THE ARCHITECTS' JOURNAL

No. 2546] [VOL. 98
THE ARCHITECTURAL PRESS, War Address: Forty-five The Avenue, Cheam, Surrey. Phone: Vigilant 0087-9

Price 9d.
Registered as a Newspaper

★ The war has both multiplied the number of Official Departments and encouraged Societies and Committees of all kinds to become more vocal. The result is a growing output of official and group propaganda. A glossary of abbreviations is now provided below, together with the full address and telephone number of the organizations concerned. In all cases where the town is not mentioned the word LONDON is implicit in the address.

AA	Architectural Association. 34/6, Bedford Square, W.C.1.	Museum 0974.
ABT	Association of Building Technicians. 5, Ashley Place, S.W.1.	Victoria 0447-8.
APRR	Association for Planning and Regional Reconstruction. 32, Gordon Square, W.C.1.	Euston 2158-9.
ARCUK	Architects' Registration Council. 68, Portland Place, W.1.	Welbeck 9738.
ASB	Architectural Science Board of the Royal Institute of British Architects, 66, Portland Place, W.1.	Welbeck 6927.
BC	Building Centre. 23, Maddox Street, W.1.	Mayfair 2128.
BDA	British Door Association, Shobnall Road, Burton-on-Trent.	Burton-on-Trent 3350.
BIAE	British Institute of Adult Education. 29, Tavistock Square, W.C.1.	Euston 5385.
BINC	Building Industries National Council. 110, Bickenhall Mansions, W.1.	Welbeck 3335.
BOE	Board of Education. Belgrave Square, S.W.1.	Sloane 4522.
BOT	Board of Trade. Millbank, S.W.1.	Whitehall 5140.
BRS	Building Research Station. Bucknalls Lane, Watford.	Garston 2246.
BSA	British Steelwork Association. 11, Tothill Street, S.W.1.	Whitehall 5073.
BSI	British Standards Institution. 28, Victoria Street, S.W.1.	Abbey 3333.
CCA	Cement and Concrete Association. 52, Grosvenor Gardens, S.W.1.	Sloane 5255.
CEMA	Council for the Encouragement of Music and the Arts. 9, Belgrave Square, S.W. 1.	Sloane 0421.
CPRE	Council for the Preservation of Rural England. 4, Hobart Place, S.W.	Sloane 4280.
CSI	Chartered Surveyors' Institution. 12, Great George Street, S.W.1.	Whitehall 5322.
DIA	Design and Industries Association. Central Institute of Art and Design, National Gallery, W.C.2.	Whitehall 7618.
DOT	Department of Overseas Trade. Dolphin Square, S.W.1.	Victoria 4477
EJMA	English Joinery Manufacturers Association (Incorporated), Sackville House, 40, Piccadilly, W.1.	Regent 4448.
FMB	Federation of Master Builders. 23, Compton Terrace, Upper Street, N.1.	Canonbury 2041.
GG	Georgian Group. 55, Great Ormond Street, W.C.1.	Holborn 2664.
HC	Housing Centre. 13, Suffolk Street, Pall Mall, S.W.1.	Whitehall 2881.
IAAS	Incorporated Association of Architects and Surveyors. 75, Eaton Place, S.W.1.	Sloane 3158.
ICE	Institution of Civil Engineers. Great George Street, S.W.1.	Whitehall 4577.
IEE	Institution of Electrical Engineers, Savoy Place, W.C.2.	Temple Bar 7676.
IOB	Institute of Builders. 48, Bedford Square, W.C.1.	Museum 7197.
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 7128-29.
ISPH	Committee for the Industrial and Scientific Provision of Housing. 3, Albemarle Street, W.1.	Regent 4782-3.
LIDC	Lead Industries Development Council. Rex House, King William Street, E.C.4.	Mansion House 2855.
LMBA	London Master Builders' Association. 47, Bedford Square, W.C.1.	Museum 3767.
MARS	Modern Architectural Research. 8, Clarges Street, W.1.	Grosvenor 2652.
MOA	Ministry of Agriculture and Fisheries, 55, Whitehall, S.W.1.	Whitehall 3400.
MOH	Ministry of Health. Whitehall, S.W.1.	Whitehall 4300.
MOI	Ministry of Information. Malet Street, W.C.1.	Euston 4321.
MOLNS	Ministry of Labour and National Service. St. James' 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.	Abbey 7711.
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.
NBR	National Buildings Record. 66, Portland Place, W.1. All Souls' College, Oxford.	Welbeck 1881. Oxford 48809.
NFBTE	National Federation of Building Trades Employers. 82, New Cavendish Street, W.1.	Langham 4041.
NFBTO	National Federation of Building Trades Operatives. 9, Rugby Chambers, Rugby Street, W.C.1.	Holborn 2770.
NT	National Trust for Places of Historic Interest or Natural Beauty. 7, Buckingham Palace Gardens, S.W.1.	Sloane 5808.
PEP	Political and Economic Planning. 16, Queen Anne's Gate, S.W.1.	Whitehall 7245.
PWB	Post War Building, Directorate of. Ministry of Works, Lambeth Bridge House S.E.1.	Reliance 7611.
RC	Reconstruction Committee RIBA. 66, Portland Place, W.1.	Welbeck 6927.
RCA	Reinforced Concrete Association. 91, Petty France, S.W.1.	Whitehall 9936.
RIBA	Royal Institute of British Architects. 66, Portland Place, W.1.	Welbeck 5721.
RS	Royal Society. Burlington House, Piccadilly, W.1.	Regent 3335.
RSA	Royal Society of Arts. 6, John Adam Street, W.C.2.	Temple Bar 8274.
SPAB	Society for the Protection of Ancient Buildings. 55, Great Ormond Street, W.C.1.	Holborn 2646.
TCPA	Town and Country Planning Association. 13, Suffolk Street, S.W.1.	Whitehall 2881.
TDA	Timber Development Association. 75, Cannon Street, E.C.4.	City 6147.
TPI	Town Planning Institute. 11, Arundel Street, Strand, W.C.2.	Temple Bar 4985.

D,

.I

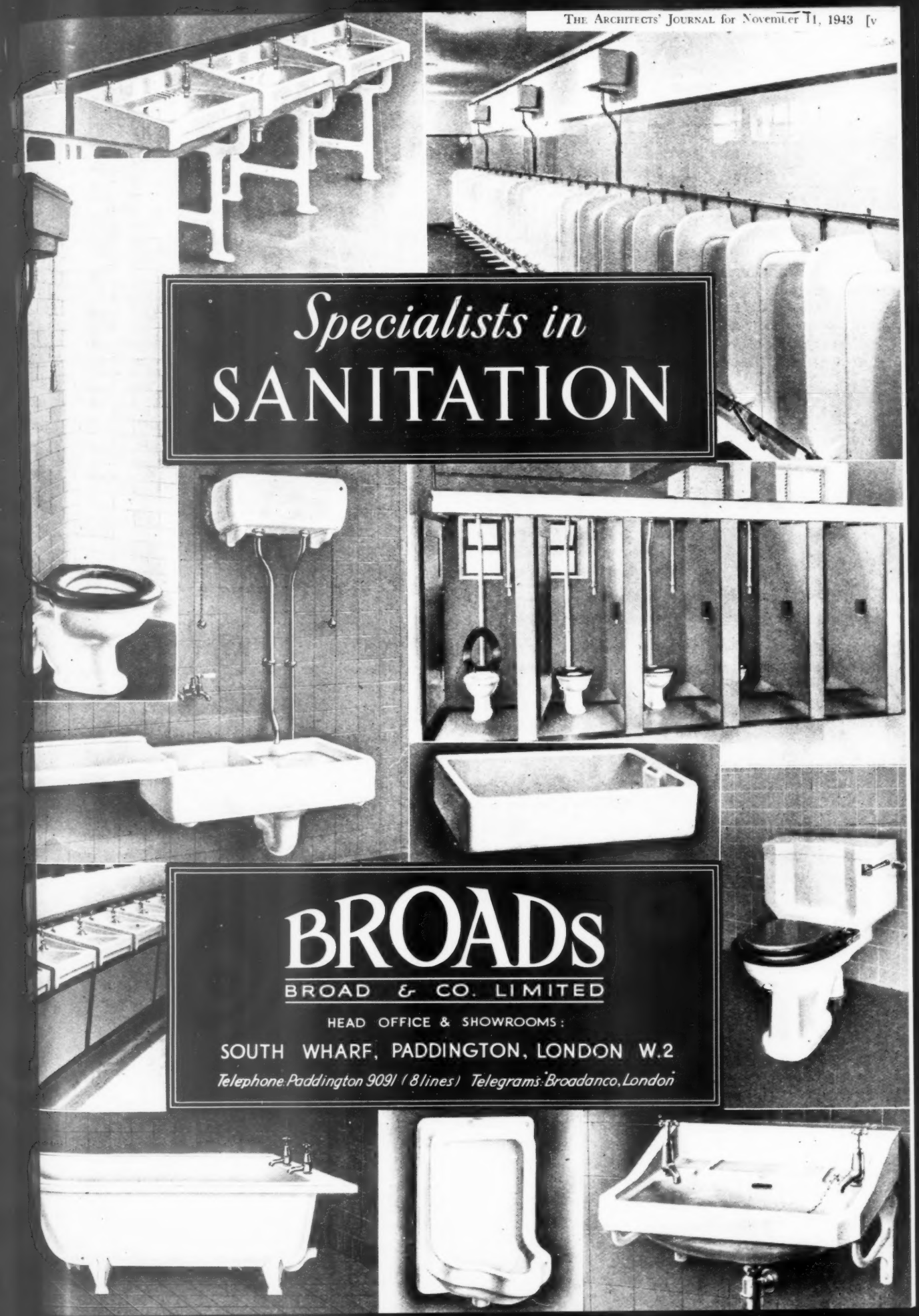
X.

ec).

II."

Alphabetical Index to Advertisers

For Appointments (Wanted or Vacant), Competitions Open, Drawings, Tracings, etc., Educational
Legal Notices, Miscellaneous, Property and Land Sales—*see* pages xxxii and xxxiv.


Specialists in
SANITATION
BROADS
BROAD & CO. LIMITED
HEAD OFFICE & SHOWROOMS:
SOUTH WHARF, PADDINGTON, LONDON W.2
Telephone: Paddington 9091 (8 lines) Telegrams: Broadanco, London

for every storage need there's a . . .

Braithwaite Pressed Steel Tanks are in use all over the World. Built up from standard unit sections, they can be erected at ground level or on supporting structures to suit any site however restricted or difficult of access. For further details you are invited to apply for a copy of the latest Braithwaite Pressed Steel Tank Brochure.

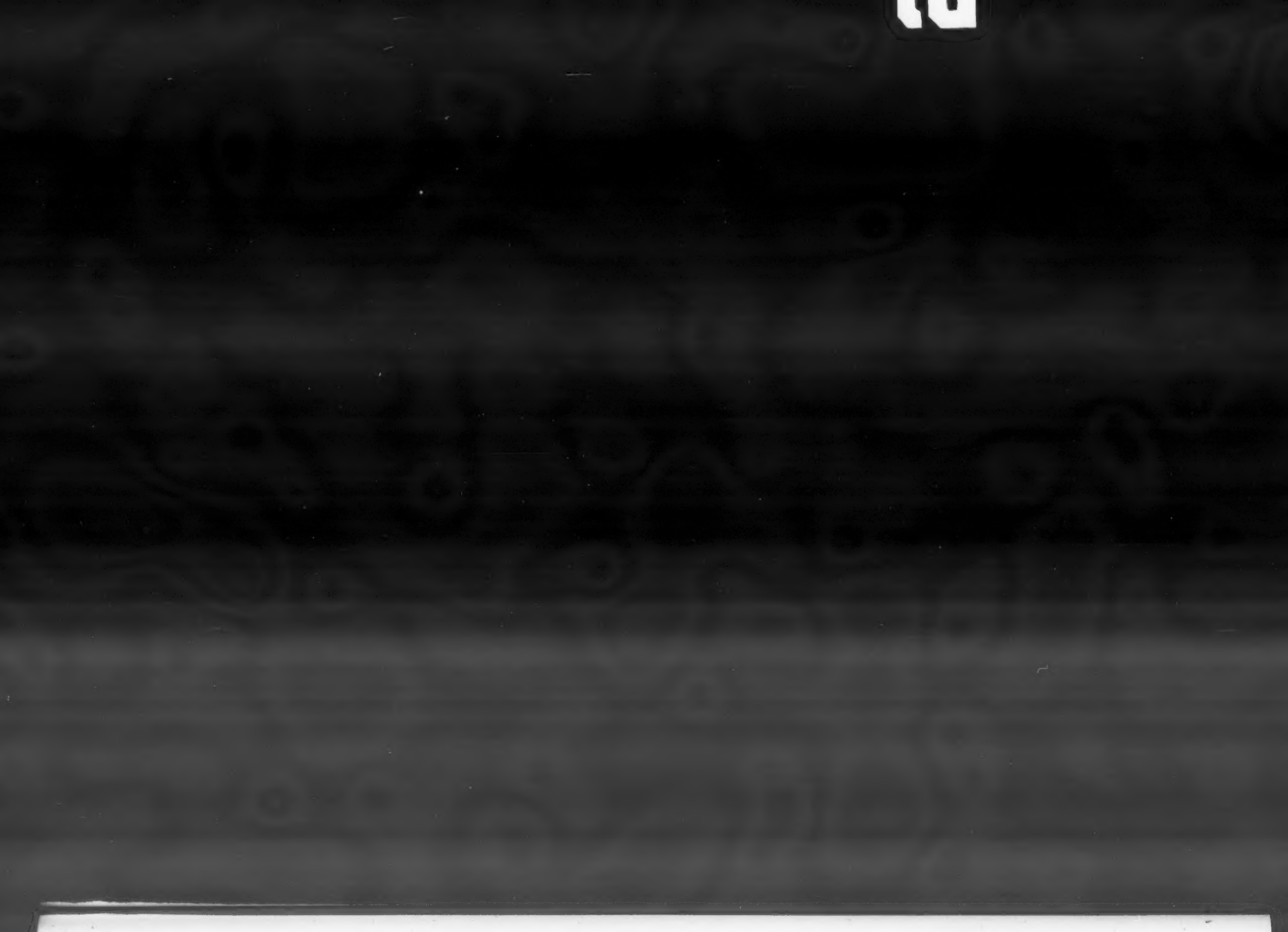
BRAITHWAITE

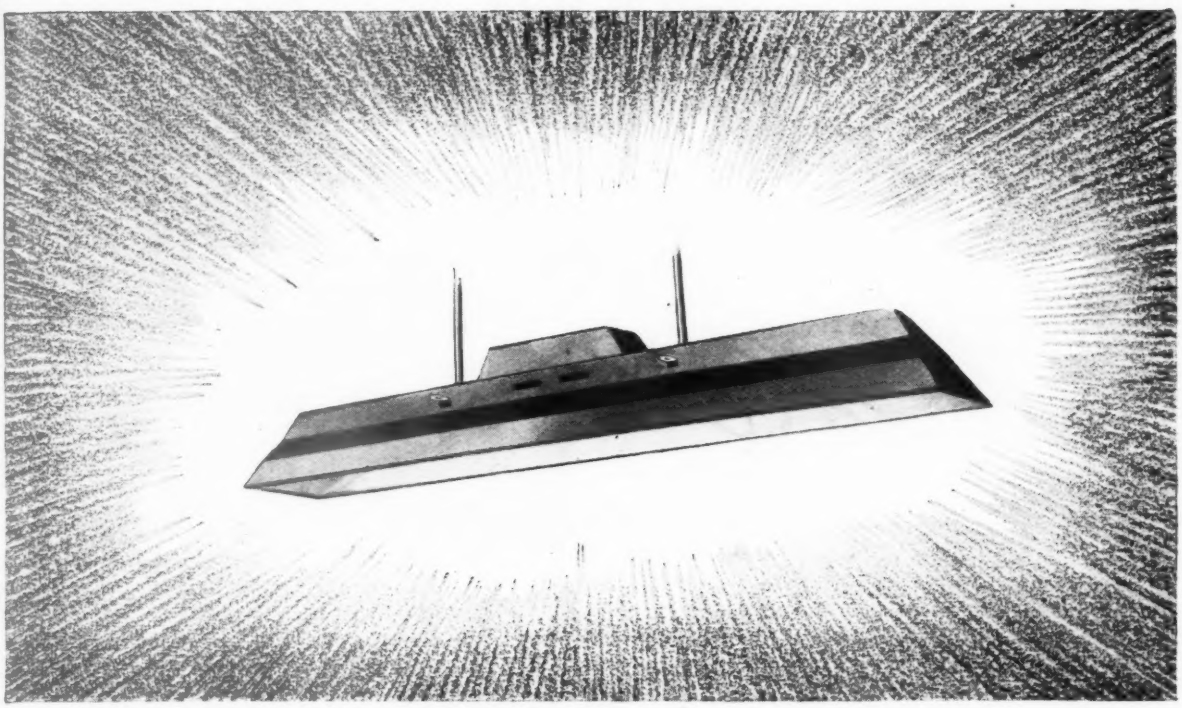
PRESSED STEEL TANK

BRAITHWAITE & CO. ENGINEERS LTD. 35 KINGS HOUSE, HAYMARKET, LONDON, S.W.1

Telephone: Whitehall 3993

B





WE DESIGNED
THE FLUROLIER (REGD.)

We designed the Flurolier to provide the best available unit for use with fluorescent tubular lamps in accordance with Benjamin practice. We made it easy to erect on either chain or conduit with no weight to support when connecting the leads, we made the reflector detachable without disturbing the wiring, we included covers for the ends of the lamps and made it of heavy gauge metal. The enamel is the result of many laboratory tests. The Flurolier is the finest fluorescent tubular lighting unit.

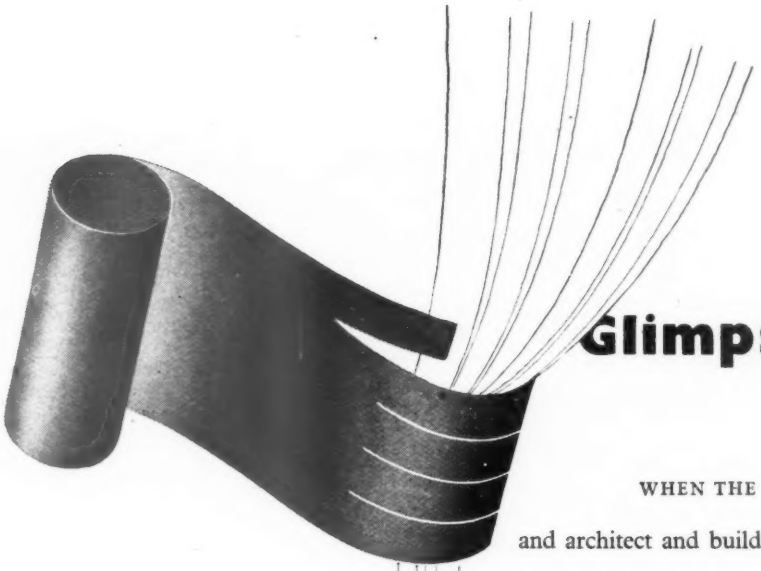
BENJAMIN LIGHTING

FLUORESCENT — DISCHARGE — FILAMENT

The Benjamin Electric Ltd., Brantwood Works, Tottenham, London, N.17

Telegrams: "Benjalect, Southtot, London" Telephone: Tottenham 5252 (5 lines)

1182



Glimpse ahead

WHEN THE New Renaissance starts, and architect and builder begin to re-fashion the old and bad into the new and better, they will still be facing one undiminished enemy: *damp* . . . IBECO waterproof kraft paper will come into its own then! For wherever moisture must be disciplined — kept in or kept out — IBECO does the job simply, inexpensively, thoroughly. Already widely used as an underlay for concrete where porosity of subsoil is suspected IBECO is equally valuable as a "damp course" under wood-block floors, as a liner for wooden walls and roofs, as a sarking under slates or tiles, as a mould-liner for precast concrete shapes. IBECO'S waterproof properties are *part of the paper* itself — not a superimposed finish which may crack with handling or folding. Five weights are available for a wide variety of building and constructional purposes. May we send you full details and samples for future reference?

IBECO **WATERPROOF KRAFT PAPER**

C. DAVIDSON & SONS LTD (DEPT K.22): MUGIE MOSS, BUCKSBURN ABERDEEN

CITIES THAT BREATHE FRESH CLEAN AIR

ONE OF THE BIG THINGS

Whether the planned city of the future will be Corbusier-like or based upon a more homely model, one thing is certain: there will be a big call for improved conditions in home, public building, office and workshop.

Fortunately, the engineer can now offer control of air temperature, humidity, cleanliness and circulation in centralised or unitary, complete or partial systems to suit the whole needs of human comfort or industrial necessity.

Pre-eminent in this planning will be the "Brightside" organisation, with all their experience of conditioned comfort and industrial requirements.

