials? The answer, given recently by the professional purposes committee of ARCUK, is that he may not. An advertiser who asked for ARCUK's ruling has been told that "the Code of Conduct expressly prohibits an architect from recommending specific building materials in advertisement,"

#### LECTURES

#### For Boys and Girls

William Allen will be giving three Christmas holiday lectures for children at the RIBA, 66, Portland Place, W.1, in the new year. The first, on Monday, January 2, will be on "Materials for Building." The second lecture, "The Shape of Buildings," which will be given on January 4, will be followed by one on January 6 called "Light, Sound and Colour." Admission to all lectures, which will be given at 3 p.m., will be free, but by ticket only.

#### SIA

#### Architectural Design Section Formed

The Society of Industrial Artists, which was formed twenty-five years ago, has just changed its rules of entry.

In the past there have been two selection

committees—one for industrial design and the other for commercial design. These two committees have met at irregular intervals, depending upon the number of applications for admission.

Now, because of the growth of the Society and the wider fields of practice covered by its members, five main sections have been instituted, each comprising two or more categories and each with its own selection committee. The committees will meet in April and October each year and candidates' work must be submitted by either March 31 or September 30.

The new Sections are:—(1) Industrial design; (2) Design for craft-based industries; (3) Textiles and dress design section; (4) Architectural design section; (5) Graphic design section.

A new category—Television, Film and Theatre—has also been instituted in the architectural design section.



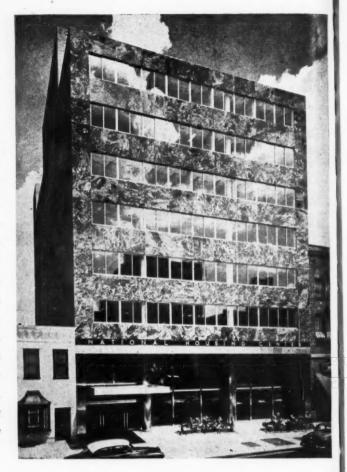
#### BUILDINGS IN THE NEWS

#### Housing Centre, Washington, D.C.

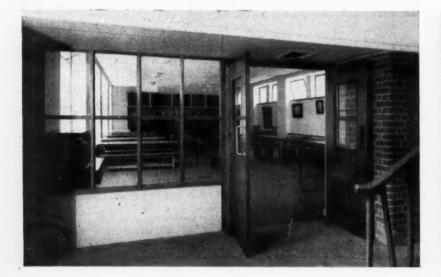
The National Housing Centre at Washington, D.C., which is the first of its kind in America, was recently opened by the Vice-President of the U.S.A. The architects are Aubinoe, Edwards and Beery and the sponsors for the Centre are the National Association of House Builders. This is a powerful association of building firms, who employ architects to design their prototype houses and are responsible for most of the small houses now being erected in thousands throughout America. House building is now second only to motor car manufacture as the largest industry in the U.S.A. At the opening ceremony it was acknowledged that inspiration for this building had come from the Bowcentrum in Rotterdam and the Building Centre in London. The road facade, seen in this photograph, has strips of sliding aluminium windows, and above first floor level is faced entirely with polished block granite. The headquarters of the National Association occupy the top two floors and the remainder of the building is used for exhibits, on the lines of our own Building Centre. Elaborate kitchen fitments, cookers, refrigerators, washing machines, garbage grinders, etc., which are exhibited, are regularly fitted into even the simplest American homes.

#### Grant's House, Westminster School, London, S.W.1

This new building for Grant's House (architects, Carden & Godfrey) consists of a three-storey block, situated between the original Georgian House to the north and partly completed rebuilding scheme to the south, which faces on to Old College Street. The new block contains on the ground floor a large dining hall, and on the first and second floors study-cubicles for 28 boys, and two common rooms. The scheme includes the



remodelling of part of the existing buildings, providing toilets and bathrooms, matron's and maids' rooms, a sick bay, servery, changing rooms and a garage for the headmaster. Construction is of load-bearing cavity brickwork and precast prestressed unit floors and roof. Below left, view through the glazed screen from the stair hall looking into the dining hall. Below, the courtyard entrance to the new building, showing the dining hall windows with beech-pebble panels under.





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In this article Paul Brenikov bases his comments on planning for "the new mobility" on the topics discussed at the recent national conference of the TCPA. Not many people, he says, realize that the motor vehicle can be expected "to revolutionize the form of the towns we inhabit; the future development of the country as a whole and indeed the very pattern of our lives."

# PLANNING FOR THE NEW MOBILITY

#### By Paul Brenikov

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Since so many of the urgent planning problems with which we are faced in this country today are bound up with the question of mobility, the topics discussed at the National Conference of the Town and Country Planning Association reinforced many of the fundamental questions that are now giving serious concern to planners. The first section of the Conference was devoted to the future development of the means of transport themselves. Christopher Brunner spoke on "Roads and Road Transport" and Peter Masefield on "Railways and Air." The two following papers dealt with the implications of their proposals. The distribution of population and industry was treated by Peter Self and the particular problems of the Metropolis by Alderman W. G. Fiske.

It is now becoming more and more apparent that we are at the beginning of a new and decisive phase in the process of urban development in Britain, and it is the motor-car which is the active element in the changes that are taking place. Almost everyone is aware-some of us acutely sothat traffic congestion is increasing and that it is becoming more and more difficult to park the car at the end of our journey, but not many, as yet, appreciate the extent to which the new mobility that the motor vehicle is providing for a continually expanding section of the community, can be expected to revolutionize the form of the towns we inhabit, the future development of the country as a whole, and indeed the very pattern of our lives.

#### The new motorways

The most obvious impact of this revolution in mobility is upon the roads themselves. Mr. Brunner, in his paper, made out an almost unanswerable case for the construction now of at least 800 miles of new motorways, and made suggestions for their proper equipment with service stations for both men and machines. As a nation we have now lagged so far behind in this field that it is being claimed that the annual cost of leaving the new roads unmade is now greater than the annual charge for making them—

with nothing, except chaos and frustration, to show for our money. No one would deny the soundness of the case for new through routes, nor does their construction appear to raise any particular problems. What is not clear, however, is the extent to which they are likely to bring relief to the more serious difficulty of congestion in the central areas of our great cities. If present-day American experience is any guide, we may expect little, if any, return for our efforts in this respect. We know how to solve the problems of inter-city and inter-region transport. The solutions, in many cases, exist on the drawing board. But neither the engineers nor the planners have yet devised any workable solution for the problem of central area congestion. The classical remedies, the inner and outer ring roads, the radials and the bypasses have not, as yet, been applied on a serious scale in any major city. Even if they were, the latest analyses of traffic flow in towns seem to suggest that they would not be nearly so effective as we once supposed, because of the high proportion of complex "radial" and "scatter" journeys which, as C. D. Buchanan has shown, are a main cause of the widespread congestion. In fact, our continued inability to provide a workable solution to the congestion and parking problems of central London and elsewhere forces one to the conclusion that it is only by strict limitations on vehicular entry into the central areas of cities that even a reasonable flow can be maintained with traffic at a slightly higher level than is common today.

#### The future of city centres

If this means that we can see no solution to the traffic problem in the down-town areas of big cities, then the city centre, at least in the form that we know it today is doomed. It is too constricted to survive. Many of the typical uses that we associate with such an area-shopping, offices, some storage and entertainment-will be forced to re-locate themselves elsewhere. Only a limited range of special "top level" activities, which, by their very nature, must have a central area location, will retain sites there, and it seems reasonable to suppose that the provision of generous parking space will be a major factor in determining the layout of the buildings they occupy.

Is this collapse of the city centre a real possibility and ought we to take steps now to anticipate this and other implications of greater mobility in our development plans? The key factor is the extent to which we can reasonably expect motor-car ownership to expand during the next, say, twenty years. It seems probable that at least an additional half-million vehicles will be added annually to the national total during the next three years, and that we can expect the number of motor vehicles to double itself during the next ten years. In human terms this will mean that the greater proportion of British families would then own a car. Even now, with the minimum cost of motoring artificially raised by taxation, the average earnings of an industrial worker are rapidly approaching the point where a high proportion of them could maintain a vehicle of some kind. It seems certain that we can foresee a vast increase in personal mobility during the next two decades, yet no serious attempt appears to have been made to take account of this fact either in the local authority development plans or in the layout of our new residential areas.

Apart from its effect on the future of the central areas of towns, this increase in mobility will certainly be the key factor in determining the pattern of a wide range of development in the New Britain. If it presents us with an opportunity to better ourselves, it could also be a danger, depending on our ability to direct and control its effects. For instance, Mr. Self reminded us in his paper that an uncomfortably high proportion of our population live and work in the great conurbations. Yet in spite of all our efforts, these continue to grow at the expense of the remainder of the country. Increased mobility could easily produce greater pressure for residential development on, or very near, the periphery of the conurbations, thus adding to the sprawl which we are all anxious to avoid and nullifying the effectiveness of the green belt policy we are all anxious to enforce.

#### Subsidies and sprawl

Although it was not a major issue at the conference, we should recognize that the recent changes in housing subsidy structure may, in fact, reinforce this effect. If, as it appears to be, it is now national policy to make tenants pay an economic rent for their accommodation, how many of the more prosperous of them will be content to remain tenants for life on these terms? Ought we not to expect that some of them at least will begin to turn in increasing numbers to the private builder for their needs? The volume of private house building has risen very sharply during the last few years. National policy seems to be directed towards raising the numbers still higher in the future.

The question of home ownership policy is not a matter for the Planner, but he is justifiably alarmed by the fact that nearly all the really bad post-war layout and design on the edge of the conurbations and elsewhere is the work of the private developer. A speculative builder will select sites that he knows he can sell quickly, and direct access to "town" will continue to be a powerful selling point with his clients, even though they are more mobile. He is not interested in the possibility of development on the "other side" of a green belt-unless it is so narrow as to be quite useless. Faced with the prospect of permitting private housing, at no cost to the taxpayer, on the perimeter of a conurbation, as against the costly expedient of large scale subsidized development-including a heavy charge for new services-on a site well beyond it, the Minister will need to be very strong-minded to make the right decision on appeal. He will have to make it very often if green belts are to survive. Mr. Self, using figures which he described as "a minimum calculation," anticipated that at least a quarter of a million new suburban villas would be added to the periphery of the conurbations alone during the next twenty years. Events may well prove his estimate to be too low unless decisive, even ruthless, action is taken now and continued in the future.

#### Distribution of industry

Nor is the present prospect much brighter in the industrial field. We have achieved a limited success in locating new factories in the development areas and in some of the new towns. But the gist of the report to the conference was that, in spite of the official endorsement of the Barlow Commission's recommendations, the share that the big conurbations-particularly Greater London and Greater Birmingham-have secured of the total of newly constructed factory space is still disproportionately large and has risen alarmingly during the last three years. This failure is the more tragic since the machinery for effective control exists, but is not being used. It is difficult to see how this can be avoided so long as the effective powers of control are vested in the Board of Trade whose prime interest appears to be the direction of some industry to areas with an actual or potential economic weakness, rather than in the realization of a policy of decentralization on a national scale.

Yet surely this continuing concentration of industry, either in the conurbations, or on sites close to them, runs counter to the longterm interests of the manufacturers themselves. If we are to survive in an increasingly competitive world, we must do our utmost to ensure that our factories can exploit every advantage to be gained from modern layout, efficient transport services and productive personnel. It is difficult to see how any of these aims can be achieved in the increasing congestion of the conurbations, where suitable land for development is at a premium and men, materials and finished products, more and more of them carried by road, are subjected to a continual drag through a traffic jungle of their own creation. It may be true that, from the short-term point of view, the decision to move out will involve the industrialist in extra costs. But, as the director of one firm pointed out in an address to the Town Planning Institute's summer school this year, these costs can be quickly offset by the increased productivity on the new site. There is no reason to suppose that his case was exceptional.

#### **Exploiting increased mobility**

The effects of increased mobility can therefore, in one sense, be considered as wholly bad. It could choke the centres of our big cities to a standstill. It could spread the net of suburban sprawl wider and more loosely than ever before-for the new "auto suburb" need have no recognizable centres apart from the supermarket, the motel and the "drive-in" cinema. It can help to draw the main volume of new industrial development onto industrial ribbons flanking the main routes at the rim of the conurbations. It will do all this in a very short space of time, unless we take active steps to prevent it now.

For it is possible to turn this process to our advantage if we are determined to make

mobility our servant rather than our master. Since not only the natural trend but considerations of strategy, health, convenience and long-term economics all point towards decentralization, we should exploit this itch for movement to help us to decentralize on a grand scale. Mr. Self indicated the terms in which we should think when he suggested that of the two million new houses which we can expect will be built to satisfy the needs of the conurbations in the next twenty years, at least one million should be constructed on sites well outside them.

#### Planning for a million new homes

The provision of a million new homes-and at least as many new jobs-on new sites well away from the conurbations was the gigantic task that the conference was informed must be done. But if we mean to be realistic about this it will involve some re-thinking of our planning principles, particularly as regards green belts, central areas and industrial provision. The main outlines of the development pattern we should aim for are becoming clearer. We should strive to limit the outward expansion of all the conurbations to a minimum by surrounding them, not with a green belt but a green zone some twenty or thirty miles wide. Within this zone new urban development would be rigidly restricted and a limit set to the size of the existing settlements it contains. The main drive would be for the development, outside the zone, of a series of new and expanded towns. Some of these might with advantage be the smaller ports which the government is anxious to develop for defence purposes. These new areas would be linked to the parent city by the new motorways we need so badly. Provided the expansion of the new centres is undertaken on a sufficient scale-and Mr. Self's estimate of 25,000 persons per centre should be considered a minimum-they can be relied on to draw out not only the people, but sufficient industry, offices and central area uses to make them real centre's in the vital sense and relieve the threat of congestion in the heart of the conurbations.

In our central area redevelopment schemes for the conurbations themselves we must expect to reduce the quantities of uses they contain, reserving them for the top-level activities in business, administration, shopping and entertainment. The remainder should be encouraged to decentralize. Some shops have already begun to do this. In the vital field of industry-on which the whole success of the venture dependsmuch more positive action will be required. Now that the development of a nuclearpowered super grid seems possible, with coal treated as a valuable raw material rather than a fuel and the certainty that more and more of our raw materials and finished products will travel on the new motorways, a whole new range of factors will determine the pattern of industrial location. We now know that to zone land for industry and hope that it will be developed is not enough. Sites with natural or potential advantages must be selected, acquired and laid out with services well in advance of development if we are serious in

our intention of attracting new industry to them. It may well be that it is the availability of sites suitable for industrial development on the scale required that will be the main determinant of the location of the new settlements.

