THE ARCHITECTS' JOURNAL

standard contents

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

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THE ARCHITECTURAL PRESS
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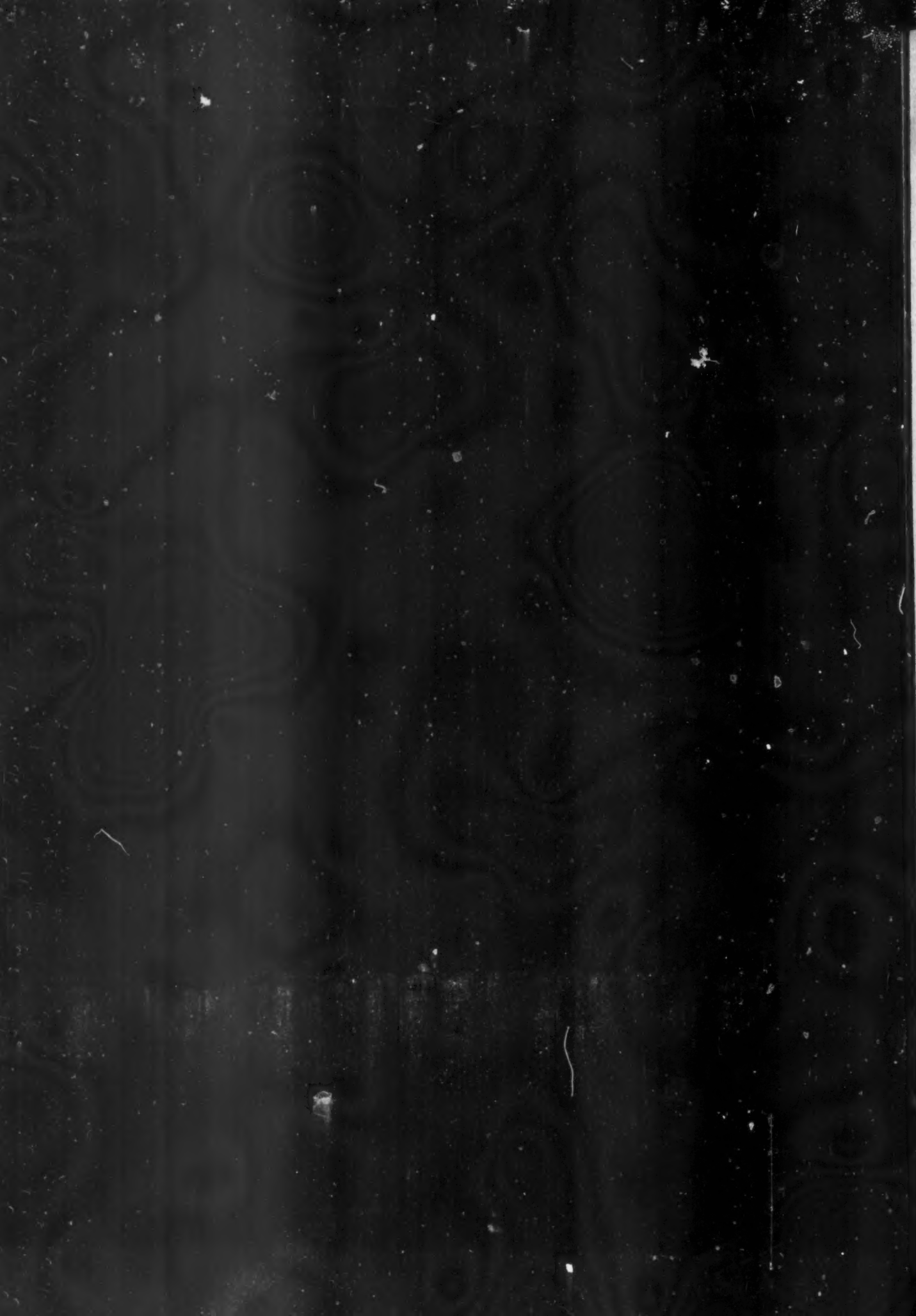
Registered as a Newspaper.

★A glossary of abbreviations of Government Departments and Societies and Committees of all kinds, together with their 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.

IGE	Institution of Gas Engineers. 17, Grosvenor Crescent, S.W.1.	Sloane 8266
IHVE	Institution of Heating and Ventilating Engineers. 75, Eaton Place, S.W.1.	Sloane 3158/1601
IIBD	Incorporated Institute of British Decorators. Drayton House, Gordon Street, W.C.1.	Euston 2450
ILA	Institute of Landscape Architects. 12, Gower Street, W.C.1.	Museum 1783
I of Arb.	Institute of Arbitrators, 35/37, Hastings House, 10, Norfolk Street, Strand, W.C.2.	Temple Bar 4071
IOB	Institute of Builders. 48, Bedford Square, W.C.1.	Museum 7197/5176
IR	Institute of Refrigeration. Dalmeny House, Monument Street, E.C.3.	Avenue 6851
IRA	Institute of Registered Architects. 47, Victoria Street, S.W.1.	Abbey 6172
ISE	Institution of Structural Engineers. 11, Upper Belgrave Street, S.W.1.	Sloane 7128
IWA	Inland Waterways Association. 11, Gower Street, W.C.1.	Museum 9200
LIDC	Lead Industries Development Council. Eagle House, Jermyn Street, S.W.1.	Whitehall 7264/4175
LMBA	London Master Builders' Association. 47, Bedford Square, W.C.1.	Museum 3891
MARS	MARS Group (English Branch of CIAM). Secretary: Gontran Goulden, Building Centre, 9, Conduit Street, W.1.	Mayfair 8641
MOA	Ministry of Agriculture and Fisheries. 55, Whitehall, S.W.1.	Whitehall 3400
MOE	Ministry of Education. Curzon Street House, Curzon Street, W.1.	Mayfair 9400
MOH	Ministry of Health. Whitehall, S.W.1.	Whitehall 4300
MOLNS	Ministry of Labour and National Service, 8, St. James's Square, S.W.1.	Whitehall 6200
MOS	Ministry of Supply. Shell Mex House, Victoria Embankment, W.C.	Gerrard 6933
MOT	Ministry of Transport. Berkeley Square House, Berkeley Square, W.1.	Mayfair 9494
MOTCP	Ministry of Town and Country Planning. 32-33, St. James's Square, S.W.1.	Whitehall 8411
MOW	Ministry of Works. Lambeth Bridge House, S.E.1.	Reliance 7611
NAMMC	Natural Asphalte Mine-Owners and Manufacturers Council. 94-98, Petty France, S.W.1.	Abbey1010
NAS	National Association of Shopfitters. 9, Victoria Street, S.W.1.	Abbey 4813
NBR	National Buildings Record. 37, Onslow Gardens, S.W.7.	Kensington 8161
NCBMP	National Council of Building Material Producers. 10,Princes Street, S.W.1.	Abbey 5111
NFBTE	National Federation of Building Trades Employers. 82, New Cavendish Street, W.1.	Langham 4041/4054
NFBTO	National Federation of Building Trades Operatives, Federal House, Cedars Road, Clapham, S.W.4.	Macaulay 4451
NFHS	National Federation of Housing Societies. 13, Suffolk St., S.W.1.	Whitehall 1693
NHBRC	National House Builders Registration Council. 82, New Cavendish Street, W.1.	Langham 4341
NPL	National Physical Laboratory. Head Office, Teddington.	Molesey 1380
NSA	National Sawmilling Association. 14, New Bridge Street, E.C.4.	City 1476
NSAS	National Smoke Abatement Society. Chandos House, Buckingham Gate, S.W.1.	Abbey 1359
NT	National Trust for Places of Historic Interest or Natural Beauty. 42, Queen Anne's Gate, S.W.1.	Whitehall 0211
PEP	Political and Economic Planning. 16, Queen Anne's Gate, S.W.1.	Whitehall 7245
RCA	Reinforced Concrete Association. 94, Petty France, S.W.1.	Whitehall 9936
RIAS	Royal Incorporation of Architects in Scotland. 15, Rutland Square, Edinburgh.	Edinburgh 20396
RIBA	Royal Institute of British Architects. 66, Portland Place, W.1.	Langham 5721
RICS	Royal Institution of Chartered Surveyors. 12, Great George St., S.W.1.	Whitehall 5322/9242
RFAC	Royal Fine Art Commission. 22A, Queen Anne's Gate, S.W.1.	Whitehall 3935
RS	Royal Society. Burlington House, Piccadilly, W.1.	Regent 3335
RSA	Royal Society of Arts. 6. John Adam Street, W.C.2.	Trafalgar 2366
RSI	Royal Sanitary Institute. 90, Buckingham Palace Road, S.W.1.	Sloane 5134
RIB	Rural Industries Bureau. 35, Camp Road, Wimbledon, S.W.19.	Wimbledon 5101
SBPM	Society of British Paint Manufacturers. Grosvenor Gardens House, Grosvenor Gardens, S.W.1.	Victoria 2186
SCR	Society for Cultural Relations with the USSR. 14. Kensington Square, London, W.8.	Western 1571
SE	Society of Engineers. 17, Victoria Street, Westminster, S.W.1.	Abbey 7244
SFMA	School Furniture Manufacturers' Association. 30, Cornhill, London, E.C.3.	Mansion House 3921
SIA	Structural Insulation Association. 14, Moorgate, London, E.C.2.	Central 4444
SIA	Society of Industrial Artists. 7, Woburn Square, W.C.1.	Langham 1984
SNHTPC	Scottish National Housing Town Planning Council. Hon. Sec., Robert Pollock, Town Clerk, Ruthlergen.	
SPAB	Society for the Protection of Ancient Buildings. 55 Great Ormond Street, W.C.1.	Holborn 2646
TCPA	Town and Country Planning Association. 28, King Street, Covent Garden, W.C.2.	Temple Bar 5006
TDA	Timber Development Association. 75, Cannon Street, E.C.4.	City 4771
TGC	The Gas Council. 1, Grosvenor Place, S.W.1.	Sloane 4554
TPI	Town Planning Institute. 18, Ashley Place, S.W.1.	Victoria 8815
TTF	Timber Trades Federation. 69, Cannon Street, E.C.4.	City 4444
WDC	War Damage Commission. Devonshire House, Mayfair Place, Piccadilly, W.1.	Mayfair 8866
WEDA	Welfare Equipment Development Association. 74, Victoria Street, S.W.1.	Victoria 5783
ZDA	Zinc Development Association. Lincoln House, Turl Street, Oxford.	Oxford 47988



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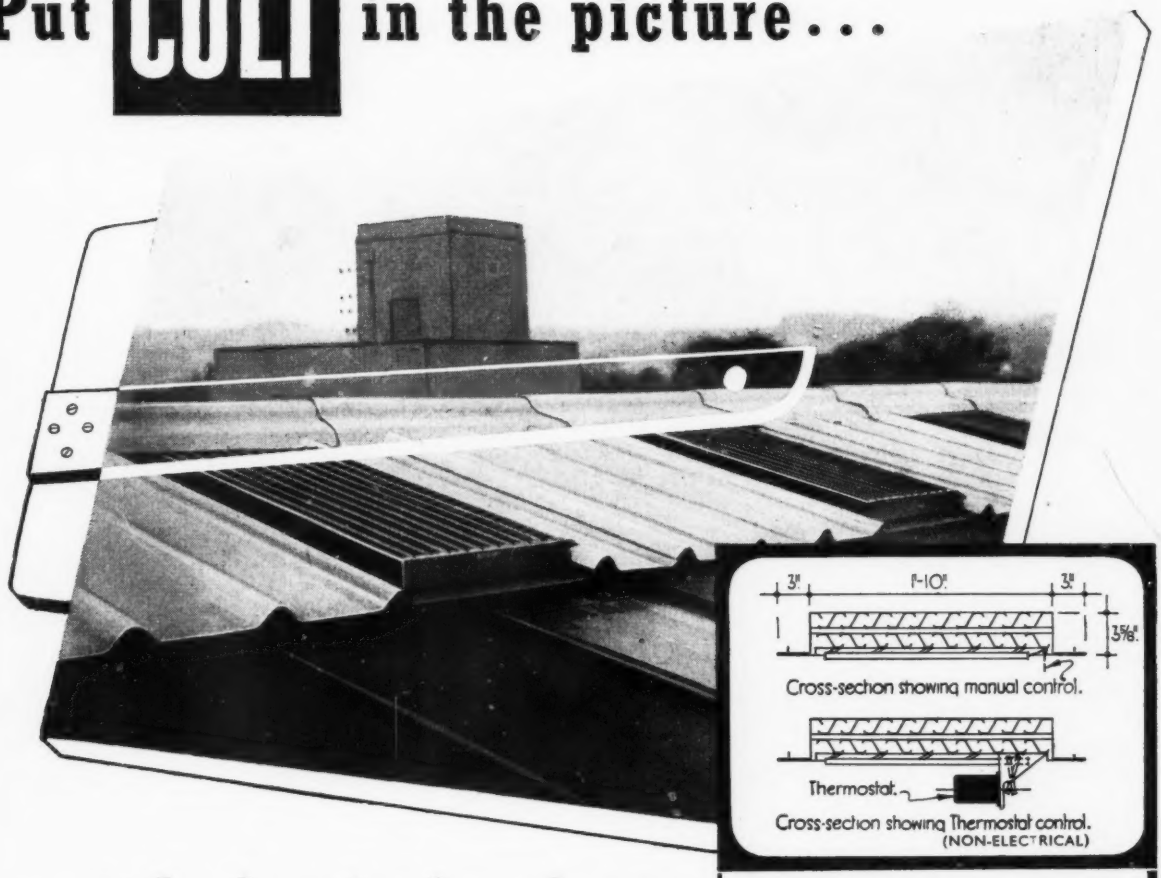

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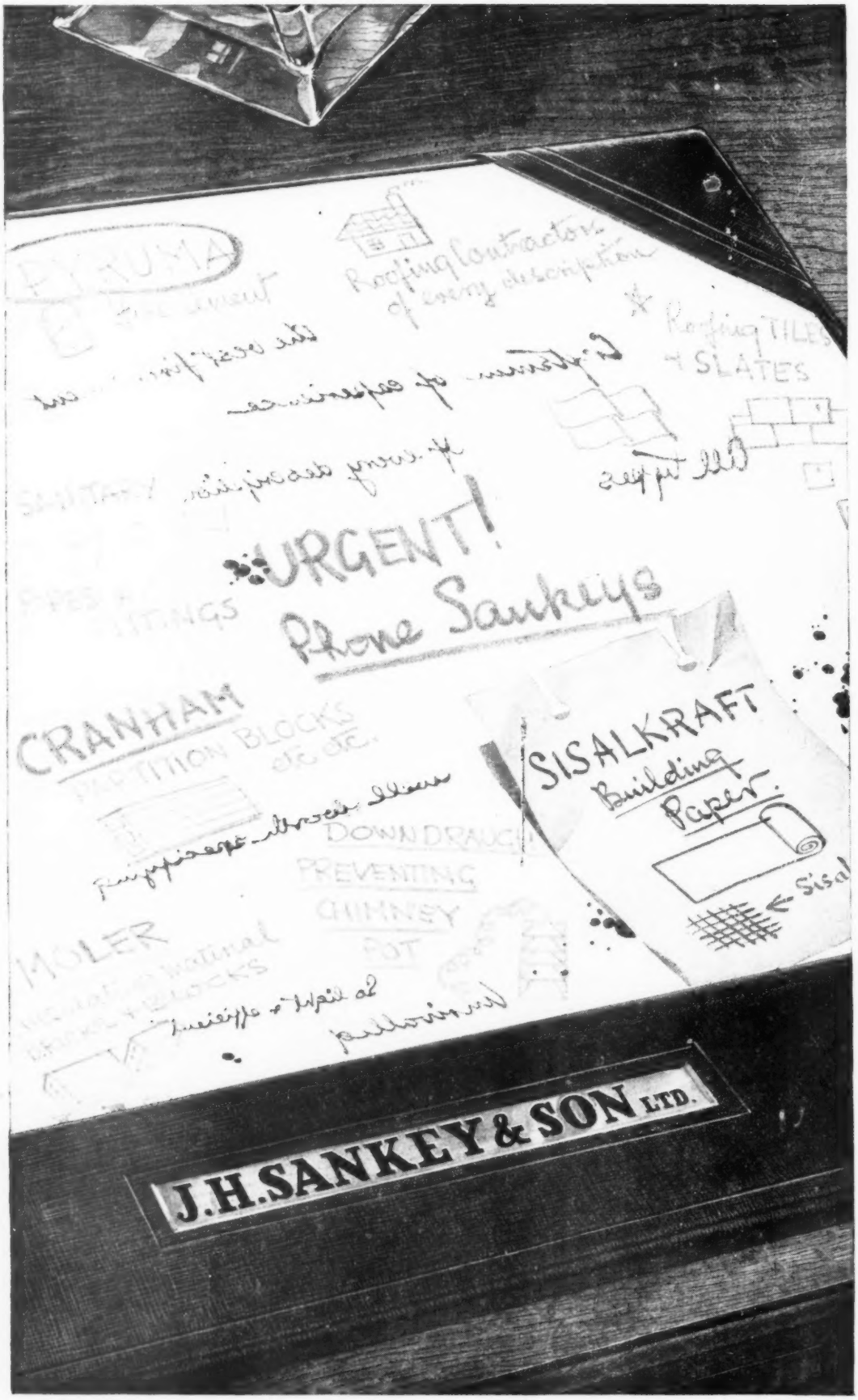

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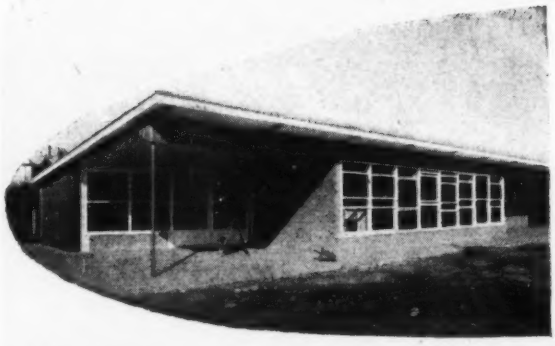

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Asbestos-Cement CAVITY DECKING

Patent No. 620,012

LIGHT WEIGHT — DRY CONSTRUCTION

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One unit provides:

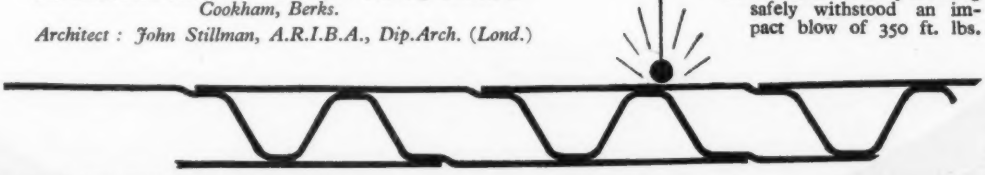
- A roofing deck over—
- a finished ceiling, in one operation.
- Cavity construction with efficient thermal insulation.
- High strength factor with supports at 8 ft. 3 ins. centres.

The illustration shows the "ASCOS" Nursery School, at Cookham, Berks.

Architect: John Stillman, A.R.I.B.A., Dip.Arch. (Lond.)

RESISTANCE TO IMPACT

During tests, a section of "TURNALL" Cavity Decking safely withstood an impact blow of 350 ft. lbs.



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Carden School
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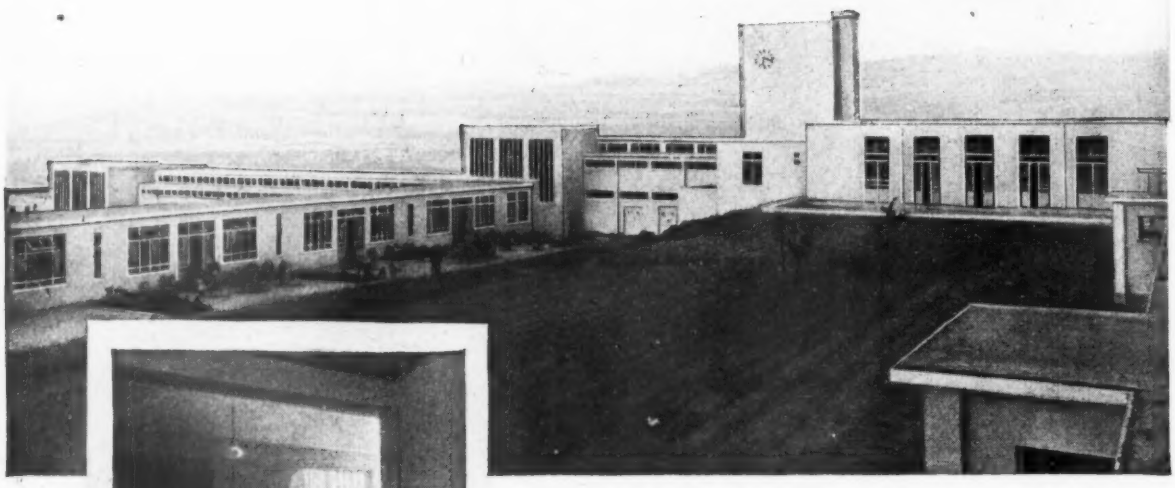

This new primary school for 840 children near Brighton occupies a site of over 13 acres.

It was designed by D. J. Howe, M.I.C.E., M.I.Mun.E., Borough Engineer and Surveyor, in collaboration with P. Billington, A.R.I.B.A., A.M.T.P.I., School Architect for the Borough of Brighton Education Committee.

It is the first school of its kind to be constructed of precast concrete. Over ten miles of BICC Rubber Insulated Cables were used by **Messrs. Hall & Stinson Ltd., of Hove and Sheffield,** who overcame the special wiring problems involved in this unusual form of construction.

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Rubber Insulated Cables

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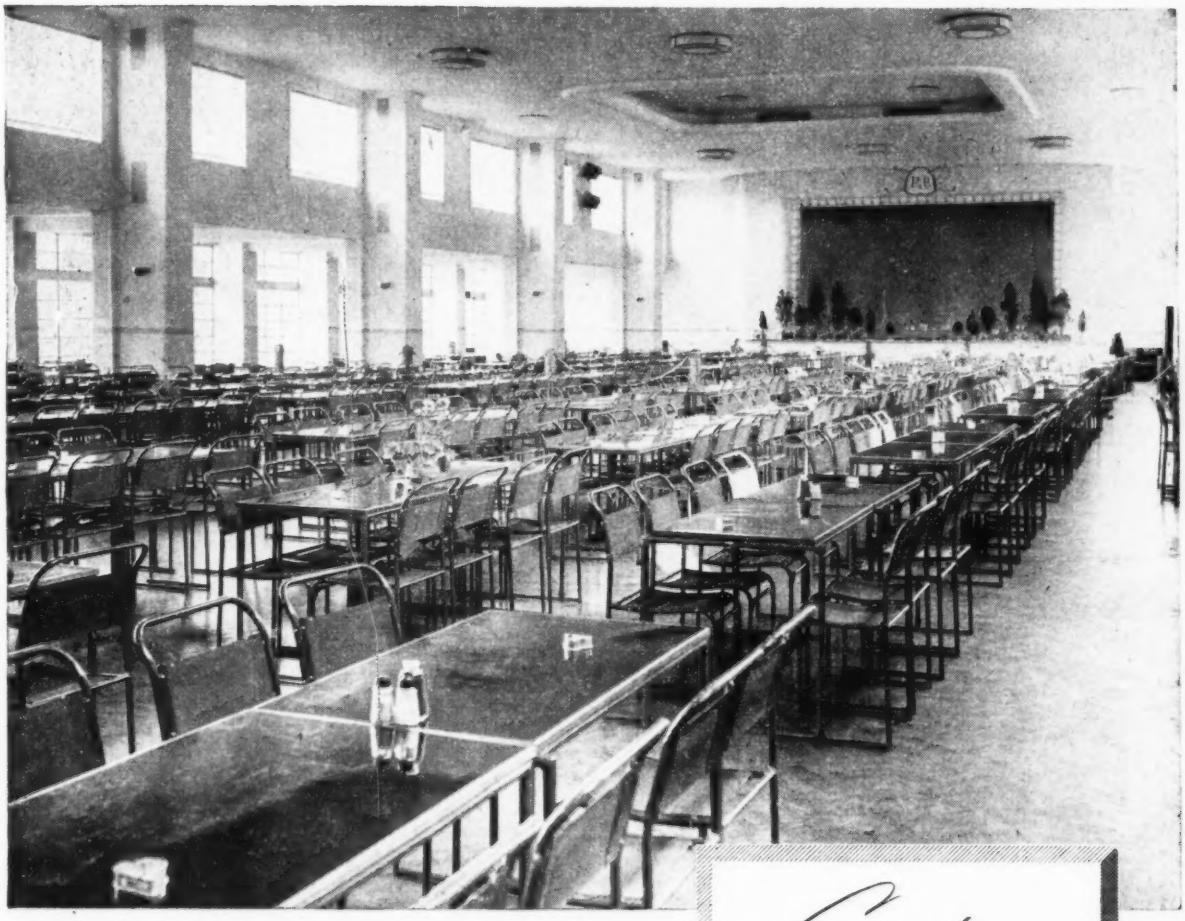
Paton & Baldwin Ltd.. Canteen—Darlington
Photograph by courtesy of Paton & Baldwin Ltd. Architects : Sir Alex Gibbs & Partners, Queen Annes Lodge, London. S.W.1.



NOWADAYS the works canteen often serves a dual purpose and for that reason permanent furniture is undesirable. When the last meal is served as likely as not preparations will commence for an evening concert or maybe a staff dance. In these circumstances Kingfisher space-saving furniture is the perfect answer. Strong, light and easy-to-handle it facilitates re-arrangement, removal and stacking in a matter of minutes and at the same time provides that degree of comfort which is looked for in furniture of a more permanent character.

The attractive and colourful appearance of Kingfisher Tubular Steel Nesting Chairs and Tables, the unmistakable mark of quality which withstands the most arduous conditions, and the remarkable economy of storage space make them ideal for use in canteens as well as in public halls, civic restaurants and other public buildings.

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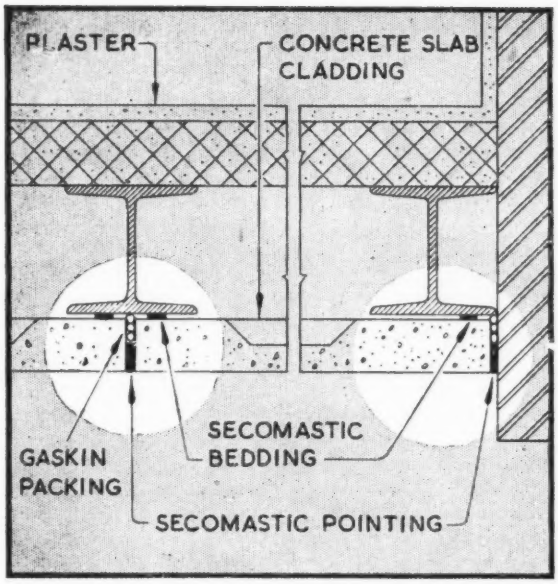

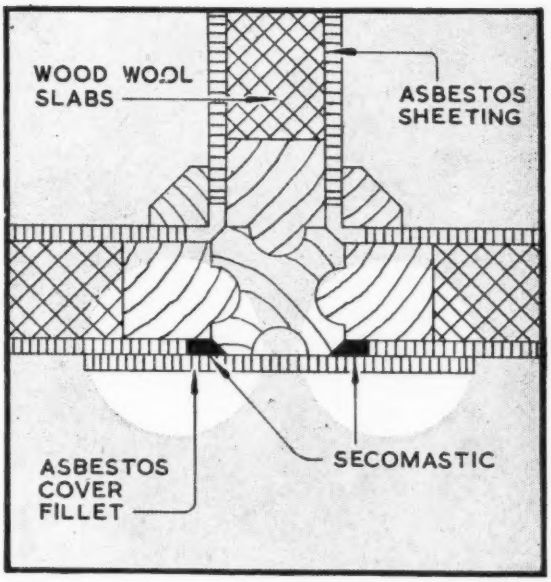

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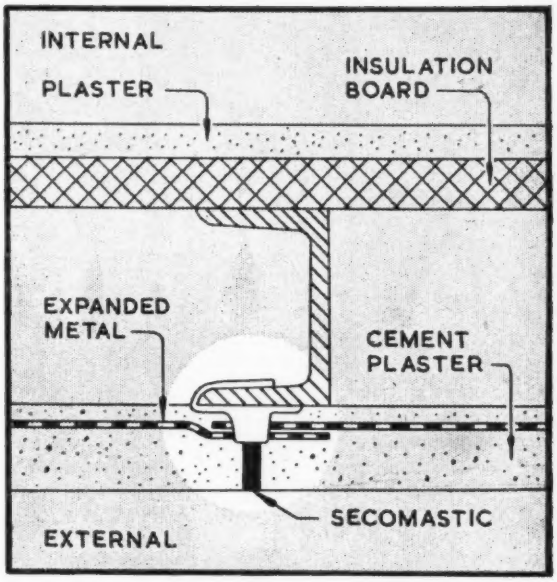

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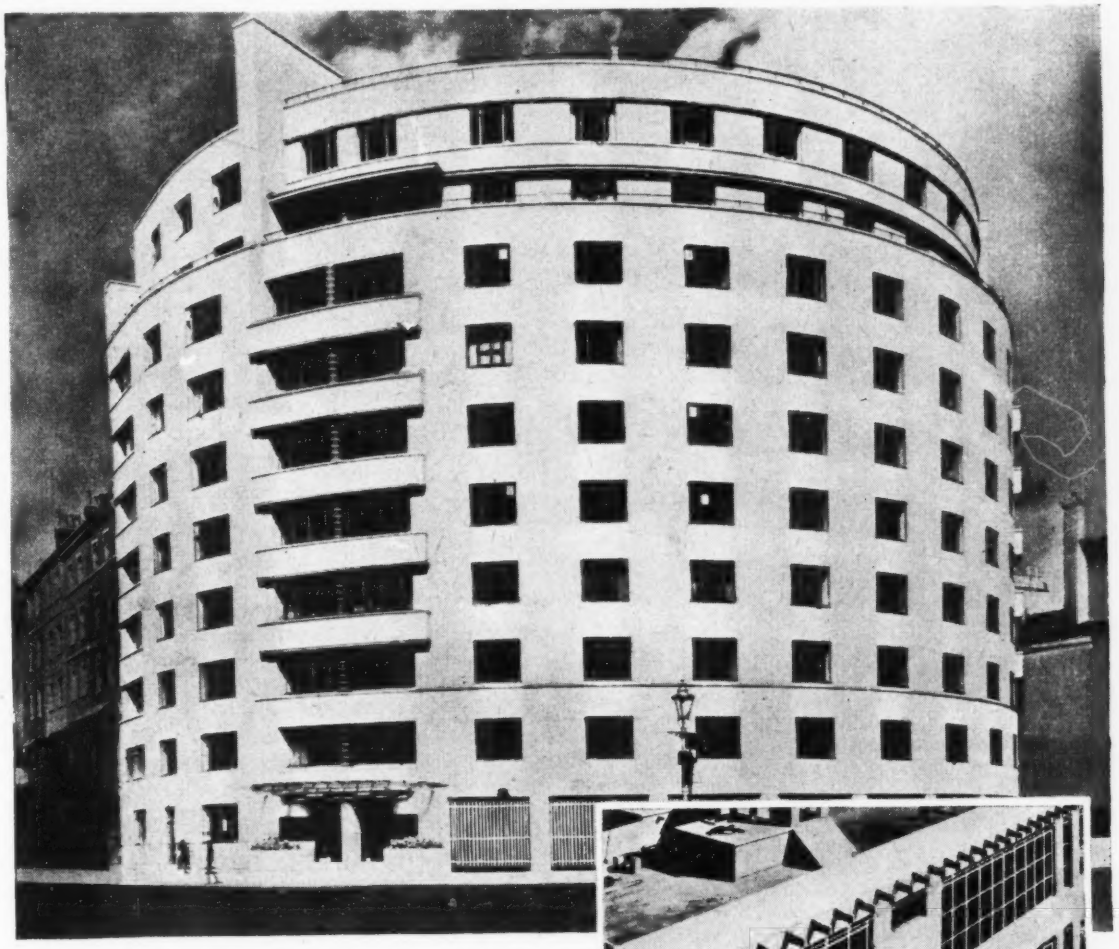
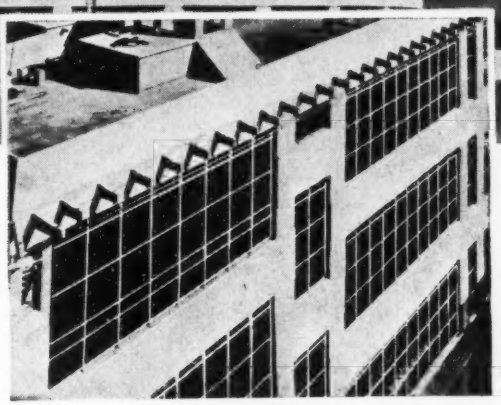


Block of Flats, Lowndes Street, London
Architect:
Sir John Burnet, Tait and Partners, F/F.R.I.B.A.



Sainsbury's Kitchens
Architect: Sir Owen Williams, K.B.E.