BRIGHTSIDE *Conditioned* COMFORT

HEATING · PIPING · AIR CONDITIONING

THE BRIGHTSIDE FOUNDRY & ENGINEERING COMPANY LTD

Head Office: SHEFFIELD, and BIRMINGHAM, BRISTOL, LIVERPOOL, LONDON, NEWCASTLE, PORTSMOUTH, EDINBURGH, GLASGOW, BELFAST

CC.3.

The last 'General' horse bus leaving London Bridge station for Moorgate, October 25, 1911.

WHEN WE WERE YOUNG

Time could no longer wait for the horses, it was marching quickly on to a new era. It is significant that Cellon should be founded in that year, Cellon that was to become so closely associated with the progressive and new industries. As we look back over those thirty odd years we see how close are the parallel lines of Cellon's development and the trend of industrial progress. It is true to say that each has helped the other.

CELLON LTD., KINGSTON-ON-THAMES. TELEPHONE: KINGSTON 1234 (5 lines).

The perfect finish

CELLON

CELLON
CERRIC CERRUX

CVS-518

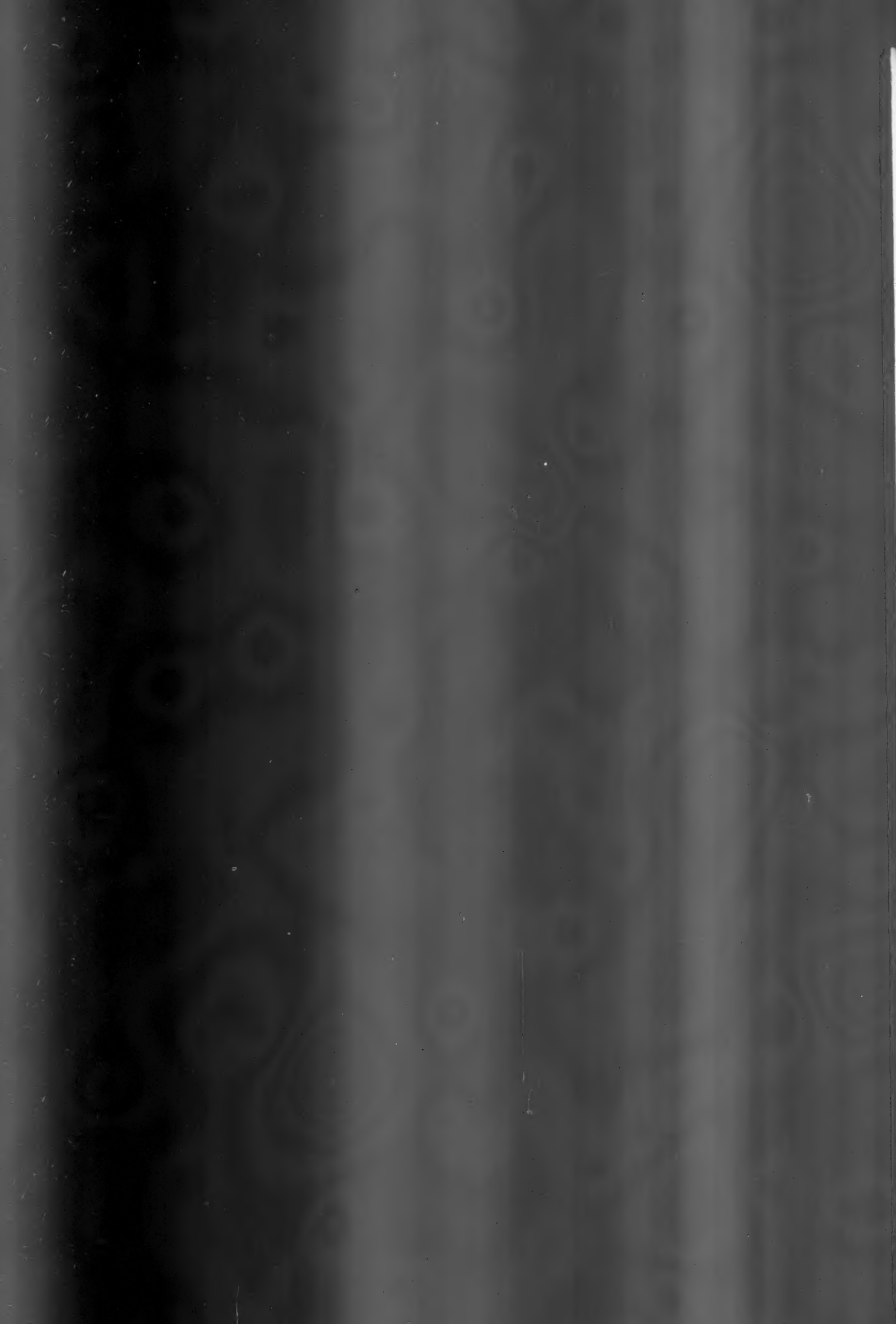
A RUSSIAN VISTA

Russian in their vast size of these facades of old St. Petersburg — only the wealthiest of autocrats could build on so fantastic a scale. In all else these buildings speak of Europe — reaching back through France and Italy to classical origins. They represent the marriage of Russia and Europe for which Peter the Great founded his planned city on the Neva. In their easy reconciliation of poise and grace with enormous scale, they have a living message for today—and tomorrow ! A vast building programme will be part of the post-war picture . . . and will no doubt have a big place for Celotex insulating and wall board.

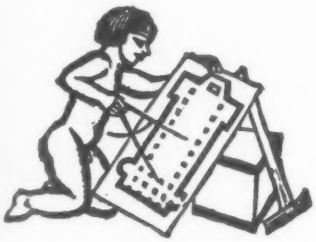
CELOTEX
makers of Insulating board, Wall boards and Acoustic tiles

CELOTEX LIMITED · NORTH CIRCULAR ROAD · STONEBRIDGE PARK · LONDON · N.W.10

d!
y,
d.
rs.



In common with every other periodical this JOURNAL *is rationed to a small part of its peacetime needs of paper. Thus a balance has to be struck between circulation and number of pages. We regret that unless a reader is a subscriber we cannot guarantee that he will get a copy of the* JOURNAL. *Newsagents now cannot supply the* JOURNAL *except to a "firm order." Subscription rates: by post in the U.K. or abroad, £1 15s. 0d. per annum. Single copies, 9d.; post free, 11d. Special numbers are included in subscription; single copies, 1s. 6d.; post free, 1s. 9d. Back numbers more than 12 months old (when available), double price. Volumes can be bound complete with index, in cloth cases, for 15s. each; carriage 1s. extra. Goods advertised in the* JOURNAL, *and made of raw materials now in short supply, are not necessarily available for export.*



DIARY FOR NOVEMBER AND DECEMBER

Titles of exhibitions, lectures and papers are printed in italics. In the case of papers and lectures the authors' names come first. Sponsors are represented by their initials as given in the glossary of abbreviations on the front cover.

CARDIFF. *Rebuilding Britain Exhibition.* (Sponsor, RIBA.) DEC. 20 to JAN. 17

CHELTENHAM. *Town and Country Planning Association Conference.* Speakers: Roy Hughes, Gordon Payne and A. G. Streater. Nov. 20

DUNDEE. *Rebuilding Britain Exhibition.* At the Victoria Art Galleries. Nov. 11 to 22

ISLE OF ARRAN. *Twenty Women at Home Exhibition.* (Sponsor, HC.) Nov. 15 to 29

KINGSTON-UPON-THAMES. *Exhibition of Nursery Schools and War-time Nursery Work.* At Bentall's Store. The exhibition has been organized by the Nursery School Association of Great Britain (Kingston Branch) in co-operation with Mr. Gerald C. Bentall. The aim is to give as complete a picture as possible of all forms of nursery activity. Films of nursery life will be shown, and each afternoon addresses will be given by experts on various aspects of child welfare. Photographs cover every phase of nursery activity. Nursery furniture and equipment, toys and models are also on view. Nursery material loaned by the Board of Education and the Ministry of Health and the Ministry of Information has assisted on the pictorial side. Nov. 11 to 13

LONDON. H. Alker Tripp. *Town Planning and Road Traffic Problems.* At Abercorn Rooms. Great Eastern Hotel. (Sponsor, TCPI.) 12.30 p.m. Nov. 19

BBC Broadcast on London Tomorrow. The County of London Plan will be criticized and defended by an architect, a planner and an economist. (see page 347). 9.25 p.m. Nov. 16

Prefabrication and Kindred Problems. The Westminster Branch of the ABT has arranged a further series of lectures on new building technique. The lectures will be given at 6.30 p.m. on the following dates, at the Alliance Hall, Palmer Street, Westminster, S.W.1. November 12: *Aluminium and the Light Alloys.* November 19: *Governmental Work on New Building Techniques.* November 26: *Some Problems of Prefabrication.* Enrolment fee, 5/- for the series; 2/- for single lectures. 50 per cent. reduction for members of the ABT, and for members of trade unions affiliated to the NFBTO. A series of booklets based on the first series of lectures is now in preparation. These will be published shortly, complete with additional information, illustrations and bibliographies. Nov. 11—26

County of London Plan Exhibition. At the Royal Academy, Burlington House, Piccadilly, W. The exhibition consists of large-scale maps and drawings illustrating the County of London Plan, prepared for the LCC by J. H. Forshaw, the Council's Architect, in association with Professor Patrick Abercrombie. The Council now awaits the views of MOTCP and MOT, and of the other Government departments and public authorities and public utility undertakings concerned, and will consider the Plan further when these views have been received. The Council is also anxious to obtain the views of the general public, particularly of Londoners. Open 10 a.m. to 5 p.m. weekdays, 2 p.m. to 5 p.m. Sundays, admission free. During the exhibition, talks will be given by the following speakers. All the talks will be at 3 p.m.: Nov. 15, W. R. Davidge; Nov. 17, W. H. Ansell; Nov. 25, L. St. G. Wilkinson, Borough Engineer and Surveyor, County Borough of Wallasey, and President of the Institution of Municipal and County Engineers. (See page 347). Nov. 11 to 28

Walter O. Hudson. *Architects' Registration Acts, 1931-38.* At 29, Lincoln's Inn Fields, W.C.2. (Sponsor, Institute of Registered Architects.) 2.15 p.m. Nov. 20

John A. F. Watson. *Housing and the Child.* At Queen Mary Hall, Great Russell Street, W.C.1. 2.30 p.m. (Sponsor, Society of Women House Managers.) Nov. 20

W. A. Robertson. *Timber: The New Outlook.* At Royal Society of Arts, John Adam Street, W.C.2. 1.45 p.m. Nov. 22

H. A. Cox. *Timber, Uses New and Old.* At Royal Society of Arts, John Adam Street, W.C.2. 1.45 p.m. Nov. 29

W. A. Robertson. *Timber, the Minor Products.* At Royal Society of Arts, John Adam Street, W.C.2. 1.45 p.m. DEC. 6

Motorways for Britain Exhibition. At 22, Lower Regent Street, W.1. (Sponsor, British Road Federation.) DEC. 9-24

Charles Gandy. *Town Planning and Clean Air.* At 1, Grosvenor Place, S.W.1. (Sponsor, TCPA). Nov. 25

Film Evening. Films selected by Paul Rotha, who will give an informal talk. At 34-36, Bedford Square, W.C.1. 6 p.m. (Sponsor AA). DEC. 14

SWANSEA. *Rebuilding Britain Exhibition.* (Sponsor, RIBA.) Nov. 11 to DEC. 11

UXBRIDGE. Films: *Rehousing in Britain and Rural Conditioning.* (Sponsor, HC.) Nov. 14 to 21

NEWS

THURSDAY, NOVEMBER 11, 1943
No. 2546. VOL. 98

Though no feature in the JOURNAL *is without value for someone, there are often good reasons why certain news calls for special emphasis. The* JOURNAL'S *starring system is designed to give this emphasis, but without prejudice to the unstarred items which are often no less important.*

★ *means spare a second for this it will probably be worth it.*

★★ *means important news, for reasons which may or may not be obvious.*

Any feature marked with more than two stars is very big building news indeed.

NT is inviting COMPETITIVE DESIGNS FOR COTTAGES at High Wycombe, Bucks.

In 1934 the National Trust acquired from the Royal Society of Arts a considerable part of the village and have since bought still more of it. The village is a practically unspoiled example of sixteenth and seventeenth-century traditional work in local materials. Full particulars of the competition can be obtained from the National Trust, 7, Buckingham Palace Gardens, S.W.1, and a site plan on payment of a deposit of £1, which is returnable to genuine competitors, or to anyone returning the conditions and plan. The Trust is anxious that the new cottages, which are to be for working-class tenants, should be not only a real contribution to the beauty of this famous village but also a contribution to the problem of cottage designs for villages to meet modern needs, and special consideration is to be given to the practical aspects of the interior design and fittings. The assessors are Darcy Braddell, Edward Maufe and William Weir. 100 guineas is offered to the author of the winning design; the 2nd and 3rd prizes are 30 guineas and 20 guineas respectively. The Trust hopes to be able to erect cottages according to the winning design as soon as circumstances permit after the war.

Sir Edwin Lutyens has offered to REDESIGN LEICESTER SQUARE.

The Institute of Landscape Architects and the Royal Academy Committee are prepared to act as honorary advisers.

from AN ARCHITECT'S *Commonplace Book*

APARTMENT HOUSE: 16TH CENTURY (continued). [*From* The Lives, Heroic Deeds and Sayings of Gargantua and His Son, Pantagruel, *by François Rabelais*]. This same building was a hundred times more sumptuous and magnificent than ever was Bonnivet, Chambourg or Chantillie; for there were in it nine thousand, three hundred and two and thirty chambers, every one whereof had a withdrawing room, a handsom closet, a wardrobe, an oratory, and neat passage, leading into a great and spacious hall. Between every tower, in the midst of the said body of building, there was a paire of winding staires. . . . In every resting place were two faire antick arches where the light came in .. . . By that vize or winding, they entered on every side into a great hall, and from the halls into the chambers. From the Arctick tower unto the Criere, were the faire great libraries. . . . In the midst there was a wonderful scalier or winding-staire, the entry whereof was without the house, in a vault or arch six fathoms broad. It was made in such symmetrie and largenesse, that six men at armes with their lances in their rests might together in a breast ride all up to the very top of all the Palace. From the tower Anatole to the Mesembrine were faire spacious galleries all coloured over and painted with the ancient prowesses, histories and descriptions of the world.

A National WAGES BOARD FOR THE DEMOLITION INDUSTRY has now been constituted.
The Board is vested with the responsibility for the interpretation of the working rule agreement and the settlement of any disputes or differences arising from the operation of the working rule agreement. This provides for the setting up of a National Demolition Industry Disputes Commission, and the employers and operatives have agreed that every means for effecting an amicable settlement shall be exhausted before resorting to direct action. The joint secretaries are Mr. Richard Coppock, General Secretary of NFBTO and Chairman of the LCC, and Mr. G. A. Warley, Secretary of The National Federation of Demolition Contractors.

The guest of honour at the quarterly lunch of the Federation of Master Builders on November 2 at the Connaught Rooms was SIR WILLIAM BEVERIDGE K.C.B.
Mr. J. H. Heal, J.P., the President of FMB., was in the chair. "In peace our main objective should be to make as many good things as possible for ourselves, to raise our standard of living," said Sir William. "That puts the building industry and all the industries connected with it in the centre of the stage for peace, and makes the attaining of the maximum of efficiency of that industry a central aim of social policy. This war will have brought immense technical development in engineering. There is need for a matching advance in the technical efficiency of building. A revolutionary step forward in the housing of our people is, perhaps, the most important particular aim that we can set before us for the peace." Mr. Noel Landau, B.E.M., proposed a toast; he called for freedom for the building industry and referred to the 3,000 farm workers' cottages as an example of Government building control. Lady Beveridge responded to the toast and Sir Hugh Beaver made an excellent impromptu speech in reply to Mr. Landau. The lunch was followed by the 11th quarterly general meeting of the FMB.

Take proper advice BEFORE BUYING LAND for development, says MOTCP.
It appears from information reaching MOTCP that buyers occasionally buy land intending to develop it without making enquiry about the planning restrictions to which it is, or may become, subject. Under the Town and Country Planning Acts, 1932 and 1943, the whole of the land of England and Wales is now subject to planning control, and it would be unwise for anyone to pay a price for land based on its use for a different purpose without taking proper advice.

Sir Giles Gilbert Scott said that NOTHING WILL SOLVE LONDON'S TRAFFIC PROBLEM short of a drastic surgical operation.
Opening the County of London Plan Exhibition at the Royal Academy he said: We have never really got down to the question of fast-moving traffic. If the authorities are not willing to face a drastic surgical operation we shall go on in the same muddle and chaos as before. Now is the time to plan the operation, for we shall never get another opportunity after the war. From the engineering construction point of view it is not a large problem. He hoped that the war will create a bigger outlook and a less timid approach to planning.

At 9.25 p.m. on November 16 a discussion on "London Tomorrow?" will be broadcast by the B.B.C. in which the COUNTY OF LONDON Plan will be criticised and defended by an architect, a planner and an economist.
The speakers will be Dr. Thomas Sharp, Architect and Town Planner; F. J. Osborn, Hon. Secretary Town and Country Planning Association; and Donald Tyerman, Deputy Editor of *The Economist*.

Hertfordshire County Council has decided to buy the WALL HALL ESTATE FOR LONDON'S GREEN BELT.
The Aldenham estate, known as Wall Hall, was the property of the late Mr. John Pierpont Morgan. It is intended that the estate should form part of the green belt round London, and it was stated at the meeting that the LCC will pay a quarter of the cost.

The model of replanned Bermondsey at the County of London Exhibition at the Royal Academy. Sir Giles Gilbert Scott (extreme right) who opened the exhibition, is with Mr. R. Coppock, chairman of the LCC and the Lord Mayors of Hull, Newcastle, Cardiff, York and Birmingham.

County Planning Officer of East Suffolk

The Hull Civic Diagnosis exhibition* has been followed at the Housing Centre by one of the East Suffolk Reconstruction Survey. Both are excellent examples of how surveys should be carried out, the one on the civic scale, the other on the regional. The Suffolk survey has been prepared under the direction of the County Planning Officer of the East Suffolk County Council, Mr. T. B. Oxenbury. Born in Totnes, Devonshire, 39 years ago, he was educated at King Edward VI Grammar School and afterwards articled to the Borough Engineer and Surveyor of Totnes. He took up town planning early in his career and has held local government appointments at Paignton, Sutton Coldfield and in Guernsey in the Public Works Department. Apart from holding the appointment of East Suffolk County Planning Officer, he is now Planning Consultant to the West Suffolk County Council, Town Planning Officer of Bury St. Edmunds, and Planning Officer to the Samford Area Joint Planning Board. He is a Licentiate of the RIBA, an Associate Member of the TPI, and an Associate of the Institute of Landscape Architects of which he is a Member of the Council and Assistant Editor of the Institute's Journal. He is also Secretary of the Suffolk Architectural Records Committee, a branch of the National Buildings Record. Extracts from the lecture he gave in connection with the exhibition at the Housing Centre are published on page 361. See also the leading article.

*A.J. July 29, 1943.

★

In two memoranda, issued last week, MOTCP tells LOCAL AUTHORITIES TO PLAN AT ONCE, subject to the overriding demands of war services. Guidance on special problems of war-damaged areas will follow later. The Ministry suggests the extent of work necessary so that planning authorities will be able to deal expeditiously with building development proposals in the first few years of peace. Shortage of labour and materials will limit development. Closest consultation is urged with regional planning officers, rural land utilization officers and local associations. Great importance is attached to control of architectural designs, aiming at simplicity and harmony. Provision is made for erecting certain buildings in rural zones, including premises for vegetable and fruit canning, and for jam-making. Extension to villages near towns may be permitted if the village remains a separate unit, and the extension adds naturally to its character. Special care should be taken to avoid ribbon development along the coast. The Ministry's coastal survey, begun last December, is well advanced, and authorities concerned with any rural area within, say, three miles of the coast, are advised to acquaint themselves fully with this survey. Dealing with urban areas, it is suggested that proposals be prepared under main headings of communications, residential areas, business and shopping, industry and open spaces. On communications, authorities are urged to keep in mind road developments. (See page 356).

★

MOTCP has issued a circular to local authorities and joint town and country planning committees (England and Wales) to draw attention to the LAND CHARGES ACT, 1925, as amended by the Law of Property (Amendment) Act, 1926, whereby every resolution to prepare a planning scheme which has taken effect is required to be entered in the Local Land Charges Register. Amendment rules are now in draft and will shortly be issued which will amend the Local Land Charges Rules, 1934 (S.R. & O. 1934 No. 285/L.4) and will provide that where, by virtue of Section 1 of the Town and Country Planning (Interim Development) Act, 1943, a resolution to prepare a scheme is deemed to have been passed by a local authority, county council or joint committee, an entry shall be made in Part III of the Register with respect thereto, and that the entry shall contain: (*a*) particulars (by reference to a map) of the land to which the resolution relates; (*b*) a statement signed by the clerk to the local authority or county council, or by the chairman or secretary of the joint committee, as the case may be, that such a resolution has been deemed to have taken effect in relation to the land by virtue of Section 1; (*c*) notice of the place at which inspection may be made, of the particulars, the map and the statement, and (*d*) date of registration. The Rules will also make provision for entering in Part III of the Register a certified copy of any order prohibiting the use of land, or buildings, made under Section 13 of the Town and Country Planning Act, 1932, or under Section 5 of the Town and Country Planning (Interim Development) Act, 1943; and a certified copy of the order and of the Instrument signifying the Minister's approval, or provisional approval, of an order for the interim preservation of trees under Section 8 of the Town and Country Planning (Interim Development) Act, 1943.