#### Are our plans out-of-date?

These appear to be some of the planning implications of the topics discussed at the conference. However we interpret the future, we may expect that the next twenty years will be critical ones in the history of urban development in this country. There is ample evidence of this to be found in almost every field of development today. Perhaps the conclusions we ought to draw are these. First that we must plan for the dispersal of our towns. Second, that most of the facilities that most people need can best be supplied in a relatively small town with, say, between 25,000 and 50,000 inhabitants. Lastly that the future house for every family on or above the average income level must take account of a great increase in personal mobility. It will be smaller and planned round the car and the kitchen.

There is nothing startling about these conclusions, some of them are accepted already. Yet if one examines the mass of Local Authority Development Plans now before the Minister, the layout of the housing estates they will contain, or the re-development schemes prepared for the central areas of great cities, one looks in vain for any suggestion that such changes are even possible, let alone probable.

### DIARY

Architecture Inside Out. Christmas holiday lectures for boys and girls by William Allen. First lecture, January 2: "Materials for Building." Second lecture, January 4: "The Shape of Building." Third lecture, January 4: "The Shape of Buildings." Third lecture, January 6: "Light, Sound and Colour." At the RIBA, 66, Portland Place, W.1. All at 3 p.m. Admission free, by ticket only.

The Motorway and its Environs. Talk by Sir E. Owen Williams. At the RIBA, 66, Portland Place, W.1. 6 p.m.

JANUARY 10

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The Housing Repairs and Rents Act. Paper by J. Clancey, Chief Inspector, Public Health Department, LCC. 10.30 a.m. Slum Clearance. Paper by D. J. E. Lamb, Chief Housing Inspector, Birmingham. Grants for Improvements and Conversions. Paper by J. E. Austin, Chief Housing Officer, West Ham. 2 p.m. At the RSH, 90, Buckingham Palace Road, S.W.1.

JANUARY 11

A New Approach to Furniture Construc-tion. Talk by T. Kotas and Robin Day. At the RSA, John Adam Street, W.C.2. 2.30 p.m.

JANUARY 11

Development Plans and their Provision for Industry. Talk by S. G. L. Beaufoy. At the RICS, 12, Great George Street, S.W.1. 5.30 p.m. January 17

Chandigarh-India. Illustrated lecture by Jane Drew, F.R.I.B.A. S.E. Soc. of Architects meeting at The Studio, 1, Edridge Road, Croydon. 8 p.m.

JANUARY 17

#### HOUSING

in COILLESDENE AVENUE, EASTFIELD, JOPPA, MIDLOTHIAN

designed by ALAN REIACH

assistant IAN W. HALL

Edinburgh must be as well known for the uninhibited vulgarity of its recently "spec"-built housing as for the unique quality of the 17th and 18th century work in the residential areas of its "old" and "new" towns. This scheme at Joppa is a refreshing change from the dozens of boring bungalows and barricades which surround it. Both the contractor-client and occupiers are well pleased with the comparatively spatial feeling provided along the road serving these houses—of a simple and chaste design rarely encountered in Edinburgh. The contractors (Morton & Johnstone) were most co-operative with the architect and have realised the more purely financial advantage of employing an architect for projects of this kind. The tenants are delighted with their homes and, as it happens, would have willingly invested a further £180 for central heating, which was estimated for but not provided. The houses sold extremely quickly for £2,600 each. This sum included road charges, legal fees, all services, architect's fees, and in fact everything to do with the development. For sub-contractors see page 892.

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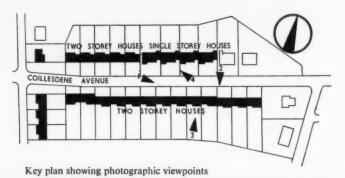
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by ects oad, Viewpoint 1, looking south-east along Coillesdene Avenue.









Above, viewpoint 2: a closer view of the entrance front to the 2-storey type house. The clients co-operated with the architect in taking all pipe runs internally where these would otherwise have interfered with the character of the building and the advantages of this are self evident here. Window and door frames are painted white, while the shutters are yellow and the doors vary in their bright colours to give some individual feature on each house. It was only after considerable argument that the architect and contractor were successful in persuading the occupiers not to build boundary walls to the gardens and road, and it is interesting to note that now no occupier will consider such an idea. Above right, viewpoint 3: the 2-storey houses have south-facing back gardens. This

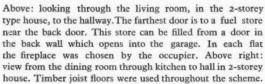
photograph shows the back of one of these houses as seen from the garden, and is evidence of the simple and straightforward character of the design being maintained all over the scheme. This is a rare quality in "spec" built projects and one which these occupiers appreciate greatly from their traditionally "private" relaxation place—the back garden. Below, viewpoint 4: south front of one of the 3-bedroom bungalows which are on the north side of Coillesdene Avenue. Here the architect intended the frames of the three small windows on right of the door to be "boxed" out a few inches from the wall, but this was not permitted by the contractor-client for fear of water penetration through wooden box frames on such an exposed site.

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#### HOUSING AT JOPPA, MIDLOTHIAN



Typical ground and upper floor plans, 2-storey house [Scale:  $t_s^{\prime\prime}=l^{\prime}$  0"]

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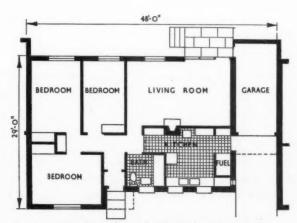
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Typical ground floor plan, 1-storey house [Scale: +" = 1' 0"]

#### CLIENT'S BRIEF: his stated requirements

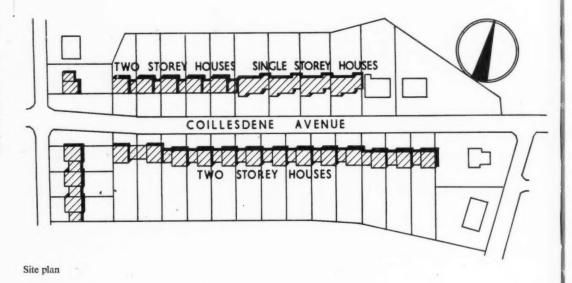
The client required the site to be developed as economically as possible; the houses were to be

of traditional construction, built speculatively. A variation in type was required, but each type was to have 3 bedrooms and also a garage under the same roof.

#### SITE: topography, surroundings, access, planting

The site is within 200 yards of Milton Road (the main road from Edinburgh to the south) and lies

between this road and the Firth of Forth. The ground falls slightly to the east of the site, and immediately to the north it drops steeply, giving an uninterrupted view out to sea.



#### PLAN: general appreciation

The area of the site is 3.11 acres, and developed per acre was obtained. Two house-types were decided on: type "B," on two floors, is the logical development of house planning require-

on the north side of the road. Single-storey as shown on the plan a density of eight houses houses were designed for part of the north side of the road to avoid obstructing the view from houses of type "B." In these single-storey houses a southern aspect from the living room ments, and houses of this type were to be built was sacrificed in favour of the magnificent view

over the Firth of Forth on the northern side, and as much glass as possible has been used here. So that the juxtaposition of the two house types would not be destroyed, and to preserve the unity of the street, no boundary fences have been erected.

#### STRUCTURAL ELEMENTS

Load bearing element Location  Location  External walls  4½-in. partitions Internally		Beams	spans	Column grid	
Foundation type	Location	Sub-so	il	Depth	
Concrete to sleeper walls Throughou		Gravel to clay at 4-ft. depth (vegetable soil 2 ft. 6 in. surface layer)			
Outer wall type	Location	Material	Finish	Reasons and comments	
-in. cavity brickwork Throughout		Canterbury spar		For sharpness of line and texture. A white exterior finish was intended by the architect but was not allowed by the Town Planning Officer for Edinburgh and others	
Roof type	Location	Material	Finish	Reasons and comments	
Timber trussed rafters (TDA type)	Two-storey houses	Timber	Double Roman clay tiles		
Standard type at 18-in. centres. 4-in. by 2-in. principal rafters, 5-in. by 2-in. bottom tie and 4-in. by 1½-in. braces and collar	Bungalows	Timber	Concrete tiles	These standard trusses have replaced TDA designs since timber supplies became easier	

Floor structure type	Location	Materia	Finish	Reasons and comments		
Timber joists	Throughout	Timber	Timber flooring	The contractors are now proposing hardwood floor finishes to living-		
Solid, 4-in. thick	Fuel stores and garages	Concrete	I-in. granolithic finish	and dining-areas since prices have been reduced		
Wall glazing	Location		Reasons and comments			
Timber casements single glazing	Throughout		Economy and preferes	Economy and preference for wood in this character of design		
Roof glazing type	Location		Reasons and comments			
Wooden framed skylights	By chimney stack		Bye-law requirement			

#### PARTITIONING

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Location	Material	Finish	Reasons and comments
Throughout	Brick	Plaster	
Larder and cupboard to kitchenette and box- and bath-rooms upstairs	Concrete	Plaster	
Location	Material	Finish	Reasons and comments
Throughout		Two coats board finish. Scrimmed joints	
	Throughout  Larder and cupboard to kitchenette and box- and bath-rooms upstairs  Location	Throughout Brick  Larder and cupboard to kitchenette and box- and bath-rooms upstairs  Location Material	Throughout Brick Plaster  Larder and cupboard to kitchenette and box- and bath-rooms upstairs  Location Material Finish  Throughout Two coats board finish.

#### SERVICES

Bayonet sockets

Plumbing: internal	Location		Materials	*
Two-pipe system; deep seal traps	Vents carried up internal	lly	Cast iron	
Plumbing: external	Location		Materials	
	Front gardens		Fireclay	
Rainwater disposal	Location		Materials	
g-in, diameter downpipes	Inside walls		Cast iron	
Heating installation: heat exchanger	type	Location		
Coal fire		Living room		
Coal fire		Main bedroom		
Boiler type and capacity		Fuel type		
Back boiler to living room fire		Solid		
Water heater type	Location	Fuel type		Stoking method
Back boiler to fire	Living room	Solid		Manual
Hot water storage type	Location	Materials		Capacity
Storage cylinder	Linen cupboard	Copper		30 gallons
Pipes and jointing types		Location		Materials
Copper pipes and "Yorkshire" join	nts	Throughout		Copper
Cold water storage	Location	Materials	•	Capacity
Cistern	Roof space	Cast iron		40 gallons
Electrical installation: source and fit	ting type	Location		24

Ceilings

#### DECORATIONS

 Paint types
 Where used
 Colour treatment

 Oil gloss
 External woodwork, gutters and down pipes
 Windows white, shutters yellow, doors various bright colours to give interest

 Oil flat
 Doors, facings, etc., internally

 Oilbound water paint
 Interior walls

#### TIME SCHEDULE

Work commenced

October 12, 1954 18 houses completed November, 1955

#### SCHEDULE OF ACCOMMODATION

Type	Number of storeys	1-room	2-room	3-room	4-room	5/6-room
Terraced house	2	Living room	Dining room	Kitchen	Bedroom	Bedrooms 2/3
Terraced house	1	Living room	Kitchen	Bedroom 1	Bedroom 2	Bedroom 3

Work completed

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#### ACCOMMODATION STANDARD

Area of site in acres prior to road widening	3.11	Density of dwellings per acre	8
Deduct area of site for non-housing purposes	-	Density of persons per acre	35
Add ½ public roads up to 20 ft.	2.86	No. of tenant stores internal	1 per house
Area of site available for housing	3.11	Total no. of garages	1 per house
Total no. of dwellings	25	Frontage of dwellings: Villa	36 ft. 6 in.
Total no. of rooms	118	Bungalow	48 ft.
Total no. of persons housed	102		

#### ROOM AREAS: in square feet

Type	Living room	Dining room	Kitchen	Bedroom no. 1	Bedroom no. 2	Bedroom no. 3
Two-storey dwelling	248	96	100	140	109	84
Floor to floor height 8 ft. 9 in. Room heights (fin. to fin.) 8 ft.						

#### COST

Two-storey dwelling	£		£
Architects' and lawyers' fees, All services, gas, water and electricity	100	Road charges	180
Electrician	65	Painter	60
Slater and harler	215	-	
Plumber	230	Total	2,400
Drainagé and paths	150		
Brickwork	1,400	Bungalow type	
			-
		Total	2,350

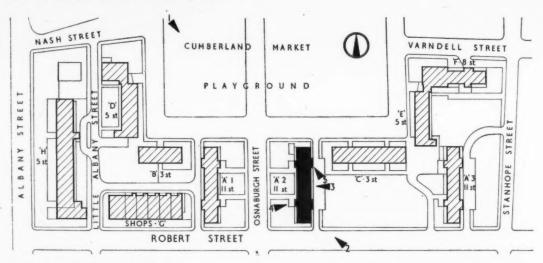
#### FLATS

in OSNABURGH STREET, LONDON, N.W.1 for the BOROUGH OF ST. PANCRAS designed by DAVIES and ARNOLD assistant in charge R. TUCKER consulting engineers G. A. DODD and PARTNERS quantity surveyors C. E. BALL and PARTNERS

This 11-storey block is the first to be completed in Area "C" of the 32 acre re-development area to the east of Regent's Park, between Albany Street and Hampstead Road, in the Borough of St. Pancras. Area "C" is a mixed development scheme, comprising 11-storey, 5-storey and 3-storey blocks and one 8-storey block, and is scheduled to be completed in 1956. The general contractors were John Laing & Son Ltd.; for sub-contractors see page 892.

Viewpoint 1: the block from the north-west.