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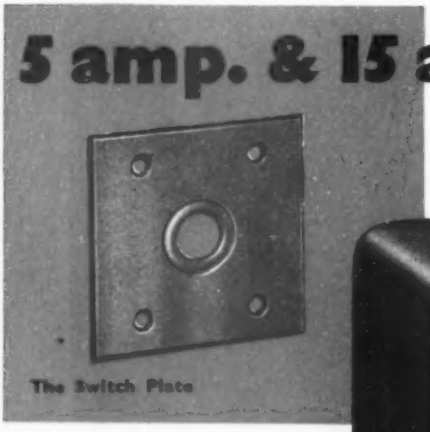
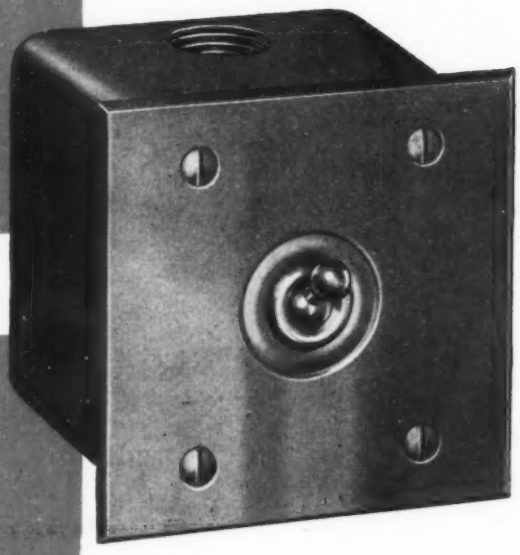


The Switch Plate



for schools

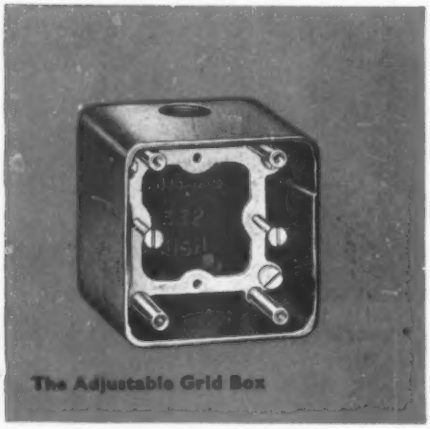
The Switch

The switch unit illustrated, assembled from standard components, is particularly suitable for electrical installation in schools, technical colleges, hospitals and other public buildings. Strength, safety and efficient operation over long periods are the important characteristics and large quantities have been supplied during recent months . . . from single units up to 48 gang assemblies.

for hospitals

THE SWITCH PLATE: Incorporates the cuttered-hole and four corner screws, dispensing with the need for a switch ring. For added safety, corner screws of a 'secret' pattern can be supplied.

THE SWITCH: This is the well-known 'Silomac,' for use on A.C. current only and, as the name implies, is silent in operation.



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THE GRID BOX: Rigidly constructed and designed to give a wide margin of adjustment and the maximum space for wiring.

This flush switch unit is a worthy criterion of all BRITMAC products. A large number of County Architects and Local Authorities are already specifying BRITMAC ELECTRICAL ACCESSORIES by name and thereby ensuring the highest standard of quality and perfection of finish throughout the building.

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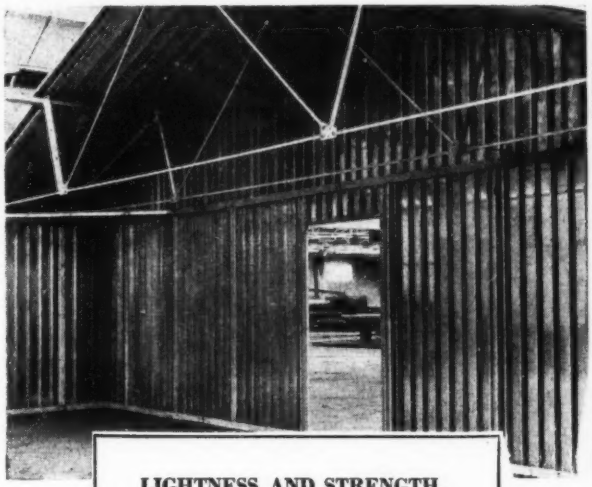

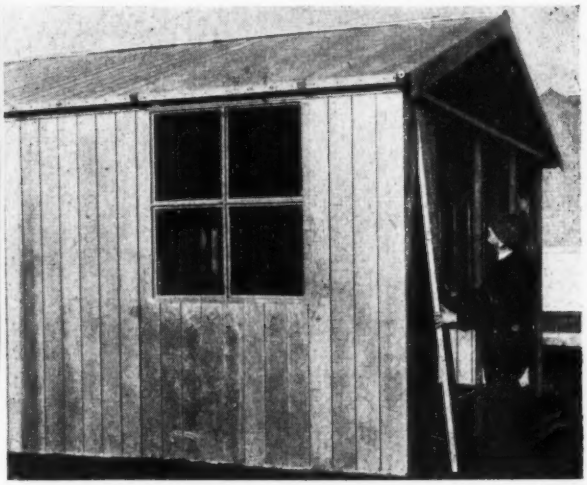

JB2

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of course

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- ★ NON-RUSTING
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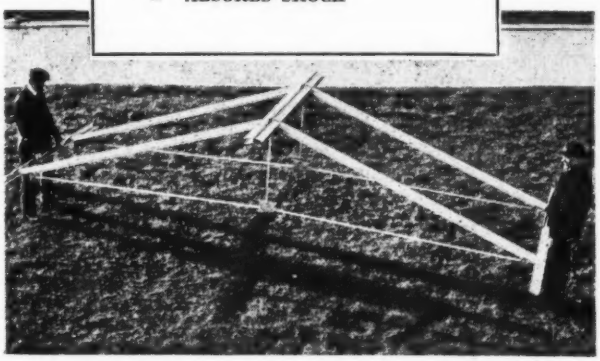

Top left : Part interior of a larger Briggs Building.
Top right : Wall sheets on a small Briggs Demountable Building being fitted into position.
Bottom left : A roof truss is easily handled by two men.

" Duralumin " is as strong as steel but only a third as heavy, conforms very readily to all methods of fabricating, and as it does not rust may be left unpainted with perfect safety.

Good use has been made of the many advantages of " Duralumin " in the Briggs Demountable Building, an entirely new system which provides rigid and durable buildings up to 36 ft. span, capable of being dismantled and re-erected any number of times.

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BOOTH BIRMINGHAM

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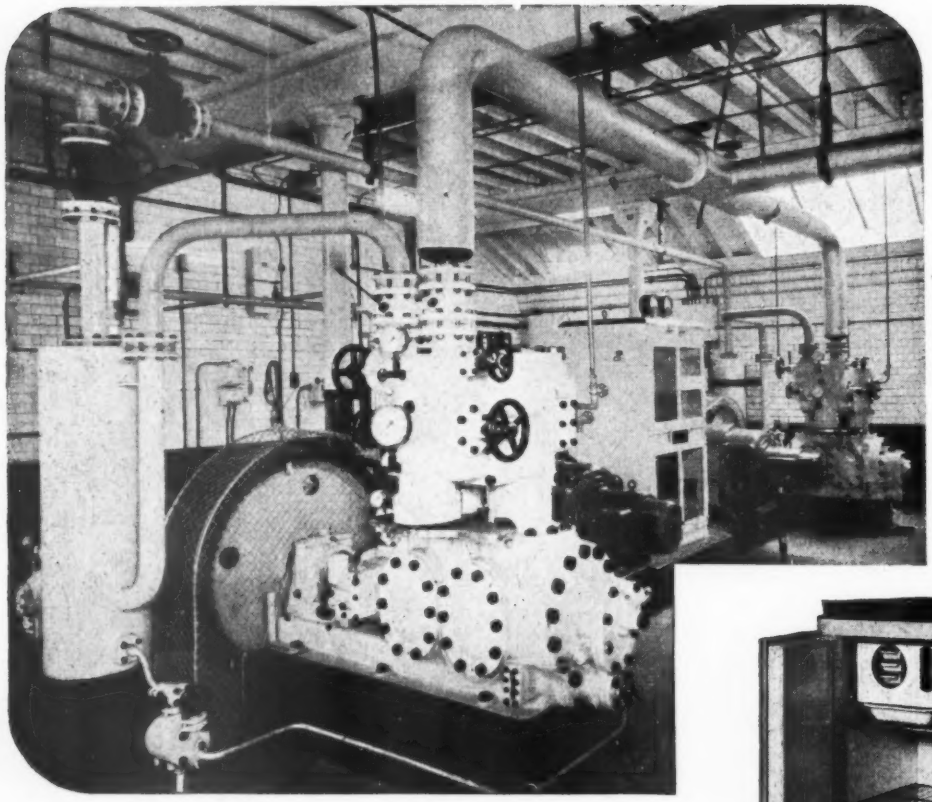
Leeds Office: 1a Upper Mill Hill, Boar Lane. Manchester Office: 289 Bury New Road. Tel: Broughton 1730



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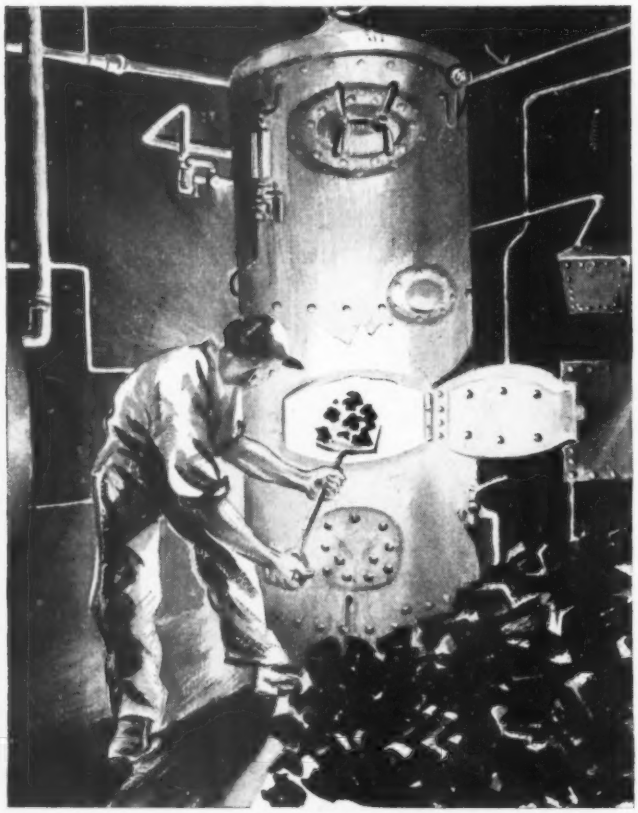

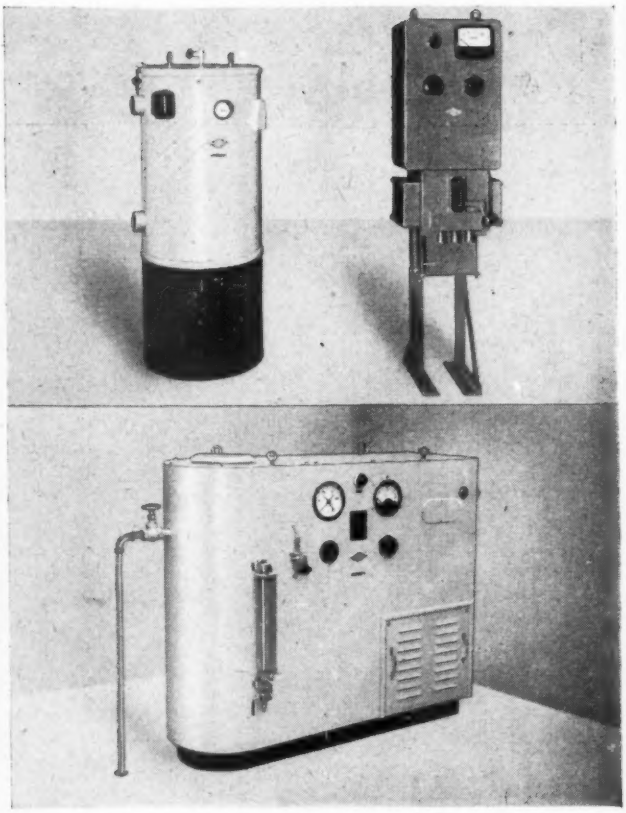

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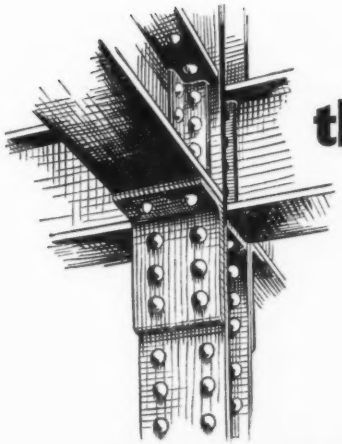

the heart of the matter..

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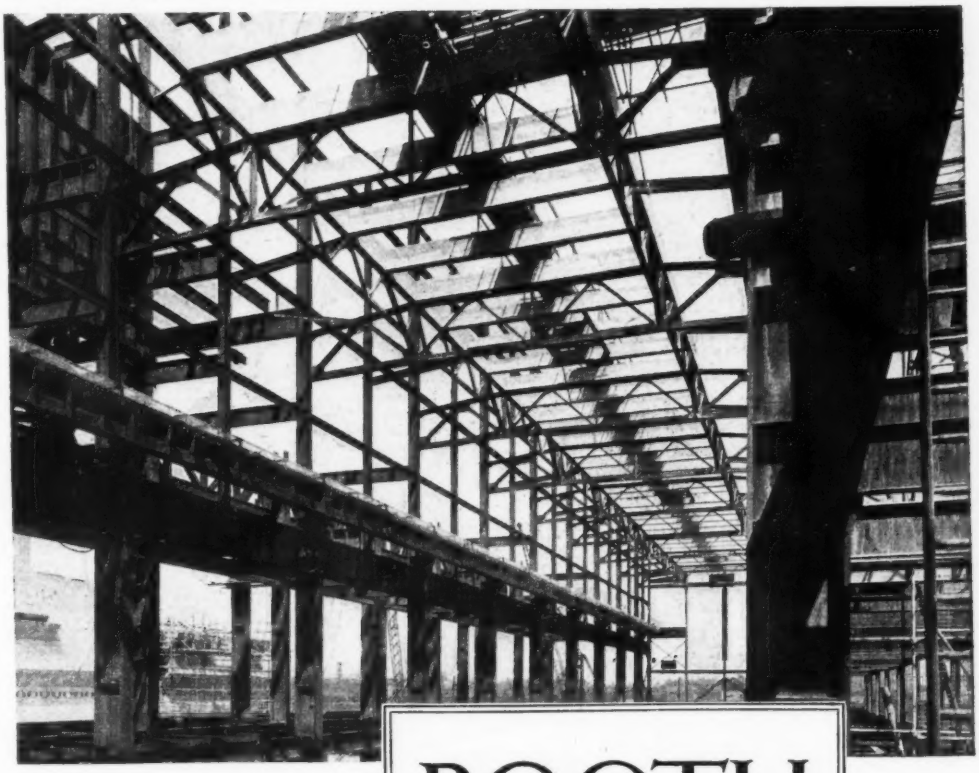

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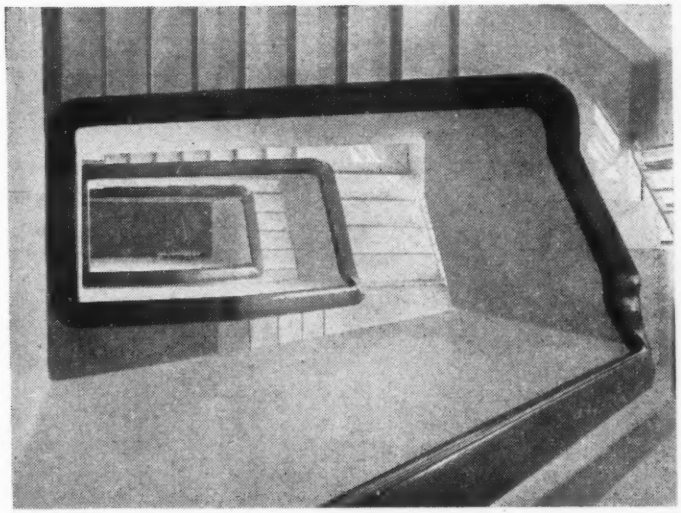
Right: Continuous handrail round three floors of an open well staircase. Its construction, as well as that of the interesting semi-circular flight of stairs shown below, involved many problems of craftsmanship, which Sadds knew how to solve. At the same time, their works are equipped for economical production of long runs of staircases for housing schemes.



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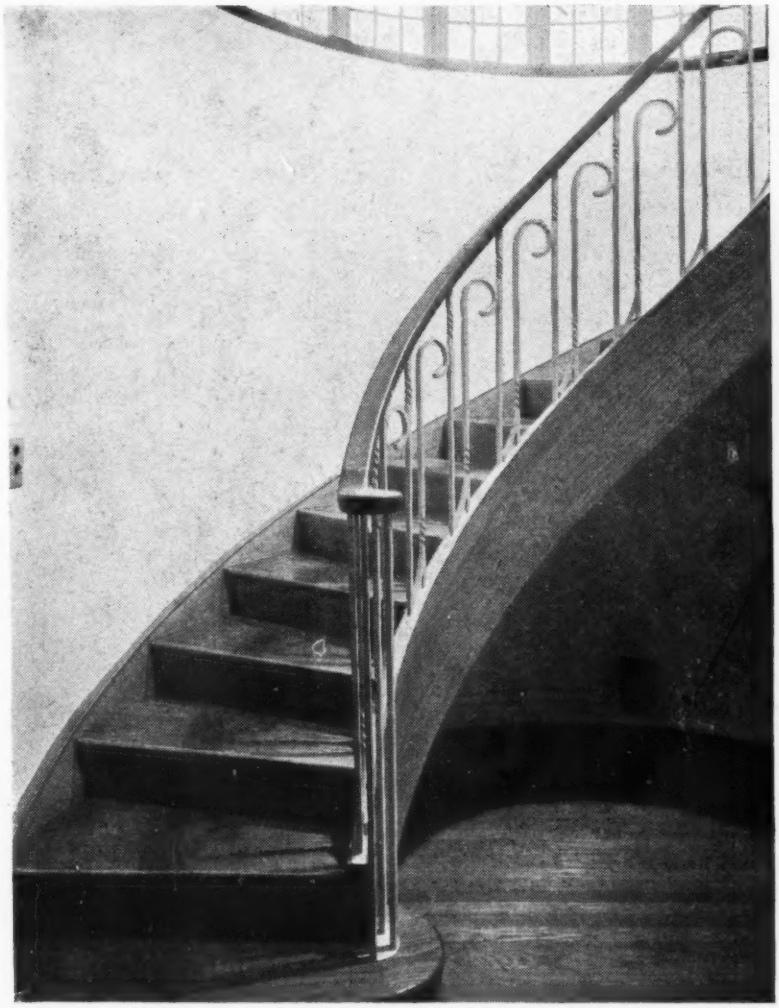

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THE ARCHITECTS' JOURNAL

No 2914 4 JANUARY 1951 VOL 113

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AGAIN CARLTON HOUSE TERRACE

It just shows how necessary it is always to be on the watch against the vandals in our midst. The proposals for rebuilding Carlton House Terrace were only sprung on the public a day or two before they were to come up before the Westminster City Council — having already been approved by the Council's town-planning committee. The Council is not, of course, the final authority, but for the first time the threat to ruin London's only example of large-scale civic planning was to be debated in public, and this was obviously the moment for the public's resentment to be expressed.

*

It *was* expressed—forcibly and unmistakably: *The Times* printed a leader, the Georgian Group wrote a letter and the editors of *The Architectural Review* sent a telegram. As a result, the chairman of the town-planning committee got up and asked leave to withdraw his committee's approval so that they could discuss it further. Only a temporary victory perhaps, but sufficient unto the day. . . . The public's watchfulness, moreover, had been aroused.

*

The depressing thing about the whole episode is that it should be our own Government against whom we have to defend our architectural treasures; one can understand commercial enterprise being tempted to exploit a valuable site to the utmost, whatever the sacrifice of beauty, when it gets its hands on one, but surely one can expect governments to behave more responsibly and far-sightedly? What makes it worse is that when rumours of the proposal got around (a sketch was actually exhibited at the RA a couple of years ago, but had not then official sanction) the Government promised, in the House of Commons, that Carlton House Terrace would not be destroyed; that the Nash façades would be perserved and a new Foreign Office built behind them.

*

It now turns out that preserving the façades means incorporating them in a huge building rising 96 feet above the upper road level, topping Nash façades by several storeys, which will ruin the scale of the whole composition and destroy the delightful view from St. James's Park. The scheme also involves rebuilding the Carlton Gardens elevation, which will spoil the character of Waterloo Place, and sinking a ramp in the middle of Waterloo Place so that cars can get down to a basement car-park. If this is done, whoever climbs the Duke of York's steps will find himself confronted by a hole in the road instead of with the solid platform such a noble ascent demands.

All lovers of London will, I trust, continue to fight against this scheme and anything resembling it. Meanwhile there is one more question one is impelled to ask: What is the Royal Fine Art Commission doing? This is exactly the sort of vandalism the Commission exists to prevent.

PEACOCKS, BUT NO PIPER

For me, and I daresay for you, too, Hafod was the discovery of John Piper, revealed by his paintings and drawings and by an article in *The Architectural Review* (reprinted in his *Buildings and Prospects*). So I was a little surprised to find no reference to him at all in a new book about the place which has just appeared—*Peacocks in Paradise*, by Elisabeth Inglis-Jones.*

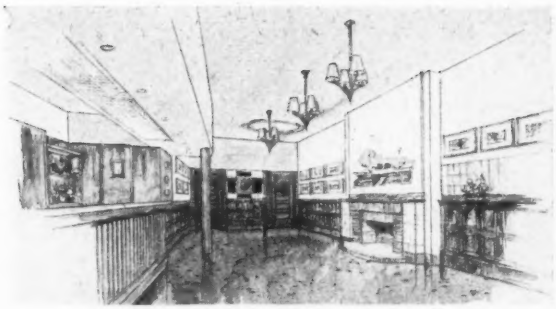
*

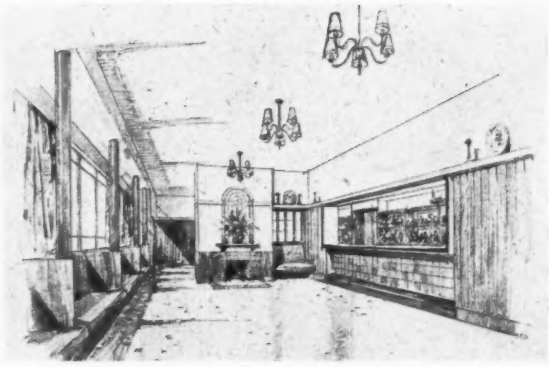
But having said that, let me recommend *Peacocks in Paradise* as a thoroughly readable account of the history of that extraordinary Cardiganshire estate, where the philanthropic spendthrift Thomas Johnes combined literature, landscape gardening, forestry and model farming to such good effect in the thirty years following 1783. Miss Inglis-Jones must have done a formidable job of research, but her book is quite untainted by pedantry. Oddly enough, the peacocks of her title are of the feathered kind—though some have believed that Hafod was the original of Thomas Love Peacock's Headlong Hall. Miss Inglis-Jones doesn't as much as mention TLP; so presumably she knows better.

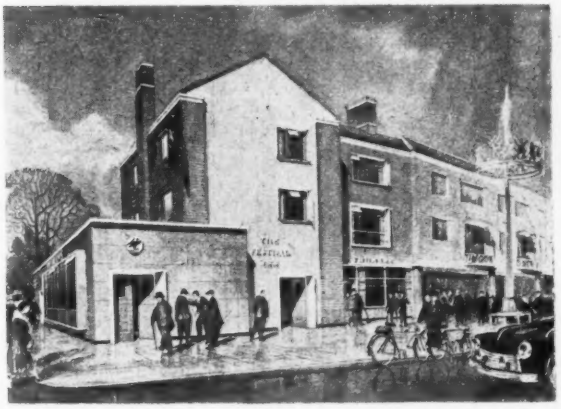
*

Johnes's house at Hafod, a Gothic extravagance designed partly by Baldwin of Bath, partly by Nash, and partly by Johnes himself, was burnt down during his lifetime. He immediately rebuilt it, this time taking care to leave

* Faber and Faber. 18s.







Three views of the Festival Inn now under construction at Poplar as part of the Lansbury Neighbourhood Unit, which is to form part of the FOB's Live Architecture Exhibition. In order to ensure a unity of architectural treatment the inn, which is part of a new market area, has had its elevations designed by the architect for the market, Frederick Gibberd. The interior, however, has been designed by R. W. Stoddart, the architect to the brewers, Messrs. Hanbury, Buxton and Co. Ltd. Top, left, the public bar ; left, the saloon bar. (*See note below.*)

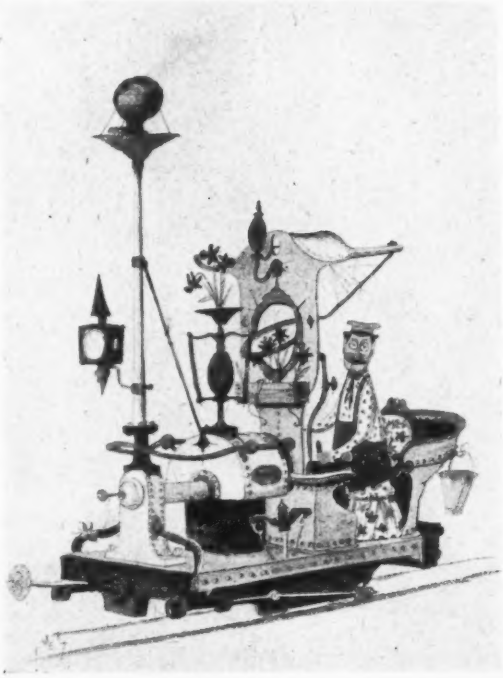
Nash (whose part had burnt most readily of all) well out of the picture. After his death it suffered many changes and decays, and the very last of it has now been demolished. The sale of the materials was well attended by local people, and I'm told that in that part of Cardiganshire it is quite a usual thing to see cottage gardens decked with Gothic pinnacles, or cucumbers growing under great Gothic windows from the dismantled conservatory.

NO MISNOMER

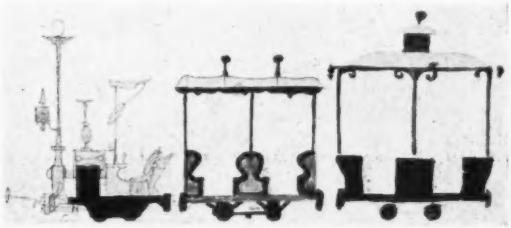
The public house being rebuilt in Lansbury (see sketch above), for the Festival's Live Architecture Exhibition, was originally called "The Grundy Arms." It has, however, been renamed "The Festival Inn." Grundyism, you will remember, is a term used to describe conventional prudish propriety. How well the old name fits the new interiors. How regrettably slight has been the influence of the *Architectural Review's* pub competition in this instance.

ANOTHER ILLUSION GONE

My delight in Rowland Emett's famous trains was largely due to my conviction, that beneath the designer's frills the wheels went round and the engines really chuffed. Inefficiently and sporadically, no doubt, but that was part of their charm. Unfortunately, however, as my illustration below indicates, these railway phantasies are not easily translated into reality. For the miniature railway, which is to run this year in the Festival's Pleasure Gardens, is to be propelled by some smoothly-purring alien device. No hiss of erratically escaping steam, no piping whistles,



A model railway train designed by Emett of Punch, *for the Festival Pleasure Gardens in Battersea Park. The sketch below shows the light superstructure on a standard Lister locomotive.* (*See note above*)



Guest Editor for 1951

As announced elsewhere in this issue the JOURNAL is continuing its policy, entered upon last year, of inviting annually a new member to the editorial board as a guest editor for one year. For 1951 the guest editor will be Frank Russon, photographed above, the joint managing director of C. Bryant & Son, Ltd., a Birmingham firm of building and civil engineering contractors. The main subject with which Mr. Russon will deal during the coming year is the ways and means of ensuring closer co-operation in the building industry between the architect, and the contractor and his operatives, and thereby increasing efficiency and reducing costs. This is the essential desideratum underlying all the recommendations of the many reports on the building industry published recently.

no hot brasswork, none of the essential esoteric Emett-ry.

BUTLIN IN THE BAHAMAS

One of my spies has recently returned from a visit to the Bahamas where, he tells me, he was able, in the intervals between bathing and drinking rum punches, to glean some information on the Butlin project on Grand Bahama Island. His report * makes sad reading.

*

Already some £1,500,000 has been spent on the site, which is still unfinished. Admittedly, the construction of a vacation village on what was virtually a desert island, sixty miles from Miami and even more from Nassau, presented those responsible with many civil engineering problems. But quite a number of similar projects cropped up during the war and one would have thought that the lessons so expensively learned then would have been remembered today. And, for that matter, a month or so spent in Kongwa, East Africa, two years ago would have provided a second set of examples. As it is, either the estimating must have been poor or the plans must have skipped too easily over too many of the inevitable difficulties. The original estimate for the total cost was under £1,000,000.

*

The result can hardly be described as an artistic triumph. In this country, we have come to accept a Butlin's Camp as one of those things that had to happen and about which not very much can be done. It is, none the less, something of a shock to find that the American vacationist—probably a man who would never get to Europe anyway—was to have been confronted with this as a typical British institution.

*

A footnote in praise of BOAC. The reception hall at Oakes Field, Nassau, now an important junction on BOAC lines to the Caribbean and to South America, is unpretentious but at least has decorated itself with a series of gay, if not profound, murals. My spy rates the airport buildings above those at Heathrow (as I hope he should) and he rates Heathrow well above Idlewild, New York. "At least," he says, "Heathrow looks as though they did intend to build something better someday."

ASTRAGAL

The Editors

GUEST EDITOR, 1951

AT the beginning of the year just concluded the JOURNAL announced its intention of appointing annually a guest editor for the year. Its first guest editor was Arcon, who last week wound up their term of office with a summary of their views on the organization of a private practice in the light of present day conditions, a subject on which they have written and guided JOURNAL policy over the twelve months. During that time another subject, of vital importance to the profession and the building industry, has since grown rapidly in importance and now assumes alarming proportions ; the subject of rising costs and low productivity. Both these closely related subjects were dealt with at some length in the spate of reports which appeared during 1950, the principal ones being first, the Working Party Report ; second, the report of the Anglo-American Council on Productivity ; and lastly, the second report of the committee of inquiry, appointed by the Ministry of Health, on the cost of house building (The Girdwood Report). Rising costs and low productivity : those are the spectres which arise from a study of these documents. Even at this moment building workers are applying for an increase in wages of sixpence an hour, and the industry is also faced by rising prices and a growing shortage of certain materials as the country wearily returns to a policy of rearmament. In the face of all these depressing factors it is more than ever essential that the building industry as a whole should make every endeavour to increase its efficiency. Higher production and lower costs can best be achieved by co-operation between the interested professions and trades which make up the industry. This theme of co-operation to achieve a greater output of building at less cost is an urgent subject for discussion in the JOURNAL, and for this reason an eminent building contractor has been invited to become, for the coming year, a member of the editorial board. He will have at his disposal the pages of the JOURNAL as a platform from which to discuss with architects and builders the steps which should be taken towards ensuring smoother relationships, greater efficiency and lower costs.

The JOURNAL's guest editor for 1951 is Frank Russon, a joint managing director of C. Bryant & Son, Ltd., a Birmingham firm of building and civil engineering contractors. Mr. Russon has himself made a notable contribution to reducing the cost of building and increasing productivity by examining in detail, in his excellent book, published last summer, *Bonusing for Builders*,* the many and varied problems connected with bonusing. This book is one of the first attempts at the rationalisation of the many different methods of calculating and paying bonus to have been carried out by a practical builder who has actually applied the methods he describes.

Frank Russon has had the wide practical experience which is typical of the real core of the building industry. In his

* *Bonusing for Builders*, Norman Tiptaft, Ltd, 10s.

youth he worked as a gas fitters' and plumbers' mate, as a brick layer and as a builders' surveyor before joining his present firm in 1924. Today, he is a member of the National Incentives Committee, a Past President of the Birmingham Association of Building Trade Employers, and a director of several building firms.

He will give the readers the benefit of his experience in matters closely concerning architect and builder relationships in an endeavour to progress a little farther towards a synthesis of design and production—a state of affairs essential for the art of architecture and for which we have long been waiting. In welcoming Mr. Russon to its pages the JOURNAL takes this opportunity of wishing him and readers a happy New Year.

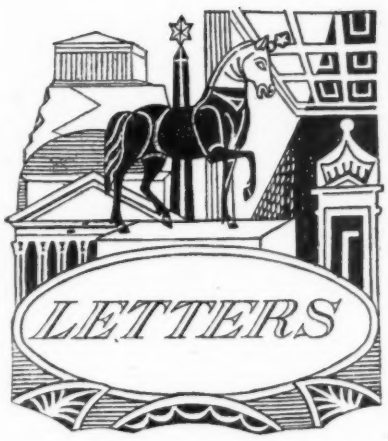
WORKING DETAILS

This week sees the return of one of the JOURNAL's most popular pre-war features: working details. The results of the JOURNAL's recent questionnaire to subscribers showed that working details were far and away the most asked for feature. The last working detail of the old series of sheets, number 777, was published shortly after the outbreak of war, and it is somewhat chastening to read the brief accompanying editorial note which announced that: "until conditions become more normal certain features may be temporarily or intermittently suspended." The editors were then no more able to foretell the future than they can now. Conditions can still hardly be described as normal. Nevertheless a start must be made sometime, and this new series is launched in a spirit of confidence and optimism appropriate to the New Year.

The working details will be an entirely new series, though somewhat similar in format to the old, because it is felt that differences in architectural practice are such, today, as to merit a complete break away. The details will be chosen only from contemporary buildings, both British and foreign, which may or may not have been illustrated in the JOURNAL, but they will have been selected as being of specific interest in themselves and hence worthy of filing.

