ARC



tandard

contents

LDA

LSPC

SIA

TPI

ZDA

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

and COMMENT NEWS

stragal's Notes and Topics

letters

News

Diary

ocieties and Institutions

SECTION TECHNICAL

nformation Sheets nformation Centre

urrent Technique

Working Details

duestions and Answers

rices

he Industry

URRENT BUILDING

lajor Buildings described:

etails of Planning, Construction,

mishes and Costs

uildings in the News

wilding Costs Analysed

rchitectural Appointments anted Vacant and

0. 32691 [Vol. 126 HE ARCHITECTURAL PRESS 11 and 13, Queen Anne's Gate, Westminster,

'Phone: Whitehall 0611

Price Is. od. Registered as a Newspaper. IHVE Institution of Heating and Ventilating Engineers. 49, Cadogan Square.

Sloane 1601/3158

IIBDID Incorporated Institute of British Decorators and Interior Designers. 100, Park Street, Grosvenor Square, W.1. Institute of Landscape Architects, 2, Guilford Place, W.C.1. Mayfair 7086 Holborn 0281 ILA I of Arb

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

Institute of Arbitrators. Hastings House, 10, Norfolk Street Strand, W.C.2. Temple Bar 4071 Institute of Builders. 48, Bedford Square, W.C.1.

Institute of Quantity Surveyors. 98, Gloucester Place, W.1.

Institute of Refrigeration. Dalmeny House, Monument Street, E.C.3.

Institute of Registered Architects. 47, Victoria Street, S.W.1.

Institute of Structural Engineers. 11, Upper Belgrave Street, S.W.1.

Lead Development Association. 18, Adam Street, W.C.2.

Whitehall 4175

London Master Builders' Association. 47, Bedford Square, W.C.1.

Whitehall 7264/4175 IOB IOS IR IRA ISE

LMBA

Whitehall 7264/4175 Ministry of Agriculture, Fisheries and Food. Whitehall Place, S.W.1.
Ministry of Education. Curzon Street House, Curzon Street, W.1.
Ministry of Health. 23, Savile Row, W.1. MAFF Trafalgar 7711 MOE Mayfair 9400 MOH Regent 8411 MOHLG Ministry of Housing and Local Government. Whitehall, S.W.1 Whitehall 4300 MOLNS

Ministry of Labour and National Service. 8, St. James' Square, S.W.1. Whitehall 4300 Ministry of Supply. Shell Mex House, W.C.2. Gerrard 6933 Ministry of Transport. Berkeley Square House, Berkeley Square, W.1. Mayfair 9494 Ministry of Works. Lambeth Bridge House, S.E.1. Reliance 7611 Natural Asphalte Mine Owners and Manufacturers Council. 94/98, Petty France, S.W.1. Abbey 1010 National Association of Shopfitters. 9, Victoria Street, S.W.1. Abbey 4813 National Buildings Record. 31, Chester Terrace, Regent's Park, N.W.1. Welbeck 0619 National Council of Building Material Producers. 10 Storey's Gate, S.W.1. Abbey5111 National Employers Federation of the Mastic Asphalt Industry. MOS MOT

MOW NAMMC

NAS NBR NCBMP NEFMAI

21, John Adam Street, Adelphi, W.C.2. Trafalgar 3927 National Federation of Building Trades Employers. 82, New Cavendish Street. W.1. Langham 4041/4054 NFBTE

NFBTO Federal House National Federation of Building Trades Operatives. Cedars Road, Clapham, S.W.4. Mac National Federation of Housing Societies. 12, Suffolk St., S.W.1. Whi National House Builders Registration Council. 58, Portland Place, W.1. Macaulay 4451 Whitehall 1693 NFHS

NHBRC Langham 0064/5 NPL

National Physical Laboratory. Head Office, Teddington. Moles Natural Rubber Development Board. Market Buildings, Mark Lane, E.C.3. Molesey 1380 NRDB Mansion House 9383 NSAS National Smoke Abatement Society. Palace Chambers,

Bridge Street, S.W.1. Trafalgar 6838
National Trust for Places of Historic Interest or Natural Beauty. NT

National Trust for Places of Historic Interest or Natural Beauty.

42, Queen Anne's Gate, S.W.1. Whitehall 0211
Political and Economic Planning.
16, Queen Anne's Gate, S.W.1. Whitehall 0211
Reinforced Concrete Association.
4, Petty France, S.W.1. Abbey 4504
Royal Incorporation of Architects in Scotland.
15, Rutland Square, Edinburgh.
Fountainbridge 7631
Langham 5721 PEP RCA RIAS

Royal Institute of British Architects. 66, Portland Place, W.1. Langh Royal Institution of Chartered Surveyors. 12, Great George Street, S.W.1. RIBA Langham 5721 RICS Whitehall 5322/9242

Royal Fine Art Commission. 5, Old Palace Yard, S.W.1.
Royal Society. Burlington House. Piccadilly, W.1.
Royal Society of Arts. 6, John Adam Street, W.C.2.
Royal Society of Health. 90, Buckingham Palace Road, S.W.1.
Rural Industries Bureau. 35, Camp Road, Wimbledon, S.W.19.
Society of British Paint Manufacturers.

Grosvenor Gardens House,
Grosvenor Gardens S.W.1. RFAC Whitehall 3935 RS Regent 3335 RSA Trafalgar 2366 RSH Sloane 5134 Wimbledon 5101 RIB

SBPM Grosvenor Gardens, S.W.1. Victoria 2186 Society of Engineers. 17, Victoria Street, Westminster, S.W.1. Abbey 7244 School Furniture Manufacturers' Association. 30, Cornhill, London, E.C.3. SE SFMA

Mansion House 3921 Society of Industrial Artists. 7, Woburn Square, London, W.C.1. Langham 1984/5

Langham 7616 Structural Insulation Association. 32, Queen Anne Strock, 1111.

Scottish National Housing. Town Planning Council.

Hon. Sec., Robert Pollock, Town Clerk, Rutherglen Society for the Protection of Ancient Buildings. 55, Great Ormond Street, W.C.1.

Holborn 2646 Structural Insulation Association. 32, Queen Anne Street, W.1. SNHTPC

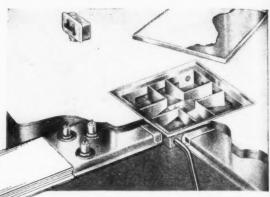
SPAB **TCPA**

Town and Country Planning Association. 28, King Street, Covent Garden, W.C.2.
Temple Bar 5006 Timber Development Association. 21, College Hill, E.C.4. Town Planning Institute. 18, Ashley Place, S.W.1 Timber Trades Federation. 75, Cannon Street, E C.4. War Damage Commission. 6, Carlton House Terrace, S.W.1. Zinc Development Association. 34, Berkeley Square, W.1. TDA City 4771 Victoria 8815 TTF

City 5040 Whitehall 4341 Grosvenor 6636

All cables in ONE duct





Underfloor Junction Box shown fitted with Flyover Separator,

Greenwood-Airvac conduit systems provide for all cables to be housed in one duct with adequate screening between telephone and power cables. The unique construction of the underfloor system enables it to be laid where necessary in only $1\frac{1}{2}"$ of screed, and for applications where underfloor fitting is impracticable, a skirting system is readily available. Please write or telephone for the publication 'Greenwood-Airvac Conduit Systems' or call to see the demonstration layout in the Beacon House showroom.

VISIT STANDS G122 3, BUILDING EXHIBITION, OLYMPIA-NOV. 13-27

reenwoo

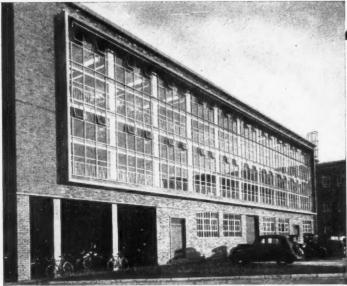
C conduit systems



AND AIRVAC VENTILATING COMPANY

Patentees, Designers and Manufacturers of Ventilating Equipment and Electrical Conduit Systems

BEACON HOUSE, KINGSWAY, LONDON, W.C.2. CHAncery 8135/6/7. 'Airvac', London



Architects: Fairbrother, Hall & Hedges, Edinburgh General Contractors: Wm. Arnott McLeod & Co. Ltd.

FOR THE 'HIGHER REACHES' OF VINDOW CONTROL

Instant accessibility to "out-of-reach" windows is ensured by the positive pushpull action of Teleflex cable. Housed within a neat rigid conduit, it operates accurately and without distortion throughout all directional changes. The flexibility of the Teleflex system also allows simultaneous multi-point operation from a single line transmission.

Please write for illustrated Catalogue.

Pictured above is the Drawing Office Window of the new Ferranti Research Laboratory at Edinburgh, where Teleflex Remote Controls are used throughout.

TELEPHONE: BASILDON 22861 TELEGRAMS: TELEFLEX PHONE BASILDON

ESSEX TELEFLEX PRODUCTS LIMITED CONVEYORS ALSO MANUFACTURERS OF THE WORLD RENOWNED TELEFLEX

parator.

ephone erfloor screed, able, a one for or call wroom.

7. 13-27 77.5 L T D

ndon

 \cdot

oushoused rates oughbility mulm

ie.

EX ORS



Four publications of interest to all concerned with **HEATING &** AIR TREATMENT



BRIGHTSIDE HEATING & ENGINEERING CO. LTD

and at BELFAST BIRMINGHAM BRADFORD BRISTOL EDINBURGH GLASGOW LIVERPOOL LONDON MANCHESTER NEWCASTLE PORTSMOUTH

British Aluminium at Marchwood Generating Station: (4)



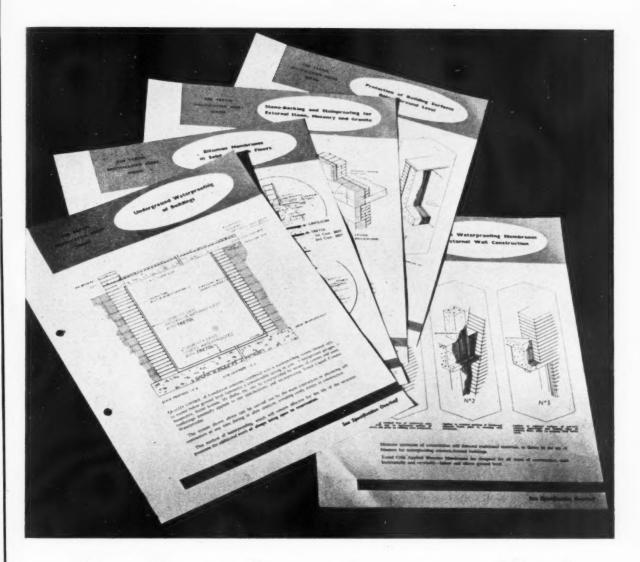
Insulation and weathering by William Kenyon & Sons Ltd.

Nearly 21,000 square feet of Rigidal 3" pitch corrugated sheet were used for cladding the three insulated oil fuel storage tanks at Marchwood. Rigidal will give enduring and trouble-free protection, while its high reflectivity will increase the efficiency of the Rocksil insulation.



The BRITISH ALUMINIUM Co Ltd

NORFOLK HOUSE ST JAMES'S SQUARE LONDON SW1



Are these sheets in your files?

THESE five specification sheets deal with various aspects of waterproofing structures. They cover the use of cold-applied bitumen solutions as both horizontal and vertical damp-proof membranes. One sheet is devoted entirely to the correct application of internal waterproof renderings as an alternative to tanking. When used in conjunction with the wide range of Tretol specialised

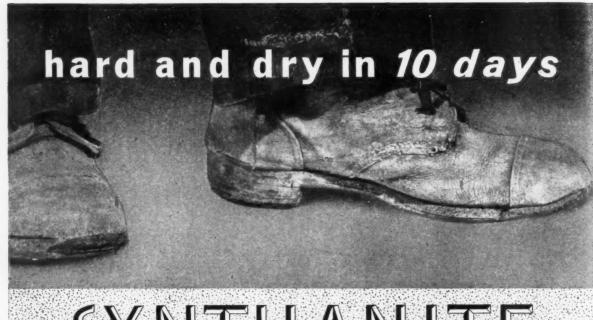
building products, the treatments described will ensure an effective solution to many waterproofing problems.

The techniques illustrated in these specification sheets have been utilised for a number of years in many important building projects throughout the country and the sheets are a further extension of the Tretol technical advisory service.

If these sheets are not already in your files, we shall be glad to send you a set and also place you on our mailing list for further sheets which will be issued from time to time. Filing will be no problem, since they are designed to the recommended British Standards size for technical literature.



TRETOL LTD., Makers of Paints and Building Products, THE HYDE, LONDON N.W.9. Phone: Colindale 7223



SYNTHANITE

THE FLOOR SCREED THAT SAVES WEEKS IN CONSTRUCTION TIME

SYNTHANITE is a new screed binder with phenomenal hardening and drying qualities. Six to ten days after being laid, a Synthanite screed is hard and dry. No more waiting four to six weeks for this stage of construction. The use of Synthanite therefore allows earlier occupation of the building, and that means saving of time, labour and money.

Great strength and virtual absence of shrinkage are outstanding qualities of a Synthanite screed. Up to 600 sq. yds. can be laid at a time with no joints and little fear of cracking. There is no risk of having to do repairs later, and an excellent surface for all floor finishes is obtained.

Laid on top of an acoustic mattress, Synthanite continuous screed forms an ideal sound insulator, and need be no more than 11 in. thick for this purpose with no reinforcement.

Only the specialist firms listed here lay Synthanite screed; their workmen are skilled in the operation, and contracts can be accepted for screeding anywhere in the U.K. and Eire.

Haskel Robertson & Co. Ltd.

19 Queen Street, London, W.I. Tel: GROsvenor 8764

W. Miller (Plasterers) Ltd.

15 Stainforth Road, London, E.17. Tel: LARkswood 3496

P B Industrial Flooring Ltd.

(Associate Co. of Pollock Bros. Ltd.)
473 New Cross Road, London, S.E.14. Tel: TIDeway 4438

Jonathan James Ltd.

55 Lacy Road, London, S.W.15. Tel: PUTney 9343

The British Doloment Co. Ltd.

18 Howick Place, London, S.W.1. Tel: VICtoria 6176

William Kenyon & Sons Thermal Insulation

(Scotland) Ltd. 140 West George Street, Glasgow, C.2. Tel: Douglas 7233

John Hadfield & Sons Ltd.

Effingham Street, Sheffield, 4. Tel: Sheffield 24082

Clifford Hughes & Co. Ltd.

Quarryfields, Ruthin, Denbighshire. Tel: Ruthin 493

Decorative Plaster Co. (Newcastle upon Tyne) Ltd.

la Leazes Park Road, Newcastle upon Tyne. Tel: Newcastle 23014

Artistic & Industrial Flooring Ltd.

Specialist House, St. Philips, Bristol. Tel: Bristol 77671

For full information write to any of the above firms or to: Morris de Leval Limited,

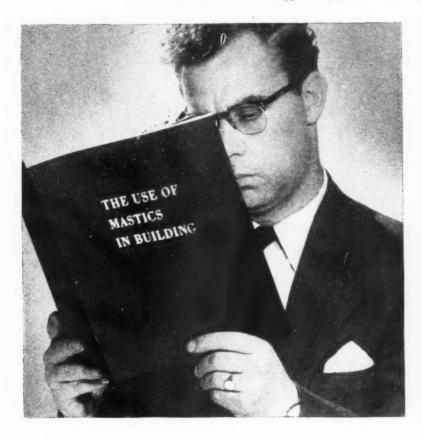
15 Princes Gate, London, SW7. Tel: Kensington 6000

MORE THAN 63,000,000 square foot OF SYNTHANITE SCREEDING HAS ALREADY BEEN LAID

Recent contracts include :-

Leven High School, Fife. Kirkcaldy School, Fife. Buckhaven School, Fife. Hutcheson's Grammar School, Glasgow. Stewarts and Lloyds' Office, Mossend. Tate & Lyle Building, Silvertown. Bowaters Building, Northfleet. Telephone Exchange, Liverpool. Sun Assurance Office, Edinburgh. Marconi Buildings, Great Baddow, Chelmsford.

THE ROLE THAT MASTIC PLAYS



The role that mastic plays in many new building techniques is now so important that choice of product cannot be left to chance.

Advantage should be taken of the manufacturer's specialised experience when dealing with joint sealing problems.

The new enlarged edition of 'The Use of Mastics' sets out in convenient form the results of over 14 years' experience in the formulation of joint sealing mastics and their application throughout the world.

The latest developments in this field can be seen on STAND 43—ROW C (Grand Hall) at the Building Exhibition

AID

ffice, urgh. Copies of this booklet are available on application to:
Architectural Department

SECOMASTIC LIMITED

 $\textbf{SECOMASTIC LIMITED} \cdot \textbf{WESTERN ROAD} \cdot \textbf{BRACKNELL} \cdot \textbf{BERKSHIRE}$

Telephone: BRACKNELL 910/9

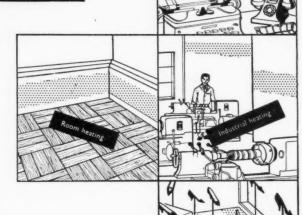
\$ 3 5

Introducing-

MHOGLAS

The New Non-metallic Heating Element

Mhoglas is a completely new departure in the areaheating field—new working principle, new materials, new manufacturing techniques. Its many qualities, particularly its complete safety, make it an attractive proposition for the space heating of buildings. Here the element could be incorporated in floors, walls or skirting boards or even in wooden, plastic or rubber panels.



Some Mhoglas features

- I Provides even, "solid" heat without hot spots or tracks.
- 2 It is light, flexible, non-metallic and made in thin sheets.
- 3 Can suffer local damage without element failure and is thus inherently "safe."
- 4 May be shaped, cut and formed, potted, laminated, and incorporated in wood, plastics, rubber, concrete and metal.
- 5 May be curved to radii of 1½" or as low as ¼" during manufacture.
- 6 May be thermostatically controlled, directly or remotely.

It is produced and marketed by Hunting Mhoglas Ltd. who welcome your enquiries. Mhoglas can be supplied in all lengths and in widths up to 12"



A Hunting Group Company

HUNTING MHOGLAS LIMITED

LUTON, BEDFORDSHIRE, ENGLAND. TELEPHONE: LUTON 6060

AP/10



Fast falls the water table . . .

In this well watered isle of ours there is already a water scarcity and likely to be a famine. The Building Research Station has found that, in an office block, a staff of one thousand uses sixteen thousand gallons of hot and six thousand gallons of cold water every week for washing their hands. A startling amount. To save half of this there has been designed a new tap, a mixing tap, that will give either hot or cold at a turn. Add a spray nozzle and you wash in running water using only four pints instead of a gallon or more. "Unatap" was designed by our technical staff in collaboration with the Building Research Station and is presently in production.

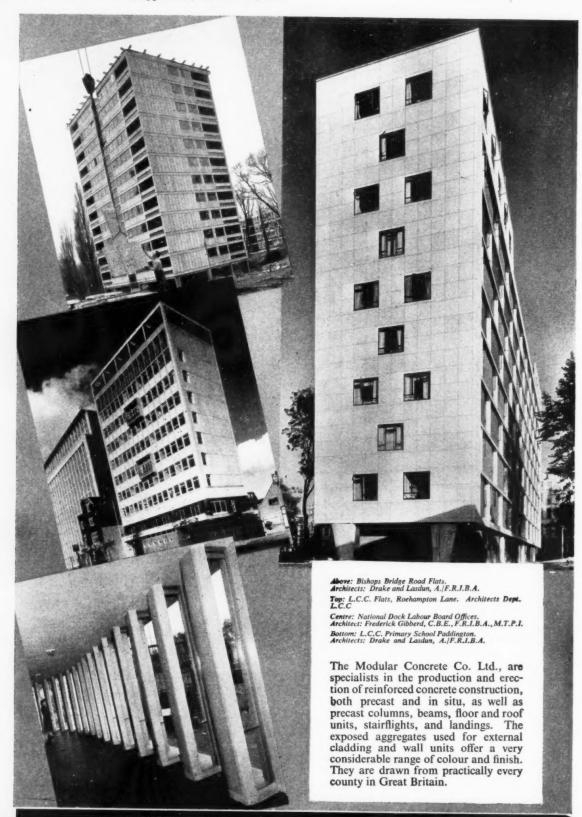
You will be hearing more about this as it gets into the news but if you want to know now write for Pamphlet U/2,

"UNATAP" IS A REGISTERED TRADE MARK

Stand No. 703, Empire Hall, Building Exhibition, Olympia

WALKER, CROSWELLER - CHELTENHA AND COMPANY LIMITED Telephone: Cheltenham 56317 Telephone: INSTRINGENI Cheltenham 56317 Telephone: INSTRINGENI Cheltenham 56317

Telegrams: INSTRUKEMI, Cheltenham



THE MODULAR CONCRETE GO LTD

Pre-cast Concrete Specialists

STAINES ROAD, BEDFONT, MIDDLESEX · Telephone: Ashford (Middlesex) 2601 & 3827



SHOWROOM?

THE ANSWER IN ONE

'NEW-RANGE'

No other fluorescent fittings cover so many lighting applications. 'New-Range' parts are completely standardised and interchangeable allowing easy adaptation and quick maintenance. Several reduced prices reflect the wide acceptance of 'New-Range' by Government departments and by the largest buyers. New fast-installation features make possible further economies. All fixings for 'New-Range' are included in the pack.

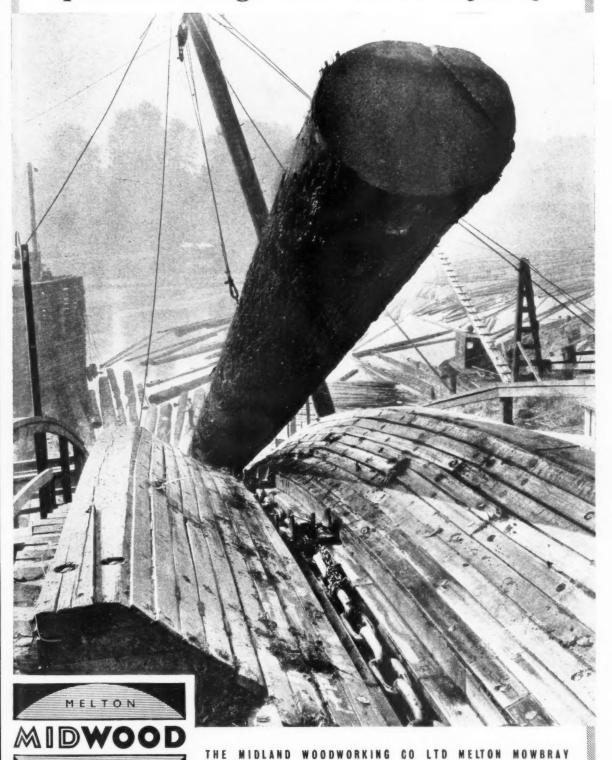


(rompton 'NEW-RANGE'

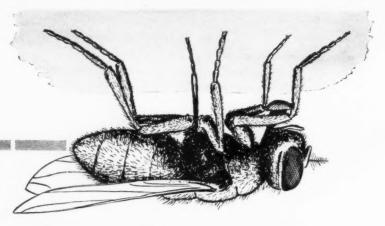
Crompton Parkinson Ltd., Crompton House, Aldwych, London W.C.2. Tel: Chancery 3333. Grams: Crompark Estrand London



Specialists in high class Standard Joinery

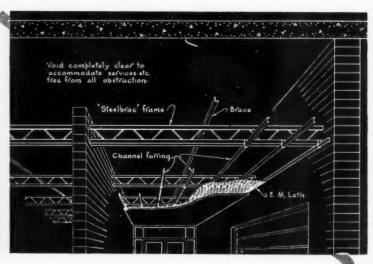


AP/MW 15



Wise flies know...

A Steelbrac suspended ceiling is practical, economical and speedy. The special light-weight framing is exclusive to the system, and the metal lathing which has 500 meshes per square foot ensures a tenacious key for the plaster. Special effects such as barrel or vaulted ceilings can be demanded without the embarrassment of prohibitive cost. The void between the ceiling and the floor above acts as a natural barrier to noise, and is the obvious place to accommodate services, since absolute latitude is obtained. We have an interesting technical booklet and will be pleased to send you a copy if you will kindly send us your name and address.

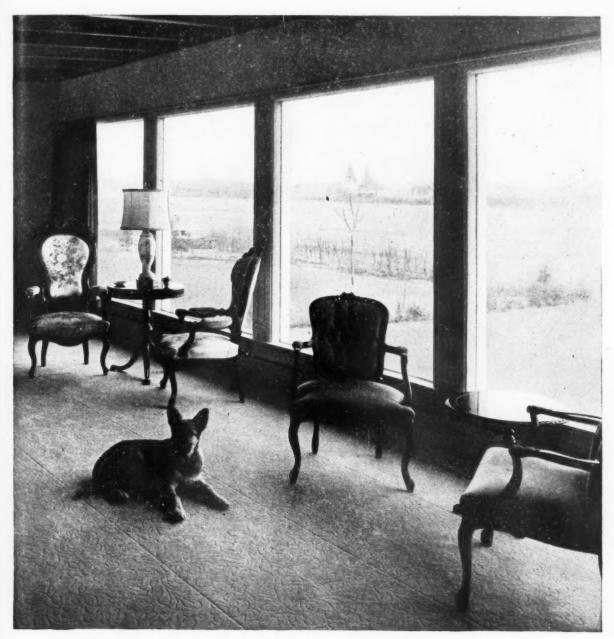


...AT THE BACK OF A GOOD SUSPENDED PLASTER CEILING THERE'S ALWAYS STEELBRAC FRAMING



STEEL BRACKETING & LATHING LTD.

3/8 BRIGSTOCK PARADE, THORNTON HEATH, SURREY Telephone: Thornton Heath 5601



They've got it there, we can have it here!

Scene in a Canadian Home—time, mid-winter. Double-glazed windows are a recognised feature of every modern home in Canada and the United States. That's why they're always cosy and warm while we shiver in a much less extreme climate and waste our costly, precious fuel in trying to combat our bitter brand of penetrating cold. The effective way of increasing winter warmth and cutting rising fuel bills, is to fit Pilkington's

'INSULIGHT' DOUBLE GLAZING UNITS



Write for full details to Pilkington Brothers Limited, St. Helens, Lancs. (Tel: St. Helens 4001) or Selwyn House, Cleveland Row, St. James's, London, S.W.I. (Tel: WHItehall 5672-6).

Supplies are available through the usual trade channels.

"INSULIGHT" IS A REGISTERED TRADE MARK OF PILKINGTON BROTHERS LIMITED



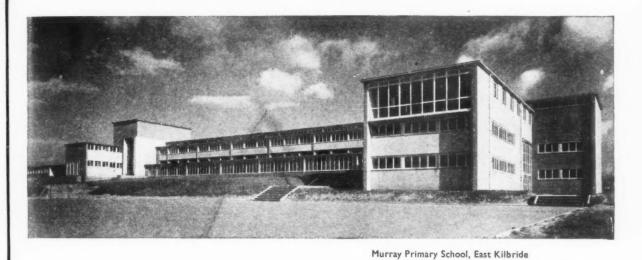


TO: JOSEPH FREEMAN SONS & CO. LTD., CEMENTONE WORKS, LONDON, SW18.

Send today for your colour card) Please send me a

Please send me a Number Seven colour card. NAME

ADDRESS



Architects:— East Kilbride Development Corporation Contractors:— M. McKenzie Ltd.

Braby metal windows



Braby manufacture a wide range of metal windows and doors in steel, aluminium and bronze, designed to meet most architectural requirements or supplied to specification. The illustrations show some recent Braby contracts where our hot-dip galvanized steel windows and Wallstruct aluminium windows were used.



W.D. & H.O. Wills Tobacco Factory, Glasgow
Designed and erected under the direction of The
Chief Engineer of The Imperial Tobacco Company
(of Gt. Britain and Ireland), Ltd.
Contractors:— Thaw & Campbell Ltd.

Renfrew Air Terminal

Architects:— Rowand Anderson, Kininmonth & Paul Contractors:— A. A. Stuart & Co. Ltd.