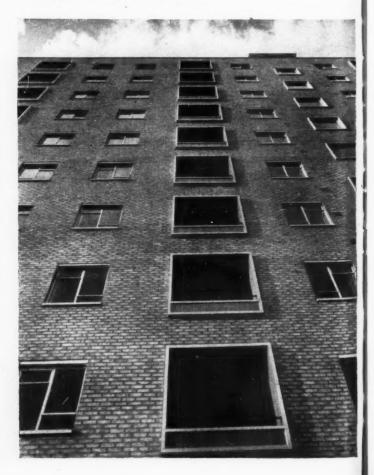


Key plan showing photographic viewpoints



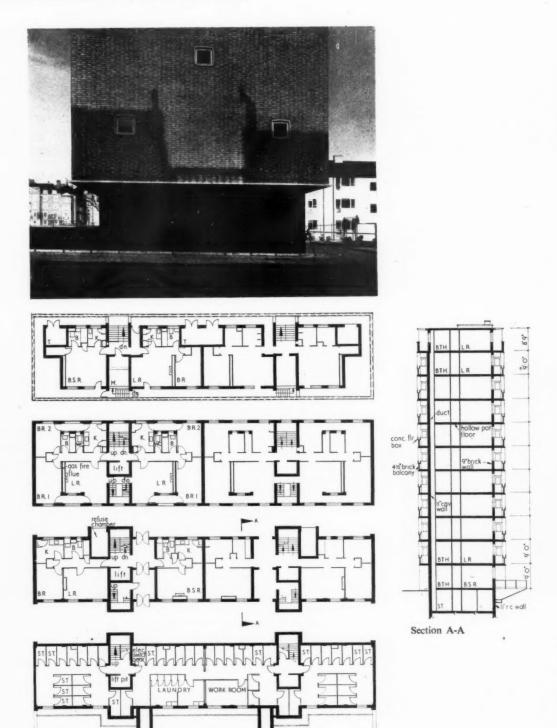
Left, viewpoint 2, from the south-east. This facade is identical to that on the other side (a requirement of the Planning Authority) no positive attempt hav ng been made to express unit dwelling or structure. All rooms have the same window units. The block is steel-framed with brick and clinker block cavity external walls. The flank wall is freely patterned with small windows. The pale yellow of the facing bricks forms the predominant colour, highlighted by the terracotta of the painted balcony recesses. The metal window frames are painted off-white. Below, viewpoint 3. The main plastic expression of the facade derives from the recessed private balconies and the square vertically-pivoted staircase windows, both of which have thin projecting cast-stone frames. The balconies have an inset panel, faced externally with a single course of pale blue glazed tiles.

F,L

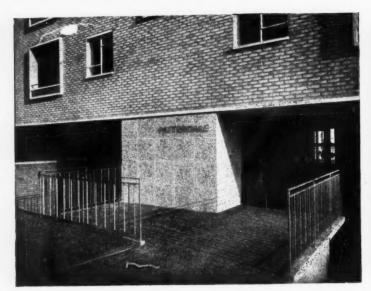


Below, viewpoint 4. Dark purple bricks with black cement joints are used on the ground floor and this dark cladding, together with the cantilever, divorces the block from the ground. In the background is one of the incomplete 3-storey blocks, which are faced in the same pale yellow bricks as the 11-storey. The pitched roof is slate-covered.

#### FLATS AT OSNABURGH STREET, LONDON, N.W.1



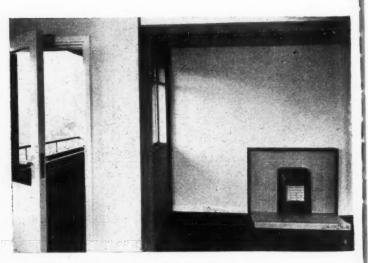
Basement, ground floor, typical first to ninth floor and tenth floor plans [Scale: 3" = 1' 0"]





Above, left, viewpoint 5. The main entrance to the block from Robert Street is flanked by 2-ft. × 2-ft. × 1½-in. pre-cast concrete facing slabs, finished with light brown and black marble chipping surface, and set in white cement joints. The slabs are fixed by metal clips, pre-cast into slabs and gummed into brickwork. Entrance doors are of teak, oiled finished and panelled in ½-in. georgian wired glass, with teak beads and purpose-made push pads. Above, viewpoint 6. Similar facing slabs and entrance doors are used in the entrance on the east service road side. The facing slabs were designed to be "small-boy-proof,"—difficult to scratch or write upon. On the extreme right are the flush steel refuse chamber doors.





Above left: typical kitchen to penthouse flat, generously equipped with storage units which are based with combined drawing boards and table tops of teak; water heating is by a multi-point appliance recessed into a duct in the adjacent bathroom and balanced-flued direct to the external wall. Doors to kitchen units are painted deep mushroom, the frames white, and walls and ceiling are pale mushroom. Above: living rooms have gas-fire heating with individual pre-cast concrete circular flues to each appliance concealed in the living room/bathroom partition. Walls and ceilings to all rooms are decorated in pale mushroom water paint, the ceilings are a tone lighter than the walls. Door frames are white and the ply-faced flush doors are varnished.

#### CLIENT'S BRIEF: his stated requirements

The first scheme for the re-development of this area was begun after the first world war by C. E. Warndell, the architect to the Commissioners of Crown Lands. Work began in 1928, and a number of blocks were built before work was eventually stopped by the outbreak of war in 1939. At the end of the war the Borough of St. Pancras purchased from the Commissioners of Crown

Lands the property owned by them, and the remainder by compulsory purchase order. C. S. Bainbridge, Borough Engineer and Planning Officer, and Frederick Gibberd, as town planning consultant, collaborated to produce in 1952 the first master plan for the entire area of 32 acres. The completed scheme will provide 1,700 dwellings in mixed development, with tall blocks

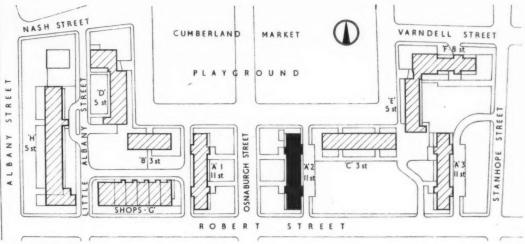
planned mostly on a north to south axis. The 32 acre development was divided into areas, with Frederick Gibberd as architect for Area "A," Thomas Sibthorp for Area "B," Davies and Arnold for Area " C," and Armstrong and Macmanus for Areas "E," "F" and "G." The first block to be completed in Area " C" is illustrated here.

#### SITE: topography, surroundings, access, planting

The site is flat and lies directly to the south of Cumberland Market. This was originally a hay and straw market, and during excavation on the site a brick-constructed ice well, 34 ft. in dia-

meter and 100 ft. estimated depth, was discovered. The area and its surroundings was previously developed by John Nash between 1813 and 1838 as a middle-class residential area of

3-storey terraces, but part of this had been devastated by air-raids and part had fallen into disrepair and declined to the status of tenements. The area of the site is 4.8 acres.



Site plan, Area "C"

#### PLAN: general appreciation

The block which this analysis deals with is the 11-storey block A2, sited on a north/south axis and with access from Robert Street. It has II storeys-nine intermediate floors of three-room flats, a ground floor of 1 one-bedroom flat, 1 two-

pairs on either side of a lift, staircase, escape tion for tenant stores, communal laundry, transstair unit, and the accommodation areas conform to Ministry of Housing Standards. LRs and rooms and tank rooms are accommodated on BR1's have west aspect; BR2's, kitchens, bath- penthouse floor, and this enables a clean roof line bedroom flat, and 2 bed-sitters, and a penthouse rooms and w.c.s are planned on the east face of to be obtained.

floor of one-room flats, Dwellings are planned in the block. The basement provides accommodaformer chamber, workshop, etc. Lift motor

#### MAIN CONSTRUCTION: general appreciation

Originally intended as a concrete frame, the sitated a change to steel frame, although it was

realized that this would be more expensive. acute shortage of steel rod reinforcement neces- Columns are set 4 ft. 9 in. back from face of portal frames. Windbracing is obtained by braced external walls, except at staircases, and this frames at gable ends and at centre of block.

4 ft. 9 in. portion is cantilevered from main

#### STRUCTURAL ELEMENTS

Work below ground floor level				
Foundation type	Location	Materials	Finish	Reasons and comments
In situ pile	Under columns	Concrete pile caps and beams		
External walls and facings	Location	Materials	Finish	Reasons and comments
Brick	External walls	11-in. cavity; 4½-in. brick; 3½-in. cavity; 3-in. block	Sandfaced golden wirecuts, flush pointing	

#### PARTITIONING

Internal partitions	Location	Materials	Finish	Reasons and comments
Hand erected block	Between rooms	3-in. clinker block	# in. plaster	
Cavity	Between dwellings	4½-in. brick; 3½-in cavity; 4-in. block	§ in. plaster	Sound insulation; also used around lift shafts where adjacent to dwellings
Cupboards, tenant stores		2-in. clinker block	f-in. plaster in cup-	

Plumbing internal: waste disp	osal Location		Materials		Finish		Reasons and comments
One pipe system	Duct back	of bath	3½-in. L.C.C. stack 2-in. vent stack				All fittings vented; copper branches and antisiphons. Sink waste in separate 3-instack unvented
Cold water storage	Location		Materials		Capacity		Reasons and comments
Central storage	In tank ro roof	om on	Galvanized mi	ld steel		per dwelling is. total storage	No booster pumps were required; 115 fe head available from M.W.B, main
Plumbing: sanitary fittings	Location		Materials		Finish		Reasons and comments
Low level suites	Generally		Earthenware		White gla	azed	2-gallon w.w.p.'s
Sinks	Kitchens		Ditto		Ditto		Standard Belfast
Heat installation: Heat exchanger type	Location		Criteria temp.	,	Air change	rate Ro	easons and comments
Gas fires	In LRs		Co	onvector ty	ype flue	flu	nsufficient knowledge of behaviour of 100 fo ues for solid fuel burning appliances vailable at time of design
Water heater type	Location		Fuel type		Stoking met	thod R	easons and comments
Multi-point	Recessed in bathroo	into ducts om	Gas			C	alanced flue appliances for external wall. entral heating contemplated but rejected or sst grounds
Drainage: type of system	Location		Materials		Finish	R	leasons and comments
Combined	Generally		Stoneware		Salt-glazed	6-	in. concrete bed and hanched
Ventilation	Location		Materials		Finish	R	leasons and comments
Natural	To all roo	oms	Pressed metal		Galvanised painted	10	n head of window frames designed to give o sq. in. minimum permanent ventilation to mply with L.C.C. bye-laws
Electric installation: source and fitting type	Location		Illumination l	enel	Ouality	R	leasons and comments
Mains A.C.						T	ransformer chambers within basement; no pecial sound insulation required by lectricity Authority
Wiring and switching types	Location		Λ	Saterials		R	teasons and comments
V.I.R. cables in conduit		l in floor sc to walls, etc	bi		ncorporation mmodated wall		- **
Lifts Loca	stion	Capacity	and speed A	Aotor roon	position	Reasons and	comments
	ing pairs of lings	10 passen 100-120 f		n pentho	use floor	main staircas	noth floor; access to penthouse flats by e has advantage of enabling lift motor room ed within mass of block

#### THERMAL INSULATION

used

g finish

ed with

und ellings

Type	Location	U-value	Reasons and comments
Cavity construction	External walls generally		
21-in. cellular concrete screed	Roofs		

#### SPECIAL ACOUSTICAL TREATMENT

Sound insulation	Location	Insulation standard	Reasons and comments
2½-in. cellular concrete screed	To all floors		No difficulty experienced in obtaining satisfactory surface for plastic tiling

terra cotta colour

unit into same stack

balconies

L.R. rement

d push

in that ed for

i top

irain

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Structural precautions  Concrete casing to steel frame	Grade of protection apparatus S	prinklers	Reasons and comments  No dry-risers required by fire-brigade
Planning precautions	Access for fighting	Means of escape	Reasons and comments
Alternative means of escape provided or each dwelling	Provided to both sides of block, by access or public roads	Escape staircase	

#### REFUSE DISPOSAL

Method	Type of refuse	Waste recovery	Materials and installation	Reasons and comments
Chute, discharging in chamber at ground floor level	Household	None	Salt-glazed stonework	Steel self-closing hoppers provided on each landing at one side of public stair

#### TIME SCHEDULE

Tender date	Work commenced	Work completed	Type of contract	
26.5.53	Demolition, April, 1954	November 1955	RIBA form of contract	
	Piling, May, 1954			

#### COST ANALYSIS

Block A.2 (11-storeys, comprising 44 flats)	Cost per sq. ft.	Percentage of total
Main structure (concrete cased steel frame)	34,646	28.48
External panel walls	5,770	4.74
Floor and balcony construction	9,320	7.66
Stairs and landings	2,114	1.74
Non-load-bearing partitions	2,660	2.19
Roof construction	930	0.77
Roof finish	1,135	0.03
Floor finishes	4,400	3.62
Plaster work	3,305	2.72
Joinery work	6.910	5.68
Steel and iron work	870	0.72
Windows	1,540	1.27
Painting and glazing	4,080	3 · 35
Plumbing and wastes	4,320	3.55
Electrical work	2,290	1.88
Gas installation including gas fires and multi-point heaters	2,530	2.08
Lifts	5,310	4.36
Sub-structure including basement	22,630	18.60
Site clearance	480	0.39
Preliminaries, etc.	6,410	5.27
Total	£121,650	100.00
Note: The above figures exclude boundary walls, pavings and drains.		

#### COST COMMENTS

This is the first cost analysis for local autnority construction) shows that the steel frame was two 11-storey flat blocks. building presentation and is expressed in perrelated to the total cost of the block, excluding basic difficulties which prevented the application of the usual type of cost analysis was the fact 
It has not been considered wise to compare that the Bill of Quantities was not separated for these figures with those for LCC point flats each type of block, so that it needed to be reassessed, not only as elements instead of analysis published in the Journal for April 28, trades but also items allocated to individual 1955, since no indication was given in this article blocks. It should be remembered that cost untried field in comparison with schools. The total cost figure for the Ackroydon and Alton figures quoted here are, however, of value and interest; for example the 36.9 total percentage it would have enabled an approximate compari-

housing to appear in the JOURNAL's new form of expensive, as the architects expected. Another Perhaps the most obvious contradiction configure of interest is the 18.6 per cent. for subcentage costs of elements (based on trades) structure and basement which, even allowing for a high sub-structure figure of say 7 per cent., still lifts on Ackroydon Estate where two 8 passenger boundary walls, pavings and drains. One of the leaves a large deficit for accommodation devoted mainly to tenant-stores.

at Ackroydon given in the article on cost of either the total cost of the blocks or the cost analysis applied to housing is in a relatively of elements other than as percentages. Even a Estate blocks would have been of great value for cost of the structure (including floor and roof son to be made of the cost per dwelling in these

tained in the two cost analyses when comparing percentages, is the 9.1 per cent, quoted for lifts with a central motor room are employed and the 4:36 per cent, which appears for the two 12 passenger lifts with separate motor rooms in the Regent's Park scheme. Since both installations are similar in standard equipment this leads us to believe either that the appropriate builders work, structure etc., has been differently allocated or that the Ackroydon estate figure relates to a lower overall cost, and until a standard method is used we shall constantly be faced by unexplained mysteries like these.