In addition to the illustration of details representing interesting ideas in design within the normal range of constructional techniques in the building industry, we hope to publish a few details of subjects relevant to architecture but from other spheres of construction and manufacture, as, for instance, parts of railway carriages, caravans, ships and motor cars. We hope thus to show fresh and original approaches to similar problems, and thereby awaken the interest of architects in techniques normally outside their ken.

AS FROM THIS WEEK THE PRICE OF THE ARCHITECTS' JOURNAL WILL BE INCREASED TO 1*s.* AND THE SUBSCRIPTION RATE TO £2. 10. 0. A YEAR, INCLUDING POSTAGE.



Edwin Gunn, *A.R.I.B.A.* (*Retd.*)

R. H. Spencer

F. R. Brinkhurst

Louis Erdi, *L.R.I.B.A.*

A. G. Stanwell, *A.R.I.B.A.*

Housing Medal Work

SIR,—I have read with interest Prof. Gordon Stephenson's temperate criticism of the layouts and house designs (AJ: December 21), which were awarded MOH medals.

It is obviously difficult to do justice to this subject without knowledge of all the conditions, in particular the architects' instructions, for it must be remembered that the employer has the last word. Often semi-detached pairs were stipulated. Contours are usually a vital factor in dictating layout; or should be. Grass verges are seldom an enduring success and this might be extended to include "greens" which interpose between houses and road access. Heavy motor transport (coal lorries, railway and furniture vans, etc.), disregarding damage, will cut up the surface, and who can blame them?

Division into classes might be extended to provide for (1) "urban" schemes which are really rural; (2) differentiation between schemes with one or more existing road frontages, and those wholly on back land.

As to house plans, many, of course, follow the guidance of the manual, but others are based on Raymond Unwin's prescription—"When only limited space can be afforded see that it is provided where it will most avail, and avail most often." I agree that a £1,200 ceiling is desirable and (on average) possible.

As to lamp-posts—these usually arrive without any reference to the architect—somebody might introduce the simple type suggested; I wish they would!

EDWIN GUNN.

Minehead.

Architectural Pro Wanted

SIR,—Recent and unproductive criticism between architect and critic has served only to indicate the barriers which exist between the architect and the vast majority of the public. Buildings are criticised by canons altogether foreign to the emotions and reactions of the public themselves. As a result, those criticisms which are published in the technical journals are unlikely to filter through to the daily press.

The misunderstanding between the architect and public is twofold. The architect does not understand the public and they do not understand him or his work. In both cases it is the architect who is to blame.

The architect, in his "ivory tower," is preoccupied with intellectual "design" concepts, and the emotional and subjective aspects which are most significant to the layman are ignored by him because they do not readily stand up to measurement and analysis. Furthermore, the acceleration in all fields of scientific development and the increase in specialization has been such that the specialist tends to outstrip the public so far in the understanding of his own subject that he expresses himself in terms unintelligible to those outside his profession and the appreciation of architecture becomes largely esoteric.

People still think of modern architecture in terms of grubby concrete, meaningless angularity and jazzy ornament, and this is not surprising, since it is impossible for many people even to see a good modern building, nor are they in any way aware of the possibilities involved. As long as they are not aware there will be no demand, and while there is no demand there can be no architecture. Not only is there no demand, but in some cases there has been considerable misunderstanding and opposition to those buildings eventually erected.

Two points arise from these arguments. The architect must realize the dominant importance of the emotional aspects in design, and though it will be difficult to sift those symbols of universal significance from those of purely individual value, some move in this direction must be made if a common language is to be established.

The architect must consider himself responsible for the establishment of a *direct* relationship with the public. Until this can be achieved by a sufficient quantity of new buildings, an artificial means of communication will be necessary. Although this could be done by exhibitions and discussions, the cinema, as the most potent force in education today, would be more effective; it is, furthermore, the only medium capable of expressing an idea both in space and time.

R. H. SPENCER.

London.

A Would-be Architect

SIR,—I was most interested in the case of the German ex-POW of whom ASTRAGAL wrote on November 16. Such treatment as has been accorded him is, as you say, no credit to our Welfare State. My own experience of dealing with Government departments has been as surprising and as exasperating as that of "S."

I, too, have wanted to be an architect since my school days. I passed the subsidiary higher scool certificate in architecture at the age of 17 and left school to await my call-up. In the meantime, being unable to afford a course in architecture, I became a tea-taster. Three months later I was called up. In the army I spent some time in this country, and was later sent to Palestine during the post-war disturbances there.

When I was released I found I was still unable to realise an architectural career, and I returned to tea-tasting, only to experience, some months later, a bout of ill-health which had been brought on by military service. I had to give up tea-tasting, and spent a considerable time in hospital. Early this year I began working as an assistant to a firm of drawing-office stationers.

I understand that there is a Government scheme which provides training for men disabled by military service for a profession or trade of equal rating to that which they are no longer able to pursue as a result of their disablement. I therefore wrote to the Ministry of Labour and National Service and stated my case and intention of becoming an architect, having been deposed from tea-tasting. I was also accepted for the school year beginning in September, 1950, by Brighton College of Art, to carry out a full-time course in architecture. But I was quite unable to obtain any decision on my application. I wrote, telephoned and called at the office of the Ministry of Labour, and because I received no answer from them was unable to begin studying at Brighton.

Several days ago I had a postcard from the Ministry of Labour stating that my application had been transferred to the Ministry of Education, from whom I have had no communication.

I am 22 years old. I think I am eligible for financial aid from the Government in whose service my disability occurred. Perhaps I shall know in time for the school year which begins in September, 1951.

Had I been 100 per cent. fit I should not now have hesitated to study in evening classes, working in the day in an architect's office. In fact, I have tried to take evening classes, but had to give it up.

F. R. BRINKHURST.

Croydon.

The Future of Architecture

SIR,—The future of architects and architecture in this country depends on two factors:—(*a*) The planning of all building projects should be brought within the orbit of the profession, and (*b*) the vast amount of work thus secured should be spread amongst the most suitable.

To take point (*a*) first: A survey of all the construction and planning work executed during the post-war years might well reveal that on probably less than 25 per cent. of the sum total of these works have architects been employed. The widening of the architect's field, by adding only a further 25 per cent. of the work to their responsibility, will absorb and fully occupy all available architects, assistants and students for many years to come.

Every project must harmonize with its surroundings and if architects could not give any other services but æsthetic co-ordination, this one end would amply justify their employment. However, architecture is the only profession where training is concentrated on the planning of schemes to satisfy a set of requirements and to co-ordinate the efforts of specialists into an organic whole. This ability is, at the moment, largely wasted.

The common misconception that only a dwelling, a public or commercial building comes within the scope of architecture must be dispelled and industry, civil engineering, etc., made to realize the advantages to be derived by the inclusion of an architect in the planning team, advantages which will be gained by all, the promoters, planners, workers and the public.

As for point (*b*): the broadening of the competition system would ensure the selection of the ablest designers. In Switzerland all government and municipal work has to be put to competition. The result is to be seen in the standard of Swiss architecture. The additional 2-3 per cent. expense would be saved by a better and more economical scheme. Even in highly specialized problems a competition should prove useful. Human invention transcends specialization.

The solution of these two problems is the duty of the professional organizations. If they fail in solving problem (*a*), the architect's profession, as existing today, will be extinct in 50 years time. A failure in problem (*b*) means the stifling of talent, and final decadence in all matters of architecture. In both cases the country and the world will be the poorer.

Let us hope that our officials will be successful in their task.

LOUIS ERDI.

London.

Housing Allocations

SIR,—I feel that Mr. Bazeley (AJ: December 14) has raised a most interesting point regarding the Government rate of house building and one that should be closely attended to, because it almost amounts to a political scandal.

Having worked on council housing for several years and watched my local conservative council lashed periodically in the Press by "guerilla socialists" for their very slow and insufficient housing programmes, I have for some time supposed that the chief hold-up was the government's belief in the dire shortage of materials and perhaps an imperfect rail transport system. The lack of essential building materials is not so chronic as some may have supposed, and if building operatives have been transferred to building public lavatories to prevent more being paid off, it would suggest that the labour shortage is not so desperate either, although we are far from the healthy competition maintained in the United States by many new recruits and lesser unemployment incentives. But if it is true that it is a government policy to restrict very drastically the rate of house building, then, to be consistent, my own borough should be commended for its supposed lack of interest to the point of having practically no architectural staff to cope with the weekly demands for more housing in some form or other. Many boroughs and local councils are evidently in a similar position. What little housing is done is not supervised by an architect even when there may be an architect on the council because the borough engineer, surveyor of all that the local architects are not allowed to survey, prefers his cloak of prejudice against architectural interference.

It is sincerely hoped there are many cheering exceptions to this dismal story of restricted allocations, but the exceptions, wherever they are do not prove or justify such a barren and short sighted policy.

The standard of living in America is high because there is a strong public demand for improved standards. When the public demand in this country for more and better (please let it be better) housing, has risen to the pitch of being an insistent and national outcry, perhaps the wholly unnecessary apathy and painful sense of limitation in the socialist ranks will be shocked into real and wholesome action. Who knows? Perhaps a really active, progressive and inspired architects' committee (not more than three) will get its chance to stimulate the MOH with progressive, inspired and adequate ideas. Then the MOH will be less conscious of the limitations and more aware of the immense opportunities for *better and more housing*.

A. G. STANWELL.

Beckenham.

The EDITORS reserve the right to shorten letters from readers. Whenever possible, however, they are published in full.

MOH

1951 Housing Awards

Schemes competing for the 1951 award for the best designed local authority housing estates should be sent to the principal regional officers not later than the end of January, 1951. In future there will be two awards made in each Region, not four.

An MOH circular issued to local authorities gives a reminder that awards will be offered annually in each region outside London for one urban scheme and one rural scheme; and that in the London region an award will be made for a scheme of new development and another for a scheme of reconstruction.

An awards committee will be formed in each region to adjudicate upon entries. The committee will consist of 9 members (in London Region 11 members), as follows:—one member (an architect) nominated by the RIBA, who will act as chairman; three members (architects) nominated by the local Architectural Societies allied to the RIBA; three members, whom it is contemplated will normally be laymen, nominated severally by the Association of Municipal Corporations, the Urban District Councils Association and the Rural District Councils Association (in London five members, including a representative of the London County Council and the Metropolitan Boroughs); one member (an architect) nominated by the Minister of Health, who will normally be the principal regional architect; a woman, resident in the region, nominated by the Minister of Health.

COMPETITION

Festival Hall at Heswall

The Wirral UDC invite architects to submit designs in competition for a Festival Hall to be erected at Heswall, Wirrall, Cheshire. First prize, £500; second prize, £350; third prize, £250. The assessor will be P. Garland Fairhurst. Last day for submitting designs, April, 28, 1951. Last day for submitting questions, February 8, 1951. Conditions may be obtained on application to W. F. Roberts, Clerk of the Council, Council Offices, Heswall, Wirral, Cheshire. A deposit of £2 2s. should be paid.

WESTMINSTER

Future of Carlton House Terrace

The town planning committee of Westminster City Council is to consider further proposals for the rebuilding of properties on the south side of Carlton House Terrace to provide accommodation for the Foreign Office.

When the recommendation that no objection in principle should be offered to the scheme came before the council meeting recently, the chairman of the committee Major Claude Davis, architect, after a brief discussion asked leave to withdraw that section of the report, to enable the committee to consider the height and elevations of the proposed new buildings. That was an aspect which the committee, not being the planning authority, had not hitherto been asked to consider, and it had only concerned itself with the proposed new underground garage, the ramp giving access to it from Waterloo Place, and the widening of the highway. But it was ready to consider other aspects of the scheme if that were the council's wish.

The reference back of the report had previously been moved by Mr. E. H. Keeling, MP, who said that the proposals filled him with alarm. They threatened irreparable injury to the Nash terraces and also to the Mall, which was London's leading processional way, comparing favourably with Princes Street, Edinburgh, the Champs Elysées in Paris, or with anything that America could boast. All over the world the Mall was unique in the affections of the British people because it had been the scene of great national processions. The Minister of Works must have had his tongue in his cheek when he stated in the House of Commons last March that the Nash façades would be preserved.

The new Foreign Office buildings, when grafted on to them, would tower above them and make them completely out of scale. Even if the new buildings were invisible on the north side of the Mall they would certainly be conspicuous from the other side, and even from the middle of the Mall, and even more so from the Horse Guards Parade and St. James's Park. To claim that these façades were preserved was like saying one was preserving a woman's beautiful face when one put an ugly hat on top of her head or, architecturally speaking, as reasonable as saying that Nelson's Column was preserved when one surrounded it with skyscrapers.

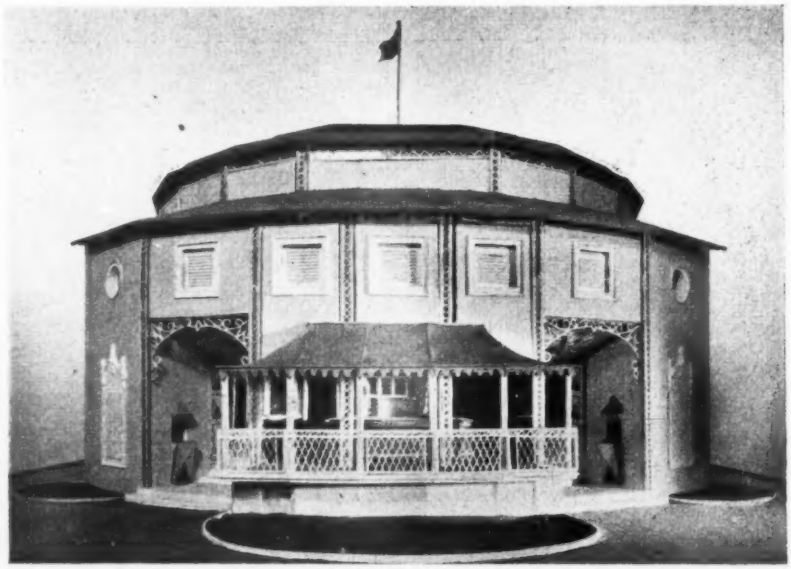
It was quite true that Westminster City Council was not the planning authority, but this request for its opinion was unrestricted and therefore it was free to express its views on the architectural aspect. The committee, in its report, said that it had no objection on principle to the scheme. Surely, in a matter of this importance, it should be more positive.

Major Davis said that he had seen the leader in *The Times* criticizing the scheme and the town clerk had received telegrams from Professor R. Wittkower, Professor in the History of Art at London University, and from the editors of the *Architectural Review* strongly protesting against the plan for Carlton House Terrace. The town clerk had also received a letter from the Georgian Group stating that it regarded with the gravest concern the proposal to increase the height of the buildings at Carlton House Terrace by three storeys, which seemed to it bound to put the buildings out of scale with the retained façades, as well as with other notable buildings in the vicinity. Furthermore, the group considered that the design and dignity of Waterloo Place must surely be seriously impaired if the access ramp were to be constructed in its centre.

The architects retained by the Ministry of Works in connexion with the redevelopment had submitted particulars of the scheme to the council for its observations, and the proposals had been considered by the town planning and the works and traffic committees. His committee felt that the provision of an underground garage, provided that it was large enough to accommodate the cars of the persons working in and visitors to the building, would be a great benefit in that it would lessen the number of cars standing in the streets.

They considered that the provision of a ramp from Waterloo Place was a convenient method of access to the garage and that no objection need be raised to it, subject to its being satisfactorily architecturally treated and the works to the public way being to the satisfaction of the council as the highway authority.

The widening of Carlton House Terrace would provide additional space for the parking and turning of cars and would enable a more imposing view of the building to be obtained from the opposite side of the road.



The preliminary model of the Riverside Theatre, designed by Guy Sheppard for the Festival Pleasure Gardens. The theatre will be a prefabricated structure of tubular steel scaffolding and fibrous plaster panels and will be easy to dismantle and re-erect.

"As regards the height and the elevations of the proposed new blocks as a whole," he concluded, "the committee did not apply their minds to these—they were not asked to—although, admittedly, our report looks a little like that. But in view of the opinions expressed, perhaps it would be better if I ask leave to withdraw this report in order that that particular angle may receive consideration."

The council agreed to this course.

DSIR

Grant For Furniture Information Service

The DSIR have offered a grant of £3,000 a year for an experimental period of three years to the Furniture Development Council. The grant is towards the expenses of setting up a technical information service and for research into the possibilities of establishing standard performance tests for furniture.

NEW YEAR HONOURS

Awards in the Building Industry

This year's list includes the following awards:—

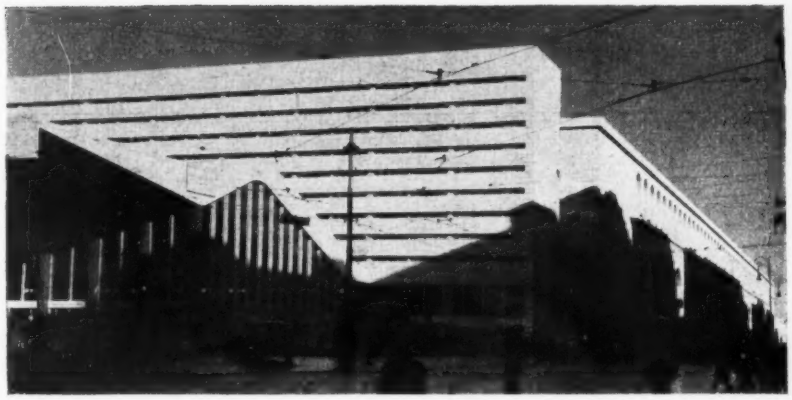
Knights Bachelor: Alderman Richard Coppock, general secretary of the National Federation of Building Trades Operatives. *CBE*: Oscar Faber, senior partner of Oscar Faber & Partners, for services in rebuilding the House of Commons. D. E. E. Gibson, City Architect and Town Planner of Coventry. R. M. Hunter, Assistant Secretary, Ministry of Works. W. A. Ross, Director of Works and Services, Scotland, Ministry of Works. J. W. Laing, Governing Director, John Laing & Son Ltd., Mill Hill. *OBE:* F. M. K. Thomas, joint chief surveyor and contracts manager, John Mowlem & Co. Ltd., for services in rebuilding the House of Commons. P. J. Williams, Principal Regional Architect, Ministry of Health. J. A. Wright, Senior Architect, Ministry of Works. *MBE:* E. L. Bird, editor *Journal of the Royal Institute of British Architects.* L. G. Pargiter, senior architect, Ministry of Works, for services in rebuilding the House of Commons. E. J. Powell, senior chief technical officer, Ministry of Works, for services in the rebuilding of the House of Commons. G. P. H. Watson, senior investigating officer, Royal Commission on Ancient and Historial Monuments (Scotland). T. C. R. Willis, assistant regional manager, London (S.W.) regional War Damage Commission and Central Land Board.

RIBA

Architectural Education to be Reviewed

The RIBA council has appointed a committee to review the present system of architectural education, with special reference to practical training. The committee will include the following:—

Kenneth M. B. Cross (chairman), Anthony Chitty, W. A. Eden, W. B. Edwards, Philip G. Freeman, J. L. Gleave, Leonard C. Howitt, Lockhard W. Hutson, R. Furneaux Jordan, Andrew Rankine, F. C. Saxon and T. S. Scott.



The new railway station in Rome, which was opened recently. Architect, Montuori. See news note on this page.

PUNJAB

Corbusier Appointed Adviser for new Capital

A new capital is to be built at Chandigarh, in the Punjab, India. Le Corbusier has been appointed one of the advisory architects both for planning and designing the new city. An official announcement about the project and about the other designers who will be concerned in it is expected shortly.

REGENT'S PARK

Restoration of Nash Terraces

A deputation from the St. Marylebone Society is to meet the Commissioners of Crown Lands on January 11 to discuss the restoration of the Nash terrace houses in Regent's Park. The invitation to send a deputation came after letters had been sent by the society to the Commissioners and the Minister of Works complaining of the uncompleted condition of the façades of some of the houses.

Satisfactory replies to the letters were received giving assurances that the restoration work would be fully carried out and the discussions between the deputation and the Commissioners are likely to be largely technical. On Thursday the St. Marylebone borough council discussed the letters sent by the society and a motion supporting the original protest was passed.

SCOTLAND

Buildings worthy of Preservation

The thirteenth report of the Royal Commission on Ancient and Historical Monuments and Constructions of Scotland, published recently (Cmd. 7967, Stationery Office, 3d.), relates to the city of Edinburgh, its suburbs, and the port of Leith. It contains a list of 65 buildings and other places of historic and cultural interest which the Commissioners consider worthy of preservation.

The commission, whose chairman is Lord Wemyss and March, reports that most of Edinburgh's monuments are now in public hands, but suggests that other structures may be expected to deteriorate progressively unless their preservation is made a matter of policy.

Reference is made to the emergency records which were made of ancient monuments in all parts of Scotland which were subject to special risks during the last war through enemy action or the training of troops. Some 2,300 photographs were taken of buildings in counties not yet covered by inventories and 636 monuments were visited and recorded in military training areas.

ROME

New Railway Station Opened

The new "Termini" or central railway station of Rome, the construction of which began in 1938 on the site of the old station, was formally opened recently at a ceremony attended by President Einaudi, Signor De Gasperi, and Signor D'Aragona, Minister of Transport. Built at an estimated cost of from £15,000,000 to £17,000,000, the station is said to be the largest and most modern in Europe. It covers an area of about 50 acres and can deal with up to 400 trains a day. The architect is Montuori.

The main edifice consists of an unadorned white rectangular block, 250 yards long and 90 ft. high, slashed horizontally by nine continuous lines of glass which provide light for the offices inside. The original design of a purely decorative façade was abandoned after the war and the criterion of a "functional" structure was adopted.

Starting at the first floor of the block and jutting upwards and outwards for two-thirds of its length is a roof which the Romans have called the "dinosaur." Below it is the booking-hall, with glass walls divided by red granite pillars.

To the left, where the roof ends, lie the ruins of the ancient Servian Wall, which formerly lay inside the old station. A proposal to remove the wall was rejected. Two more conventional wings of the new station were partly completed before work was interrupted by the war in 1942.

The square in front of the old station has been enlarged by setting back the façade of the new structure 200 yards, thereby creating a square which, with an area of over 80,000 square yards, is by far the largest in Rome and probably in Italy. Under here is being built a junction of Rome's new underground railway, while subways from the new station already run to tram and bus stops in the square.

DIARY

Art and the Continuity of Human Experience. Dr. Sigfried Giedion. 17-18, Dover Street, W.1. (Sponsor, ICA.) 8 p.m. JAN. 8

Development Charges—A Surveyor's Practice Notes. W. R. Brackett. 12, Great George Street, S.W.1. (Sponsor, RICS.) 5.30 p.m. JAN. 8

The Plastics Industry. J. C. Swallow. (Three Cantor Lectures.) At RSA, John Adam Street, Adelphi, W.C.2. 6 p.m. JAN. 8, 15 AND 22

Post-war Building by Housing Associations. Harry Moncrieff. 13, Suffolk Street, Haymarket, S.W.1. (HC.) 1.15 p.m. JAN. 9

Brightness Engineering. W. Robinson. At 2, Savoy Hill, W.C.2. (Sponsor, IES.) 6 p.m. JAN. 9

Timber Engineering. F. D. Silvester. At Hammersmith School of Building and Arts and Crafts, Lime Grove, Shepherd's Bush, W.12. (Sponsor, TDA.) 7.30 p.m. JAN. 9

The Height of Rooms in Dwellings in Relation to Health and Comfort. Discussion opened by Prof. G. P. Crowden. At 90, Buckingham Palace Road, S.W.1. (Sponsor, RSI.) 2.30 p.m. JAN. 10

A Comparison of the Bearing Power of Footings on Dry and Inundated Sand. Dr. W. Eastwood. (Sponsor, ISE.) 6.30 p.m. JAN. 11

The Early Years of Illuminating Engineering in Great Britain. Dr. J. W. T. Walsh. At the Royal Institution, Albemarle Street, W.1. (Sponsor, IES.) 6 p.m. JAN. 17

This feature covers aspects of legislation, parliamentary news or statutory rules and regulations which are of special significance to the architectural profession.

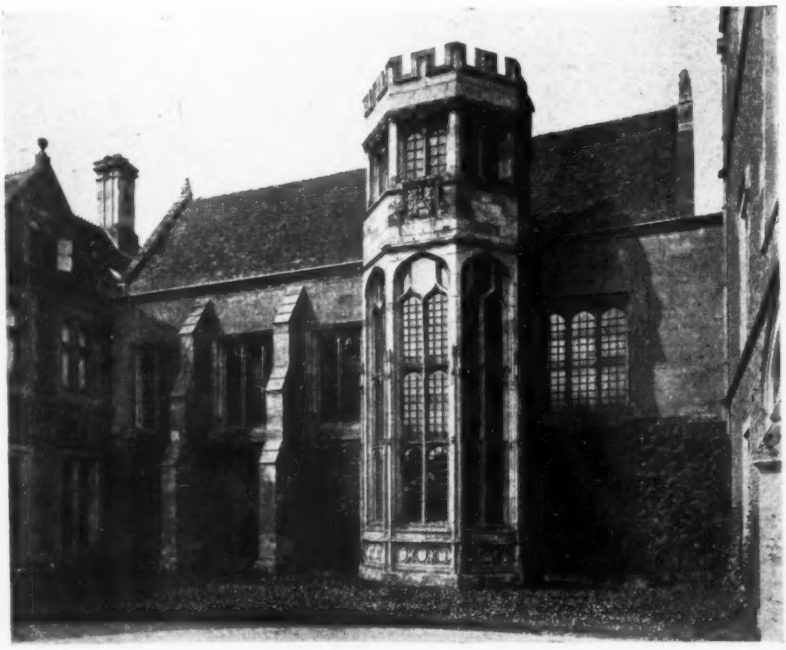
ERNEST WATKINS

The Architect and Current Affairs

The Central Land Board has one unique power. Most statutory bodies have power to acquire land compulsorily (subject to Ministerial confirmation), provided that the land is needed for some public purpose. The Central Land Board has power buy land compulsorily in order to re-sell it at once to some other private owner for his own purposes. This power has recently been reviewed both by the Board in its annual report and by the Courts in the case of *Earl Fitzwilliam's Wentworth Estates Co. v. Ministry of Town and Country Planning and Another.*

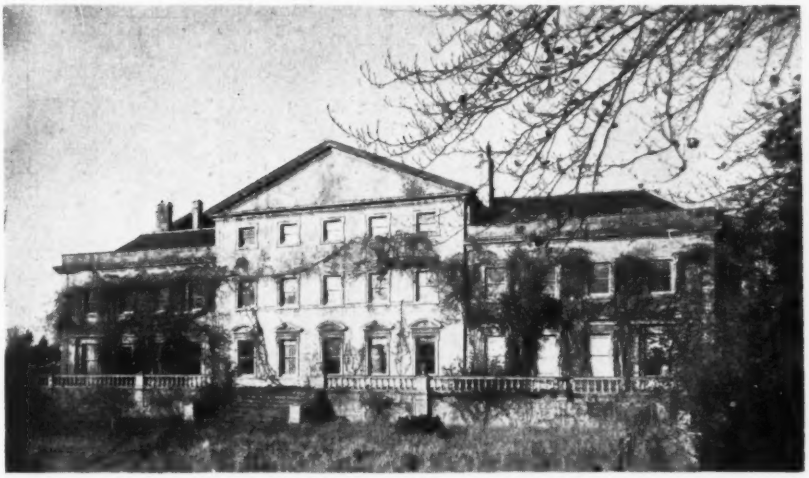
The power is commonly thought of, rather loosely, as a power possessed by the Board to compel a landowner who is standing out for a price above existing use value to sell at the existing use value. Having bought, the Board estimates the proper development charge, and sells the land to the man who wants to develop it at existing use value plus development charge. The annual report of the Board, which I discussed briefly last week, gives this instance of a case in which it did use this power. The owner of a plot was

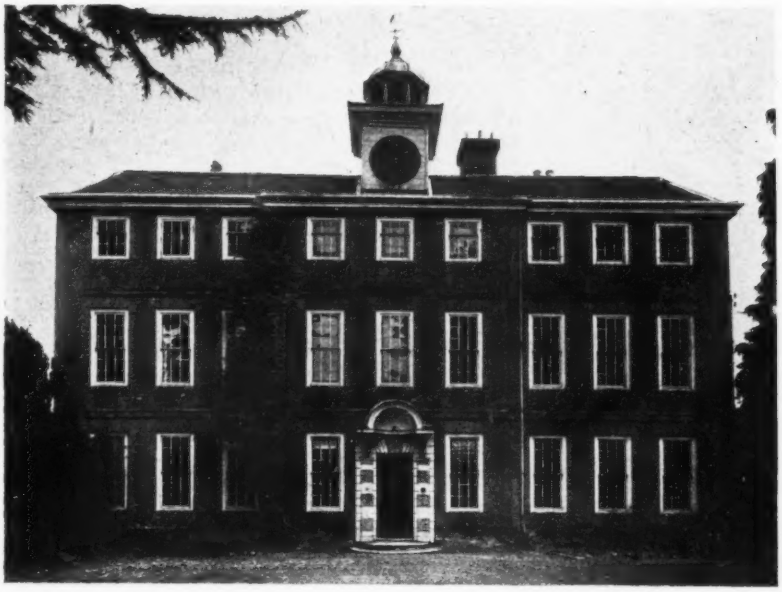
MUST WE LOSE OUR COUNTRY



HOUSES? BUILDINGS THREATENED OR DESTROYED

The houses illustrated on these pages are among those to be demolished or in danger of demolition which are listed in the National Building Record s annual report, recently published. On the right is Draycott House, Wiltshire, which was occupied by the army during the war and was badly damaged inside. At present no use can be found for the building and it is standing derelict, in danger of demolition.





Redheath, Croxley Green, at one time consisted of three parts, a 17th century manor, a fine Queen Anne block and an Edwardian block. The owners had arranged for its demolition as they felt it was in too bad a state of repair and too large, and in fact this was well advanced when a Mr. Geoffrey Allen secured the property. He proposes to recondition the Queen Anne part.

Redgrave Hall, Suffolk, was one of the largest mansions in Suffolk. The Georgian extensions designed by Lancelot Brown were demolished in 1946. It has now been demolished.

Left, top, Weald Hall, Essex, consists of two main blocks at right angles to each other and extending towards the east and north respectively; the east block was built (probably 1540-50) on an H-shaped plan, and the north wing added 1560-70. Further additions and alterations took place in the 18th and 19th century. The buildings are interesting examples of brickwork of the period, though much altered. In the war the building was damaged during military occupation. It became impossible to repair except at considerable cost and is now in danger.

Left, Fawsley House, Northamptonshire, has not been occupied since 1913 except by troops, who were stationed there during the war with rather more than usually destructive effect. In 1948 the building suffered from pillage by organized thieves who removed much of the lead so that wet entered and dry rot set in. Even when the building was in a good state of repair it proved impossible to find a suitable use for it. It has now been demolished.

COUNTRY HOUSES DEMOLISHED OR THREATENED

High Sunderland, Shibden, near Halifax, was originally a timber building but was encased in stone some time between the years 1622 and 1634. It has stood derelict for many years and is now in a pitiable condition. The SPAB co-operated with local bodies in trying to save the property and the Halifax Corporation considered its acquisition. Unfortunately, however, the necessary amount of land was not available and the scheme fell through.

Rufford Abbey, Nottingham. In January, 1949, the SPAB heard that the building was to be demolished. A public inquiry was held and a Building Preservation Order made on the building. The SPAB prepared for the Nottingham County Council a full report on its condition and made recommendations for its use. Although this was given every consideration and the Society understands that all Government departments were approached in the hope of finding that one of the Ministries needed accommodation, the County Council was not successful and at the end of the statutory period of six months the Order was withdrawn. The Minister of Town and Country Planning, however, confirmed the Purchase Order and the Nottingham County Council are now negotiating with the owner for its purchase for demolition with the exception of the 12th century crypt, which the MOW will watch over.

Bredfield House, Woodbridge, Suffolk, the birthplace of Edward FitzGerald, was occupied by the military during the war. A speculator purchased it, obtained compensation for the damage done but did nothing towards the repair of the house which he then sold. The house was in a very dilapidated state and the new owners had little alternative but to demolish all but the kitchen wing, which was the earliest part, dating from the late 15th or early 16th century.

Kiplin Hall, Scorton, Yorks, designed by Inigo Jones for the first Lord Baltimore, founder of the State of Maryland, in 1633. Damage during the war, when the house was requisitioned, and the effects of high taxation have made the future of the building uncertain.

Minstead Manor, an early 19th century building, is owned by Mrs. H. C. Compton. She retains the site but has had the building destroyed.

WITH DEMOLITION

Blatherwyck, which had been owned by the family of Stafford O'Brien since the 13th century. The building was sold to demolition contractors in 1948 and subsequently destroyed in spite of attempts by the MOTCP to save it.

Part of Woburn Abbey, Bedfordshire, owned by the Duke of Bedford, is being demolished, together with the riding school. The State rooms are to be retained. Demolition is due to lack of finance to restore damage done by dry rot.

Rushbrooke Hall, Suffolk, the property of Lord Rothschild, is in danger. The building has been listed by the MOTCP and in the meantime the owner is trying to find a user for it.

asking £300 for it. The District Valuer estimated its existing use value at £10. The Board made a compulsory purchase order, the order was confirmed by the Minister, the development charge was assessed at £170 and the eager purchaser got his plot at £180, all in. There is a nice touch of the old Robin Hood atmosphere about it all.