SURVEY THE LAND

"NO planning scheme *can* be prepared—(note I have said *can* and not *should*)—without the preliminary extensive research." This remark, with which the JOURNAL is in full agreement, was made by the County Planning Officer of Suffolk in a lecture* he gave on October 26 last in connection with the East Suffolk Reconstruction Survey Exhibition which has been on view at the Housing Centre. This exhibition once again raises the important, and indeed urgent, matter of the need for preparing national, regional and local surveys, which are so essential a preliminary to making any radical improvement in our physical environment.

Why make surveys? The answer emerged clearly from the discussions on Survey and Notation at the Town Planning Institute's Summer School at Birmingham held last August. Three main reasons were arrived at: (i) As a public service to tell the citizen how he stands in matters relating to his environment; (ii) to help the planner to plan a place in the terms of the life needs of the people who live and/or work in it, and (iii) to contribute to the central pooling of research relating to urban and regional structure so that zoning policy can be stronger, more scientific, more comprehensive and more flexible.

Our local councils have been advised to begin preparing post-war plans. Many of them are now doing so, but mostly with little factual knowledge to work on. Their final plans will therefore be largely abortive—mere piece-meal, palliative and inadequate zoning lay-outs unrelated to the national whole. A few towns such as Hull have been far-sighted enough to prepare very full surveys, and a number of regions such as the West Midlands, Worcestershire and East Suffolk are at work on large areas. These sporadic efforts, though extremely useful in setting an example and in proving the need for research, will lose much of their value unless they are properly co-related by a national survey service, such as America already possesses in its Federal Housing Administration.

What should be the function of such a service and how should it be organised? Since society, as an expression of life, is fluid and ever-changing, survey of human environment and subsequent physical planning is a continuous process; it is never finished. A national research service should therefore be a permanent institution. Its structure should be pyramidal, with local civic offices co-ordinated by county and regional offices, which in their turn should be linked by a central national organisation. Every local council should have a permanent, fully qualified, planning officer on its staff, a major official whose status would be on a par with that of the town clerk, treasurer, engineer, architect and medical officer. An accepted technique of survey should be adopted; notation should be standardised; objectives, extent of work and the practical application of research to local, regional and national planning policy should be clarified. Free local

*Reported on page 361.

initiative should be made compatible with strong guidance by a central office, also acting as a clearing house of information. Close contact between research groups should be maintained so that overlapping of work is avoided and each group is made aware of what others are doing. Periodic conferences should be held for pooling of knowledge and ideas, and reports of the work of each research group, as well as their actual surveys, should be published from time to time both for internal technical use and for external public education and information.

The Barlow and Scott reports both stress the need for research. Pending the clarification of political and social objectives, this recommendation for research can be implemented *now*, for diagnosis is a purely objective and fact-finding function, which will be a necessity in the future, whatever the political dawn may reveal. Here in the initiation and organisation of a nation-wide survey is a job which MOTCP can, and should, tackle without more ado.

The Architects' Journal

War Address : 45, The Avenue, Cheam, Surrey
Telephone : Vigilant 0087-9

NOTES & TOPICS

THE RIBA ON SHORT-LIFE HOUSING

I hope that all architects will read the memorandum which appeared in the *RIBA Journal* for October. This memorandum may affect the whole future of the profession and members of the RIBA may wish to learn what Institute Committee was responsible for it and what were the terms of reference from the MOH sub-committee.

★

These terms of reference, which are somewhat oddly omitted from the *RIBA Journal* reprint, would seem from the opening sentence of the memorandum to have been something like this : *On the assumption that post-war housing will be executed in the same materials and by the same methods as inter-war housing, would the RIBA favour relaxation of pre-war standards of building by-laws*, provided that a limited "life" *is imposed on houses built under such relaxed by-laws* ? But is it possible that a Government sub-committee could have asked the RIBA to waste time on such a question ?

★

I do not think so. It appears far more likely that the terms of reference were : *What is the RIBA's opinion on the general question of the use of short-life housing to alleviate the post-war housing shortage ?* If this second suggestion is correct, I consider the memorandum is the most unfortunate document ever put out from Portland Place. It expresses the most narrow professional prejudice ; it drags in matters which have nothing to do with the *technical* question involved ; throughout, it confuses (1) housing of "normal" construction built under relaxed building by-laws with (2) "short-life" prefabricated houses and (3) full-life prefabricated houses ; it insinuates that all new materials are likely to be unsatisfactory and that prefabricated houses must necessarily be built of such materials.

Let us consider one or two points in more detail.

The Royal Institute would regard with regret the creation of a body of labour unskilled in any craft but the assembly of ready-made houses by means of the spanner.

Can one assume that the two million or so people who will want houses after the war as they want nothing else will prefer to wait any number of years rather than give the RIBA any cause for regret ?

★

The shortage of skilled labour after the war should be looked upon as a temporary condition in the same way as a shortage of traditional materials. A great effort should be directed towards preserving the skilled crafts and the skilled labour that creates them, especially in view of the danger of suppression and supersession of both craft and skill by the use of ready-made and untried goods.

The interpretation which reasonable people would put on this is that (1) building progress is forever to be "frozen" at the 1939 position because that would suit the convenience of a portion of the building industry and the RIBA and (2) some members of the RIBA dislike the idea of prefabrication and would like the Government to stop its introduction.

★

The financing of the short-life house, owing to this compression, may have the effect of raising the rent of the house, which in turn would lead to higher assessments for rates and taxes. It would seem that the payment of compressed mortgage charges, higher rent, rates and taxes, and higher maintenance costs are all against the introduction of short-life housing.

If a new kind of house is introduced, new arrangements for its financing and rating will be needed. This is no argument against short-life housing in itself and certainly not a technical argument.

★

There is, however, a danger of advertising slogans being made use of for the purpose of selling questionable goods, or even whole houses, to an inexperienced public. The Royal Institute suggests that the Government should not take any action that might lead to the exploitation of the public. The danger to the industry and crafts has already been stressed but the public well-being is to be considered, its freedom of choice, liberty of market, and the exercise of its taste and preferences should be preserved. Situations might arise, however unwittingly, where a continuation and misuse of the war-time system of licence and permit might be used to force the public to accept certain manufacturers' goods when it might have other legitimate preferences.

This peculiar sequence of sentences deserves reading several times. When this has been done, their meaning appears to be (1) if there is a free-for-all in the supply of prefabricated houses, a great many people would get very bad houses (quite right) ; but if the Government takes steps to see that the houses are in fact all very good houses, some limitation of choice for the individual occupier would be necessary ; (3) this would be un-British, so the Government should abandon all idea of such action.

★

It is necessary to make plain my attitude on this matter—an attitude

which this JOURNAL shares. The introduction of short-life houses of pre-war construction or of prefabricated houses, whether for short life or long, demands the most careful study, for the possible dangers are many and great. But when a Government committee asks for the opinion of the RIBA on this problem, it has the right to expect a technical opinion which is as unbiased and lucid as human frailty will allow. The RIBA memorandum reads as though its authors cared not a fig how long people have to wait for houses after the war providing " traditional " methods and customs are retained and the personal convenience and prejudice of the authors receive scrupulous attention.

*

I hope that most members of the RIBA will ask for this memorandum to be withdrawn and for the production of similar documents in future to be placed under adequate supervision.

MOTHER AT HOME

It was on the plan of the Commons and on the psychological significance of the traditional shape that Mr. Churchill recently made his most brilliant remarks. But he had little to say on the technical side, and little on the decorative. Here we have a problem. Obviously there can be no objection to incorporating up-to-date lighting, heating and other equipment, but to what extent should the new chamber be in decorative harmony with Pugin's Epsom salts that will no doubt continue to surround it ?

*

There is apparently to be panelling and carving, if not to begin with then at a later date. I am one of those who could not attend the House without paying forfeit with a splitting headache ; and during the debate on the Architects Registration Bill a fellow architect whispered to me that he had reckoned that there were a hundred thousand square inches of ledge in the House where dust could lie undisturbed by cleaners. I believe that it was that dust, drying up and contaminating the perfect ozone laid on, which produced so many headaches.

ASTRAGAL

" We shape our buildings and afterwards our buildings shape us," said Mr. Churchill, in a speech last week that was a model of constructive architectural criticism. " I am proposing that we decide to rebuild the House of Commons on its old foundations, which are intact and in principle within its old dimensions, and that we utilize as far as possible its shattered walls. Two main characteristics would command approval and support of reflective and experienced members, though they would sound odd to foreign ears—that the Chamber's shape should be oblong and not semi-circular, and that it should not be big enough to contain all its members without overcrowding. . . . A small Chamber and a sense of intimacy are indispensable." Mr. Churchill's speech appeared in last week's issue of the JOURNAL. See Astragal's note.

LETTERS

Mary Beale

G. B. J. Athoe (Secretary IAAS)

A. C. Manuel, A.R.I.B.A.

The Model Kitchen

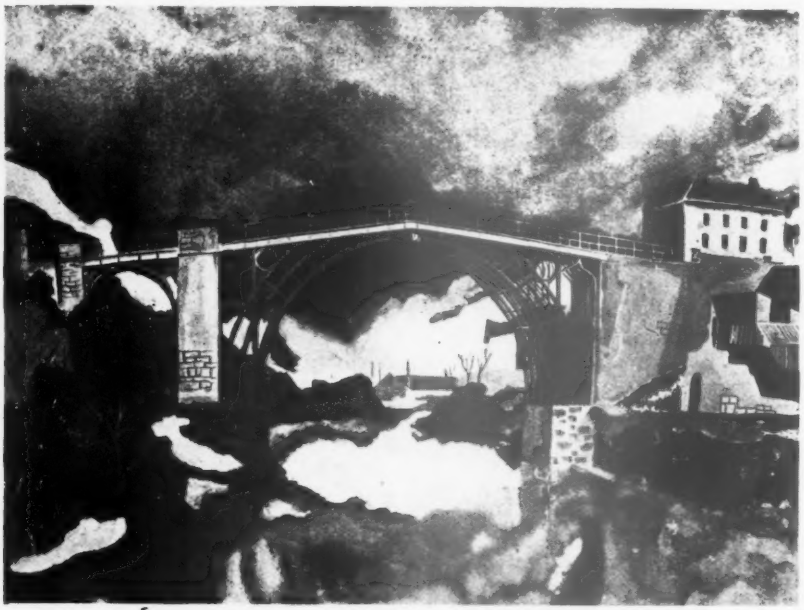
SIR,—In the Practical Planning Exhibition at the Institution of Civil Engineers, the main attraction to most women was the kitchen, a model kitchen, showing (in the words of the Exhibition leaflet) " a logical sequence in planning " and " full use of the help which engineering science can give." In planning this kitchen those responsible had in mind, we presume, the many problems with which the harassed housewife is faced, and accordingly set out to show how needless drudgery could be banished, hours of labour reduced and her health safeguarded. They would also have been advised to plan the kitchen on the basis of a family of three or four children.

What did one see when visiting the exhibition? A room about 15 ft. by 7 ft. 6 in., flanked on one side by cupboards of impossible design and, on the other, by a very ordinary earthenware sink on either side of which are wooden representations of a cooker and a refrigerator. Above the refrigerator another wooden model is intended to represent the hot water supply.

Is this the planned kitchen of the future ? Where are all the labour-saving devices one expected to see ? To begin with, the kitchen is far too small. There is no room for an electric dish-washing machine and indeed no evidence of electric points for the electric iron, the toaster, electric mixer and other labour-saving aids. The wall cupboards are a positive menace and a source of potential accident every time they are opened as the doors project nearly 2 ft. into the room. And this in a kitchen only 7 ft. 6 in. wide. A small laundry is provided but no place to iron the clothes. A small hinged table against the kitchen wall is quite unsuitable for this purpose. One looked in vain for some sort of electric fan to dispel cooking odours, and to keep the kitchen cool in summer.

Presumably this is the engineers' idea of a

AA MEMBERS' SKETCHES



At the exhibition of Architectural Association Members' Sketches completed since the outbreak of war. Top, Ironbridge, Shropshire, by Geoffrey Robson. This is the first iron bridge ever constructed, being built in 1777-9. Centre, Fairholt, Hadley Green, by Leonard Manasseh. Left, water-colour of a pair of houses by P. A. R. Dickinson.

planned kitchen for the 4,000,000 working-class houses after the war. A serving hatch to dining-room is shown. Does any architect or engineer seriously believe that no meals will ever again be eaten in the kitchen? The trend (already noted and acted upon in America) is in the reverse direction.

The kitchen should be roomy enough to incorporate not only the equipment of a first-rate workshop but also a recess in which the family may have their meals in comfort. Even for households once accustomed to a resident maid, at least the first and last meals of the day will be eaten in the kitchen; an alcove in the lounge (when guests are expected) makes a dining-room unnecessary.

Where is "the logical sequence" and where—oh! where—is "the help that engineering science can give" in solving the kitchen problem? No! If this is practical planning it just won't do!

MARY BEALE

London

Building Societies

SIR,—The extent to which the cost of building houses after the war may be reduced by new methods is uncertain. The most optimistic estimates place the figure at least 50 per cent. above the 1939 level. Thus the question of housing finance must be boldly faced. State assistance on a large scale will be needed, and might include new forms such as the suggested issue of building notes secured on the value of the property to be erected.

Though it is generally agreed that the Building Societies have done good work, and are to-day showing themselves alive to the needs of the times, their methods and policy have not been wholly immune from criticism, especially in regard to maintaining a high standard of house construction. There would seem to be scope for other and improved methods of housing finance, either by the existing societies or other bodies with similar aims.

For example, a considerable extension of the housing society movement is desirable; and it is a welcome sign that this is acknowledged by at least one of the leading building societies which has recently announced its intention of collaborating with the National Federation of Housing Societies with a view to their further extension. This is all to the good, for these latter have always insisted on a high standard of construction through employment of qualified architects.

G. B. J. ATHOE

London

Coal Mining Methods

SIR,—In your issue for October 21, Dr. E. S. Grumell, speaking at a luncheon held in London of the Institute of Fuel, is reported to have said that "coal will be very costly unless improved methods of mining are invented."

Surely improved methods don't have to be invented. Is it not a fact that mechanical methods are far more extensively utilized—and have been for many years—for parallel operations in the metal mining industries; and that the reason why these methods (most of which are adaptable for use in coal-mines) are not introduced into the coal-mines is due to

(*a*) unenlightened managements with lack of catholic experience;
(*b*) lack of interest by the men's leaders;
(*c*) lack of co-ordination and spreading of knowledge as between the coal-mining and metal-mining industries;
(*d*) antiquated rules, regulations and orders under and arising from the Coal Mines Act 1911, many of which hamstring the industry and prevent the introduction of techniques which are second nature in metal-mining.

It is time the fire-damp bogey was liquidated.

A. C. MANUEL

London

TH

1110

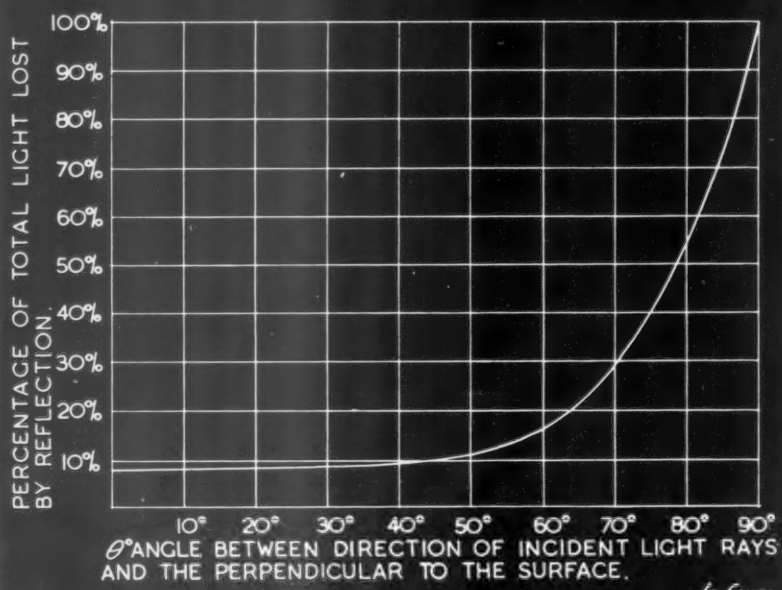
743

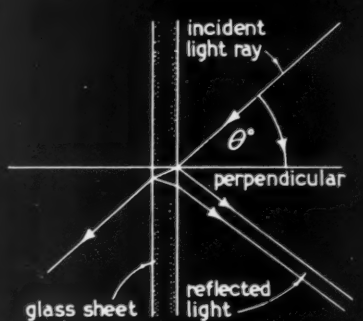
1110

THE ARCHITECTS' JOURNAL LIBRARY OF PLANNED INFORMATION

SUMMARY OF GENERAL PHYSICAL CHARACTERISTICS OF GLASS.

	COMMERCIAL RANGE	STRUCTURAL GLASS	REMARKS
SPECIFIC GRAVITY lbs/cu ft	145 - 210	160	For further information, see Sheet No 2.
COEFFICIENT OF LINEAR THERMAL EXPANSION PER 1° F.	18-50 X 10^{-7}	45 X 10^{-7}	For further information, see Sheet No 2.
MODULUS OF ELASTICITY lbs/sq in (Young's Modulus)	10^{7}		Virtually independent of type. For further information, see Sheet No 2.
REFRACTIVE INDEX (for wavelength of 5893 A)	1·48 - 1·60	1·52	Refractive index varies for light of different wavelengths, figures taken for sodium light: 5893 A.
REFLECTION LOSS % per pane (no absorption) normal incidence.	8% to 10%	8%	See graph below, and notes on reverse.
THERMAL CONDUCTIVITY B.Th.U./Sq. Ft./°F/inch	8		The differences between various types of glass are small enough to be negligible.
TENSILE STRENGTH lbs/sq in	—	—	Glass is completely elastic up to the breaking point, and it has no ductility. Tensile and impact strengths have to be expressed in terms of percentage risk. See Sheet No 2.
IMPACT STRENGTH ft/lbs	—	—	





INFLUENCE OF ANGLE OF INCIDENCE ON LOSS OF LIGHT DUE TO REFLECTION AT THE SURFACES OF THE GLASS.

Note: Values based on Refractive Index of Glass 1·50.

Information from Chance Brothers Ltd.

INFORMATION SHEET: GLASS I: PHYSICAL CHARACTERISTICS I.
Sir John Burnet Tait and Lorne Architects One Montague Place Bedford Square London WC1.

743

THE ARCHITECTS' JOURNAL
LIBRARY OF PLANNED INFORMATION

INFORMATION SHEET
• 914 •

GLASS: No. I

Subject: Physical characteristics: I.

General:

This Sheet is the first of a series dealing with glass and glass products, and sets out the primary physical characteristics of the material.

Glass at normal temperatures is—in general—a transparent, hard, brittle solid. At temperatures above 400°C., it acts as a liquid of decreasing viscosity. The chemical composition of glass can vary over extremely wide limits, but for building purposes, compositions are almost entirely of the soda-lime-silica type, on account of its freedom from risk of crystallisation during manufacture, its high resistance to chemical attack, and its economy. The composition is roughly 70 per cent. silica, 15 per cent. lime and 15 per cent. soda.

Glass is impervious to water, and extremely resistant to attack by ordinary weathering agents. It has a brilliant surface, is easily kept clean, and its main disadvantages compared with other structural materials are its low tensile strength and its brittleness.

The physical properties of glass may be subdivided into two main groups:

(*a*) Those which are constant for any particular specimen and can be measured to the limits of accuracy imposed by the precision of the method used, such as Light Transmission, Colour, Refractive Index, Reflection Factor, Heat Transmission, Specific Gravity, Coefficient of Linear Thermal Expansion and Modulus of Elasticity;

(*b*) those which can only be determined on a statistical basis, i.e., repeat measurements show an inherent variation which is as characteristic of the material as the property itself, such as Tensile Strength, Impact Strength and Thermal Shock.

Light Transmission:

Absorption: In addition to the light reflected at the surfaces, all commercial glasses absorb light, which is lost completely. In so-called colourless glass, the amount absorbed per inch of thickness varies from less than 1 per cent. in optical glass to 15 per cent. in ordinary commercial glasses, which when viewed through the edge have an appreciably greenish tinge. In patterned glasses, the actual absorption may be considerably higher owing to the pattern causing internal reflections so that the light travels a greater distance in the glass than the normal distance through the sheet. In subsequent Sheets, figures are given for the light absorption for various patterns. In the special case of opal glass the effective light path can be five or six times the thickness of the glass, and it is increasingly important that the matrix in which the small particles which give the opal appearance are embedded, should be as colourless as possible.

Dirt on the surface of glass reduces the transmission, both by scattering light at the surface so that it never enters the glass, and by absorption in the dirt itself. It is quite possible for a dirty window to have an overall transmission appreciably less than 50 per cent. of that which it would have when clean.