#### SELF-SERVICE RESTAURANT, TOTTENHAM COURT ROAD

This self-service restaurant on the ground floor of the Oxford Corner House, Tottenham Court Road, forms part of J. Lyons & Co.'s programme of redesigning the interiors of their Corner Houses. design, by Lutyens and Greenwood, consists principally of a series of alcoves, right, arranged around the sides of the restaurant and round a central column. This central feature is repeated in order to obtain symmetry. The alcoves



conceal the familiar landscape murals of cypress trees and waterfalls executed in Swedish green and other marbles which formed part of the original design done by Oliver Bernard in the



'twenties. Noise is one of the greatest drawbacks to the selfservice cafe, and particular emphasis has been placed in the design on reducing noise by installing absorbents to the sides of the alcoves (mineral wool behind oak Danish panelling) and on the ceiling (fibrous plaster vertical baffles to break up the sound waves with mineral wool backing to perforated steel plates above) as shown left. The floor is carpeting on a foamed rubber underlay. The result is an unusually quiet room for this type of service, the only sound which carries effectively being the impact of a dropped plate on the plastic table tops. The table top has a special design of fruit in red, black and brown lines on light blue background which is somewhat fussy seen against the bold pattern of the carpet. The back of each alcove consists of an imitation window with glass-silk bands simulating a venetian blind behind the glass. The room is artificially ventilated, with five air changes an hour. The temperature aimed for is 68°. The air is discharged through grilles just below the ceiling and extracted from behind a baffle board under the foam rubber seating in the alcoves. Air pressure is higher in the restaurant than in the kitchen in order to keep back cooking smells. All ducts for lighting and ventilating are contained in the false ceiling of the restaurant and, in the case of the air-extract ducts, in the false ceiling of the floor below. The service counter, shown on left, has frested plates to keep food cool, as well as hot plates with infra-red lights over to keep food hot. There is a left-luggage office at the entrance, and a pay office at the

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#### TECHNICAL SECTION

### 18 CONSTRUCTION: THEORY two reports on structural design

During the past month there have been two important meetings on structural design. The first was occupied with the question of how to find a logical basis for applying a safety factor; and the second with the more detailed question of how to devise a method of designing for cased stanchions which would allow a fair value for the strength of the concrete. This week our Specialist Editor (13) for structural engineering describes the proposals and comments on them.

Though the two meetings described here were of differing natures they had a similar object. For both were in the end inspired by the thought that our present legislation covering structural design is illogical and requires overhauling. It is interesting to note that the Committee of the ISE on Structural Safety whose report we consider first were allowed to take their subject in the widest context. They were allowed to go beyond the technical engineering question of the inherent strength of a structure and to take into account the use to which it is to be put. Though we may query the basis put forward for assessing this use, we can only welcome the desire to take such questions systematically into account; for if it is accepted it will mark a big step forward in our legislation. The second paper was in the nature of a strenuous, last-minute plea to influence the revised version of BS.449:1948 The use of structural steel in building now shortly to be published: or, to be more exact, that part of BS.449:1948 which deals with cased

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#### REPORT ON STRUCTURAL SAFETY

The Institute of Structural Engineers appointed in December, 1951, a committee to review structural safety problems including methods of specifying margins of safety for design purposes. An interim report was published in May this year in the Structural Engineer and was the subject of a discussion at the Institution on November 24, the object being to secure the views of Engineers generally before providing a final report on the widest basis.

The interim report may be summarized as follows.

It is considered that a structure should be able to perform satisfactorily for its full life to the design specification without abnormal maintenance cost: that it should neither have nor develop characteristics leading to concern for its safety, nor by its appearance cause public disquiet and, that it should, before failure, give adequate visible warning signs. It is envisaged that the type of construction and the proposed life of the structure would be determined by the owner

on the advice of the Engineer with due regard to the structural and use limitations expressed by the owner; and that, to avoid misuse, it would be necessary to display loading restriction notices and to advise local authorities of change of user.

LOAD RATIOS IN PLACE OF DESIGN STRESSES In the present Codes of Practice safety is ensured by limiting the design stresses to some fraction of the yield or ultimate strength of the material under consideration but it is now considered that load ratios should be used. Three terms are defined: "working load" is the greatest load that has a reasonable chance of occurring during the life of the structure if the structure is used in the manner for which it was designed; "limiting load" is the load distributed as before at which excessive deflections or cracks appear; "ultimate load" is the maximum load, distributed as the working load, which the structure can carry. Ratio of ultimate load to working load is the "ultimate load factor" and ratio of limiting load to working load is the "limiting load factor."

The committee consider that the "ultimate load factor" is of primary importance and provide a series of tables from which an assessment of the factor may be made.

First, two groups X and Y are described. In group X are factors influencing the probability of collapse: A, workmanship, B, control of loading, and C, accuracy of analysis. In group Y are factors influencing the serious nature of a collapse: D, danger to personnel and E, which is a composite factor, including considerations of cost of repair or rebuilding, loss of public confidence and loss of user while rebuilding. Several ways are given of establishing values for the factors and combining them but the method favoured by the majority of the committee gives numerical X factors for very good, good, fair or poor conditions for each of A, B, and C and similarly numerical Y factors for not serious, serious and very serious conditions for D and E. By multiplying these numbers together the ultimate load factor is obtained, e.g., for the steel structure of a theatre gallery, A, workmanship, is good if carried out in accordance with the Code of Practice, B, control of loading, is prabably very good by limitation of seating and C, analysis, if carried out by an engineer, should be good. The table for X fac-

TABLE 1 .- Values of X factors.

Characteristic	B =										
	vg	g	f	p							
(vs	1-1	1.3	1.5	1.7							
$A = \text{vg } C = \begin{cases} B \\ f \\ D \end{cases}$	1.2	1-45	1.7	1.95							
y = ig c = ) l	1.3	1.6	1.9	2.2							
Lp.	1-4	1-75	2-1	2-45							
(vg	1.3	1-55	1.8	2.05							
$A = g C = \begin{cases} g \\ f \end{cases}$	1.45	1.75	2.05	2-35							
$A = g C = \begin{cases} g \\ f \end{cases}$	1.6	1-95	2.3	2.65							
(p	1.75	2.15	2.55	2.95							
(vg	1.5	1.8	2-1	2.4							
$A = f C = \begin{cases} g \\ f \end{cases}$	1.7	2.05	2.4	2.75							
4 = 1 C = 1	1.9	2.3	2.7	3.1							
p	2.1	2.55	3.0	3-45							
CVE	1.7	2-15	2.4	2.75							
$A = p  C = \begin{cases} vg \\ g \\ f \\ p \end{cases}$	1.95	2.35	2.75	3-15							
4 = b c = { [	2.2	2.65	3-1	3.55							
p	2-45	2.95	3-45	3.95							

Above, Table 1. Factors influencing the probability of collapse (X factors). A represents workmanship, B control of loading, C accuracy of analysis. All are graded "very good," "good," "fair" and "poor." Below, Table 2. Factors influencing the serious nature of a collapse (Y factors). D represents danger to personnel, E cost liability.

TABLE 2.- Value of Y factors.

(	Characteristic		D =	
		Not *	Serious	Very
,	Not serious	1.0	1-2	1-4
E=	Serious	1-1	1.3	1.5
	Very serious	1.2	1.4	1.6

tors shows this combination as X = 1.45. Danger to the public in large numbers ranks D as very serious and E repairs as serious. The table for Y factors shows this combination as 1.5 and multiplying the X and Y factors would give an ultimate load factor of 2.18. Designing to the Code at a stress of 10 tons per sq. in. would give an equivalent factor of 2.8 to 3.0 irrespective of any of the assessments of the X or Y factors. The X and Y factors suggested in the report were arrived at after members of the committee had assessed various typical structures and as the result of their individual efforts. They felt that there would be good agreement among professionally qualified assessors. They therefore recommend the system both as a general guide to professional engineers and as a system worthy of further improvement to meet the need of any particular branch of construction.

Forgetting for the moment the actual number values of the X and Y factors the report has provided the first official logical approach to design and, when redrafted in the light of general comment in structural engineering circles, must eventually influence the Codes of Practice. The result would be an immediate saving in both cost and materials, in fact the report could easily have been entitled "Structural Safety and Structural Economy." The basis of the report is the use of ultimate load factors in design instead of stress limitations and no one can argue against the logic of this. The example of the theatre gallery quoted previously shows a factor of 2.18 against 2.8-3.0 by the present Code. The present Code does in fact provide exactly the same safety factor for a water tank constructed out in the wilds as an office building in the centre of London despite the fact that the loading of the tank is known exactly, the odds against its falling on someone are colossal and it could probably be replaced in a matter of weeks, during which an emergency water supply would suffice. Where we begin to criticise the report however is in its choice of factors. The idea of crediting workmanship, loading and analysis with qualities of very good, good, fair and poor would seem to provide as many different answers as there are engineers. Presumably the more experienced the engineer the more likelihood is there of agreement with another experienced engineer. The present Codes guide the less experienced and if this guidance is to continue in the proposed modified Codes, then either a vast number of factors must be given for different conditions, or minimum factors must be specified for the particular materials of construction. After all, to date, only structural steelwork in bending can be said to have a definitely calculable collapse load.

The most criticized element in the Report was the mode of assessing type loadings. One suggestion was that a drive with government backing should be made to conduct a wide survey into loadings. The D factor came under fire because it indicated that one or two lives lost in a collapsing structure was "serious" while many lives lost was "very serious." Some members thought any loss of life could only be regarded as very serious but consideration of public reaction to big and small air accidents will show that the report is quite correct in this respect. The American committee which is working on a similar report has actually used a more statistical basis so that in the case of bridge building for example they might expect 1 in 10,000 bridges to collapse.

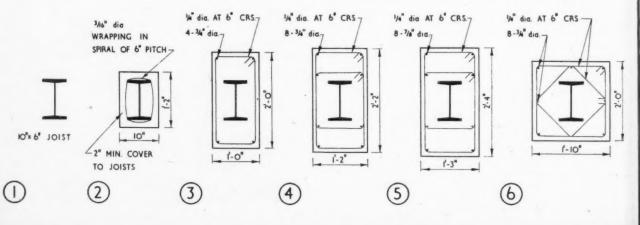
Nobody at the meeting seemed to have any idea as to how the life of a building is determined in advance and it will be interesting to see whether the report enlarges on this when redrafted. The report states that a great deal more thought must be given to the limiting load factor and we look forward to hearing more about this in due course.

THE DESIGN OF CASED STANCHIONS The second meeting, which took place on November 29, was called jointly by the ISE and the British Constructional Steelwork Association to hear a report presented by Dr. Oscar Faber on some research into the strength of concrete encased structural steel stanchions carried out by him in conjunction with BCSA. Design of stanchions at the moment is largely based on BS 449/1948, although this standard is to be revised and the draft of the new version has been circulated for comment. In BS 449/1948 provision is made for an increase in the design strength of a steel stanchion encased in concrete only by the fact that a higher value may be used for the least radius of gyration (r) so that a correspondingly higher stress may be used for the lower length (1) ratio. The casing

(Continued on page 891)

			Per	rmissible Load	s	Ultimate	Factor of Safety or
Member	ember Overall Size		Based on B.S. 449/ 1948	Based on B.S. 449/ 1955 Draft	New Basis of Design	Load from Tests	Load Facto on Basis of New Design Method
		Ft.	Tons	Tons	Tons	Tons	Method
1	10 in. × 6 in. I Uncased	12	54	54	54	155	2-87
2	14 in. × 10 in. (10 in. × 6 in. I)	12	71	81	92	250	2.72
3	24 in. × 12 in. (10 in. × 6 in. I)	12	71	81	147	450	3-06
4	26 in. × 14 in. (10 in. × 6 in. I)	12	71	81	183	615	3.36
5	28 in. × 15 in. (10 in. × 6 in. I)	12	71	81	211	670	3-17
6	20 in. × 20 in. (10 in. × 6 in. I)	12	71	81	211	555	2.63

Above, Table 3. Table showing the ultimate test load of colums of varying cross section (as shown in the diagram) but uniform length of 12 ft., and comparing the loads permissible under BS.449:1948 as now in force, under the same as modified by the draft now circulating, and on the new basis proposed by Dr. Faber. Below, diagram showing the cross section of the stanchions considered in Table 3.





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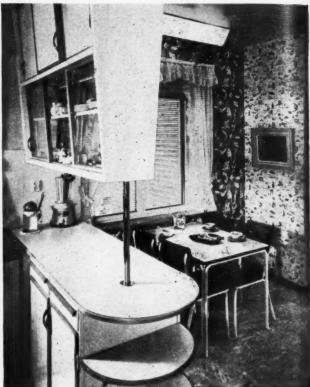
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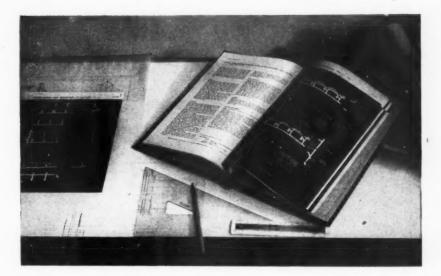
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#### THE LIBRARY OF INFORMATION SHEETS

This week part of the Technical Section is devoted to the customary annual review of the Library.

From time to time, and regularly each December, all Sheets are examined and checked, and where a manufacturer's products form the subject of a Sheet the manufacturer in question is asked to certify that the data are still current. Where a Sheet is found to require considerable modification, it is cancelled and readers should remove such Sheets from their collections. Where only small variations are involved, revision notes enable the Sheet to be corrected.

The Sheet 46.Z (A-FR) published in the issue of 15.12.55 and the two Sheets 46.Z (FU-P) and (R-Z) published in this issue give an up-to-date index cancelling all previous indexes.

On the following pages will be found a list of the revisions and cancellations which have become necessary during the year, and a statement of the contents of the Library with all Sheets current at this date in correct sequence. For the benefit of new subscribers, we also give information on the method of filing Sheets.

#### REPRINTS

To enable new subscribers to complete their Library all Sheets published since the inception of the new series in October, 1947, have been checked and reprinted. Readers requiring sets or individual Sheets should fill in the form printed in the adjoining column. Sets are available as follows:

Oct., 1947-Dec. 15, 1955 inclusive ..... £4 13s. od.