But the story is not as simple as that. The operative Section of the 1947 Act is Section 43. This gives the Board its power to buy land for any purpose "connected with the performance of its functions" and to sell it at a price inclusive of the development charge, but Sub-Section 2 provides that, if the purchase is to be a compulsory one, the Board must obtain the Minister's authorization and that that is to be given if the Minister "is satisfied in the public interest that the Board should acquire" the land and that it is "unable to acquire the land by agreement on reasonable terms." Public interest is always a dangerously indefinite phrase. So far, the Board seems to have adopted the working rule that at least the man who wants the land must have planning permission for its development and that he must equally have some backing from a local authority that he is a deserving case.

The Board explains, in its annual report, that normally when it is asked to use these compulsory powers it first approaches the owner and offers him the alternatives set out in the Board's pamphlet "House 1," which, presumably, gives him his chance to sell on "reasonable" terms. If that produces no response, the Board still does not act unless it is satisfied that the land was, in fact, offered for sale at a price "inconsistent with the principles of the Act." (It should be pointed out that the report was probably written before the decision in the Fitzwilliam Estates case.)

The facts in the Fitzwilliam Estates case were rather similar to the instance quoted in the report, save that the owners were offering a 300-year lease at the yearly rent of £20 10s. and that they were prepared to assign to the purchaser the claim on the Compensation Fund in respect of that plot. The Board took action and the owners applied to quash the compulsory purchase order. The application was heard by Mr. Justice Birkett.

Mr. Justice Birkett's judgment was involved. It turned mainly on the legal construction of the words in Section 43, on whether the Board could acquire land compulsorily only for the purpose of ascertaining development values or whether it could, in addition, purchase land with the intention of disposing of it for development. If the first construction had been right, the Court would have quashed the purchase order. Mr. Justice Birkett's view was that the Board had no right to acquire land simply to defeat a landowner who was asking a price for it "inconsistent with the principles of the Act." To quote from the judgment: ". . . if the issue in this case had been . . . whether the powers of the Central Land Board were powers which enabled them to . . . enforce a policy that land should not be sold at a price greater than its existing use value, I should have held that the Board had no such power." In the event, he did hold that the Board's powers were wide enough to cover the case under consideration, that the Section gave the Board power to acquire land for the purpose of disposing of it for development, which is what it had, in fact, done.

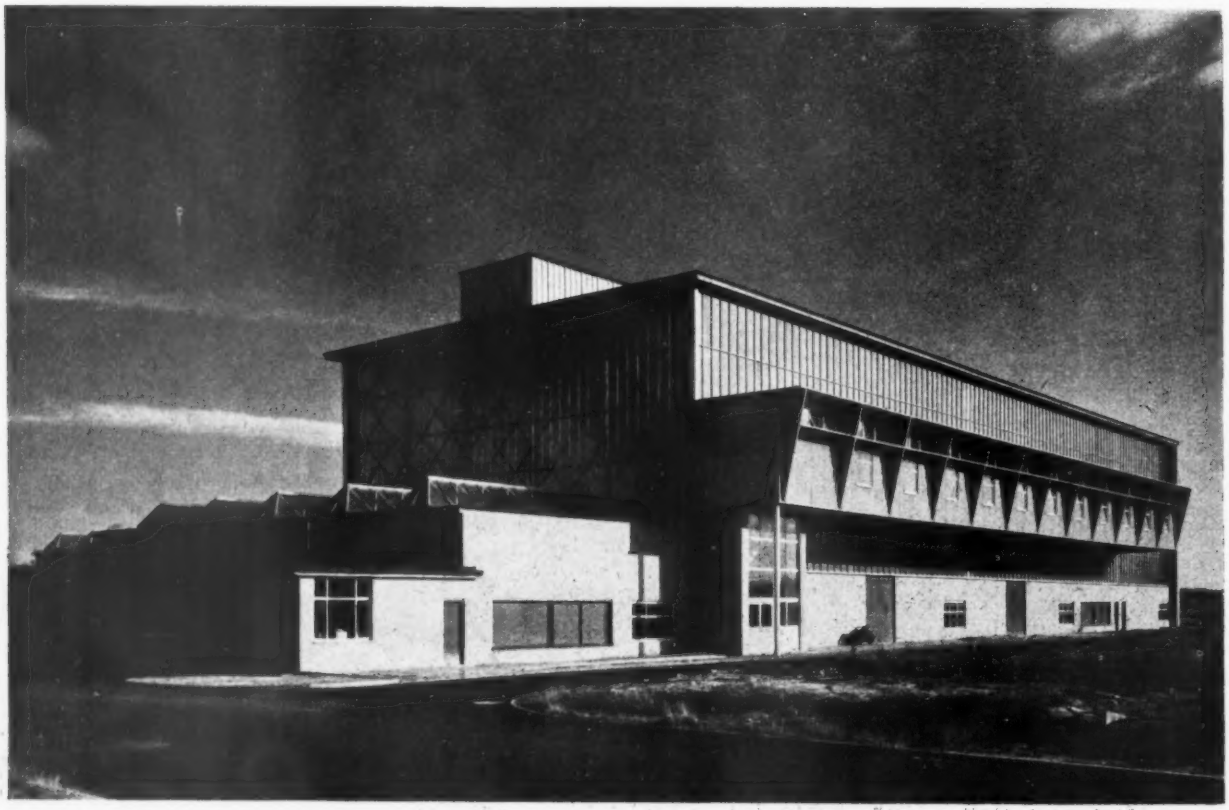
Section 43 must be a very difficult section to administer, and it is obvious that both the Board and the Ministry have been viewing it with caution and restraint. In the year covered by this report, about 1,200 applications had been made to the Board for their help under this section. Up to the end of last March the Board had made only fifteen compulsory purchase orders, nine of which had been confirmed by the Minister, one had been withdrawn and the other five were then pending.

FACTORY

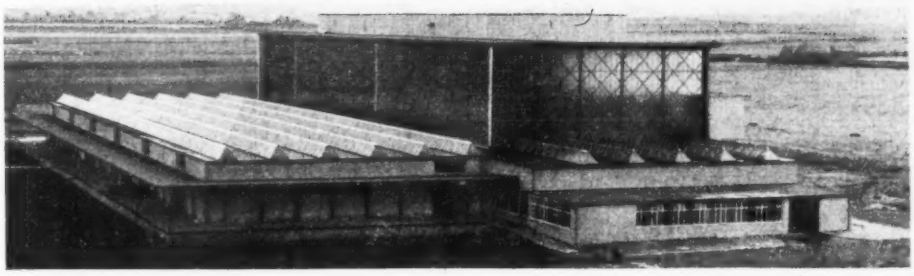
at DUXFORD, CAMBRIDGESHIRE
designed by OVE ARUP and PARTNERS
assistant architect BARBARA PRIESTLEY

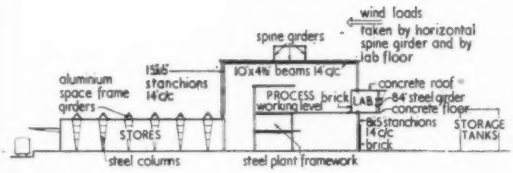
The new factory and ancillary buildings for Aero Research Ltd. at Duxford, near Cambridge, accommodate a large extension to the existing works. The factory produces synthetic resin glues of various types for markets at home and abroad. The clients visualize possible expansion taking place for many years to come and they therefore stipulated that a plan should be prepared for the future development of the whole of their large site.

View looking east.

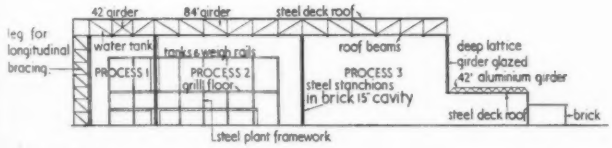


View looking south, with the stores on the left and the tall process block in the centre.

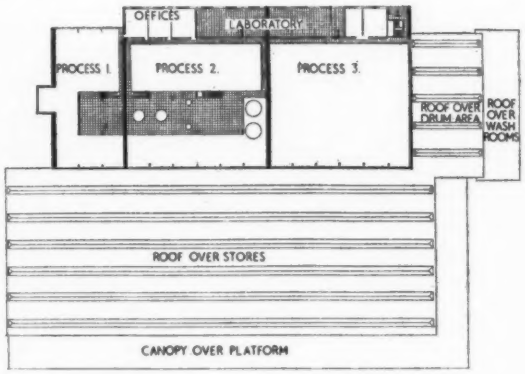




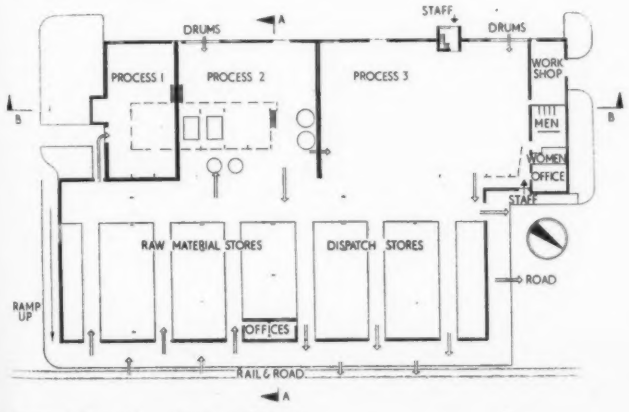
Section A-A



Section B-B



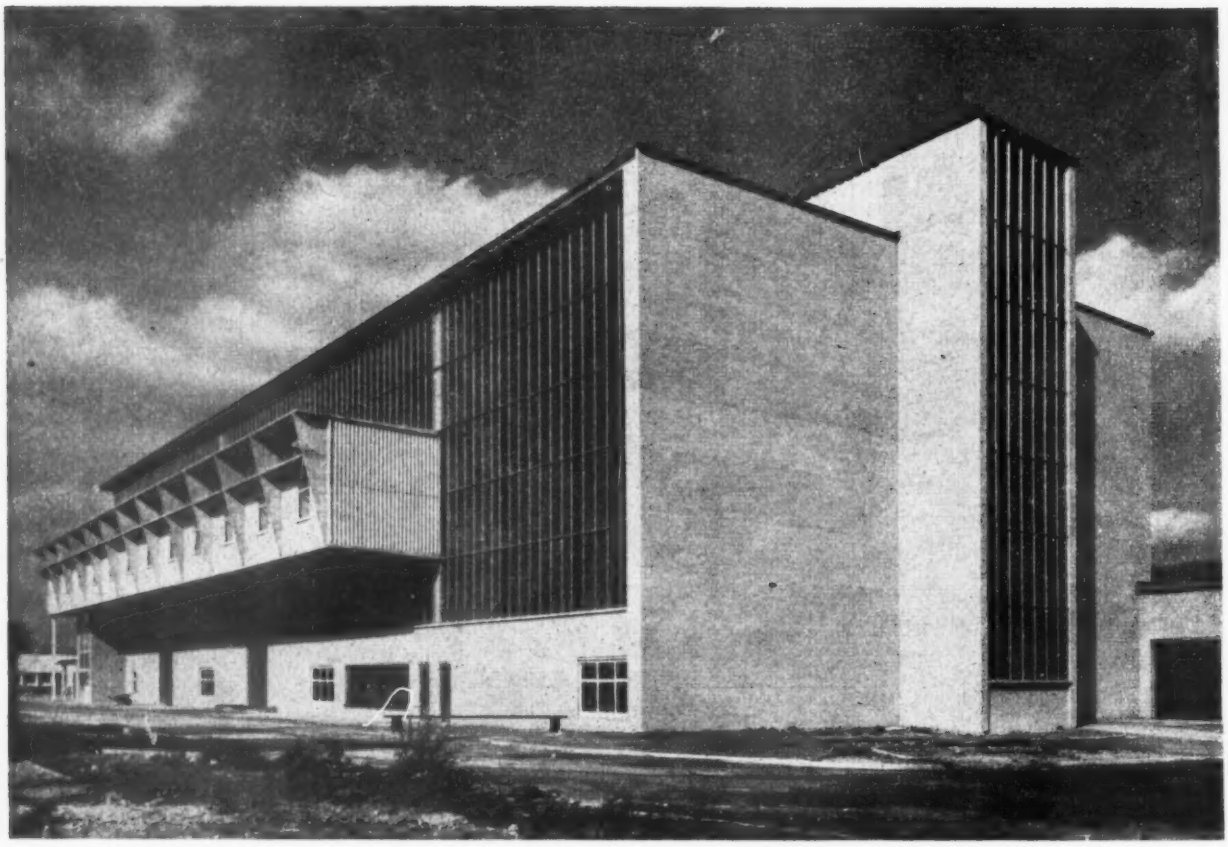
High level plan



Ground floor plan [Scale: $\frac{1}{32}$" = 1'0"]

SITE.—The site, which is in open country, has a gentle slope towards the River Cam. The present buildings were required to fit into an overall scheme in which each block could be fed by both railway sidings and roads, and surveys revealed that it is possible to construct a railway siding from the main line, with the main feeder going up the slope and the various sidings running along the lines of the contours. After consideration of other chemical works of this nature it was decided to split up the site into blocks of 300 ft. widths, and the slope is such that this dimension gives a 3 ft. 6 in. loading platform on the lower side of the block and a floor level flush with the road at the top of the block, which is almost ideal. The new block illustrated here is on the lowest of the development areas, and the main access road has been constructed so that future feeder roads can be constructed from it. The slope towards the river is useful in the design of the drains and services.

PLAN.—The two most important sections of the new factory are the main production area with a floor to ceiling height of 50 ft., and the stores area with a height of 17 ft. The production area is divided into three sections for the three distinct processes involved. Empty drums are fed in from the back and raw materials from the stores or piped from storage tanks. Supervision of the process, which is largely automatic, is from the offices and laboratories which are constructed 20 ft. above ground level at the same level as the main production floor. In order not to encroach on the production area and to give clearance over the road on the west side, these offices and laboratories have been cantilevered out from the side of the process block. The stores are divided into incoming raw materials and outgoing processed resins. The area is laid out



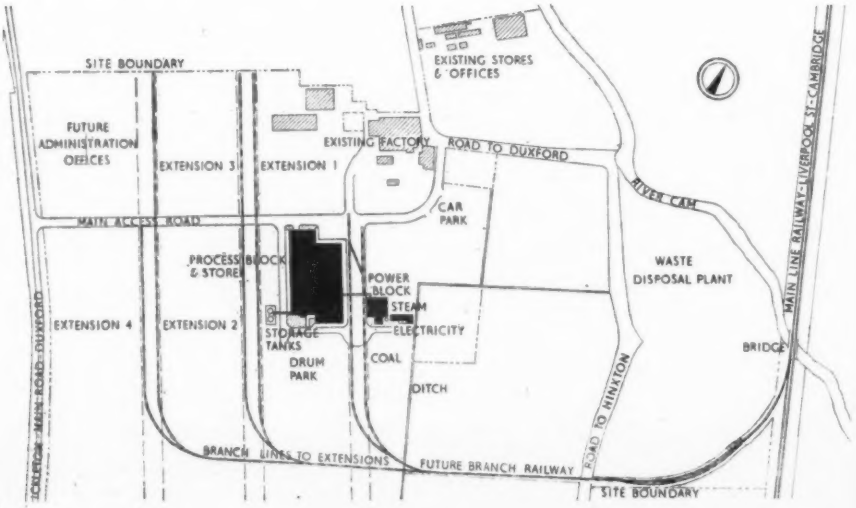
The process block looking north, showing the laboratories and offices cantilevered from the south-west facade.

using the palette size of the run-about stacker as a module. The stores are divided into compartments of 42 ft. span by rows of V-shaped steel columns so that the compartments can, if necessary, be fenced off with steel mesh fencing. The boiler house and sub-station are on the lower part of the site so that the prevailing winds carry smoke away from the factory area. These are simple buildings as they are likely to be extended to several times their present area.

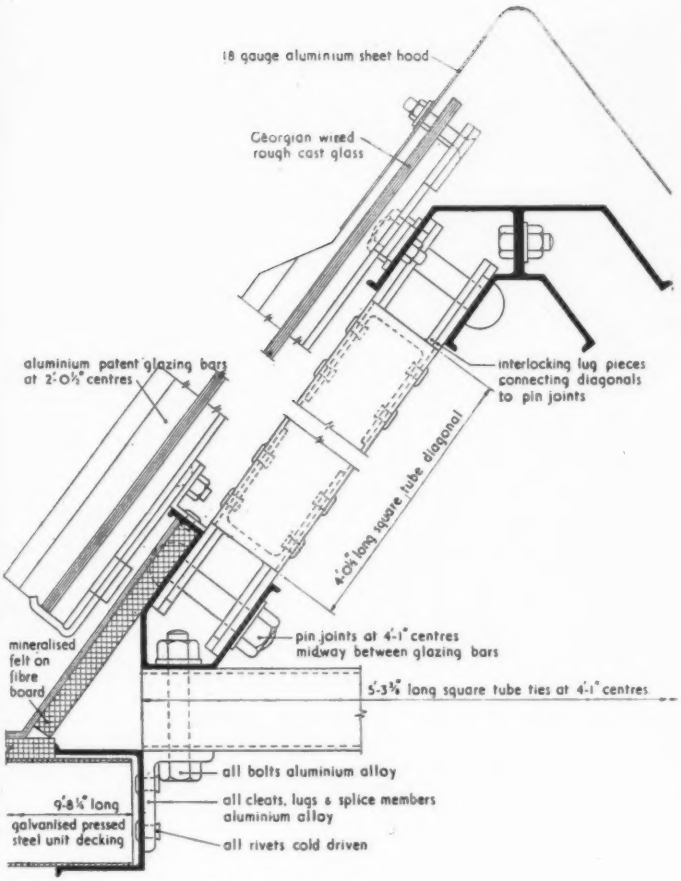
CONSTRUCTION.—In the main structure of the production area full use has been made of the main dividing cross walls. These have been framed in light steelwork for their full 50 ft. height and clad with two skins of 4½-in. brickwork, leaving a 15-in. cavity. Spanning across the tops of these walls for the length of the building is a "spine" girder, which consists of a system of trusses which not only supports the 10-in. by 4½-in. roof beams but takes the horizontal wind loads on the upper part of the

FACTORY

at DUXFORD, CAMBRIDGESHIRE
designed by OVE ARUP and PARTNERS
assistant architect BARBARA PRIESTLEY

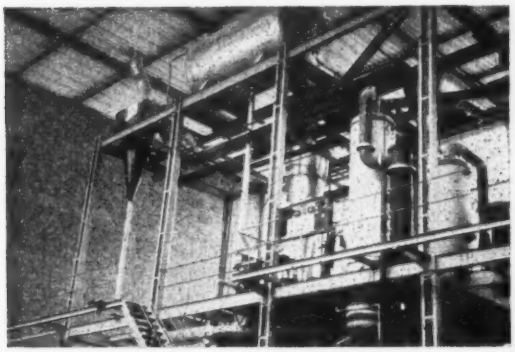


Site plan



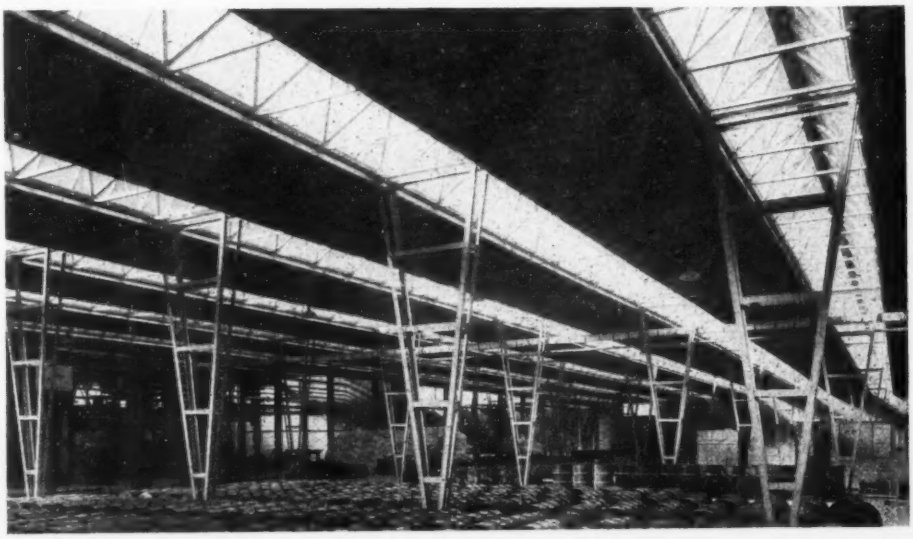
Section of space frame girder [Scale 3" = 1'0"]

building. It projects above the main roof level and provides a convenient space for service ducts, fans, storage tank, and similar plant. The walls of the main production area are almost entirely of glass. The steel columns supporting them and the outer parts of the roof span the full 50-ft. height, their horizontal reactions at roof level being absorbed by the "spine" girder. On the stores side, the columns are 15 in. by 6 in. R.S.J.'s. On the other

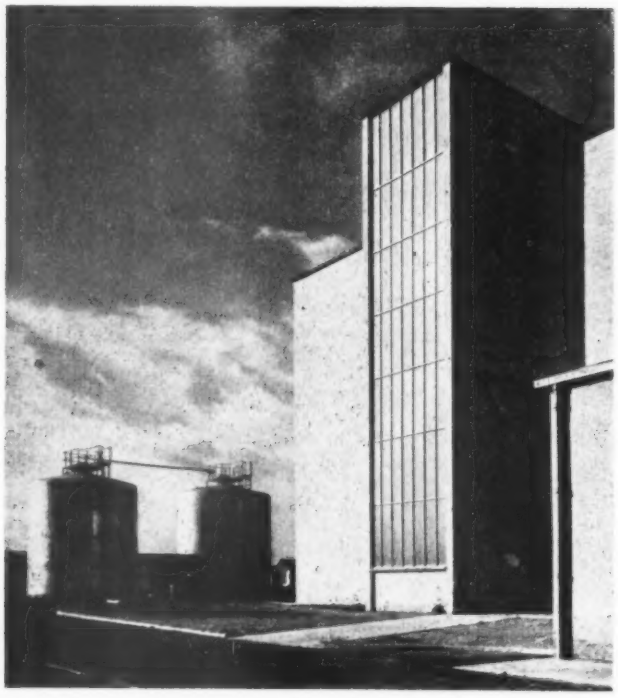


side the columns also support the inner half of the laboratories, but are only 8 in. by 5 in., as the laboratory floor and roof act as horizontal beams and relieve the columns of part of the wind load. The outer edge of the laboratories is carried by a steel girder which spans across cantilevers framed out from the heavy main cross walls. Both end walls are structurally important. The south wall has two vertical fins of latticed steel covered with brick skins which give longitudinal stability to the whole building. At the north end the whole of the wall above the 17-ft. stores roof was designed as a deep lattice girder.

FINISHES.—Process block and boiler house roofs are steel deck with ½-in. fibreboard and a single layer of mineralized felt. The stores roof is of galvanized steel deck with similar finish and patent glazing to the space frame girders made of extruded aluminium sections. The laboratory roof is of 3-in. cellular concrete. Walls: 11-in. cavity brick with facings of buff-coloured Uxbridge flints. Laboratory walls of asbestos cement corrugated sheeting insulated with 3-in. cork. Partitions are either plastered breeze blocks or studding and plaster on expanded metal. Floors are plain concrete with

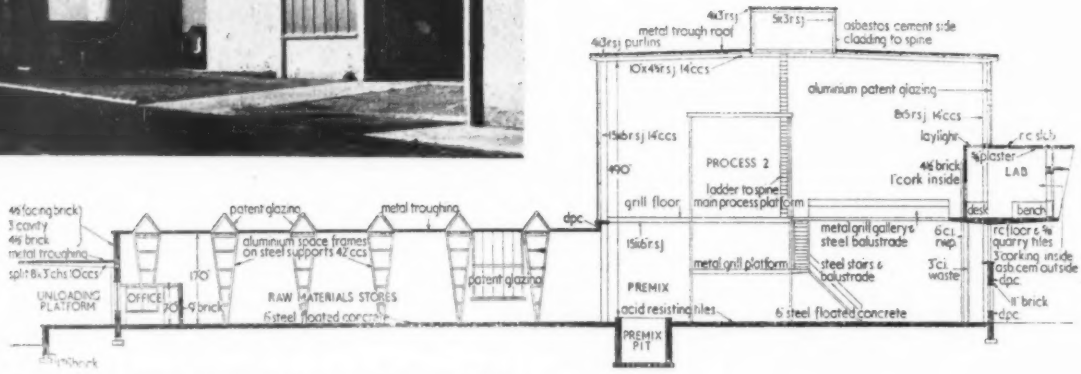


Above right, process machinery showing high level working platform. Right, the raw materials store showing space frame girders and V-shape steel columns.

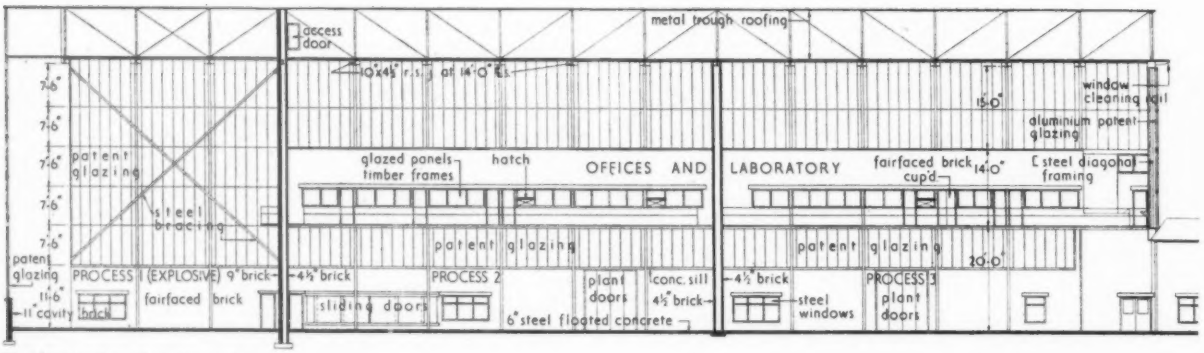


stee float finish and quarry tile or latex finish in laboratories. The process block patent glazing has aluminium bars and Georgian wired roughcast glass. All structural steelwork is painted oriental blue, window frames are white, doors and frames dark grey, main entrance doors poppy red.

The general contractors were Gee, Walker & Slater Ltd. For list of sub-contractors see page 30.



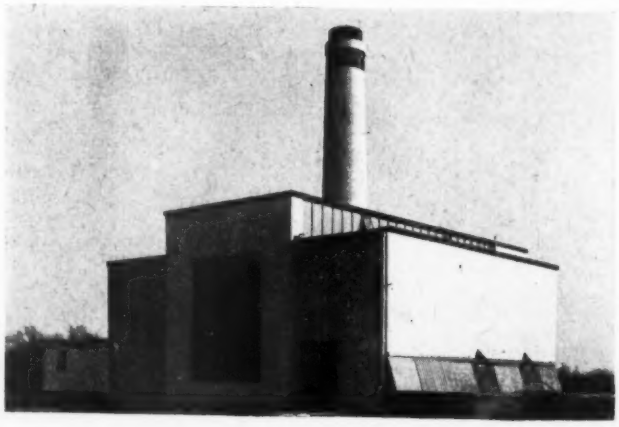
Cross section through raw materials store and process block



Longitudinal section through centre of process block [Scale: $\frac{1}{16}$" = 1'0"]

FACTORY

at DUXFORD, CAMBRIDGESHIRE
designed by OVE ARUP and PARTNERS
assistant architect BARBARA PRIESTLEY



Above, the south-east facade of the process block with storage tanks on the left. Right, the boiler house looking east.

It should be of considerable interest to architects to discover the way in which an engineer approaches the problem of designing a building. This factory at Duxford is a particularly good example, since Ove Arup's logical approach has produced such attractive results. In the following discussion, the editors are each represented by a number; to identify them, refer to the first page of the JOURNAL.

FACTORY AT DUXFORD

Discussion between the Engineers and the Editors

TWELVE : The structural design of the building is rather unusual. How did you come to choose this particular scheme ?

ENGINEERS : We question whether it is so unusual. We were simply trying to fit the scheme to the conditions without having any preconceived ideas. There is nothing unusual or complicated in the actual structure, only a series of loads and supports. It is simply a logical solution to the problem. If it is so unusual to have applied logic to the problem, that is most distressing.

TWENTY-THREE : But the final result is certainly different from the usual methods of enclosing space.

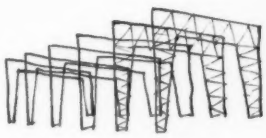
ENGINEERS : If the conditions are different from normal of course you get a different solution. There were three particular requirements which themselves " suggested " the structural solution. Firstly, the need for a clear height of 50 ft.—this is, in itself, rather unusual. Secondly, there are three distinct industrial processes involved—an explosive process, a liquid process and a dry, that is a dusty, process. These three operations had to be kept completely separate—hence the two solid partition walls. Then, lastly, we needed space above the roof for water storage, for ducting, and so on. Given those conditions, this is an absolutely straightforward and economical engineering answer. It would have been quite illogical to base the building on a series of frames or trusses when we could make use of these cross walls. We balanced all our loads across them.

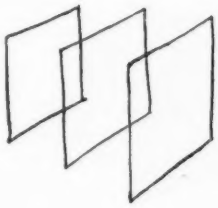
ELEVEN : Why did you make these walls with a steel frame as well as the brickwork ?

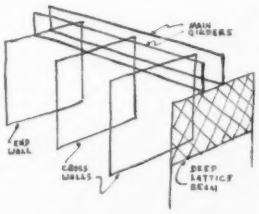
ENGINEERS : Walls 50-ft. high in solid brickwork would have to be very thick at the base ; the steel frame enabled us to use 4½-in. skins. The sides of the storage space above the roof were an obvious place for main girders. You see, the deeper a beam the more economical it is, so you should place your structural members where you have the depth. In the same way, the floor of this storage space provides room for another girder which resists the horizontal stresses across the building. The connections at " A " become " hinged " in effect and the vertical members between the cross walls span simply from "A" to " B." (See sketch on page 20).

TWENTY : What were the reasons for suspending the offices 20 ft. above the main floor level ?

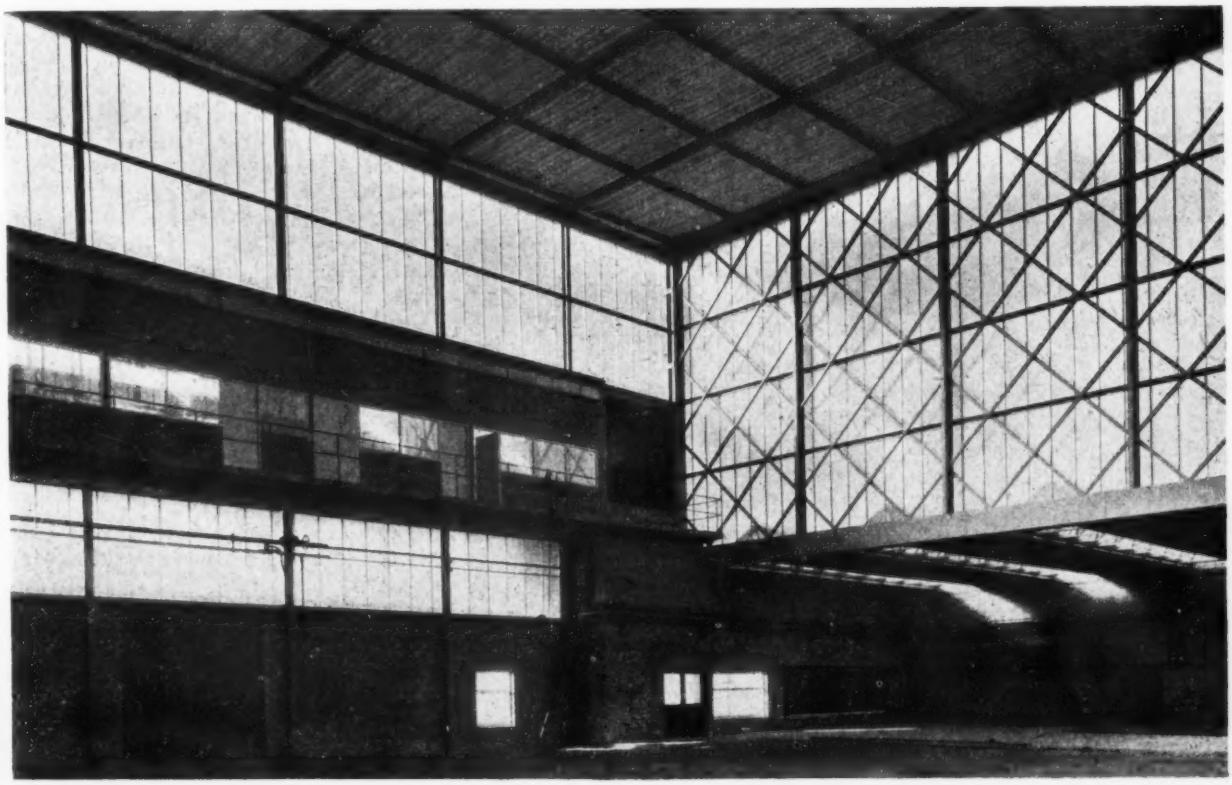
ENGINEERS : This is the main working level of the plant. From the supervisor's offices you can look clear across to the production control points ; and samples are taken at this level to be brought to the laboratories. There is no walking up and down

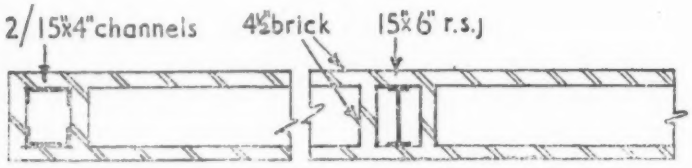




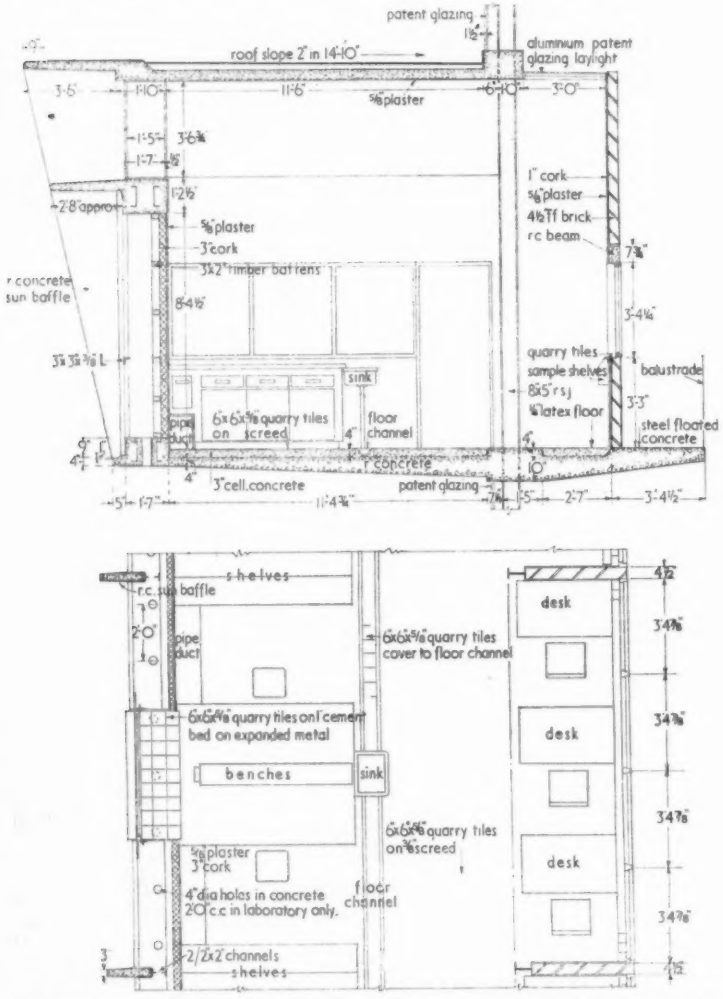


Below, interior of process block.