In the case of typical reinforced glasses, the area obscured by the wire causes an additional absorption which is of the order of 10 per cent.

Colour:

Coloured glasses appear coloured because of the deliberate absorption of certain parts of the incident white light. Thus, a red glass absorbs the blue and green and some of the yellow, and transmits the red. Since the relative intensities of different colours vary according to the light source, even for light which is normally considered white, it follows that the light transmission of a coloured glass varies according to the nature of the original white light.

Refractive Index:

The refractive index, which varies with the wavelength of the light, is usually specified for the sodium line 5893 Angstrom units, and is defined as the ratio of the velocity of light in air to the velocity of light in the glass. The design of any patterned glass pre-supposes a knowledge of the refractive index.

Reflection Factor:

Light is always reflected when it passes from a medium of one refractive index to a medium of another refractive index. The loss is a function both of the refractive indices of the media and the angle of incidence of the light. See graph on face of this Sheet.

Heat Transmission:

Heat can be transmitted through glass in two ways, by radiation and conduction. Since light energy on being absorbed becomes heat energy, any glass which transmits light must have an appreciable transmission value for radiant heat. Certain glasses, such as Calorex, have the special property of being largely transparent to visible light and opaque to infra-red (heat) radiation, so that they give the maximum transmission of light with the minimum transmission of radiant heat.

With regard to conduction, the differences which exist between one type of glass and another are small enough to be negligible.

Electrical Properties:

Glasses vary considerably in their electrical properties, but the essential feature is that they are all insulators (dielectrics). The effective leakage of electricity across a glass surface is determined more by the condition of the surface itself than by the properties of the glass.

Issued by: Chance Brothers Limited.
Address: Glass Works, Smethwick, Birmingham.
Telephone: West Bromwich 1051.
Telegrams: Chance, Smethwick.

• DOMESTIC WATER HEATING 10: FLUES FOR INSTANTANEOUS GAS WATER HEATERS (A)

FLUE TEMPERATURES.

The primary function of the flue to a gas appliance is to remove the products of combustion. The gas consumption involved determines whether an appliance should be fitted with a flue or not.[1]

Considerable misunderstanding exists regarding the purpose of flues to gas appliances. Since gas appliances do not require a draught to draw in the air for combustion,[2] this has led to the belief that a gas flue will operate under any conditions. In fact, the reverse is the case, for the flue temperature, and consequently the degree of draught available, is comparatively low.[3] Therefore, flues for gas appliances must be designed with considerable care in order effectively to utilise the very small forces available.

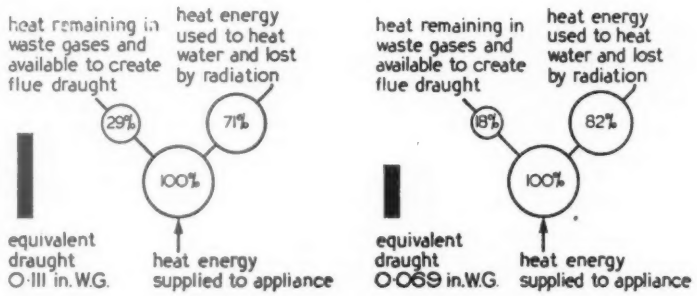


DIAGRAM 1: Heat energy available to create flue draught: comparison between solid fuel and gas appliances.

GENERAL DESIGN OF FLUES.

(1) It is essential that flues should be planned at an early stage in the design of a building, and as far as practicable the actual position of the water heater should be made subordinate to the flue.

(2) The main flue should not be on or in an outside wall.[4]

(3) The flue terminal should be above the ridge of a pitched roof, or clear of obstructions in the case of a flat roof. Positions where the air pressure is higher than inside the building should be avoided.

(4) The appliance should be installed as near as possible to the main flue to avoid long horizontal runs.

(5) The connecting flue should be of the same diameter as the flue socket of the appliance.

(6) The connection between the connecting flue and the main flue should not reduce the cross sectional area of the main flue.

(7) As long a vertical length as possible should be fitted immediately above the heater.

(8) Change of direction should be produced by obtuse bends.

1. Regulations of The Institution of Gas Engineers, state that "flues must be provided for the following appliances": (*a*) Rapid water heating type, used for the heating of water for a bath; (*b*) Storage type, having gas burners generating more than 15,000 B.Th.U. (gross) per hour; (*c*) Central heating type; (*d*) Wash boilers, washing machines or similar appliances, having gas burners generating more than 20,000 B.Th.U. (gross) per hour; (*e*) Any appliance fitted in a bathroom for heating water for a bath, having gas burners generating more than 500 B.Th.U. (gross) per hour per 35 cu. ft. of room space. Every such bath-room shall, in addition, be provided with adequate means of ventilation to the outside of the room by sufficient aperture of air-shaft having an unobstructed cross-sectional area of not less than 15 sq. inches. As the calorific value of towns gas varies, the gas rate for any appliance is usually given for gas of 500 B.Th.U. per cu. ft. Generally, sink heaters do not require flues, whereas multi-point appliances and bath heaters, wash coppers and central heating boilers should be fitted with flues. Confirmation of this, and any special local bye-laws or regulations, may be obtained from the local Gas Company.

2. With solid fuel burning appliances a strong draught in the flue is necessary to draw air into the grate to maintain combustion. With gas appliances, the air for combustion is drawn into the appliance by the gas stream. A draught in the flue is not, therefore, necessary to ensure combustion.

3. Flue gas temperatures from solid fuel burning appliances are usually in excess of those necessary for obtaining a draught. Gas appliances have been developed with high thermal efficiencies, and little heat is wasted in the flue gases. In a well-designed instantaneous water heater the flue gas temperature is in the region of 240°F. If the temperature were lowered still further, condensation would occur in the appliance.

The strength of the draught available is determined by the height of the flue and the temperature of the flue gases. In gas appliances the temperatures are comparatively low, and the forces available correspondingly small. To utilise these to the full, the vertical rise of the flue should be as great as possible. Before a draught can be produced, the whole of a flue must be filled with hot gases. To do this, the cold air in any horizontal length must be displaced solely by the force due to the vertical rise before the horizontal stretch. Thus it is very important: (*a*) to ensure some vertical length of flue immediately after the appliance, and (*b*) to use rising or inclined flues in preference to horizontal.

4. With flues in an inside wall, the cooling of flue gases will be less, reducing condensation and increasing the "pull" of the flue.

[TURN OVER

INFORMATION SHEET 915

(CONTINUED)

HEIGHT OF FLUES.

The appliance and the draught diverter have a resistance, and require a certain minimum length of flue to bring about a steady evacuation of the gases.[5]

The total height of the flue necessary will be reduced, if as much vertical rise as possible follows immediately after the appliance.

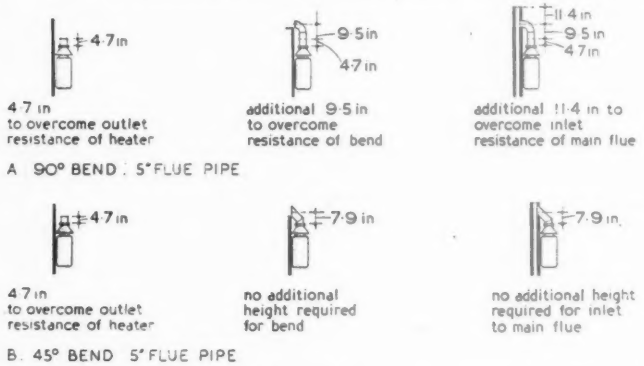


DIAGRAM 2 : Vertical heights of flue pipe necessary to maintain a steady flow of flue gases by overcoming resistance of appliance, bends, etc. Output of heater : 13,000 B.Th.U./hr.[7] Diameter of flue socket : 5 in.

CONDENSATION.

If the total height of a flue exceeds 45-50 ft., it is advisable to consult the manufacturers of the water heater, since special precautions must be taken to prevent excessive cooling of the flue gases, and loss of draught.[8]

With external flues, or where an internal flue exceeds two storeys in height, a condensation trap and drain should be provided,[9] and acid-resisting asbestos cement, or glazed-ware pipe used.

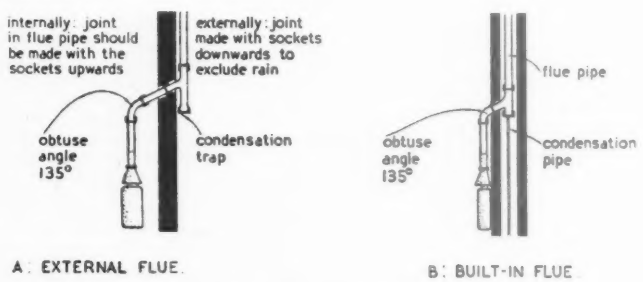


DIAGRAM 3 : Sketches indicating methods of providing for the outlet of condensation from a flue.

MATERIALS FOR FLUES.

The materials of which a flue is constructed should be : mechanically strong, resistant to temperatures up to 400°F., impervious to moisture, and acid-resisting.

The materials best meeting these conditions are : glazed ware, asbestos cement, lead-coated iron, and vitreous enamelled iron. The last two, when uninsulated, should only be used for short lengths owing to their high thermal conductivity.[10]

5. The column of hot gases in the appliance, including those enclosed in the draught diverter, is too short to remove the products of combustion without some flue pipe.

6. Additional height of flue is required to overcome the resistance due to restrictions or change in direction. This must be incorporated in the flue before the restriction (see Note 3) to ensure filling the flue with hot gases. Therefore, compensation for resistance should *always* be made by vertical rise before the obstruction.

7. Experiments carried out with an Ascot NEA 32 multi-point.

8. The draught available in a flue is proportional to the square root of the height of the flue. Instantaneous gas water heaters incorporate a draught diverter, which limits the amount of air drawn through the combustion chamber so that any excess due to a high draught is drawn in above the heat exchanger. Therefore, as the height of the flue is increased, the volume of cold air drawn in will also be increased, and the temperature of the gases fall, eventually reaching a stage where any tendency to increase the draught by a greater height of flue will be cancelled or negatived.

9. Condensation drain pipes should be not less than ¾ in. internal diameter to prevent obstruction. They should be connected to the trap of a waste water (not soil) fitment above the water level or continue through an external wall and either : discharge over or into a trapped gulley above the water level, or discharge into a rainwater head, eaves gutter, or rainwater pipe constructed of a material other than zinc.

Adequate provision should be allowed for clearing the pipe of any obstruction which may occur.

With internal flues the heat loss is much less than with external flues, arrangements to collect the condensate only necessary where the flue extends through two or more storeys.

If salt-glazed pipe or asbestos cement flue pipes are used in internal flues, the sockets should point upwards, but with external flues, downwards to prevent the ingress of rain water.

10. The heat capacity of metal flues (quantity of heat required to raise their temperature to the same level as that of the flue gases), is low and their normal conductivity is high. The use of long lengths of unprotected metal flues results in excessive cooling of the flue gases and reduction of draught. Their use is permissible in the case of short connecting lengths where the atmosphere surrounding the pipe will be at room temperature.

Issued by Ascot Gas Water Heaters Ltd., North Circular Road, Neasden, N.W.10. Telephone : Willesden 5121 (14 lines).

PHYSICAL PLANNING

PROBLEM NUMBER TWO

One of the most urgent problems in the field of physical planning is that of training the men for the job. At the moment, startling confusion exists among the professions on this subject. Lack of constructive proposals provides a dangerously narrow bottleneck in which half-finished schemes will get jammed if the possibility of their realization comes upon us unexpectedly, and we find ourselves with neither the experts to bring them up to the realization stage nor those to carry them out.

In this week's article Dr. Gutkind points to the need for achieving a dynamic balance between centralized authority and decentralized administration, as a weapon against unfettered bureaucracy, and draws attention to the experiments of the TVA and USSR. He outlines the scope and relations of planners at the national, regional and local levels, comparing the national planners to the general staff of an army supreme command and local planners to the commanders in the front line. His proposal for a school of planning in an experimental post-war town is worth serious consideration, for it is only through such schemes as this that the essential combination of theory and practice will be achieved in the training of planners.

14

index

Dr. Gutkind, whose article on Training for Planning is published this week, was for some time in charge of the Demographic Survey and Plan, a study group under the auspices of the 1940 Council. The results of this work were published in his book 'Creative Demobilisation.' He gained the degree of Diplôme Ingénieur at the University of Berlin, Technical High School, and is a Dr. Ing. He was an adviser on problems of physical reconstruction to the Armistice Commission after the last war.

WHAT KIND OF TRAINING WILL THE PLANNERS NEED?

Part one, the job they have to do, by Dr. E. A. Gutkind

planning the planners

We should not forget that old ideas and old habits are stubborn. They will disintegrate more thoroughly and quickly the more powerfully and efficiently new trends develop and the more qualified are the active agents who have to work out the plans and to supervise their execution. As long as expert planners are not available the old powers will retain their front unbroken. Our urgent need is therefore to plan the planners, to train men who combine enthusiasm with knowledge, who dare to act against so-called facts, who are resolved to create new facts and do not want to feed their fellow countrymen on promises which cannot be fulfilled.

Planning implies a systematic procedure starting from the top and the bottom at the same time. It includes large-scale plans as well as local plans, or in other words: its general framework consists of a national plan while local plans constitute, as it were, the cellular components which are bound together through the medium of regional schemes. Consequently planning proceeds on the different levels of national, regional and local activities forming one coherent whole. The necessary interrelationship cannot be realized by a mere adding together of the various individual plans but can be achieved only by a clear conception of the configuration in its entirety and by fusing the detailed schemes into the general pattern according to the specific functions which they are expected to fulfil. What is the common denominator which should govern all these activities? We must plan for human and social values and adapt the physical conditions of our environment to these aspirations.

new qualifications needed

It is obvious that we need

different types of planners on each different level. In spite of many achievements we cannot content ourselves that we have the right people for the tasks lying ahead. Why are they not available? The answer is: they cannot be available because planning is a new discipline which could not develop under *laisser-faire* conditions. Planning needs centralized guidance in order to achieve decentralized results. It attempts to balance individual initiative with the needs of the community. In the past we were more concerned with looking at our problems in a fragmentary way and consequently our educational institutions produced foremost experts for a specific branch of knowledge. What we need now are men who understand the intricate interdependence of the manifold forces and know how to handle them and make them effective. These men must be trained therefore in a manner which is different from the old methods. Their qualities are not of a slighter and more superficial character. They are different. We must produce a new type of co-ordinator and general practitioner.

centralized authority: decentralized administration

If we do not want to drift into a totalitarian state of affairs, we have got to find ways and means to curb the growing concentration of power at the centre without splitting up the country into a multitude of local communities with conflicting interests. National planning must be restricted therefore to those activities which are clearly common to all parts of the nation, and it must draw a clear line between centralized authority and centralized administration. The Tennessee Valley Authority is the outstanding example of administrative decentralization within the orbit of a centralized authority. It came into being and produced its grand results because its place was clearly defined within the general framework of the national policy. Having done that the largest number of decisions could be made on the spot without undue interference from remote headquarters, but with the widest participation of the people themselves. Similar examples exist in the USSR. The working out of plans in detail and even with regard to major problems was left to the individual Republics forming the Soviet State once the general policy and the needs of these units was recognized and laid down.

national policy first

One of the main activities of a national planning policy consists in a redistribution of population and industry. This is an especially important problem in this country with its crowded urban districts and its distressed areas. The Central Government should endeavour therefore to prepare a national plan which shows the evacuation and reception areas in broad outlines, i.e., it should indicate those areas from which people should be evacuated and those to which they should be directed together with the suitable industries. This would enable local and regional authorities to plan either for further development or for re-development. For the time being there seems to be not only a marking of time but a definite retreat from national planning. In this respect it is symptomatic that the Minister of Health can ask the local authorities to prepare their post-war housing schemes while the same local authorities do not receive any guidance from the Minister of Town and Country Planning as to whether they should plan for a thinning out of their communities or for receiving more people within their boundaries.

the national planner

The planners on the national level are not concerned with the working out of plans in detail. They must rely on the knowledge and expert ability of the specialists inside the Central Government and outside it; but they must be specialists in seeing and correlating the relations and the work of specialists on the other planes. To call them administrators—a suggestion that might easily come to one's mind—would not do justice to their special qualifications. The American Society of Planning Officials has defined these qualifications as follows: "Creative ability in developing and stimulating development of comprehensive solutions to complex problems of a social, economic and physical character. Such ability requires broad vision, imagination, thoroughness, and sound judgment, together with competence of a high order in the abilities indicated as necessary to perform the special duties which this job demands." These planners working on a national level are neither administrators nor executive agents. They are comparable to the general staff of the supreme command; they frame the general policy under the guidance of the Central Government but, although their training will be partly the same as that of regional and local planners, they must acquire those specific qualifications which will enable them to see first the configuration as a whole and to assign the right place to the many functions of human activity without losing sight of their working in detail.

The Five Years Plans of the USSR are famous. Their execution was entrusted to the State Planning Commission (Gosplan) as the supreme planning authority. It was supported by corresponding bodies in all the constituent and autonomous Republics. These subcommissions were each subject to their own cabinet of ministers. The members of the Gosplan were carefully selected and their qualifications had to be the same as those mentioned above. Their training followed the main principle of Soviet education of "learn by doing." It was realized from the outset that planning involves a great deal of adventurous experiment. In this respect the American, as expressed in the activities of the TVA, and Russian views meet. It is the foremost task of this country to develop its own type of planning and to make democracy militant and efficient, so that the last legacies of the Industrial Revolution will disappear.

the regional planner

Regional planning is the connecting link between national and local planning. Patrick Geddes defined regionalism as "an experimental problem, that of starting a re-adaptation." This re-adaptation should aim at the development of internally homogeneous regions and at a new inter-regional balance. This connecting link of a regional division of Britain is missing. For the time being the Civil Defence Regions fill this place but it is not at all certain that they will ultimately become the regional planning units, or that there will be any regional division in the administrative sense. It is hard to imagine how a sound planning policy can be carried through without a clear division of the whole country into regional units. This is especially important as regards the rural districts the integration of which in an efficiently balanced structure of settlement and industry is one of the primary objects of post-war reconstruction. Although regional and inter-regional committees have done useful work in some cases, they cannot be considered as anything like really efficient bodies. They have no authority and are more or less powerless against the pressure especially of the cities and large towns. Like national planning regional planning is a new task and its problems have to be evolved gradually. The planners working at the regional level and being nearer to the actual execution of the schemes, need a somewhat different training than those who are occupied in the framing of the national policy. They are the regional agents of the Central Planning Authority on the one hand, and on the other they must balance the claims of the local communities within their region. They must be "region conscious" and must not restrict their work to a mere co-ordination of conflicting local interests; they must develop a regional programme and carry it out. Just as the Central Authority does in the field of national planning they must plan from the top. Regional representatives who would be predominantly administrative advisers and town-planners could not cope with the problems. Many decisions are needed which do not belong to the sphere of town and country planning but are integral parts of planning in general.

the local planner

Local planning is a far more familiar activity especially as far as town and country planning is concerned. Country planning, i.e. the planning of rural areas, is almost as new as national and regional planning. No urban district should be planned without due con-

sideration of the surrounding rural area. Local planners need not be drawn from town planners and architects only; like regional and national planners, their qualifications should consist in an efficient combination of practical ability and theoretical knowledge. They are—like their fellow planners — co-ordinators and general practitioners who must possess detailed knowledge of at least a considerable part of the whole scope of their work. They must also have the ability to evaluate the importance of data and of presenting material clearly and usefully. They must be able to organize the work on the spot and to deal with the many intricacies of local government. Local planners can be compared to commanders in the front line who should undergo the same training as the higher staffs but whose work requires a more specialized and additional experience in the practical field.

The work of all planners must be faced without preconceived ideas, and the sense of possibility must be brought out as counterpart to the sense of reality. Every planner must be aware that his individual work is part of a greater collective task but that he has to solve each task in the light of its particular purpose and function.

Under certain conditions it may be possible to adapt some of the existing educational institutions to the training of the various types of planners which have been described above. The difficulty will consist, however, in the preponderance of town and country planning which is a feature common almost to all curricula. If we intend to train students as planners, i.e. as general practitioners and co-ordinators, we must develop new methods and different institutions.

school of planning

There is one solution that seems to be the natural consequence of the necessary integration of theory and practice. We may safely assume that some new towns will be built after the war. One of them should be chosen as a model town, the centre of which is the School of Planning. The full development of this new community will cover a period, say, of ten years, and during this time it will be a useful testing ground for numerous students. The advantages are obvious. As the model town will be laid out *ab ovo*, the most advanced principles of social and physical planning can be applied. Its design involves a wide field of practical and theoretical field work and research. It is a unit of a region and thus regional problems can be studied and solved. The new community should be in the proximity of a large town and should have good communications. It should be situated in the open country and have beautiful and inspiring surroundings. Possibilities of large-scale and small-scale farming and of horticulture should be available. All of these features are essential as requirements for the practical side of the training.

The interaction between the growing community and the school would give to the students and to the inhabitants a new sense of values, a new outlook and a new creative vitality.