0557

FREDERICK BRABY & COMPANY LIMITED

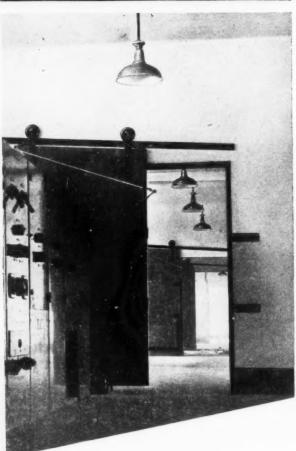
ECLIPSE WORKS, PETERSHILL ROAD, GLASGOW, N. TELEPHONE: SPRINGBURN 5151

OTHER FACTORIES AT: London Works, Thames Road, Crayford, Kent. TELEPHONE: Bexleyheath 7777
Havelock Works, Aintree, Liverpool, 10. TELEPHONE: Aintree 1721
Ashton Gate Works, Bristol, 3. TELEPHONE: Bristol 64041. And Falkirk

OTHER OFFICES: 352-364 Euston Road, London, N.W.1 (Head Office). TELEPHONE: EUSton 3456 110 Cannon Street, London, E.C.4 (Export). TELEPHONE: MANsion House 6034 Queen's Buildings, 10 Royal Avenue, Belfast, TELEPHONE: 26509 Palace Street, Plymouth. TELEPHONE: 62261

AP 245





FIRE RESISTING DOORS

THE REAL PROPERTY.

ARMOURED OR COMPOSITE,
SLIDING OR FOLDING,
AUTOMATIC OR NON-AUTOMATIC

Fireproof party walls of brick or concrete cannot prevent the spread of fire from one section of a building to another if doorways, stairways and other openings are left unprotected.

Mather & Platt fire-resisting doors convert these vulnerable internal openings into strong-points which halt the advance of fire.

TOP Non-automatic folding composite doors in a Northern outfitter's showroom.

BOTTOM Automatic sliding armoured fire doors in switch houses at a generating station in India.

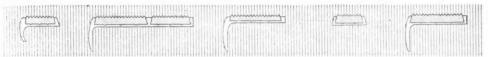
Mather & Platt

PARK WORKS, MANCHESTER, 10

Phone: COLlyhurst 2321. Grams, Sprinkler Manchester. London Office: 22, Gt. Smith Street, Westminster, S.W.1.

752

For every type of stair



(wood metal or stone)





tread (colour or fabric-filled)







THE PARTY OF THE PARTY OF THE PARTY OF THE

We have
PERMANENT
STAIRTREAD EXHIBITS

THE LONDON BUILDING CENTRE
26 Store Street, W.C.I
and

THE SCOTTISH BUILDING CENTRE 425 Sauchiehall Street, Glasgow

STAIRTREADS

19 different nosings: extruded from pure aluminium:
 plastic-filled in 9 colours (brown, green,
lino brown, blue, maroon, black, white, silver, red):
 also available fabric-filled:
 suitable for all types of stairway:
 can be supplied to fit almost any curve or bend.

Sole Distributors to the Furnishing Trade in England and Wales:

George Dickinson & Co. Ltd. Calabria Road, London, N.5 Main Distributors for Scotland:

GEO. BOYD & Co. LTD. 129, Buchanan Street, Glasgow, C.2.

For supplies and information get in touch with:

SMALL & PARKES LTD

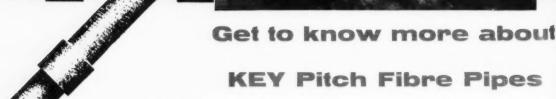
HENDHAM VALE WORKS MANCHESTER 9 London: 67 Victoria Street S.W.

THIS WINTER avoid setbacks to drain laying plans by specifying KEY pipes

Key Pitch Fibre drainage pipes can be laid in all weathers. There are no hold-ups for frost, snow or rain because the simple system of jointing requires no cement or other sealing compounds. Precision-machined taper joints are tapped into place giving a perfect fit, so that the drain can be tested immediately on completion and the trench back-filled right away.

Plan now for this winter with Key Pitch Fibre pipes. They ensure that your building schedules do not fall behind while drain laying waits for the 'right' weather.





TGA KD9

Smooth bore and clean joints

Key Pitch Fibre pipes have precisionmachined taper joints which require no mortar or compounds. Combined with their smooth bore, this means a high flow factor, with no problems of root growth.



No cracking through settlement

The resilience of pitch fibre pipes ensures that no cracking occurs under normal conditions of earth settlement. This also means that bedding concrete is unnecessary.



Resistant to corrosion

Key pipes are vacuum-impregnated with pitch and are non-porous and resistant to normal effluent corrosives throughout their thickness.

Maximum loan period

The 30-year loan period applies to all Key Drain pipes. Pitch fibre pipes have been used with notable success in the United States for over 50 years.



A piece of heavy timber is placed against the coupling and a length knocked home.



The precision-machined taper joints require no mortar or jointing compounds.



Short lengths of pipe can be cut with a coarse toothed handsaw.



A special hand lathe is used for cutting joints on short lengths.

SPEEDING THE JOB-CUTTING THE COST

500 feet an hour is a modest rate for laying Key pipes. The simple system of jointing also ensures that the pipe can be laid in all weathers. Because there is no cement to dry out, the completed drain can be tested immediately and the trench back-filled without delay. When contracts must be carried out to a tight schedule these advantages are well worth bearing in mind. On a cost plus labour basis, pitch fibre pipes are cheaper per installed foot run than other drainage systems.

THOROUGHLY TESTED AND APPROVED

British Standard

Key pipes exceed the requirements of BS 2760/56 for Pitch-impregnated Fibre Drain and Sewer Pipes. This standard was approved by the Bituminous Products Industry Standards Committee consisting of representatives of Government departments and professional bodies, including the following:

Royal Institute of British Architects
Ministry of Housing & Local Government
Ministry of Works
Institution of Civil Engineers
Royal Institute of Chartered Surveyors
D.S.I.R. — Building Research Station
Institution of Public Health Engineers

Ministry of Health Model Bye Laws

Pitch fibre pipes are deemed to comply with M.O.H. Bye Law requirements.

Building Research Station Report

Key Pipes were tested by this body and given a favourable report.

Other approving bodies

Federation Civil Engineering Contractors.

National Federation of Building Trade Employers.

Royal Society for the Promotion of Health.

Many local authorities have installed KEY pipes

Test Results

Key pipes have been subjected to detailed physical tests.

Also KEY Underfloor Ducting and Cable Conduit



ut

5

PITCH FIBRE PIPES

The world's finest and most modern drainage system

A PRODUCT OF KEY ENGINEERING COMPANY LIMITED

4, Newgate Street, London, E.C.1. Telephone: CITY 1185, 6 and 7.





MAKE SURE YOU
KNOW ALL ABOUT
THIS CTC DOUBLE-DUTY
OIL FIRED BOILER

Controlled central heating plus constant domestic hot water operated from one unit. That is the unique feature of the (CTC.) Double Duty Oil Burner, Boiler.

An indirect cylinder supplying the domestic hot water is fitted inside the boiler-shell thus eliminating piping between boiler and cylinder and avoiding heat losses. Each circuit is independently controlled so that when the domestic water is registering 150 deg. F. the radiators can be reduced to 95 deg. F.

Over 10,000 of these units have now been installed in domestic and commercial premises—a fact that testifies to their economy efficiency and high standard of design and construction. Every architect, heating engineer and builder should know all about (CTC), heating units. Please write, or telephone for details now.



HEAT LTD.

17 SLOANE ST., LONDON, S.W.I Telephone: BELgravia 3478 6286

Write for this illustrated leaflet now

First in the field—and still the best TRUE FLUE RIPLE UNIT NEW MEMBRANE ATTACHMENT for back boiler flues Difficulty has been experienced in the past in adequately throating the "gather-over" above a back boiler appliance owing to provision having to be made for the back flue. The Triple Unit Type "U" has now been amended, so that the Membrane Unit can be bedded in the correct position spanning the flue opening, providing adequate space for the back flue and correctly throating the fire. Also, a new Back Attachment is available for converting Triple Units for use with open fires. Send for complete catalogue TRUE FLUE LTD

-anything in refractory concrete

Convector House · Acacia Road · St. John's Wood, N.W.8 Tele: Primrose 7161/2

BRITAIN'S ATOMIC FACTORIES Capenhurst

PART OF THE CAPENHURST ATOMIC PLANT UNDER CONSTRUCTION.

(By kind permission of United Kingdom Atomic Energy Authority)

25,000 TONS OF STEELWORK

UNDER DIRECT CONTRACT WITH THE MINISTRY OF WORKS ALEX FINDLAY & CO., LTD.

MOTHERWELL, HAVE SUPPLIED, DELIVERED AND ERECTED OVER 25,000 TONS OF

STEELWORK TO BUILD THE UNITED KINGDOM ATOMIC ENERGY

- AUTHORITY PLANT AT CAPENHURST WORKS, CHESTER.

ALEX. FINDLAY & CO. LTD.

RUCTURAL EELWORK BY

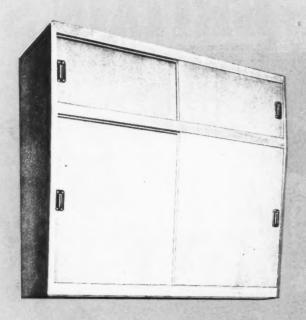
STRUCTURAL ENGINEERS

MOTHERWELL · SCOTLAND

* Member of the Nuclear Power Plant Co. Ltd.

LONDON OFFICE: HIGH HOLBORN HOUSE, 52/54 HIGH HOLBORN W.C.1 TELEPHONE HOLBORN 7330-5083

161/2



- Kingston improved 'Scandinavian' Kitchen Fitments will ease the problem of planning restricted kitchen space.
- They have been developed as a result of considerable experience in the manufacture of first quality joinery and create a perfect blend of contemporary design and traditional craftsmanship.
- They have a large cubic capacity of storage space.
- Space saving sliding doors are incorporated in both floor and wall units.
 - The wall units have a receding front providing maximum access to the working top of the floor units.

Ilustrated brochure on request.

KINGSTON

New Design

SCANDINAVIAN KITCHEN FITMENTS

offer these advantages



- Framing: Flush plywood ends on stout framing, the plywood being applied under pressure using Urea Resin adhesive.
- Doors: All doors are of \(\frac{3}{4}\) solid blockboard with blemish free flush faces. They have solid tongued runners at the base and hardwood guides at the top.
 - Shelves: The floor unit shelves consist of a framing, jointed at angles, covered on one face with plywood, glued and pinned securely in position.

The wall unit shelf is of solid timber.

Drawers: These consist of solid 1" parana pine fronts dovetailed to solid timber sides and back. The drawer bottom is of 5 mm plywood which is grooved into the front:





PROVED PERFORMANCE...

THE RILEY TYPE 'T'

CHAIN GRATE STOKER

The Riley Type 'T' Chain Grate Stoker has been developed specially to burn efficiently, and in sufficient quantities, small sized low grade coals which are high in ash content.

For Horizontal Shell-type Boilers

The stoker body is of rigid fabricated steel box structure, with zonal air control.

The grate surface is formed of die-cast links of heat resisting cast iron and high individual strength.

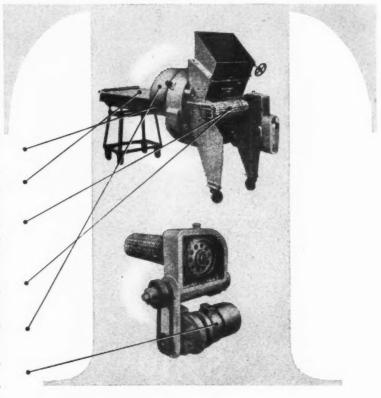
All links, except for the two rows of heavy side links, are of equal thickness and are disposed to ensure that air spacing is uniform across the grate.

Odd links can be replaced easily without withdrawing the stoker from the boiler.

Refractory lined furnace flue extension incorporates air ducts and peep-hole door.

Geared motor drive for A.C. or D.C. supply.

Please write for booklet R522.



RILEY (IC) PRODUCTS LIMITED

One of the International Combustion Group of Companies.

NINETEEN WOBURN PLACE · LONDON · W.C.1 · TELEPHONE: TERMINUS 2622



SYMBOL OF PERFECTION



Specify F.F. Spun Pipes, every length of which carries this distinctive marking. Remember that the F.F. Spun Pipe incorporates the new Single Ear (patent pending) which is out of sight when fixed. A range of fittings including F.F. Joints can be supplied with the Pipe. The Single Ear is particularly suitable for fixing inside ducts.



SOIL PIPES



OSE

to B.S. 416



PEDERATED FOUNDRIES | TD. Head Office: 75 Hawthorn Street, Glasgow, N.2. Landon Office and Showrooms: 4 Stratford Place, London, W.I.

s babel of Thomas Allan & Se sk.td., Thornaby-on-Tees brange-Camelon fron Compan Ltd., Falkirk ameron & Roberton Ltd., K. similloch, Glasgow barid King & Sians Lid., Stim un, Yorkshire batter Mocharlane & Compan, Ltd., Glasgow, N.2 outhern Foundries Ltd., Was Jon, Croydon

NO MYSTERY

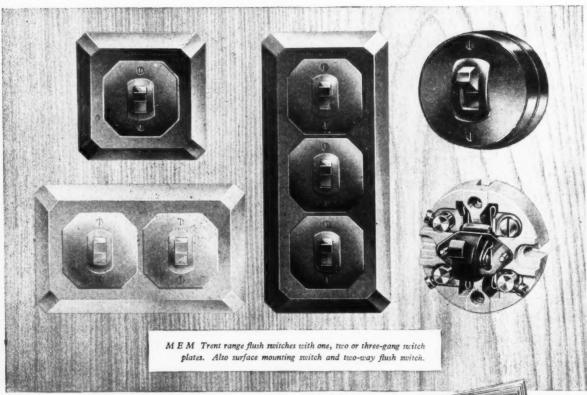
ABOUT THAT EXTRA
INGREDIENT
IN MASON'S PAINT



joseph mason paints

SEPH MASON AND COMPANY LIMITED, DERBY. TELEPHONE: 40691-2-3

For quick make and break duty the sturdy, modern 'TRENT' RANGE



When you want sturdy all insulated switches with quick make and break action, choose the Trent range from M E M-Tucker-Kerson accessories. See how you gain.

- Quick make and break action suitable for AC/DC applications.
- · Available in surface, semi-recessed and flush patterns.
- · Available in one-way and two-way types.
- · Attractive, simple design for modern installation.
- All current carrying parts are mounted on high grade vitreous porcelain.
- · Switch plates for flush switches for one, two, three and four-gang.





You get Britain's widest choice of electrical accessories in the new merged M E M-Tucker-Kerson range. Send for Catalogue No. 370 to-day

MIDLAND ELECTRIC MANUFACTURING CO., LTD., ACCESSORIES DIVISION, REDDINGS LANE, TYSELEY, BIRMINGHAM, II



have the answer to most HEATING & VENTILATION problems



Photograph shows typical installation of coils for floor panel warming system.

N,

Members of the invisible panel warming association.

- * Space heating in all its forms.
- Domestic hot and cold water service.
- * Ventilation and Air Conditioning.
- Dust and fume removal.
- * Steam Plant and pipeline installations

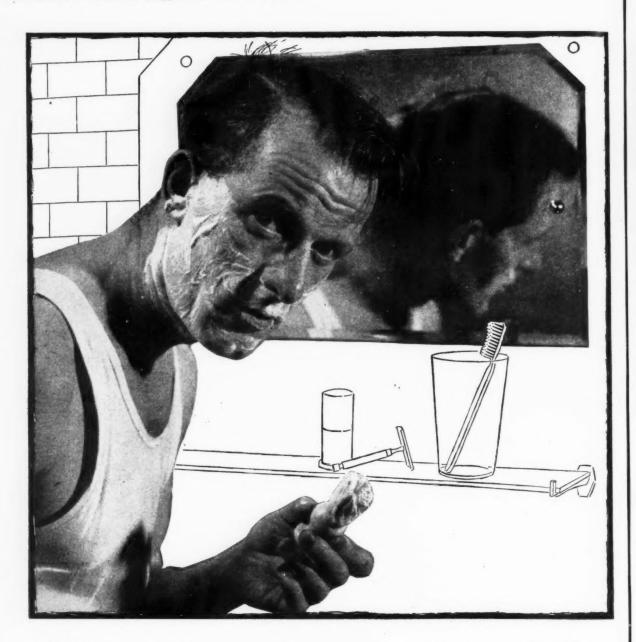


S.E.I. offer a comprehensive design service . . . if you have a Heating or Ventilating problem, our extensive experience and technical facilities are at your disposal.

STEELS ENGINEERING INSTALLATIONS LIMITED

Head Office: Crown Works, Sunderland

LONDON: 143 Sloane St., S.W.1. BIRMINGHAM: 172 St. Paul's Rd., Balsall Heath, 12. NEWCASTLE-ON-TYNE: 13 Brunswick Place, 1. GLASGOW: Merkland Works, Merkland St., Partick.



What is it to me where copper tube's made?

If you want to know the answer to that, try shaving in cold water! Because copper tubing brings you hot water at the turning of a tap. And because all copper tubing is inconspicuously efficient, its quality is taken for granted. But not at Wednesbury. There you'll find scientists and workers spending their lives making sure that Wednesbury copper tube will never be noticed — except for its efficient reticence.

choose WEDNESBURY TUBE

Granded

Printful

ALLES / Fine

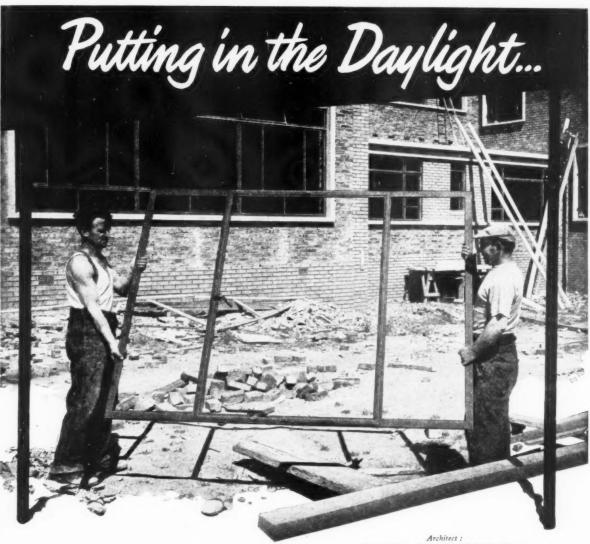
ALLES / Fine

France | Fine

Fran

Obtainable from your local stockist or builders' merchant

THE WEDNESBURY TUBE CO. LTD. BILSTON. STAFFS
Associated Company, Glynn Bros. Ltd, London and Manchester



Architect: Toseph Wilson, F.R.I.B.A., F.R.I.A.S., Glasgow

FOXBAR PRIMARY SCHOOL No. I PAISLEY

There goes another Maclean Metal Window straight from the Hamilton factory to the site, ready to offer the maximum protection against the worst of weather, take fullest advantage of the fine days. Throughout the seasons they

keep their shape and form, protected from rust by their electro-galvanised coating, which is applied in the largest Electro Galvanising Plant in Britain, plus two coats of paint each stoved on separately.



MACLEAN & CO. (Metal Windows) LTD. CADZOW WORKS, LOW WATERS ROAD, HAMILTON, Lanarkshire. Hamilton 1419-4 7, Albany St., Edinburgh. Waverley 2190 13 Bridge St., Aberdeen. Aberdeen 25528 36 High Holborn, London, W.C.1



the new, super-efficient, super-smart cistern by Shires

Introduced several months ago, the 'Super-lynx' has been enthusiastically received by architects, builders and plumbers. Not only because it is super-efficient, not only because it is super-smart, but also because it is guaranteed for 5 years. Inside and out the 'Super-lynx' really is an outstanding job—one which you will be pleased to specify for initial installation or for replacement. High and low level models are available in extra high gloss black Duranite and white Keramic ware. The low level model has gold-lustre beading, operating lever and flush pipe. The high level model has a gold-lustre lever mechanism and beading, and chain with coloured acrylic handle. Matching flush pipe for the high level model can be supplied at extra cost. The 'Super-lynx' is fitted with the rustless, unbreakable, silent flush-at-a-touch 'Kingfisher' syphon mechanism. Powerful flush syphon to B.S.S. 1125 and water works specifications. Capacities 2, 21 and 3 gallons.



\$52

Shires are the largest manufacturers of flushing cisterns in the world. They also make W.C. pans and seats, pipes, wash-basins and complete W.C. Suites. Full details and trade terms from: Division A, Shires & Co. (London) Limited.

Greenbottom Works, Guiseley, Yorks. (Also at London, Stoke, Birmingham & Glasgow).



ROBERTSON THAIN supplied more than 100,000 sq. ft. of Q-DECK ROOFING and more than 1,000 sq. ft. of and more than 1,000 sq.

Architects: Wylie, Shanks & Underwood, Glasgow Contractors: W. & J. R. Watson, Ltd., Edinburgh

Robertson Thain provide a COMPREHENSIVE BUILDING SERVICE embracing WALL CLADDING, ROOF DECK, FLOORING, VENTILATION and DAYLIGHTING.

This service reduces the problem of co-ordinating site activities during erection, and by accepting UNDIVIDED RESPONSIBILITY for the finished result, safeguards the clients interests.

May we send you descriptive literature?

May we send you

ROBERTSON THAIN LIMITED

ELLESMERE PORT · WIRRAL · CHESHIRE

Telephone: Ellesmere Port 2341

Telegrams: "Robertroof"

Sales Offices: BELFAST - BIRMINGHAM - CARDIFF - EXMOUTH - GLASGOW - LIVERPOOL - LONDON - MANCHESTER - NEWCASTLE - SHEFFIELD

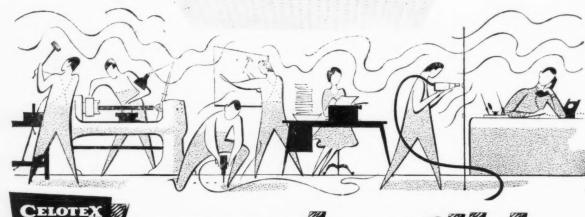
Associated Companies or Agents in most countries throughout the World

P.13

25

\$52

=Wquietness overhead!



Now, in your factory or your office, you can have a CELOTEX Acoustical ceiling which is *INCOMBUSTIBLE*.

Perforated steel tiles produced as individual panels with clean margins and

bevels, are combined with a sound absorbing element to give maximum efficiency. They are easy and economical to instal.

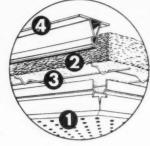
Celotex Incombustible Metal Acoustic Tiles, with their matt enamel finish, add dignity to any room or building, whether factory or office, and they can be painted or washed as many times as you like. Resistant to vermin and rot, they last for the life span of the building, and are easily removable for access to services behind the ceiling. The Celotex Acoustical Advisory Service is at to services behind the ceiling. The Celotex Acoustical Advisory Service is at your immediate disposal—consult us without delay.

1 Steel Tile

2 Rockwool pad

3 Wire Grid

4 Steel T Bar Support



Main distributors for London, Southern Counties, Wales, the Midlands and Yorkshire:

Horace W. Cullum & Co. Ltd., The Acoustic Centre, 58 Highgate West Hill, N.6. Tel: FITzroy 1221 (PBX) Main distributors for Scotland and Northern Counties:

William Beardmore & Company Ltd., Parkhead Steel Works, Glasgow. Tel: Bridgeton 1881

MADE IN GREAT BRITAIN BY CELOTEX LIMITED, North Circular Road, Stonebridge Park, London, N.W.10 Tel: ELGar \$717 (10 times)

A LESSON

IN TIMINIUM



This new L.C.C. Comprehensive School at Tulse Hill is an excellent example of how Timinium is helping to fulfil modern architectural needs.

Thanks to glass curtain-walling, assisted by light, durable and corrosion-free Timinium sections, the school children of today may enjoy a bright and airy environment throughout the year.

Curtain walling supplied by Hills (West Bromwich) Ltd. Former Architect to the London County Conncil: J. L. Martin, M.A., Ph. D., F.R.I.B.A.



TIMINIUM

TI ALUMINIUM LTD., ONE OF THE LARGEST U.K. MANUFACTURERS OF SHEET, CORRUGATED SHEET, STRIP, CIRCLES, PLATE, EXTRUDED SECTIONS & TUBES – IN THE TIMINIUM RANGE OF ALUMINIUM & ALUMINIUM ALLOYS.

Compan

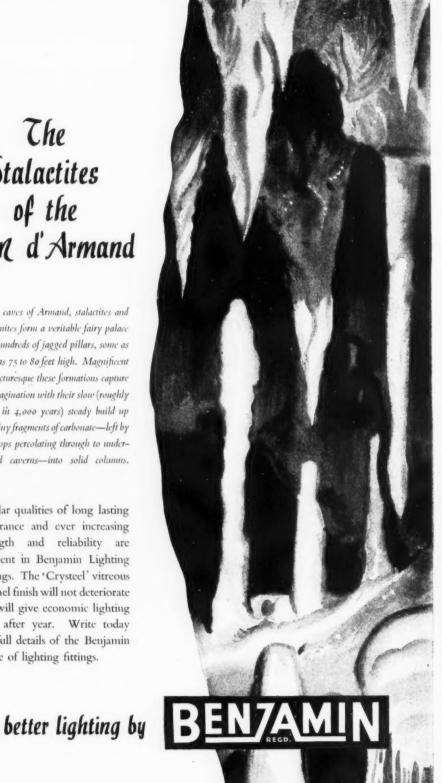
Head Office: Redfern Rd., Tyseley, Birmingham 11. Phone: Acocks Green 4211

Offices in: LONDON . BIRMINGHAM . MANCHESTER . LEEDS . GLAS30 7 . BRISTOL . BELFAST . DUBLIN

The Stalactites of the Aven d'Armand

In the caves of Armand, stalactites and stalagmites form a veritable fairy palace with hundreds of jagged pillars, some as much as 75 to 80 feet high. Magnificent and picturesque these formations capture the imagination with their slow (roughly 7 feet in 4,000 years) steady build up from tiny fragments of carbonate-left by raindrops percolating through to underground caverns-into solid columns.

Similar qualities of long lasting endurance and ever increasing strength and reliability are mherent in Benjamin Lighting Fittings. The 'Crysteel' vitreous enamel finish will not deteriorate but will give economic lighting year after year. Write today for full details of the Benjamin range of lighting fittings.



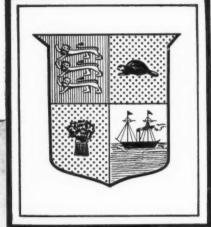
THE BENJAMIN ELECTRIC LTD · TOTTENHAM · LONDON · N.17

Telephone: TOTtenham 5252 (5 lines). Telegrams: Benjalect Southtot London. BIRMINGHAM: 5 Corporation Street, Birmingham 2. Tel: MIDland 5197. LEEDS: 49 Basinghall Street, Leeds 1. Tel: Leeds 25579.

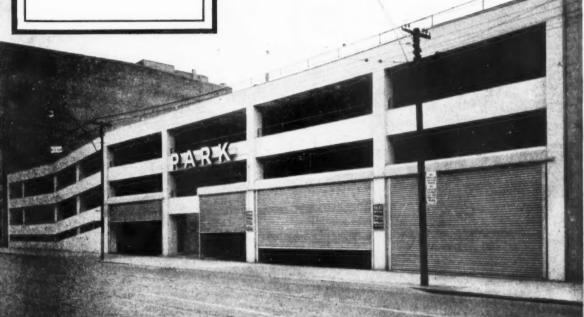
The world's big cities use



The doors commanding the world's largest sale



One of the world's most important cities, Toronto, Canada has installed Brady Steel, gear operated Rolling Doors on both sides of their handsome new Municipal Car Park. Brady Rolling Doors in steel, wood or aluminium—hand gear or electrically operated—are available to fit any type of opening.



G. BRADY & COMPANY LIMITED MANCHESTER 4

Write for informative literature to Dept. 3

London: Thames Works, Strawberry Vale, Twickenham, Middx. Birmingham: Rectory Park Road, Sheldon 26. Canada: David C. Orrock & Co. (G. Brady and Co. Canada Ltd.) 4925 De Sorel Street, Montreal, Que. and also at Suite 2/23 Applewood Village, 1077, Queen Elizabeth Way, Port Credit, Ontario. Norway: An Thorbjörnsen, Kongensgate, 14, Oslo. Hong Kong: Blair & Co. Ltd. Windsor House.