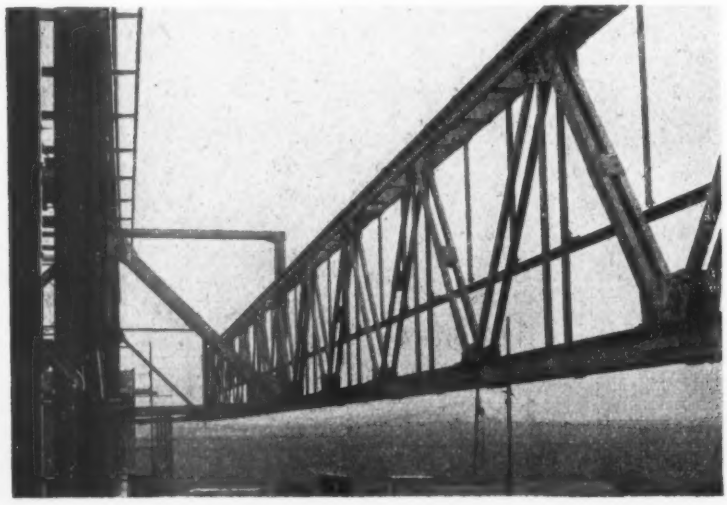




Part plan of composite steel and brickwork cross wall (scale ¼ in. to 1 ft.).

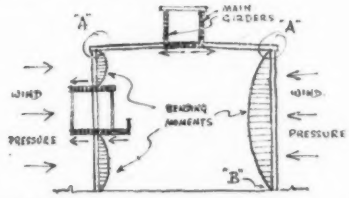


The cantilevered offices and laboratories. Above, cross section and plan of typical bay (scale ⅛ in. to 1 ft.); below, progress photo, showing the deep lattice beam.



stairs. It is the level where the offices should be. Also it gives a completely clear ground floor, where drums and raw materials are handled in and out.

TWELVE : You used the reinforced concrete floor and roof of the offices as horizontal beams, to assist in resisting wind pressure, as shown in this sketch :



Why don't the stores act in a similar manner on the north-east side ?

ENGINEERS : They are of a light form of construction which will not help to resist the wind pressure in the same way.

TWENTY-THREE : Surely it was more expensive to cantilever the offices instead of supporting them on a row of columns ?

ENGINEERS : There is not much in it. It is probably a little more expensive but there are very good reasons against using a row of columns. It was desirable from the planning point of view to keep the access as clear of obstruction as possible. Structurally it is a good thing to bring all the loads down on to one foundation. It reduces risks of uneven settlement. We would need the framing in the front wall of the offices in any case so it was simply a question of thickening up the members so that the whole of the front wall becomes a girder, spanning between the cantilevers from the cross walls.

EIGHTEEN : Why didn't you cantilever out from the end wall as well, instead of having that one solitary column.

ENGINEERS : The end wall is principally glass. There is not enough weight to counterbalance a heavy cantilever load. The column and entrance in this position is the logical functional solution, but that does not always give the best appearance.

EIGHTEEN : That is true, the appearance around the entrance is not altogether satisfactory and this isolated column does not help.

ENGINEERS : We are not really happy about it either.

ELEVEN : You mentioned the question of unequal settlement. In this building you have very different loads from the different parts of the building coming down on to foundations in close proximity. Does not this constitute a danger ?

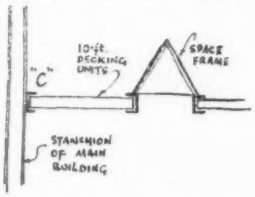
ENGINEERS : We have hardly any loads worth speaking about. The building is a light shell. There are no suspended floors to carry loads. There are some raised floors for plant but we made them entirely free—they stand on their own foundations. Incidentally, the ground is particularly good.

ELEVEN : The brickwalling running round the base and the stores seems to be continuous. Is there no danger of cracking due to thermal expansion or are these brick walls entirely independent of the structure ?

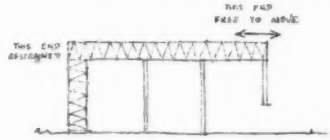
ENGINEERS : They only carry their own weight and their foundations are quite independent. Although there has been some cracking due to other causes.

ELEVEN: How do you deal with the problem of thermal expansion generally? The building is over 200 ft. long and where the low stores block adjoins the main building looks like a typical danger spot.

ENGINEERS: There is a loose connection at that point, namely, the 10 ft. span of roof at "C." There is no structural connection between these two



buildings. There are bolted connections throughout the steelwork which also help, as they will give a little. If it does expand in length it might push the main walls over ½ in. or so at the top, which wouldn't show. It is not at all a serious matter because the structure is free to move in one direction.



If it were restrained at both ends it might still be alright but you would certainly get greater moments of bending.

TWENTY-THREE: What purpose is served by the concrete fins protruding from the office block?

ENGINEERS: We were convinced that this was the right place for the offices but they face nearly south west and get a great deal of sun. The clients were worried about this, so, besides providing insulation of 3 in. of cork, we also used baffles to reduce direct sunlight. These baffles completely screen the top windows and give some protection to the lower square windows. The fins support the horizontal baffles. We also used them for what they were worth structurally—they helped to stiffen up the vertical members and top boom of the girder. At one stage we considered having sunblinds, but they would require maintenance, which the baffles, of course, do not need.

FIFTEEN: I assume the orientation of the building had already been determined by other, more important, factors.

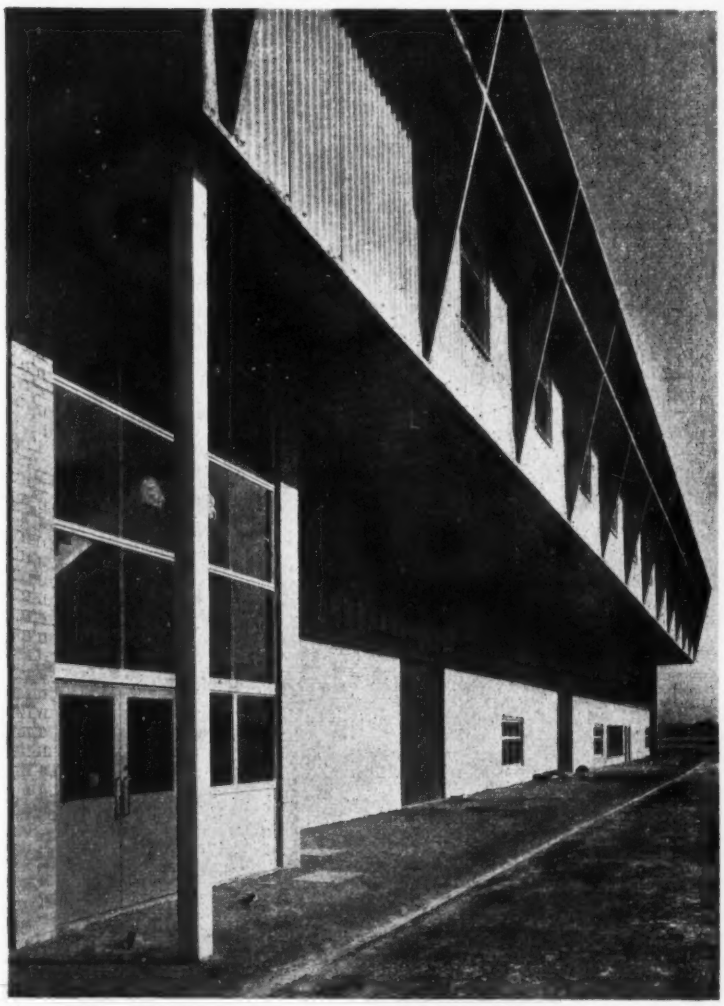
ENGINEERS: Yes, we had to consider the planning of the whole site, including uncovered storage areas and access by road and rail, as well as the logical arrangement of this and future process buildings.

TWELVE: Why, when the main structural framing is in steel, did you choose aluminium for the combined lanterns and trusses (the space frames) over the stores?

Was the cost as cheap as a more conventional arrangement in steel?

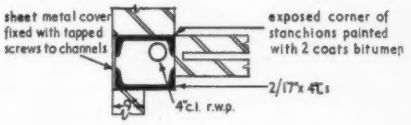
ENGINEERS: Steel was on licence and we wanted to reduce our requirements. Besides this, we believe there is room to develop aluminium. But we could not have used it here if it had involved much more expense. There was very little in it.

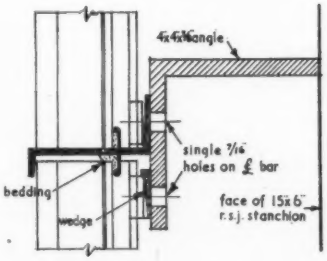
TWELVE: I presume the aluminium was extruded. The sections (see drawing on page 17) appear to be quite unique.



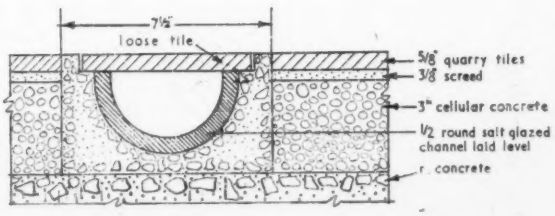
Close-up view of main entrance. Note the single column discussed in the text and the pattern stains on the concrete work.

Right, plan of typical box stanchion with RWP inside (scale ½ in. to 1 ft.).

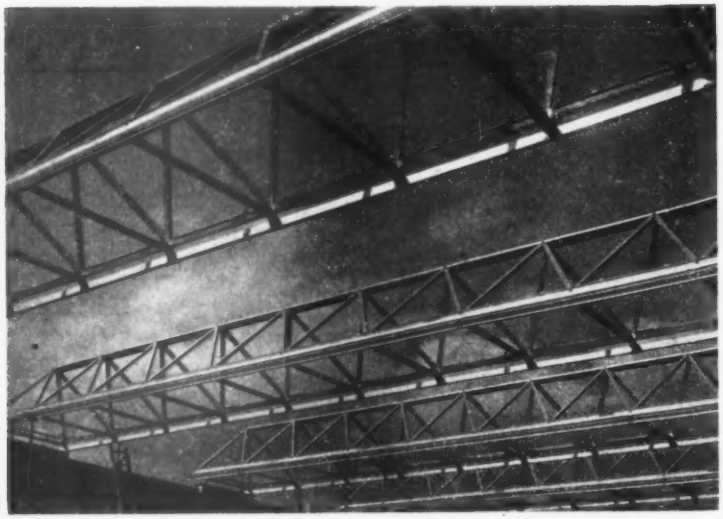




Left, section through specially designed aluminium glazing bar (scale ½ full size).



Right, section through floor channel in laboratories (scale ½ full size).



The aluminium space frames before the steel decking was placed in position. Although 42-ft. long they could be lifted by two men.

ENGINEERS : Hitherto, not much has been done in structural aluminium. Usually designers simply imitate steel construction, using the same sections—angles and tees, and so on. The trouble is aluminium tends to be much more expensive than steel. It can only be competitive if you make good use of every ounce of material. Also the elasticity modulus is lower and therefore you have to spread the material on the circumference of a section. By using an extrusion process this can be done. The cost of a die for a new extrusion is very small compared with the cost of a set of rollers, so you can design a section having the required structural requirements and, at the same time, serving various functional purposes, such as fixings, weatherings and so on. If you do this you can make a neater job than would be possible with steel and you can do it economically. In this building the cost is practically the same as steel would have been, which is quite an achievement in view of the difference in the price of the material.

TWENTY : Why did you build the external walls entirely of glass ?

ENGINEERS : For economy. Aluminium patent glazing is a very cheap form of walling and, of course, gives as much light as possible.

FIFTEEN : Did you use a special type of glass to reduce glare ?

Cantilevered steelwork for roof over loading bay, note row of stanchions which serve to reduce bending moments.

ENGINEERS : Well, we used double rolled rough cast Georgian wired glass, ¼-in. thick.

FIFTEEN : On the photos it appears that the steelwork behind the glazing is dark in colour. This would increase the effect of glare. Are the photos misleading in this respect ?

ENGINEERS : They are painted oriental blue colour. It is fairly light. Unfortunately, we did not have control of the colour scheme which was mainly decided by the clients themselves.

EIGHTEEN : With the large expanse of glass in the building what purpose is served by the small windows along the front ? They seem to spoil the sense of scale by introducing a " fussy " note.

ENGINEERS : These are to enable workers at floor level to see out and to give light to work benches which may be situated against this wall for maintenance work and so on.

TWENTY : Referring again to the photos, the surface of the concrete, particularly the underside of the floor slab of the offices, appears very patchy. What is the reason for this and can nothing be done about it ?

ENGINEERS : This finish results from the steel shuttering used. Actually the pattern is quite regular but the steel plates could not have been equally well cleaned. It should be painted with some sort of cement paint but this cannot be done at present on grounds of economy. It might be done one day.

EIGHTEEN : On the S.E. elevation entire bands of brickwork appear to be of different shades. Is this the result of variations in deliveries ?

ENGINEERS : Presumably. The bricks were not, of course, selected. But I think it is emphasised by lines at each scaffold platform level. The pointing is not first class and was " up-struck " at scaffold platform levels.

TWENTY : There are also some stains on the brickwork on the S.E. elevation of the stores.

ENGINEERS : This is rather interesting. Before the gutter was fixed, water from the roof ran down this wall and, although it has since dried out, the stains remain.

EIGHTEEN : Why are the stores off centre from the main building—they are recessed about 20 ft. one end and extend about the same distance at the other end. The æsthetic effect is not unpleasant, but what were the planning reasons ?

ENGINEERS : The sizes of the parts of the stores related to the three separate processes are not in the same ratio as the process areas, and putting them in their logical relative positions we get this dimensioning.

EIGHTEEN: We should like to congratulate you and your staff on the way in which you have taken advantage of the special requirements of this building to produce a result so satisfactory, both functionally and æsthetically, and so different from the standard type of factory with which we are, unfortunately, much too familiar.

WORKING DETAIL

STAIRCASE : SHOP AT WATFORD

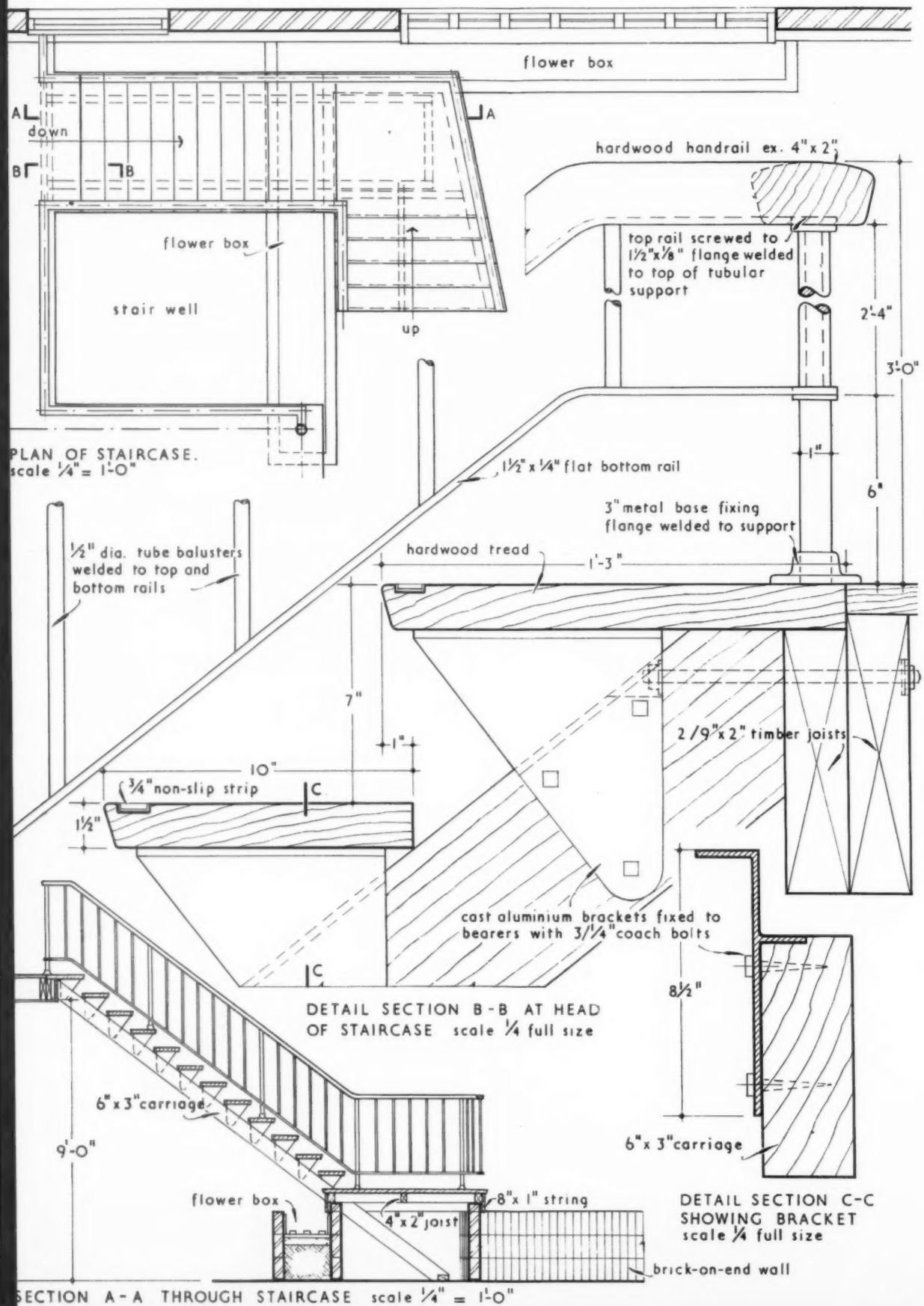
Brian Peake, architect

The staircase treads are of hardwood carried on aluminium alloy brackets fixed to timber carriage beams

WORKING DETAIL **STAIRCASES : 1**

STAIRCASE : SHOP AT WATFORD

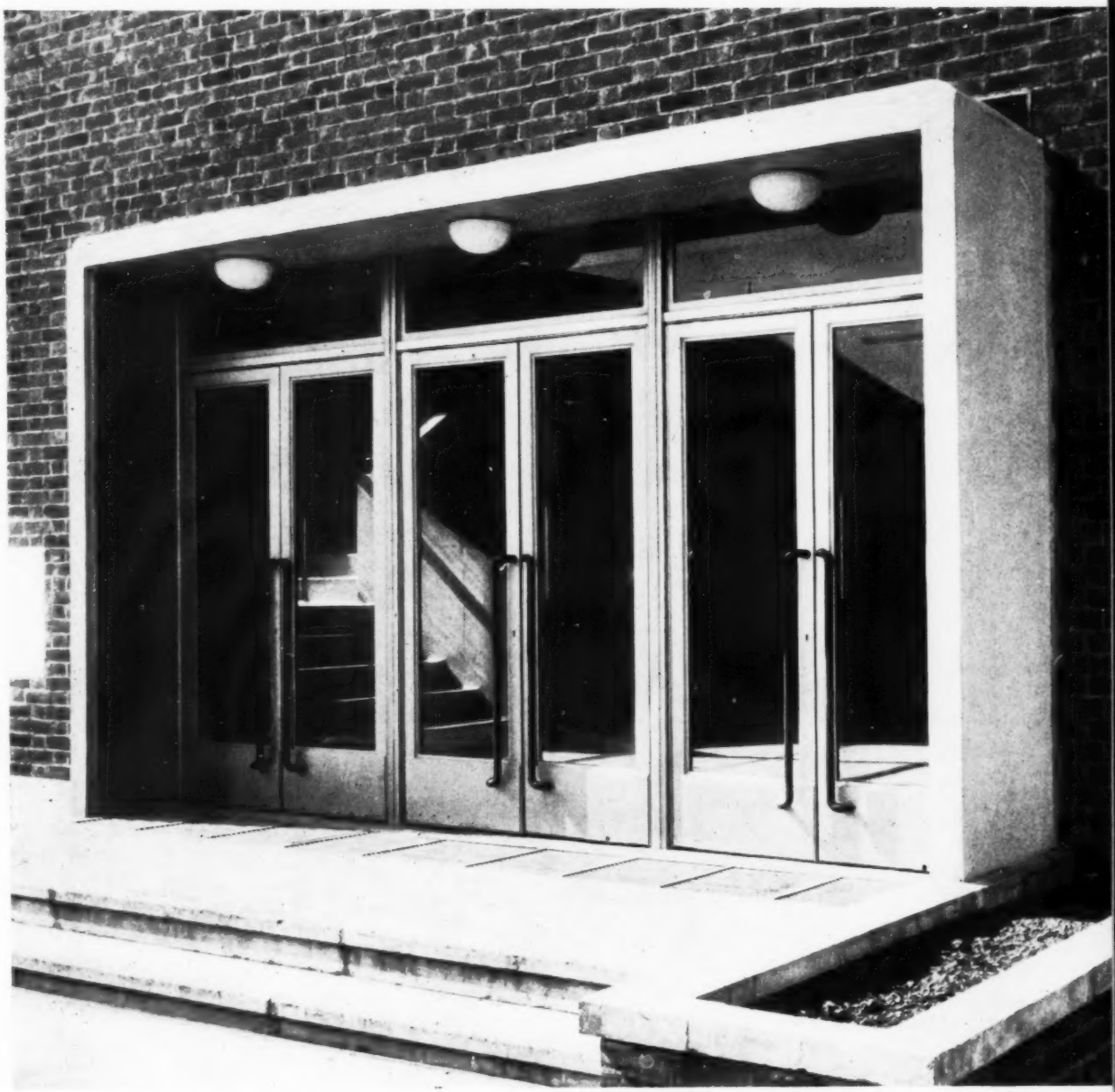
Brian Peake, architect



WORKING DETAIL

ENTRANCE DOORS: WELFARE CENTRE AT BECKTON

A. H. Shearing, architect (Brian Colquhoun and Partners)



The doors are constructed from extruded aluminium alloy sections

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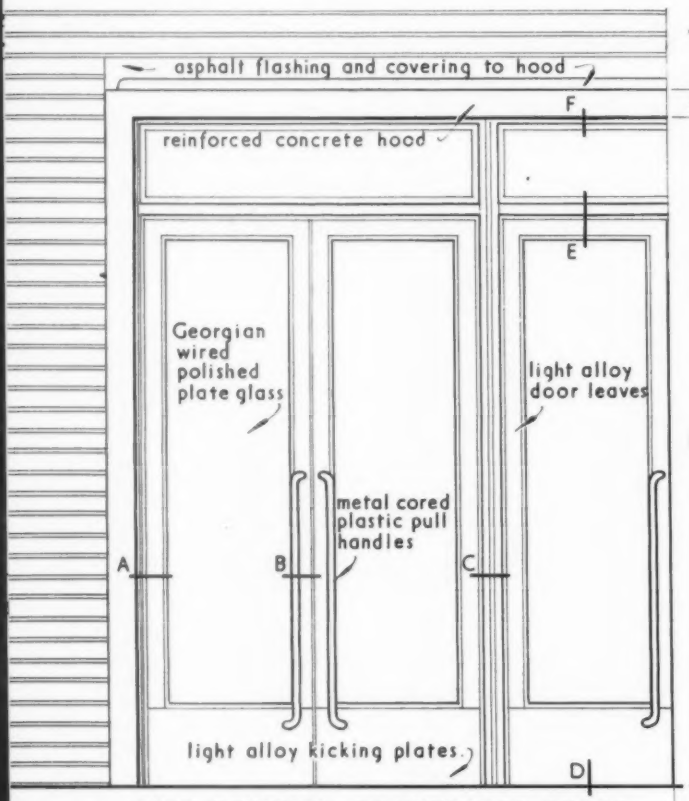
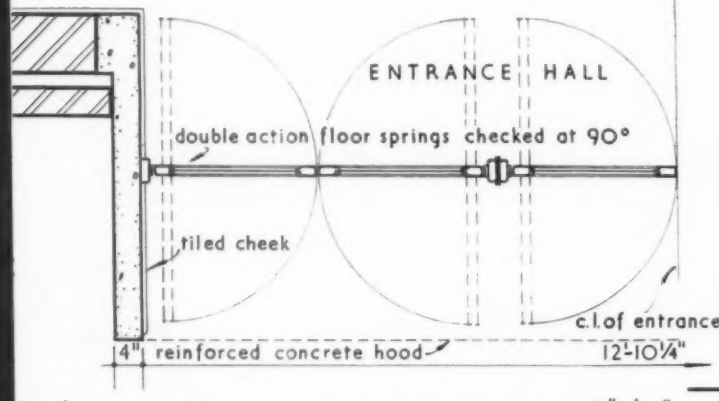
WORKING DETAIL **DOORS : 1**

ENTRANCE DOORS : WELFARE CENTRE AT BECKTON

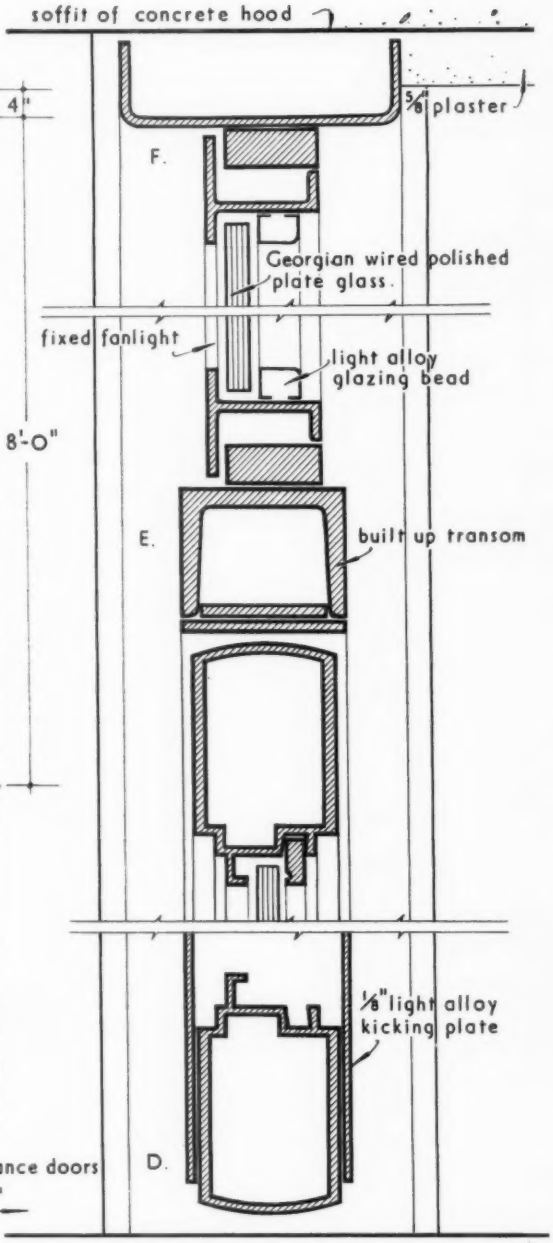
A. H. Shearing, architect (Brian Colquhoun and Partners)



PART ELEVATION OF ENTRANCE DOORS.



PART PLAN OF ENTRANCE DOORS scale ½" = 1'-0"



SECTION THRO' DOORS AND FANLIGHT
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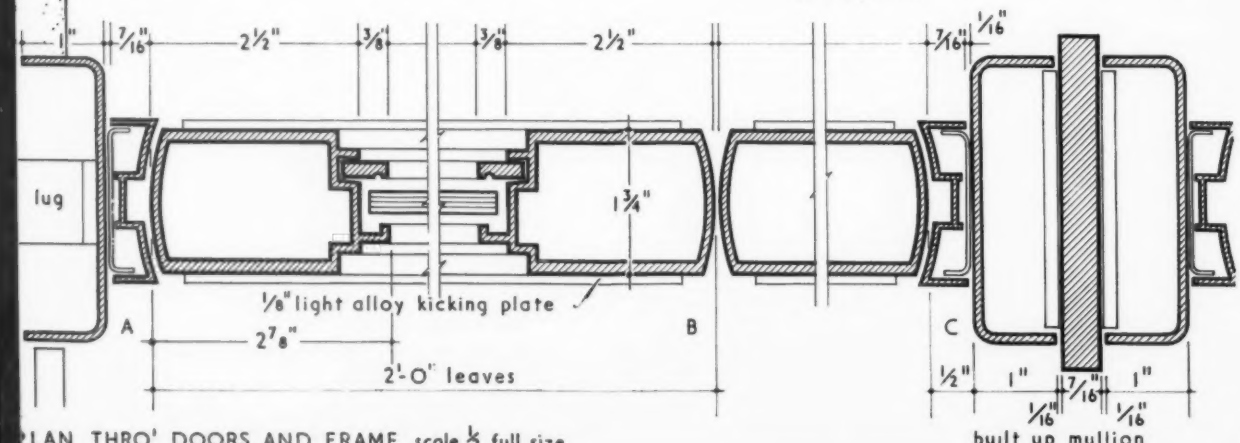

PLAN THRO' DOORS AND FRAME scale ½ full size

built up mullion

INFORMATION CENTRE · INFORMATION SHEETS
QUESTIONS AND ANSWERS · CURRENT TECHNIQUE
THE INDUSTRY · PRICES · TECHNICAL ARTICLES

TECHNICAL SECTION

The opening of the Royal Festival Hall will be an important test for the relatively young science of acoustics. This article is, therefore, most timely and has been designed to help the architect appreciate some of the many aspects of this subject.

REVERBERATION TIMES

By H. Creighton.

The study of reverberation began with W. C. Sabine's first experiments in architectural acoustics in 1895. Since that time the concept of reverberation time has been the most valuable guide towards good acoustics which the architect possesses and has been used in the design of countless buildings. But the subject has not stood still during these fifty years; much new knowledge of the behaviour of sound in buildings has been acquired which has affected our conception of reverberation. Though new ideas have not been completely formulated, it may be useful to give a very brief summary of the subject as it stands today.

CRITICISMS OF REVERBERATION THEORY

Sabine defined reverberation time as the length of time taken for reverberant sound to diminish in intensity by 60 decibels (or one million-fold) after the source has ceased. The figure is an arbitrary one, having no scientific significance, but on this definition reverberation time roughly represents the time necessary for the average speaking voice to become inaudible. It is not necessary, here, to give an account of Sabine's theory of reverberation nor of his well-known formula relating reverberation time to the volume of the room and the total absorption present in it. This theory and formula are based on certain assumptions about the distribution and decay of sound in an enclosure which are now known not to be entirely valid. The true state of affairs is much more complex and less uniform than Sabine allowed for, so that the conditions actually found in practice only approximate to those predicted by the formula. For "normal" rooms the approximation is usually fairly close, but when the shape departs much from a simple rectangle, or when the absorption is very great, the discrepancy can be considerable.

Thus, instead of decaying at a uniform rate, as it should according to the theory, we frequently find that the sound falls off in an irregular manner, showing either pronounced maxima and minima of intensity or a composite decay made up of two or more separate reverberation times. Powerful absorbents somtimes appear to absorb more than 100 per cent. of the sound falling on them; more usually, materials show markedly different degrees of absorption in different rooms or in different parts of the same room. This is not accounted for by the classical theory which states that the absorbing power of a material is independent of its position in the room.

An example of this, which is particularly interesting because it affects all calculations of reverberation time, arises in connection with the measurement of sound absorption coefficients. In most laboratories this is done in a very highly reflecting room called a reverberation chamber. The reverberation time of the chamber is measured with and without a sample of the material to be tested; from the difference between the two times the amount of absorption contributed by the sample, and thence the absorption coefficient of the material, can be calculated by the formula. Now it has been found that different laboratories, using the same procedure, frequently arrive at different results. A comparison made some years ago of the coefficients obtained from identical specimens in eight laboratories showed that the difference could be as great as 50 per cent. The cause of this lies in the different shapes and dimensions of the chambers and in the position of the sample in them. The same applies, though to a lesser extent, to all rooms, so that it is not strictly possible to assign to a material a single invariable coefficient of absorption which will be true for all conditions.