Specially designed binding cases to hold approximately 100 Sheets may be obtained at the price of 6s. od. (postage 6d.) each. Individual Sheets may be ordered at the price of 3d. each, and the publishers will quote for sets not detailed above.

ORDER FORM	0	RI	D	ER	F	70	R	N	1
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#### FILING INSTRUCTIONS

Every Information Sheet is perforated so that it may be readily removed from the JOURNAL and has a classification symbol printed in the top corner, for example, 32.C20. The key to the classification system is contained in Sheet 1.A1, reference to which should make filing a simple matter.

The first number of the symbol, 32, refers to one of the 46 main subjects into which the Library has been divided (in this case, water heating): the letter that follows refers to the section, C (in this case, units: gas), under subject 32: the final number indicates the position in which the Sheet is to be placed in the appropriate section.

Every December a check list of the contents of the Library is issued showing the correct sequence of all Sheets published to date. Throughout the year, any revisions to or cancellations of Sheets are noted in the JOURNAL and the Editor will always be pleased to assist if any difficulty is encountered in keeping the Library in order.

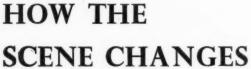
#### CORRECT SEQUENCE OF COMPLETE LIBRARY AT DECEMBER 15, 1955

1.41	1.A2	1.A3	1.B1	1.B2	1.B3	15.S7	15.S8	15.T6	15.T8 (R'55)	15.T9 (R'55)	15.Z1 (CR'51)	29.G1	29.H1 (CR'55)	29.H2	29.JI	29.J3	29.J4 (R'51)
1.B4	1.B5	1.B5a	1.B6	1.B7	1.B8	15.Z2	16.B1	16.C1 (R'55)	16.J1	17.B1	17.B2	29.J5 (R'51)	29.J6	29.J10 (R'55)	29.J11 (R'55)	30.B1	30.B2 (R'54)
1.B9	1.B10	1.B11	1.B12	1.B13	1.B14	17.D1 (R'54)	17.D2 (R'54)	17.H1	18.E1	18.F1 (R'55)	18.F2	30.B3	30.B4	30.B5	30.C1 (R'49)	30.C2	30.C3
1.B15	1.B16	1.B18 (R'51)	1.B19	1.B20	1.B21	18.G1 (R'55)	18.H1	19.F1	19.F2	19.F3	19.F11	30.C4	30.D1 (CR'55)	30.D10	30.D11	30.D12 (R'52)	30.D21 (R'54)
1.B22	1.B23	1.B24	1.B25	1.B26	1.B27			19.G3 (CR'54)		19.J2 (R'55)	19.Z1	30.E1	31.C2	31.C3 (CR'55)		32.C3 (R'52)	32.C10
1.B28	1.B29	1.B30	1.B31	1.B32 (R'51)	1.B33	19.Z10 (CR'55)	19.Z11	20.C3 (R'55)	20.C4	20.C10 (CR'54)	20.C12	32.C11	(CR'52)	32.C21 (R'53)		32.C23 (R'53)	32.C24 (R'53)
1.B34	1.B35	1.B36	1.B37	1.B38	1.B39	20.C13	20.D1 (R'54)	20.D2	20.E1	20.Z1	20.Z2 (R'52)	32.C25 (R'53)		32.C27 (R'53)	32.C28 (R'53)	32.C29 (R'53)	32.C30 (R'53)
1.B40	1.B41	1.B48	1.B49	1.B55	1.B56	20.Z5	20.Z6	20.Z7	21.C1	21.C2	21.E2	32.C31 (CR'55)		32.C33	32.C34	32.D7 (R'52)	32.D8
1.B57	1.B60 (R'54)	2.A1 (R'49)	2.A2	2.A3	2.A4	21.G2	22.D1 (CR'54)	22.D2 (CR'54)	22.D3 (CR'54)	22.D4	22.D5	33.B1	33.B2	33.B3 (R'54)	33.C1 (R'54)	33,C2 (R'54)	33.C3 (R'54)
2.A5	2.B1	2.B2	2.B3	2.B4 (R'50)	2.B5	22.D12 (R'55)	22.D13 (R'55)	22.D16 (R'53)		22.E2 (R'51)	22.F1 (R'51)	33.C4 (R'54)	33.C5 (R'54)	33.C6 (R'54)	33.C7 (R'54)	33.C8 (R'54)	33.C9 (R'54)
2.H1	2.H2	4.A1	4.A10	4.A11	4.A12	22.F2	22.F3	23.B1 (R'55)	23.B2	23.C1 (R'55)	23.C2 (R'55)	33.C10 (R'54)	33.C11 (R'54)	33.C12 (R'54)	33.D1	33.K1 (R'54)	33.L1
4.A13	4.A14	4.A20	4.E1 (CR'53)	4.E2	4.L1	23.C3 (R'55)	23.E1	23.H1	23.H2	23.H3	23.H4	33.P1 (CR'53)	33.Q1 (CR'53)	33.Q2 (R'50)	33.Q3 (R'53)	33.U1	33.U4
4.L2	4.L3	4.LA (R'54)	4.L5	4.L10	4.L11	23.H5	23.H6	23.Z1	23.Z2	24.C1 (R'54)	24.D1 (R'53)	33.U5	(R'55) 34.Z1	35,B1 (CR'55)	35.B2	36.A1	36.A2
4.N1	4.N2	5.B1	6.A1 (R'53)	6.A10	6.A11	24.D2 (R'53)	24.D3 (R'53)	24.D4 (R'53)	24.J1	24.J2 (R'53)	24.L1	36.A3	36.B1 (R'55)	36.D2	37.C1 (R'50)	37.D1 (R'54)	37.D2 (R'54)
6.A20	6.A21	6.B1	6.Z1 (R'53)	6.Z2	6.Z3	24.M1	24.M2	24.M3 (R'53)	24.M4	24.N1	24.N2	37.D3	37.D4	37.D10	37.H1	S37.H1	37.H2
6.Z5	7.C1 (R'51)	7.C2 (R'51)	8.E1 (CR'55)	8.F1	9.C1	24.N3 (R'53)	24.N4	24.S1	24.S2	24.Z1	24.Z2	37.Н3	37.H4	37.H10 (R'55)	37.H11	38.A1	38.B1
10.B1 (CR'52) (R'55)	10.B2 (CR'52) (R'55)	10.B3 (R'55)	10.B4 (R'55)	10.E1 (CR'55)	10.G1 (R'54)	24.Z3 (R'55)	25.A1	25.A2	25.A3	25.A4	25.A5	38,C1	38.C2	38.C3	38.D1	38.D2	38.E1
10.G2 (R'54)	10.G3 (R'54)	10.G4 (R'54)	10.G5 (R'54)	10.G6 (R'54)	10.G10 (R'54)	25.A6	26.A1 (R'54)	26.A3	26.C1 (R'50)	26.C2	26.D1	39.B1	40.B1 (R'49)	40.B2	40.C1	41.A1	41.B1
10.G11 (R'54)	10.G12 (R'54)		10.G14 (R'54)	10.G15 (R'54)	10.G20 (R'54)	26.D2	26.D6	26.E1 (R'55)	26.E2 (R'53)	26.F1 (R'55)	26.F2 (R'54)	42.B2 (R'54)	42.C1	42.C2	42.C3	42.C4	42.C5
10.G21 (R'54)	10.G22 (R'54)	10.J1	10.J2	10.J3 (R'53)	10.J4	26.F3 (R'54)	26.F4 (R'55)	26.J3 (R'51)	26.J6	26.J10	26.J20	42.D1	42.E1 (R'55)	42.K1 (R'53)	42.K2 (R'55)	42.L1 (R'55)	43.E1 (R'55)
11.C1 (R'52)	12.F1	12.N1 (CR'55)	13.C10	13.C11 (R'51)	13.C12 (R'51)	26.K1	26.M1	26.M2	26.M3	27.B9 (R'51)	27.B10 (R'54)	43.E2 (R'54)	43.E12 (R'53)	43.Z2 (CR'49)	43.Z3	43.Z4	44.D2 (R'51)
13.H1 (R'55)	14.B1 (CR'55)	14.B2 (CR'55)	14.B3 (CR'55)	14.F1 (R'55)	14.L4 (R'51)	27.B11 (CR'54)	27.C1 (R'54)	27.F1 (R'54)	27.Z1	28.A1 (R'53)	28.A2 (R'53)	44.E1	44.E2	44.J1 (R'55)	44.32		
14.L11	15.B1 (CR'55)	15.B3 (CR'55)		15.C1 (R'54)	15.C2 (R'54)	28.A3 (R°53)	28.B1	28.D1 (CR'55)	28.E2 (R'54)	28.E10 (CR'55)	28.E20 (R'53)	46.Z (Three	Sheets)				
15.C3	15.C4 (R'53)	15.C11	15.R1 (R*54)	15.R2	15.S6 (CR'54)	29.A1 (R'55)	29.C1 (R'50)	29.C2 (R'52)	29.C3	29.C10 (R'52)	29.F1						

The letter R after the number of the Information Sheet indicates that the Sheet has been revised and is followed by the year in which the latest revision was made. The letters CR indicate that the Sheet has been cancelled and republished and are followed by the year of re-issue.



Garage with conventional lighting. Note the confusion of beams, pipes, trunking, wiring and light fittings.





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#### REVISIONS 1955

10.B1-Face of Sheet-third column, first entry, second and third sentences, substitute H3 for H10 in each case; fifth entry add H30.

10.B2—Reverse of Sheet—add to list of manufacturers Almin Ltd., Almin House, Stoke Poges, Bucks and E. & E. Kaye Ltd., Ponders End, Enfield, Middlesex, and delete Richard Thomas and Baldwins Ltd. The address of British Aluminium Co. Ltd. is now Norfolk House, St. James's Square, London, S.W.1, and of L.M.F.A., 69, Harborne Road, Birmingham 15. P.O. Box 216 should be placed before the address of Imperial Chemical Industries Ltd., Metals Division.

10.B3—Reverse of Sheet-heading "Heat-Treated Materials," first column, third entry, add "and 20W," fourth entry add "and 20WP." Add a fifth entry, HE 30WP, adding 16, 19 and 10 respectively to the other columns of the table. Delete "with the possible exception of NE6" from the second sentence following the table.

10.B4—Reverse of Sheet, heading General, first paragraph should be amended to "While structural sections to BS.1161 are often less costly to produce than special sections, there exist a number of stock sections, not to BS.1161, which are more effective than those included in the Standard.'

Heading "Material Specifications . . . "amend second entry, first column, to HE3 WP. Heading "Relevant Publications" add after A.D.A. Brochure No. AB/6, Addendum to AB/6 "Bulbed and lipped structural aluminium-alloy sections (angles and channels).

13.H1-Face of Sheet, heading "British Standard," for grades of brick see BS.187: 1955.

**14.F1**—Reverse of Sheet—heading "Laying," sub-heading "Mortar," for 1:1:6 substitute 1:3:12.

15.B4—Face of Sheet—headings "Sizes" and "Fixing," delete all references to  $\frac{3}{16}$  in. board.

15.S6—Reverse of Sheet—heading "General Applications," sub-heading "Veneers," to last sentence should be added ... but it is not recommended that it should be used without considerable experience of its application and its limitations. It is generally better to face a brick or plaster wall with wellsecured hardboard and apply the veneers subsequently.

15.T8—Reverse of Sheet—heading "Fixing," sub-heading "Veneers," last paragraph should read "The adhesives recommended are of the spirit-solvent type . . . "

15.T9—Reverse of Sheet—heading "Construction Generally," second sentence, delete example of adhesive given in brackets.

16.C1-Reverse of Sheet-heading "Flashings," add "The materials specially recommended for flashings are high-purity aluminium 1, 1A and 1B."

18.F1—Face of Sheet—heading "Fixings to Sub-Floors," sub-heading "To Concrete" amend note to cork tile to "\frac{3}{16} in. or \frac{5}{16} in. thick." Lower two rows of drawings on Sheet, amend \frac{1}{2} in. to \frac{3}{16} in. wherever it occurs.

Reverse of Sheet—heading "Sizes," first sentence, omit "12 in. by 4 in., 9 in. by 9 in. and 6 in. by 6 in." Amend fourth sentence to ".. two thicknesses: \frac{1}{16} in. .." Heading "Grades" amend paragraph to "... available in three specifications: S. I medium grain heavy density (recommended) specifications: S.1 medium grain, heavy density (recommended for areas likely to receive exceptionally heavy traffic); S.2 medium grain, S.4 medium grain (for all general purposes)." "Applications" second sentence, amend to means of Armstrong's L128 Linoleum Cement or L500 or L505 Waterproof Cement and headless steel pins." Heading "Sealing," amend first sentence to " . . . traffic, a plastic seal can be used as an alternative to the wax finish, in which case

the floor may be lightly washed. On no account should it be wax-polished as this seriously affects any future resealing.' The manufacturer's telephone number is now Covent Garden

18.G1-Reverse of Sheet-heading "Applications," subheading "Wood Sub-Floors," second paragraph, third sentence, add "L128" before "Linoleum Cement."

19.J2—Face and Reverse of Sheet—The flooring is now known as Onsite Windsor Wood Flooring and is available in oak, sapele and other woods. The address of the manufacturer is now 44, Southern Row, Kensington, London, W.10; telephone: Ladbroke 6555.

20.C3—Face of Sheet—The figures for the 36 in. by 7½ in. beam have been revised; the manufacturer should be consulted.

22.D12—Face of Sheet, "General Assembly of Component Parts," from note to hook bracket delete "at 12 ft. 0 in. maximum crs." The wall fixing is now a \(\frac{1}{2}\) in channel. Reverse of Sheet—under "Components," Deep tee, steel is now 1\(\frac{3}{2}\) in. wide; deep tee, aluminium-alloy is now 2 in. high. Standard tee, delete steel section, aluminium-alloy tee is now 1½ in. high. Angle trim, add 1½ in. by 1 in. Add at end, Wall channel: ¾ in. and ½ in. Under "Fittings," "Hook brackets," delete sentence beginning "A pressed steel bracket . . . "The figures in the table of safe spans have been revised: the manufacturer should be consulted.

22.D13—Face of Sheet—"General Assembly of Component Parts," from note to hook bracket delete "at 12 ft. 0 in. maximum crs." Delete note beginning "With aluminium sections..." Note at lower left should read "m.s. or aluminium-alloy tees at 2 ft. 0 in. crs." and at lower right "...at 2 ft. 0 in. crs." Delete sub-headings to "Sections thro' Tees at Wedges." The wall fixing is now a \(\frac{3}{4}\)-in. channel.