Telephone COLlyhurst 2797/8



we shutter the world

MANUFACTURERS OF BRADY HAND AND POWER OPERATED LIFTS

Coburn

right

for every place and purpose

THE SLIDING DOOR

GEAR MASTER'

Specially designed for lightweight interior doors, this ball-bearing sliding gear is light yet remarkably strong. It has a wide variety of

applications, is simple to install and completely trouble-free.

CUBBARD'

Light in weight, quiet in operation and unobtrusive in appearance; designed to suit quality or utility doors, fitting into the rear face of the joinery. Maximum door weight recommended is 50 lb.



GEAR

control Finger - tip by perfect counter-balancing. pletely proof and draughtproof and draught-proof, ensured by weather stripping on inside of door and jamb. Standard set operates doors up to 8ft. high and up to 250 lb. weight. Simple to install and maintenance free.



-and for the heavier job! STRAIGHT SLIDING GEAR

The most popular and widely used of all sliding gears. It can be used on single, double or triple tracks. A wide variety of applications may be assembled from the various components available.

FOLDING GEAR

May be used for exterior and interior folding and sliding doors, screens and windows. It is particularly suitable when side walls may not be used.

'ROUND-THE-CORNER' GEAR

The perfect gear for garages, warehouses and similar buildings where it is required to run the doors round the corner, so that they are positioned against a side wall when open.

Jauge for gauge, Coburn is still the strongest load-bearing track made. Improvements in trolley and component design are continuous, besides developments in metallurgy and finish. A practical adviscry service is also available. of which explains why Coburn has been confidently specified by architects for the last 50 years!



Send today for illustrated Catalogue of gears and prices.

COBURN ENGINEERS

COBURN WORKS · PEASMARSH ·

GUILDFORD ·

SURREY

Tel.: GUILDFORD 3373

Spans & Loads PlerHEAD LTD. PlerHEAD LTD. Prestressed

-	FLOOR	S	&	R	0	0	F	S				
Depth	TYPICAL CROSS SECTIONS	Self Wt. per sq.ft.	Туре	Superimp'd load lb./ft.2	30 чь.	40 lb.	60 Ib	80 ·b	100 lb.	150 lb.	200 lb.	3361b.
7"	2'0'	35 lbs.	x7	Case 1	20'-10"	19'-3"	17'-5"	15'-11'	14-6"	12'-7"	111-31	9'-1"
7"		36 lbs.	do	Case 2	, 24'-0"	22 -5*	20 -2*	18 -7*	16 .9"	14 -7*	13 -0*	10 -5"
7"	2' 6'	40 lbs.	do.	Case 3	26 -0"	24: 2"	21 .9*	20 2"	,181.9	16'-0"	14'-4"	11 .6*
7"	2' 0'	42 lbs.	do	Case 4	27'-6"	25'-0"	24 -5"	22 -8"	20'-6"	17'-10'	16:-01	12'-11"
7"	7-	60 lbs.	do.	Case 5	-	-	-	_	-	24′-1°	22:-10	17'-10"
9"	1' 8" - 5" 5" 5" 5" 5" 5" 5" 5" 5" 5" 5" 5" 5"	47 lbs.	н9	Case 1	31 -3"	29'-2"	26'-6"	24'-7"	22 -5	19'-8"	17'-7"	14-31
9"		53 lbs.	do.	Case 2	36'-6"	34'-0"	31 -2"	28:-10:	26'-4"	23'-2"	20:-6*	17'-0"
10"	12" 12" 12"	55 lbs	I 10	Case 1	38'-8"	36:-3"	33 -4-	31 -1"	28'-3"	24 -9	22:-4"	17:41*
10"	10-	64 lbs.	do.	Case 2	44'-1"	41:-2"	38:-0*	35'-6"	32~3*	28 -7"	25'-10°	20 -3"

THE HOVERINGHAM CONCRETE CO. LTD. HOVERINGHAM NOTTS

Tel. BLEASBY 381-2-3

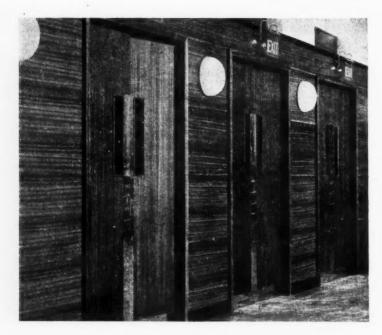
PIERHEAD LTD.

SPEKE BOULEVARD LIVERPOOL, 19

Tel Hunts Cross 1311

LONDON FACTORY FAGGS LANE FELTHAM, MIDDX





makes the most of wood

venesta

veneered plywood

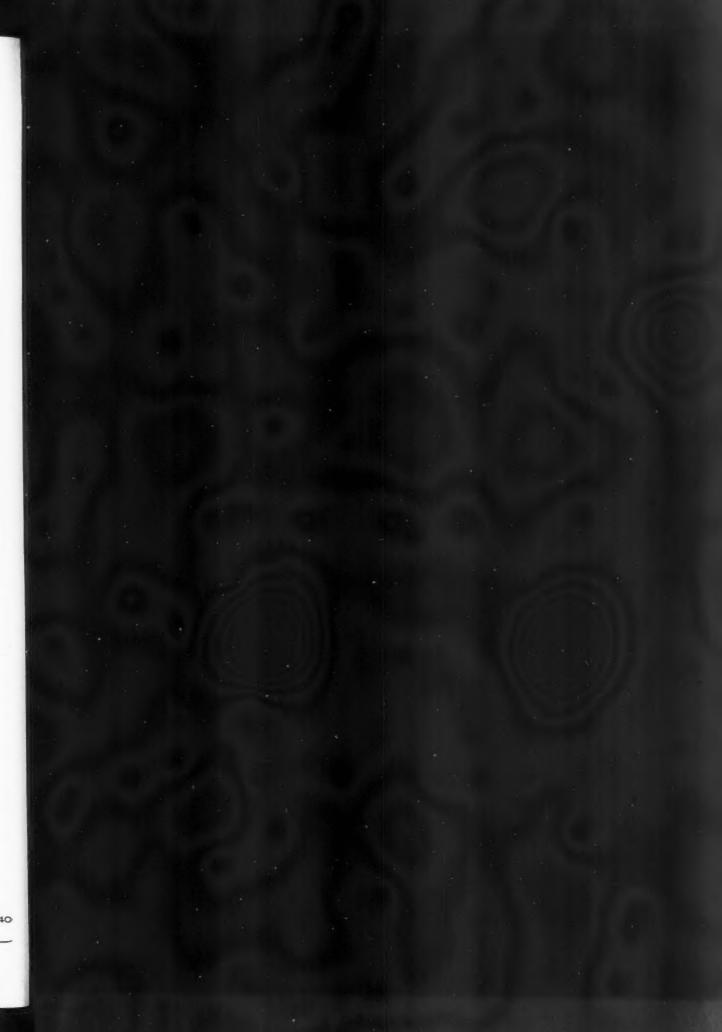
Wood used as a decorative material is friendly all the year round — in winter it is warm, in summer cool. With the experience of over 50 years in the plywood industry, VENESTA Limited can today offer a wide range of the finest veneered plywood for contemporary and traditional panelling. The effect of grain and figure, as well as the varying characteristics of the wood, adds a distinctive charm to interiors panelled with VENESTA Veneered Plywood.

VENESTA FLUSH DOORS ARE SOLID AND STRONG

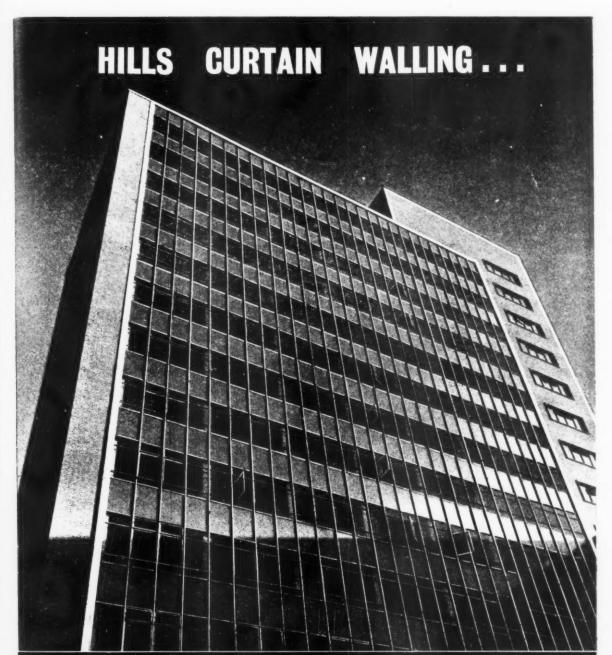
VENESTA Flush Doors are available either veneered or suitable for painting. Robustly constructed, with a solid core and lipping on the edges, they are flat and sound resistant and they will withstand hard usage.

VENESTA LIMITED, PLYWOOD DIVISION

VINTRY HOUSE, QUEEN STREET PLACE, LONDON EC4 TELEPHONE: CENTRAL 3040





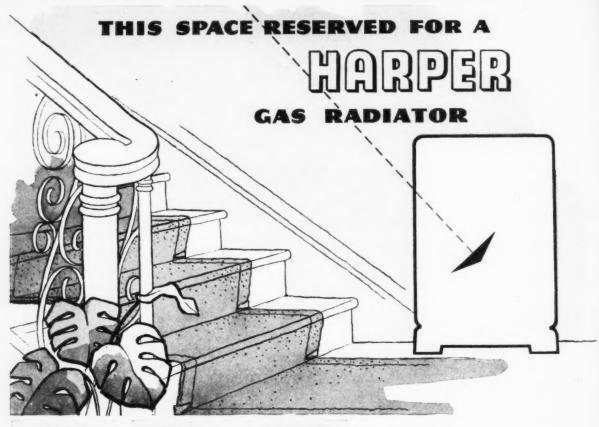


.. is the 100% watertight system with mastic-free dry jointing and adequate compensation for thermal movement.

Office Block. 28-35, Minories, For the City of London Real Property Co. Ltd. Architects: Howard, Souster & Fairbairn.

HILLS (WEST BROMWICH)
LIMITED

Albion Road, West Bromwich, Staffs. Tel: West Bromwich 1811 (15 lines) London Office Chapon: Place, Dean Street, W.1. Let. J. card 0526/9
Branches at: Birmingham (Midland 5175) Manchester (Blackfriars 3382.3) Bristol (24765) Newcastle-on-Tyne (25)60) Glasgow (City 5564) and Belfust (Dundonald 3526)





Model No. 3161

Model No. 3161

Finish—Base and body heat resisting coinage bronze paint. Baffle vitreous enamelled. Louvres cream vitreous enamelled. Burner—Cast iron with luminous bray jets. \{in. gas inlet, can be fitted for R. H. or L. H. feed.

Governor—Constant pressure. Gas consumption—18 cu. ft. per hour at 2\{\}in. W.G.

Maximum output per hour: \{\}100 B.Th.U. at 500 c.v.

Dimensions—Height 29\{\}in. Weight 17\{\}\{\}in. Depth 7in.

Weight 42lb.



Model No. 3160

Finish-Heat resisting coinage bronze. The top louvre and the door (which has concealed hinges) are cream vitreous enamelled. Gas consumption: 2 cu. ft. per hour.

Dimensions: Height 25in. Width 163in. Depth 61in. Weight: 31 lb.



Model No. 300

Its graceful lines and pleasing finish t1 nd with any surroundings.

Finish—Front panel, heat re sisting coinage bronze paint' Baffle, vitreous enamelled. Louvres, vitreous enamelled.

Burner—Cast iron luminous bray jets. gas inlet.

Governor-Constant pressure.

Gas consumption-18 cu. ft. per hour at 2½in. W.G.

laximum output per hour-8,100 B.Th.U. at 500 c.v.

Dimensions—(a) Panel: Height 27½in.; Width 17in. (b) Overall dimensions required for recess. Height 24in.; Width 12½in.; Depth 3½in. to 4½in. Series of three nautilus flue blocks, type S.1.

For many years Harper gas radiators have been specified by leading architects throughout the country.

Unequalled in design, quality and finish, Harper radiators are economical, require virtually no maintenance, and will give years of efficient use.



Harper's make a comprehensive range of door furniture, cast iron and finished in bronze lustre vitreous enamel to withstand exposure to severe weather conditions. May we send you details of the full range?

Harper No. 325 Gas Heated Towel Rail

Fasily installed, compact and economical. A single fuminous burner keeps bathroom towels warm and dry. A governor controls gas consumption (4½ cu. ft. per hour.) Finished in ivory and green. Provision is made for screwing to the floor although it is stable enough to stand unsupported.



RPE

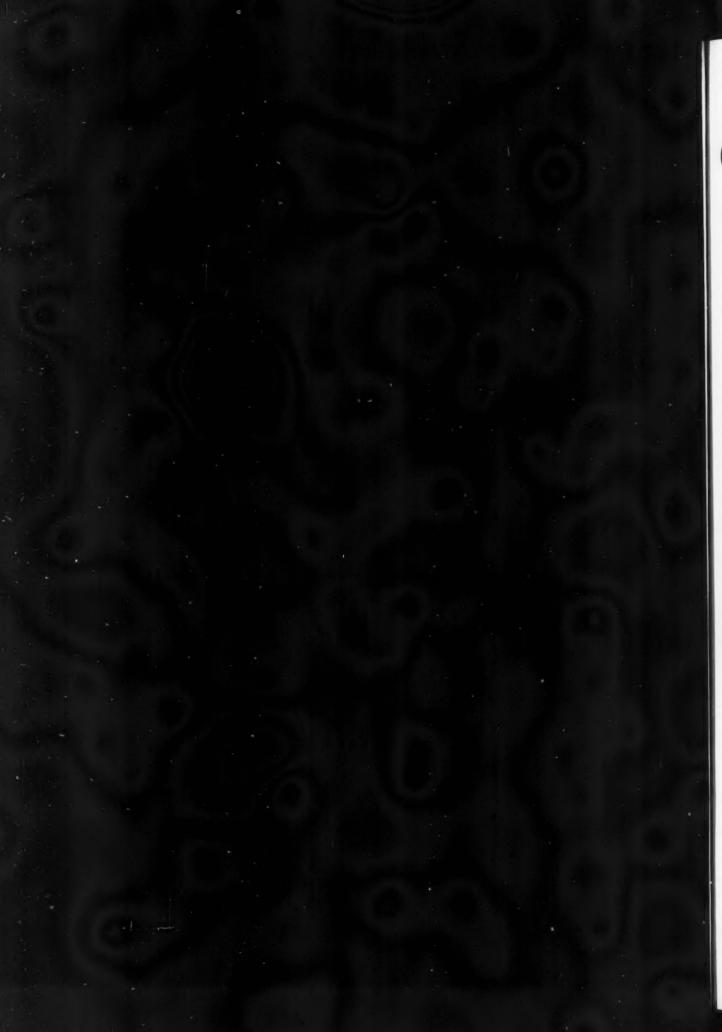
JOHN HARPER & CO. LTD., ALBION WORKS, WILLENHALL

d by

e ill

nius n-

LTD.



Canteen comfort!





Contractors: Messrs. George Wimpey & Co. Ltd. Regional Architect: B. C. Jones Esq., A.R.I.B.A., A.M.T.P.I.

for a cheerful, hygienic floor—choose ACCOFLEX

Accoflex, the vinyl-asbestos tile, provided the colourful floor for the Staff Canteen of Messrs. George Wimpey & Co. Ltd., at Newcastle, and they made full use of the design possibilities of these 9"×9" tiles to produce the striking directional effect you see above. As you may know, Accoflex is a flexible tile-it can be laid on almost any good sub-floor. It is available in 14 colours, mostly light ones, and has a sparkling lustrous finish. Accoflex is the new flooring surface that Architects, Builders and the public alike have accepted as a material of modern conception and application . . . fully explained in Publication No. 337.

Visit our Stand No. 45, Row C, Grand Hall, Olympia at the Building Exhibition, Nov. 13-27.

because

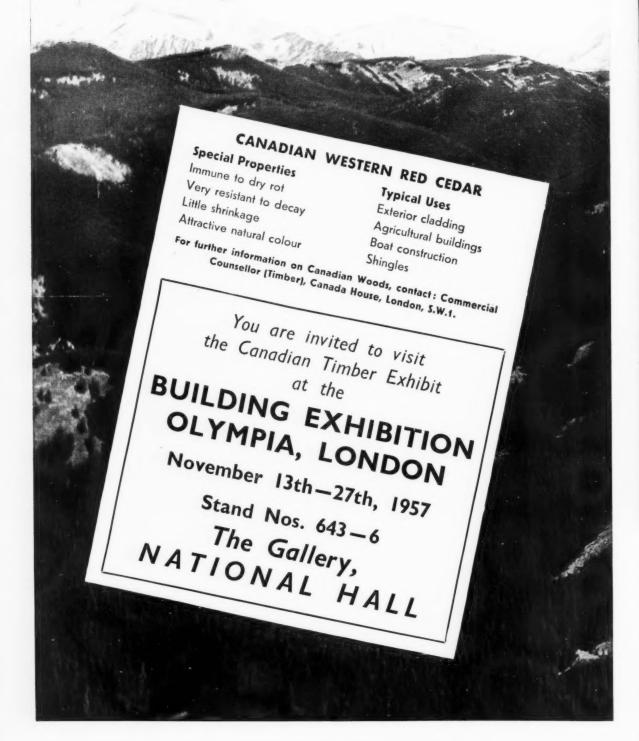
- its bright colours make floors
- it is easy to clean and maintain
- it resists grease, dilute acids, and
- it is tough and hard-wearing

and it's rmstrong FLOORING

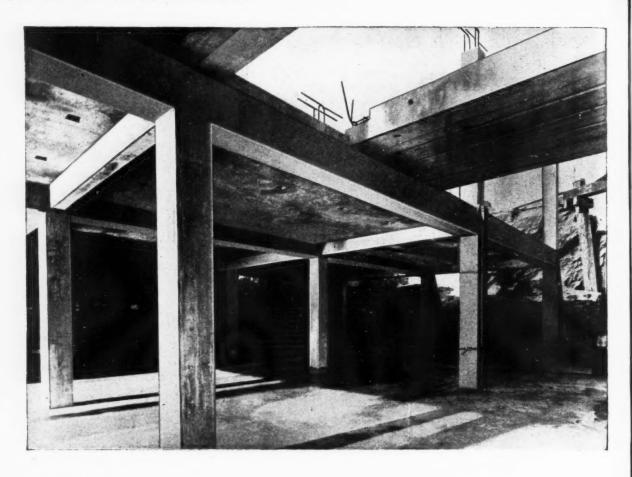
LINOLEUM ACCOFLEX . ACCOTILE . CORK TILE

ARMSTRONG CORK COMPANY LTD., Flooring Department, BUSH HOUSE, ALDWYCH, LONDON, W.C.2 . Telephone: COVent Garden 1101

CANADIAN TIMBER ... from Canada's vast forests







Well'of shuttering...

offers concrete advantages large boards — 8' x 4' can be used again and again; easily handled smooth surfaces for best great rigidity with minifinish mum support

For more than ten years Weyroc has been widely used for shuttering. It needs only a simple surface dressing to fit it for repeated use.

weyroc — one of the world's great man-made materials

THE AIRSCREW CO. & JICWOOD LTD. WEYBRIDGE, SURREY. Weybridge 2242/7



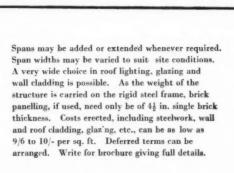
clients with limited budgets

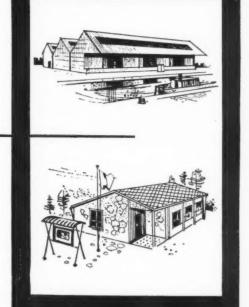
need your creative services most . . .

With Unimer or "Umbrella" Buildings, the preliminary structural engineering and roof system is already completed utilising specially jigged, pre-assembled and mass-produced components. Fabrication costs are, as a result, reduced to a minimum.

On these components you can create striking, architecturally distinctive buildings, for clients who are limited financially by tight budgets, by utilising various readily obtainable building materials—particularly on exteriors. Pre-engineering does not limit your scope. You have a choice of six standard spans from 60 ft. to 15 ft. wide with lengths in multiples of 15 ft. and 12 ft. 6 ins., also 105 ft., 90 ft. and 75 ft. wide with lengths in 40 ft. multiples. There is a wide range of standard heights to suit every need.

 BASE YOUR DESIGNS ON UNIMER OR "UMBRELLA" TUBULAR STEEL BUILD-INGS AND CREATE DISTINCTIVE STRUCTURES AT A MODEST COST







TUBULAR STEEL BUILDINGS FOR INDUSTRY

SHERBOURNE ROAD, ACOCKS GREEN, BIRMINGHAM, 27.

Tel: Acocks Green 0683 (12 lines)

anden Office: 33 Manor Farm Road. Alberton Wemble

Over 100 prominent architects, surveyors, and consulting engineers have specified Unimer and "Umbrella" Buildings supplied by us. Unimer and "Umbrella" Buildings conform to the relevant British Standards and Codes of Practice.

Tel: Wembley 8671 (5 lines)

IN FACTORY..OFFICE.. HOSPITAL OR SCHOOL



New **DURA** flex ndustrial Threshold

SEALS OUT WATER, DUST, FUMES AND NOISE

Greatest threshold advance in 25 years. The DURAffex threshold is revolutionary. Flexible vinyl plastic arched in a sturdy aluminium base, provides a tight spring-action seal against the bottom of the door. Vinyl strips along either side of the threshold base prevent water seepage, and complete the unique DURAffex 3-way SEAL.

Installed in less than HALF the time. The DURAflex Industrial Threshold is just what Architects and Builders have been waiting for—installed in less than HALF the time needed for ordinary thresholds—reduces labour costs. Designed for single or double swing-doors, exterior and interior doorways, DURAflex is Britain's finest Industrial Threshold.

*Independent laboratory test (by the South Florida Test Service) prove the ruggedness of DURAflex thresholds; over 215,000 door openings and closings with no visible signs of wear on the especially compounded vinyl plastic,

ONLY DURAFLEX HAS ALL THESE ADVANTAGES



Installed in Hospi tals, Sanatoria Factories, etc DURAfler Viny Arch flattens unde wheels and feet.



DURAflex stops draughts, reduces air-conditioning and heating losses, Ideal for Laboratories, Hospitals,



DURAfter positively seals out moist air noises, dust... everything!...ever if door warps.

Eliminates need for weather stripping designed for inswinging and outswinging doors.

FOR FULL DETAILS, SEND THIS COUPON TODAY

To: Adams & Benson (Dalbukirk) Ltd., Industrial DURAffex Division,
Oldbury Road, Albion, W. Bromwich, Staffs.

I am interested in DURAffex — please send me full details.

NAME
ADDRESS
3810



precious eyes . . .

the new HA LOUVRED LIGHT

HERE's the most modern lighting fitting yet—the HA167. Scientifically designed to met Ministry of Education requirements, the HA167 is particularly well suited for illumination of classrooms—also hospitals, offices, shops, etc. With 45° cut-off and having low surface brightness, it eliminates eyestrain—provides maximum light, free from glare or dazzle. Perspex shade is easy to clean and practically unbreakable. All parts are just sprung together—no screws fasteners—to form a permanently rigid fitting Speedy re-lamping through louvre. Easy to install and maintain. Its low price, pleasing design, combined with its high efficiency, makes the HA167 the best value in lighting today.

Folder describing the HA 167 in detail sent on request.



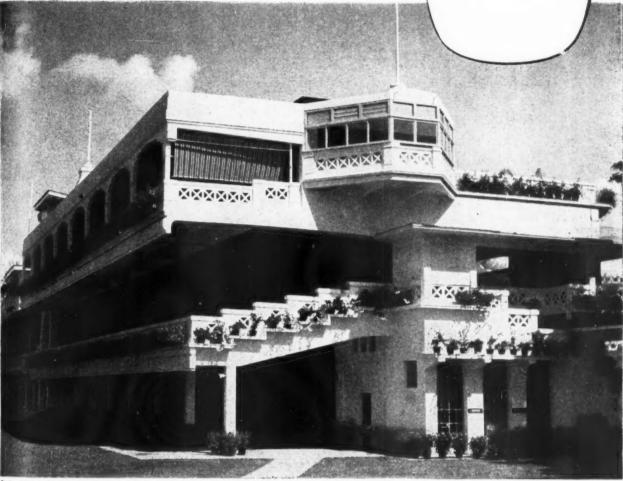
3E

HUME ATKINS & COMPANY LIMITED 66 VICTORIA STREET, LONDON, S.W.1. TELEPHONE): VICTORIA 0161 WORKS: ICKNIELD WAY, LETCHWORTH, HERTS.

WHETHER a building is designed in traditional or contemporary style, Robbialac Colorizer Paints allow the architect almost unlimited scope for the imaginative use of colour. With their unrivalled range of 999 colours in Super Gloss Enamel and 99 colours in Emulsion Paint, they combine unique colour flexibility with a quality of finish that provides complete protection for all paintable surfaces both inside and outside the building.

The Perak Turf Club

IPOH - MALAYA



Redecoration controlled direct by: Clerk of the Course, Perak Turf Club. Contractor: Wah Onn & Co.



ding

IGHT

ting yet to meet to meet the for illuospitals, d having tes eyeee from easy to All parts
rews
d fitting. Easy to pleasing fficiency.

lighting



PAINTS

SUPER GLOSS ENAMEL

EMULSION PAINT

Suede Finish

Eggshell Enamel

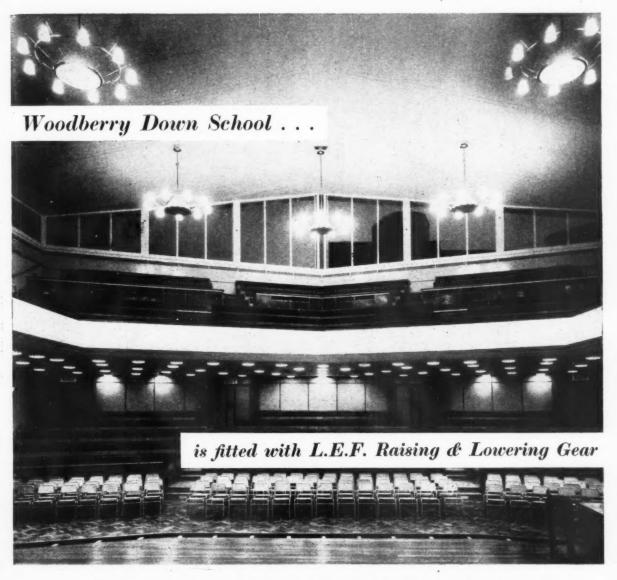
The Architectural Bureau



of Jenson & Nicholson Ltd. offers

a complete colour advisory service and, if required, full on-site co-operation, to architects and their contractors. A technical brochure is available on request.

PARTITIONING ceiling level one edge nailed cornice mould nailed to ceiling ro corner post 3/8" or 1/2" Bartrey expansion gap 3/8" or 1/2" Builtrey line of skirting bituminous paint timber skirting applied to inner face before fixing allow adequate expansion gap note: one vertical edge of board should be noiled at 10" centres leaving opposite floor level edge to move freely behind a cover mould DETAIL AT SKIRTING PLAN SHOWING TYPICAL FIXING AT CORNER AND CEILING Bartrey Chipboard is particularly suitable for since although Bartrev tends to move less than softwood all the movement is concentrated at the partitions and wall linings, as its availability in "floor to ceiling" lengths eliminates the necessity board edges. Full information is contained in the Bartrey for horizontal joints. Information Sheets. For copies of these or for The standard width of Bartrev is 4 feet, and the following thicknesses are recommended: $\frac{3}{8}$ and $\frac{1}{8}$ details of prices and distributors, write to: Vere Engineering Co. Ltd., 3 Vere Street, London, W.1. for double-skin construction and wall lining, and 5" and 3" for single-skin partitions. Telephone: MAYfair 9501. Visit our stand at the Building Exhibition The fixing details given above show how adequate allowance can be made for expansion and contraction, No. 798/9, Empire Hall, First Floor.



THE means of servicing inaccessible lights in the Assembly Hall of this new school was given careful consideration at an early stage of planning by the Architect (Robert H. Matthew, C.B.E., A.R.I.B.A.) and the Chief Engineer L.C.C. (J. Rawlinson, C.B.E., M.Eng., M.I.C.E., M.I.Mech.E.)