Some of the deficiencies of the classical reverberation theory have been rectified by modified formulæ, such as those of Eyring and Millington; these are, in effect, the more generalized and comprehensive formulæ, of which the Sabine formula is a simplified form which covers a particular range of conditions. But a complete picture of the decay of sound in an enclosure, which would account for all known phenomena, could only be given by considering it from the point of view of wave theory; the mathematical complexity of this approach is so great that only the simplest shapes can be dealt with at all and the time when it will be able to give any practical assistance to the designer seems to be very far distant.

The inability of the concept of reverberation time to account for all the known facts has led some investigators to the view that it is an altogether unreliable criterion of acoustical performance. For certain rather specialized types of room, such as broadcasting studios or cinemas, where conditions suitable for the artificial ear or voice have to be provided, this attitude may be justified. The requirements of the microphone, for instance, are very much more stringent—though also more restricted—than those of the ear, but they can be assessed with much greater accuracy. Also, in a studio, it is usually possible to adjust the acoustical treatment progressively and arrive at a solution by trial and error. The problems facing the designer of a normal auditorium are quite different. He has to design for good hearing throughout the audience, not simply at one or two fixed microphone positions, and he is not often in a position to alter his treatment very drastically after it is constructed. He needs, in fact, just such a general prediction of the performance of his room as is provided by reverberation time. Another point in favour of retaining the classical conception of reverberation is that the conditions of complete diffusion and smooth decay which it assumes seem to be those which, when they are attained, give the most satisfactory results. Therefore, as a standard, they should not be superseded and design should aim at reproducing them as nearly as possible.

The conclusion, then, is that reverberation time is a rather arbitrary approximation which, at the price of some inaccuracy, gives an overall picture of the decay of sound. It does not provide fundamental information but a rough and ready indication of the interaction between a room and the sound produced in it. It is still the only criterion which can be expressed quantitatively and is therefore the only means by which rooms can be compared directly with one another. Indeed its chief value is as a method of comparison and it is by using it in this way that it can be of most assistance to the designer.

THE RELATION BETWEEN DIRECT AND REVERBERANT SOUND

The effect of reverberation on sounds, as heard by a listener, is threefold. First, reverberation can impair clarity and definition by masking the direct sound. Second, it can increase loudness, because the ear, to a certain extent, integrates the reverberant with the direct sound. Third, it can influence tone quality by prolonging the individual sounds of speech and music and by modifying their frequency characteristics. The purpose to which an auditorium is put will determine which of these effects is the most important in any particular case.

For speech, intelligibility is clearly the predominant requirement, and experiments have shown that, solely from this point of view, reverberation cannot be too short; this is to say that clarity of speech depends on the direct sound from speaker to listener and that any reverberation at all will to some extent diminish it; this is true also of "definition" in music. But the "natural" quality of a voice is felt to be lacking if there is no reverberation and obviously sufficient loudness is required to cover the audience; therefore reverberation should not be reduced too much.

At one time it was thought to be desirable to make small broadcasting studios intended for talks as "dead" and absorbing as possible; in this case loudness was not a factor, because the microphone was the only audience and naturalness was given by the reverberation of the receiving rooms. But the speaker in the studio was faced with an atmosphere so unusual as to be uncomfortable and for this reason the practice has been abandoned. Another similar instance is that of classrooms. In old schools, with hard walls and floors and no absorbents, classrooms are commonly very noisy and reverberant. To remedy this fault sound absorbing ceilings are recommended for classrooms and are included in all new schools. But they can sometimes be too efficient and cases are known where teachers suffer from fatigue because of the very short reverberation.

Generally speaking, in rooms intended for speech, reverberation should be no longer than is necessary to secure adequate loudness throughout the room, though a corollary to this is that it should never, however small the room, fall below about 0·5 sec. With increasing sizes of room, a limit is obviously reached when the contribution of reverberation to loudness is outweighed by the falling off of intelligibility due to masking; thus it has been estimated that the largest room in which an unaided speaker can hope to be heard clearly is one of about 1,000,000 cu. ft.

The requirements of music are more complex, because no one of the three factors mentioned previously—clarity, loudness, and tone—is predominant. At one extreme we have choral music, in particular unaccompanied church music, for which beauty of tone and not definition is important; church music does not depend upon rapid precision or rhythmic intricacy, but on the slow building up and dying away of large masses of tone, so that it needs the long reverberation of the buildings in which it originated. At the other extreme is the dance band, for which tone counts for nothing but which must have loudness and precision. Thus, beauty of tone is associated with a fairly long reverberation and the speed of the music cannot be too great if adequate definition is to be secured; for clear definition at very

quick tempi, such as are favoured nowadays, a shorter reverberation is necessary. In between these two extremes come instrumental and orchestral music, opera and oratorio, for each of which a different set of conditions is appropriate. In designing for general musical purposes, therefore, the aim should be to have a long enough reverberation to give fulness of tone and a strong enough direct sound to give definition.

For both speech and music the importance of the relationship of direct to reverberant sound cannot be over-emphasized, because a correct reverberation time has too frequently been regarded as a guarantee of success by itself. While reverberation can enhance tone and increase loudness, it can only detract from clarity and it is essential that the direct sound (with which should be included first reflections from surfaces near the source) should be as strong as possible to counteract this. An extreme example of this principle is provided by the use of loudspeakers in very reverberant churches. Their function is not to increase the volume of sound—there is too much already—but to provide for those members of the congregation who are beyond the reach of the speaker's own voice an artificial direct component loud enough to drown out the reverberation.

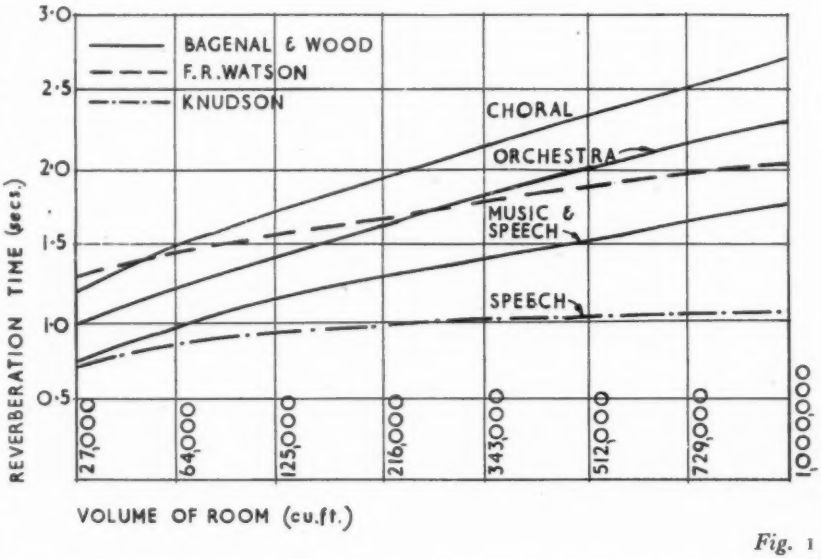

Fig. 1

OPTIMUM TIMES

We have seen that reverberation time is essentially a method of comparing one room with another, and this is really what a designer is doing when he refers to a scale of optimum reverberation times, such as those given in Fig. 1. These scales have been arrived at from the measured or calculated times of existing halls of acknowledged excellence. The problem of formulating the correct time for a hall of any particular size has also been attacked from a theoretical standpoint, but the validity of this approach is open to question. Since the final judge of good acoustics is the ear, one is on surer ground in generalizing from good buildings and the problem becomes one of assessing subjective judgments. The curves shown in the figure are some of the best known and most widely used. Knudsen's curves for music are very similar to Bagenal and Wood's, except that they show rather shorter times for large rooms and longer times for small rooms, and that the range between minimum and maximum is rather wider.

In the case of rooms for speech, it is not very difficult to decide on the optimum times, because reliable techniques of measuring intelligibility have been developed. Tests can therefore be performed in suitable rooms, the percentage intelligibility for each determined and related to their reverberation times. The process is similar for music rooms, but it is complicated by the diversity of musical requirements which we have already noticed, each of which needs a different length of reverberation. Thus the optima for music are not represented by a single line on the graph, but by a broad band. There is also room for genuine differences in taste which are not open to argument; it seems, for instance, that a shorter reverberation is preferred for concert halls in America than in this country.

Hitherto the chief difficulty has been in determining accurately the actual reverberation times of the halls taken as standards. The earliest measurements were made by W. C. Sabine with an organ pipe and stop watch, and he devised a method of calculation which agreed with his measurements, so that his work was consistent with itself and reliable. This process was continued by succeeding workers, more halls were calculated and, chiefly on the basis of such calculations, the various optimum curves were arrived at. Meanwhile, however, more accurate methods of measurement were developed and the results from this source did not agree very well with the calculations. The case of the New Gewandhaus in Leipzig, one of the most famous concert halls in the world, is instructive. The reverberation figures as published by various authorities are as follows:—

Authority	Date	Reverberation at 500 cycles		
		Full	Empty	—
W. C. Sabine	1895	2·3	—	Calculated
Knudsen ..	1930	1·5	2·4	Measured empty : estimated full
Bagenal and Wood	1931	2·0	4·2	Calculated
Meyer ..	1933	—	1·5	Measured

As judged by ear the reverberation of the Gewandhaus is excellent for orchestral music and long enough to be good for choral works as well; that is to say, its place is in the upper part of the range of recommended times, though not on the upper limit. It has been used as a standard on the assumption that its reverberation time is about 2.0 secs., but if the correct figure is about 1.5 secs., and if something similar is true of the other standard halls, then the optimum curves clearly need to be revised.

It is known that Sabine overestimated the volume of the Gewandhaus on account of the inaccuracy of the drawings which were available to him and alterations to the seating in the hall may be a further cause of the difference between the older and more recent figures. But there is further evidence that calculated times have in general tended to be too long. One indication is the practical difficulty of attaining the long reverberations which are recommended. For example, a new concert hall in Denmark was recently designed to have a reverberation time of 2.1 secs.: when it was built the time was measured at 1.6 secs. The new Royal Festival Hall in London is similarly designed for a long reverberation which, for a hall of this size, presumably means 2 secs. or more, but it will not be surprising if the measured time turns out to be lower. This is, of course, not the failure in design which it might at first sight appear, for so long as the same method of calculation is used in assessing the reverberation of the halls taken as standards and in the design of new ones, the desired results are obtained and no discrepancy would be noticed if the reverberation time of the new building were never actually measured. But the present position obviously gives rise to confusion and uncertainty, and it is very desirable that new optimum curves, based on reliable and consistent measurements, should be compiled.

Measurements have been made during the past few years by the BRS in a number of good concert halls in this country, which it is hoped may be the beginning of such a programme. The results so far seem to bear out the view which has been suggested here; all the reverberation times except one fall in the lower part of the existing range of optima and some below it. Also the variation of reverberation time with volume appears to be less than had previously been supposed. A particularly interesting comparison is between two halls one of which is about twice as large as the other, though the relationship between the number of seats and the volume of the hall is the same for both. In the smaller hall reverberation is so short that it can scarcely be detected by ear, while in the larger it is quite noticeable

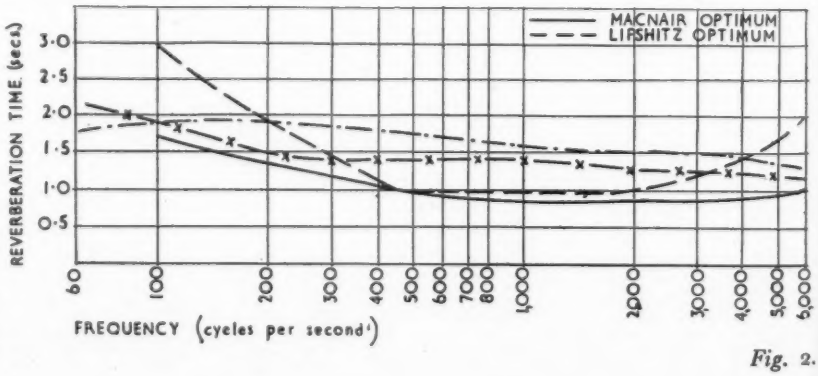

Fig. 2.

HINCKLEY HEATHFIELD MODERN SCHOOL

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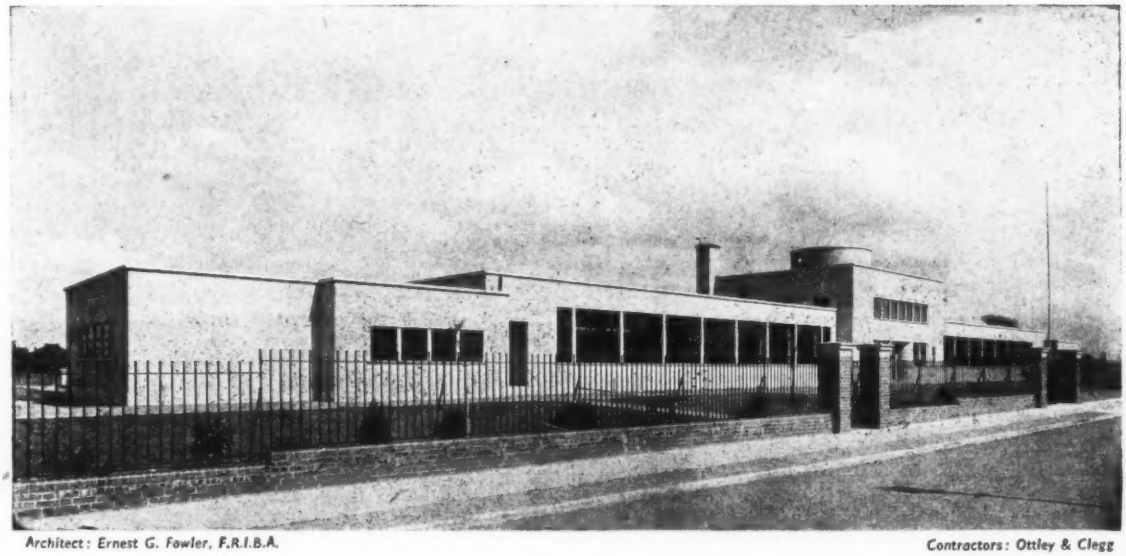

Architect: Ernest G. Fowler, F.R.I.B.A. *Contractors: Ottley & Clegg*

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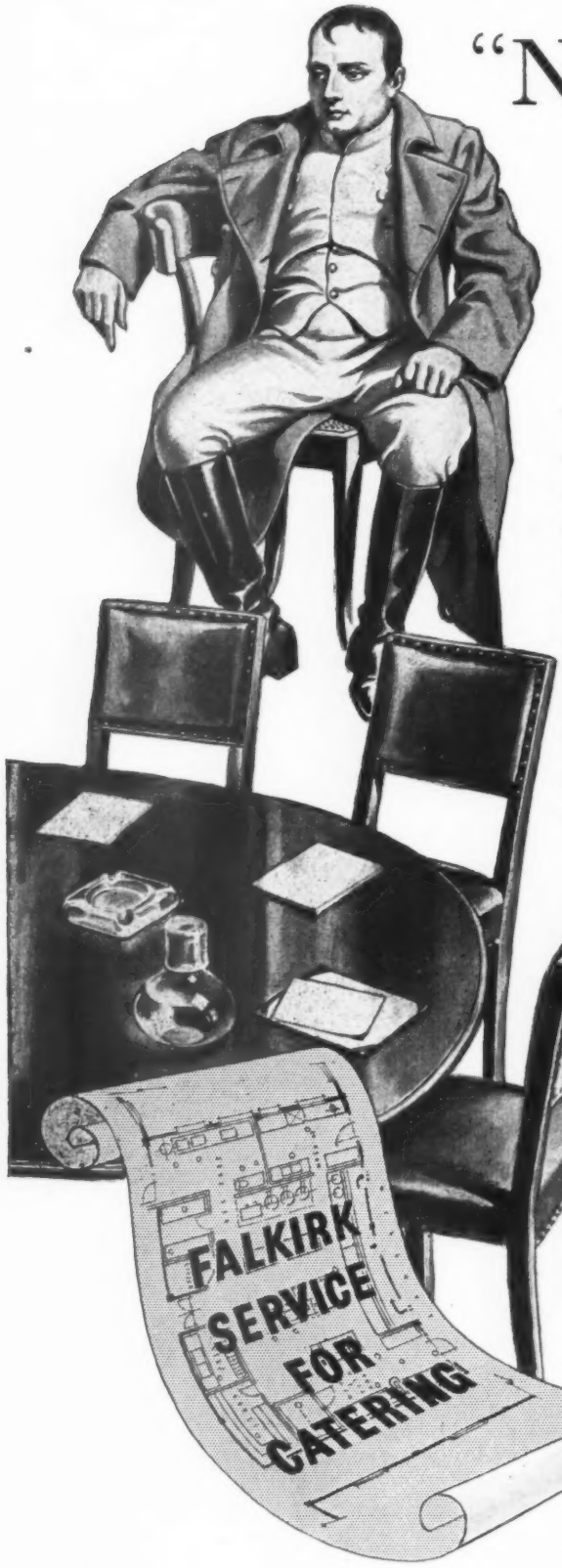

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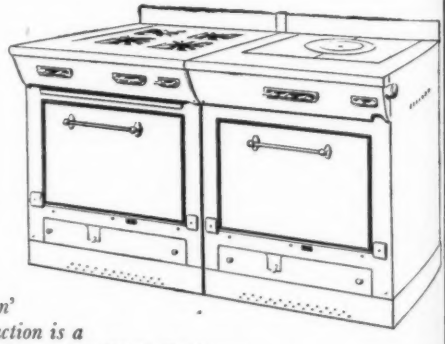

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and long enough to give strong full tone. The reverberation times with full audience are respectively 1.3 and 1.8 secs. at 500 cycles. Thus a difference in reverberation time of 0.5 secs. seems to represent the contrast between a small very unreverberant hall and one of twice the volume with a fairly long reverberation.

We may therefore expect that future optimum curves will show a narrower range of values, with an average for orchestral music a little above the minimum line of existing recommendations, and that the rise of reverberation time with increasing volume will be less pronounced.

VARIATION OF REVERBERATION WITH FREQUENCY

So far, we have been speaking only of reverberation at middle pitch (500 cycles). But the acoustic character of a room, especially where music is concerned, may depend more on the manner in which reverberation varies over the audible frequency range than on its exact value at middle pitch.

Much theoretical work has been done to determine the correct relation between reverberation at high and low frequencies and that at middle pitch; this work has been founded on the known sensitivity characteristics of the ear to sounds of different pitch and in some cases also on the average distribution of sound energy over the frequency range in speech and music. The optimum conditions have been assumed, variously, as either an equal rate of decay for all frequency components, or that all frequencies should become inaudible at the same instant. The most widely accepted results are those of MacNair (1930), which are shown in Fig. 2; other curves, such as those of Lifshitz and Knudsen, show a very much steeper rise in both bass and treble. Again, however, it may be argued justly that theoretical considerations should not be regarded as final on this question, unless they are borne out by subjective opinion. As listeners, our tastes have been formed by the experience of sound in existing buildings and we are not bound to accept the findings of theory.

In Fig. 2 are shown also the actual curves obtained for two concert halls. One of them shows an appreciable rise in the bass, such as is associated with modern buildings of solid construction. The other, much flatter, is characteristic of older buildings which contain large areas of resonant material (panelling, fibrous plaster, etc.). (In the present context the absolute length of reverberation is not important; it is the shape of the curves that is significant.) Very few halls show any rise in the treble, but rather a slight drop (about 0.1 sec.) between 500 and 4,000 cycles. In practice it is found to be very difficult to prevent reverberation falling sharply at high frequencies because they are powerfully absorbed both by the audience and by the air, so that a rise as great as that recommended by Lifshitz and Knudsen is in any case impossible under normal circumstances. In the few auditoria (such as La Scala opera house in Milan) where there is a slight rise in reverberation time at high frequencies, musical tone is very brilliant and may even be considered harsh.

On the other hand it is generally difficult to keep reverberation at low frequencies low enough. The flatness of the curves for many old buildings, where no special acoustic precautions were taken, is a measure of the high bass absorption provided by the panelling and suspended floors and ceilings of traditional construction. With solid construction such absorbents do not occur naturally and have to be planned deliberately.

The evidence of recent measurements is that the MacNair optimum is a reliable guide, but that a flatter curve is not harmful, especially for speech. If a rise in the treble can be achieved, the result will be a "live" room, giving brilliance of musical tone; the bass rise is not essential but can be tolerated up to the limits of the MacNair curve.

CALCULATION

Although we can now rely more and more on measurement for establishing reverberation standards, calculation must always remain an esesntial step in design and, if the suggestions which have been made here with regard to optimum times are correct, it is desirable to achieve a greater degree of accuracy in calculation than has been usual in the past. There is no doubt that the chief obstacle in the way of doing so is the incompleteness of the available data on absorption coefficients.

It would be unreasonable to expect to find figures for all the finishes used in building, but for many of the commonest materials perhaps only a single coefficient for 500 cycles or no coefficient at all is available. In any case, not only the material itself but also the method of fixing it is important. For example: window glass can give considerable absorption at low frequencies simply by transmission of the sound to the outside air; an effect which cannot be simulated in the reverberation chamber. Conversely, porous absorbents such as acoustic boards and tiles are less absorbent in the bass when fixed directly to walls or ceilings than when nailed to battens with an air space behind, as is usually done in the reverberation chamber; under the latter circumstances they have resonant properties and become panel absorbers. It is scarcely ever possible to perform a reverberation calculation using only published absorption coefficients; usually the calculator will find that he can only use them as a guide to forming his own estimate, so that experience and knowledge of the processes of sound absorption are necessary to achieve reliable results.

Examples of reverberation calculations are given in all text-books of acoustics and need not be repeated here, but it may be worth while mentioning one or two disconnected points, which have been found important.

1. Since the shape of the reverberation-frequency curve is important, it is advisable to calculate reverberation at four frequencies—125, 500, 2,000, and 4,000 cycles.

2. High frequencies are absorbed powerfully by the volume of air in the room. The absorption varies with humidity, but for normal conditions (60 per cent. relative humidity) the coefficients are 0.003 at 2,000 cycles and 0.008 at 4,000 cycles per cu. ft.; at lower frequencies the effect is negligible.

3. The audience is the predominant absorbent factor in any room but it is the one for which absorption coefficients are the most variable. The following coefficients have proved reliable in a number of calculations where the results could be checked against measurement and are close to some of the most recent measured coefficients. They are given in absorption units (Sabine) per seat. The decrease in absorption between 2,000 and 4,000 cycles for the seated audience should be noticed; it appears to be correct and may reflect the absorption characteristics of the human face, which is the part of an audience most exposed to sound waves.

Type of seating	—	Absorption coefficients at			
		125 cycles	500 cycles	2,000 cycles	4,000 cycles
Upholstered seating	Occupied	2·0	5·0	5·5	5·0
	Unoccupied	1·3	3·0	3·4	4·0
Wooden or padded seats	Occupied ..	1·7	4·3	4·7	4·3
	Unoccupied	0·8	1·6	1·9	2·1

4. That part of the floor which is covered by seats is shaded from the sound waves and, therefore, contributes less to absorption than it would if it were exposed. This effect is more pronounced at high than at low frequencies, because of the greater directionality of high frequency waves. In order to give effect to this in the calculations, the absorption of the floor may be worked out as if it were exposed and then reduced proportionally for the seating area. The following rule of thumb method has given good results:—Reduce by 20 per cent. at 125 cycles, 40 per cent. at 500 cycles, 60 per cent. at 2,000 cycles, and 80 per cent. at 4,000 cycles; as in the case of audience absorption, the figures are only empirical.

5. Of the reverberation formulæ, that of Millington appears to be the most exactly correct; both Millington's and Eyring's formulæ give lower values for reverberation than Sabine's but in the majority of cases the difference is so small as to be insignificant and the Sabine formula is very much simpler to use. In exceptional circumstances, however—where the average absorption is very high, for instance, or is accounted for almost entirely by a single material—one of the revised formulæ should be used.

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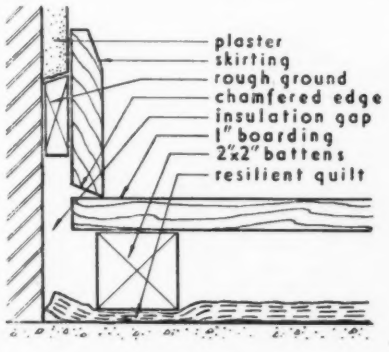
QUESTIONS AND ANSWERS

3035 FLOATING FLOORS

Q *In the construction of a small block of flats, on which I am engaged, I am proposing to use a "floating floor" of the type recommended in BRS Digest No. 19 (illustrated below).*

I should be much obliged if you could clarify for me the procedure for the laying of the battens and floor boards in such a way that the battens are retained in position while the boards are being fixed.



A There should not be any great difficulty in retaining the battens in position but if workmen find any trouble, the battens can be temporarily located by light nailing of a pair of cross battens until enough floor boarding is fixed to keep the main battens firm.

A digest of current information prepared by independent specialists; printed so that readers may cut out items for filing and paste them up in classified order. Headings below.

INFORMATION CENTRE

3.24 planning: general
REGIONAL PLANNING

Studies in Regional Planning. G. H. T. Daysh and others. (George Philip & Son, Ltd., 1949. 25s.)

An important contribution by a team of geographers, led by Professor Daysh of Durham University, towards the development of suitable methods of studying regional planning. 223 pp. and 8 folding maps in colour.

The authors' studies take the form of outline surveys and proposals for the development of several regions in England and Scotland, they include: the Highlands & Isles; Central Scotland; the North-east of England; Cumberland; the East Midlands; Gloucestershire—Wiltshire—Somerset; and Devon and Cornwall.

5.39 planning: public utilities
ROAD TRANSPORT

Road Passenger Transport in the North East. Alastair M. Milne. Planning Outlook. Spring, 1950, pp. 19-29. (Geoffrey Cumberlege, Oxford University Press.)

An examination of the Transport Commission's proposals in relation to road passenger requirements in the north-east of England. This is the first area to be examined by the Transport Commission from the point of view of co-ordinating bus services one with another and also with railway passenger services. The north-east area includes Northumberland, Co. Durham and North Riding.

18.64 construction: theory
WELDED STEELWORK DESIGN

Recommendations for the Design and Fabrication of Arc Welded Structural Steelwork, Built-up Girders and Compression Members. (British Welding Research Association, 1s. 6d.)

A rather long title for a pamphlet of only 12 pages and 11 illustrations. But it saves giving a table of contents. In the absence of a code of practice for welded steelwork these recommendations are of some importance. In BS 449 : 1948, The Use of Structural Steel in Building, a number of clauses deal with welded construction, but they are tucked away amongst rules for riveted steelwork and therefore not easy to find. In this pamphlet, as its title indicates, only two types of structural members are covered. No attempt is made to explain or to derive any of the arbitrary rules laid down. Sets of figures are presented, obviously after thorough discussion in committee, for all kinds of dimensional requirements in welded steelwork, such as minimum plate thickness and maximum unsupported width, the depth of plate girder stiffeners at the bearings and at intermediate points, the spacing of intermittent welds, and the minimum size of fillet welds in relation to plate thickness. A comparison for a variety of cross sections for compression members is presented. Strangely enough the tubular section has not been included although it is known to be superior in many types of welded structure. It is difficult to see how the battened or latticed members discussed in the text can economically compete against the plain tube. The choice of cross section is, of course, a little beyond the scope of this pamphlet. This new memorandum should help the architect to visualise some of the clean and simple lines offered to him by welded construction.

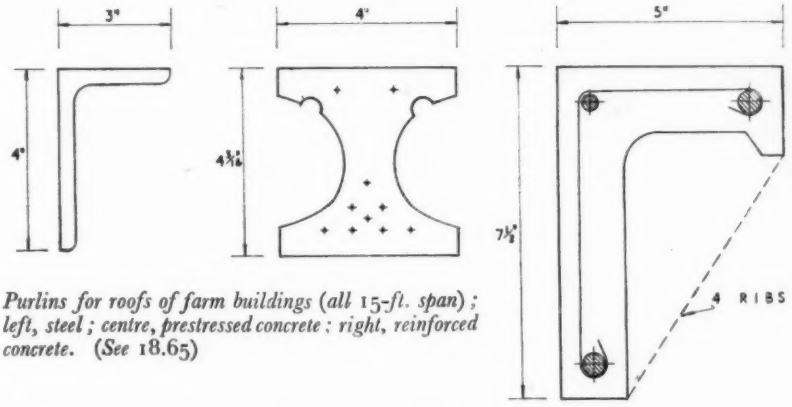
18.65 construction: theory
PRESTRESSED CONCRETE TESTING

Prestressed Concrete Developments at the Field Test Unit Thatched Barn. (Now BRS). O. J. Masterman (The Structural Engineer, Oct., 1950.)

Lecture to the Institution of Structural Engineers describing early developments and series of tests under field conditions for the Ministry of Works. 19 pp., tables, 34 figures.

In contrast to fundamental research done at other stations the work described here is in the nature of operational research. Field or factory conditions were the feature throughout the tests and some of the developments were in fact done in commercial shops under contract to the Ministry. The two main systems of prestressing were applied, i.e., with bonded or pre-tensioned and with end-anchored or post-tensioned wires. The equipment for straining and anchoring the high-tensile steel wires is described and illustrated; various types of wire grips, jacks and end plates were used in the tests. To the architect the results of series of tests with floor joists, complete floors and roof purlins are of particular interest. A variety of designs has been used in loading tests, including floors of Swiss design.

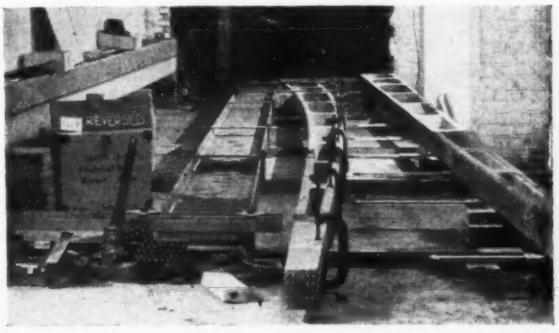
Prestressing actually provides the tensile strength which is so small in normal concrete. The remarkable capacity to deflect is shown in a picture of 36-ft. long transmission line poles during loading tests, when a maximum deflection of 3 ft. 4 in. was recorded before failure.



Purlins for roofs of farm buildings (all 15-ft. span); left, steel; centre, prestressed concrete; right, reinforced concrete. (*See* 18.65)

Table showing comparison of quantities.

Type	Depth	Steel Lb.	Weight Lb.	Deflection under 1¼ times working load, inches
Steel purlin ..	4 in.	106·0	106	0·58
P.C. purlin ..	4 3/16 in.	4·4	168	0·36
R.C. purlin ..	7½ in.	20·5	258	0·25



Transmission line pole under test. (Crown Copyright Reserved-MOW.)

1 Sociology. 2 Planning: General. 3 Planning: Regional and National. 4 Planning: Urban and Rural. 5 Planning: Public Utilities. 6 Planning: Social and Recreational. 7 Practice. 8 Surveying, Specification. 9 Design: General. 10 Design: Building Types. 11 Materials: General. 12 Materials: Metal. 13 Materials: Timber. 14 Materials: Concrete. 15 Materials: Applied Finishes, Treatments. 16 Materials: Miscellaneous 17 Construction: General. 18 Construction: Theory. 19 Construction: Details. 20 Construction: Complete Structures. 21 Construction: Miscellaneous. 22 Sound Insulation-Acoustics. 23 Heating, Ventilation. 24 Lighting. 25 Water Supply, Sanitation. 26 Services Equipment: Miscellaneous: 27 Furniture, Fittings. 28 Miscellaneous.

18.66 construction: theory

REINFORCED CONCRETE CODE

Explanatory Handbook on the BS Code of Practice for Reinforced Concrete. W. L. Scott, W. H. Glanville and F. G. Thomas. (Concrete Publications Ltd., 1950. 9s.)

Following the well-known handbook by Scott and Glanville on the DSIR Code of 1934, now replaced by the new Code CP 114. 120 pp., many figures and tables.

Since this Code of Practice was published in 1948 it has been widely adopted as part of the conditions of contract in reinforced concrete work, both by Government and municipal authorities and by private clients. What is in fact an annotated edition of the official text should prove most useful to architects and engineers who are responsible for the correct application of the code to reinforced concrete work in buildings. It is made clear in the introduction that specialized types of construction, such as prestressed concrete and water-retaining structures, are beyond the scope of this handbook. It covers materials and appliances, considerations of design, workmanship, inspection, testing and maintenance. About 80 out of the 120 pages of this book are given to a thorough and authoritative discussion of the Code clauses on design. Basic assumptions, loading, permissible stresses, beams, slabs and columns are amongst these clauses, also detailed comments on the flat slab type of construction which is so attractive from the architect's point of view. About three-dozen tables and 19 figures are given in addition to those reproduced from the original Code, and these represent the authors' most valuable contribution, which will be a welcome help to the busy designer.

20.191 construction: complete structures

STEEL BUILDINGS IN BELGIUM

Quelques Réalisations d'Architecture Métallique en Belgique (*Some recent steel buildings in Belgium.*) Professor V. Bourgeois (L'Ossature Métallique [Belgium], Oct., 1950.)

Modern tendencies in the architectural and engineering design of steel framed industrial buildings. Examples ranging from industrial office blocks to the 7-storey post-office building at Brussels. 10 pp., 17 illustr.