The lesson of the USSR

by Arthur Ling

There follows a short synopsis of organization and training for planning in the USSR. Although their problems were different from ours, the experience they gained in tackling them will be invaluable to us on the threshold of our own planning enterprise.

Planning in the Soviet Union is essentially a team responsibility, shared by architects, engineers, builders, economists and experts in other branches of planning such as transport and electrification. There is no separate town planner's profession. The staff of Gyprograd, the State planning authority for the Ukraine, is typical of similar groups throughout the Union. Among 400 members on the staff in 1939, there were 60 architects, 70 engineers, 45 geologists, 45 economists and other specialists. There were no departmental divisions and consequently little time was wasted on departmental routine and jealousies. According to the particular problem, the responsible head of a group or "brigade" as it is called might be an engineer, an architect or an agricultural expert. The head selects his team according to the nature and extent of the project and these men work as a team with complete responsibility, subject only to the final approval of the Technical Council of the Institute. As an example, the brigade formed to draw up plans for Baku was led by a young architect, and included:

3 economists,
3 transportation engineers,
2 agricultural engineers,
4 architect city planners,
6 draughtsmen,
1 consultant of city planning,
1 consultant of transportation.

The client is usually a city, industry or agricultural development authority, and the form of agreement drawn up between the client and the brigade specifies the work to be done, that is the type and scale of drawings, the amount of help from outside consultants, the amount of research and planning to be covered in the investigation and the inspection of the work in process of building. Members of the brigade are paid predetermined rates worked out between the engineer's section of the National Trade Unions and the organization which is acting as client. The rate will vary with the complexity of the project, and for a field of work so far removed from the mechanical as architectural design there is a wide margin and variance of rates. High quality, speed and saving of cost are encouraged and rewarded by premiums, and there is quite a competitive spirit among brigades who strive to improve their work by frequent production meetings. The inter-relation of the different planning specialists included in a brigade is reflected in the nomenclature of the graduates—there are architect-city planners, architect-engineers and architect-builders.

The system of training these specialists in the common field of planning has grown out of the problems and conditions emerging from the revolutionary wars and the backwardness of Tzarist Russia. Large-scale economic and physical planning suddenly became both necessary and possible. Speed was more important than detail, but big mistakes could not afford to be made in the groundwork of making Russia an up-to-date industrial and agricultural country, using her natural resources to their limit. The economic plans which came first involved the construction of over 500 new industrial centres, but there were only a few technicians to plan and carry through the work. State Planning Institutes and Departments were set up with nucleus staffs augmented by hundreds of foreign specialists so that the industrial programme could go on without having to wait while Russian architects and planners were being trained. At the same time an extensive educational drive was made to train new men. The courses consisted in the first instance of evening classes and part-time courses for the untrained men already working in the institutes. Later, as more trained men became available the Institutes of Planning from which brigades are drawn were decentralized and greater cohesion existed between the planning and the execution of the work. In contrast to this country, where Architectural and Town-planning Schools are attached to Universities or function independently, the Soviet schools were linked with the offices and the jobs in progress. Although now these are purely academic schools, they are reserved for those working on planning projects rather than for new entrants straight from secondary schools.

In time the educational programme produced technicians adequate in numbers to fulfil the building programme. In the course of ten years 1928-37, 568,000 scientific specialists graduated from the polytechnics and universities, and 943,000 passed through technical schools. In three years between 1926 and 1929 the number of architects, engineers, and acrhitect-builders rose from 32,000 to 305,000. The tempo of training increased. The third five-year plan included the training of 1,400,000 technicians of various branches and of 600,000 specialists with higher education, i.e. architects, engineers, etc. Women are playing an increasingly large part in architecture and planning. In 1940 19 per cent. of the higher technical personnel of the People's Commisariat for Heavy Industry, 13,000 in number, were women. Of these 2,500 were architects, 2,700 geologists and 8,600 engineers. In 1938 45 per cent. of the students attending the 708 higher institutions of science and technology were women.

The training of planners, whatever their particular specialization, is of course fundamentally conditioned by the economic and social system. The struggle for effective town planning powers such as is being waged here around the reports of the Barlow Commission and the Scott and Uthwatt Committees was resolved in the Soviet Union twenty-six years ago. Planners there have the backing of Article 6 of the Constitution, which declares that "the land, its natural deposits, waters, forests, mills, factories, mines . . . as well as municipal enterprises and the bulk of the dwelling-houses in the cities and industrial localities are State property—that is, they belong to the whole people." On this basis, material, regional and city planning can be operated without the deadening restrictions due to multi-ownership of land, high site values and lack of planning powers; the student can concentrate on learning how to plan well with the knowledge that he will be able to make full use of his training later.

PLANNING REVIEW

DISTRICT HEATING

A scheme for district heating by high-pressure hot water, which it is estimated will cost £1,500,000, has been submitted to the public works committee of Bristol City Council. It covers the central commercial area of the city of about 335 acres, and is capable of extension. Apart from its value as a means of smoke abatement, the scheme would save nearly 25,000 tons of coal a year, providing cheaper heat than electricity, open fires or gas fires.

TCPA VERSUS LCC

In a letter to *The Times* on October 28, Sir Reginald Rowe, President of the National Federation of Housing Societies and Chairman of the Executive Committee of the Housing Centre, maintained that the figures presented in the Town and Country Planning Association's circular, which opposes the LCC plan, are misleading. He stated that the main purpose of his letter was to point out the danger of such propaganda confusing the public mind to the extent that the London boroughs might fail to co-operate wholeheartedly with the LCC in implementing the general principle of the County plan, with the result that an effective scheme for London might never come into being.

On November 1, Mr. Norman Macfadyen, Chairman of the Executive of the Town and Country Planning Association, answered Sir Reginald Rowe by restating the arguments of the TCPA and emphasizing the importance of the density of dwellings per acre in town planning as the basis of decent living conditions. He pointed out that the TCPA has not recommended the outright rejection of the LCC plan, and he believes that constructive criticism, even of a radical character, gives reality to the public discussion of the plan.

Mr. Lewis Silkin, Chairman of the Town Planning Committee of the London County Council, pointed out, in a letter on November 3 in connection with Dr. Macfadyen's denial that the TCPA has recommended outright rejection of the LCC plan, that the conception of the London of the future in the plan cannot be reconciled with that of the Association. He is convinced that if the issue is fairly and fully put to the people of London, they will prefer the principles upon which the plan has been prepared and reject the association's policy of the dismemberment of London.

The *New Statesman and Nation*, on October 30, gave added support to the opinion that the TCPA proposals to rehouse one and a half million people in garden cities and small satellite towns, runs counter to the central conception of the LCC plan, which places reliance upon the rebuilding and rehousing of the population from within the present boundaries of London, and where it is possible, within the old neighbourhood units.

MOTCP CIRCULARS 5 AND 6

On November 3 the Ministry of Town and Country Planning issued its Circular 5, Memorandum B, and Circular 6, Memorandum C, primarily for the guidance of local authorities who have not hitherto exercised planning control. Memorandum B, which deals with planning work during the war period, stresses certain relevant points in the Town and Country Planning (Interim Development) Act, 1943, and expresses the hope that planning authorities will avail themselves of the assistance of Regional Planning Officers. It emphasizes the necessity of comprehensive survey as the basis of planning, but points out that owing to shortage of staff a less comprehensive survey may have to suffice. It is recommended that assistance should be sought from outside sources in compiling the necessary information.

With regard to outline planning proposals, it is advised that local authorities should consider :

(1) The broad division between areas where considerable development is likely and appropriate, and those in which it is unlikely and undesirable.

(2) The effect of the retention of war-time building developments in their district.

(3) The architectural design of buildings, which it is advised should be simple and appropriate rather than pretentious and over-ornamented, and the relation of buildings to their surroundings.

(4) The question of villages which may provisionally be included in the Rural Zone and those where facilities may exist which permit a reasonable expansion. The areas allotted for any extension should be small and should be selected to avoid conflict with the existing character and agricultural requirements of the village.

(5) Where relevant, the special problems of development in coastal areas.

(6) Outline proposals for urban areas under five main headings : Communications ; Residential Areas ; Shopping and Business ; Industry ; Open Spaces.

Memorandum C, which is concerned with the employment of technical planning staff in wartime, suggests four possible methods which are open to a local authority in making war-time provisions for the performance of its planning duties. These are :

(1) The appointment of a planning officer.

(2) The appointment of a planning consultant.

(3) The part-time use of a planning officer lent by a neighbouring authority.

(4) Temporary surveillance by a group of technical officers.

The memorandum states that the Central Register of the Ministry of Labour has recently prepared in consultation with MOTCP, an up-to-date register of qualified planners, to which local authorities are invited to apply.

NEW LITERATURE

Pubs in the Future : The True Temperance Association ; 6d.

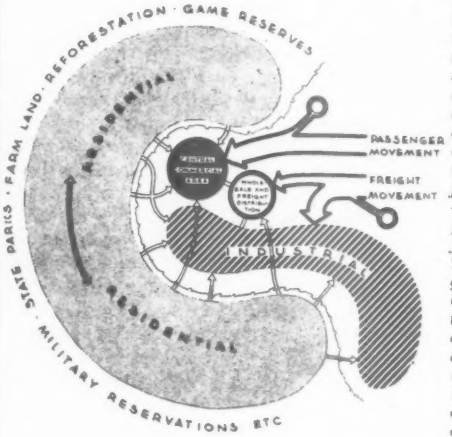
Report on the Planning of the Gas Industry : British Gas Federation, 1943 ; 1s

Rebuilding Devastated France, 1918-22 : Report No. 26. November, 1943. Association for Planning and Regional Reconstruction. Free on request.

Ministry of Town and Country Planning, Circulars No. 5 and 6 : H.M.S.O.

FUNCTIONAL ANALYSIS: USA

TACOMA



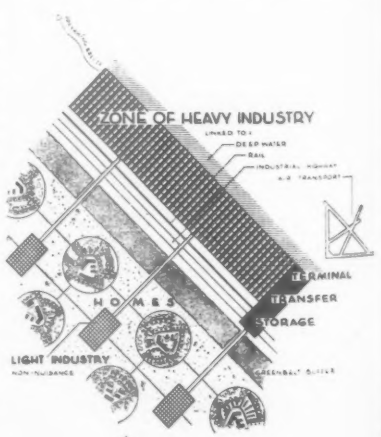
A functional relationship diagram which shows broadly the relative positions, sizes and circulation connections of the areas devoted to industry, residence, central business, wholesale trade and freight distribution —all in relation to passenger and freight movement. This type of diagram was found to be a convenient way to give preliminary direction to the actual plan, which was later worked out in relation to conditions of topography and existing features.

The National Planning Resources Board of the USA was killed, after a useful life of ten years, by an Act of Congress in June, 1943. Among the last works to be completed by NPRB were the Progressive Urban Studies of Tacoma, Washington ; Salt Lake City, Utah ; and Corpus Christi, Texas. The aim of the studies was to encourage the active participation of responsible groups in the replanning of their cities ; and a technician was supplied in each case to act as a link between the local planners and the central and regional federal offices whose programme affected the cities. The experiment was a marked success. Through it, a broadly diversified group of responsible people in each of the communities came to know their cities as never before ; they learned that they can in large measure control its future development by continuing their planning studies, and they developed an enthusiastic understanding of planning that has seldom been attained elsewhere.

The procedure followed in the demonstration cities was designed to emphasize their economic and social foundations. The first thing to be established was a broad functional pattern, such as would be most desirable for the community, taking into account the kinds of activities and their interrelationship ; to show this several alternative diagrammatic sketches were made, being followed by an examination of the forces tending to bring about changes. By adjusting the cities' existing pattern to an agreed desirable pattern, it was possible to work out the first draft of a physical plan. The diagrams illustrated here show two of the types of studies made in the demonstration cities. They bring out relationships in a way that is easy to understand and sometimes point the way to bold and useful measures of rehabilitation which might not be suggested in a physical map itself. It is interesting to compare this approach with those which have been made towards the replanning of London. In such a light the MARS plan appears as a stage which the American planners call the first draft of a physical plan, when the forces tending to bring about changes have been ascertained and the city's existing pattern is adjusted to an agreed desirable pattern. A plan such as that of the LCC is a stage further when the draft plan has been related to topographical and existing features. It is evident however, that the degree of collaboration between specialists and responsible citizens achieved in the USA demonstration cities is still far from being realized in the replanning of London.

CORPUS CHRISTI

A diagrammatic study of industrial locations which shows the relationships of heavy industry to transportation and to terminal facilities as well as to homes and light (non-nuisance) industry. This diagram was based on the possibilities of development and was intended to serve as a guide in attacking the more precise physical study of future locations for new industry and feasible adjustments in neighbourhood arrangements.



(*New Pencil Points, August, 1943*).

The following report on a type of reinforced concrete floor, little known in this country, is based on experience gained by the author in Czechoslovakia and Yugoslavia between 1936 and 1938. The floor is composed of prefabricated units, either tubular or half tubular in shape, which are given great density and strength by a factory process of spinning in a centrifugal mould. This type of floor, the author claims, saves both labour and materials. It should therefore be of value in post-war rebuilding.

Prefabricated FLOORS in Spun Concrete

[*By Dr. PAUL W. ABELES*]

There are, broadly speaking, three different kinds of floors: (1) Reinforced concrete floors made *in situ*, using timber or steel shuttering and supports; (2) floors consisting of prefabricated reinforced concrete elements, which need little or no support, and of *in situ* concrete, the shuttering for the latter, supported by the precast elements, being either removable or forming part of the floor structure (mostly increasing insulating value); (3) floors consisting of prefabricated elements only.

Types (3) and some types of (2) do not require the shuttering and support of type (1), thus greatly simplify the construction. Floors of type (3), unlike types (1) and (2), can be loaded immediately. The time of erection can thus be greatly reduced, since it is not necessary to wait until the concrete has hardened to erect partition walls. Most of the known types of floors of type (3) are, however, not very economical in material and are rather heavy. This is not the case with floors having spun concrete beams.

The manufacture of reinforced concrete products in a centrifugal mould has been known for some time. By this process spun concrete of great density and strength is obtained. Tubular spun concrete beams, as shown in Figure 1 are a combination of a cylindrical tube and a beam. The reinforcement is of transverse rings which form, together with a main and secondary longitudinal reinforcement, a rigid skeleton. As compared with rectangular hollow beams, this arrangement on the one hand reduces weight, and on the other hand considerably increases strength, as has been proved by extensive tests in Yugoslavia (University of Ljublana) and Czechoslovakia (University of Brno).* This may be explained by the fact that this form of construction has the combined properties of a beam and a cylindrical tube, that the strength of the concrete is greatly enhanced by the centrifugal moulding process, and that the reinforcement acts as a rigid skeleton whose transverse part is pre-stressed during the moulding operation. An outstanding feature of tubular spun beams is their great pliability and resilience. With beams loaded to two-thirds, or even three-quarters, of the ultimate load, relatively slight permanent deformation remains after removing the load. This property of tubular spun beams is similar to that obtained in pre-stressed concrete.

Figure 2 shows the underside of a floor of the weaving mill in Dugaresa, Yugoslavia, where this system was used for the first time in 1936, precast reinforced concrete slabs being placed between the tubular beams and the gaps being filled with cement mortar. The girders were made *in situ* in the normal way. No separation between the single interconnected parts took place in spite of the vibration which occurs in a weaving mill, and this floor has remained quite rigid and proved most satisfactory. Shaftings can easily be fixed to these beams, as can be seen in Figure 2. No separate plaster is necessary since the surface of the spun beams is very smooth. Figure 3 is a view of the underside of a flat roof construction with concrete sky lights in a dyeing mill, erected in 1936. Here spun concrete beams lie between *in situ* girders. Figures 4 and 5 show parts of a pitched roof of a magazine where spun beams are used as purlins between reinforced concrete frames made *in situ*, the purlins having timber inlets for fixing the roof sheeting. Figure 6 shows the use of tubular beams in combination with precast reinforced concrete slabs, as used for floors in dwelling-houses in Brno, Czechoslovakia, in 1937. The rods which are seen protruding from the slabs are ultimately bent down and serve to suspend a separate ceiling.

Since by the spinning process a great uniformity in carrying capacity is ensured, the design can be carried out on the basis of test results, thus making use of the real strength of the beams and saving steel (30 to 50 per cent. of the longitudinal reinforcement as compared with rectangular or T-beams of the same depth). The design on the basis of test results instead of according to permissible stresses, calculated in the orthodox way, has been approved by the Building Research Station for a roofing design for hutments.†

Figure 7 shows a type of floor construction using half-tubular spun beams, two of which are produced simultaneously, the tube being halved by insertion of division sheets. Floor and ceiling slabs are placed between the half-tubes and special thin concrete slabs are fixed at the underside of the half-tubular beams in order to obtain a uniform ceiling. It is also possible to suspend a separate ceiling, dispensing with the solid ceiling slabs.

In half-tubular beams, even if designed in accordance with the regulations, a great reduction in the consumption both of concrete and steel is achieved. Figure 8 shows a block of flats in Susak, during its erection in 1937, where half-tubular beams laid one beside another without using slabs, form a floor between reinforced concrete girders made *in situ* in the usual way.

Owing to the great strength of spun concrete in tubular beams used in floor construction (e.g., Figures 1, 2 and 6), the usual concrete slabs forming the flange of T-beams can be dispensed with. The relatively small upper portion of the tube has sufficient compressive resistance, which permits their being used as

* See: International Association for Bridge and Structural Engineering. Second Congress. *Final Report*, pp. 252 to 256; *Report* by Prof. Kral, University Ljubljana, Yugoslavia.
Spun Tubular Beams. Economy in Steel in Floor Constr., by Dr. P. Abeles (*Concrete & Constr. Eng.*, May, 1940).
Tubular and Half-tubular Spun Concrete Beams, by Dr. P. W. Abeles (*Engineering*, November 1, 1940).

† The note on this design says: "The calculation for the strength of the tubes carry a reference to the results of tests made on similar tubes showing the high standard of performance of this type of beam. Although a factor of safety of only two has been adopted in the present designs, it is considered that the good standard of quality and workmanship which is a necessary result of the spinning process renders the use of such a factor permissible. On this basis the sections adopted are considered satisfactory for a superimposed loading of 15 lb./sq. ft."

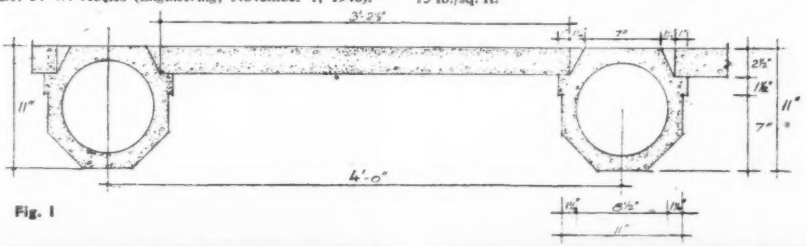


Fig. 1

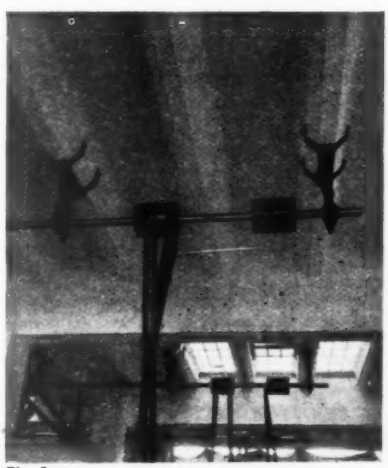


Fig. 2

Fig. 3

Figure 1, section through part of a factory floor supported by tubular spun concrete beams, live load being 2 cwts./sq.ft. Figure 2, the underside of a floor in a Yugoslavian weaving mill, showing this type of construction. Figure 3, shows the underside of a flat roof with sky lights in a dyeing mill.

Fig. 4

Fig. 5

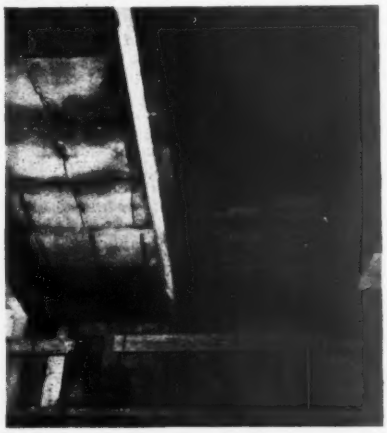


Fig. 6

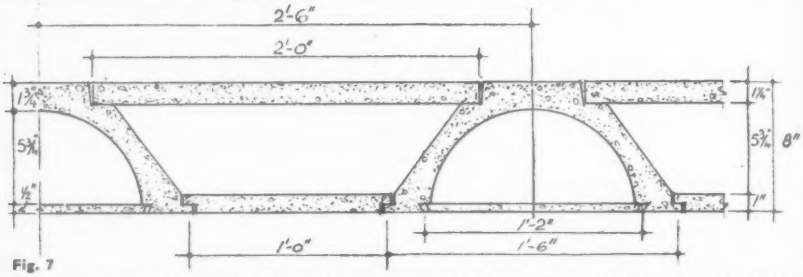


Fig. 7

Figures 4 and 5, pitched roof with tubular spun purlins in a magazine erected in Yugoslavia in 1938. Figure 6, tubular spun concrete beams in combination with precast reinforced concrete slabs, as used for floors in houses in Brno, Czechoslovakia in 1937. Figure 7, section through a floor used in housing of half-tubular spun beams, two of which are produced simultaneously. Live load is 50 lbs./sq.ft. Figure 8, a block of flats in Susak, Yugoslavia, during its erection in 1937, where half-tubular beams were laid one beside another without intermediate slabs. Figure 9, a spinning machine used in the production of half-tubular beams near the site of a temporary factory, Susak, 1937. Figure 10, storage of half-tubular beams on the ground floor of the block of flats in Susak.