London Electric Firm Ltd., were consulted, with the result that they were able to supply Raising and Lowering Gear that was built into the ceiling with all working parts concealed.

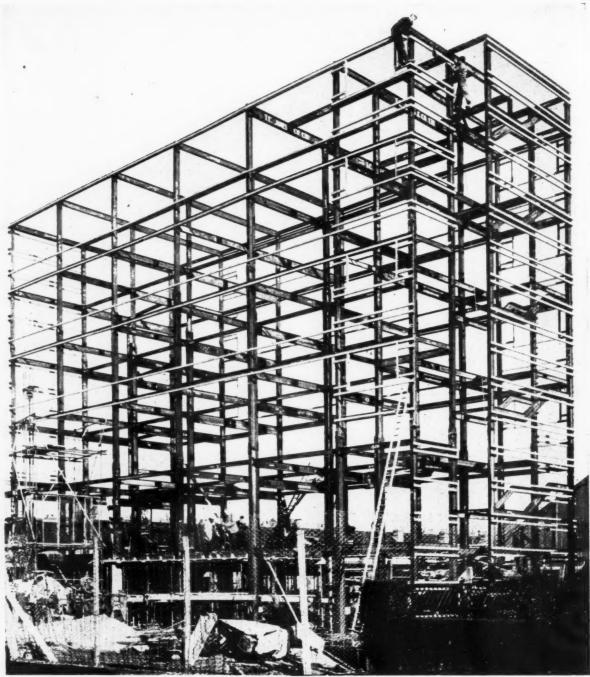
L.E.F. Raising and Lowering Gear enables maintenance staff to bring light fittings down to floor level so that they can be dealt with quickly and conveniently. It outdates other cumbersome methods and is more

economical in time and labour.

When you have a similar lighting problem, remember that it is most important to discuss your needs with L.E.F. at the planning stage: first to satisfy your technical requirements and secondly to ensure suitable delivery.

LONDON ELECTRIC FIRM LTD. South Croydon, Surrey. Telephone: Uplands 4871





Factory for Electronic Instruments Ltd., Richmond, Surrey

This is a C.A.S. (Industrial Developments) Ltd. development. Architect: KENNETH ANNS, M.C., F.R.I.B.A.

Consulting Architect: A. B. WATERS, M.B.E., G.M., F.R.I.B.A.

Consulting Engineers: ANDREWS, KENT & STONE. Contractors: C.A.S. (Contractors) Ltd.

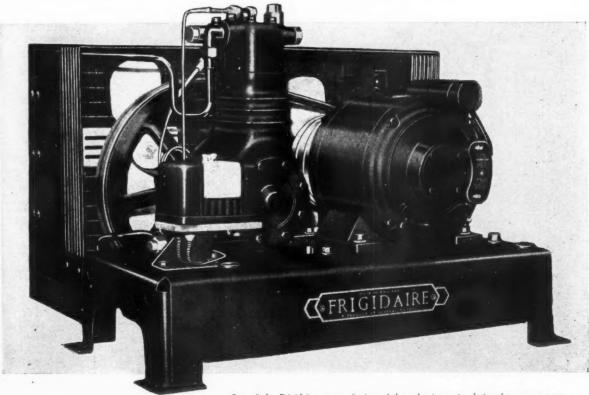
STEELWORK FABRICATED & ERECTED BY

T. C. JONES



HEAD OFFICE: WOOD LANE, W.12. Telephone: SHEpherds Bush 2020
SOUTH WALES OFFICE: 2 PIERHEAD CHAMBERS, BUTE STREET, CARDIFF. Telephone: Cardiff 28786
REINFORCEMENT DEPARTMENT: 17 BUCKINGHAM PALACE GARDENS, LONDON, S.W.1. Telephone: SLOane 5271
WORKS: Shepherds Bush, London Neasden, Middx Treorchy, Glamorgan

NOW! Five-year Warranty on all Frigidaire Compressors!



One of the Frigidaire range of air-cooled condensing units designed to cover many applications. Water-cooled types are also available.

The full range of famous Frigidaire Compressors is now backed by a five-year warranty: not just the compressors — but the condensers, belts, receivers and oil separators as well — and at no increase in price.

There are 80 model variations in this wonderful range, from 1/8 h.p. to 10 h.p. inclusive.

Frigidaire equipment is built and backed by General Motors. You can have complete confidence in it and in Frigidaire's unequalled after sales service.

This step is part of Frigidaire's new Five Point

Development Programme for commercial refrigeration

FRIGIDAIRE means

means business—for you!



271

FRIGIDAIRE DIVISION OF GENERAL MOTORS LTD., STAG LANE, KINGSBURY, LONDON, N.W.9



WOOD is ideally functional and economical to install and maintain as well as providing flexibility in expression. Wood reduces condensation. Specify wood for windows.

A GASE IN POINT Wood windows have been used in the new Administrative Block at London Airport with a view to combining functional efficiency with the required style of contemporary design. For advice on wood windows suitable for schools, offices and factories consult E.J.M.A. Write to the address below.

THE ENGLISH JOINERY MANUFACTURERS' ASSOCIATION (Incorporated)
(with which is associated the Scottish Joinery & Door Manufacturers' Association)

SACKVILLE HOUSE - 40 PICCADILLY - LONDON, W.1

Telephone: REGENT 4448/9



TOUGHEST PENCIL EVER MADE ... now the choice of draughtsmen all over Britain!

First specially developed for draughtsmen of Rolls Royce Limited, the NEW Koh-i-Noor Draughtsman Superweld Pencils are now being used by draughtsmen throughout Britain. And no wonder, for this pencil is superior to any of its kind—as YOU will discover the moment you use it! Why not ask for a free sample, and prove to yourself that:—

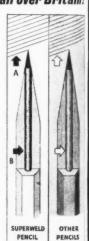
MOLEGULAR GRAPHITE CONTROL is the secret of its perfect density! It gives you a velvet-smcoth, non-smudge, yet easily erased line (A). Amazing toughness and long life due to

SUPERWELD REINFORCED LEAD—the lead and wood-casing are welded as one by a special process. The wood, in fact, actually RE-INFORCES the lead instead of merely encasing it (B). Consider what you save in money, time and temper by using a pencil that

DOESN'T BREAN WHEN DROPPED OR SHARPEMED—All this PLUS that feature exclusive to KOH-I-NOOR Draughtsman pencils—DISTINGTIVE GOLOUR TIPS—for each degree for easy and immediate identification (C). Each of the 9 degrees has an easily distinguished coloured tip to give you the grade at a glance without having to refer to the lettering on the pencil.



The NEW KOH-I-NOOR
Draughtsman SUPERWELD Pencil
for the smoothest line and the longest life.





TEST THIS NEW PENCIL FREE BY SENDING COUPON NOW!

The new Koh-i-Noor Draughtsman Superweld Pencils are available in 2^{ll} B, HB, F, H, 2H, 3H, 4H and 6H. For FREE test pencil, send this coupor indicating grade required to: L. & C. Hardtmuth (Gt. Britain) Ltd, (A.J. Koh-i-Noor Factory, Chard, Somerset.

NAME	GRADE OF
ADDRESS	REQUIRE

....(A.J.)

internal door frames or kitchen units, make sure you buy Rippers — the finest standard joinery obtainable. Over sixty years experience is behind Rippers quality -

RIPPERS STANDARD WINDOWS

DE tain!

ENCILS

le in 2B, s couper td, (A.J.

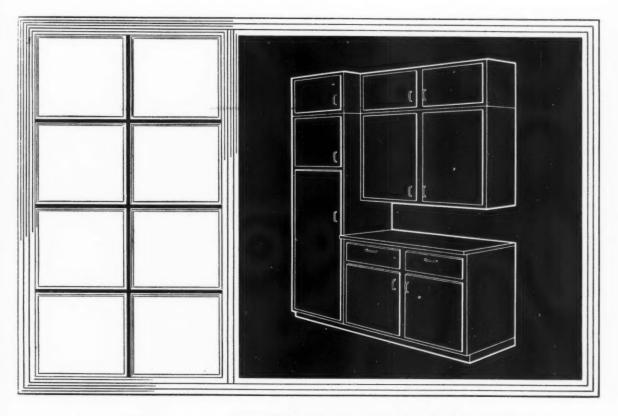
RADE OF PENCIL

REQUIRED

'the best in the business'

When you order windows, external door frames,

Write to-day for our free Catalogue: it describes over three hundred designs from which endless window combinations can be arranged, and includes descriptions of all our products. Apply for your free catalogue to Dept. A.J. 24/10.



"you'll be glad you chose WOOD windows"

RIPPERS LIMITED

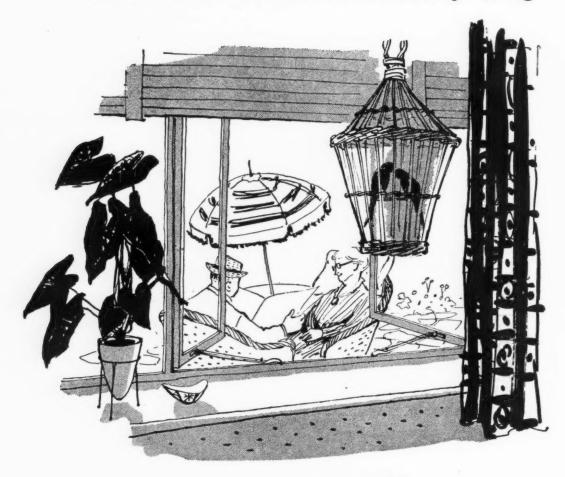
CASTLE HEDINGHAM, HALSTEAD, ESSEX

TELEPHONE: 191 HEDINGHAM (4 lines). TELEGRAMS: RIPPERS, CASTLE HEDINGHAM

LONDON OFFICE:

9, SOUTHAMPTON PLACE, LONDON, W.C.I. TELEPHONE: CHANCERY 8406/7.

SADIA HOT WATER for leisurely living



Maximum labour-saving efficiency in the supply of hot water! That is what Sadia Water Heaters are made for.

For a small house—or flat—we recommend the type UDB Sadia of 20-gallon capacity. It provides a complete hot water system and is fitted next to the most frequently used tap, in the kitchen, thus saving on pipe losses. For that purpose it is made to fit neatly Under the Draining Board. For larger households there are Sadia Electric Storage Water Heaters up to 60-gallon capacity. They are made of the finest and toughest materials to the highest standards of construction—tested and re-tested. They are recognised for their reliability and long life, individual units installed 25 years ago and longer still giving unfailing service.

Sadia Water Heaters are the most likely to meet your requirements.

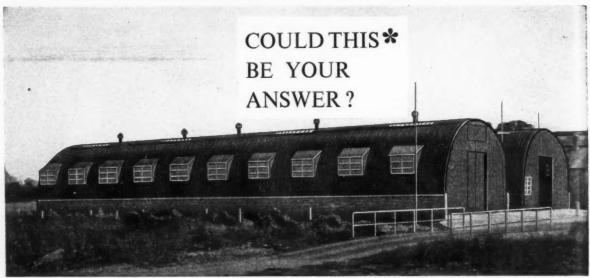
We shall be very happy to answer all enquiries regarding any contracts you may have under consideration.



AIDAS ELECTRIC LTD · SADIA WORKS ROWDELL ROAD · NORTHOLT · MIDDX WAXLOW 2355

SPECIALISTS IN HOT WATER BY ELECTRICITY SINCE 1923





Photograph by courtesy of Stafford Allen & Sons Ltd., Long Melford.

For one reason or another, tomorrow may find you face to face with a complex building problem demanding an urgent solution . . . or funds will not permit the expense of a traditional brick structure.

Whichever it is, YOU are expected to find a speedy, efficient, yet simple answer.

Just such an answer is provided by THORNS CURVED-

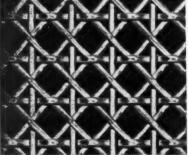
ROOF BUILDINGS, which provide the most inexpensive form of building construction, great adaptability, and ease of erection.

The photograph shows two Nissen-Type Sheds, size 12 oft. \times 3 oft.

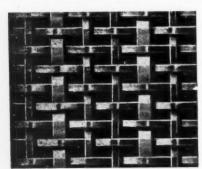
Basic widths'available- 16ft., 24ft., 30ft., 35ft., 91ft.

get a quotation from THORNS

J. THORN & SONS LTD. (Dept. 188) BRAMPTON ROAD, BEXLEYHEATH, KENT



METALACE (Pattern No. M1006)
Produced in rolls of 25ft. to 100ft. by
2ft. 11in. wide.
Please ask for List No. AJ875.



RIBBON WIREWORK (Pattern No. 1357W)
Produced in flat panels to any size.
Please ask for List No. AJ875.

Decorative and Durable

For effective screening whilst allowing a free circulation of air, Harveys make a group of products which ensure harmony with any decorative scheme. The patterns illustrated are representative of three comprehensive ranges, available in a variety of metals and finishes.

'HARCO' PATENT
METALACE
RIBBON WIREWORK

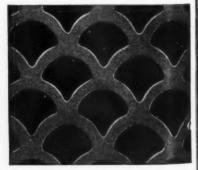
PERFORATED METAL
AND PLASTIC



G. A. HARVEY & CO. (LONDON) LTD.

Woolwich Road London, S.E.7

Telephone: GREenwich 3232 (22 lines)

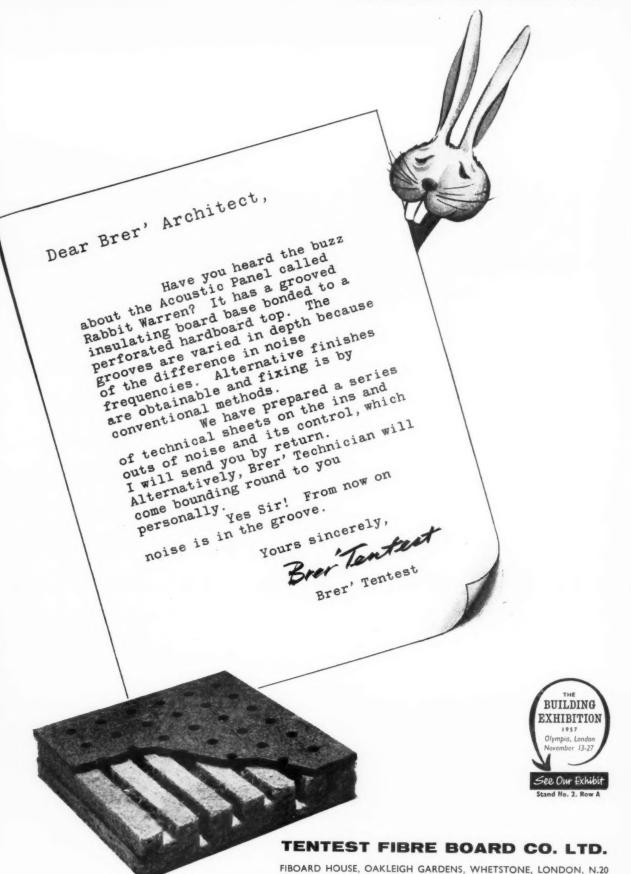


PERFORATED METALS (Pattern No. 388)

Produced in all metals and finishes.

PERFORATED PLASTICS can also be supplied.

Please ask for List No. AJ355.



N T

ys make

e. The vailable

Pattern

an also

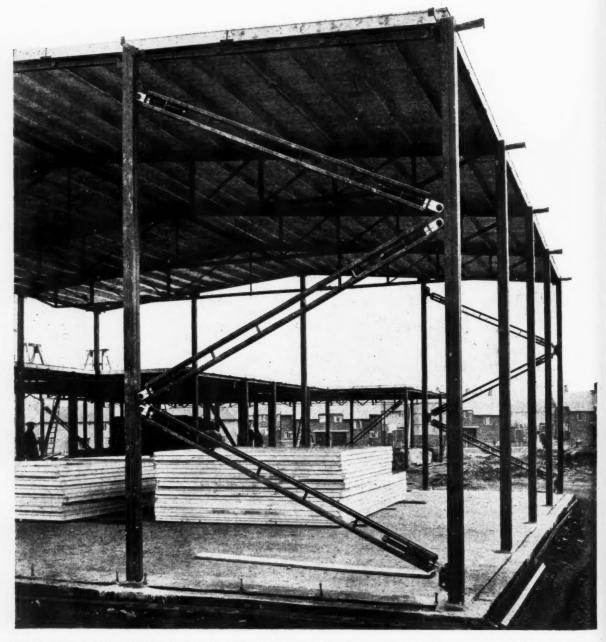
Telephone: Hillside 8801-7

BROCKHOUSE STRUCTURES

All-types of STRUCTURAL COMPONENTS for building on the 40 in. module

MANSFIELD BANCROFT LANE INFANTS SCHOOL

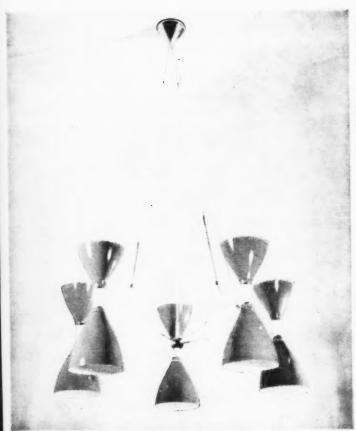
Architect: D. E. E. Gibson C.B.E., M.A., A.R.I.B.A., M.T.P.I.
NOTTINGHAMSHIRE COUNTY ARCHITECT

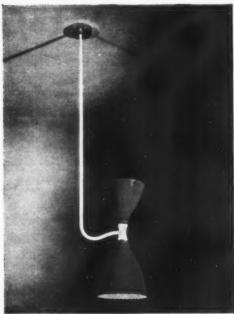


BROCKHOUSE STEEL STRUCTURES LTD., Victoria Works, Hill Top, West Bromwich, Staffs.,

Tel: Wednesbury 0243

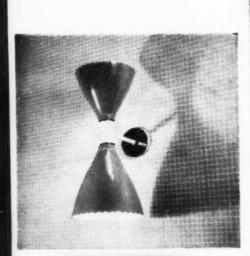






pleiades

from FALKS range of contemporary fittings designed by J. M. Barnicot, M.S.I.A. of Falks

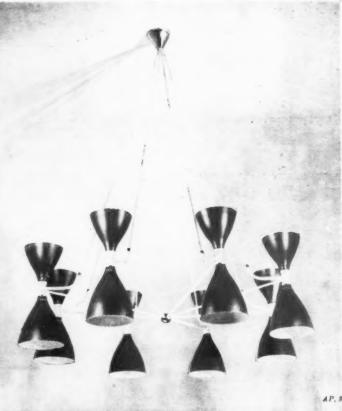




Lighting Engineers and Manufacturers of Lighting Fittings

91 Farringdon Road, London, E.C.1 and Branches
London Showrooms Holborn 7654

20 22 Mount Street, Park Lane, W.1 Mayfair 5671 2

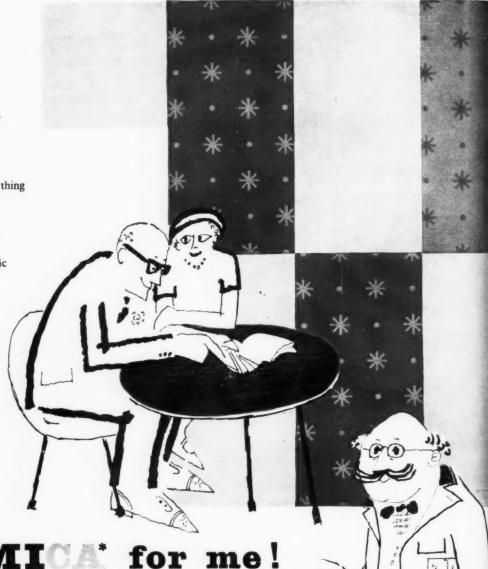


AP. 89.752

Opportunity by the sq ft

If you are at that operative point, in a small job or a large one, where the colour and variety and solidity and cool, clean texture of FORMICA decorative laminates might bring the whole thing to life in a new way . . . If you're just there, then take your opportunity!

For FORMICA laminated plastic is one of those fundamental materials that upset earlier concepts by the scoreand its full possibilities are nowhere near realised yet. Its sheer practical beauty gave it a start in the kitchen. Its sheer practical beauty is taking it far and wide, into industrial and public life. And once you say . . .



FORMICA for

... who knows where it may go? Things are moving fast at our end-new colours, new patterns, new forming techniques, new-experience with furniture and panelling. But the future lies with you.

Will you get in touch with us?

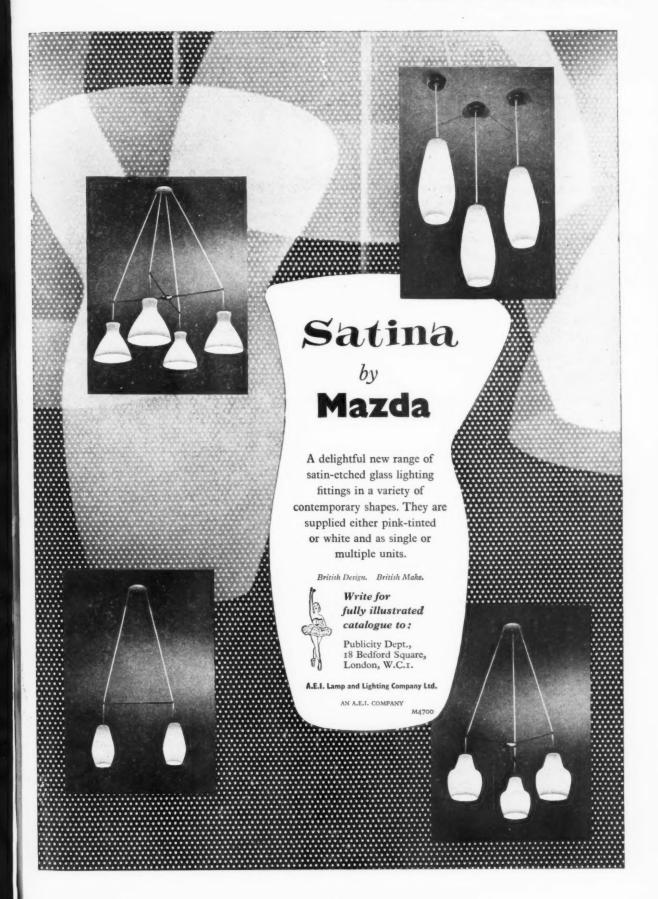
Write for further information to FORMICA Ltd Dept. F344, De La Rue House, Regent Street, London WI

*FORMICA is a registered trademark

Look for the name FORMICA on every sheet







SHERWOODS -

Est. 1777

PAINTS

for service ...

No paint company offers a better service than Sherwoods. Service to architect, builder, industry and commerce. Service that is swift, efficient, constant and comprehensive.

Service that is yours for the asking.

Next time you need advice on colour schemes, finishes, specifications . . . next time you need *any* kind of service *and* paint of the highest quality—say Sherwoods. In addition to our standard colour range, Ultramel enamel finish is available in all 101 shades of B.S. 2660 from stock.

Ultrasheen satin finish, Ultramel flat wall finish, Ultramatt PVA emulsion and Astrex superwashable water paint are also available in 52 shades from this range.

SHERWOODS PAINTS LIMITED BARKING, ESSEX PHONE: RIPPLEWAY 5500

... and for Sherwoods



Write for brochure "Colour in the Roof."
This illustrates in colour these fine tiles.

Phone: NUNEATON 3125
G. W. LEWIS' TILERIES LTD.
STOCKINGFORD, NUNEATON

How true this is! If colour is the criterion then "Rosemary" can offer a wide choice in reds—browns—brindles and multi-colours, all of which are fadeless.

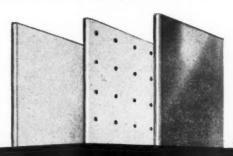
As for the quality of "Rosemary" Clay Roof Tiles, this is on a par with their beautiful colour. If you want the best, insist on the best and specify

ROSEMARY
ROOF TILES

GYPROC make the lath

and make the plasters that marry

into a tenacious, perfect bond



GYPROC LATH & PLASTERS

Gyproc Lath is composed of a cellular gypsum core encased in millboard liner. When a gyproc Plaster such as paristone or gyprone is applied to the surface of the lath, the gypsum crystals penetrate and interlock with the paper fibres during setting.

ouse

on then

-browns

fadeless.

of Tiles,

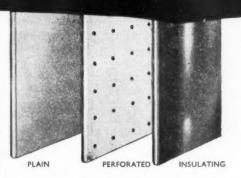
specify

during setting.

GYPROC Lath is available in three grades:

Plain for normal work; Perforated for greater fire-resistance; Insulating for better thermal insulation. All 16 ins. wide, § in. thick in sizes 42, 48 and 54 ins. long, and § in. thick in sizes 48 ins. and 54 ins. long. Packed in easy-to-carry bundles.

Paristone Plaster is made in undercoat and finishing coat grades. Gypstone Plaster is used for single coat work, Write for Leaflets for full information.



GYPROC PRODUCTS LIMITED

Head Office: Singlewell Road, Gravesend, Kent. Gravesend 4251/4.
Glasgow Office: Gyproc Wharf, Shieldhall, Glasgow, S.W.1 Govan 2141/3.
Midland Sales Office: 11 Musters Rd., West Bridgford, Nottingham. N. & ingham 32161.
London Office: Bath House, 82 Piccadilly, London, W.1. Grovenor 4617/9.

L.P.I.

Duramel helps to sell Self-Service

DURAMEL Plastic-Faced Plywood is widely used throughout the fine new Self-Service Store of the Dartford Industrial Co-operative Society at Hextable. **
(Photograph by courtesy of the Society)



The vastly increasing use of DURAMEL in shopfitting is the surest evidence of its fine, practical qualities.

DURAMEL was selected for check-out counters, island fittings and all shelves and plinths of the wall fixtures throughout this splendid new store of the Dartford Cooperative Society—the most modern store in the district.

DURAMEL'S hygienic, plastic surface is not only ideal for food storage, but stands up to hard wear of constant rubbing by jars and tins. It is resistant to moisture, acids, grease and fruit juices. Carpenters and shopfitters like it because it works like wood. And of course DURAMEL is thoroughly economical. At the Hextable store, for instance, fixtures are made on a 2'0" modula, which means that

in using standard sheets the wastage is negligible.

We need only add that DURAMEL is made in a range of colourful finishes and also in plain white.

**DURAMEL supplied through Rex Bousfield Ltd.



SIZES: 72" x 48", 84" x 48", 96" x 48", 36" x 24", 48" x 24".

STANDARD THICKNESSES: 1", 1", 1".

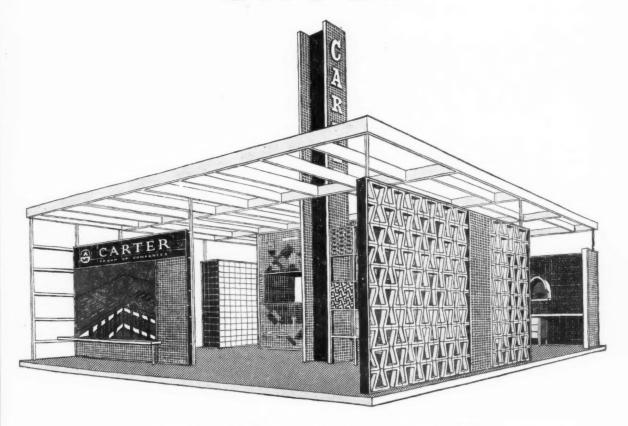
See DURAMEL on Stand 36, Row B at Olympia, November 13-27

Sole manufacturers: F. HILLS & SONS LTD., NORTON ROAD, STOCKTON-ON-TEES. Tel: STOCKTON 67141 For full details write to your nearest distributor-

MAIN DISTRIBUTORS:

LONDON & HOME COUNTIES: C. F. Anderson & Son Ltd., London, N.1 • Allied Manufacturing Co. (London) Ltd., London, N.1 • Bambergers Ltd., London, E.C.2 Rex Bousfield Ltd., London, E.C.4 • Waiter S. Fry Ltd., London, S.E.1 • SOUTH WEST: Rowe Bros. & Co. Ltd., Bristol, 1 • MIDLANDS: Rowe Bros. & Co. Ltd., Birmingham, 1 NORTH WEST: Barderal Distributors Ltd., Swinton, Manchester • John Cartmell & Sons (1947) Ltd., Morecambe • W. H. M. (Manchester) Ltd., Manchester, & G. E. Robinson & Co. Ltd., Salford, 5 • Rowe Bros. & Co. Ltd., Liverpool, 13 • NORTH EAST: Henry Moat & Son Ltd., Newcastle-upon-Tyne, 1 • EAST ANGLIA: Arthur Saul Ltd.. Norwich • Palgrave Brown Ltd., Colchester • SCOTLAND: Graham & Wylie Ltd., Glasgow, S.E • P. McDonaid Ltd., Glasgow, C.3 • Henry Moat & Son Ltd., Edinburgh, 1.