23.B1—Reverse of Sheet—heading "Framed Ledged and Braced Doors (not to BS)," middle and bottom rails are now 5 in. and bottom rails are now the full nominal thickness of the door.

23.C1-3—Readers are advised to refer to BS.1245:1951 in conjunction with these Sheets. In addition, an alternative range of door frames in 18 gauge steel can now be supplied, designed for housing work: an amendment to BS.1245 is in course of preparation to cover this range.

24.Z3—Face of Sheet—second detail, headed "With Standard Metal Window and Frame (showing 11 in. cavity wall)," the size of the wood fillet was incorrectly given as 1\frac{1}{8} in. by \frac{3}{4} in.: this should read 1\frac{1}{2} in. by \frac{3}{2} in.

26.E1—Reverse of Sheet—heading "Methods of Driving," amend wording to "Large Contracts: Excavator outfit-Drop hammer or Pile frame—Steam hammer. 3-5 ton types for vertical or raking drive (up to 1 in 3 rake) driving 6 to 10 piles per day." The address of the manufacturer's Northern Office is now 103, Hulme Hall Lane, Miles Platting, Manchester 10.

26.F1—Face of Sheet—Model DLA4RS, the sliding safety grip is no longer used.

26.F4—Face of Sheet-column of table headed "D" should read 3 ft. 0 in., 3 ft. 6 in., 4 ft. 0 in.

29.A1—The manufacturer's telegraphic address is now Spirax,

29.J10-11—The manufacturer is now known as Riley (IC) Products Ltd.

32.C20-34—The manufacturer's telephone number is now Willesden 1234.

33.Q1-Face of Sheet-Model OG, overall depth is now 2 ft. 1 in. and width 1 ft. 6 in.



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164 T.D. 85

36.B1-Reverse of Sheet-heading "Pyrene Everyway Hosereel," sub-heading "Operation," add at the end the following

new paragraphs:

"When the hose-reel is not in use the main water control valve should be kept closed. If desired, the hose can be kept charged with water provided it is not under pressure. "The recommended procedure after installation, or after use or test, is to shut off the water at the nozzle cock, then shut off the main control valve; after this, re-open the nozzle cock to release the excess pressure and close it again." Heading "Construction," sub-heading "Side Discs," delete "pressed steel"; sub-heading "Hose," amend to ".... 60 ft. to 120 ft."

37.H10—Reverse of Sheet—heading "Instruments and Systems," sub-heading "(3), (4) and (5) . . .", first sentence should read "... suitable for medium-sized installations in offices etc." Add at end of paragraph "A loudspeaking master can be included." Heading "Capacity of Equipment," amend first sentence to read "... 2 to 30 points."

42.E1-Face of Sheet-Pattern B, the dimension from the back of the fitting to the floor is 41 in. to 61 in.

42.K2—Reverse of Sheet—heading "Construction," blinds can be made up to 15 ft. 0 in. in width as one unit. The back-to-front depth of the blinds makes them particularly suitable for use with double-glazed windows. Sub-heading "Sunblinds," these are now available in Terylene or nylon which give a high degree of light diffusion. Heading "Colours" add "Terylene sunblinds are available in white, and nylon in white and pastel shades."

**42.L1**—Face of Sheet—Type NT2, bottom line of table, dimensions should read a: 2 ft. 0 in., b: 3 ft. 9 in.

43.E1—Reverse of Sheet—heading "Construction," sub-heading "Doors," amend first sentence to "These are plywood-faced skeleton framed . . ." Sub-heading "Plinth," amend first sentence to "This can be supplied but is normally provided by the builder"; Heading "Fittings," sub-heading "Hinges," amend to ". . . hung on semi-concealed cadmiumplated hinges"; sub-heading "Handles," amend to "These are in hardwood and are supplied loose with screws; doors are pre-drilled."

**44.J1**—Reverse of Sheet—heading "Capacity of Balances," substitute for existing wording "A range of 9 capacities, varying from 4 to 30 lb. per pair of balances, can be obtained." Heading "Length of Travel of Sash," from second sentence, substitute for existing wording "The maximum length of travel is 39 in. and this cannot be increased. The standard length of tape is 46 in. and although longer tapes can be supplied if necessary, this only allows the balance to be fitted further away from the sash. It is recommended that catches be fitted to retain the sash in the fully-closed and fully-open positions."

#### CANCELLATIONS

Sheets 8.E1, 10.E1, 12.N1, 14.B1, 14.B2, 14.B3, 15.B1, 15.B3, 19.Z10, 28.D1, 28.E10, 29.H1, 30.D1, 31.C3, 32.C31 and 35.B1 were cancelled and republished this year. Sheet 12.F1 was cancelled and its classification number re-used for the first of a new series of Sheets on asphalt. Sheet 44.D1 is being revised and will be republished. Sheets 10.F1, 14.M1, 14.N1-9, 15.S2, 15.T7, 20.C1, 20.C2, 21.G1, 30.A1, 33.Q4, 33.Q5, 36.D1, 43.E15-16 and 45.A1 have been cancelled and should be withdrawn from the Library.

#### two reports on structural design Continued from page 886

must be not less than 2 in, all round the column but nothing greater than that 2 in. may be used in determining "r" irrespective of the casing thickness. In addition the l

ratio of the stanchion itself must not exceed 250 and the final stress on the steel only shall not exceed 1.5 times the allowable stress. The new draft has not given very much relief. All the previous provisions apply except that the concrete measured as a rectangular section between the flanges of the steel section and width equal to the width of the flange may now be considered as assisting in carrying the load using a modular ratio of 15.

Dr. Faber did not consider this adequate and following discussions with BCSA, arrangements were made to carry out a series of full-scale tests in the 1,250-ton testing machine in Dorman Long's works at Middlesbrough. A series of 10 × 6 and 12 × 8 r.s.j's were tested uncased and cased with a variety of thicknesses at a length of 12 ft. and a series of 12 × 8 r.s.j's at a length of 18 ft. The bigger sections were given a mesh of 3 in. dia. vertical and in dia horizontal reinforcing bars.

Table 3 gives results typical of the three sets. In the permissible load columns it will be noted that under BS 449 and the new draft, no increase is allowed as the size of the casing increases but in the ultimate load column the stanchion failing strength goes up as the area of concrete increases. Dr. Faber suggests that a new formula similar to that used in concrete columns be applied. i.e., design strength is  $(18,000 A_s + 760 A_c)$  lb. where

A, is the total area of steel section and rod reinforcement:

Ac is the total area of concrete casing. The l/r ratio is determined by taking r =0.2 × casing width, or by calculating exactly on a modular ratio of 15. The reduction for safe strength is then made by reference to Robertson's formula in BS 449 reducing the load by the ratio that the figure thus obtained bears to 9 tons per sq. in. (i.e., the safe stress with l/r = 0). The concrete is assumed to be 1:2:4 nominal mix giving cubes of 3,000 p.s.i. at 28 days.

Dr. Faber considers that this research may well lead to a new technique whereby certain structures can be run up with smaller stanchion sizes than would otherwise be required, the concrete casing providing the extra strength later. This would lead to considerable economy in steel.

Alternatively it would provide a solution where a building is required to be strengthened to carry extra load higher than that capable of being taken by the steel stanchions only.

He also puts forward a revised clause for the new version of BS 449 which would take into account the whole area of the concrete and delete the restrictions of 11 times the steel stanchion capacity and also the 250 maximum l/r ratio.

There will be general agreement that the work described in this paper is of great importance and may well affect the redrafting of BS 449. The idea of erecting the steelwork with the minimum size stanchion and later increasing its strength by the concrete casing has already been used for bridge and power station columns in Denmark and Italy; it should make quite a saving in cost but without being as cheap as reinforced concrete. One of the few present advantages of structural steelwork is the ability to design smaller sizes than in reinforced concrete and once casings of greater than 2 in, thickness are used this will be largely lost.

The big disadvantage of the proposed system is in stanchions subjected to bending where Dr. Faber remarks with some optimism that the bending moment will be carried by the casing. We suggest that a large amount of rod reinforcement would be required for this purpose and in a building with a high live to dead load ratio there would be little aggregate gain.

There is also in the smaller thickness casings the doubt about the compacting of the concrete along the face of the flanges and underneath the junctions of floor beams at stanchion heads and the ease with which concrete in these positions would be flashed off in the case of fire. This perhaps provides the answer for the conservative approach made in BS 449.

Dr. Thomas has announced that a similar series of tests are to be carried out at BRS in the new big testing machine there and we look forward to the time when sufficient evidence has been marshalled to make full use of Dr. Faber's efforts.

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#### Buildings Illustrated

Housing in Coillesdene Avenue, Eastfield, Joppa, Midlothian, Scotland, for Messrs. Morton & Johnstone (pages 869-874). Architect: Alan Reiach, A.R.I.B.A., A.M.T.P.I. Assistant: Ian W. Hall. General Contractors: Morton & Johnstone. Sub-contractors (structure): Tiles and slates: Peter Kelly & Sons Ltd. Glass: James Thow Ltd. (Equipment.) Electric wiring and light fixtures: Murdoch Wight. Door furniture: Bell & Donaldson Ltd.; Harvey, Gordon & Campbell Ltd. Casements and doors: Coudens Ltd. Plumbing: A. W. Johnstone. Plumbing fittings: Low & Duff; Sinclair, Cambell, Kinghorn Ltd. Sanitary fittings: Shanks. (Decorations.) Paint: Russell & Abbey.

Flats in Regent's Park, Area "C," Osnaburgh Street, London, N.W.1, for the Borough of St. Pancras (pages 875-883). Architects: Davies & Arnold, F.R.I.B.A. Assistant-in-charge: R. Tucker. Consulting engineers: G. A. Dodd & Partners. Quantity surveyors: C. E. Ball & Partners. General contractors: John Laing & Son Ltd. Sub-contractors: (structure) Demolition: Lea Bridge Demolition Co. Asphalt: General Asphalte Ltd. Reinforced concrete: Caxton Floors Ltd., & John Laing & Son Ltd. Slates: London Slate & Tile Roofing Co. Glass: Faulkner Greene & Co. Ltd. Artificial stone: The Atlas Stone Co. Ltd. Structural steel: Redpath Brown & Co. Ltd. Patent flooring: Marley Tile Co. Ltd. (Equipment) Gas fixtures: Radiation Group Sales Ltd. Gas fitting: North Thames Gas

Board. Electric wiring: David Thompson Ltd. Plumbing: Ellis (Kensington) Ltd. Door furniture: W. N. Froy & Sons Ltd. Window furniture casements: Crittall Manufacturing Co. Ltd. Sanitary fittings: John Knowles & Co. (London) Ltd. (Decorations and specialities). Plaster: Pollock Bros. (London) Ltd. Joinery: The Rothervale Trading Co. Ltd.; Gliksten Doors Ltd. Tiling: S. A. Forbes & Son. Lifts: Marryat & Scott Ltd. Paint: Leyland Paint & Varnish Co. Ltd.

### Announcements

Dr. Harold Hartley, C.B.E., the Chairman of Radiation Ltd., will, at his own request, relinquish the office of Chairman on the 31st December. He will be succeeded by the present Deputy Chairman, W. Donald King, Dr. Hartley will retain his directorship of the Company.

G. R. Blakely, B.Sc. (Eng.), M.I.C.E., M.I.Mech.E., M.I.Prod.E., has been appointed to the Board of Directors of G. A. Harvey & Co. (London) Ltd., Greenwich Metal Works, as Works Director.

The Peterborough office of Mitchell Engineering Ltd. has moved from Fengate House and the Company's new address is: Mitchell Engineering Ltd., The Bridge, Peterborough, Northants. The telephone numbers and telephonic address remain unchanged.

#### CORRECTION

In our issue of December 15, 1955, the name of Patricia R. Tindale, A.R.I.B.A., of the MOE, was omitted as assistant architect for the Secondary School, Belper, Derbyshire.

#### In character....

29.12.55

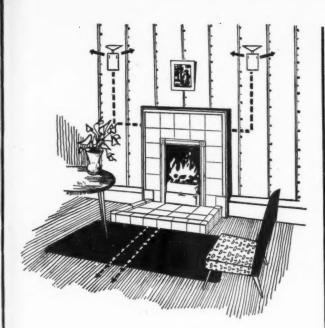
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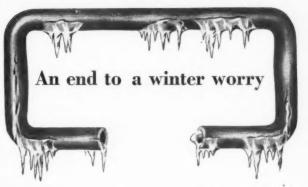


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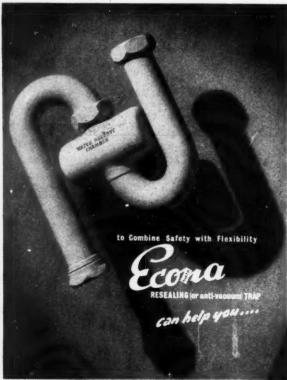
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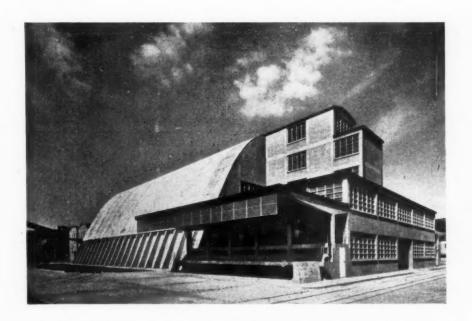
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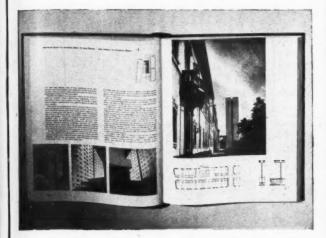
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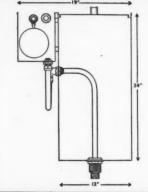
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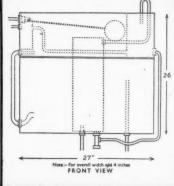
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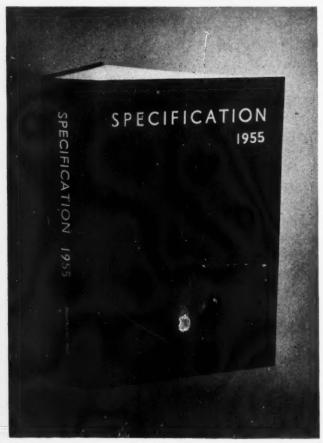


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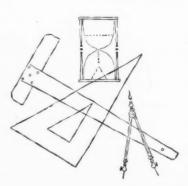
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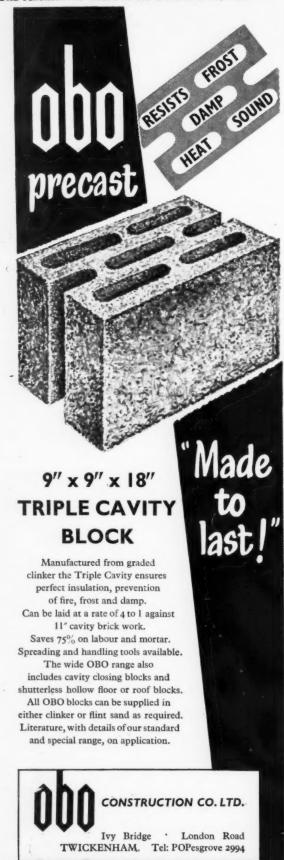
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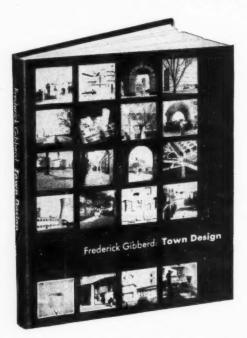
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Town Hall, Oxford. DEVON COUNTY COUNCIL require TWO SENIOR ARCHITECTS (2750×230—2900), and TWO ASSISTANT ARCHITECTS (2650×252—2775). Particulars and application forms, returnable by 18th January, 1956, from County Architect, 97, Heavitree Road, Exeter.