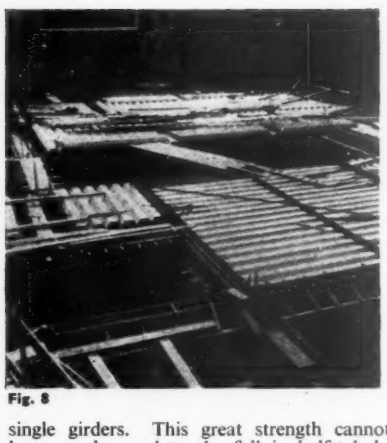


Fig. 8

Fig. 9

Fig. 10

single girders. This great strength cannot, however, be used to the full in half-tubular beams, even if they are spaced as shown in Figure 7. It is therefore possible in this case to use light weight aggregates, thus reducing the weight further and increasing insulation. In Brno, Czechoslovakia, interesting experiments were made with a mixture consisting of ground brick as sand, broken brick as gravel, and cement, the weight being reduced by one quarter and sufficient strength being attained. Such a mixture should be of some interest in England owing to the great amount of bricks of destroyed houses which is now available.

In their first practical application in 1936-38, spun concrete beams were used only as floor beams. It is, however, also possible to use them as girders and columns, thus further extending the use of prefabricated units.

Figure 9 shows the production near the site of a factory of half-tubular beams for the floors illustrated in Figure 8. For products of considerable length such as beams, the reinforcement and the concrete are inserted into the mould, which consists of two halves, before it is closed. For shorter products such as pipes, the mould, consisting of one piece, is filled from the two ends. A number of different types of centrifugal machines have been produced for making pipes of limited length; in this case the mould spins free between its fixed ends. For the manufacture of longer products such as poles or beams, different types of machines are available. Nearly all of them are rather heavy and require a heavy anchorage; some are moreover rather complicated as far as the spinning process is concerned, since the mould has to be inserted into, and threaded through, single cylinders or a counter-mould. But a new type of spinning machine, shown in Figure 9, was used in Czechoslovakia and Yugoslavia in 1937 and has proved very satisfactory. It does not need heavy anchorage and is mobile, thus allowing easy transportation to the site (weight of a machine of 25 ft. length is about 7,000 lb.).

From Figure 9 it can be seen that the mould has at certain distances rings which are supported by rollers, fasteners being provided between the rings to lock the mould after it has been filled. Upper pressure rollers, provided with a pressure-adjusting device, are carried by arms which are fixed on pillars and revolve round them. It is possible to bring the filled mould from above down to the rollers, one of which rotates the mould by friction. The upper pressure rollers are brought to position and the required pressure is exerted, the degree of which can be regulated even during the spinning process. In one mould two tubular beams or four half-tubular beams can be produced simultaneously. The machine can be provided in any length required and this can be increased at any time. The motor is either placed at the centre or at one end of the machine, provided the latter is not too long. (In Brno it was placed at one end of a 25 ft. machine with a view to doubling the length later). The production is carried out in a continuous process consisting of the following operations: making the reinforcement skeleton; putting it into the mould and filling the latter with concrete; loc..ing the mould and carrying it to the spinning machine; centrifugating (six to eight minutes); removing the mould from the spinning machine after the centrifugating process has taken place; storing the mould containing the product; removing the mould from the hardened product; cleaning the mould for re-use;

Fig. 11

Fig. 12

Figure 11, *the use of a crane for mounting tubular spun beams at a weaving mill, Dugaresa, Yugoslavia*, 1936. *Figure* 12, *the handling by a simple tackle of beams for a dwelling-house at Brno, Czechoslovakia*, 1937.

curing the spun concrete products; storing the products and loading them for transport to the site. The last operation is dispensed with when the production is carried out near the site (see Figure 10 showing half-tubular beams, the production of which is illustrated in Figure 9, stored in the ground-floor of the block of flats in Figure 8). The time which is required for hardening the concrete, before the moulds can be removed from the beams, depends on the kind of cement used and on the temperature, maximum time being 20 to 24 hours. When using bauxite (high aluminia) cement or placing the moulds with the spun products in a heating chamber (autoclave), the moulds can be removed after about three hours.

The use of a crane, as seen in Figure 11, for the erection of the floors, shown in Figure 2, is of advantage. Special mechanical means, however, are not essential; a simple tackle can be used, as is seen in Figure 12.

It is interesting to note that this floor construction (both with tubular and with half-tubular spun beams) was competitive in price compared with other known floors in Czechoslovakia and Yugoslavia. In Czechoslovakia, wages and cost of materials were about the same as in this country, but timber was relatively cheaper, while in Yugoslavia wages were relatively much lower and very cheap timber for shuttering and support was available. The economy of this floor construction, in spite of the capital cost of machinery and moulds, is due to the saving both of material and labour, the latter being attained by the use of factory methods. In addition to the economy of the floor construction itself, a further saving of 15 per cent. in the cost of girders, columns and foundation is effected by the reduction of weight.

The cost of machinery and moulds and the production of high-quality concrete not necessary for ordinary floors is more than offset by the speed of erection and the great saving in materials and labour—considerations which should be of primary importance in post-war building.

INFORMATION CENTRE

The function of this feature is to supply an index and a digest of all current developments in planning and building technique throughout the world as recorded in technical publications, and statements of every kind whether official, private or commercial. Items are written by specialists of the highest authority who are not on the permanent staff of the Journal and views expressed are disinterested and objective. The Editors welcome information on all developments from any source, including manufacturers and contractors.

PHYSICAL PLANNING

1278 — *Regional Planning*

REGIONAL PLANNING. *L. B. Escritt.* (*Allen & Unwin*, 1943). Original and useful book on value of geographic survey in planning, with full bibliography.

(1) If those who would plan the future development of town and country do not study the material upon which they work, plans may be adverse to the general welfare.

(2) The boundary of the regional authority may not extend to the natural limits of the region, but the survey should do so. It should therefore include the whole of the river basins.

(3) The survey atlas should be made up of a series of transparent maps; suggested subjects, scales and sources are included. For example, working from the soil survey and with the aid of the soil surveyor, the planner would prepare a map showing in, say, green hachure lines the best agricultural land, dotted green hachure lines land capable of bearing crops but not particularly good, while unfertile land would be left blank. Using a different colour he would then prepare a similar plan showing land particularly suitable for housing, land fitted for housing and land unfitted for housing. A similar plan would show the suitability of the land for industrial purposes. An essential plan would show the land that must be reserved for water supply purposes such as gathering grounds, wells, intakes, reservoirs, etc., and on the same map could be included suitable positions for sewage treatment works, cemeteries and other public services.

(4) The next stage would be the preparation of a number of interpretations of these maps to form tentative zoning plans, after which "the planner would have a map showing the general layout of the town, with industrial zone, residential zone, business centre, administrative centre, public services, shopping centres, parks (some situated on land fit for no other purpose), green belts (dividing zones), playing fields (on flat ground with good soil), main through roads, district roads, railways and waterways. Copies of this plan he would then submit to the engineers specializing in the different branches of engineering concerned and when such variations as they considered necessary had been made, the final plan would be submitted to the Committee and decided upon as the basis of the Master Plan."

(5) Mr. Escritt suggests that some knowledge of Geology, Agriculture and Sewerage engineering is essential and should be included in the education of the planner.

1279 — *World Population*

THE ECONOMIC PATTERN OF WORLD POPULATION. *J. B. Condliffe.* (*Planning Pamphlets, No.* 18, *National Planning Assocn., Washington, January*, 1943). Economic significance of world population statistics upon which plans for post-war reconstruction must be based.

"The great cities of our day have grown primarily because in the last century and a half means have been found to control the death-rate among crowded masses of people. Until the nineteenth century, cities maintained and increased the number of their inhabitants by drawing heavily upon fresh infusions of healthy adult immigrants from the surrounding countryside. The drift from rural to urban areas has continued; but the manner in which the modern growth of cities has taken place is rather a larger natural increase in the city populations themselves (lower death-rate) than an increase in immigration from the rural districts; the current of migration cityward has been observed for several centuries, but it is only in the nineteenth century that any very considerable number of cities have had a regular surplus of births over deaths.

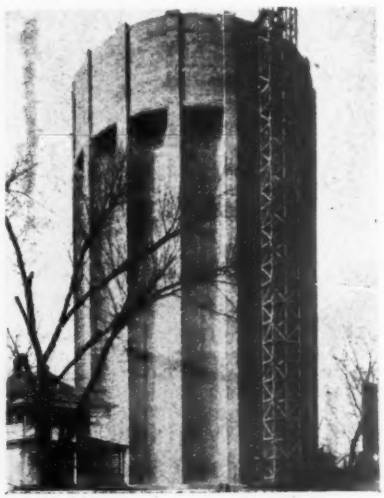
"This fact in itself is enough to cause one to suspect the validity of the arguments against urbanization in the broader sense of the term. Indeed the attack on city life, which is most pertinent to modern conditions, is itself conceived in terms of modernization. Not only the improvements in public health and medical care, but modern advances in popular as well as specialized education, in political democracy, trade union organization, improved housing and nutrition and care for individual misfortune had their origins not in country but in city life. The constructive discontent that provides the motive power for social reform or revolution is not usually generated in rural surroundings and no small part of the distrust of city life arises in fact from fear of such constructive discontent. It is significant that the countries which have gone furthest along the road to economic justice and political equality, those in which individual human rights are most adequately safeguarded and opportunities for individual development are most widespread, are precisely those in which urbanization has gone furthest. This does not mean that congestion in urban areas is not an evil; but it does mean that the advantages of city life are real and capable now of extension over wider areas. Not less, but more mechanization is the line along which to seek solutions."

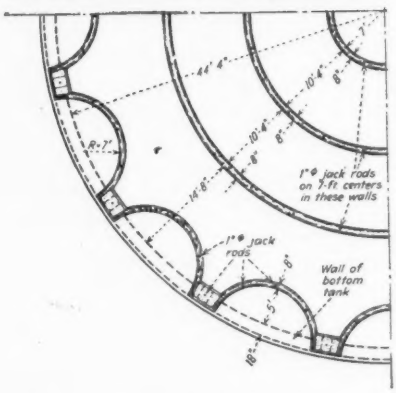
STRUCTURE

1280 — *Water Tank*

CONCENTRIC RING TANK FOR TOPEKA. (*Engineering News-Record, July* 29, 1943, *pp.* 194-197). 1,000,000 gal. tank, 120 ft. above ground, supported on three concentric concrete rings inside the fluted exterior wall. Second 1,000,000 gal. tank in the base of the structure, below ground.

Meeting the objection of home-owners to the erection of an elevated storage tank in a residential area, Topeka, Kan., has an attractive concrete structure that is far from the eyesore that many residents had feared. Exterior of the supporting structure is a





Water storage tank for one million gallons at Topeka, Kan. of reinforced concrete on concentric walls, the outer one being fluted. Top, general view. Above, quarter plan. See item 1280.

distinctive fluted surface accented by pilasters. The tank is of the concentric ring type in which the " tower " consists of a series of concentric concrete walls instead of the more usual columns and bracing. The tank itself, a concrete cylinder 87 ft. in diameter and 25 ft. high, rests on top of the tower. Rings of columns within the tank and directly over the walls carry the tank roof.

An unusual feature is a " basement " tank, which was made possible when excavation for the foundations had to go down about 30 ft. below ground level to reach rock.

Ordinarily such a tank and tower would resemble an up-ended cylinder, with smooth exterior surface. To improve its appearance, the consulting architect suggested a fluted surface for the exterior ring. Although it increased the cost of construction somewhat, it was adopted and met with general approval throughout the city.

The most spectacular element of the construction was the use of sliding forms. (See Inf. Centre, No. 1193). Because of the four concentric walls, a forest of jack frames was required and because of the fluted exterior wall some special techniques had to be devised.

LIGHTING

1281 **Light and Vision**

LIGHT AND VISION. *Sir John Parsons.* (*Journal of the Illuminating Engineering Society, June*, 1943, *p.* 99.) An exposition of the physiology of the eye in relation to illumination.

It is interesting to observe that minds most capable of exploring the deepest complexities of science are often those best able to expound them simply. This paper is a case in point.

The author's main purpose is to review, in the manner of a formal annual address, the history and significance of researches on light and vision, and the part they have played in the work of the Illuminating Engineering Society. Reference is made to a full range of studies such as the response of the eye to light, visual acuity, and glare, and these are cleverly shown to fit together to form the necessary background for the IES Code, for the recent factory lighting legislation, and for other results of the Society's activity. Naturally, there is an extended reference to vision at low illuminations, which is mainly a transient wartime problem, but the bulk of the material is basic, and makes good reading for the architect. It has a particular interest now because it is becoming more widely realized that knowledge of the elements of physiology of the eye and ear should form part of the architect's " stock-in-trade."

1282 **RIBA Lecture**

LIGHTING : ANALYSIS. *H. C. Weston, Investigator to the Industrial Health Research Board.* (*Lecture at RIBA, May* 15, 1943. *Fully reported in the* JOURNAL, *August* 5, 1943). A general statement of the function of lighting, the nature of light and the reaction of the eye. This lecture is a clear statement of principles which must be understood if design is to be satisfactory. Lecture essentially a background to following lectures by R. O. Ackerley and P. V. Burnett.

1283 **RIBA Lecture**

LIGHTING : APPLICATION : DAYLIGHT. *P. V. Burnett, F.R.I.B.A.* (*Lecture at RIBA, May* 15, 1943. *Fully reported in the* JOURNAL, *August* 12, 1943). An explanation of the function of windows with important review of methods of measuring daylight and methods of window design. Some new methods reviewed.

1284 **RIBA Lecture**

LIGHTING : APPLICATION : ARTIFICIAL LIGHT. *R. O. Ackerley.* (*Lecture at RIBA, May* 15, 1943. *Fully reported in the* JOURNAL, *August* 19, 1943). General description of requirements and method of approach to design of lighting installations. Quantity and quality of light. Some details on domestic lighting.

1285 **Aero Dynamos**

WIND POWER FOR ELECTRICITY. *C. A. C. Brown.* (*Electrical Times, August* 26, 1943, *p.* 240.) Possibilities in the design of aero dynamos.

Generators operated by wind power are visualized by various authorities as falling roughly into three size groups, with the purpose of serving, firstly, isolated consumers ; secondly, isolated groups of consumers, such as small, remote villages ; and thirdly, as large scale sources of power supply.

In America there is a large, experimental generator on Grandpa's Knob, and in Germany there are said to be some very large units. But the present author feels that to think along these lines is to ignore the isolated consumers, which he regards as the most important group, both socially and commercially.

He describes the requirements of units for farm and villages, and discusses the vital problem of power storage and power demands to secure a high degree of utilization. The best models so far produced are discussed and one of them is illustrated. Estimates of costs of units are given.

QUESTIONS and answers

THE Information Centre answers any question about architecture, building, or the professions and trades within the building industry. It does so free of charge, and its help is available to any member of the industry. Answers are sent direct to enquirers as soon as they have been prepared. The service is confidential, and in no case is the identity of an enquirer disclosed to a third party. Questions should be sent to : THE ARCHITECTS' JOURNAL, 45, *The Avenue, Cheam, Surrey.*

1286 **Approval of Post-war Plans**

Q *My clients are negotiating for some land and require to be assured that shop property can be erected after the war. Accordingly plans have been deposited with the local authorities. Their reply is that this land is zoned (undetermined) in a draft planning scheme, that all building requires the consent of the Council and that they would not be prepared to recommend approval of plans to be carried out at a later date when conditions may have changed. Without the Corporation's consent and approval of plans my clients would not be prepared to continue negotiations.*

Have the local authorities the power to refuse consideration of plans in these circumstances ?

A Conditions may vary slightly in different localities but under the Model By-Laws, approval as regards conformity with the local Building By-Laws must be given within one month. Where meetings of the local authority are normally held not more frequently than once a month, and plans are deposited less than three clear days before a meeting, the period of approval is extended to five weeks. This has nothing to do with the approval required under the Town and Country Planning Acts.

The Town and Country Planning Act, 1943, Section 2, repeals the automatic permission for interim development given in the 1932 Act and allows the Interim Development Authority to postpone their decision if the development is not to be carried out at once.

1287 **Tenancy Agreements**

Q *I shall be pleased if you can inform me if there is any wartime legislation which controls tenancy agreements for residential properties, entered into since the war commenced. If such legislation exists, can the landlord not regain possession except for the purpose of his own occupation upon the expiration of the term of tenancy and must he continue the tenancy upon the previously existing terms ?*

A The latest Act which controls tenancy agreements (in the sense referred to by you) is the Rent and Mortgage Interest Restriction Act, 1939, which modifies and amends the previous Rent Restriction Acts.

If the property is controlled under this Act, the Landlord cannot regain possession and cannot charge more than the Standard Rent to either the existing or a new tenant. The Standard Rent is the rent at which the house was let on September 1, 1939 or, in the case of a house first let after that date, the rent at which it was first let after Sept. 1, 1939.

SOCIETIES AND INSTITUTIONS

Speeches and lectures delivered before societies, as well as reports of their activities, are dealt with under this title, which includes trade associations, Government departments, Parliament and professional societies. To economise space the bodies concerned are represented by their initials, but a glossary of abbreviations will be found on the front cover. Except where inverted commas are used, the reports are summaries and not verbatim.

HC

T. B. Oxenbury

October 26, at the Housing Centre, 13, Suffolk Street, S.W.1. Lecture in conjunction with exhibition (now closed) on EAST SUFFOLK RECONSTRUCTION SURVEY, by T. B. Oxenbury, L.R.I.B.A., A.M.T.P.I., County Planning Officer of East Suffolk.

T. B. Oxenbury : We have seen the very interesting work carried out by Max Lock in the Hull Survey and I am sure he chose a singularly apt title—*Civic Diagnosis*. The County Survey is the direct antithesis, dealing as it does with the rural complexity as opposed to the urban.

The word diagnosis pre-supposes the existence of a complaint, a malady ; e.g., the squalor and degradation of slums in our cities, and in the countryside the miserable pre-war state of the agricultural industry and the primitive and insanitary housing conditions of the agricultural community.

Acknowledging the fact that something is wrong, we proceed to carry out investigations into houses—by carrying out investigation into existing conditions ; this then is what we mean by survey.

The Oxford dictionary gives the definition of survey as " an enquiry into something's condition . . ." but it is rather more, it is an " endeavour to discover facts by *scientific* study "—it is research pure and simple.

No planning scheme *can* be prepared (note I have said *can* and not *should*) without the preliminary extensive research. In pre-war planning schemes the lack of a basic survey has resulted in the wholesale production of negative and ineffectual plans—and in so many instances the sum total merely being a perpetuation of existing unsatisfactory conditions in a less unpalatable form.

The laying down of building and improvement lines and the application of density zones does not represent a planning scheme. The planner is concerned with the whole life and structure of communities—the seeds must be sown for the fulfilment of human hopes and aspirations—that is a healthy, happy and contented life in a better England, and a better world.

New development should be directed to existing village centres in close proximity to educational, social and recreational facilities. Ribbon development is a disease which must be stamped out—the grouping of " development units " in and around the established rural settlements is undoubtedly sound planning and acts as an antidote to ugly, untidy and wasteful ribboning. Grouping is economic and socially desirable, it causes the least offence to amenity and has obvious advantages when one is considering traffic requirements and road safety. Proposals for the County will aim at settling the agricultural population in such centres—in what we hope will continue to be a countryside rehabilitated by the maintenance of a prosperous agriculture.

The first thing we have to consider is the direction in which the investigation is to proceed. In a survey it is desirable to classify investigations in order of importance—concentrating first of all on basic features—bearing in mind the desirability of having ready at the end of the war, broad outline proposals of a particular county or region.

When in the early part of 1941 I obtained the whole-hearted support of the County Council to the making of a survey for the County of Suffolk, I drew up a programme of planning research under the following main headings—the results of which you see on exhibition here to-day. The programme is as follows :—

GEOGRAPHY.

1. *Land.*—Solid geology ; drift geology ; soil distribution ; contours ; low lying land ; land classification ; grassland grades.
2. *Climate.*—Wind and frost ; rain, sun and temperature ; coastal erosion.

INDUSTRY.

1. *Agriculture.*—Crop and livestock production, 1939 and 1943 ; market gardening ; forestry ; non-agricultural areas ; areas devoted to cereals, roots and legumes, grazing, cattle, sheep, pigs and fowls, and centres of the allied agricultural industries.
2. *Fishing.*—For sport ; for marketing ; allied industries.
3. *Extractive.*—Quarrying ; brickmaking ; cement manufacture.
4. *Constructive.*—Rural ; urban.
5. *Service.*—Public utilities ; road, rail, water and air communications ; bus services ; road accidents and their causes ; retail distribution ; child and adult education ; recreation ; village halls, churches.
6. *Tourist.*—Reception areas.