THE CARTER GROUP



Stand No. 72/3 Row D

B U I L D I N G E X H I B I T I O N
O L Y M P I A N O V 13-27th 1957



ter, 3 I Ltd.,

gh, 1.

Carter & Co. Ltd., Poole, Dorset. Telephone: Poole 125
Carter & Co. London Ltd., 29 Albert Embankment, SE11. Telephone: Reliance 1471
Manchester Office: 27 Brazennose Street, Manchester 2. Telephone: Blackfriars 2098
Art Pavements & Decorations Ltd., St. Paul's Crescent, Camden Town, NW1. Telephone: Gulliver 2126
J. H. Barratt & Co. (1927) Ltd., Boothen Tile Works, Stoke-on-Trent. Telephone: Stoke-on-Trent 48652
The Marbolith Flooring Co. Ltd., 29 Albert Embankment, SE11. Telephone: Reliance 2062
Commercial Marble & Tiles Ltd., Selborne Gardens, Newcastle-upon-Tyne 2. Telephone: Newcastle 811373
R. Campbell & Sons, 13 Steads Place, Edinburgh 6. Telephone: Leith 39188



YPE SIX

SYSTEM OF CONSTRUCTION

for additional A C C O M M O D A T I O N



Delivered and erected in a matter of weeks

As supplied to: The National Coal Board, The British Transport Commission, British European Airways

6ft. 4 ins. module giving flexibility in design Eaves height: 9 ft.

SEND FOR ILLUSTRATED BROCHURE

Ideal for OFFICES

CLASSROOMS

HOSTELS

PAVILIONS

LIBRARIES

CANTEENS

COMMUNITY CENTRES

VILLAGE HALLS

(7 lines) Phone: Langley Mill 2301



(LONDON) LIMITED

Cast Iron pipes & fittings

We design and supply, for home and abroad, installations for plumbing, drainage, and sewage pumping and disposal plants. Consultation before plans are settled can reduce costs and avoid delays. Large stocks, covering a wide range, support this important service with good deliveries. Please ask for our catalogue.

HORNITEX

Permanent display at the Building Centre. Incorporated in products selected by the Council of Industrial Design.

See the new range of Hornitex Irish Linen finishes on Stand No. 2 Row A, Ground Floor, at the Building Exhibition.

cupboards

MS

TY

lines)

Mahogany' table top, panelling, flush door and

where beauty, quality and economy are first considerations

Super Hornitex is a new melamine surfaced hardboard of exceptional quality and durability. Supplied in large and carefully graded sheet sizes calculated to keep wastage-especially in panelling-to the minimum. Super Hornitex is simple to fix and unaffected by steam, oil, grease, boiling water, acid and mild alkali. 30 attractive patterns and colours, including superb wood imitations, contemporary designs - all at the lowest retail prices in the country.

fully detailed literature, samples and patterns sent on request.

MANsion House 6599

Wm. BRANDTS (Wallply) LTD., 36 FENCHURCH ST., LONDON, E.C.3.

Established 1695

WARING AND GILLOW

bave manufactured

PANELLING AND FURNITURE

IN THEIR

LANCASTER FACTORY

FOR

Over 260 years

AND

invite enquiries from

Architects

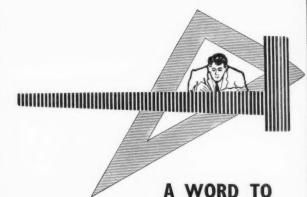
WARING & GILLOW Ltd.

CONTRACT DEPARTMENT

164-182 OXFORD ST., LONDON, W.1.

Telephone: MUSeum 5000

Factories at LONDON, LANCASTER, & LIVERPOOL



OVERWORKED ARCHITECTS

The Compactom service is designed to take over all the problems in connection with every type of scheme calling for dry construction demountable partitions, wall panelling, counters and fitments, and acoustic and false ceilings. When you call in Compactom you have the benefit of many years' experience in these specialised spheres. A general outline of what you have in mind is all we ask. We will do the rest: provide plans and perspectives, advise upon the most suitable materials from our verywide range, supply full quotations, and erect on site. A telephone call or letter will bring a copy of our brochure—or a representative to talk over your ideas with you.

1

Partitions.—The widest possible range of materials, styles and finishes—tailored for every scheme. Partitions may be solid or glazed, and may be treated for sound insulation, sound absorption or fire resistance: they provide all the solidity of permanent walling plus the ability to meet changing needs without loss of materials.

2

DECOR.—Schemes involving decorative and functional panelling for walls in board rooms, offices, reception areas, etc. An almost unlimited range of materials and finishes is available and any special features can be incorporated.

93

CEILINGS,—We are also specialists in all types of acoustic and false ceilings. As with partitions and decor we are completely flexible and are able to give you the scheme best suited to each individual project (whether it involves ceilings alone or an overall scheme embracing our entire service).

FOR WALLS WITHIN WALLS . .

... and ceilings too!

CALL

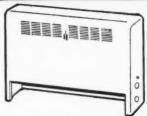
We shall be on Stand 121G, Ground Floor, Grand Hall, at the Building Exhibition

COMPACTOM

Compactom Ltd. Oxgate Lane Cricklewood

GLAdstone 6633





Copperad or equal

When the new entrance foyer and bar to the Connaught Rooms, London's famous rendezvous, were being planned, heating equipment was required that would be thoroughly efficient and economical but, above all, unobtrusive—hidden heating, almost. The choice was COPPERAD Convectors, which in addition are noiseless and, where desired, give controllable heat.

The heating engineers were J. Jeffreys & Co., Ltd., of London, S.E.1.

These words, so often seen on specifications, speak for themselves. In fact, of course, COPPERAD has no equal.

Not only is it more reliable, better made, longer lasting and, since it requires practically no maintenance, less costly to run; it's also versatile—the range covers all types of building—commercial, industrial, institutional and domestic.

COPPERAD equipment is attractively styled, moreover, and it's clean—you can be certain that it will neither accumulate dust, disturb the surrounding air, nor disfigure walls, etc., with unsightly streaking. It won't mar, it may even help, your interior design. May we tell you more about COPPERAD?

Copperad Ltd: Head Office & Works; Colnbrook, Bucks. Phone; Colnbrook 2521 (6 lines). Grams; Copperad, Colnbrook,

London Office: 1 York Street, Baker Street, London W.1 Telephone: WELbeck 1226/7

ial

Scottish Office: 30 Rutland Square, Edinburgh 1 Telephone: FOUntainbridge 6067 Birmingham Office: Wolverley House, 18 Digbeth, Birmingham 5 Telephone: MIDland 1553 Welsh & South Western Office: Chesterfield Chambers Westbourne Place, Queen's Road, Clifton, Bristol 8 Telephone: BRIstol 3-3883

Representatives at: Belfast, Glasgow, Manchester, Leeds, Nottingham, Newcastle-on-Tyne

Also at:
Auckland (N.Z.),
Johannesburg, Lisbon,
Brussels, Toronto,
Melbourge

The MODERN System of Air-Conditioning

THAT PROVIDES CLEAN AIR WITH SUMMER COOLING

AND WINTER HEATING FROM CENTRAL PLANT

WITH INDIVIDUAL CONTROL IN EVERY ROOM

TOO ALP DISTRIBUTION

PRESCURE CONDUITS MINIMISE

DUCT SPACE REQUIREMENTS



Write today for a copy of the WEATHERMASTER booklet.



Conduit WEATHERMASTER System

CARRIER ENGINEERING COMPANY LTD. 24 Buckingham Gate, Westminster, S.W.I
Telephone: VICtoria 6858

The Pioneers of Air Conditioning



I name this ship

Passenger-cargo my boy—a staunch vessel. She'll have good solid mahogany throughout. None of this damned Reed Millican* nonsense.

Bit old-fashioned, what?

What d'ye mean, "old-fashioned"? I've told Bullingford-Yates that if those Newcastle glass-blowers set foot in her while she's fitting out I'll resign from the board.

Hear they're doin' a lot of new ships.

Dozens by all accounts. All right for the younger set maybe but anathema to men of my generation.

Think this one's goin' to do well?

Bound to. Maiden voyage to Rio and all three cabins booked.

Featherstonehaugh, Cholmondely-Marjoribanks and who else?

Me!





THE ARCHITECTS' JOURNAL

No. 3269 Vol. 126 October 24, 1957

9-13 Queen Anne's Gate, London, S.W.1. Tel. WHI 0611

Subscription rates: by post in the U.K. or abroad, £2 10s. 0d. per annum. Single copies, 1s.; post free 1s. 3d. Special numbers are included in Subscriptions; single copies, 2s.; post free, 2s. 3d. Back numbers more than 12 months old (when available), double price. Half-yearly volumes can be bound complete with index in cloth cases for 30s.; carriage, 1s. extra.

NOT QUITE ARCHITECTURE

CPRE IN CONFERENCE

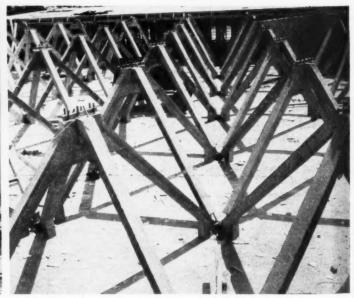
A newcomer to an annual conference is always apt to find himself a little bit out of his depth. How is he to know that Alderman Spink of Topdale makes the same point year after year, with unfailing regularity, because it is the only point he knows, and he cannot bear to keep quiet? A conference may strike him as dull: but the seasoned campaigner, with recollections of ever duller ones, may think it is relatively exciting. And if the delegates seem apathetic, are the old hands not as busy as bees behind the scenes, making contacts and dropping broad hints to Ministers or Opposition leaders which may even fructify, one day, into a new regulation?

These observations are prompted by the annual conference of the Council for the Preservation of Rural England at Hastings last week, which gave the impression of having settled down to a respectable middleage. The gloomy weather on Friday cast its shadow over the discussions, and it was a refreshing change to hear the voice of youth and energy in the evening when Michael Dower, fresh from leading the group that cleared 13 derelict acres of Admiralty land in Pembrokeshire, offered to do the same anywhere else.

It was a far cry from his enthusiasm to the careful platitudes, the non-committal departmental brief (from which the hand of Dame Evelyn Sharp peeped from time to time) and the portion of soft soap (for the CPRE) that was offered by Henry Brooke, the Minister of Housing and Local Government. Was the conference looking for a challenging lead on Subtopia and bad design? It got an assurance that the CPRE-RIBA booklet Your House on View was already stimulating interest on good design. Did it want to know the Minister's reply to the plea made by the National Parks Commission 18 months ago for more money and powers? It was told that good progress had been made in designating Parks and areas of outstanding natural beauty. Did it want







Inventiveness In Two Fields

A few weeks ago Texas Instruments opened a modest plant in Bedford and started making silicon transistors—an advanced type of heat-resisting semi-conductor which is of inestimable value to the electrical industry. Texas Instruments is an American company which was hardly heard of when it started producing germanium transistors in 1947. Since then they have pioneered the development of the improved silicon transistor and have no significant rivals—and a sales turnover now 20 times its 1947 total. The production of silicon transistors, is a most precise and polished bit of engineering, and much the same progressive attitude can be discerned in the new two-storey plant which the company is now erecting in Dallas, Texas.

The thin shell roofs, top, span 63 feet in both directions, and have been designed by Felix Candela, who is also responsible for the prefabricated concrete space frame above, left and right, which supports the upper floor and acts as an enormous duct for nearly 50 different types of piped services. The architects for this 300,000-sq. ft. plant are: O'Neil Ford, Richard Colley, A. B. Swank and S. B. Zigman, and such is the rate of expansion of Texas Instruments (Dallas) that the architects have already been asked to prepare plans for an extension of a further 300,000 sq. ft. If the fortunes of Texas Instruments (Bedford) flourish similarly we will be entitled to expect the same structural inventiveness and enterprise demonstrated over here.

litte in sou app and litte its

Jan

for

viev pres nati that disc CPI com stat

Lor

the Centhe it s scie can tran hear the that much help for

take land short glim thro cabl lage. How open state ing of A

that

the oppostant ferendoes beau from become

and
away
"ins
and
tects
adop
by s

face ever they to know where the Minister stood on Milford Haven? His lips were sealed by an outstanding planning application.

It was only when he got to the subject of litter that Mr. Brooke got off his fence, just in time to prevent the iron entering into his soul, and roused as loud a round of applause as the conference could muster by announcing that he would support the antiliter Bill if it were reintroduced without its "unenforceable" provisions.

James Callaghan, M.P., was able to speak more freely and interestingly on oil pollution. The conference certainly supported his view that opinion should be mobilized to press the United States and other laggard nations to ratify the 1954 Convention and that the only ultimate solution is to stop all discharge of oil at sea. But this was, for the CPRE, a subject of marginal importance compared to the siting of nuclear power stations and transmission lines.

Lord Lucas of Chilworth, one of those curious hybrids a "Labour Lord," opened the discussion with a vigorous attack on the Central Electricity Authority for enclosing the country in a wire cage. Unfortunately, it spoils a good case to assert that British scientists are not worthy of the name if they cannot make it as cheap to put 275 kW. transmission lines underground as overhead. It was easy for Sir Josiah Eccles, the Authority's Deputy Chairman, to retort that underground cables cost 15 times as much, and are less reliable. Nor is it very helpful to assert that the CEA had no plan for siting power stations: Sir Josiah showed that it had a plan which, all too clearly, takes little or no account of aesthetic or landscape considerations. It was only in the short time allowed for questions that some glimmering of a policy began to come through, with suggestions that at least the cables might be put underground in vil-

How much better it would have been to open such a discussion with a reasoned statement of policy was shown the following day when W. M. Whiteman, the editor of The Caravan, came like a Daniel into the lions' den, and spoke so persuasively on the intelligent siting of caravans (as opposed to treating them as an evil to be stamped out) that he almost had the conference eating out of his hand. Even if one does not share his lyrical views on the beauty of caravans, there is no getting away from his argument that caravans have become a normal part of the landscape, and should be integrated into it, not hidden away like something unclean. His plea for inspired irregularity" in their siting, and for the employment of landscape architects, his criticism of the rigid attitude adopted by some planning authorities and by some CPRE enthusiasts, will prove of positive assistance to delegates when they face this problem. On nuclear power, however, they returned in as big a muddle as they came in. M. M.

ections,

is also

or and

ypes of t. plant

d S. B.

Instru-

n asked

0 sq. ft.

flourish

ructural

EDITORIAL BOARD: (1) Consulting Editor, F. R. Yerbury, O.B.E., Hon. A.R.I.B.A. (2) House Editor, J. M. Richards, A.R.I.B.A. (3) Executive Editor, D. A. C. A. Boyne. (4) Editor Information Sheets, Cotterell Butler, A.R.I.B.A. (5) Editorial Director, H. de C. Hastings.

TECHNICAL EDITOR: (6) Lance Wright, A.R.I.B.A.

SPECIALIST EDITORS*: (7) Planning (8) Practice (9) Surveying and Specification (10) Materials (11) General Construction (12) Structural Engineering (13) Sound Insulation and Acoustics (14) Heating and Ventilation (15) Lighting (16) Sanitation (17) Legal.

ASSISTANT EDITORS: (18) Chief Assistant Editor, Kenneth J. Robinson. (19) Assistant Editor (Buildings), L. F. R. Jones. (20) Assistant Editor (Production), W. Slack. (21) Assistant Editor (Information Sheets), V. A. Groom. (22) Assistant Editor (Costs). J. Carter, A.R.I.B.A. (23) Photographic Department, H. de Burgh Galwey, W. H. Toomey. (24) Editorial Secretary, Monica Craig.

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

The Editors

INVESTMENT AND THE POUND

hear the words pound or devaluation or even inflation without reaching automatically for his investment file. At all events, every crisis has led to a cutting back of investment. What reflex processes go on to connect what J. Jones, Esq. or J. Jones and Company or Littletown U.D.C. or Loamshire County Council want to build today with what the bankers of Zurich or the Governors of the International Monetary Fund will think, say, or do tomorrow? That there is a connection, real or merely suggestive, is clear. The promised cuts in investment—together, of course, with 7 per cent. and all that—have apparently steadied the flight from the pound. If the latter is still not possessed of that fragrance which attracts the passer-by, at least it seems to have lost the BO which drove even its best friends into the arms of rival currencies.

The more one thinks of this the curioser it all becomes. First of all it would seem on the face of it that, if one wants to fortify the pound, more investment and not less is wanted—at any rate in obviously productive fields such as fuel and power, transport (including roads), export manufacturing and education. Conversely, if one wants to sap the pound, softness towards consumption, coupled with hardness towards investment is a good recipe. There is no harm in thinking that an ever increasing standard of living—by which is commonly meant more motor cars, television sets, refrigerators, continental holidays, and so on-is a basic human right. The danger lies in thinking that it is also our destiny and that so long as we go on living patently beyond our economic means our fortunes must rise but never fall. In short, it is incredible that any thought should be given to cutting (or deferring or postponing) the building of new power stations, rail facilities, or technical colleges (for example) when the whole sumptuary apparatus of soft living, and the mental attitudes which

regard that apparatus as untouchable, are left untouched. The next puzzling thing is the naivety with which people—at any rate overseas—assume that "cutting investment" has any immediate significance. It will be two years from now before the full effects of the cuts will be perceptible. But two things are fairly certain to happen before then. First, the cuts will still only be cuts on a well-loaded building industry, and the net result will almost certainly be that work will go ahead more quickly all round; in fact, investment is likely to rise in 1958-59 as a result of the cuts. Secondly, it is a fair bet that the cuts will be restored during the next two years, either piecemeal as essential development is seen to be threatened, or when the men of Zurich or New York are not looking, or overtly as the next general election comes round.

We are now used to the procession of economic crises at twoyearly intervals and to the hectic tampering on each occasion with the country's investment programmes and progress. Are either avoidable? Our proper concern is with the latter. There is an alternative to the automatic cry of "cut investment" in the face of every economic crisis. That alternative is to get better value for the same amount of money. We have the classic example of what can be done in this direction offered by

educational building.

Though the MOE and local education authorities have had to take—and may have to take yet again on this occasion their share of whatever cuts were being made, they have built more school places on a value for money basis with a reduced investment ration than they would have built without a value for money policy with an unreduced ration. What reason can there be for supposing that a similar way out of the apparent present impasse is not open to many, if not most, other classes of building projects? The essential question is, who is to bring this change about? People are needed at two levels; first, at the top of the central government and professional organizations-the Treasury, the building ministries, the RIBA, and the RICS; secondly, at the top of the executive agencies such as local authorities, nationalized industries, commercial and industrial enterprises and private architects' and quantity surveyors' firms. Where are these people to come from? There are only a few to hand at present, and they seem to have either worked in or through the educational building machine—the MOE Development Group, LCC, Herts., Derbyshire, Coventry and now the Nottinghamshire education authorities. They are the seed corn. They are not all architects; they include quantity surveyors, administrators and users. We must breed from them, their ideas and their procedures. It will do no harm, either, when we address our minds to the question of educating ourselves about building to deduce what is necessary not only downwards from social theories, general principles, schools' syllabi, etc., but also upwards from a few effective and pragmatic experiments such as post-war school building. There is nothing wrong, in peace as in war, with the precept reinforce success. "Cutting investment" is merely to admit defeat.



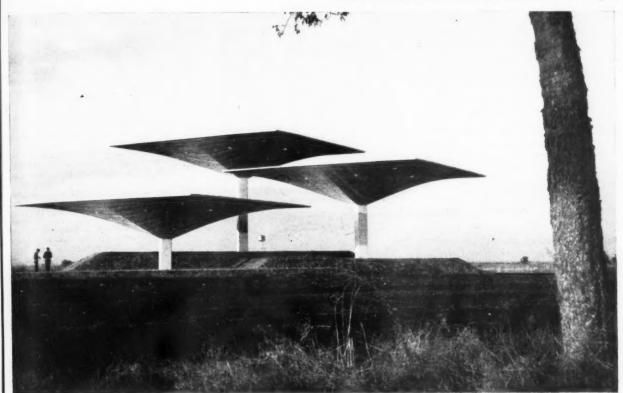
A DUTCH LESSON

A week or two ago a party of town planners from the LCC were guests of planners in Rotterdam. Last week the Dutch planners paid a return visit. The exchange seems to have been equally satisfactory to both parties, some of the Londoners having hailed Rotterdam as the planners' Mecca, and some of the Dutchmen expressing amazement, on seeing the new LCC estates at Highbury Quadrant and Roehampton, that London planners and architects should look on Rotterdam as their Mecca.

In fact the Londoners learned a great deal about central area redevelopment, and the Rotterdammers learned a great deal about housing. It is perhaps as well for London's prestige that there was not enough time to include the City in the itinerary.

One fact about Rotterdam's planning set-up, which ASTRAGAL learned at a party given to the Dutch visitors at the Architectural Press,* seems to him to suggest a possible solution to the much-discussed problem of architectural control. Rotterdam's planning division is in two sections. One is responsible for land use—and here the surveyors, engineers and other professions seem to play the dominant rôle. The other section is responsible for design, and is in the hands of architects, who wield

• See page 618.



A recent visitor to the Journal's offices was O'Neil Ford, the architect who helped pioneer slab lifting in the United States and who explained it in person when he visited this country six years ago. No longer primarily interested in slab lifting, he is now working with fellow architects Richard Colley, A. B. Swank and S. B. Zigman, and engineer Felix Candela on a number of elaborate structures of which two are shown above and in this week's frontispiece. The three brooding forms, above, each 40 ft. square, are the highway sign of a 5,000-acre industrial estate between Dallas and Fort Worth, Texas. Based on a structural unit used by Candela for the buildings on the estate, the three concrete shells are a more effective eyecatcher than the usual forest of billboards used to advertise industrial development in the U.S. The estate, called the Great Southwest Industrial District, consists mostly of warehouses and manufacturing plant, but there are also several restaurants, an industrialists' club, a chapel, several small hospitals, 20 petrol stations and a recreation centre. The forms for the lightweight concrete shells are erected by two carpenters and two labourers in four hours and can be struck 48 hours after the concrete is poured.

greater powers of control than their opposite numbers in London. An architect cannot build in the central area, for example, unless the design department considers that he is good enough and experienced enough for the job.

THE MOTOR SHOW

f town

ests of

ek the

it. The

equally

of the

dam as

of the

nt, on

ghbury

t Lon-

should

a great

pment,

a great

naps as

t there

ide the

lanning

ed at a

s at the

him to

e much-

ral con-

ision is

sible for

rveyors,

seem to

her sec-

nd is in

o wield

cca.

More two-colour finishes, more chromium strips and more automatic gear changing or two-pedal controls: for the person who merely wants transport and can't be bothered to go round the showrooms the Motor Show is presumably worth visiting, though it's almost impossible, as always, to do more than peer over too many shoulders at the lower-priced cars. For the technically minded it's as dull as usual, unless you are interested in the miniature four-wheelers. These are a little puzzling, for they are by no means

cheap, and 60 miles or so a gallon does not seem all that much better than the 40 plus you can get with the normal small car, unless, of course, you are paying French prices for petrol. As a second car to solve the shopper's packing problem they are excellent, but on cross-country journeys it is no use being able to wind up to an ultimate speed of 60 or so if you haven't the acceleration to pass a lorry.

A CHINK IN THE LAW

You probably noticed in your newspaper the case of the builder who was fined a moderate sum of money for dismantling a small Chinese pagoda and selling it to a client in Ireland. The pagoda was the subject of a preservation order. The papers were amused, but ASTRAGAL was not—for the following reasons. The builder was prosecuted, the case was proved,

and a penalty was imposed. This, as far as one can make out, satisfies the law. But nothing has been said about the recovery and reconstruction of the pagoda, and if this cannot be enforced then the purpose of the law is far from satisfied, and we seem to be looking through a loophole big enough to contain Chatsworth House.

The moral seems to be simple enough. Next time you pull down and sell a scheduled monument, make sure you give yourself a big enough profit margin to cover a moderate-sized fine, and you'll probably be all right.

CIVIC DISTRUST

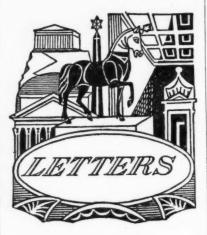
Interested to see what Outrage-fighters look like at the parish-council level (rather than Civic Trust level),

ASTRAGAL secreted himself among members of the local Press at a Brains Trust organized by the Hampton Residents' Association (Hampton, Middlesex, that is) one night recently. The setting was Betjemanite (brown, cream and glazed-brick school hall with complicated roof and exposed tie-bars); the audience numbered more than a hundred (and included one or two rather distinguished architects and writers of æsthetic-control letters to The Times), and the panel was astonishingly mixed -a local lawyer, the editor of the Richmond and Twickenham Times, the Mayor of Chelsea, and Reyner Banham (wincing visibly at being described as the editor of the Architectural Review).

Many of the questions asked-mostly submitted and, presumably, edited beforehand-ran on familiar themes, such as tree lopping and concrete lampstandards. There was also some smart-Alec stuff about the influence of interplanetary travel on the face of England (this got a straight answer it didn't deserve: "Atomic power-plants, only more so"). And one big, underlying worry ran through nearly everything else-the apparently cultivated indifference of local councillors to the dayto-day opinions of their electorate, the hostility of local councils to honest seekers after facts, secrecy about committee meetings, and the whole dismal business of trying to govern in the teeth of the governed.

The situation in Hampton is unusually bad-so bad that the local council is now trying to discriminate against the Residents' Association, and deny them facilities for displaying notices in public buildings-but there is a more general lesson to be learned. This is where the best intentions of high-level bodies like the Civic Trust will always go astray, in the mazes of local politics, unless both the Trust, and the Counter-Attack bureau, can enormously extend their services of advice and encouragement. They should try to ensure that the upper hand in matters of expertize does not always lie with entrenched local oligarchies, planning-committee members with interests in real estate, and other barnacles on the body politic.

ASTRAGAL



15 Local Government Architects
Clive E. D. Wooster, A.R.I.B.A.
Frederick Hill, F.R.I.B.A.
"Functionalist"
Michael Graham

W. Sinclair Gauldie, F.R.I.B.A.
F. D. Hillson, Director, Manchester Slate Co., Ltd.

G. A. Bendell

Representation

SIR,—With reference to Mr. Richard Sheppard's open letter, a copy of which is published in the JOURNAL of September 26, 1957, we, the undersigned Local Government Architects, have considered the questions raised and present the following points which we trust will aid your deliberations.*

We feel that NALGO does not effectively represent the architectural profession in its negotiations with the National Joint Council and is, indeed, never likely to do so, having such a large preponderance of clerical and administrative officer members. It would almost seem that NALGO is unaware of the contribution that architectural staffs have made to the local government service since the war, notably in the fields of school building and the housing programme. In the recent revision of the APT grades, qualified architects are still referred to as architectural assistants, whereas the legal profession are recognized as assistant solicitors. The fact that the latter are also to receive £90 p.a. more on their comparable special scale would indicate that NALGO and the local authorities value the work of solicitors more highly than architects.

Under the recent salary award, the majority of ARIBA's will be placed within the same salary scale as those who have not yet fully qualified. Again, those students who have just successfully completed their five years' theoretical training will now join the service with the same prospects as those ARIBA's who have had many years of practical experience. We feel that this may well prove to be detrimental to the

*This is a copy of a letter sent to the secretary for professional relations, R.I.B.A.

already fully qualified staff who will be assimilated on this grade.

A similar anomaly arises in the case of students of the RibA. Entry to the new API Grade I is now dependent upon possession of the Intermediate examination. No such similar bar is placed on clerical or administrative staff who can pass into the APT Grades without any examination qualification whatsoever.

qualification whatsoever.

In view of the foregoing, we are of the op.nion that representation of local government architects should be by local government architects who are, after all, the only persons who have an adequate perspective of the duties and responsibilities involved. This leads to the conclusion that there is an overwhelming case for the formation of either a Local Government Architects' Society such as is envisaged by the ad hoc Committee which would have the full support of all the members concerned; or alternatively, a society for the representation of all salaried architects and having a sub-committee solely concerned with local government affairs, this sub-committee being responsible for negotiations with the employers.