COUNTY BOROUGH OF DERBY.

BOROUGH ARCHITECT'S DEPARTMENT.

ARCHITECTURAL STAFF:

(a) A.P.T., Grade IV (£675-£825 per annum).

(b) A.P.T., Grade III (£500-£725 per annum).

(c) A.P.T., Grade II (£550-£640 per annum).

(d) A.P.T., Grade I (£500-£580 per annum).

(e) Higher General Division (£275 at 26, rising).

(e) Higher General Division (£275 at 20, rising to £475).

QUANTITY SURVEYING STAFF:
(f) A.P.T., Grade VI (£825-£1,000 per annum).
(g) A.P.T., Grade V (£750-£900 per annum).
(h) A.P.T., Grade III (£600-£725 per annum).
(j) A.P.T., Grade III (£600-£725 per annum).
Commencing salary will be according to qualifications and experience.
Applicants for (f) will be required to act as deputy to the Chief Quantity Surveyor.
Permanent superannuable appointments, subject to one month's notice and to medical examination.

On. National Conditions of Service. Applicants must state for which post they are

Applicants must state for which post they are applying.

Further particulars and application form obtainable from and to be returned to the Borough Architect, The Council House, Corporation Street, Derby, not later than Monday, 9th January, 1956.

G. H. EMLYN JONES. G. H. EMLYN JONES, Town Clerk.

15th December, 1955.

BOROUGH OF REIGATE,
ARCHITECTURAL ASSISTANT required,
Grade A.P.T. II (£595—£675 p.a.). Commencing
salary according to qualifications and experience.
Intermediate Examination R.I.B.A. desirable.
Housing accommodation provided if necessary for
married man. Application forms from Borough
Surveyor, Town Hall, Reigate, to be returned by
6th January, 1956.

HEBER DAVIES.

HEBER DAVIES, Town Clerk

Town Citers.
6052

EAST RIDING OF YORKSHIRE COUNTY
COUNCIL.
Applications are invited for the following permanent appointments on the staff of the County Architect.
(a) ASSISTANT QUANTITY SURVEYOR,
Grade V (£750—£900).
(b) ASSISTANT QUANTITY SURVEYOR,
Grade II (£560—6540).
(c) ASSISTANT ARCHITECT.
Special Scale (£650—£775).
Applications, giving particulars of age, past and present appointments and salaries, together with the names of three referees, should be sent to the County Architect, County Hall, Beverley, not later than Friday, 13th January, 1956.

THOMAS STEPHENSON,
County Hall,

THOMAS STEPHENSON,
Clerk of the Council.
Beverley.
November, 1955.

COUNTY OF HUNTINGDON.
COUNTY ARCHITECT'S DEPARTMENT.
APPOINTMENT OF THE SENIOR ARCHITECTIVAL ASSISTANT.
APPOINTMENT OF THE SENIOR ARCHITECTIVAL ASSISTANT.
Applications are invited for the above appointment at a salary in accordance with Grade APT. VII of the National Joint Council's scales (at present 2900 × 240 (5) — £1,000 per annum).
Candidates should be Associate Members of the Royal Institute of British Architects or hold equivalent qualifications, and have had considerable experience in the design of Schools, Police and other Council will be prepared to consider the provision of accommodation in due course. An allowance of 30s. per week will be paid for a period not exceeding six months in the event of a married man being appointed who is unable to find accommodation, together with a moiety of the cost of removal expenses.
Further details and application forms may be obtained from S. M. Holloway, A.R.I.B.A., County Architect. County Buildings, Huntingdon, to whom completed application forms should be forwarded by Saturday, 14th January, 1956.
A. C. AYLWARD,
Clerk of the County Council.

Deprough 2303.

LONDON COUNTY COUNCIL.

Vacancies for Grade II ASSISTANTS in the District Surveyor's Service (salary £945 to £1,134, with starting point according to experience and qualifications). Duties will include the supervision of works in progress and checking of calculations, Qualifications: A.R.I.B.A. A.M.T.Str.E., or A.R.I.C.S., structural knowledge essential.

Particulars and application form from Architect (AR/EK/DS/1), The County Hall, S.E.I. (2122)

COUNTY BOROUGH OF BURNLEY.
BOROUGH ENGINEER AND SURVEYOR'S
DEPARTMENT.
Applications are invited for the appointment of
QUANTITY SURVEYING ASSISTANT. Salary
£500×£20—£580 or £560×£20—£540. Grade and
salary to be fixed according to experience and
qualifications.
Should have a sound knowledge of building construction, and experience in preparation of
quantities and measurement of work is essential.
Application forms, etc., may be obtained from
the Borough Engineer, 22/24, Nicholas Street,
Burnley, to whom applications should be returned
not later than 7th January, 1956.
C. V. THORNLEY,
Town Clerk.

Town Clerk.
6071

HACKNEY BOROUGH COUNCIL require
ARCHITECTURAL ASSISTANTS and JUNIOR
ARCHITECTURAL ASSISTANTS for extensive
programme of new housing, public baths, libraries,
and other public ouldings. Appointments may
be in Grades A.P.T. II (£500—£530), A.P.T. II
(£550—£640), or A.P.T. III (£600—£725), singly
or combined, plus London allowance of up to £30
p.a. Candidates must be Probationers or Students
of R.I.B.A. Grade and commencing salary
according to training, qualifications and experience. Application form obtainable from the Town
Clerk, Town Hall, London, E.3, returnable by
16th January, 1956, quoting Reference J.1. 6070
ASSISTANT ARCHITECTS, A.P.T. IV (£675 to
£825).
ARCHITECTURAL ASSISTANTS, A.P.T. IV

ARCHITECTURAL ASSISTANTS, A.P.T. II (£560 to £640). (£560 to £640). ARCHITECTURAL ASSISTANTS, A.P.T. II (£500 to £580).

(£500 to £940).

ARCHITECTURAL ASSISTANTS, A.P.T. I
(£500 to £580).

SURVEYING ASSISTANT (ESTATE WORK),
A.P.T. I (£500 to £580).

TECHNICAL ASSISTANT (RECORDS), A.P.T.
I (£500 to £580).

Applications are invited for the above posts in the County Architect's Department, Bedfordshire County Architect's Department, Bedfordshire County Architect, Shire Hall, Bedford, to be returned by 20th January, 1956.

BRACKNELL DEVELOPMENT
CORPORATION.

Applications are invited from Corporate Members of the R.I.B.A. for the post of ASSISTANT ARCHITECT, Grade IV. Salary £710× £40 (6)×£10 (1)—£560.

Superannuation schemes, medical examination. Housing available in due course. Apply by 6th January, 1956, giving age, education and qualifications; experience and appointments held (with dates and salaries), and names of two referees to the General Manager (A.A.), Bracknell, Berks.

6037

COUNTY BOROUGH OF BOOTLE.

the General Models, the Corporation, Farley Hall, Bracknell, Betan. 6037

COUNTY BOROUGH OF BOOTLE.

Applications are invited for the appointment of the following:—
(a) ARCHITECTURAL ASSISTANT. Grade A.P.T. III (£600—£725 per annum). Preference will be given to those having experience in the design and planning of schools.
(b) ASSISTANT QUANTITY SURVEYOR, A.P.T. IV (£675—£285 p.a.).
(c) ENGINEERING ASSISTANT, A.P.T. I (£500—£580 p.a.).
(d) TEMPORARY CLERK OF WORKS, at a salary within Grade A.P.T. I, according to ability (£500—£580 p.a.).
Application forms, obtainable from the Borough Surveyor. Town Hall, Bootle, are returnable by Friday, the 6th January, 1956.

HAROLD PARTINGTON.

Town Clerk.
6662

ROYAL BOROUGH OF KINGSTON-UPON-THAMES.
BOROUGH SURVEYOR'S DEPARTMENT.
Applications are invited for the followin

Applications are invited for the following posts:—

(a) ARCHITECTURAL ASSISTANT, A.P.T., Grade II (£595-£675 per annum),

(b) ARCHITECTURAL DRAUGHTSMAN, Miscellaneous Division, Grade III (£445-£510 per

cellaneous Division, Grade 111
Salaries quoted are those operative from the 1st January, 1956, to which London weighting should be added. National Scheme of Conditions of Service applies. Canvassing will disqualify. Details and forms of application from Borough Surveyor. Guildhall, Kingston-upon-Thames. Applications returnable by the 18th January, 1956.

A. B. ROGERS.

Town Clerk.

Surveyor,
Applications returnable by
A. B. RUVERS.

Town Clerk.

Guildhall, Kingston-upon-Thames.

MIDLANDS ELECTRICITY BOARD.

SECOND ASSISTANT ENGINEER (ARCHITECTURAL) required at the Central Gloucestershire Sub-Area Headquarters. Applicants should have reached the Final R.I.B.A. standard or hold equivalent qualifications, and should preferably have a knowledge of quantities. The duties will include prenaration of drawings, construction and detail, of offices, service centres, stores and general building work. Salary £790-£850 per annum (N.J.B., Class H.8). Superannuable.

Apply by letter, within 14 days, stating age, experience, present position and salary, to Mr. S. Raybould, Sub-Area Manager, Midlands Electricity Board, 126, London Road, Gloucester.

A. STEPHENS.

Secretary.

6036

STEVENAGE DEVELOPMENT
CORPORATION.

Applications are invited for the post of PANNING ASSISTANT in the Department of Architecture and Planning, on N.J.C. Salary Scale, A.P.T. IV (£675×£30—£825 per annum). Commencing salary will be fixed according to qualifications and experience.

The post is in the Planning and Landscaping Group; the successful applicant will be engaged on the varied work of implementing the Outline Plan, Applicants should be Members of the Town Planning Institute, and an additional Architectural qualification would be an advantage. Housing accommodation will be available in due course in an appropriate case.

Applications, giving full details of qualifications and experience, together with the names of two referees, to be sent to the Chief Administrative Officer, Stevenage Development Corporation, Aston House, near Stevenage, Herts., not later than 16th January, 1956.

LEEDS REGIONAL HOSPITAL BOARD.

LEEDS REGIONAL HOSPITAL BOARD.
Applications are invited for the following appointments:—
(a) PRINCIPAL ASSISTANT QUANTITY SURVEYOR (£1,050 × £40(5) × £25(1) — £1,275

VEYOR (£1,000 per annum).

Applicants must hold the Corporate Membership of the Royal Institution of Chartered Surveyors and have had experience in the Settlement of Final Accounts, Specifications, Estimates and in the preparation of Bills

Settlement of Final Accounts, Special Settlement of Final Accounts of Bills of Quantities.

(b) SENIOR ASSISTANT ENGINEER (Mechanical) (£920 × £30(5) × £25(1) — £1,095 per annum).

Applicants must hold the Corporate Membership of the Institution of Mechanical or Civil Engineers and possess experience in a senior capacity in the design of boiler plants, steam, heating, hot water and ventilating systems and have a sound knowledge of all associated mechanical equipment. Applications giving age, present salary, qualifications and experience, together with names and addresses of two referees, to the Secretary, Park Parade, Harrogate, within 14 days.

ROROLIGH OF STAFFORD.

Parade, Harrogate, within 14 days. 6061

BOROUGH OF STAFFORD.

APPOINTMENT OF ARCHITECTURAL

ASSISTANT.

Applications are invited for the appointment of an ARCHITECTURAL ASSISTANT on the permanent staff at a salary in accordance with A.P.T. I (£500—£580) per annum.

Previous Municipal experience not essential.

Housing accommodation will be made available to the successful applicant if required.

Applications, suitably endorsed, stating age, experience and qualifications, together with the names of two referees, are to be sent to Mr. T. H. Higson, B.Sc., A.M.I.C.E., Borough Surveyor, Mount Street, Stafford, not later than Wednesday, 11th January, 1956.

16th December. 1955.

DERBY AND DISTRICT COLLEGE OF

It is the intention of the Architects to establish a Site Office for the above job, which is scheduled to commence in March, 1956.

The site Architect will be required to assist in the building of the College by interpretation of drawings and amplification of details where necessary.

Management of the Architects' contractual re-sponsibilities will be from Head Office, and a well-qualified Clerk of Works is being engaged

well-qualified Clerk of Works is being engaged by the Promoters.

Applicants should be young, preferably single, qualified Architects, with at least two years' practical experience in offices, Salary range £750 to £800.

Prospects of permanency on Group Superannua-tion Scheme.

Applications to:

GRENFELL BAINES & HARGREAVES, 12-24, Guildhall Street, Preston. 6042

INVERNESS COUNTY COUNCIL.

Applications are invited for the following appointments in the County Architect's Department:

(a) TWO SENIOR ARCHITECTURAL ASSISTANTS. Salary scale: A.P.T., Grade VI (£750-£815), with placing according to experience and qualifications.