Points to be considered under the heading of INDUSTRY :—

(*a*) *Undertakings.*—Number in district ; reasons for presence and estimated duration of stay ; seasonal fluctuations ; total area occupied ; area covered by plant ; expansion requirements ; storage of raw material and products.

(*b*) *Employees.*—Total numbers employed ; average number per undertaking of each type ; sex groups ; age groups ; skilled and unskilled.

(*c*) *Local Distribution* : Siting of undertakings ; homes of employees and their means and time of transport.

(*d*) *Raw Material* : Sources ; means and time of transport.

(*e*) *Location of Markets* : Means and time of transport ; methods of distribution (Regional, National and Foreign).

(*f*) *Strategy* : Areas requiring decentralization ; reception areas ; new or immigrated factories ; bomb damaged areas.

POPULATION.

1. *Density.*—1938 estimate.
2. *Trend.*—Analysis of tendencies 1851-1931.
3. *Distribution.*—Rural ; local ; district ; provincial ; regional.
4. *Fresh Food Supply.*—Acreage required.
5. *Housing.*—Property unfit for habitation ; repairable or in good repair ; future requirements of agricultural population ; individual village surveys.
6. *National Heritage.*—Buildings and other antiquities for preservation ; areas of landscape interest ; nature reserves ; footpath access to the coast and countryside.

ADMINISTRATION AND FINANCE.

1. *Ownership.*—Public and private.
2. *Finance.*—Land values and rateable values.
3. *Administration.*—Local Government units ; planning areas.

Geography.—A study of " Solid " and " Drift " geology forms an important basis for an understanding of the land, drainage and water supply problems of an area, both in connection with water supply for urban districts and the general moisture retention capacity of the soil.

A complete picture of general farming tendency springs to light from a top-soil survey made from careful local examination of soil sample. Mineral outcrops are located and the position relating to extractive industries examined. At the same time, areas, the soils of which are agriculturally useless, can be seen and these considered with a view to use as National Parks and Reserves, for building development or other non-agricultural purposes.

A clear contour map is an essential part of the land survey. Slopes are a deciding factor in the siting and layout of buildings, of roads, of towns and of the whole transport network.

Climate.—High sunshine percentages are recorded in the County and a rainfall well below the National Mean, these two factors contributing much towards making Suffolk a good corn-growing region.

A big problem with which we are faced is erosion along stretches of our coastline, and at certain points accretion is taking place.

Agriculture.—The County has a high soil fertility and where reception areas for lighter industries and their workers are to be included in future plans, the selection of possible sites is greatly limited by the valuable nature of the ground for agricultural purposes.

Survey maps show farming in the County as it actually was in 1939. These show the density of the various crops, grazing land and livestock. Thus we are able to see where local production falls short of local needs and to ensure, having accepted some fundamental diet standards, that wherever possible adequate good quality land is reserved round urban centres for market garden and allotment use ; but perhaps most important of all, we are able to see what repercussions will take place owing to planned increase or reduction of population in any one place on local agricultural activity. Estimates can also be made showing what increase in population a locality can support in fresh food ; where this is the only outstanding consideration, it may become a deciding factor in fixing population limit.

Industry.—Many of the smaller market towns in the County have grown in the past beyond village status and are yet not capable of maintaining those social amenities which are associated with a well-planned and flourishing community. When considering Suffolk as a possible reception area for light industry or discussing plans for developing rural industry, it is to these " dead " towns, whose ordinary market business has decreased with the growth of easy transport facilities, that we turn.

In answer to a questionnaire circulated to all industrial undertakings, most firms anticipate remaining in the district after the war. There is, therefore, no acute industrial problem and the field is clear for a planned development.

A careful study of suitable industrial locations, bearing constantly in mind the agricultural or other value of the land, the transport facilities,

services available, and the opportunity offered for the growth of a balanced and healthy community will automatically determine areas for development.

Population.—The relation of town to town needs to be stated. A balanced community must be built up of small villages within easy access of a small but flourishing country town, which in its turn can depend for its higher education, its less frequent purchases, its specialized health services, and its music and theatres on a prosperous County town, the whole structure having an administrative centre acting as a meeting ground for the provinces of the region. Within broad limits, the town sizes must also be determined, they must be brought up to reach a population capable of supporting the services required, and prevented from growing so large as to become badly planned and prejudicial to healthy living.

To consider this problem in its true perspective, I have wandered outside the boundaries of the County in order to cover as wide a field as possible. We must break away from the insular or parochial outlook—arbitrary local government boundaries are meaningless when one is concerned with planning whether local or regional. Some of the maps, therefore, in this series cover East Anglia. The population centres are built up in five degrees depending on function, requirements and importance.

1*st degree*: *Rural Centres.*—Least complex communal unit; villages and hamlets.

2*nd degree*: *Local Centres.*—Rather larger than the ordinary hamlet or village (say up to 5,000), where a village college might be established to form a focal point for rural life and where cinema shows and dances might take place. I feel there is a big future for the travelling cinema and repertory companies.

3*rd degree*: *District Centres.*—Providing for its area the secondary education, the simpler non-perishable goods and the other social needs of everyday life. It is in fact a country town where fresh country produce can be marketed, and where light industrial undertakings connected with agriculture can be established. It is a focal point and supply centre for the district, and its population according to its nature should fall between 5,000 and 15,000. No outlying area should be further than 7 miles from the town.

4*th degree*: *Provincial Centres.*—These would serve a group of country towns and the background population of a rural area, with all those social necessities that cannot be run in the smaller country town or district centre. The population should be between 50,000 and 100,000. No outlying town or area should be further than 20 miles from such a centre.

5*th degree*: *Regional Centres.*—Would serve as a hub for regional business, easy of access from the provincial centres involved. Here would be located the "little Whitehalls"—the regional headquarters of the various Ministries. My survey indicates Thetford, in Norfolk, as serving this function for the Eastern Region, purely from a geographical point of view.

So much for the basic survey. In addition to the basic survey, subsidiary surveys are being carried out to provide more detailed information. As a result of the whole survey, I hope within a short time to present to my Council and to my Joint Planning Committees, a broad outline planning scheme for Suffolk.

To summarize, the survey involves a sequence of stages:—

1. *The Basic Survey* covers the wider investigations into existing conditions in the County.

2. *Subsidiary Surveys* bridge any gaps in the basic survey and provide more specialized information, e.g., on village halls and playing fields, housing conditions, etc.

3. *A Pattern Village Survey* represents a local specialized survey of the life history of each village, indicating its physical character, existing services, social amenities and any matter bearing on the life of the community. Each village dossier will be complete with planning proposals for the background rural population.

4. *Detailed Analytical Survey*, supplementing again the basic survey, and covering towns and larger settlements.

5. *The Emergence of the Plan.*—A broad outline scheme, followed by detailed schemes for the towns, village settlements and background population—based on the assumption that the recommendations contained in the Barlow, Scott and Uthwatt Reports will be implemented.

IAAS

H. H. Lusty

Oct. 30, at 75, Eaton Place, S.W.1. Paper read to the London Branch of the Incorporated Association of Architects and Surveyors on PLASTICS AND THEIR PLACE IN POST-WAR BUILDING, by H. H. Lusty.

H. H. Lusty: Plastics are very remarkable materials and they will undoubtedly exert an increasing influence on our everyday lives. They have great potentialities but they also have their limitations, both physical and economic. Plastics science is continually advancing, new materials are introduced from time to time and the old ones constantly improved. Limitations which exist to-day may disappear to-morrow.

The name "plastics" is not a particularly happy one because the ultimate consumer rarely knows the materials in a plastic form. It is, however, well established now and is likely to remain. Plastics may be described as a group of materials which are plastic at some stage in their manufacture, and can be shaped or formed by the application of heat and pressure. Bitumen, Shellac and Sealing Wax are naturally occurring plastics. The group of materials known as plastics are organic materials. They are mainly synthetic, but they include the semi-synthetic cellulose plastics and casein.

Thermo-Plastics and Thermo-Setting Plastics

Plastics can be broadly divided into two groups—thermo-plastics and thermo-setting plastics. The thermo-plastics can be softened by heating and harden on cooling, and this process of softening and hardening can be repeated almost indefinitely. Celluloid is possibly the best known thermo-plastic; cellulose acetate, polymethyl methacrylate, polystyrene and polyvinyl-chloride are others. The natural plastics previously referred to are also thermo-plastics. The thermo-setting plastics, on the other hand, can be prepared in an intermediate state in which they can be moulded under heat and pressure, but continued heating causes them to set permanently. Once set they cannot again be softened by heating, but being organic they will char. For example, ordinary thermo-setting plastics will char if left in the domestic oven at normal baking temperatures for any length of time. Under similar conditions thermo-plastics would soften and lose their shape. Phenol formaldehyde and urea-formaldehyde plastics are thermo-setting. The best known materials in this group are *Bakelite* and *Beetle* respectively.

The thermo-plastic materials were first in the field. Celluloid was discovered in this country about the middle of the last century by Parkes, and was originally known as *Parkesine* but I think it is true to say that the foundations of the present Plastics industry were laid by Dr. Baekeland when he discovered the thermo-setting plastics which he patented in 1909.

Physical Characteristics

Plastics are available as moulding materials, as rigid and flexible sheet and films, as resins for the manufacture of paints and varnishes, as adhesives and impregnants for wood, and in many other forms.

In colour they range from black to beautiful pastel shades and they may be opaque, transparent or translucent. Their advantage in comparison with other materials lies in their remarkable combination of physical properties rather than in the possession of any single property to a marked degree; for example, they do not corrode as do metals; they are more consistent than natural materials, such as wood; they are stronger than porcelain or glass and can be produced to much more accurate dimensions. They are mechanically strong and are good electrical insulators. Add to these properties good appearance, ease of fabrication and elimination of the need for surface finishing operation, such as painting, and you have good enough reason for the popularity of plastics.

Moulded Plastics

Speaking very generally, most types of plastics are available in the form of moulding powder which can be moulded to shape in steel moulds. The technique varies with different materials but in principle a measured quantity of material is charged into a steel mould, heat and pressure are applied for a short period and the finished moulding is removed from the mould. Thermo-setting materials as loose powder or preforms are charged into hot moulds and the finished mouldings are removed whilst hot. Thermo-plastic materials, on the other hand, are heated to a plastic condition and squirted or injected into cold moulds. Finished mouldings are removed cold, otherwise they might become deformed. The moulding cycle varies from a few seconds to 10 or 15 minutes, depending on the size and nature of the moulding. The highly polished surface normal to mouldings is produced in the mould and the only finishing operation required is the removal of the flash or fin formed where surplus material may have been forced through joints in the mould.

Moulds are, however, expensive and their cost must necessarily be spread over the number of mouldings produced. In general, the moulding process is only economic where large numbers of similar articles are required.

Whilst for economy in manufacture, simple shapes and uniform sections are most desirable, very complicated mouldings, some incorporating moulded screw threads and metal inserts, are in regular production and recent advances in moulding technique have made possible the production of more delicate and intricate mouldings, and at the other extreme thicker sections than have previously been possible. It would indeed be an involved shape that would baffle the modern plastic moulder.

In the manufacture of thermo-setting moulding materials the resins are reinforced with such materials as wood flour, cotton or asbestos. The characteristics of the final moulding can be varied over a wide range by the use of different fillers, e.g. asbestos fillers provide heat resistance, cotton fillers increase mechanical strength, certain mineral fillers improve moisture and chemical resistance, and so on. It should be noted, however, that the improvement of any one of these properties frequently results in the impairment of one or more of the others. Common examples of the use of mouldings are telephones, bottle caps, door furniture, electric meter cases, radio cabinets, etc.

Moulding materials can also be extruded in continuous lengths for such purposes as curtain runners, picture rails, hand rails, etc. At least one company in America has a standard range of extruded cover sections, coving and decorative strips in a wide range of colours. It is reasonable to assume that a range of standard extruded plastics will be produced in this country after the war.

Sheet Plastics

Sheet Plastics, whether laminated or otherwise, fall into a different category from the moulded plastics. They can be machined and formed in a somewhat similar manner to metals without the use of expensive moulds.

L. E. Walker, Photo.

THE SOUTH GATES, KING'S LYNN

ABOUT 10 o'clock on Sunday evening, the 30th September, 1470, the drawbridge was lowered, and the portcullis raised to admit Edward IV and some three thousand of his followers, who were in retreat from the Earl of Warwick, afterwards known as "*The Kingmaker.*" The next day, the fugitive king set sail for Holland. Until the outbreak of the present war, regular supplies of 'PUDLO' Brand waterproofer were shipped by the same direct sea route to Holland, where it was made good use of to combat the dampness and flooding, which are probably without parallel in any other country.

This does not mean that plastics sheets are not used for mass-production jobs. They are, and in such cases the usual jigs and tools are employed: but it does mean that it is possible to produce individual units or small numbers of a given unit without undue expense.

Transparent, translucent and non-laminated opaque sheet is mainly thermo-plastic; it is tougher than glass but lacks its surface hardness. Where softened by heating, it can readily be shaped in steel moulds or over wooden formers, e.g. transparent enclosures for aircraft; children's dolls and rattles.

Laminated plastics are produced by impregnating paper or fabric with a synthetic resin or varnish of the phenol-formaldehyde or urea-formaldehyde types, the impregnated sheets are dried, cut to size and placed one on top of another in sufficient numbers to give a finished board of the required thickness. These packs are then placed between highly polished metal plates and subjected to heat and pressure. The heat initially softens the resin in the paper, the pressure forces the sheets together, and the resin flows uniformly between the sheets and into the interstices in the paper. Continued heating causes the resin to harden permanently, and a homogeneous board results.

These boards are made in sizes up to 8 ft. by 4 ft. and in thicknesses from a few thousandths of an inch up to several inches. Laminated plastics are generally stronger than moulded plastics, their principal industrial uses are for electrical insulation and for innumerable aircraft and engineering components, including gear wheels. Prior to the war they were being used increasingly for wall surfacing and for table tops, counter tops, flush doors and similar uses.

Building Industry

The application of plastics to the building industry to date has been mainly in the form of fixtures and accessories, such as door furniture, wall ventilators, electrical fittings, curtain rails, lavatory seats and wall panelling. Further developments in the use of plastics in building would appear to be in the extension of such uses rather than in the use of plastics in the actual structure.

Mr. Schaffer, of the Building Research Station of the DSIR, dealt with the possible use of plastics as load-bearing members in a paper read to the Society of Chemical Industry early last year. He showed that "products so far available" were not "especially suitable" for use as load-bearing members on account of their disproportionately low modulus of elasticity when compared with the tensile strength and also on account of their lack of ductility. We must accept Mr. Schaffer's findings and even if modulus of elasticity and lack of ductility were not limiting factors, price certainly would be.

Windows and Frames

I think it is unlikely that plastics will be able to compete with metal for the common casement frame. Drawn metal sections are relatively cheap and can so easily be welded together to form units of almost any size, whereas the provision of moulds for the moulding of complete frames of the many sizes required would be a very costly item. Plastic sections similar to metal sections could be extruded, but the fabrication of these sections would present a considerable problem. It might, however, be possible to design windows and frames of special types to employ plastics to advantage. Whilst the light-coloured urea materials might be the most desirable for a job of this type, the darker phenolics would probably weather better, but it is possible that light-coloured materials with good weathering properties may be available after the war by use of the melamine resins.

So far as the lights themselves are concerned, the methyl methacrylate plastics have better light transmitting properties and are tougher than glass: they are light in weight and easily shaped. They are, however, more expensive and are not likely to compete with glass for ordinary glazing, but they might find application for special purposes or where curved transparencies are required.

Wall and Floor Tiles

Moulded wall tiles have been made in America from polystyrene, the most water-resistant plastic. These tiles are much lighter in weight than ordinary ceramic tiles, and it should be possible to produce them in a large range of colours not unlike tinted glass. At present polystyrene is rather expensive for applications of this type, but with the enormously increased production of styrene for the manufacture of synthetic rubber, it is possible that the price may come down sufficiently to make polystyrene tiles an economic proposition. Lack of surface hardness of ceramics or glass is a disadvantage.

Plumbing

My attention was drawn, the other day, to a publication which gave what was considered to be the requirements of an ideal material for domestic water services—they were as follows: "First, it must have no deleterious effect on the water carried or stored; secondly, it must have such qualities that the water will not harm the pipes, tanks, etc., in which it flows or is stored, so as either to cause a wearing away and consequent weakening or leakage, or so as to form a coating or obstruction which would lead to an inefficient service. After these essentials are fulfilled, the material should be able to withstand, indoors or out, the effects of air, and outdoors of weather, preferably without the aid of paint or other protection; and it should present a pleasing appearance in order not to disfigure our houses. Tubes and cisterns made of it should be strong and light; strong to withstand the pressure of water, rough handling, and, most common annoyance in domestic plumbing, the bursting effect of frost. It should be easily bent, worked and jointed. It should be such that it can be quickly and easily put in position with the minimum of disfigurement to the building. Pipes made of it should offer the minimum of frictional resistance to the flow of water, in order to allow their use in the smallest diameters. This makes possible a neater job. It also secures that, with hot water, there is the least possible loss of heat, owing to the reduced external pipe surface thus obtainable. The material should have a high figure of heat conduction, so that boilers heat up quickly, combined with low heat capacity, so as not to allow the pipes to rob hot water of too much heat in passing through."

At least one of the newer thermo-plastic materials fulfils practically all these conditions; it is not affected by nor does it affect water, it certainly does not require painting for indoor use, it is tough, is light in weight, approximately a quarter the weight of iron piping, and able to stand the bursting effect of frost. It would, I think, be easier to work and join than metals. It has one serious drawback, however, and that is its relatively low softening point and it is doubtful whether the material available at present would stand up to boiling water. Such pipes or tubes should find wide application in chemical plant and a shortage of lead, for example, might influence its use for the cold water portion of the domestic plumbing system.

Apart from this major application, there are one or two other possible applications in plumbing; I believe that lavatory cisterns were actually moulded from phenolic moulding powder prior to the war, although I have not seen them myself. I am not prepared to say how these cisterns would wear in service and this is one of the cases where I think experience is necessary before one could give a definite answer as to the soundness of the application. Moulded ball floats have given quite satisfactory service over a number of years and one should bear in mind that cast iron, one of the commonest materials in use for cisterns, is by no means ideal.

I have been asked on several occasions whether washbasins, sinks and baths could be moulded. I do not think they would present any real difficulty from a manufacturing point of view, but the surface of such mouldings would not stand up to constant cleaning with ordinary domestic cleansers.

Interior Decoration

For wall surfaces, doors and skirtings and the general interior decoration of public buildings, ships and shops, laminated plastics offer very great possibilities, the texture of the materials is sympathetic, the possible range of colours is infinite, and patterns and artists' original drawings may be incorporated in the face of the laminated plastics, such patterns or designs being protected by a film of synthetic resin which ensures their permanence. The materials are not brittle and are not readily defaced, they are permanent, hygienic and easily cleaned.

Laminated plastics are usually used as thin veneers on plywood or as solid wall panels, in which case they are usually about 5/32 in. thick. Fixing in the former case is by the usual secret fixing methods employed with wood panelling. In the case of wall panels, dome-headed screws or metal beading are used. Pleasing effects have been obtained by the use of anodised aluminium beading in combination with laminated plastics. In one or two instances tiled effects have been obtained by the use of squares of veneer fixed to plywood and by fixing squares of wall panelling direct on to plaster.

There should be considerable scope for the use of laminated plastics in the home for splash backs and bath panels and possibly for wall surfaces in kitchens, bathrooms and most certainly for table tops and similar working surfaces. Here the hard-wearing and hygienic properties of the material, coupled with its resistance to the marring effect of hot plates, fruit juices, alcohol, etc., should be invaluable. Matt surfaces are preferable to highly polished surfaces as blemishes do not show so readily, and can be removed more easily.

Improved Plywood

In recent years considerable improvements have been made in the physical properties of plywood by the use of synthetic resin adhesives. In particular, plywoods have become much less susceptible to moisture and fungus. The aircraft industry has taken advantage of these developments and the majority if not all aircraft plywood is now bonded with synthetic resin cements.

A process for moulding large plywood shapes has been developed and is used in the manufacture of aircraft fuselage sections and completely moulded boat hulls. Aircraft claimed in the popular press to be made from plastics have in fact been made from wood plies moulded in this way and bonded with a plastic cement.

In America, synthetic resin bonded plywood is being used in the manufacture of prefabricated houses employing a stressed skin form of construction. In one example plywood is made in continuous lengths 8 ft. wide and cut to the required wall length. Double walls are cemented to supporting studs by means of a synthetic resin adhesive which provides a rigid and permanent joint. The interior surface is covered with a fabric also attached with a synthetic resin adhesive; this provides a first-class surface for decoration and eliminates one coat of paint. Well-designed houses of this type are said to be relatively inexpensive, easy to assemble and look very attractive, and some such scheme might go a long way towards solving our post-war rehousing problem.