The author advocates pre-fabrication methods to reduce the cost of building in steel, and draws a comparison with the mass production principles which made the motor car the most popular means of transport. Extensive use of steel sheeting was made in some of the buildings described, and pre-fabricated connections between flange beams and stanchions produced fully rigid triple-storey frames. Tack bolts held the steel members in alignment while top and bottom flange welds completed the joint. Very little use has been made of this type of joint for multi-storey frames in this country, but in many structures in Belgium, and to some extent in pre-war Germany, this method of welded construction was found highly satisfactory. The use of broad flange beams (now rolled in this country) should considerably facilitate the design of welded rigid frames of this type. Their cross section is highly economical for stanchions and their parallel flanges make the welded connection quite easy.

22.50 sound insulation and acoustics

SOUND INSULATION AND ACOUSTICS OF BUILDINGS

Acoustical Designing in Architecture. V. O. Knudsen and C. M. Harris. (Chapman & Hall. 1950. 60s.)

Properties of sound; hearing; reverberation; outdoor theatres; sound absorbents; insulation; ventilation systems and loud-speakers; types of buildings. Authoritative, comprehensive.

A new major book on architectural acoustics is an event. None has been written in England since Bagenal's wartime effort and the post-war Building Study No. 14. This one, from America, has some important weaknesses but many typical strengths. It deserves a place on the conscientious architect's shelf, though its price here is, naturally, unfortunate.

The opening section is, as usual, on sound and hearing, but is much improved over previous efforts. It contains some irrelevant material which is nevertheless interesting.

There is an odd immediate jump to a chapter on outdoor theatres, but it is particularly useful because this is a field where the Americans have obtained a great deal of experience; their climate is sympathetic. Reflecting shells are carefully discussed, and emphasis is laid on the necessity for a quiet location and a well-sloped seating area.

Absorption is more fully discussed than in any previous book. Modern European and British researches have added greatly to the pre-war range of materials and the new types are adequately, though briefly described. Following this there is a chapter on room resonance, reverberation and other characteristics of shape. Again much new material has been incorporated; absorption is followed by a rather mixed-up chapter dealing with "acoustical design of rooms"; in effect it is a review of the stages which it is thought an architect should take to cover acoustical needs in a design, but it reads as if written by one of the authors who had not seen what the other had written, or did not believe it had been properly done.

Now one arrives at a discussion of noise (common noises and their measurement), which leads in turn to remarks on insulation. To British readers this is familiar stuff; to Americans it will seem advanced. It lacks the decisive touch of experience with high insulation constructions, and includes a lot of rather intricate and impractical details. Results are based on laboratory measurements not full studies as the BRS and NPL can now do.

Noise in ventilation systems is another chapter like the one on outdoor auditoria, where American experience is a long way ahead of that of anyone else, and the chapter is therefore valuable.

Sound amplification receives a clear and advanced discussion, including the stereophonic techniques which are now becoming valued because of the increased realism obtained. It is a pity that the use of delays to improve realism, which is now known to be so very important, was not known to the authors at the time of writing.

The last third of the book deals with building types, beginning with auditoria, by which is meant little theatres, cinemas, school halls and civic auditoria. Discussion is brief and often inadequate. For instance, the civic auditorium section is only two pages long, and deals really with the multi-purpose flat floored hall rather than the hall for music.

Schools and university buildings, including those for music teaching, get a chapter and there is another on business buildings, hospitals and law courts. Homes and hotels come next, followed by churches, and ending with studios.

There are appendices giving absorption coefficients, insulation data, etc.

A glance at the layout of material shows a distinctive merit and an outstanding fault. It is all to the good that the book should be comprehensive; but the approach lacks the designer's touch. It cannot be helped; America lacks architects who are authoritative in acoustics.

26.80 services and equipment: miscellaneous

MEASUREMENT OF NATURAL VENTILATION IN HOUSES

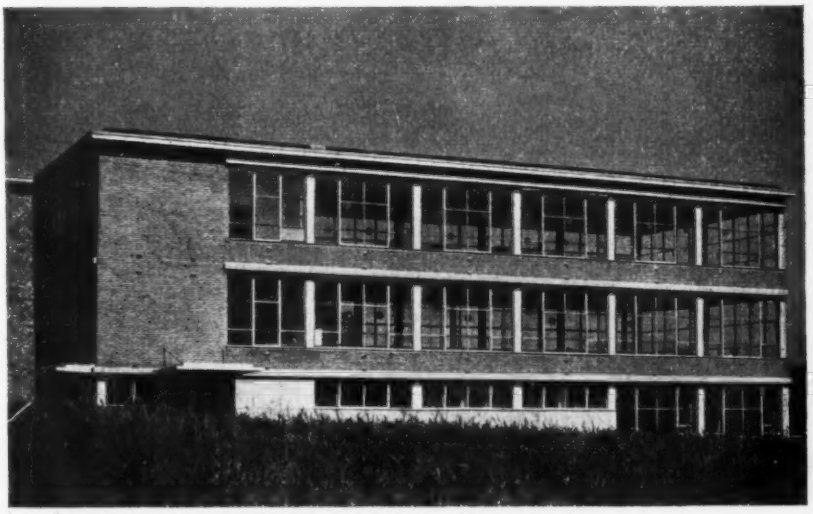
Measurement of Ventilation Using Tracer Gas Technique. J. B. Dick. (Paper published by The Building Research Station.)

Paper describing apparatus and technique used in measuring natural ventilation in houses.

This paper has particular reference to the technique of ventilation measurement employed in the experimental houses of the Building Research Station at Abbots Langley.

It describes the use of tracer gases (usually hydrogen, carbon-dioxide, or helium) and the instrument (the Katharometer) used for their measurement, and the methods of using them, including the installations used for introducing the gas, withdrawing air for sampling, and recording equipment used for taking measurements during the occupied stage of the full-scale experiment at Abbots Langley.

Architects will be for the most part more concerned with the results of Mr. Dick's investigations than the methods used (see 23.132 : 24.8.50), but those of a more scientific turn of mind will find the paper of great interest. It is a valuable contribution to the literature on the subject.



Offices of factory at Braine-le-Compte, Belgium. (*See* 20.191.)

In his first contribution for 1951, Ian Bowen continues his evaluation of incentive schemes, with particular reference to the recent agreement between the trade unions and the employers. Prof. Bowen fears that, unless determined administrative action is taken, the value of incentive schemes may be negated by renewed shortages of building materials and the re-armament programme.*

INCENTIVES 1950

By Ian Bowen

The building industry, some of whose leaders appear to resent criticism, is popularly supposed to move more slowly than other industries; there is a certain majestic deliberation in the movements of the practitioners of its arts and mysteries which excites impatience, as well as reluctant admiration, among the uninitiated. But this is the season of goodwill, and far be it, from anyone who merely writes, to hint that five years is too long a time for masters and men to negotiate an agreement on incentive payments.

THE INCENTIVES AGREEMENT

The contents of the agreement can hardly be judged until it has been worked for a while. The date of the agreement cannot, however, be regarded as favourable for its successful working. For the building industry, like most other industries at this moment, is entering (and in places has already entered) a new period of materials' shortages. 1951 is likely to be a year of "bottlenecks" at least as frustrating as those of 1946, and perhaps much worse. Not only timber, cement and bricks, but zinc, aluminium and lead are in dangerously short supply. How can any incentives scheme work successfully if the delivery of materials is intermittent and uncertain? And if materials' shortages provoke new delays, the very idea of incentives' payments may become finally discredited.

The acceptance of an incentives-payments plan by trade union leaders is, of course, a notable event. It marks that change, or development, in trade union thinking which was typified, for the trade union movement generally, by the publication of the pamphlet on "Productivity" in the summer of 1950—the recognition that rises in earnings should be linked to increases in physical productivity.

EFFECT OF RISES IN THE COST OF LIVING

But unfortunately, this aspect of the question, important as it may be, is no longer the most significant one. As shortages develop, and inflated raw material prices penetrate to retail trade (*i.e.* cost of living) level, demands for increased earnings will not be susceptible of restraint to the relatively slow pace of productivity increases. What is now required, just as urgently as it was required in 1940, is an effective economic *plan*. But there seem to be few signs that the political state of party government in this country will inspire the rapid drafting of any plan adequate to cope with the emergency. Future events will, however, force us to face this issue properly.

CAN PRIVATE ENTERPRISE HELP?

With regard to the part private enterprise building should play in the future building programme, this is both a political, and a relatively minor issue—not unimportant, but not, at the same time, critical. Supposing a larger share of house building went to private builders, they would still need bricks, cement, timber, etc., and supplies of these would still not be forthcoming unless the necessary programmes of production and imports had been officially encouraged. Private enterprise on a larger scale might, it has been claimed, improve productivity. But it could not do this if the flow of materials was insufficient.

THE PROSPECT FOR 1951

It may be felt that the industry is more planned against than planned. The truth is that present dangers are not confined to the building industry. Plans and programmes of course exist, but it is becoming evident that they do not meet the gravity of the situation. Unless the building programme is to be bogged down in frustration, more drastic cutting of coats to cloth must be undertaken. For whilst the deterioration of the materials' position has occurred *before*, when the direct impact of re-armament on Britain's industrial system begins to be felt, the strain will be intensified.

The old year ended, then, with a step forward in industrial organisation, but with dark prospects for 1951 unless fairly drastic measures are taken to concentrate the scarce resources of the industry where they are most needed, and to expand production of materials, and essential imports. Fortunately, the machinery of planning still exists; it is to be hoped that it will be made to work, not only for restrictive purposes, but also, when possible, for purposes of expansion.

Incentives schemes may play some part in maintaining, or even increasing, output. But it is to be feared that they are not so appropriate to a period during which supplies of timber and goods may become less as they might have been when the flow of goods for home civilian markets was increasing. A more indirect merit of incentives schemes is that they sometimes increase labour costs, thus compelling employers, in normal times, to economise in the use of labour (this consequence of high hourly wages in America—*not* due, usually, to incentives' schemes—has been pointed out by more than one of the Anglo-American productivity team). But under inflationary re-armament conditions, this influence upon employers may be less effective. The best that can be hoped for, is that the concentration of attention on output will, in itself, be salutary.

* See AJ Oct. 26, and Nov. 2, 1950.

THE LIBRARY OF INFORMATION SHEETS

43.E10 *and* 11 *cancelled* 21.12.50
REFERENCE BACK

It is now established that these Sheets are accurate so far as the products are concerned, but the producers are now known as Aluplex Ltd., and the address is 42, *Whadcoat Street, Finsbury Park, London, N.*4. *Telephone: Archway* 4332.

Readers requiring up-to-date information on building products and services may complete and post this form to The Architects' Journal, 9, 11 and 13, Queen Anne's Gate, S.W.1.

ENQUIRY FORM

I am interested in the following advertisements appearing in this issue of "The Architects' Journal." (BLOCK LETTERS, and list in alphabetical order please).

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Announcements

Stramit Boards Ltd., whose London Depot is at Packet Boat Dock, Cowley Peachey, Uxbridge, Middlesex, ask us to advise readers that the Depot telephone number is West Drayton 3021-2-3.

Mr. H. G. Huckle, A.R.I.B.A., A.M.T.P.I., of Huckle & Durkin, Architects and Consulting Engineers, Exchange Buildings, Liverpool, 2, has opened a London Office at 55, Queen Anne Street, London, W.1. (Tel.: Welbeck 2852.)

Mr. W. H. Irwin, A.R.I.B.A., M.R.I.A.I., has resigned from the position of assistant architect to the Department of Works and Public Buildings, Ministry of Finance, Government of Northern Ireland, upon being appointed chief assistant architect to the housing department of the Corporation of Belfast.

Messrs. Dorman & Smith Ltd. announce that they have appointed as manager for London and Southern England, Robert Speirs, M.I.E.E. He will also represent the interests of their Associated Companies D.S. Plugs Ltd., Alorite Ltd. and British Klockner Switchgear Ltd.

Mr. Charles Scott, A.R.I.B.A., DIP.T.P. (LEEDS), previously Chief Assistant Architect (Health) City of Leeds, has been appointed Regional Architect to the South-East Metropolitan Regional Hospital Board, and has taken up his duties at 27, Queen Anne Street, W.1. (Langham 3264).

Any ex-students of the Leeds School of Architecture now working in the London area who are interested in the revival of the pre-war "Leeds in London" annual dinners are asked to contact Macfarlane Widdup, DIPL. ARCH. (LEEDS) A.R.I.B.A., at The Peter Dunham Group, 42-44, Hastings Street, Luton, Bedfordshire.

Stramit Boards, Ltd., announce the appointment of Mr. G. W. H. Haines of 269, Ferndale Road, Swindon, as their technical representative for the Southern counties.

Mr. Keith P. Roberts, L.R.I.B.A., Roberts & Butterfield, has moved from 6, Avery Row, New Bond Street, W.1, to 21, Woodstock Street, New Bond Street, W.1, Tel: Grosvenor 1140, and is now practising under the name of Keith P. Roberts, L.R.I.B.A., at the new address and 2-4, Upper Dagnall Street, Market Place, St. Albans, Herts. (Tel: St. Albans 6886). He will be pleased to receive trade catalogues etc.

Stramit Boards Ltd. announce Mr. J. S. Hewitt of Ravenswell House, Lansdowne, Bath, is their Technical Representative for South West England and South Wales.

Mr. E. Emrys Edmunds, F.R.I.B.A., is relinquishing his post as The Technical Adviser for Wales to the War Damage Commission and is resuming private practice as a chartered architect at No. 4, Brunswick Gardens, St. Helen's Road, Swansea.

Mr. S. Derrick Ellis, of 27, Villa Real Bungalows, Villa Real, Consett, Co. Durham, will be glad to receive trade catalogues regarding housing and municipal works.

Mr. Frederick Gibberd, F.R.I.B.A., M.T.P.I., has moved to 8, Percy Street, London, W.1. (Tel.; Langham 6385-6.)

The Government of Pakistan is taking swift action, in proceeding with their part of the Colombo Plan. A series of new jetties are to be constructed comprising seven berths for ships of up to 10,000 tons each, at the Port of Chittagong. A contract has now been signed between the Government of Pakistan and Messrs. Braithwaite & Co. Engineers Ltd. who have undertaken to complete all the jetties within three years at a cost of £2¼ million.

Buildings Illustrated

Factory at Duxford, Cambridgeshire. Consulting Engineers: Ove Arup and Partners. Assistant Architect: Barbara Priestley, A.R.I.B.A. Site Engineer: I. L. Holmes, A.M.I.C.E. Quantity Surveyors: Davis, Belfield & Everest. General Contractors: Gee, Walker & Slater Ltd. Sub-contractors: Roads, foundations and services, Messrs. William Sindall; structural steel and aluminium, English Bridge & Structural Engineering Co. Ltd.; subsidiary works, W. A. Dawson Ltd., and Harding & Sons; patent glazing, British Challenge Glazing Co. Ltd.; steel windows, Williams & Williams Ltd.; steel deck and roofing, Ruberoid Co. Ltd.; sanitary fittings, William E. Farrer Ltd.; ironmongery, Dryad Metal Works Ltd.; electrical work, Rashleigh Phipps & Co. Ltd.; heating services, Sulzer Brothers Ltd.; cell. concrete, Celcon Ltd.; cork lining, Alpine Insulation Ltd.; sliding door gear, British Trolley Track Co. Ltd.; rubber flooring, Messrs. L. Fishburn; handrailing and steel floors, Grill Floors Ltd.; plastering, W. A. Telling Ltd.; painting, Lees (Shelford) Ltd.; hollow tile roofs, Flooring Contracts (London) Ltd.; asbestos cement and building materials, Travis & Arnold Ltd.; quarry tile floors, A. H. Herbert Co. Ltd.

The following acknowledgements were unavoidably omitted from last week's JOURNAL. *Concrete Blocks* (*pages* 583-585). Manufacturers and Trade Associations from whom technical information was received and whose products are mentioned and/or illustrated: Atlas Stone Co. Ltd.; British Art Tile Co. Ltd. (Figs. 5 & 6); Broad & Co. Ltd. (Fig. 3); Clugston Staveley Ltd.; Cotswold Dale Stone Co. Ltd. (Fig. 9); Holland Hannen & Cubitts Ltd. (Fig. 7); Structural & Mechanical Development Engineers Ltd.; Trainco Ltd. (Fig. 4); Wilson's Terrazzo Manufacturing Co. Ltd. (Fig. 8); British Cast Concrete Federation; Cement & Concrete Association; Federation of Clinker Block Manufacturers; Foamed Slag Producers Federation Ltd.

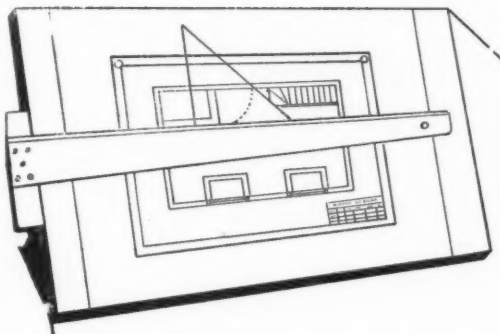
Corrections

In the list of designers and architects for the Festival Pleasure Gardens published in our issue of December 21, we gave Messrs. Harrison and Seel credit for servicing the site and did not mention the consultants.

Mr. C. V. Blumfield is the chief structural consultant to the Gardens as a whole, Mr. H. E. Baker is chief electrical consultant and Mr. W. J. Woolgar is the sanitary consultant.

In *Current Prices For Measured Work* in our issue for November 23, a mistake was made on page 437. Under the heading "Painter" it was stated that the price for preparing, priming and painting two coats of oil colour on plastered walls and ceilings was 2s. 7d. per yard super. This price should have read 3s. 9d. per yard super.

Messrs. Gyproc Products Ltd. have called our attention to the following errors in our description of the flats in Antrobus Street, Pimlico, on December 7. On page 487, under the heading "Internal Finishes," it was stated that the walls are plastered with ⅜-in. *semi*-hydrate plaster instead of *hemi*-hydrate plaster. In the same paragraph was a sentence which read: "Ceilings, special gypsum plaster, obviating mechanical key to concrete." The company points out that a more accurate description of the particular plaster used ("Cretestone") would be: "Ceilings, special gypsum plaster which avoids the necessity for hacking concrete before plastering."



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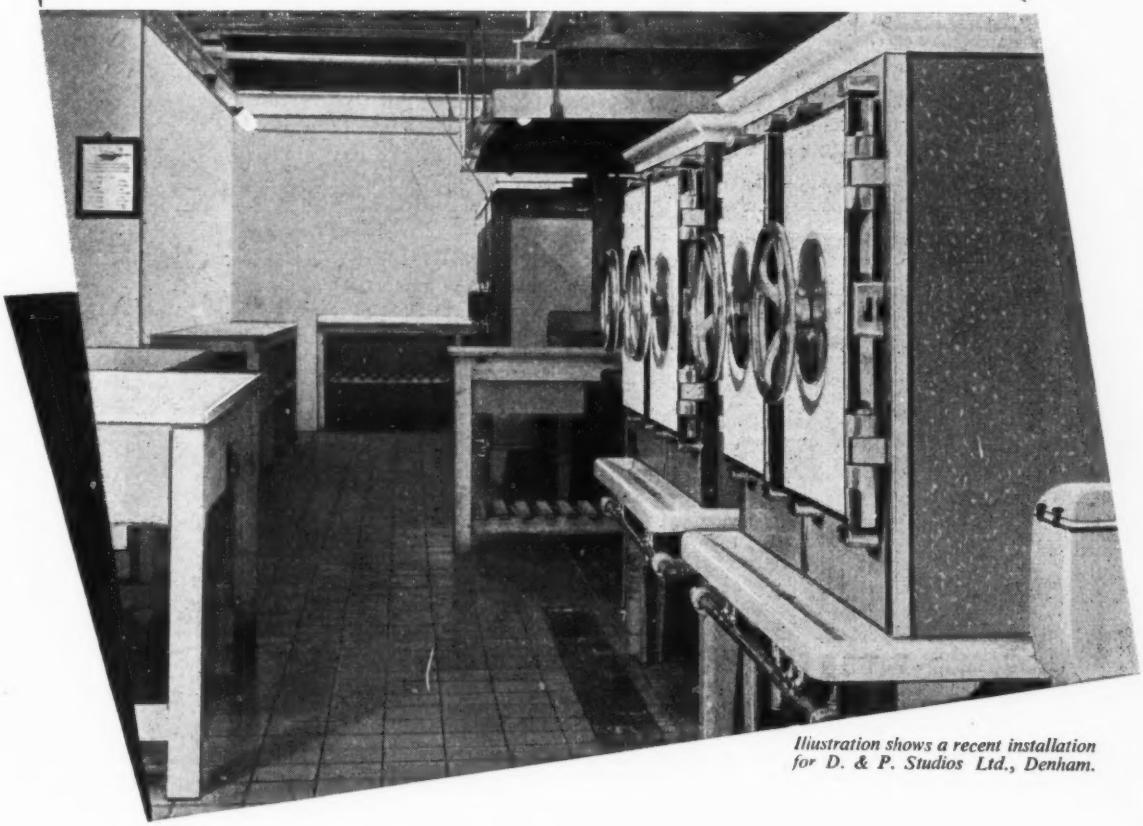

Illustration shows a recent installation for D. & P. Studios Ltd., Denham.

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Advertisements should be addressed to the Advt. Manager, "The Architects' Journal," 9, 11 and 13, Queen Anne's Gate, Westminster, S.W.1, and should reach there by first post on Friday morning for inclusion in the following Thursday's paper.

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

Public and Official Announcement

25s. per inch; each additional line, 2s.

NORTH THAMES GAS BOARD.

Applications are invited for the following appointment in the Architects' Section of the Chief Engineer's Department of Westminster: SENIOR ARCHITECTURAL ASSISTANT, minimum starting salary £650 per annum.

Applicants, who must be Registered Architects and should be studying for or have passed the Final Examination of the R.I.B.A., should be capable of preparing working and detailed drawings and specifications, and supervising and controlling the work on contracts. Experience in design and planning of industrial buildings would be an advantage.

The appointment is of a permanent nature, and pension arrangements will be discussed with short list candidates.

Applications, stating age, qualifications, and particulars of previous appointments held, must be submitted to the Staff Controller, North Thames Gas Board, 30, Kensington Church Street, London, W.8, quoting reference 9757. 4341

COUNTY BOROUGH OF HALIFAX.
BOROUGH ENGINEER'S DEPARTMENT.

Applications are invited for the following appointments:—

DEPUTY PLANNING OFFICER. Salary A.P.T., VI (£595 to £660).

ARCHITECTURAL ASSISTANT. Salary A.P.T., V (£520 to £570).

ARCHITECTURAL ASSISTANT. Salary A.P.T., III (£450 to £495).

The person appointed to the post of Deputy Planning Officer will be expected to take charge under the Borough Engineer, of that section of the department responsible for Town Planning work.

Candidates should possess appropriate technical qualifications, and will be required to pass a medical examination. The appointments will be subject to the conditions of service adopted by the Corporation and to the Local Government Superannuation Act, 1937.

Candidates must disclose whether to their knowledge they are related to any member of or the holder of any senior office under the Council.

Applications, stating age, qualifications, present position, salary and experience, accompanied by copies of three recent testimonials, should be appropriately endorsed and delivered to the undersigned not later than Wednesday, 17th January, 1951.

RICHARD DE Z. HALL,
Town Clerk.

Town Hall, Halifax.
15th December, 1950. 1503

COUNTY OF LINCOLN—PARTS OF HOLLAND.
COUNTY PLANNING DEPARTMENT.

Applications are invited for the appointment of TWO PLANNING ASSISTANTS, in the Boston Office of the above Department, at a scale in accordance with A.P.T., Grade I, of the National Scale of Salaries (£390-£435 per annum).

Candidates should preferably have had previous experience in the office of a local planning authority and should be neat and expeditious draughtsmen. Intermediate Examination standard of the Town Planning Institute or other technical qualifications will be an advantage.

The appointments will be subject to the provisions of the Local Government Superannuation Act, 1937, and the successful candidates must pass a medical examination.

Applications, stating age, education, experience, present position and salary, together with the names of two referees, should reach the undersigned within 14 days from the appearance of this advertisement.

H. C. MARRIS,
Clerk of the County Council.

County Hall, Boston, Lincs. 1498

GATESHEAD EDUCATION COMMITTEE.
CLERK OF WORKS.

Applications are invited for the appointment of a Clerk of Works, to supervise the erection of the Technical College which is being erected in Gateshead.

Applicants must have a sound and practical knowledge of all building trades and be experienced in the supervision and erection of large buildings, including setting out, levelling, measuring-up, and keeping records.

The salary will be in accordance with A.P.T., Grade IV, commencing £480-£525 per annum.

The appointment will be subject to one month's notice on either side.

Applications to be made on forms obtainable from the Chief Architect, should be returned, together with copies of three recent testimonials, to H. J. Cook, A.R.I.B.A., M.I.Struct.E., Chief Architect, Municipal Buildings, Swinburne Street, Gateshead, 8, not later than Friday, the 19th January, 1951.

W. N. HOWARD,
Director of Education.
1535

CITY OF PETERBOROUGH.
CITY ENGINEER AND SURVEYOR'S DEPARTMENT.

Applications are invited for the appointment of ARCHITECTURAL ASSISTANT, on the staff of the City Engineer and Surveyor, at a salary in accordance with Grade IV, A.P.T., *i.e.*, £480, rising by annual increments to £525 per annum.

Applicants should be good draughtsmen, possess a sound knowledge of building construction, and be capable of preparing working drawings, etc., with the minimum amount of supervision.

The City Council have adopted the National Scheme of Conditions of Service. The appointment is subject to the provisions of the Local Government Superannuation Act, 1937, and the successful applicant will be required to pass a medical examination. Applications, stating age, qualifications and experience, accompanied by copies of not more than three recent testimonials, and suitably endorsed, must be delivered to the undersigned not later than 13th January, 1951.

Applicants must disclose whether they are related to any senior official or member of the Authority.

Housing accommodation is not immediately available, but the Council will, if necessary, assist so far as they are able the successful applicant to obtain accommodation, but it must be distinctly understood that the Council do not guarantee to find either a house or living accommodation.

C. PETER CLARKE,
Town Clerk.

Town Hall, Peterborough.
December, 1950. 1502

LONDON COUNTY COUNCIL.

Applications are invited for positions of ARCHITECTURAL ASSISTANT (salaries up to £580 a year) in the Housing and Valuation Department. Commencing salaries will be determined according to qualifications and experience. Engagement will be subject to the Local Government Superannuation Acts, and successful candidates will be eligible for consideration for appointment to the permanent staff on the occurrence of vacancies.

Successful candidates will be required to assist in the design, layout and preparation of working drawings for housing schemes (cottages and multi-storey flats), and will be employed in the Housing Architect's Division.

Forms of application may be obtained from the Director of Housing, The County Hall, Westminster Bridge, S.E.1 (stamped addressed envelope required and quote reference A.A.1). Canvassing disqualifies. (816) 4558

THE TRAINING OF TECHNICAL TEACHERS.

Applications are invited from men and women of approximately 25 years of age and over, for admission to a one year course of training as full time teachers of Building and Allied subjects in Technical Colleges and similar institutions.

Applicants should have a University degree in Building or Allied Subjects, or qualifications in a profession associated with Building, or a Higher National Certificate in Building, or for Craft teaching, a Full Technological Certificate of the City and Guilds of London Institute in a Building craft. In certain crafts a Final City and Guilds Certificate (preferably a First-Class) may be accepted.

The courses will begin in September, 1951. Recognised students will pay no fees and they will be eligible for maintenance grants for the period of the course.

Further particulars and application forms may be obtained from:—

THE DIRECTOR,
Bolton Training College,
Manchester Road, Bolton, Lancs.

THE DIRECTOR,
Huddersfield Training College,
Queen Street South, Huddersfield, Yorks.

1499

BOROUGH OF WILLESDEN.
APPOINTMENT OF ARCHITECTURAL ASSISTANT.

The Council invite applications for the appointment of a THIRD CLASS ARCHITECTURAL ASSISTANT, on the temporary staff of the Borough Engineer and Surveyor's Department. The salary attaching to the post will be Administrative, Professional and Technical, Grade III, namely £450 per annum, rising by £15 per annum to £495 per annum, plus London weighting.

Candidates must have served their Articles of pupilage or have worked in an architectural office for a minimum period of three years, and have passed the R.I.B.A. Intermediate Examination or its equivalent at one of the recognised schools of architecture.

The appointment, which will be terminable by one month's notice on either side, is subject to the provisions of the Local Government Superannuation Act, 1937, and the successful candidate will be required to pass a medical examination.

Applications, giving age, experience, etc., accompanied by copies of not more than three testimonials, should be addressed to the undersigned, endorsed "Architectural Assistant," not later than 10 a.m. on Friday, 19th January, 1951.

It will be necessary for the successful candidate to provide his own housing accommodation as the Council is not in a position to assist.

Canvassing, directly or indirectly, will be deemed a disqualification.

(Signed) R. S. FORSTER,
Town Clerk.

Town Hall, Dyne Road, Kilburn, N.W.6.
21st December, 1950. 1536

CORPORATION OF LONDON.

Applications are invited for the following posts in the City Planning Office:—

CIVIC DESIGN SECTION:

SENIOR PLANNING ASSISTANT. £700, by annual increments of £25 to £850.

1ST CLASS PLANNING ASSISTANTS. £600, by annual increments of £25 to £750.

Applicants should have ability in the design of large buildings and the lay-out of central areas. Preference will be given to qualified Architects; a qualification in town planning will be an additional advantage.

DEVELOPMENT SECTION:

SENIOR ASSISTANT DEVELOPMENT OFFICER. £700, by annual increments of £25 to £850.

Applicants should possess the qualification of A.M.T.P.I. and/or A.R.I.C.S. or A.R.I.B.A. Preference will be given to applicants who are conversant with the Town and Country Planning Act, 1947, and the Orders and Regulations made thereunder, and have experience in the control of development in central areas, with particular reference to daylighting and amenity.

Successful candidates will be required to pass a medical examination. The appointments will be subject to the provisions of the Corporation of London Superannuation Fund established under the City of London (Various Powers) Acts, 1931 to 1950, which provide for the payment, in appropriate circumstances, of superannuation allowances to officers and dependants, and pensions to widows and children. further details of which will be supplied on request.

Applications, stating age, qualifications, experience, present position and salary, accompanied by copies of two recent testimonials, should be sent to the City Planning Officer, 55-61, Moorgate, E.C.2, to arrive not later than the 29th January, 1951.

PICKFORD.
1538

CITY OF PLYMOUTH.
CITY ARCHITECT'S DEPARTMENT.

Applications are invited for the following appointments on the established staff, subject to the Conditions of Service of the National Joint Council for Local Authorities, Administrative, Professional, Technical and Clerical Services, the Local Government Superannuation Act, 1937, and one month's notice on either side for termination:—

(*a*) SENIOR ASSISTANT ARCHITECT. Grade VII (£635 to £710).

(*b*) SENIOR ASSISTANT ARCHITECTS. Grade VI (£595 to £660).

(*c*) SENIOR ASSISTANT ARCHITECT. Grade V (£520 to £570).

(*d*) ASSISTANT ARCHITECT. Grade IV (£480 to £525).

(*e*) ASSISTANT ARCHITECT. Grade III (£450 to £495).

Candidates should be experienced in the design and construction of schools, municipal housing or general work.

(*f*) QUANTITY SURVEYOR. Grade III (£450 to £495).

(*g*) QUANTITY SURVEYOR. Grade I (£390 to £435).

Candidates for appointments (*a*), (*b*) and (*c*) must be Registered Architects, and preference will be given to Members of the R.I.B.A.

In the case of appointments (*d*) and (*e*) preference will be given to candidates who have passed the Intermediate Examination of the R.I.B.A.

For appointment (*f*) preference will be given to candidates who have passed the Intermediate Examination of the Royal Institute of Chartered Surveyors, and for appointment (*g*) preference will be given to candidates who have passed the First Examination of the Royal Institute of Chartered Surveyors.

Successful candidates will be required to pass a medical examination.

Applications, on forms obtainable from the undersigned, accompanied by copies of not more than three recent testimonials or names of persons to whom reference may be made, should be received at my office not later than 31st January, 1951.

The Corporation may make housing accommodation available to the successful married candidates if required.

H. J. W. STIRLING, A.R.I.B.A.,
City Architect.

Seymour Road, Plymouth. 1540

COUNTY BOROUGH OF EAST HAM.
APPOINTMENT OF TOWN PLANNING ASSISTANT.

Applications are invited for the appointment of Town Planning Assistant, Grade A.P.T., III (£450 to £495 per annum, plus London weighting), in the Town Planning Section of the Borough Engineer's Department.

Candidates must be competent draughtsmen and have general knowledge and experience of Town Planning work.

Housing accommodation is not provided, but the Council will be prepared to consider an application for subsistence allowance in an appropriate case from the person appointed who may be unable to obtain suitable accommodation.

Application forms, obtainable from the undersigned, must be returned not later than 13th January, 1951.

H. A. EDWARDS,
Town Clerk.

Town Hall, East Ham, E.6.
20th December, 1950. 1539

URBAN DISTRICT COUNCIL OF FELTHAM.
APPOINTMENT OF CHIEF ARCHITECTURAL ASSISTANT (PERMANENT POST).

Applications are invited for the appointment of Chief Architectural Assistant on the established staff of the Engineer and Surveyor's Department, at a salary up to Grade VII of the Administrative, Professional and Technical Division of the National Scales, according to the qualifications and experience of the successful applicant. The Grade VII salary commences at £635 per annum and rises by annual increments of £25 to a maximum of £710 per annum, plus the appropriate London "weighting."

Preference will be given to qualified architects who have had previous experience with a Local Authority. The appointment will be subject to (i) the National Scheme of Conditions of Service, (ii) the provisions of the Local Government Superannuation Acts, and (iii) one month's notice in writing on either side. The successful applicant will be required to pass a medical examination.