We do not underestimate the difficulties which will be encountered, not least from the Trade Unions which are already in the field. The effort, however, must be made if the profession is to hold its own in the highly competitive conditions which exist today, and the status and respect rightly due to architects is to be maintained.

A. WILSON, F. W. DUNFORD, R. EAUDE, S. J. GIBBS, D. S. PACKER, M. J. SIMPSON, F. C. M. MORRIS, A. S. CHANDLER, T. W. WILLIAMSON, G. DENNIS PILLINGER, O. O. DAVIS, G. E. SMEE, W. H. JOHN BAVERSTOCK, P. E. MITCHELL, PERCIVAL F. R. OSMAN.

Dates At Notts.

SIR,—I read with interest the account of the reorganization of the Nottinghamshire County Office, as described by the architects (Sept. 26), but was sorry that it made no mention of difficulties or problems still unsolved, and that it did not delve more deeply into at least one of the problems touched on.

The authors said "The dates . . . are regarded as inviolable." How to keep dates inviolate is the thing that worries all architects; it is the most difficult thing of all particularly in development work, and I wonder if the authors could go a little further and explain how they did it.

C. WOOSTER.

One of the authors of the article referred to above has written the following reply:

The maintenance of target starting dates obviously depends first of all on these dates being set as realistically as possible. In this respect the local authority office, with its consecutive programme of similar jobs, is well placed. If accurate records are kept from year to year, then these form a valuable basis on which to set the target dates when new programmes are being drawn up.

In the course of preparing sketch plans, working drawings, quantities, etc., an accumulation of circumstances usually results in some variation of the actual site starting date but, again, experience suggests that provided a good deal of emphasis is placed on the importance of these target dates in the running of the office, then the amount of variation is a matter of days not weeks. It is not intended in our article to suggest that there are not problems and difficulties still outstanding. We were describing an organisation which has been set up and which, we find, enables the office to deal efficiently with the many detailed problems which arise from day to day. W. D. LACEY.

spired the introduction of the Electric the

The

Mr. I

ment

SIR,

stron

your so t dread industry ou The diffic certa build is ab

Ma

SIR, the CIA! quer Rus plant to the east bedrunce bedr sun reversand room 2.5

the 3. and unde 4. kitch bund interspace form 5.

som the used 2. and "K

way
4.
tort
5.
6.
sma
7.
to r

to r Prand 2.

* Se

The following is a copy of a letter which Mr. Hill addressed to his Member of Parlia-

be

e of

new pos-

into tion

the

ernern-

only ctive

is an of of

hoc

sup-

enta-

ng a local be-the

ulties

from n the

made

n the

exist due

DE.

E.

nt of

shire

Il unmore blems

dates

archiof all and I

little

TER.

red to

n this

kept

when

plans, results

start-

ts that placed

ites in

mount

weeks.

uggest culties ng an p and o deal

blems CEY.

bs,

ment:

Sir.—I write urgently to protest most strongly against what appears to be an inspired rumour in the Press to the effect that the government is considering the reintroduction of building licences. It is stated that this is not only part of the restrictions on investment but largely aimed at the considerable investment going on in the considerable investment going on in London in the erection of large office blocks.

blocks. In view of the fact that the increase in the Bank rate and the credit squeeze generally has already been stated by employers and trade unions to be almost certain to produce unemployment in the building industry, I cannot believe that the reintroduction of building licensing, with its attendant hordes of officials and forms, can seriously be contemplated by a Conservative government. tive government.

May I press you most strongly to use your influence to restrain such a proposal so that we shall not go back to those dreadful days which those in the building

dreadful days which those in the building industry remember only too vividly. The government's present policy of dearer money is more than adequate I can assure you to restrain building activity.

The present high cost of building and the difficulty of obtaining finance make it certain that in 95 per cent. of cases the building owner does not build unless he is absolutely forced to do so.

FREDERICK HILL.

Birmingham.

Rushbrooke Housing

SIR,-Although basically in sympathy with the Rushbrooke Village Housing and the CIAM Projects,* I have the following queries and criticisms to make:

queries and criticisms to make: Rushbrooke two-bedroom house. 1. Badly planned for insolation—the main window to the parlour faces north-east, the south-east window faces the adjacent cottage; bedroom 1 faces south-west and will be uncomfortably hot after a day's harvesting; bedroom 2 faces north-west and will get no sun at all. If the plan were completely reversed, with the shed to the north-west and bedrooms to the south-east both bedand bedrooms to the south-east, both bed-

rooms would get morning sun.

2. The plan would be more flexible and 2. The plan would be more nextble and less poky if the parlour were placed next to the living room, with a movable screen.

3. Doors in the kitchen are badly placed and the larder end of the kitchen will be

4. Fuel has to be taken through the kitchen to the living room fire. A low bunker planned next to the fireplace, with internal and external access, would save space and labour, and might be exploited formally.

5. The rain will get in.

Project by James Stirling. 1. Toilets are remote from the bedrooms. Since they have been planned next to the kitchens (in some cases without a ventilated lobby to the W.C.), they might have been bigger and

used as laundries.

2. Narrow bedrooms with sloping ceilings and high-level slit windows are a bit "Kafka." How are these windows cleaned?

3. Ground floor bedrooms facing the alley-

way get little sun or privacy.

4. Refuse-disposal and fuel-delivery is tortuous

5. Fuel stores are remote from fireplaces. 6. Some of the gable windows are too small to be worth having.

Small to be worth having.

7. Aprons and flashings at the top of leanto roofs will tend to spoil the basic forms.

Project by John Voelker.

1. Bathrooms
and W.C.s are entered off the living space. 2. Living rooms have alternating orientation—they cannot both be right.

* See JOURNAL for Sept. 19.

3. Bedrooms appear to face neighbours' gardens.

Project by Peter and Alison Smithson. 1. Areas marked "P" (play?) have the look of left-over space.

2. Why two types of window side by side in some of the bedrooms? Simple country folk would probably consider them ugly.

3. High-level slit windows are difficult to

clean, and some would be whittled away to nothing by upstands and sills.

4. Some of the bedroom windows of adjacent houses are within hand-shaking distance of each other. This might, of course, lead to interesting human relationships.

5. Interesting as the windows may be from the outside, the views from the inside would be slashed up by the glazing bars in a most

unpleasant way.
6. Living rooms face east or west, when south light is available in many cases.

Dining rooms face north. Some country dwellers are not working in the sun all day, and need as much sun in their homes as town dwellers. Some of the kitchens are overshadowed

and under-lit.

7. Narrow alleys past the kitchens are poky, squalid, and lacking in privacy. Many women like to gossip over the fence, but

some like the choice.

8. There is no built-in storage.

The project by Bill Howell and John Partridge cannot be discussed, as no plans were

Some of these criticisms are petty, all are elementary. Schemes which are offered as new trends in housing research should not be vulnerable on this elementary plane.

"FUNCTIONALIST."

SIR,—I cannot help feeling that Mr. Cowburn's line of thought in his letter to the AJ of October 3, is contrary to the true feeling of village development, and in fact all the schemes published with, and including, the Rushbrooke Village Project (September 19), leave me a little puzzled as to the respective authors' interpretation of a village. a village.

Mr. Cowburn seems to expect his village to have a core, and finds satisfaction in the Rushbrooke scheme, even though it is a "redundant generation," but is unhappy about the CIAM schemes which do not have about the CIAM schemes which do not have cores as he understands them. But why should he expect to find a core to a village as far south as Suffolk? In the south of Eng.and it is most common to find the village laid out at a linear development. The impression of entering or leaving is often created by a change in direction of the road. Moreover, most village dwellings front straight on to the road, so any spacial feeling is that of narrow movement. His example of the Corte Palazzacio is surely a most example of the Corte Palazzaccio is surely a most ex-ceptional case, and anything of a similar nature is rather unlikely in this country. I do not wish to state that a village should

not be planned, as Mr. Cowburn puts it, as a Group Place, but I submit that this is a a Group Place, but I submit that this is a new line in village development. It is rather flying in the teeth of traditional experience, and though Mr. Howell might label me an "acceptance-planner," if he is sailing close to the wind, the acceptance boys are more likely to be setting a spinnaker. To completely change the type of planning found in town or village without reference to the past is not yery bright.

is not very bright.

The Rushbrooke scheme is a little worrying, probably because of its very small size. Unity has been achieved through repetition, and a merit is made of homogeneous development, which to my mind is alien to true village life, which is today relatively more heterogeneous than the town. Mr. Howell describes this in his article as "picturesque intricacy of the haphazard having been replaced by an organised complication which, within a system of repetition, gives its own clear identity to each house and corner of clear identity to each house and corner of

the viliage." As far as one can judge from the plans and photographs, there are only nine houses and a club, and it one cannot achieve a clear identity between each of nine houses, then Messrs. Davies and Weekes are not architects of the calibre that we have come to accept.

But these are all details, and one feels bound to applaud the architects of Rushrooke and the CIAM projects for giving a new stimulus to rural development, And all praise to the Journal for a spiendid criticism, and Mr. Cowburn for making some of us sit up and think.

London.

MICHAEL GRAHAM.

I'm Not An Angry Old Man, But . . .

SIR,—I find it difficult to comment on Mr. Scher's article (Sept. 12) without sounding like an Angry Old Man, but I snall take the risk. I have my birth certificate handy. I have been thinking about architectural training for a long time—as a student and as a teacher and, for the last 12 years, as a practicing architectural training training architectural training training architectural training training architectural training trainin

practising architect—and I agree that most schools fail in at least one major respect. The basic failure is the failure to give

students any real training in formal thought

—I mean by that the deliberate mental —I mean by that the deliberate mental discipline necessary to examine a proposition, test its validity and take the appropriate action. This is a technique which can be taught to intelligent people like any other technique. It is not accidental that the "management consultant" (whose analytical function is analogous to ours) is

analytical function is analogous to ours) is often an Arts graduate grounded in formal logic and so provided with the mental tools for tackling problems in unfamiliar fields. The architect's training does not provide these tools, because it is rooted in a past where they seemed unnecessary: but without them he is liable today to find himself up the traditional creek.

up the traditional creek.

I am not suggesting that we should aspire to be philosophers, but we must somehow, as a profession, acquire the techniques of close reasoning in place of assumption and inspiration (stop every time you say "But surely . . ." and "I feel . ." and you will see what I mean). Otherwise all Mr. Scher's realistic exercises will be simply sham-fights, the visits to sites and factories merely wide-eved excursions and the techmerely wide-eyed excursions and the tech-nical libraries just so much handy cribmaterial.

W. SINCLAIR GAULDIE.

Dundee.

The Acid Test

SIR,-I read with great interest Mr. Pritchard's article regarding laboratory benches and fume cupboards (August 29), but was rather disturbed to find that there was no mention of the use of slate in laboratories.

Whilst not claiming that slate is very widely used in terms of total number of laboratory fittings installed there has been, laboratory fittings installed there has been, over many years, a considerable quantity of slate used for both laboratory benches and fume cupboards. So long as a good quality Welsh slate is used it will stand up to the majority of the chemicals with which it is likely to come into contact. In Mr. Pritchard's article he mentions Alberene natural stone being used very widely in America, and in particular refers to the absorption of moisture. The RS.

widely in America, and in particular refers to the absorption of moisture. The B.S. Specification 680: 1944 calls for a maximum absorption rate of ·3 per cent. We ourselves had three samples of Velinheli slates tested at the Manchester College of Technology some years ago and the worst of these had an absorption of ·1 per cent., the average for the three being ·098 per cent.

Incidentally, the other two tests stipulated

Incidentally, the other two tests stipulated

in the British Standard Specification were also carried out, and in the case of the asso carried out, and in the case of the sulphuric acid immersion test there was no attack whatsoever, and in the wetting and drying test there was no visible attack after the completion of 15 cycles.

We give these figures to illustrate the contract of the contract of

resistance of slate by comparison to the standards set out by Mr. Pritchard. From an economical point of view—whilst we are not conversant with the detailed cost of teak—we feel confident that slate would prove economical by comparison.

F. D. HILLSON.

Manchester.

The Jaguar Fire

SIR,—There are three matters arising out of Mr. W. G. Phillips's letter about the Jaguar fire published in your issue of September 19 which should not really be allowed to go unchallenged.

(1) "An engineering machine shop with little or no hazards." Surely Mr. Phillips knows that the greatest industrial fire of all knows that the greatest industrial fire of all times at Livonia in the USA was in an engineering machine shop of General Motors Corporation. The extent of the damage was 23 million dollars or more. Many articles have been written about that Many articles have been written about that fire—there is a full account in *The Gypsum Journal* No. 2, published by The Gypsum Plasterboard Development Association.

(2) Mr. Phillips says—"The area where the worst fire damage and spread occurred was where the combustible lining had been found in the public.

was where the combustible lining had been fixed to the underside of the purlins, so providing an increased combustible space." Very well, but the combustible lining fixed above the purlins at Coventry also burnt. At Crewe—the other fire Mr. Phillips mentions—the combustible lining was fixed above the purlins and the Crewe factory had not suffered damage during the war. not suffered damage during the war. The Crewe factory was a complete write-off, although there was no space between the roof sheeting and the lining, as there was in the re-lined portion of the Coventry factory. It would seem that the question of whether there is a large air space or a small one makes no difference. Some people are of the opinion that the forced draught howling up the underside of the corrugations of the roof sheeting is more dangerous tions of the roof sheeting is more dangerous than the draught contained between the roof sheeting and a suspended lining.

(3) The Thermal Insulation (Industrial Buildings) Act, 1957, does not define standards of thermal insulation. The standards

are to be defined under Clause I by the Minister of Power, through regulations to be laid before both Houses of Parliament. Under Clause VII, certain classes of buildings are to be exempted. Under Clause III, the Minister of Power is to restrict the use of materials for thermal insulation purposes if they add to the risk of the rapid spread None of these regulations has yet been issued and architects must be in a quandary as they do not know whether they are to thermally insulate buildings the plans of which they are preparing, to what stan-dard they are to thermally insulate them and what materials they can use. The issuing of these regulations is becoming an urgent necessity if plans for industrial buildings are not to be held up. Perhaps the RIBA could do something about this.

the RIBA could do something about this.

As Mr. Phillips says, the reinstatement of the Crewe factory is being carried out, the replacement lining being insulating gypsum plasterboard. Although insulating gypsum plasterboard was not available in this country at the time the shadow factories for the Ministry of Aircraft Production were built, plain plasterboard was available and so was aluminated from its own. The and so was aluminium foil on its own. The war Office used plasterboard about the same time as these shadow factories were built at the very big Central Ordnance Depot at Chilwell in Nottinghamshire.

G. A. BENDELL.



RIBA

New Assistant Secretary

The RIBA has appointed an assistant The RIBA has appointed an assistant secretary, Anthony T. Williams, who will act as secretary to the science committee and technical editor of the R.I.B.A. Journal. Mr. Williams has been on the staff of the British Standards Institution since 1955. He has been employed there as a committee secretary and as a technical officer in the modular coordination study team. Before modular co-ordination study team. Before that he was employed from 1949, in the architectural department of the Herts County Council. He became an associate of the R.I.B.A. in 1950.

"Design Pays"

The RIBA's Town and Country Planning and Housing Committee has recommended that the Institute should hold a one-day conference on private enterprise housing, entitled "Design Pays." The Council has approved this in principle.

London Conference Postboned

The IUA's sixth annual conference, which was to have been held in London in 1959 at the invitation of the R.I.B.A., has been postponed to 1961.

1959 Conference

The 1959 British Architects' Conference will be held in Cardiff, at the invitation of the South Wales Institute of Architects.

London By-Laws

The R.I.B.A.'s committee on by-laws and building regulations has accepted the L.C.C.'s request to "make observations on a number of matters in connection with London Building By-Laws." A covering letter which was sent to the LCC with these observations, stated that "any waivers in connection with London building by-laws should be dealt with by a central authority so that a body of experience and information might rapidly be collected and be available at some central

COUNTER ATTACK

Planning Officer Organizes Lecture Programme

The Subtopian Counter-Attack campaign Wisbech comes news of a course of six lectures arranged by P. G. Laws, the County Planning Officer of the Isle of Ely.

The first of these lectures has been given.

The first of these lectures has been given. The next, on November 15, will be by G. Grenfell Baines, who will talk about housing design. On December 20 G. A. Jellicoe will discuss townscape and on January 17 there will be a talk by Norman Gardner, chairman of a firm of advertising contractors, on "The Place of Outdoor Advertising in the Contemporary Scene." H. T. Cadbury Brown will lecture on the appreciation of architecture on February 21; and the last talk in the series, on March 21, will be given by Ian Nairn, author of will be given by Ian Nairn, author of "Outrage" and "Counter-Attack."

The lectures will be given at the Isle of Ely College of Further Education and Horti-

cultural Institute, Wisbech. Each will begin at 7 p.m.

The fee for the course is 10s.

LCC

Overspill in Bucks

Aylesbury (Bucks) borough council intends to build 3,000 houses for families from the County of London and to develop its town centre. The council has accepted the LCC's centre. The council has accepted the LCC's offer—for houses for which it nominates tenants from the county of London—to pay interest charges on capital cost up to time the houses are occupied. The LCC will also contribute, for 10 years after that, 50 per cent of the difference between the economic rent of the houses and the rents which it is felt tenants can reasonably be

expected to pay.

The borough council has also accepted an offer from the MOHLG. The Ministry will make a grant of £230,000 towards new sewage disposal works and new sewers (estimated cost, £670,000), subject to Aylesbury accepting about 10,500 Londoners, together with appropriate industry, in order to help relieve congestion and population in London.

LMBA

Education Conference

Four subjects have been chosen for discus-sion at this year's LMBA Education Con-ference, which takes place in Ironmongers' Hall on the afternoon of Tuesday, Novem-

They are: 1. The Government White Paper on Technical Education. 2. The City & Guilds Proposals for the Revision of Building Craft Courses. 3. The Pattern of Foremanship Studies. 4. The College of Advanced Technology Report.

The president of the LMBA, W. K. Laing.

Problems of Building on Moving Ground. Talk by D. E. E. Gibson, County Architect of Nottinghamshire. At the RIBA, 66 Portland Place, W. 1. 6 p.m. OCTOBER 29

Some Thoughts on Three-Dimensional Composition. Talk by John Brandon-Jones, President of the AA. At the AA, 34 8 p.m. OCTOBER 30 Bedford Square, W.C.1.

Middx.

LO men (righ Tran com

spon

NO

ing. a pi this betu pictu the hom the supp The simp

port mair a SI 60-fi The creat who Cou ргор prov were offic de-ci

Par were sche first tions has sche time vear

The sche ings dista tuate high estin a wi

to fa areas narro build wher

lavor

With mucl those plexi

could The

NOTTING HILL GATE

S

rom six unty ven.

by bout A.

on man ising door ene."

the 21;

e of lortibegin

tends

n the

town

CC's nates pay

o the

n the

rents ly be

ed an y will new

ewers

Aylesoners, order

over-

discus-Conongers' lovem-White ie City ion of tern of ege of

Laing.

Archi-BA, 66

DBER 29

ensional randon-AA, 34

BER 30

will that,

LCC Determines Its Future

An exhibition showing the future development of Notting Hill Gate is now on show in Kensington Town Hall. The scheme (right) is a combined effort of London Transport Executive, and two development companies selected from a large number of applicants by the LCC.

Those who know the area (writes a correspondent) only as a large traffic block

Those who know the area (writes a correspondent) only as a large traffic block may see the project simply as road widening. The exhibition takes us by means of a pictorial survey back to the time when this highway was part of the Romans' road between Colchester and the West. The picture that emerges is the complex one of the shopping centre of a widespread neighbourhood whose High Street happens to be the bottle-neck of a Metropolitan traffic artery. At the point where this is crossed by another traffic stream—Church Street to Pembridge Road—pedestrians tend to dart across the narrow street. A further supply of pedestrians is provided by two unconnected underground stations on opposite sides of the road.

The pedestrian problem is solved fairly simply, as a by-product of London Transport's plan, already begun, to replace the two stations by a single new one. The main concourse of this station will serve as a subway to the road which will have a 60-ft. carriageway and 12-ft. 6-in. pavement.

The LCC attaches great importance to recreating the neighbourhood as a living whole. In order to widen the road the Council has had to buy and demolish property on both sides. The intention is to provide more dwellings and shops than were there before to encourage the displaced traders to return, and to increase office accommodation in accordance with de-centralization policy.

Parliamentary powers to acquire the land were obtained in 1939, but in fact the scheme dates back to 1910 when the Council first voted for the road widening. Since then two wars and numerous credit restrictions have intervened. A new architecture has grown up. We are lucky that this scheme did not go forward at the same time as Kingsway or Regent Street. The tall building and the pedestrian precinct are only two crystallizations of much creative thought on town planning. Is the 50 years of progress manifest in the Notting Hill Gate scheme?

The architects for the development companies are Cotton, Ballard and Blow. Their scheme borders the road system with buildings of varying heights and set back various distances. The two road junctions are punctuated by two tall slab blocks. The one on the corner of Pembridge Road is 176 ft. high and contains maisonettes, the smaller one on the corner of Church Street houses offices. This is sited over the most interesting group of buildings where shops flank a wide square of pavement. The rest of the layout fails to achieve a feeling of inevitability. In trying to create here something more than street façades the architects have to face heavy odds. To acquire larger site areas the LCC would have had to delay the scheme for an uneconomic length of time. They have proceeded therefore on narrow strips bordering the roads. All the buildings have service access at the rear, where parking is also provided for the curiously inadequate number of 142 cars. Within these limitations it is difficult to see much possibility of imaginative layout. To those who have not battled with the complexities of land values, underground engineering, road widening and town planning, it is not clear why a much larger scheme could not have been developed in stages.

The future character of Notting Hill Gate, whether as a recognizable descendant of its











At the Architectural Press party for the Rotterdam town planners, in the "Bride of Denmark." Top, a group of Dutch planners and some of their hosts from the LCC, with Percy Johnson-Marshall, who organized the exchange, seated beside T. J. W. Lantermans, the chief of the Rotterdam design department. Above, Hubert Bennett, Architect to the LCC (standing, right) with (from left to right) Mrs. F. J. C. Amos (LCC), Mrs. B. Mees and B. Mees, Rotterdam's traffic surveyor, Miss J. M. Swankhuisen, Rotterdam's senior information officer, and Miss E. K. Smith, an American planner who is working with the LCC.



Here is the LCC party leaving for Rotterdam for the first part of the exchange. From left to right J. G. F. Flack, F. J. C. Amos, P. E. A. Johnson-Marshall, B. Schlafenburg, M. S. T. Dower, Mrs. Schlafenburg, W. G. Bor, T. Bigwood, J. J. Read, J. K. Buczyhski (with camera), G. Jarvis, R. Westmacott, P. McKinley, J. G. Toon.

previous vague charm, or as a brash new sub-town, will depend not only on heights and block plan, but upon the architecture. It is difficult not to be beguiled by the attractive stock façades with which the LCC clothes models to this scale. But it is in block form only that the Council will consider the scheme on October 22. Detail is not yet decided. The impression created by the high block of a complete casing of curtain wall, with a service core, is entirely misleading, since the structure at present favoured is cellular reinforced concrete. In a month or so we shall be in a position to see whether the skill of the detailing is great enough to make up for the thinness in the planning.

MANAGEMENT

Builders' Residential Course in Wales

A correspondent writes:

The first joint week-end residential course in building management to be sponsored by a joint consultative committee was held at Porthcawl earlier this month. It was organized by the South Wales and Mon-mouthshire Regional Committee of the Joint Consultative Committee, and was attended by some 50 architects, builders and quantity surveyors. The course was designed to be a serious study of certain aspects of building management, and to assist course members in the attainment of higher efficiency in their respective spheres, and in the co-ordination of activities. The most notable feature of the course was the way in which each section criticized their own work, and not that of the other members of the team. There was thus a complete lack of recrimination between architect, builder and quantity surveyor, which promoted an atmosphere in which frank and

constructive discussion could take place. The first paper, given by K. C. M. Symon, of the Building Advisory Service, was entitled "Organization within the Building Industry." Mr. Symon emphasized the importance of good organization at or before the design stage, and said that building was a team effort and that each member of the team had his contribution to make to the organization. There was a need for programming work before it commenced and also for short term planning after the commencement of the job; there was also the improvement in performance that work study can bring about. Mr. Symon made a plea for the introduction of incentive schemes. He said that the correct information for fixing the incentive targets can only be found by work measurement. The paper concluded with the suggestion that general foremen would be able to serve the industry more effectively if they received administrative training.

The second paper, read by J. M. Austin-Smith, was entitled "Designing for Building." The author pointed out that only by the use of all the management techniques could an improvement in efficiency be brought about. It was also shown how the proper use of techniques in the early stages of the job had a very beneficial effect on the later stages. An interesting point, which caused considerable discussion afterwards, was the suggestion that irrespective of whether a competitive tender was being sought, there was no reason why those invited to tender should not visit the architect's office during the preparation of the scheme, to discuss the project and offer any suggestions.

E. R. Parrinder spoke on "The Problem of Cost." and said that the problem was to inculcate "awareness of cost" into the building team, including the building owner, the most vital need being to develop techniques for producing realistic targets which contain proper apportionment

of the available money which will not be exceeded.

exceeded.
To tackle the problem dynamically a far greater degree of collaboration between architect, engineer, quantity surveyor and dient would be required from the very earliest stages. Mr. Parrinder thought that there was a pressing need for research into cost problems, and that techniques such as cost planning should be taken seriously and not lightly dismissed because of apparent effectives.

LAW REPORT

Breach of Contract to

Insure

After an eight day hearing in the Queen's Bench Division of an action which conduded on October 11, in which a building owner sued a firm of building and demolition contractors for breach of contract to insure, Mr. Justice Gorman held that under the standard form of RIBA contract by the standard form of RIBA contract between the parties the contractors were under an obligation to insure for the benefit of their employer against damage to adjoining properties through subsidence or collapse. properties through subsidence or collapse. The case had been referred to by Gerald Gardiner, Q.C., who appeared for the plainiff building owner, as "of the greatest importance to building contractors, architects and both sides of the trade generally, dealing as it does with the construction of a common form of contract in the trade." The plaintiff was Mr. Joseph Gold, a surveyor, of Mill Hill, and the defendants were Patman & Fotheringham Ltd., demolition and building contractors, of Islington. were Patman & Fotheringham Ltd., demoli-tion and building contractors, of Islington. Mr. Gold claimed that defendants con-tracted with him to demolish his bomb-damaged property at 19 Buckingham Gate, London, and to build a six-storey block of offices in its place. He alleged the con-tract provided that the confractors should either insure or indemnify him against any damage to adioining property which might damage to adjoining property which might arise from the work. Damage occurred to party walls on both sides of the proprty, but he alleged that the defendants had failed either effectively to insure him against his liability or to indemnify him themselves. The defendants denied liability or insure the plaintiff and resisted the claim or damages which he made.

It was stated that the defendants had in

force an annual policy underwritten by Lloyd's. The plaintiff said that claims for hearly £12,000 had been made against him kleady arising from the damage to the party walls, and further claims were antinated.

hyated.

Mr. Justice Gorman entered judgment for the plaintiff for damages to be assessed by an official referee, and awarded costs reainst defendants. The judge granted a stay of execution of the reference as to damages and of payment of costs, if notice of lippeal was given by defendants within 21 librate.

ays, Giving judgment, his lordship said the contract was drawn up on the RIBA form. Lause 10 provided that no variations bould vitiate the contract, and it was tated that work included in the contract hould be deemed to be that set out in the fills of quantities, which bills should be the property of detend to have been prepared in accordance with the principles of the Standard dethods of Measurement of Building

Clause 14 provided that the contractor hould be liable for and should indemnify the employer against personal injury or the tark arising out of the execution of the and arising out of the execution of the order, unless due to any act or neglect by the mployer, and that the contractor should milarly be liable for or indemnify the mployer in respect of any loss to any roperty, real or personal, in so far as it

arose out of the negligent execution of the works or the fault of the contractor.

Then there was a condition that, without prejudice to his liability to indemnify the employer under clause 14, the contractor should effect (or cause sub-contractors to effect) insurance. Should the contractor be in default, the employer might himself take out insurance and deduct the premiums from monies due to the contractor.