If plywood houses are to come into general use they would presumably have to be thermally insulated, and I understand that so far as the exigencies of war permit, a certain amount of work is being carried on now to produce various types of boards with cellular cores for this purpose. An excellent multi-layer thermal insulating material is at present made from cellulose-acetate film. Its construction is based on well-established heat insulation principles; it is light in weight, corrosion, rot and insect proof, non-inflammable and easy to assemble.

HC

G. D. H. Cole

October 19, at the Housing Centre, 13, Suffolk Street, S.W.1. Lecture by G. D. H. Cole on AGENCIES FOR POST-WAR HOUSE BUILDING. Chairman: Mrs. Irene Barclay.

G. D. H. Cole: Who is to pay for the building and own the houses after the war, and how is the actual work of building to be carried out, with what sort of organization of the building industry? To building societies (the Co-operative one excepted) I object, because it is wrong to force people to own their houses, even when they can afford to do so and have a reasonable expectation of going on living in them; and if people cannot afford to own their houses, or are not able to continue in them for any reason, they may be forced to sell, and thereby lose whatever savings of their own the house represents. After the war there should be a public authority which would find the money for building, and this authority should own the houses.

At one time we assumed that we should build new towns in country places where war factories have been established, wherever these sites are suitable. The present areas of local authorities will be unsuitable for the execution of a number of major projects likely to be involved in this, and there should be created some authority to act for larger areas. But we have been told on the authority of the Prime Minister that there will be no major changes in local government. I have found that where sites of factories built for war purposes are suitable as nuclei of new towns, either the Government has not made up its mind as to whether it will keep the factory or not, or else the factory is already on offer to someone who cannot make up his mind as to the terms. It is impossible to make any plans for the utilization of those factories until there is a decision from the Government.

A national housing corporation should be formed for the mass production of parts required for housing schemes all over the country, and there should be a national building corporation which employers and operatives alike should join, the essential idea being that firms attached to this corporation should work under a code of conditions affecting contracts, employment, etc., approved by the Government. Priority in the execution of Government and local authorities contracts should be given to those adopting the code.

Discussion. The Chairman said Mr. Cole talked as if the building industry would continue on traditional lines. She had seen the experimental houses at Coventry, and they were so much better than anything else she had seen in the way of prefabrication that she had begun to think that if we had a great building programme it would be largely on those lines.

The lecturer said he thought prefabrication would start but slowly after the war. Within ten years after the war it would have become enormously important, but the housing problem was urgent, and he did not believe that with the building industry organized as it was to-day, it would be possible to push the pace of prefabrication within the first ten years. Building would begin according to traditional methods, and prefabrication come in afterwards in an orderly way and after reasonable research into materials and methods under public auspices. Factories put up for war purposes should be turned over under public control to the manufacture of parts for houses. Prefabrication should come in under public auspices; there would be a tremendous battle if the operatives found prefabrication being introduced by the employers at the same time as there was dilution.

Mr. Ambrose Appleby said there would be a shortage of building operatives after the war. If we allowed ten years to elapse with people striving for houses and not getting them, and at the same time there was a powerful anti-prefabrication movement here, prefabricated houses of types unsuitable to our climate and conditions would be brought here from America. We should be making the worst of both worlds.

Mr. O. Arup asked exactly what was meant by prefabrication?

The lecturer replied that he referred to the complete prefabrication of houses. As regards parts, such as plumbing, prefabrication would come in early.

One of the points raised in the discussion was that prefabrication was not practicable unless you first of all designed the whole house, in which the prefabricated units were to be embodied.

Another point was mentioned by the chairman, who said the architect of Coventry had pointed out to her the unit consisting of sink draining board, etc. The plant to produce that fitting had cost £75,000 to set up. Such things could not be produced unless they were bought in very large quantities by some large purchaser such as the Government.

AAI

S. Courtauld

October 20, in London. INAUGURAL MEETING of the Association of Art Institutions. The objects of the Association are to facilitate agreed action amongst governing bodies, to promote the efficient organization and management of colleges and schools of art, and to assist the development of art education. At the meeting local authorities from all over England and Wales were represented by members of Education Committees, Governing Bodies, Directors of Education and Principals of Colleges and Schools of Art. Samuel Courtauld gave a presidential address. The secretary of the AAI is W. Marlborough Whitehead, J.P., A.R.C.A., and the provisional address is Dyneley, Castle Hill Ave., Berkhamsted, Herts.

S. Courtauld: The great buying public of to-day is interested in what is novel, fashionable and showy. These are not necessarily bad, novelty being inseparable from the change and growth without which neither art nor anything else continue to exist; but novelty and fashion have in themselves nothing whatever to do with art and beauty.

Public standards of taste have been set up by the salesmen and advertisers, and I suggest this job is taken out of their hands. I am not blaming them. They have done what they have been paid to do so far as taste is concerned. The blind have been leading the blind. Leading manufacturers to-day take a keen interest in the artistic quality of their products and better design. The producer does not control the situation. It is controlled by those who merchant the products. I should like to see special schools started to educate the taste of wholesale buyers and salesmen, and manufacturers and merchants alike, demanding a high standard of artistic taste from their men.

Local authorities in education should pay particular attention to the retailer, excite his interesr ahd enlist his help. Young salesmen all over the country might play a leading part in the elevation of public taste. The economic bogy—the question of cost—will be raised It is just as well to know how much truth there is in the cry that art in industrial products would increase cost. There is a good deal of truth in it, but it is *not* always true that the simplest form which passes most easily through the chain of mechanized operations is ultimately the most satisfying either in the hand or the eye. It is equally untrue that ugliness is inherently cheaper than beauty.

MOH and MOW

Repair of Houses

MOW has been receiving many enquiries as to whether the scheme recently announced by MOH for the repair of houses and flats modifies the provisions of Defence Regulation 56A (see JOURNAL, October 21, p. 298). The following notice has therefore been circulated to builders and contractors. There has hitherto been no recognised priority for extended first-aid repair on houses, and the purpose of the MOH scheme is to enable local authorities to organize and make better use of existing local immobile labour to relieve urgent housing needs by completing half-finished houses or flats and by repairing or converting existing ones.

The new scheme does not relieve the owner, architect or builder of the obligation under Defence Regulation 56A to apply to the Ministry of Works for a building licence in cases where the owner proposes to spend more than £100 on the property in a period of twelve months.

The position under the new scheme is accordingly as follows:—

1. Local Authorities have been authorized to carry out essential work at a cost not exceeding £250 on any one house and £200 on a flat. No licence from the Ministry of Works is required in such circumstances.

2. Private owners wishing to carry out essential work within similar limits may make application to the Regional Licensing Officer of the Ministry of Works for a licence to enable them to do so.

3. A Local Authority may grant, on the application of a private owner, a certificate of essentiality in respect of such work. The most convenient procedure in such cases will be for the applicant to forward to the Local Authority his application for a certificate of essentiality and the application for the Ministry's licence (Form C.L.1136) at the same time. If a certificate of essentiality is granted, the Local Authority will transmit it, together with the application for the licence, to the Regional Licensing Officer of the Ministry, who will issue the necessary licence direct to the applicant.

SFMA

Aims of the Association

Manufacturers of school furniture, believing that the best interests of consumer and manufacturer can be served by their united efforts, have formed the School Furniture Manufacturers' Association.

The Association hopes the combination of knowledge and experience of many firms will further improve school furniture standards and increase, by the elimination of all waste, the efficiency of production, enabling higher quality to be offered at lower cost and price. Encouragement and support will be given to inventions, and further experiment and research. The address of the Association is 13, New Square, Lincoln's Inn, W.C.2. Mr. J. Holroyd-Reece is secretary.

PRICES

BY DAVIS AND BELFIELD, CHARTERED QUANTITY SURVEYORS

There has been no alteration in the prices of the Basic Materials given below, during October. Rates of Wages have not risen since April 2, 1943.

BASIC MATERIALS	Increase over pre-war prices at end of									
	January, 1943	February 1943	March, 1943	April, 1943	May, 1943	June, 1943	July, 1943	August, 1943	Sept., 1943	October, 1943
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Portland cement	+41·46	+41·46	+41·46	+41·46	+41·46	+41·46	+41·46	+41·46	+41·46	+41·46
2-in. Unscreened ballast	+71·01	+71·01	+71·01	+88·41	+88·41	+88·41	+88·41	+88·41	+88·41	+88·41
Fletton bricks (at station)	+29·19	+29·19	+29·19	+29·19	+29·19	+29·19	+29·19	+29·19	+29·19	+29·19
Stoneware drainpipes (British Standard) 2 tons and over	+37½	+37½	+37½	+37½	+37½	+43.75	+43·75	+43·75	+43·75	+43·75
Roofing tiles	+42½	+42½	+45	+45	+45	+45	+45	+45	+45	+45
Steel joists (basic sections) ex mills	+47·5	+47·5	+47·5	+47·5	+47·5	+47·5	+47·5	+47·5	+47·5	+47·5
Lime greystone	+43·53	+43·53	+43·53	+43·53	+43·53	+43·53	+43·53	+43·53	+45·53	+43·53
Sheet lead	+65·22	+65·22	+65·22	+65·22	+65·22	+65·22	+65·22	+65·22	+65·22	+65·22
Iron rainwater goods and soil pipes	+26½	+26½	+26½	+26½	+26½	+26½	+26½	+26½	+26½	+26½
White lead paint	+44·70	+44·70	+46·21	+46·21	+46·21	+46·21	+46·21	+46·21	+46·21	+46·21
RATES OF WAGES (Central London Area)										
Labourers	+22·22	+22·22	+26·98	+26·98	+26·98	+26·98	+26·98	+26·98	+26·98	+26·98
Craftsmen	+16·67	+16·67	+21·43	+21·43	+21·43	+21·43	+21·43	+21·43	+21·43	+21·43

LABOUR—Rates of Wages since April 2, 1943.

LONDON DISTRICT	Craftsmen	Labourers
Within 12 miles radius	2s. 1½d.	1s. 8d.
From 12-15 „ „	2s. 1d.	1s. 7½d.

GRADE CLASSIFICATIONS

	A	A¹	A²	A³	B	B¹	B²	B³	C
Craftsmen	2/–	1/11½	1/11	1/10½	1/10	1/9½	1/9	1/8½	1/8
Labourers	1/7	1/6½	1/6¼	1/5¾	1/5½	1/5	1/4¾	1/4¼	1/4

N.B.—Prices of materials include for delivery to site in the Central London area unless otherwise stated.

D. A. Davis.

F.S.I.

CLASSIFIED ADVERTISEMENTS

Advertisements should be addressed to the Advt. Manager, "The Architects' Journal." War Address: 45 The Avenue, Cheam, Surrey, and should reach there by first post on Monday morning for inclusion in the following week's paper.

Replies to Box Numbers should be addressed care of "The Architects' Journal." War Address: 45 The Avenue, Cheam, Surrey.

Public and Official Announcements

Six lines or under, 8s.; each additional line, 1s.

The Incorporated Association of Architects and Surveyors maintains a register of qualified architects and surveyors (including assistants) requiring posts, and invites applications from public authorities and private practitioners having staff vacancies. Address: **75 Eaton Place, London, S.W.1. Tel.: Sloane 5615** 991

DENBIGHSHIRE COUNTY COUNCIL.

COUNTY ARCHITECT'S DEPARTMENT (WREXHAM).

Applications are invited from qualified persons for the appointment of a Temporary Architectural Assistant in the above-named Department. The salary attached to the post is £300 per annum rising by annual increments of £12 10s. to £325 per annum, plus cost of living bonus at the present rate of 13s. per week.

Candidates must be capable of making surveys together with the preparation of necessary drawings and specification for small alterations.

Applications stating age, training, experience, qualifications, position with regard to military service and length of time required to take up new appointment, together with copies of three recent testimonials should be forwarded to the undersigned not later than Saturday, the 20th November, 1943.

WILLIAM ROBERTS,
Deputy Clerk of the County Council.

40, Well Street,
Ruthin.
1st November, 1943. 972

CUMBERLAND COUNTY COUNCIL.

ARCHITECTURAL ASSISTANTS.

Applications are invited for the appointment of two Temporary Architectural Assistants in the County Architect's Department.

The salary offered is £325 per annum rising, subject to satisfactory service, by increments of £12 10s., to £350 per annum (the first increment will take effect on the 1st April, 1945), together with War Bonus at present 17s. 6d. per week, and an allowance for extended office hours (now 47 hours per week) of £50 per annum.

The appointments will be subject to the Local Government Superannuation Act, 1937, and will be terminable by one month's notice on either side.

Forms of application may be obtained from the County Architect, 4, Alfred Street North, Carlisle, and should be completed and returned to him, accompanied by copies of three testimonials, not later than Wednesday, the 1st December, 1943.

G. A. WHEATLEY,
Clerk of the County Council.

The Courts,
Carlisle.
5th November, 1943. 976

Architectural Appointments Vacant

Advertisements from Architects requiring Assistants or Draughtsmen, and from Assistants and Draughtsmen seeking positions in Architects' offices will be printed in "The Architects' Journal" free of charge until further notice. Other "Appointments Vacant" and "Wanted" will be found under later headings, and are subject to the charge given under each heading.

Wherever possible prospective employers are urged to give in their advertisement full information about the duty and responsibilities involved, the location of the office, and the salary offered. The inclusion of the Advertiser's name in lieu of a box number is welcomed.

LONDON ARCHITECT AND SURVEYOR requires assistant, present and post-war building schemes and extensive war damage and estate matters. Apply by letter stating qualifications, age and salary to T. W. Leadenhall Buildings, E.C.3. 202

Architectural Appointments Wanted

REGISTERED ARCHITECT. Total exemption from all services, requires senior position with commercial company. Experience includes Brewery and Public House work, Hotels, Chain Stores, Domestic Maintenance, etc. Used to organising and Office Staff contro,. Final Accounts, Specifications, etc., and all Supervision of Works. Salary by arrangement. Box 163.

ARCHITECT (special qualifications for post-war planning and design) desires post shortly. Experienced, having sole charge contracts from initial interview to completion, including drawings, specifications, estimates, etc. London only. Box 167.

SURVEYOR'S ASSISTANT (36), recently engaged on schedule of condition and war damage surveys. Experieneed in land surveying and levelling, including theodolite. Registered architect. Seeks engagement on work of national importance. Apply Box 174.

YOUNG ARCHITECT, registered, competent, requires responsible position. Work in connection with wartime building or preparation of post-war schemes. Box 176.

ARCHITECTURAL ASSISTANT (Chartered Architect) requires senior position. London district. Wide experience of housing and planning. State salary offered. Box 177.

SOUTH-WEST ENGLAND. ARCHITECT AND SURVEYOR with own office in Bristol seeks free lance or part-time work. Experienced in all branches of the profession, especially in hospital, factory, brewery and war damage work. Speedy and accurate draughtsman with high capabilities in design and construction. Telephone Bristol 43746. Box 178.

ASSISTANT, Diploma with distinction, Liverpool University; 2 years' office experience; age 25 years; seeks position London, Home Counties or Liverpool. Box 179.

SURVEYOR, ARCHITECT (qualified) **and Property Manager** desires position, long experience, over 30 years, theoretical and practical, expert knowledge of profession, and all trades; not liable for military service, rendered War Service 1914-18 Supervision all classes of Buildings and Public Works, to £230,000, including War Damaged Properties; excellent testimonials, etc. Please apply Box 186.

CHARTERED ARCHITECT AND SURVEYOR with own London office, offers assistance to other practitioners in the preparation of post-war schemes, surveys, war damage, etc. Terms by arrangement. Box 181.

REINFORCED CONCRETE ENGINEER requires spare-time design and detail work. Calculations submitted. Any type of precast or *in situ* structures. Box 187.

ARCHITECT, 17 years' experience, requires home evening work to assist in preparation of drawings. Can arrange appointment during day-time. Write Box 963.

ARCHITECTS' SENIOR ASSISTANT, prepared to undertake spare time work, working drawings, etc., Birmingham area. Box 191.

KEEN AND ENTHUSIASTIC STUDENT of Architecture seeks position as junior assistant in architects office, Epsom district; experienced in scales from ⅛ to 3 in. and full size; have prepared sheet drawings, small knowledge of perspective; experience in use of colours and of printing; 13 months' experience in architect's office; firm now moving back to London. Box 192.

CHARTERED ARCHITECT (51), desires engagement. London or near preferred. J. L., 71, Allerton Grange Way, Leeds 7. 193

ARCHITECT'S AND SURVEYOR'S ASSISTANT age 22 years, totally exempt from military service, desires post in the North Midlands, preferably Manchester or Leeds district. Seven years experience including three years as Quantity Surveyor's Assistant. Fully competent to perform all usual duties. Salary £300 per year or by arrangement. R. Cooper, c/o. Miss Bird, Oak Street, Fakenham, Norfolk. 194

ARCHITECT ASSISTANT, age 25, ex-service man, requires position in London; 8 years practical experience on various types of work, including factory (R.C. and steel) design, layouts of housing estates, site supervision, specifications and bills of quantities. Box 195.

CHARTERED QUANTITY SURVEYOR, F.A.S.I., requires work on housing, post-war reconstruction, town planning schemes or war damage. Fully experienced. Studying for final T.P.I. exam. 1944. Box 196.

JUNIOR requires post in architect's office (London area), keen and willing. At present attending Municipal College and School of Building. Box 197.

A.R.I.B.A., 25, exempt, seeks responsible position in London. Box 198.

Classified Advertisements continued on page xxxiv

DRAUGHTSMAN requires spare time work in London. War damage surveys, post-war planning, or general work for architects, builders, etc. Moderate fees. Box 200.

CHIEF ARCHITECT of a Government Department desires change. Aged 32, married. Exempt (medically). Preferably Eastern Area. Experienced Government and Local Government service. Please state salary, and if housing accommodation available. Free at month's notice. Box 201.

Other Appointments Vacant

Four lines or under, 4s.; each additional line, 1s.

ASSISTANT EDITOR wanted for Architectural Paper. Write, with full particulars of qualifications, salary required, &c., to Box 51.

WANTED.—MANAGER WORKS DEPARTMENT, capable of supervising general maintenance repairs to business premises and cottages, post-war structural alterations and rebuilding work, and of presenting own personally prepared plans for approval to local authority. (Some members work undertaken). Staff comprises electricians, joiners, painters, bricklayers and their labourers. Pension scheme operates. Applications should be made before the 15th November, 1943, in writing, and stage age, salary required and give full details of qualifications and experience, and be addressed in envelope endorsed "Builder" to the Managing Secretary, Failsworth Industrial Society Limited, 9, Church Street, Newton Heath, Manchester, 10. 971

GENERAL CLERK, supervising, measuring and estimating experience. Building trade, excellent prospects, full particulars to Rudders & Paynes, Ltd., Chester Street, Birmingham, 6. 977

Miscellaneous

Four lines or under, 4s.; each additional line, 1s.

A. J. BINNS, LTD., specialists in the supply and fixing of all types of fencing, tubular guard rail, factory partitions and gates. 53, Great Marlborough Street, W.1. Gerrard 4223-4224-4225.

SPECIFICATIONS AND BILLS OF QUANTITIES, etc., expeditiously and accurately typed or duplicated. Translations and Facsimile, Typewriting. All work treated confidentially. Miss G. Saunders, Typewriting Bureau, 17, Dacre Street, Westminster, S.W.1. Telephone: Whitehall 2605.

WANTED—A Plan Cabinet. Please state size, number of drawers, depth of drawers and price. Box 184.

WANTED. Student requires bound or single copies of *Architectural Review*, 1936-1943. What offers? Box 964.

WANTED.—Centrolinead, good make and condition. Morgan, Whitehall 8627. 199

AUTHORS are invited to submit Stories for children, poems, fiction, and MSS all types, for book publication. Stockwell, Ltd., Elms Court, Ilfracombe (Duration Address). 974

For Sale

Four lines or under, 4s.; each additional line, 1s.

FOR SALE.—*Houses and Gardens* (Bailey, Scott & Beresford), *Architecture of Greece and Rome* (Anderson & Spiers), *Meyer's Handbook of Ornament, Short History English Renaissance Architecture* (Blomfield), *Gwilt's Encyclopaedia of Architecture*, Vols. 47 and 48 *Architectural Review*, standard binding. Write Box 973.

Educational Announcements

Four lines or under, 4s.; each additional line, 1s.

R.I.B.A. QUALIFYING EXAMINATIONS
Mr. C. W. Box, F.R.I.B.A., M.R.San.I.
Courses by Correspondence and Personal in Studio.
115, Gower St., London, W.C.1.
Telephone: Euston 3305 and 3906.

R.I.B.A. AND T.P. INST. EXAMS. Private Courses of tuition by correspondence arranged by Mr. L. Stuart Stanley, M.A., F.R.I.B.A., M.T.P.I. Tutor, St. Catherine's College, Cambridge. 231

Printed in Great Britain for the Proprietors of "The Architects' Journal"
(The Architectural Press, Ltd.) War Address: 45 The Avenue, Cheam, Surrey
by Knapp, Drewett & Sons Ltd. Kingston-on-Thames and London.