£815), with placing according to experience and qualifications. (b) ONE JUNIOR ARCHITECTURAL ASSIS-TANT. Salary scale: A.P.T., Grade III (£585—

For appointments (a) a thorough experience in the preparation of sketch plans and working drawings for all local authority building projects is essential. Applicants must be Associate Members of the Royal Institute of British Architects. Applicants for appointment (b) must have served an apprenticeship in an Architect's office and gained several years' experience as a junior Housing accommodation.

Inverness

assistant.
Housing accommodation may be made available, if required. if required.

Applications, stating age, experience and qualifications, together with the names of three persons to whom reference may be made, should be lodged with the undersigned not later than 14 days after the publication of this advertisement.

R. WALLACE,

County Clerk.

COUNTY BOROUGH OF NEWPORT, MON. Applications are invited for the appointments

(a) ASSISTANT ARCHITECTS, Grade IV

(£675—£825).
(b) ASSISTANT QUANTITY SURVEYOR, Grade V (£750—£900).
Housing accommodation will be provided if the circumstances of the candidate justify it. Further information and forms of application from the Borough Architect, Civic Centre, Newport, Mon., to whom they should be returned not later than the 16th January, 1956.

#### Architectural Appointments Vacant 4 lines or under, 7s. 6d.; each additional line, 2s.

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a voman aged 18-69 inclusive unless he or she or the employment is excepted from the provisions of the Notification of Vacancies Order, 1952.

A BCHITECTS' CO-PARTNERSHIP require unmarried, qualified, experienced ASSISTANT in their Lagos office. Maximum tour 14 months. Flat provided. Write 44, Charlotte Street, London, W.1, or telephone Langham 5721.

A ROHITECTS' CO-PARTNERSHIP require qualified ASSISTANT with experience. Write 44, Charlotte Street, London, W.1, or Telephone Langham 5791.

WANTED urgently: Capable DRAUGHTS-MEN for preparing working drawings of industrial buildings from sketch designs. Salary according to experience. Write or telephone to Percy Biton Ltd., 113, Park Street, W.1. Tele-phone number MAYfair 8240.

DUSY London Office requires two ARCHITECTURAL ASSISTANTS, approximately Intermediate standard or upwards. Also requires one ASSISTANT with considerable perspective experience, particularly able to do quick interior colour sketches. Five-day week, good salaries. Lewis 80 comp. Son & Joseph. 21, Bloomsbury Way, W.C.1, HOL 5108 or 7082.

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

RDINBURGH.—Senior and Intermediate Write, giving particulars of experience and Salary required, to Messrs. David Carr & Stuart Matthew, 14, Lynedoch Place, Ediaburgh, 3.

JUNIOR ASSISTANT, competent to make measured surveys and prepare working drawings, required by Wallis & Smith. Chartered Architects, Basingstoke. Apply by letter, stating salary required.

A RCHITECTURAL ASSISTANTS (2) required in City Office with a wide and comprehensive range of commissions. Salary range £611—£767. Seely & Paget. CENtral 0321. 3939

RCHITECTURAL ASSISTANTS, with approx. 5 years' office experience, required for West End Architect's office engaged on large office building and cinema contracts. Commencing salary £625. 'Phone Whitehall 1624 for appointment.

JAMES & BYWATERS urgently require ASSIS-TANT, of Intermediate standard or higher, for detailing various types of buildings. Salary according to experience and qualifications. Apply in writing to 5, Bloomsbury Street, W.C.1. 4963

A RCHITECTURAL ASSISTANTS urgently required for detailed planning work. Intermediate and Junior. Salary according to experience. Please apply to L. O. L. Hannen & John H. Markham. 7 Victoria Street, Westminster, S. W.1. Tel. Abbey 5861.

A RCHITECT'S Department in City requires ASSISTANTS, 20-30 years of age. Interesting good class work. Salary according to age and experience, Apply, giving full particulars and salary required, Box 6066.

A RCHITECTS with large London practice require a qualified ARCHITECT who combines a knowledge of construction with a high standard of draughtsmanship, to work on office buildings or allied projects. Box 6034.

PASIL WARD requires an ARCHITECTURAL ASSISTANT, between Intermediate and Final standard, preferably with not less than one year's office experience. Salary to be agreed. Apply 32, Wigmore Street, London, W.I. or telephone WELbeck 1409.

NATIONAL COAL BOARD—EAST MIDLANDS DIVISION. ARCHITECTS' DEPARTMENT, NOTTINGHAM. Applications are invited for the following

Appintents:

S.V. 478-ARCHITECTS, Grade II.

S.V. 478-ARCHITECTURAL ASSISTANTS,

C.V. 479-ARCHITECTURAL ASSISTANTS,

C.V. 479-ARCHITECTURAL (ASSISTANTS),

C.V. 479-ARCHITECTURAL (ASSIS

Grade I. Salary £625×£25-£750 (exceptionally to £900). Candidates should be of R.I.B.A. Intermediate standard, and have had not less than 3 years' subsequent practical experience. S.V. 480—ARCHITECTURAL ASSISTANTS, Grade II. Salary £520 £20—£615.

S.V. 480—ARCHITECTURAL ASSISTANTS.
Grade II.
Salary £520×£20—£615.
Candidates should have passed or be studying for the Intermediate Examination of the R.I.B.A.
Facilities are granted in certain circumstances to Assistants for part-time study at the Nottingham School of Architecture.
The point of entry into the salary scales of the respective grades will depend on the qualifications and experience of the applicant. Superannuation rights under Local Authority and certain other schemes are transferable.
The architectural work of the Department covers the design of Colliery Surface Buildings of all types required in the Division, including Workshops, Stores, Power Plants, Offices, Pithead Baths, Canteens, Medical Centres, Institutes and Recreation Buildings.
Applications, stating age, education, qualifications, present appointment and salary, should be submitted within 14 days of publication to:—
THE STAFF DIRECTOR,
National Coal Board,
East Midlands Division,
Sherwood Lodge,
Arnold, Notts.

Envelopes and applications should be marked with the appropriate "S.V." reference number.

TDARTLETT & GRAY require pre-intermediate

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PARTLETT & GRAY require pre-intermediate ASSISTANT. Varied programme. Apply by letter or telephone to Castle Gate Chambers, Castle Gate, Nottingham. Telephone 42772. 6045

CO-OPERATIVE WHOLESALE SOCIETY, LTD.
ARCHITECT'S DEPARTMENT, MANCHESTER.
APPLICATIONS are invited for the following appointments:

appointments:—
(a) SENIOR ASSISTANT ARCHITECTS, with apprience of work on commercial and industrial

(a) SENIOR ASSISTANT ARCHITECTS, who experience of work on commercial and industrial projects.

(Salary range £820 to £975 per annum.)
(b) ASSISTANT ARCHITECTS, capable of preparing working drawings from preliminary details.

(Salary range £550 to £820 per annum.)
There is a five-day week in operation, and both appointments offer prospects of upgrading.

Applications, stating age, experience, qualifications and salary required, to G. S. Hay, A.R.I.B.A., Chief Architect, Co-operative Wholesale Society, Ltd., 1, Balloon Street, Manchester, 4, 3871

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

ASSISTANT ARCHITECTS, WORKER-UP, AND SHOP FITTING DRAUGHTSMAN. Applications are invited from suitably qualified persons. Salary on a scale £485—£936 inclusive of L.W., with placing according to age, qualifications and experience. The posts are superanuable, subject to medical examination. Five-day week in operation, Applications, stating age, experience, qualifications and salary required, to.—W. J. Reed, F.R.I.B.A., Chief Architect, Co-operative Wholesale Society, Ltd., 99, Leman Street, London, E.1.

2824

SENIOR ASSISTANTS required for University and Hospital work. Good salary, dependent on experience. Non-contributory pension scheme in being after probationary period. Three weeks' holiday a year, and 5-day week. Reply, stating age and experience, to Thomas Worthington & Sons, 178, Oxford Road, Manchester, 13. 5078

ESTABLISHED firm of Architects, with large and expanding practice in West of England, requires able and experienced ARCHITECT (qualified R.I.B.A.), as office manager, with view partnership. Must have sound business acumen and be able to take part control, if necessary. Apply Box 5072.

A RCHITECTURAL ASSISTANTS, Junior and Senior, required early in the New Year in Welwyn Garden City office. Varied work of contemporary character, comprising industrial, commercial and housing projects. Please reply, giving details of age, experience and qualifications, to Chas. W. Fox, 22, Parkway, Welwyn Garden City, Herts.

A RCHITECTURAL ASSISTANT required by City firm of Architects and Surveyors dealing principally with commercial and industrial buildings and multiple retail shops. At least Inter. B.I.B.A. or R.I.C.S. standard. Good draughtsmanship essential. Please reply, giving details of past experience and salary required, to Vigers & Co., 4, Frederick's Place, Old Jewry, E.C.2.

CO-OPERATIVE WHOLESALE SOCIETY, LTD.
ARCHITECT'S DEPARTMENT. BIRMINGHAM.
APPLICATIONS are invited for the following of the control of the con

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A RCHITECTURAL DRAUGHTSMAN re-aive fixed bevelopment schemes, industrial development, agricultural buildings, and wide range of domestic architecture. Applications, giving age, experience, etc., to Box 6015.

S. HATTRELL & PARTNERS have vacancies in their Coventry and London offices
for ARCHITECTURAL ASSISTANTS of Intermediate to Final Standard. Excellent opportunities in varied practice covering a very wide area,
and including Hotels, Theatres, Public Houses,
Behools, Hospitals, also Industrial and Ecclesiastical. Good salaries offered, closely related to
capabilities, and reviewed annually. Pension
scheme available. Travelling expenses paid to
applicants selected for interview. W. S. Hattrell
& Partners, 1, Queens Road, Coventry, and 14,
Hanover Square. London, W.1.

LESLIE GOODAY requires ASSISTANT of Intermediate to Final standard. Apply in writing to 17 Sloane Street, London, 8.W.1. 6032

WILLIAM HOLFORD & PARTNERS require ASSISTANT, experienced in preparation of working drawings and details. Salary £650-£780 p.a. Write, stating age and experience. to 2, Angel Court, Throgmorton Street, E.C.2. 5068

A BCHITECTURAL ASSISTANT required by firm in Home Counties. General practice. Apply, stating experience and salary, to Manning & Steel, F.R.I.B.A., 3, George Street West, Luton, Beds. 4923

A RCHITECTURAL ASSISTANTS required for office in Hertfordshire. Intermediate or Final standard for work on School, Commercial and Industrial projects. Write, giving brief details of experience and salary required, to Box 5015.

A RCHITECTURAL ASSISTANTS required for good general contemporary work in busy office in the Watford area. Excellent salary for suitable applicants. Write, giving brief details of experience, etc., to Box 5014.

THE ARCHITECTS' JOURNAL invite applica-tions from ARCHITECTS or DRAUGHTS-MEN who are exceptionally skilled at ink drawing and who would be willing to prepare Working Details for publication on a part-time basis. Apply to the Technical Editor, The Architects' Journal, 9-13, Queen Anne's Gate, S.W.1.

A RCHITECT'S ASSISTANTS required. R.I.A.S. Pension Scheme in operation. Applications, stating age, particulars of experience, and salary required. to Wylie, Shanks & Wylie, Chartered Architects, 12, Clairmont Gardens, Glasgow, C.S. 5041

A SSISTANT ARCHITECT required for small but busy country practice in Eastern Counties. Varied and interesting work. Opportunity to work on own initiative. Applicant desiring permanency preferred. State age, qualifications, experience, and salary required, to Rox 6012. fications, Box 6012.

SENIOR ARCHITECTURAL ASSISTANT required immediately. R.I.B.A. Final examination standard required. Experienced in preparing working drawings, details, supervising contracts. West End office. 5-day week. Apply, stating salary required, to Eric H. Davie, F.R.I.B.A., A.M.T.P.I., Staff Architect, Hillier. Parker, May & Rowden, 77 Grosvenor Street, W.1.

EXPERIENCED ARCHITECTURAL ASSISTANT required in Westminster. Neat draughtsmanship. Good knowledge of construction. With or without qualification. Very varied private practice. Salary £600. Apply Box 6031.

CHIEF DRAUGHTSMAN required by large firm of Builders to take charge of Drawing Office being reorganised to cope with ever-increasing work on estate development, design of houses, shops, factories, etc. Also ENGINEER/DRAUGHTSMAN to deal mainly with survey of new estates and design of roads and sewers. Pension scheme in operation. Applications, giving full details, to the Managing Director, H. C. Janes Ltd., 185 High Town Road, Luton, Beds. 6035

ARCHITECTURAL ASSISTANT, pre-Final standard, required for small but busy practice in Westminster. Only those capable of supervising medium-sized jobs from start to finish should apply. Please write, giving full particulars, to Box 6039.

A RCHITECTURAL ASSISTANT (male) required. Intermediate standard. Variety of interesting work in small office close to Victoria Station. Five-day week. Salary according to experience. Telephone SLOane 0397 or write Box 6041.

HASTIE, WINCH & KELLY require ARCHI-TECTURAL ASSISTANT, able to take charge of medium-sized iobs, including Churches, Hostels, Factories, etc. Telephone for an appoint-ment, WEL 3863, or write with particulars to 1 Bentinck Street, W.I. 6043

A RCHITECTURAL ASSISTANT required.
Good Draughtsman with office experience and knowledge of building construction. Apply, stating salary required, to Caroe & Partners, 16 Great College Street, Westminster.

ARCHITECTURAL ASSISTANTS with at least 2 years' office experience required in CROY-DON office for varied private practice. Good opportunity. Write, stating age, experience and salary required, to George Lowe, F.R.I.B.A. 4 High Street, Croydon.



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#### structure in building

by W. Fisher Cassie and J. H. Napper. Foreword by W. A. Allen. THE SECOND of a series of 3 books on building construction published at the recommendation of the Text and Reference Books Committee of the R.I.B.A. The authors do not attempt to give the formulae and methods of analysis and design used by the structural engineer; rather, they provide the architect and student with mental pictures of how structures behave. 81 ins. by 51 ins. 268 pages, over 150 illustrations. 30s. net, postage 8d.

THE ARCHITECTURAL PRESS 9-13 Queen Anne's Gate, Westminster SW1

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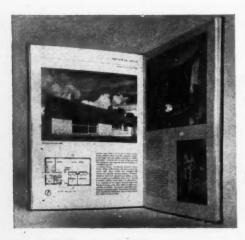
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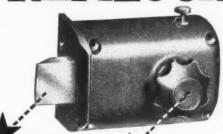
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