Under clause 15, the contractor was re-

trom monies due to the contractor.
Under clause 15, the contractor was required to insure against fire in the joint names of the employer and contractor, and reference was made to the bills of quantities, which contained the words: "The contractor shall insure or make payments in connection with the following: insurance of adjoining properties against subsidence or collapse."

of adjoining properties against substants or collapse."

His lordship said the total contract price was £36,113, and in a summary at the end of the bills there was an item "water and insurances, £275."

The judge said it was originally provided that the building should have weight-bearing walls and strip foundations, but this

that the building should have weight-bear-ing walls and strip foundations, but this was varied to pile foundations with a frame structure. In October, 1954, piling work was started, and in December 1954, cracks occurred in the structures of Nos. 18 and 20 Buckingham Gate. "I don't think there can be any doubt that the cracks in the walls, or their collapse and subsidence, were the result of the piling work." said the judge.

the judge.

It was because of the claims by the adjoining owners that the action had arisen. It was to be observed, however, that there were no allegations of negligence on either

side.

The plaintiff complained that the defendants had undertaken to cover him by insurance for his benefit against the subject matter of the claims now being made against him. They had either failed to do so or failed to enforce the policy. The defendants replied that there was no enforceable contract because the words used in the insurance provisions were so vague. in the insurance provisions were so vague and uncertain that it was impossible to spell into them any obligation. Alternatively, they said if a contract was to be construed it did not impose any obligation upon them to insure the plaintiff, but only to insure themselves. They further asserted that even if they were abliged to insure to insure themselves. They further asserted that even if they were obliged to insure the plaintiff, he had failed to carry out conditions which should be implied to be precedent to any obligation upon them to insure him. It was also said by the defence that the annual, or block policy which defendants had, did insure plaintiff against the risks in question, though unwittingly and that there was no obligation wittingly. and that there was no obligation upon defendants to enforce the insurance because plaintiff himself had a right to

do so.

His lordship said it had been suggested that if plaintiff wanted insurance he could take it out himself. "I think there is force in the suggestion that everything in this contract is made a charge on the responsiin the suggestion that everything in this contract is made a charge on the responsibility of the contractor with the object of having an inclusive contract so that the building owner may know what his obligation is going to be."

The judge continued: "I am satisfied that the plaintiff is right that there was an obligation upon the defendants to insure him against the risk, and in so far as the defence is based upon vagueness or that the

defence is based upon vagueness or that the contractors' obligation was to insure them-selves rather than the employer, I think it

His lordship also rejected the defendants' contention that the plaintiff was covered by their annual policy. Dealing with the defence that plaintiff had failed to conform with implied conditions precedent to the contractors' obligation to insure him. Mr. Justice Gorman said it was contended that the defective policy could have been no effective policy could have been obtained if the conditions were not complied with. The first condition was said

to be that any varied work which might effect adjoining properties should consist of a definite scheme of operations from which plaintiff would undertake not to depart without notification and approval. The judge said he did not think it right to imply such a condition. The building owner had power under the contract to have work had power under the contract to have work varied.

varied.

The second condition he was asked to imply was that facts material to the insurance must be disclosed by the plaintiff, who had not done so. Rejecting the submission, his lordship said the facts showed that the defendants were fully aware of everything which was going on at the site. Even if such a condition was to be implied he would hold it had been fulfilled.

Even supposing the two conditions were

Even supposing the two conditions were to be implied, there was no evidence that a policy of insurance could not have been obtained, though the premium might have

been affected.

His lordship said it had been suggested to him that if he found for the plaintiff, someone would have to assess damages and that he might therefore state the type of policy which he held should have been effected by the contractor on the algorities. effected by the contractors on the plaintiff's behalf.

behalf.

"I think the policy should insure the plaintiff against any liability which he might lawfully incur to adjoining owners or occupiers at Nos. 18 and 20, Buckingham Gate, in consequence of subsidence or collapse," said the judge.

As stated, his lordship entered judgment for plaintiff.

APPEAL

Byam Shaw School needs 1,20,000

The Byam Shaw school of drawing and painting, one of the last independent art

painting, one of the last independent art schools in London, has launched an appeal for £20,000 to secure its future.

This school, in Campden Street, Kensington, was founded in 1910 by two artists, Byam Shaw and Rex Vicat Cole. Ever since it has been run by practising artists, keeping the studio atmosphere.

keeping the studio atmosphere.

It is a non-profit-making enterprise, with a governing council which includes a number of Academicians and other well-known artists. Among its patrons is the President of the Royal Academy, Charles Wheeler.

Many other private art schools have disappeared, but the Byam Shaw School continues to attract students from all over Britain and from overseas—particularly the United States, Canada, Australia, New Zealand, South Africa and Southern Rhodesia. Travelling exhibitions of students' work have toured the last four of these countries. countries.

The school has an average of 65 day

students, and 50 evening students. Now increased costs have put the future even of this school in the balance. It is even of this school in the balance. It is recognised by the Ministry of Education, but receives no state aid. It depends entirely on students' fees, which have had to be raised, and economies made, until there is no scope for more. In spite of everything that can be done, there is an annual deficit. At this critical moment, the school has been given a chance to buy, on favourable terms, the building which it occupies in Campden Street. To do this, to set up a fund to assure the School's future, and provide more scholarships, £20,000 is needed.

needed.

needed.

The school is being helped by students, past and present, in all the heavy work involved in an appeal of this kind.

An encouraging sign is that this term has brought more new students than for several years past. Twenty-three have registered so far and there are more to come years past. Twenty-three have re so far, and there are more to come.

course nsored as held It was of the ers and esigned ects of ist the higher and in he way

eir own nembers

rchitect,

ch pro-

n new

eights ecture. y the l con-

tail is

reated

is enire at d con-

of the up for

nk and Symon, was en-Building ed the at or member to make need for nmenced after the

was also at work made a incentive informa gets can ent. The ion that serve the received

Austin-or Buildhat only ent techefficiency own how the early ng point, on afterrespective was being hy those the archin of the offer any

Problem m was to building being to realistic rtionment

HOSPITAL CONSTRUCTION

A Review of the First International Seminar

This review of the first international seminar on hospital construction, which took place in Geneva in September (under the auspices of the International Union of Architects and the International Hospital Federation) was written by A. A. Egbor, of the Nuffield Division for Architectural Studies. All views expressed, apart from a few comments in the section on tropical hospitals and under the heading of general remarks," were raised at the seminar. The article deals only with architectural aspects of the seminar.

The Seminar gave a comprehensive review The Seminar gave a comprehensive review of the basic planning principles of hospitals and also the general considerations which influence planning. These principles and concepts must be applied to local circumstances. Experts are all of the opinion that an ideal solution is impossible because of the very many complex and conbecause of the very many complex and con-flicting demands in hospital planning.

One of the first decisions to be faced is the size of the ward floor and the number of beds to be grouped under the manage-ment of one head nurse or sister. Each area of in-patient facilities has been dis-cussed primarily with reference to economy of staffing and possibilities of future

expansion.

The nursing unit Final opinion is not available with regard to either the size of the nursing unit or the number of hospital beds needed for a given population. Many factors-regional, technical, and economical, as well as ad-

technical, and economical, as well as au-ministrative, usually influence these con-siderations and should do so. Considerations given to staff and the increasing trend of the "team concept" of nursing are perhaps some of the most recent factors that will influence the planning of the nursing unit. A good plan should facilitate the conservation of time and energy so that trained personnel can exercise effective patient care. Functional exercise effective patient care. Functional planning then becomes a number one quality in the planning of the nursing units in order to reduce the walking distance of the staff. Double corridor systems have been used to shorten distances, with the nursing station placed at the heart of the parallel corridors. In general, the smaller the demand made upon personnel, the greater the demands for mechanical equipment. Thus in the double corridor system artificial illumination and mechanical ventilation are mandatory. If air-conditioning artificial illumination and mechanical ventilation are mandatory. If air-conditioning is not used, then the hospital might tend to spread out increasing staff requirements. Team nursing tends to relieve the nurse of routine duties and at the same time avoids waste of time or effort by other personnel. With this concept it is conceivable that planning requirements in the nursing unit will all be radically affected in size, number of beds and duties which are performed in the nursing unit. If, in the nursing units, patients are grouped by the degree of patient illness rather than classification. degree of patient illness rather than classification of disease, then planning requirements in the nursing unit will undergo great changes from present arrangements. Advantages of this would mean alleviation of shortages of trained personnel by using to the maximum all personnel skills and knowledge and effect scopeny in personal

knowledge and effect economy in personal effort and activity. The early ambulation in medical practice

creates the demand for more facilities in the nursing unit, such as more toilets, day-

spaces and treatment rooms—for which provision must be made in the plans.

Special studies have been carried out in connection with artificial lighting in the wards. It is very difficult to meet the very many conflicting demands in the ward unit. The basic considerations and requirements

(a) Lighting being used by the patient, nursing and medical staff should not

cause discomfort to a resting patient.
Watch lighting should be provided in order that the night nurse may see any obvious change in the patient's condi-

A low level of general lighting must be provided at night in order to facilitate ward supervision and the move-

ment of nurses and ambulant patients. An emergency lighting system should be provided in case of main supply

failure.

General and local lighting problems exist in ward lighting, both of which should be closely integrated and therefore should be designed in conjunction with each other so as to obtain maximum efficiency and satisfaction. Ward lighting which will require special consideration will include children's and lighting for the chronically sick. Emergency lighting is considered an essential requirement in special wards, particularly as the patients are often helpless and more easily frightened by the dark. Medical services, which include surgical,

obstetrics and the other adjunct facilities, are second in importance to the nursing unit itself in planning in-patient facilities. The size of adjunct facilities, laboratory. radiology, basal metabolism and cardiography, pharmacy, morgue and autopsy, is dictated not only by the bed capacity of the entire hospital, but also by the expected additional load resulting from out-patient

Operating theatres

The size of an operating theatre is determined by the operating equipment and instrument tables used in addition to the personnel present in the operating room. The question of lighting remains an unsolved problem in operating theatres. Many solutions are available but the best ones are those which offer flexible illumination without interfering with the manipulation of the operating table. The Belgian Light Committee of Hospitals evaluated the intensity of light required to be between 3,000 and 20,000 lux for operating field. The surrounding illumination should be such that its luminary contrast is not excessive. Bluish-

its luminary contrast is not excessive. Bluisngreen is the best colour for the walls, ceiling, operating table, and operating sheets. The floor should be light in colour. Whenever it is financially possible, complete air-conditioning should be provided in operating rooms. Higher pressure than the surrounding areas should be maintained in the theatre to prevent unsterile air entry. Anæsthetic gases piped from a central station are now frequently provided and consideration should be given to a careful location of fluid distribution points in the operating theatre.

A darkroom close to the operating theatre is important in the case of operating rooms planned for the performance of graphic and radioscopic examination during

surgical intervention.

Where provision has been made for central sterilizing supply, the only sterilization necessary in the operating suite is for emergency sterilizing of instruments which may have been dropped or otherwise need re-sterilization during the operation. A fast sterilizer is usually provided in a sub-sterilizing room between two operating rooms, or it may be located centrally for all operating rooms in the department. Many standard planning arrangements of other essential rooms of the operating

department are available in most hospital books and magazines.

One important feature of the surgical department is the recovery rooms, where all necessary resuscitation equipment and other treatment facilities are provided at hand, A utility room with sink and storage should be adjacent, and one bed should be capable of being enclosed by a glass partition for use of critical patients.

Radiography in hospital

Although economic and functional demands compel the grouping of these services, yet it will be profitable to examine the trends it will be profitable to examine the trends in dispersion of radiography in hospitals. The radioscope is used now to the same extent as the stethoscope, and provision should be made in the treatment and diagnostic facilities of the out-patient clinics. Recent surgical trends in radiosurgery and radiologic explorations now give rise to operating rooms planned exclusively for these needs. The mobile radiographic equipment is used regularly in the wards and provision must be made for wall plugs at about 15 metres. It is useful to remember that the cable connecting the machine with the plug is generally not longer than 10 metres.

Good ventilation is still the best means of protecting the personnel, and periodic airing is also the best means of freeing the rooms of ionized air. Consideration given to ventilation can affect the location of radiography department as well as other factors. Lead-plating for walls also gives additional Lead-plating for walls also gives additional protection to personnel and the films kept. An arrangement which enables a more careful performance on the part of the radiologist is one in which provision is made for two radiology rooms. One equipped for examinations for short duration or return as required work, the other for a received

prolonged radiologic exploration.

Circulation of out-patients should be absolutely distinct and separate from that of stretcher-borne and bed-ridden patients. brought to be examined. Some of the cubicle doors must be able to admit a bed.

The radiologist secretary should be located in a position where control of entrance and exit of the service is possible, not only verbally but visually. The secretary's room should be located between the radiologist's office and the typing office.

Laboratories in hospital

This service is usually centralized. The emergency unit will benefit by an annex of a small laboratory suitably equipped to permit simple tests such as urine, blood, etc., to be carried out at night by the nurse. It is frequently necessary to make chemical and bacteriological examinations: on the same sampling, and it is therefore desirable for both laboratories to be located in neighbouring rooms.

Local and not central air-conditioning is recommended for economy where only a small number of rooms of moderate size

are to be air-conditioned.

No solution can be considered as final with regard to the provision made in the drainage of acid liquids encountered in laboratories. Vertical small pipes of un-alloyed lead (but not commercial lead) and without traps have been used successfully. Stoneware conduits have proved successful for horizontal drains. Lead and stoneware may eventually be superseded by new materials such as polythylen, or polyvinylchoric and a new high-grade plastic material.

Laboratory floors also present a number of problems. Some new materials are now available which have possibilities for use

in laboratories*.

The out-patient department

This has become a very important element of the hospital system with the new emphasis on the prevention of disease. A clear view of out-patient clinics' functions is essential before planning the actual buildings. This

*Terraflex Plastoflow.

hospital surgical where all nd other hand. A e should e capable ition for

demands vices, yet the same provision ut-patient n radionow give xclusively

liographic he wards vall plugs remember hine with ger than est means periodic reeing the

of radioer factors. additional ilms kept. a more rt of the ovision is ms. One nort duraor a more

hould be from that of the mit a bed. be located trance and not only adiologist's

zed. The an annex quipped to ne, blood. ht by the aminations therefore be located

litioning is

ere only a derate size s final with ne drainage aboratories. traps have re conduits horizontal eventually ls such as

and a new

lings. This

would imply research or investigations which should be undertaken before the architects can conceive a functional plan and provide facilities answering to the present and future needs of a community. Today it is essential to provide waiting spaces in the immediate neighbourhood of the clinics served particularly where patients the clinics served, particularly where patients can be regulated by an appointment system. In addition to waiting spaces needed to meet the demand imposed by teaching, a general waiting space must also make provision for visitors and patients' friends.

Each nursing unit should have its clinical counterpart in the out-patient department. The out-patient department should be strategically located in a position where it can conveniently share common services with the nursing unit.

Other service departments

(a) Central Supply Service
This includes facilities for sterilizing, mainthis includes actifities for sternizing, maintenance of syringes and gloves, preparation of solutions, it may also be responsible for linen distribution, and storage for items occasionally needed in wards and treatment rooms. Frequently this service is on the same floor as the surgery, as that department receives over half of the sterile materials prepared by central supply.

(b) Kitchen

A central kitchen with pantries in the dif-ferent nursing units is considered the best solution economically and administratively. Basement or ground floor kitchen annexed Basement or ground floor kitchen annexed to the hospital should be preferred to the kitchen located on the roof or in the upper part of the hospital. The first arrangement allows for expansion in both the kitchen and hospital to take place with minimum inconvenience and maximum economy.

An aerotherm which blows hot air in the proximity of the spaces where steam is emitted should be included in addition to the ventilation facilities arranged to draw up smells and evacuate them.

The circulation in the kitchen must be

foreseen in all its details.

The problem of diet is most economically solved by annexing the diet kitchen to the main one and this receives the food partly prepared and has only to deal with the making-up of the dishes. Provision must also be made in all diet kitchens for special complete meals to be prepared. Diet restaurants is suggested as a useful solution in providing for people who for many reasons are unable to provide their prescribed diet in their own homes.

Kitchen walls can be tiled, blue ones help to keep the flies off, and ceramic paving is excellent for floors.

c) Heating and Ventilation

Many solutions are at the disposal of the planner, and expert advice is usually necessary in these considerations.

(d) Laundries

A single room is all that is required for the different occupations in the case of a small hospital. As a rule, the laundry consists of a room for receiving and sorting linen; a room for washing and extracting linen; and a third room for drying, ironing and folding linen. The laundry can either be located in the hospital premises or centralization. tralized to serve many hospitals in a region.

Economic operation of the laundry should be one of the guiding factors in the choice of any system and location to be adopted.

number of (e) Intercommunications
s are now Various patient-call systems are available
es for use from the simple bedside push bell in the ward to extensive light systems and audible systems in which the patient and nurse can call and converse with each other. Nurse we emphasis additional assistance in case of emergency clear view without having to leave the patient or disturb other resting patients are also on the market. The pneumatic system of transport is the most recent means of communication between the various services of a hospital. These devices have contributed to the improved working conditions of the personnel and have enabled the number of personnel to be reduced without any inconvenience to the patients.

Specialized Services

Much more information in addition to research is needed to throw light into the planning requirements in the psychiatric, paediatric and hospitals for the aged.

Children's Hospitals

Except in large centres, separate children's hospitals are uneconomical to equip and to staff. A self-contained children's unit linked with an adult hospital is conceivable and ground floor location offers many advantages. The internal planning should be variages. The internal planning should be arranged to facilitate the control of cross-infection. Provisions should be made for a proportion of beds in single cubicles which are quiet and which will make barrier-nursing easy. Considerations should be given to the advantages of having mother and child in children's hospitals and planning must make provision for the mother. ning must make provision for the mother as well.

Sanatoria

Mountain sanatoria and the isolated lowland sanatoria lying at a great distance from the big town, no longer meet the present requirements for the treatment of pulmonary tuberculosis. It is possible to consider a tuberculosis unit as a separate unit linked with a general hospital.

Contagious Diseases Unit

Except in under-developed countries, the present rate of bed occupancy in isolated wards for contagious patients is low. It is now possible to consider a nursing unit for contagious patients at the end of a general medical ward. A useful flexibility is achieved whereby the general medical ward could extend into the isolation ward and use its accommodation at certain periods. At other times, the isolation ward would gradually encroach upon the medical ward in order to meet the requirements of an epidemic. This formula requires the following conditions for the isolation ward:

- A separate entrance, near to which are located the general facilities necessary to the running of the service (admis-sion, rooms for supervision and nursing, ward kitchen, etc.).
- In-patient departments made up of single wards exclusively; these may be used either for contagious patients or general medical patients.
- A visitors' circuit outside the depart-ment which may be easily planned when the department is on the ground

Planning tropical hospitals
General points of view:
Consideration must be given to climatic variations and other limiting factors which affect all buildings in tropical countries.
Diagnostic and therapeutic means are the same in different parts of the world and the reaction factors which will put

the most important factors which will put their special character on these hospitals are listed below:

- (1) The frequency of certain illnesses especially characteristic of the tropics.
- (2) Climatic conditions.
- (3) The very limited number of trained personnel available.
- The rich abundance of cheap but un-qualified personnel.
- (5) The limited technical resources.
- (6) Demands for economy.

Factors as stated above would tend to dictate very simple buildings (in which the technical and mechanical installations are limited to a minimum) and one-storey buildings to avoid complicated construc-tional problems, and possibly the adoption of the pavilion system of planning. Factors which are not obvious are the rapidly changing circumstances which are possible in the under-developed tropical countries. The discovery and the exploitation of oil and other valuable minerals can, for instance, have far-reaching effects in the limitations imposed on planning by economy. It is reasonable to expect that trained personnel with the necessary technical resources will be available in a rapidly increasing number to permit hospital planning capable of reflecting the future. Prob-lems facing tropical hospitals located in big towns are different from those intended for rural areas.

The design of hospitals for the tropics will, of necessity, impose on the planner a balanced consideration of the following contradictions:

(i) cheapness versus efficiency.

(ii) ventilation versus noise.

(iii) control of the heat from the sun versus light requirements.

(iv) ventilation versus concentration.

Balanced and unprejudiced judgment is necessary for the solution in the first contradiction. Some scientific knowledge and data are available in (iii); research is necessary for the solution of (ii). For the solution to (iv) it is necessary to decide whether the ventilation adopted is natural or not. If air-conditioning is decided upon, then compact planning and low ceilings will be necessary and the hospital design can generally follow that of advanced planning generally follow that of advanced planning in temperate climates. Planning for natural ventilation generally means that tropical hospitals have to be rather more open and spread out than hospitals in temperate climates. Wards are preferably as open as possible in arrangement, with wide verandahs on either side and lavatories and sluice rooms located for good ventilation as well as for easy access. The theatre suite should, in general, be similar to a theatre suite of advanced design in temperate climates and should be air-conditioned.

General remarks

Hospital planners in the advanced countries have directed their resources and energies towards the provision of ideal conditions where the lives of the majority of people can be saved, as well as those of the people with rare or difficult illnesses. Facilities for diagnostic and treatment have increased in complexity, speciality and refinement. The architectural solutions have more or less kept pace with these complexities. In the lesser-advanced countries, hospital

planners have been obliged, for various reasons, to limit their resources to providing facilities which could reasonably be called upon to save the lives of people with general cases of illness. Provisions made for rare and complicated cases have tended to be rather few and far between.

What is greatly needed, therefore, is ex-

pert advice through research to examine the various elements of hospital systems in order to establish the minimum critical standard required below which hospital care will become impracticable. Knowledge of this kind will be of real value to planners in less advanced countries who could then expend their resources in general health education and preventative measures until conditions favourable for the provision of the minimum

favourable for the provision of the minimum hospital care have been attained. Hospital planners in quest for knowledge usually visit the most modern hospitals in many parts of the world. In the absence of an established standard necessary for minimum hospital care, there is the danger that the resources of a country might be strained to the limit where a balanced development in other fields is not possible. It is likely that hospital planners in the less advanced countries, unless reassured by an established standard necessary for minimum established standard necessary for minimum hospital care, will be frustrated if unable to provide facilities comparable to those in advanced countries.



rattled... don't slam the door on new ideas!

New but well tested is N.S.E.—the *non-vibrating* steel-and-glass partitioning that is better than anything for a quiet life. Divide and rule your floor-space into neat, bright offices, passages and bays with N.S.E., the handsome non-vibrating partitioning that looks permanent but can actually be altered in minutes to make rooms of different sizes. With or without top filling. Glass transparent



NORWOOD STEEL EQUIPMENT LTD

Makers of all kinds of steel office equipment and storage equipment. Please write to Dept. G for free illustrated brochures: "STEEL PARTITIONING", "STEEL OFFICE EQUIPMENT" or "STEEL STORAGE EQUIPMENT".

149 BOROUGH HIGH STREET · LONDON S.E.1 (HOP 5033)

or otherwise. N.S.E. partitioning is even cheaper than wood.

Also at Manchester, Birmingham and Bristol

THE INDUSTRY

This week Brian Grant describes self-closing fireproof doors, two methods of producing internal tubing inside sheets of metal, new ranges of electrical heaters and a booklet on the uses of asphalt in building.

Fireproof doors

The illustration below left shows a pair of patent fireproof self-closing steel doors now being produced as standard by Haywards. All the moving parts are enclosed in an oil bath, and rising floor quadrant tracks and wheels are eliminated, a particular advantage where the cill of a self-closing door is above the general floor level, as it often is in areas for the storage of oil or other inflammable liquids. The doors also have a braking device which allows them to be

held in any required position, and selector gear ensures the proper closing sequence of the door leaves when the fusible link melts in a fire. All the gear is mounted within the door frame so that the builder's work consists only of building in the frame lugs. (Haywards Ltd., Union Street, Borough, London, S.E.1.)

" Tube-in-Strip "

I.C.I. have just announced a new material known as "Tube-in-Strip" which seems to have considerable possibilities for simplifying central heating systems or other installations such as cold stores where the problem is to transfer the maximum of heat at lowest cost. "Tube-in-Strip" provides a tube (or a number of parallel tubes) as an integral part of a sheet or strip of metal, at the moment either aluminium or copper. In essentials, manufacture is relatively simple, but it needs careful control. The thick rolling slab is cast with rods of a special inert material in the centre of the slab, and during the rolling process the rods elongate in the direction of rolling, leaving narrow parallel internal slits in the finished strip. Finally, the tubes are formed by inflating them, either pneumatically or hydraulically, and while circular tubes are formed if they are allowed to inflate

freely, other shapes can be produced with suitable restraining dies. The metal is delivered to the customer either as sheet or as coiled strip so that transport costs are saved, while the strip can be bent or drawn either before or after inflation.

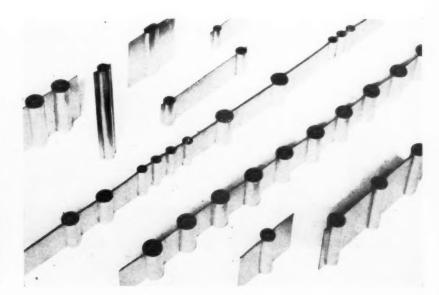
So far as the building industry is concerned, the most immediately obvious use is in panel radiators or in skirting heaters, where a single length of narrow strip could be run right round a room in a single length, without any of the expense of making joints in individual lengths and corner pieces. At the moment it is possible to produce tube diameters from 1 to 1 in, with a minimum web between tubes of ‡ in., while the strip width can be up to 22 in. in copper or 26 in. in aluminium. Maximum strip thickness is 1 in. but the tube walls are, of course, only half this thickness. (Imperial Chemical Industries Ltd., Metals Division, P.O. Box 216, Witton, Birmingham.)

Roll-bonded aluminium

Slightly akin to the above process, but carried out at a later stage, the "roll-

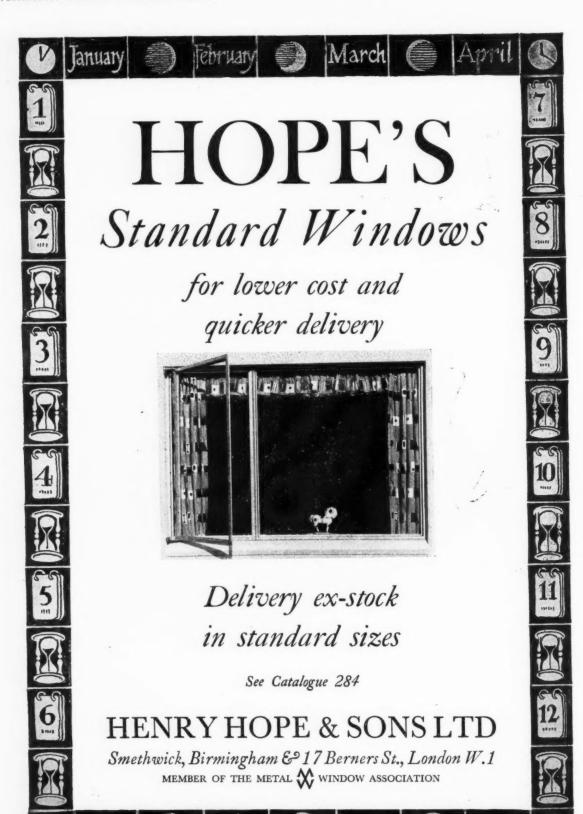
Below left, a pair of fireproof self-closing steel doors made by Haywards Ltd. Below, sections cut from inflated " Tube-in-strip," made by I.C.I. Metals,





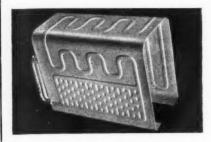
LTD

033)



technical section

bonding" of aluminium can be used to produce internal tubing to almost any required pattern. It has been found that two sheets of aluminium, if they are rolled together at high pressure, become welded together in what is virtually a single sheet.



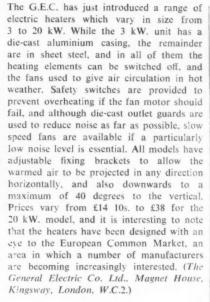
An evaporator box made from Novalduct sheeting. The pattern required is foreshortened and printed in "stopweld" ink on a thick plate of alloy. A second plate is superimposed, the two are rolled to the final size and gauge, and so bonded into homogeneous sheet, and then inflated.