Forms of application may be obtained from the undersigned, to whom they must be returned, accompanied by copies of two recent testimonials, not later than 13th January, 1951.

Canvassing will disqualify, and applicants must disclose in writing whether to their knowledge they are related to any member of or the holder of any senior office under the Council.

M. W. COUPE,
Clerk of the Council.

Council Offices, Feltham, Middlesex. 1510

CITY OF STOKE-ON-TRENT.
CITY ARCHITECT'S DEPARTMENT.

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

(*a*) ASSISTANT ARCHITECT. Salary A.P.T., Grade VII, £635-£710.

(*b*) ARCHITECTURAL ASSISTANTS. Salary A.P.T., Grade I, £390-£435.

(*c*) ASSISTANT QUANTITY SURVEYOR. Salary A.P.T., Grade VII, £635-£710.

(*d*) ASSISTANT QUANTITY SURVEYOR. Salary A.P.T., Grade VI, £595-£660.

(*e*) ASSISTANT QUANTITY SURVEYOR. Salary A.P.T., Grade III, £450-£495.

(*f*) MEASURING SURVEYORS. Salary A.P.T., Grade III, £450-£495.

Note.—Suitable housing accommodation can be made available to successful candidates for appointments (*a*), (*c*), (*d*).

Applicants for appointments (*c*) and (*d*) must be qualified Quantity Surveyors, fully experienced in taking off and the preparation of Bills of Quantities.

Applicants for appointment (*e*) must have experience of the Quantity Surveyor's duties on housing schemes and small building contracts.

Applicants for appointment (*f*) must have experience in measuring building work executed on site and the working up incidental thereto.

The selected applicants will be required to pass a medical examination, and the appointments will be subject to the provisions of the Local Government Superannuation Act, 1937.

Applications, giving date of birth, particulars of training, experience, etc., with copies of two recent testimonials, should be received by J. R. Piggott, F.R.I.B.A., City Architect, Kingsway, Stoke-on-Trent, Staffs., endorsed with the title of the appointment applied for, not later than Monday, 8th January, 1951.

HARRY TAYLOR,
Town Clerk.

Town Hall, Stoke-on-Trent.
20th December, 1950. 1508

COUNTY BOROUGH OF MIDDLESBROUGH EDUCATION COMMITTEE.
ASSISTANT ARCHITECTS.

Applications are invited for two posts of Assistant Architect, Grades A.P.T., VII, and A.P.T., V, respectively, in the Education Offices (Education Architect: P. R. Middleton, Dipl. Arch., A.R.I.B.A.). The Committee have a large Building Programme in hand, and the posts offer excellent opportunities in the design and construction of modern school buildings.

Forms of application and conditions of service may be obtained from the Director of Education, Education Offices, Woodlands Road, Middlesbrough, to whom completed forms should be returned, not later than Monday, 22nd January, 1951.

E. C. PARR,
Town Clerk.
1526

MINISTRY OF WORKS.

There are vacancies in the Chief Architect's Division for ARCHITECTURAL ASSISTANTS and LEADING ARCHITECTURAL ASSISTANTS with recognised training and fair experience. Successful candidates will be employed in London and elsewhere on a wide variety of Public Buildings, including Atomic energy and other Research Establishments, Telephone Exchanges, and Housing.

Salary: Architectural Assistants, £300-£525 per annum; Leading Architectural Assistants, £500-£625 per annum. Starting pay will be assessed acording to age, qualifications and experience. These rates are for London; a small deduction is made in the Provinces.

Although these are not established posts, some of them have long term possibilities, and competitions are held periodically to fill established vacancies.

Apply in writing, stating age, nationality, full details of experience and locality preferred, to Chief Architect, W.G.10/BC, Ministry of Works, Abell House, London, S.W.1, quoting reference W.G. 10/BC. 4626

CITY OF OXFORD.
CITY ARCHITECT AND PLANNING OFFICER'S DEPARTMENT.
ASSISTANT ARCHITECT.

Applications are invited from fully qualified Architects for a post on the permanent staff of the City Architect and Planning Officer's Department.

The salary scale will be £520×£15 (2)×£20 (1)—£570 per annum.

Applicants must be Registered Architects, capable of preparing sketch designs, full working drawings, specifications, etc., and competent to undertake educational and general architectural work.

The appointment will be subject to the National Conditions of Service, the Local Government Superannuation Act, 1937, and the successful candidate will be required to pass a medical examination.

Further details of the duties of the post and application forms, which must be used in applying for the post, may be obtained from E. G. Chandler, A.R.I.B.A., A.M.T.P.I., City Architect and Planning Officer, Town Hall, Oxford, and these forms must be returned not later than Saturday, the 20th January, 1951.

HARRY PLOWMAN,
Town Clerk.

The Town Hall, Oxford. 1517

NORTHAMPTONSHIRE COUNTY COUNCIL.
COUNTY ARCHITECT'S DEPARTMENT.

Applications are invited for the following appointments:—

* ASSISTANT ARCHITECT. A.P.T., Grade VI, £595-£660.

Candidates should be Associate or Licentiate Members of the R.I.B.A. They should be experienced in the preparation of designs for all types of buildings and the preparation of working drawings, and should have had some practical office experience.

* BUILDING INSPECTORS. A.P.T., Grade V, £520-£570 (three appointments).

Candidates should have considerable practical experience in the building industry. They should be able to prepare simple drawings for minor internal alterations to existing property, to take all the necessary particulars for the work on the site, and to prepare specifications, both for alterations and minor new works, and for painting, decorating and general maintenance. Candidates should state whether they hold any professional qualifications or trade certificates.

* ENGINEERING ASSISTANT. A.P.T., Grade V, £520-£570.

Candidates should be Associate Members of a professional body (preference will be given to Associate Members of the Institution of Heating and Ventilating Engineers), and must have had considerable experience in the design and preparation of drawings and specifications for, and the maintenance of, modern low-pressure heating and domestic hot water installations and general electric installations for all types of buildings, including schools.

* All the above officers will be required to provide their own cars, for which travelling allowances will be paid in accordance with the County Council's scales and regulations.

ENGINEERING ASSISTANT (HEATING). A.P.T., Grade I, £390-£435.

Candidates should be Graduate Members of the Institution of Heating and Ventilating Engineers, or hold equivalent qualifications, and should have had experience in the design and preparation of drawings and specifications for, and the maintenance of, modern low-pressure heating and domestic hot-water installations and general electric installations for all types of buildings, including schools.

ENGINEERING ASSISTANT (ELECTRICAL). A.P.T., Grade I, £390-£435.

Candidates should be Graduate Members of the Institution of Electrical Engineers, or hold equivalent qualifications, and should have had experience in the preparation of the design and lay-out of electrical installations for schools and dwelling houses. Preference will be given to applicants with drawing office experience.

The County Council have adopted the National Scheme of Conditions of Service for Local Government Officers.

The appointments will be determinable by one month's notice on either side and will be subject to the provisions of the Local Government Superannuation Acts; the selected candidates will be required to pass a medical examination before the appointments are confirmed.

If any of the selected candidates is married, is unable to obtain a house in or near Northampton and is compelled to maintain his family elsewhere, his salary will be temporarily increased by 25s. per week, together with such sum as will reimburse him for the cost of a third-class return railway ticket to his family's home once every two months, his circumstances to be reviewed by the appropriate Committee of the Council every three months.

No forms of application will be issued, but applicants should give particulars of age, qualifications and experience, and should send a copy of one recent testimonial, with the names, status and addresses of two other persons to whom reference can be made, in an envelope endorsed "Staff," to the County Architect, County Hall, Northampton, so as to reach him not later than 10 a.m. on Tuesday, 16th January, 1951.

J. ALAN TURNER,
Clerk of the County Council.

County Hall, Northampton.
22nd December, 1950. 1524

CIVIL SERVICE.

QUANTITY SURVEYORS and ASSISTANT QUANTITY SURVEYORS are required throughout the United Kingdom by the Ministry of Works, Admiralty, War Department, Air Ministry, The War Damage Commission, and occasionally overseas by the Admiralty, Air Ministry and War Department. Although these are not established posts some of them have long term possibilities, and competitions are held periodically to fill established vacancies.

Salaries for these professional posts in London for officers over 26 years of age range from £500 to £750 per annum in lower grades and from £750-£1,000 per annum in the higher grades. They are slightly lower than in the provinces. Salary on entry will be in accordance with age, qualifications and experience.

Vacancies also exist for QUANTITY SURVEYING ASSISTANTS and others having some experience in a quantity surveyor's office, at salaries ranging from £300 per annum upwards.

Applicants should write, quoting ref. J.Q.S., to Room 368, Ministry of Labour and National Service, Technical and Scientific Register, York House, Kingsway, London, W.C.2. 1537

SALOP COUNTY COUNCIL.
COUNTY ARCHITECT'S DEPARTMENT.
APPOINTMENT OF CHIEF ASSISTANT ARCHITECT.

Applications are invited for the appointment of CHIEF ASSISTANT ARCHITECT. The commencing salary will be not higher than the maximum of Grade A.P.T., IX (£900 per annum), but the grading is at present under review and a higher grade is likely to be fixed in the near future.

Applicants must be Members of the R.I.B.A. and have had wide experience in the design and construction of public buildings, particularly schools.

Living accommodation will, if it is desired, be available for the successful applicant.

The appointment will be subject for its termination to three months' notice in writing on either side; to the terms of the National Joint Council's Scheme of Conditions of Service, and to the provisions of the Local Government Superannuation Act, 1937.

The successful applicant will be required to pass a medical examination.

Application forms may be obtained from the County Architect, A. G. Chant, F.R.I.B.A., Column House, London Road, Shrewsbury, to whom they must be returned, accompanied by copies of not more than three recent testimonials, not later than Thursday, 18th January, 1951.

G. C. GODBER,
Clerk of the County Council.

Shrewsbury.
December, 1950. 1518

LONDON COUNTY COUNCIL.
ARCHITECT'S DEPARTMENT.
TOWN PLANNING STAFF.

Applications are invited for positions of TECHNICAL ASSISTANT (scales: (*a*) £440-£580; (*b*) 55s.-167s. 6d.) in the Planning Division of the Architect's Department. Candidates should be trained draughtsmen experienced in lettering and in the preparation and colouring of plans. Application forms from the Architect (AR/EK/P), The County Hall, Westminster Bridge, S.E.1, enclosing stamped addressed foolscap envelope. Canvassing disqualifies. (1193) 864

GOVERNMENT OF NORTHERN IRELAND.
MINISTRY OF FINANCE.
CHIEF ARCHITECT'S BRANCH.
ARCHITECTURAL ASSISTANTS.

Applications are invited for posts of Architectural Assistant in the Ministry of Finance. Appointments will be non-pensionable, but successful candidates will be eligible for consideration for appointment to pensionable posts as vacancies arise. Rates of pay will be fixed in accordance with the experience and qualification of the successful candidates and will be within the range £400-£540.

Qualifications: Candidates must have passed the Intermediate Examination of the Royal Institute of British Architects and have had at least two years' experience in an Architect's drawing office.

Preference will be given to candidates who have served with H.M. Forces in war-time, provided the Ministry is satisfied that such candidates can, or within a reasonable time will be able to, discharge the duties efficiently.

Applications, giving date of birth, full details of training and qualifications, should be sent immediately to the Director of Establishments, Ministry of Finance, Stormont. 1527

CITY AND COUNTY BOROUGH OF GLOUCESTER.
DEPUTY CITY ARCHITECT AND ESTATES MANAGER.

Applications are invited for the above appointment. Salary £750×£30—£930, and National Scheme of Conditions of Service.

Applicants must be Associate Members of the R.I.B.A.

The appointment will be subject to the successful applicant passing a medical examination, to the provisions of the L.G. Superannuation Acts, and to termination by one month's notice on either side.

Applications, stating age and dependants, training, qualifications and experience, and the names of two persons to whom reference may be made, must be received by the undersigned in an endorsed envelope not later than the 18th January, 1951.

L. O. NEED,
Town Clerk.

Guildhall, Gloucester. 1528

LOCAL APPOINTMENTS COMMISSION, DUBLIN.

POSITION VACANT: CHIEF PLANNING ASSISTANT (ARCHITECTURAL), DUBLIN COUNTY COUNCIL.

Application forms and particulars from the Secretary, 45, Upper O'Connell Street, Dublin. Salary: £750×£25—£900, plus temporary bonus of 7½ per cent. Essential qualifications include (*a*) Degree in Architecture or equivalent, (*b*) a qualification in Town Planning, (*c*) practical experience in Town Planning.

Latest time for receiving completed application forms, 5 p.m. on 9th February, 1951. 1515

SHEFFIELD REGIONAL HOSPITAL BOARD.

Applications are invited for the following permanent appointment in the Architectural Division of the Headquarters' Staff of the Board:—

SENIOR ASSISTANT ARCHITECT. Grade A.P.T., VIII (£685×£25—£760 per annum).

Applicants must be Members of the Royal Institute of British Architects and have had experience in the design and construction of Hospitals and be capable of carrying out and advising on large building contracts.

Appointment will be subject to the National Health (Superannuation) Regulations, 1947, and will be terminable by one month's notice. Applications, stating age, qualifications, present position and past experience, together with the names of three referees, should be addressed to the Secretary, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood Road, Sheffield, 10, not later than 31st January, 1951. 1522

ISLE OF ELY COUNTY COUNCIL.
COUNTY ARCHITECT'S DEPARTMENT.

Applications are invited for the under-mentioned appointments on the staff of the County Architect:—

SENIOR QUANTITY SURVEYOR. A.P.T., Grade VIII (£685×£25—£760).

SENIOR ASSISTANT ARCHITECT. A.P.T., Grade VI (£595×£20—£660).

SECOND ASSISTANT ARCHITECT. A.P.T., Grade Va (£550×£20—£610).

ASSISTANT QUANTITY SURVEYOR. A.P.T., Grade III (£450×£15—£495).

The appointments are permanent and are subject to the provisions of the National Scheme of Conditions of Service, the Local Government Superannuation Act, 1937, and to the passing of a medical examination.

Excellent experience is available over the whole field of County Council building administration.

Forms of application may be obtained from the County Architect, County Hall, March, Cambs., and are to be returned not later than Monday, 22nd January, 1951.

R. F. G. THURLOW,
Clerk of the County Council.

County Hall, March.
29th December, 1950. 1559

BURGH OF KILMARNOCK.
BURGH ARCHITECT'S DEPARTMENT.

Applications are invited for the following appointment:—

SENIOR ASSISTANT ARCHITECT. Salary: Grade A.P.T., VI, £595×£20×£20×£25 to £660.

Applicants must be Registered Architects, preferably with a professional qualification and previous Municipal and housing experience.

Applicants must not exceed 45 years of age unless they are already contributory employees under the Local Government and Other Officers' Superannuation (Scotland) Act, 1937, but those who have been on war service may, if necessary, deduct the period of such service from their present age to satisfy the condition as to age limit.

The person selected for appointment will require to pass a medical examination, and on satisfying this condition will become a contributory employee under the above mentioned Act.

If housing accommodation is required this may be made available.

Applications, accompanied by copies of testimonials and giving full details of age, qualifications, experience, and previous appointments held, should be lodged with N. S. Sutherland, Burgh Architect and Town Planning Officer, 64a, Bank Street, Kilmarnock, not later than Wednesday, the 17th January, 1951.

W. L. WALKER,
Town Clerk.

Council Chambers, Kilmarnock.
1st January, 1951. 1557

WESTERN REGIONAL HOSPITAL BOARD (SCOTLAND).

Applications are invited for the following appointments:—

(*a*) ASSISTANT ARCHITECT. Salary range £635-£760.

Candidates must be Associate Members of the R.I.B.A. Hospital experience desirable but not essential.

(*b*) QUANTITY SURVEYOR. Salary range £635-£760.

Candidates must be Associate Members of the R.I.C.S.

Point of entry on the scales will be determined by qualification and experience.

Appointments will be subject to the National Health Service (Scotland) (Superannuation) Regulations, 1948, to the passing of a medical examination, and will be terminable by two months' notice on either side.

Applications, stating age, qualifications, experience and present salary, together with the names of two referees, should be forwarded to the Chief Architect, 64, West Regent Street, Glasgow, C.2, not later than 19th January, 1951. 1560

ABERDEEN HARBOUR COMMISSIONERS.
HARBOUR ENGINEER'S DEPARTMENT.

Applications are invited for the post of ARCHITECTURAL ASSISTANT, in the Harbour Engineer's Office, Aberdeen. Applicants should be under 40 years of age, with experience in structural steelwork, reinforced concrete, and general building design and construction. Preference will be given to candidates with some experience of property procedure and the preparation of reports.

The salary £450-£570, rising by annual increments of £15.

The appointment is subject to the Commissioners' Superannuation Scheme, and the candidate selected will require to pass a medical examination before appointment.

Applications, stating age and qualifications, with full details of experience, together with copies of recent testimonials, should be lodged with the Harbour Engineer, 15, Regent Quay, Aberdeen, not later than 31st January, 1951.

Harbour Engineer's Office, Aberdeen.
30th December, 1950. 1555

CITY OF WESTMINSTER.

Applications are invited for the permanent appointment of ASSISTANT QUANTITY SURVEYOR (Housing Department), A.P.T., Grade IV (£480×£15—£525 per annum), plus London "weighting" (maximum £30 per annum).

Applicants should have had a wide experience in the preparation of specifications and quantities, valuations for payments, on account, measurement of variations and settlement of final accounts.

The appointment is subject to a satisfactory medical report and to the Council's Standing Orders, General Regulations and Superannuation Scheme. Canvassing will disqualify.

Applications (marked "Assistant Quantity Surveyor"), stating full name, address, age, qualifications, present and past appointments and experience, and whether related to any member or chief officer of the Council, with copies of two recent testimonials, must be received by 15th January, 1951.

PARKER MORRIS,
Town Clerk.

Westminster City Hall,
Charing Cross Road, W.C.2. 1547

WEST SUSSEX COUNTY COUNCIL.
COUNTY ARCHITECT'S DEPARTMENT.

Applications are invited for the appointment of a SENIOR ASSISTANT ARCHITECT, at a salary in accordance with Grade VII, A.P.T. Division (£635 to £710 per annum) of the National Scales of Salaries.

Further particulars should be obtained from the County Architect, County Hall, Chichester, to whom detailed applications must be submitted not later than the 19th January, 1951.

T. C. HAYWARD,
Clerk of the County Council.

County Hall, Chichester.
20th December, 1950. 1516

CORK CORPORATION.
APPOINTMENT OF TEMPORARY TOWN PLANNING ASSISTANT.

Applications are invited from duly qualified Architects or Engineers who hold a recognised qualification in Town Planning for above position.

The appointment will be for a period of not less than twelve months. Remuneration will be from £10 to £13 13s. per week; successful candidate may enter scale at a point above the minimum, according to qualifications and experience.

Applications, giving age, particulars of education, professional qualifications and experience, should be addressed to the undersigned, to reach him not later than 30th January, 1951.

PHILIP MONAHAN,
City Manager and Town Clerk.

City Hall, Cork, Eire.
21st December, 1950. 1546

BOROUGH OF SLOUGH.
BOROUGH ENGINEER'S DEPARTMENT.
APPOINTMENT OF ASSISTANT ARCHITECT.

Applications are invited for the permanent appointment of Assistant Architect on Grade A.P.T., V, of the National Scales, at a commencing salary of £520 per annum, rising on satisfactory service by two annual increments of £15 and one of £20 to a maximum of £570 per annum. Applicants must be Registered Architects.

Applicants must give details of age, marital state, qualifications, present and previous appointments, with dates, technical training and experience, whether related to any member or senior officer of the Council, and the names of two architects to whom reference can be made.

The appointment will be subject to: (i) the provisions of the Local Government Superannuation Act, 1937; (ii) the National Scheme of Conditions of Service; (iii) the satisfactory passing of a medical examination by the successful candidate, and (iv) termination by one month's notice on either side.

Applications, in sealed envelope, endorsed "Assistant Architect, Grade V," must reach the undersigned not later than noon on Monday, 22nd January, 1951.

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

Canvassing, directly or indirectly, will disqualify.

NORMAN T. BERRY,
Town Clerk.

Town Hall, Slough.
5th January, 1951. 1544

CWMBRAN DEVELOPMENT CORPORATION (MON.) invites applications for post CHIEF QUANTITY SURVEYOR. Salary range £1,000-£1,150.

Commencing salary within above range, according to qualifications and experience.

Applicants should be members of the Royal Institution of Chartered Surveyors and have a wide experience in the preparation of estimates, specifications, bills of quantities, schedules, adjustment of final accounts and cost analyses. Duties include giving advice on all matters concerning the cost of building works suitable to a New Town of 35,000 population, with particular regard to Housing and Industry.

Successful applicant will work under the direction of J. C. P. West, A.R.I.B.A., A.M.T.P.I., Chief Architect to the Corporation.

Post will be superannuable.

Applications, giving full particulars of age, qualifications and experience, together with the names of two referees, must reach the General Manager, Town Hall, 17, Corn Street Entrance, Newport, on or before 19th January, 1951. 1543

FINSBURY BOROUGH COUNCIL.
SENIOR ARCHITECTURAL ASSISTANT.

Applications are invited for the appointment of Senior Architectural Assistant on the permanent staff.

Applicants should be Registered Architects and have passed the Final Examination of the Royal Institute of British Architects. They should have a sound experience of architectural work, and in particular of the design and construction of Municipal flats. The post is graded on A.P.T., VI, of the National Scales, £596 per annum, rising to £660 per annum, plus "London weighting" (£20-£30).

The successful applicant will be required to pass a medical examination and contribute to the Council's Superannuation Fund, and conform to the National Conditions of Service.

Applications, stating age, experience and qualifications, and accompanied by copies of three recent testimonials, must be received by me not later than 19th January, 1951.

JOHN E. FISHWICK,
Town Clerk.

Finsbury Town Hall,
Rosebery Avenue, E.C.1. 1545

Partnership

6 lines or under, 12s. 6d.; each additional line, 2s.

OFFICIAL ARCHITECT, principal, A.R.I.B.A., aged 37, present salary £960-£1,000, looks for Partnership or other opening in private practice as the only satisfactory way of following his profession. Midlands preferred. Box 1562.

Tenders for Contracts

6 lines or under, 12s. 6d.; each additional line, 2s.

DURHAM COUNTY COUNCIL.
EDUCATION COMMITTEE.

The Education Committee are prepared to receive sole Tenders from Builders and Contractors for the following works:—

Birtley Brown's Buildings County Primary School—Erection.

Hartlepool West View County Primary School—Erection.

Applications for the Forms of Tender and Bills of Quantities are to be sent to the County Architect's Office, Court Lane, Durham, not later than the 31st January, 1951.

No pledge is given to accept the lowest or any tender.

G. R. CLAYTON, F.R.I.B.A.,
County Architect.

Court Lane, Durham.
20th December, 1950. 1523

Architectural Appointments Vacant

4 lines or under, 7s. 6d.; each additional line, 2s.

OLD-ESTABLISHED Firm of Consulting Civil Engineers have a number of vacancies for ARCHITECTURAL ASSISTANTS and DRAUGHTSMEN for general building work in connection with Generating Stations and a variety of industrial construction. Positions are of a

permanent character, and opportunities for individual ability and initiative will be provided. A full scale Superannuation Scheme is in operation. Salaries will in the first place be in accordance with experience and qualifications, but will be under constant review for adjustment in accordance with proved ability. The majority of applicants will be interviewed, when full details of the character of the work will be explained. Travelling expenses, etc., for interviews will be refunded. Applicants are asked to send full details of experience, etc., and approximate salary required, to C. S. Allott & Son, North Parade, St. Mary's Parsonage, Manchester, 3. 1433

REQUIRED immediately ARCHITECTURAL ASSISTANTS, not less than Inter. R.I.B.A. standard, on work of general and interesting character. Must have good knowledge of construction. Should be neat Draughtsmen. Salary by arrangement. Ernest Bates & Wm. G. Sinning, 89, Chancery Lane, London, W.C.2. Holborn 5136. 1471

ARCHITECTURAL DRAUGHTSMAN required, with a sound knowledge of building construction and design, and capable of working with minimum supervision. Salary £500-£600, according to ability and experience. Write with full particulars to Box 3863, c/o Charles Barker & Sons, Ltd., 31, Budge Row, London, E.C.4. 1519

THE CO-OPERATIVE WHOLESALE SOCIETY, LTD., invite applications for the following appointments on the staff of the Manchester Architect's Department :—

ASSISTANT ARCHITECTS. Salary £550-£650 per annum, according to ability. Applicants, who must have had practical office experience, are required to have a sound knowledge of building construction and be able to produce working drawing and details from sketch plans. Experience in the design and planning of modern industrial and commercial buildings will be considered an advantage.

The above appointments are permanent and offer prospects of advancement. Successful candidates will be required to undergo a medical examination for entry into a compulsory superannuation scheme.

Applications, stating age, experience and qualifications, to be addressed to the Chief Architect, Co-operative Wholesale Society, Ltd., 1, Balloon Street, Manchester. 1495

ASSISTANT required for Architect's office in London (City), preferably of Inter. R.I.B.A. standard. Hours 9 to 5. Must be keen. Write, stating experience, etc., to Box 1542.

ARCHITECTURAL ASSISTANTS, qualified or intermediate, required for varied work in private Architects' London office. Box 1520.

SENIOR ASSISTANT required by Sir John Burnet, Tait & Partners, to begin duties in the New Year. Applicant must be fully experienced in the preparation of working drawings for multi-storey buildings. Apply in writing, stating experience and salary required, to 10, Bedford Square, London, W.C.1. 1514

ASSISTANT ARCHITECT, with experience, required for Architect's office in Inverness. State age, experience and salary required to Box 1513.

SENIOR ARCHITECTURAL ASSISTANTS. APPLICATIONS are invited for the appointment of Two Senior Architectural Assistants in the office of the Architect, North-Eastern Region, British Railways, at York.

Applicants should be Registered Architects and Associates of R.I.B.A. Good contemporary designers, knowledge of Modern Building technique, and able to take responsibility for day to day major contracts. The Department is engaged upon the design and construction of industrial, commercial and domestic buildings, offers varied and interesting work and scope for initiative.

Commencing salary range £600-£630 per annum, according to qualifications and experience.

Apply, giving full particulars, to Staff Section, Civil Engineer's Office, N.E. Region, British Railways, York. 1525

ARCHITECTURAL ASSISTANT wanted. Salary in accordance with Whitley Council Scales for Health Service employees—A.P.T., V (£220 to £570 per annum). Applications, with particulars of qualifications and experience, and names of two referees, should be lodged by 15th January, 1951, with the Secretary, Northern Regional Hospital Board, Raigmore Hospital, Inverness. 1531

SENIOR ARCHITECTURAL ASSISTANT required immediately in busy and varied practice in the southern area of Yorkshire. Final R.I.B.A. essential and some office experience desirable. Salary according to R.I.B.A. scales as a minimum, and to qualifications and experience. Pension scheme in operation. Apply with full particulars. Box 1532.

JUNIOR ARCHITECTURAL ASSISTANT required immediately in busy and varied practice in the southern area of Yorkshire. Intermediate R.I.B.A. qualification desirable and a minimum of two years' office experience. Salary in accordance with R.I.B.A. scales as a minimum and to qualifications and experience. Pension Scheme in operation. Apply with full particulars. Box 1533.

EXPERIENCED SENIOR ARCHITECTURAL ASSISTANT required. Knowledge of design and construction of large scale and important work. Give full particulars. J. R. Boyd Barrett, A.R.I.B.A., F.R.I.A.I., 5, Camden Place, Cork, Eire. 1534

ARCHITECT'S ASSISTANT, with good general experience, required in Taunton or Minehead, Somerset; interesting new buildings, hospital works, housing schemes, ecclesiastical and domestic work. Good prospects for enterprising man. Apply Box 1553.

ARCHITECT required for South London office. Write, stating age, qualifications and salary required, to Box 1561.

ARCHITECTURAL ASSISTANTS (two wanted). These posts offer good salaries and prospects to applicants with sound knowledge of Industrial Building Construction, and preference will be given to those with additional experience in surveying and levelling and preparation of Builders Quantities. Pension Fund. Applications by not later than 26th January to Bleachers' Association, Ltd., Engineer's Department, Blackfriars House, Parsonage, Manchester, 3. 1558

NAIROBI.—Applications invited from experienced qualified Architects for following posts :—

(*a*) SENIOR ASSISTANT. £750×£100—£950 p.a., plus bonus. Age 35 to 40. Ref. : OSS/15/1.

(*b*) SENIOR ASSISTANT. £810×£30—£870 p.a. Ref. : OSS/10/3.

Fare out on repayment, free return fare or bonus on satisfactory conclusion of 3 years' service. Preference single men, prepared fly out. Write, giving full particulars, to Overseas Architects' Service, 5, Welldon Crescent, Harrow. 1550

ARCHITECTURAL ASSISTANT required immediately for busy general practice, including Hospital, Industrial and Housing work. Must be able to carry out small works, including supervision and prepare surveys. Write, stating age, experience, and salary required, etc., to Laurence J. Selby, A.R.I.B.A., 79, High Street, Southend-on-Sea. 1549

Architectural Appointments Wanted

LANDSCAPE ARCHITECT (27) requires post in progressive office in or near London. Box 1541.

ARCHITECTURAL ASSISTANT, capable all working drawings, requires position London. Box 54.

AN appointment is required by Qualified ARCHITECTURAL ASSISTANT (26) in small progressive London office, with contemporary bias. Box 53.

EXPERIENCED SENIOR ASSISTANT (36), school trained, seeks progressive position in London office. Box 50.

A. R.I.B.A., Dip.Arch.(Liv.), 5 years' experience. Returning to England after 3 years in the U.S.A. engaged on schools, houses, and stores. Desires responsible position in Liverpool area, with prospects. Contemporary outlook essential. Please state approximate salary. Box 52.

A. R.I.B.A. Student, T.P.I., 16 years' office experience, requires position with practical T.P. experience. Box 51.

ARCHITECTURAL ASSISTANT seeks work, London area. Capable all working drawings. Box 57.

ARCHITECT'S ASSISTANT, Inter. Final standard, several years varied experience with West End and Westminster architects, requires progressive position in small office (West End or N. London preferred). Present salary £420 per annum. Box 55.

ARCHITECTURAL ASSISTANT (25), school trained. Result Final R.I.B.A. pending. Available for post West End, Central or S.W. district. Interested contemporary design, especially shops. Ability perspectives and impressions in several media. Box 56.

Other Appointments Vacant

4 lines or under, 7s. 6d.; each additional line, 2s.

WANTED. — QUANTITY SURVEYOR'S ASSISTANT, capable of assisting in Taking Off, Abstracting, Billing, also settling final accounts. Salary according to experience. Gotch, Saunders & Surridge, Chartered Architects, Bank Chambers, Kettering. Telephone 3165/6. 1530

THE CO-OPERATIVE WHOLESALE SOCIETY, LTD., invite application for the following appointment on the staff of the Manchester Architect's Department:—

ASSISTANT QUANTITY SURVEYOR. Salary range £510-£650, according to ability. Applicants must have a sound experience in the preparation of Bills of Quantities, measuring and adjusting variations for large commercial buildings, and able to undertake work with a minimum of supervision.

The above appointment is permanent and offers prospects of upgrading to a competent Assistant. The successful candidate will be required to undergo a medical examination for entry into compulsory Superannuation Scheme.

Applications, stating age, experience, qualifications, and the commencing salary required, to be addressed to the Chief Architect, Co-operative Wholesale Society, Ltd., 1, Balloon Street, Manchester. 1512

Services Offered

4 lines or under, 7s. 6d.; each additional line, 2s.

ARCHITECTURAL MODELS and Dioramas. Edward J. Ashenden, A.R.C.A., 15, Chenil Studios, 183, Kings Road, S.W.3. Tel.: Flax 6103. 2566

FULL-TIME Architectural assistance offered. Sketches, Working Drawings, Surveys, Levels. Moderate fees. Hahn & Edwards, 5, Station Parade, Elmers End, Beckenham, Kent. BEC. 1277. 1456

WINSTON WALKER, A.A.Dipl., F.R.I.B.A., Dipl.T.P., will be pleased to execute a limited number of Perspective Drawings for submission Royal Academy, 1951. Prices from 20 gns. For a small fee advice given on size of drawings, technique, viewpoint, etc., to Architects preparing own works for submission. 107, Sloane Street, S.W.1. SLOane 1410. 1387

FRAMING AND MOUNTING of Drawings and Plans is a special service offered to Architects by The Rowley Gallery, Ltd., 87, Campden Street, Kensington Church Street, W.8. Park 4349. 3000

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PERMANENT OR TEMPORARY PARTITIONS—FREE OF LICENCE.

FOR DISPOSAL at highly competitive price. Large quantity Interlocking Partition Panels. Size: 3 ft. 6 in by 1 ft. 11 in. by 2⅜ in. timber framed, faced both sides.

Easily handled, rapidly erected and dismantled. Suitable for partitions, cubicles, storage divisions, etc. Available in quantities 100 upwards. Quotation for fixing and decorating (London area only) if required.

Further details and prices of this special offer from: Flush Woodwork, Ltd., 76/78, High Street South, London, E.6. Telephone: GRA. 0123 (5 lines). 1529

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A. J. BINNS, LTD., Specialists in the supply and fixing of all types of Fencing, Gates and Cloakroom Equipment. Harvest Works, 99-107, St. Paul's Road, N.1. Canonbury 2061.

CHARTERED SURVEYORS, close Westminster Bridge, have small suite of Offices to Let on First Floor of their building. Approx. 400 ft. Rent £225 p.a. inclusive. Box 1556.

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