The same effect as I.C.I's inert rods in the rolling slab can be obtained by applying a "stopweld" ink to the face of one of the sheets, and in this way any pattern of tube can be produced by inflation and if necessary formed into the evaporator boxes of refrigerators or any other form of heat exchanger. The sheets are marketed under the name of Noralduct. (Northern Aluminium Co. Ltd., Banbury, Oxon.)

Electrical heaters

At the British Electrical Power Convention at Eastbourne, Dimplex were showing several new items of equipment, including a domestic infra red heater and a new Minor oil filled electric towel rail. The heater has a loading of 750 watts, and is intended for wall mounting only, with a double pole pull switch so that it can be used safely in kitchens and bathrooms. The towel rail is also for wall mounting, and measures 21 in. by 21 in. With chromium plated finish the loading is 80 watts, and a stove enamelled model, produced in seven colours, has a loading of 120 watts. (Dimplex Ltd., Millbrook, Southampton.)

Two of the new G.E.C. electric heaters.



Asphalt in building

Students may well be interested in a small booklet called The Story of Asphalte in Building which is available free of charge from the NAMMC. The information is concisely presented, and covers the uses, advantages and application of mastic asphalt in tanking and damp proofing, in roofing and in flooring. Information is also provided on thermal insulation in conjunction with asphalt roofing, and there are tables setting out the grades of asphalt suitable for various types of flooring. It may be noted incidentally that the e in "asphalte" is the French spelling, which was retained when the material was introduced into this country. BSI drop the e, but some of the NAMMC members keep it and others don't. Having at one time or another annoyed Limmer & Trinidad by putting it in, and Neuchatel by leaving it out, I could wish that there was some uniformity about it. but I don't suppose it matters much. (The Natural Asphalte Mine-Owners and Manufacturers' Council, 94/98. Petty France. London, S.W.1.)





INFORMATION CENTRE

10.162 design: building types

SPORTS BUILDINGS AND PLAYING

Sports Buildings and Playing Fields. Richard Sudell and D. Tennyson Waters (Batsford,

Books on specific building types which give thorough and comprehensive information for both designer and client are too infrequently published in this country. It is not necessary to follow the practice of giving all the answers to all the planning situations which could arise. It is sufficient if all the facts of dimension and use and the principles underlying the design of a building type are set down systematically. This Sports Buildings and Playing Fields does successfully. In a chapter on space needs it is sufficiently comprehensive to include the necessary dimensions for both lawn billiards and padder tennis should your client call for their inclusion. The design and construction of pavilions, their internal details and services are thoroughly explored.

It is only when in the final chapters the authors attempt to present the requirements for larger sports buildings that some superficiality is apparent. Nonetheless in each case a very useful preliminary check list of basic information is provided.

The authors' realization of the value of the prefabricated structure of timber is encouraging. At the same time they warn of the shortcomings of both standard plans and standard buildings.

The diagrams are clear and adequate and the illustrations include most of the best examples in each category which the present day has to offer.

In all these respects Sports Buildings and Playing Fields provides a valuable source of reference. It is, however, surprising in this collaboration between a landscape architect and an architect that there is so little stress laid on the landscape opportunities of sport which offers wide scope for the structural use of plant material and land form. There is incidental mention of shelter belts and hedges and the provision of shade. There is an excellent example at Aalstenweg in Holland of cupressus closely planted around tennis courts to provide a dark background for play; but the possible contribution of sport to a living landscape tradition could have received fuller treatment. In the chapter on swimming pools the absence of any examples from Zürich is a significant example in this respect, though a small illustration of the Strandbad at Tieffenbrunnen is included in another context. A wider discussion of sport and landscape could have raised this very practical book to a much more influential level.



A brand new boiler designed by Allied Ironfounders especially for the smaller household



It's the RAYBURN No. 2 automatic solid fuel boiler

The Rayburn No. 2 is a smaller version of an already popular favourite, which is now called the Rayburn No. 1. Like its bigger brother, the Rayburn No. 2 is a top quality Allied product; everything about it is designed to give the small family constant hot water, the cheapest, easiest way.

The Rayburn No. 2 is highly efficient—small though it is, the Rayburn No. 2 can provide ample hot water for the average needs of a small family, with the minimum of fuel consumption.

Thermostatically controlled. A fully automatic, quick-acting thermostat ensures maximum economy in burning fuel, saves the housewife hours of time and trouble.

Space-saving. It's neat and compact enough to fit into a very small kitchen. Clean and attractive enough to please the most fastidious housewife.

Small households all over the country will be wanting the comfort and economy of a Rayburn No. 2 in the home.

	TO: ALLIED IRONFOUNDERS LTD. makers of cookers, boilers, fires and baths
De	pt. B.86/2, 28 Brook Street, London, W.1
Ple	ase send me a free leaflet on the Rayburn No. 2
NA	ME
	CK CAPITALS PLEASE
AD	DRESS
	AI
	The word BAYBURN is a registered trade mark of Allied Ironfounders Ltd.

23 HEATING AND VENTILATION: small-pipe central heating 2

This week we publish the second and concluding part of an authoritative paper on the design and installation of small-pipe central heating which has been prepared for the JOURNAL by D. V. Brook of BCURA. In the first part of this paper (published last week) the author described how to design a small pipe system. He now describes the actual technique of installing such a system and analyses the costs of twenty-five actual installations carried out in recent years as part of BCURA's field trials.

Small-pipe central heating: design, installation and cost. By D. V. Brook. Part 2: installation and cost

The installation of small-pipe systems in either new or existing houses is a comparatively simple operation, but, if the most satisfactory results are to be obtained, it is essential that the pipe-fitter should pay close attention to points of detail. Practically all the piping is exposed to view, and the positioning of the pipes, the types of fittings and brackets used, and the standard of workmanship will decide whether the completed system is neat and unobtrusive or otherwise.

In existing houses, care must be taken to avoid unnecessary damage to the interior decorations. In new houses, the system should be installed after the building operations, including plastering and the fitting of the skirting boards, are completed, but before the final painting and decorating is carried out. Even in new houses, the heating mains should not be buried in the floors, where, apart from the possibility of damage being caused, the heat they emit is wasted.

In exceptional cases, where short lengths of small pipe are to be laid in the ground floors, these must be positioned at the appropriate stage in construction and thoroughly lagged. When heating mains placed under intermediate floors run with the joists, traps should be provided at intervals of not more than 8 ft. to give access to the pipes; if the joists have to be notched, the floor board above should be removable. If these provisions are made, the pipes may be installed after the floor boards have been laid. They should be supported by suitable brackets at intervals of about 8 ft.

Holes containing sleeves of 1 in. copper or brass tubing may be provided through partition walls and ceilings for the smallpipe mains during the building of a new house, but, if suitable equipment is available, it is more satisfactory to drill the holes after the walls have been plastered and the skirtings fitted, when their positions can be determined more accurately. In existing houses, the proper procedure is, of course, to drill the holes through partition walls and ceilings.

Clean-edged holes can easily be made with l in. durium tipped masonry drills. A small (about 1/4 in.) pilot drill is first passed through the wall or ceiling from one side, after which the 1 in. drill can be used to enlarge the hole from opposite sides. In this way, a clean-cut hole is obtained.

There is now available a slow-speed power drill having an angle attachment incorporating a universal joint, which enables holes to be drilled close-in to the corners of the rooms. This tool, shown in Fig. 1, is of German origin, but is marketed in this country by Explosive Power Tools Limited, of Dunkinfield, Cheshire, under the name of "Rapid-Mate." The drill will effectively penetrate partition walls, including the skirting boards, and has also been successfully employed to drill plaster ceilings with wooden floors above, the complete operation usually taking no more than 10 minutes. Sleeves must be inserted into the drilled holes to prevent overheating of the woodwork or plaster. This drill, although making holes of 1 in. nominal diameter, actually gives a clearance of 24 mm. Sleeves of 1 in. supper or brass tubing can be inserted in these holes, but with some difficulty, and it is more satisfactory to use 24 mm. brass tubing for this purpose.

Pipe positioning and fitting

The position in which the small-pipe mains should be fitted on the skirting is shown in Fig. 2(a). The lower pipe of the twin run is placed at a height of 11 in. from the floor, measured to the centre of the pipe, with 1½ in. between the centres of the two pipes. When only one pipe is required, it should be fitted at the lower level, as in Fig. 2(b). The pipes must be fitted horizontally to match the line of the skirting, no rise or fall being necessary for air venting or draining purposes.

In these positions, the small-pipe mains are not only inconspicuous, but the ground clearance is sufficient for fittings and brackets, including bends connecting with a pipe through the floor to the room below, and the spacing between the twin mains is that required for the fitting of return bends at the extremities of the circuits. There is also room for wrenches or spanners to be used on iron pipes and fittings, whilst the pipes are low enough to pass under outside door sills.

The pipes are fixed to the skirting with ½ in. copper two-piece spacing clips such as Ideal Fitting No. 602, spaced at intervals of about 4 ft. These clips hold the pipes some 3 in. from the skirting, which prevents possible overheating of the painted woodwork, facilitates the painting of the pipes and skirting, and makes for easy dusting behind and floor cleaning beneath. On twin runs of pipe, the clips should be fitted one above the other, sharing one screw between the two pipes, and not placed at staggered intervals along the two pipes, for the sake of appearance. Suitable spacing clips for twin runs of pipes may be available in the future.

Drain cocks should be provided at the lowest points of any heating circuits which cannot be emptied through the drain cock fitted in the common return main near the boiler. Key-operated air-cocks should be fitted on inverted pipe loops which cannot be vented through radiators when the system is first filled. Experience has shown



Fig. 1. Drilling wall in corner of room.

there is no need to fit vent pipes in these positions, providing the heating mains are kept to the small sizes specified.

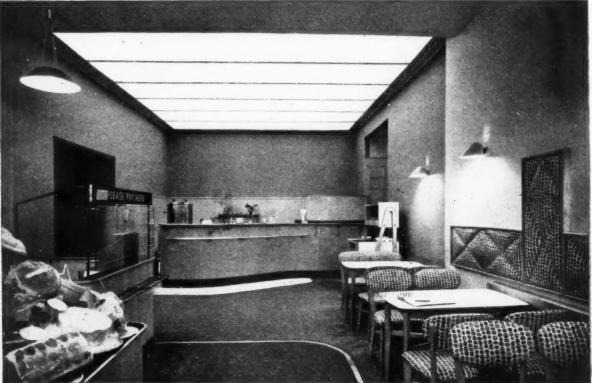
When the small-pipe mains are of copper, capillary soldered fittings should be used. and not compression joint couplings. The former are very neat and unobtrusive, whereas the compression joint couplings, with their nuts and larger threaded bodies, are both unsightly and more expensive. No damage to wood or paintwork should be incurred in using capillary fittings, provided a damp asbestos cloth is placed between the pipe and the skirting when making the

If black-iron pipes are used for the heating

CEILINGS WITH STYLE

WORKING efficiency, improved appearance and important economies in the whole design of an interior are provided by a Lumenated Ceiling. Its clean, translucent surface diffuses light of correct intensity completely free of shadows, glare and high-spots. It also provides an attractive.

contemporary ceiling at a lower level for modernising old interiors. Since lamps, wires and fittings are automatically screened, they need not be specially boxed or recessed, and no finish other than inexpensive whitewashing is needed to the structural ceiling.



In Fuller's Restaurant, Giasgow, contemporary decor is presented most attractively with the help of soft, even light from a Lumenated Ceiling.

Good Looks with Economy. The Lumenated Ceiling has an attractive appearance whether the light is on or off.

It is easy to keep clean and in good condition and its initial cost compares most favourably with other forms of lighting.



Further information is given in our booklet 'LUMENATED CEILINGS', including the fullest technical details. Recommendations will gladly be made for individual installations.

LUMENATED CEILINGS

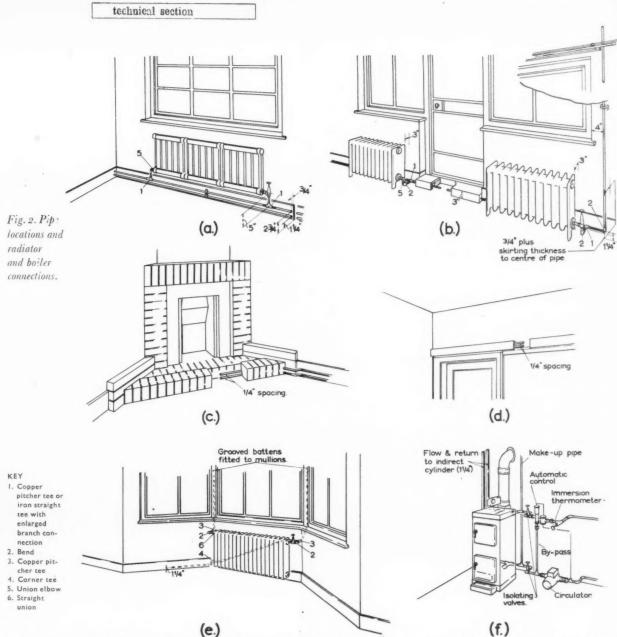
A BRILLIANT NEW IDEA IN ARCHITECTURAL LIGHTING



LUMENATED CEILINGS LIMITED

ALLIANCE HOUSE, CAXTON STREET, SWI. TELEPHONE: ABBEY 7113

10 BOTHWELL ST., GLASGOW, C.2. TEL: CENTRAL 6571/2. Registered Offices: THERMOTANK LTD., 150 HELEN ST., GLASGOW, S.W.1



mains, the ungalvanized malleable iron fittings should be unbanded, in so far as these are obtainable, for neater appearance. It should be noted that $\frac{1}{8}$ in. iron return bends are unobtainable and $\frac{1}{2}$ in. iron open return bends, fitted with suitable reducing bushes, must be substituted where necessary.

When iron pipe and fittings are used in existing houses, it is a good plan to pre-fabricate sections of the heating circuits as far as possible, and to use engineering unions in concealed positions behind curtains or furniture, or in cupboards, to facilitate assembly. In this way much of the screwing-on of the pipes and fittings in close proximity to the skirting boards is avoided, and the danger of damage to paintwork and wall coverings reduced.

Whether iron or copper is used for the small-pipe mains, pitcher tees or twin elbows, as appropriate, should be employed,

rather than straight tees, in order to keep the friction loss through the circuits to a minimum; similarly bends should be used, rather than elbows.

Specialised installation techniques

The way in which a small-pipe main is taken across the sill of an outside doorway and covered by an extension to the step is shown in detail in Fig. 2 (b). In this case, the low oak step is constructed level with the oak sill of the door, and the small pipe passes easily beneath. When the door is fitted closer to the inside face of the wall, only a narrow extension to the step is required. Twin small-pipe mains can be taken across a standard 3 in. outside door sill in this way, if each of the pipes is set down slightly closer to the floor for the width of the doorway.

Single or double runs of small pipe can be taken across brick fireplaces concealed be-

neath the first course of bricks of the hearth. as shown in Fig. 2 (c). The first course of bricks is carefully lifted from the hearth, and the small pipes laid across the lower part of the exposed face of the second course. The first course of bricks is then re-cemented in position, after the lower rear edge of each brick has been cut away, as shown in the diagram. In new houses, where the fireplace is constructed on site, this operation is, of course, simplified, as the pipes can be positioned before the completion of the hearth. With existing fireplaces, it is often possible to obtain matching bricks, and then it is not so necessary to preserve those removed from the hearth for re-use.

Where a small pipe is run down beside a window, it is important that it should be positioned 4 in. from the plastered window reveal, as in Fig. 2 (b). In this position the pipe will not only be covered by the curtain,



HAS ROOF TILES, FLOOR TILES, WALL TILES

BY MARLEY

Visit our ondon Showrooms at 251 Tottenham Court Road, W.1

The Marley Tile Campany Limited, Sevenoaks, Kent. Sevenoaks 55255



technical section

but will also be invisible from the outside. Since the pipe is dropping from the first floor skirting to the skirting below, there will be a clearance between the pipe and the wall behind the curtain of 1-11 in., depending on the thickness of the skirting. In this position, the pipe will usually conveniently pass behind the curtain rail and, if any support is required, a small wood block of appropriate thickness can be used on the wall behind the curtain, in conjunction with a ½ in. spacing clip.

Where small-pipe mains are run at picturerail level, there are many possible designs of wooden casing, or of shelves for china ware and ornaments, which might be employed to conceal them. If, however, it is merely desired to hide the pipes in the simplest possible manner, the arrangement detailed in Fig. 2 (d) can be effectively employed.

Radiator connections

Wall mounted radiators should be fitted above the skirting with a minimum clearance of 5 in. between the bottom inlet and outlet tappings and the supply main. They should, however, be mounted no higher than this, unless the height of the skirting requires them to be raised, since the lower the radiators, the smaller will be the temperature gradients between floor and ceiling. Also, maximum use can be made of the space beneath the window sill, as taller radiators can be fitted. They can then be connected, through the usual angle valve on the one side and elbow union on the other, to the main as in Fig. 2 (a). It is preferable to fit the on-off valve on the inlet side of the radiator, but it may be fitted on the outlet if this is more convenient. Both inlet and outlet connections should be made to the bottom of the radiator in the interest of appearance. Radiators so connected must be ordered with a blind bottom nipple between the first and second sections to ensure a good distribution of hot water within the sections.

Hospital or column radiators on feet may also be connected as above, but in this case the valves and elbow unions will be inclined at a greater angle to the wall. If such radiators are sited under windows covered by full-length curtains, however, they should be connected as in Fig. 2 (b), in order to permit the curtains to be drawn across behind them. In these cases, the radiators must be free-standing with a minimum clearance of 3 in. to the wall. If the use of top-stays would prevent the drawing of the curtains, radiators greater than 5 in. wide shot'd be used. They should preferably be no more than 18 in. high, but in any event must not exceed 24 in., to ensure sufficient stability.

Where the system is of copper, ½ in. pitcher rather than straight tees should be used on the main for the radiator connections. If the small-pipe main is of \{ in. iron, straight tees of $\frac{3}{8}$ in. $\times \frac{3}{8} \times \frac{1}{2}$ in. size (unbanded) should be employed to ensure a good flow of water the radiators. With large radiators having a heat emission of more than 7,000 B.t.u /h., the size of the connections should

be increased to 1 in. This necessitates the use of \frac{3}{4} in. pitcher tees fitted with \frac{3}{4} in. × ½ in. reducers for connection to ½ in. copper mains, or $\frac{1}{8}$ in. $\times \frac{3}{8}$ in. $\times \frac{3}{4}$ in. straight tees if the circuit is of \(\frac{3}{8} \) in. iron pipe.

The piping arrangement and connections to radiators sited under bay windows and fed by mains dropping from the skirting above, are detailed in Fig. 2 (e). The small pipes dropping against the window mullions are concealed behind grooved and rounded wood battens attached to the mullions. Holes 1 in. in diameter are drilled at an inclined angle, starting below the window sill at a height corresponding to that of the tappings at the top of the radiator, and ending through the window sill at the bottom of the mullions. Lengths of small copper pipe are then bent at one end to match the angle between the holes and the vertical, and cut to leave just enough pipe on which to fit a connector above the window sill. The opposite ends of the pipes, which will protrude from the wall, must be bent at right angles to the outer wall of the window bay and brought to the horizontal

The holes may have to be enlarged to enable the bent pipes to be inserted through the lower ends and, in this case, one method is to drill a second pair of 1 in. holes immediately below the first, and then to break away the thin layer of dividing brickwork. After inserting the pipes in the holes, split sleeves of 1 in. copper or brass should be fitted round them to end flush with the wall at one end and with the window sill at the other, and the necessary makinggood carried out.

The upper ends of the pipes protruding through the window sill can now be connected to the pipes dropping against the mullions from the skirting above, whilst in. pitcher tees are fitted to the ends of the pipes protruding from the wall, and the radiator connections and by-pass fitted as shown in the diagram. A straight-through radiator valve is used, rather than the more usual angle type. Both connections are made to the top of the radiator, which must therefore be ordered with a blind top nipple between the last two sections. Radiators connected in this way can be vented only by stopping the circulator and allowing the air to escape up the flow pipe, so that it may be released through a radiator or aircock at first floor level.

If a radiator under a bay window is fed by a small-pipe main dropping from above, as described, but the return main travels back to the boiler on the ground floor skirting, the alternative arrangement shown in Fig. 2 (e) should be employed. In this case, matching battens are fitted to the mullions on either side of the window, although only one will actually conceal a small-pipe main. Radiators so connected should not contain blind nipples between any of he sections. Radiators should be coated with leat resisting paints or enamels of colours . harmony with the background. The small-pipe mains should be painted to match the skirtings to which they are attached. Metanic paints, such as aluminium or bronze, should not be used as they reduce the heat emission of radiators and pipes by 10-15 per cent.

Boiler, circulator and controller connections Details of the piping arrangement round the boiler, incorporating the circulator and controller, can be seen in Fig. 2 (f). This drawing shows the relative positions of the circulator, fitted in the return main, the makeup pipe from the expansion tank, and the automatic control on the boiler by-pass. The size of the flow and return mains serving all circuits is either 2 in. or 1 in. according to the number of heating circuits in the system, as explained in Part I of this paper, and the by-pass should be of similar bore

It has been found preferable to use iron piping for the larger mains next to the boiler, even when the heating circuits are of copper tube, in order to avoid having to use copper-iron connectors on the circulator, controller and isolating valves.

Isolating valves should be provided on the flow and return mains, as shown in Fig. 2 (f), to enable the radiator circuits to be drained independently of the boiler and hot water supply system, and to enable the central heating circuits to be shut off completely when not required. In the latter case, the valve on the flow main only should be closed to prevent the possibility of high pressures occurring in the radiator system due to expansion of the water.

In connecting the return main from the radiator circuits to the boiler, care must be taken to ensure that the pumped stream of water is not injected into the return pipe from the indirect cylinder, thereby causing a reversal of the direction of flow in the cylinder circuit. If the boiler has only one return-pipe tapping, a 11 in. twin elbow or a 11 in. pitcher tee, fitted with a reducing bush for the central heating return connection, must be used in linking both circuits with the boiler.

If the boiler has only one flow-pipe connection, or if it is more convenient to take the flow mains to both radiators and cylinder from the same side of the boiler, a 11 in. twin elbow or 11 in. pitcher tee should again be used at the point of division of the two circuits, for minimising resistance to the gravity circulation to the cylinder.

The circulator is installed in the return pipe whenever possible, as it is then operating at a lower temperature than that of the flow main, and can be supported by cork blocks attached to a wooden base on the floor to prevent vibration. Also, if the circulator is fitted in the flow main, it is necessary to use a modified form of controller, and it is not yet certain that this will be generally available. However, in installations having heating mains at a level below that of the expansion tank which is less than the pressure head developed by the circulator, the latter should be fitted in the flow pipe to avoid the possibility of sub-atmospheric pressures in the high level mains. Instances of this kind sometimes occur in bungalows,



DRY SHOULDERS...and peace of mind



This man built well and now his planning is paying dividends.

His foresight in specifying Finlock Gutters has assured him of a sturdy durable construction which he knows he can always depend on to keep the eaves of his house dry.

Read the Finlock handbook which gives details of the attractive profiles and surprisingly the saving in costs.

Obtainable free from:-



th

vic

the

dra

Th in ob at pu

pre

FINLOCK

FINLOCK GUTTERS LIMITED

Finlock House, Frant Road, Tunbridge Wells, Kent. Phone: Tunbridge Wells 3396 (4 lines)

Table 1: details of small pipe systems installed, with costs

1	2	3	4	5 Heating	6 Total central	7	8	9	10	11
Inst.	House or bungalow	New or existing building	Floor area, sq. ft.	circuits of copper or iron	heating output, B.t.u./h.	No. of rads.	Type of boiler	Price of boiler and accessories	Total cost* of system	Highest tender received
6	House	Е	1280	С	30,000	6	SECTIONAL	£51	£288	_
7	House	N	1380	C	34,000	7	SECTIONAL	£57	£213	-
8	House	E	1890	C	60,000	11	SECTIONAL	£86	£416	£620
9	Bungalow	E	1010	1	26,000	6	SECTIONAL	£51	£226	-
10	Bungalow	N	980	C	24,700	6	SECTIONAL	£51	£215	-
11	House	E	1810	C	54,000	8(1)†	OIL BURNER	£144	£516	£635
12	House	E	1150	C	25,700	6	SECTIONAL	£57	£253	served
13	House	N	1040	1	28,000	4(2)*	SECTIONAL	£51	£299	-
14	House	E	1680	1	54,900	9	SECTIONAL	£86	£427	£473
15	House	E	1380	C	42,800	9	OIL BURNER	£233	£568	£660
16	House	E	1340	C	28,700	6	MAGAZINE	£98	£333	£407
17	House	E	2390	C	86,100	10	MAGAZINE	£160	£662	£720
18	House	E	1140	C	33,900	8	SECTIONAL	£57	£300	£325
19	House	E	2300	C	52,100	11	MAGAZINE	£130	£494	£525
20	House	E	1220	C	21,000	4	SECTIONAL	£51	£248	£284
21	Bungalow	N	890	C	22,900	6	SECTIONAL	£51	£238	-
22	Bungalow	N	830	C	20,600	5	SECTIONAL	£51	£222	-
23	Bungalow	N	990	C	31,900	6	SECTIONAL	£44	£264	-
24	House	E	2010	C	45,600	8	MAGAZINE	£105	£459	£547
25	Bungalow	N	990	C	26,200	6	SECTIONAL	£57	£277	£346

^{*} The total cost includes the boiler and accessories, indirect cylinder with lagging and connections to boiler, expansion tank and connections, 3-kW immersion heater, all electrical work, structural work and painting. Excluded are the towel rail, hot water distribution pipes from cylinder to fittings, cold water storage tank, automatic control, design fee and roof insulation.

when circuit mains run at near-ceiling level, but in houses it is necessary to mount the circulator in the flow pipe only on the very rare occasions when heating mains are taken up into the roof space.

The make-up pipe from the expansion tank must always be connected on the boiler side of the circulator, to prevent either water being drawn from the expansion tank and discharged through the boiler vent or, with the circulator in the flow line, a suction being created at the boiler vent. The make-up pipe must also be on the boiler side of the isolating valve.

It is desirable to provide an immersion type thermometer in the flow pipe beyond the controller as shown, so that the temperature of the water being supplied to the radiators, as distinct from that of the boiler, may be ascertained. If the boiler itself is not provided with a temperature indicator, a second immersion thermometer may be fitted in the flow pipe to the indirect cylinder, close to the boiler, in order to ensure that the boiler temperature is kept sufficiently high to satisfy the demands of the automatic control. The piping arrangement round the boiler as drawn in Fig. 2 (f) may be modified to suit the space available, provided the relative positions of the circulator, controller, etc., remain unchanged.

Installation costs

The costs of installing 20 small-pipe systems in private houses and bungalows have been obtained, the systems having been installed at the householders' expense for field-trial purposes. These systems were designed by staff of BCURA, and working drawings were prepared. The drawings were issued to the householders concerned who, in the majority of cases, sent them to heating engineers and

plumbing contractors with invitations to tender.

Actually, a total of 25 installations was put in, but five of the earlier systems were installed successfully by the householders themselves, and hence cannot be included in an assessment of costs. As many quotations as possible were obtained for each of the remaining installations, but where new buildings were concerned, the work was usually carried out by the builder or his plumbing contractor, and in only one of these cases were alternative quotations obtained.

The 20 systems for which installation costs were obtained are listed in Table I. The total cost given in column 10 is for the complete small-pipe heating system, including the indirect cylinder, but excluding the controller and charge for the designing of the system, the towel rail and hot water distribution pipes from the cylinder to the taps. These last two items were already installed at the majority of the existing houses, and a sum of £12 for the towel rail and connections has been deducted from the cost of new installations to give a common basis on which comparisons may be made. Nothing had to be deducted for the hot water distribution pipes, since the costs of new installations were obtained exclusive of these. The cost of installing a 3 kW, immersion heater in the indirect cylinder, for summertime use. is included, and also the cost of the electrical connections to the immersion heater and the circulator for the central heating system. The expansion tank, make-up pipe, flow and return to the cylinder, and cylinder lagging are included.

The total cost includes any structural work necessary, and covers the painting of all radiators and pipes. It does not include the cost of roof insulation, for which an additional £12 should be allowed for the average house. Where alternative tenders were obtained, the highest received is also listed, and it will be seen that a number of these quotations were considerably higher than the actual price paid for the installation.

The costs of the small-pipe installations would, generally, be increased to cover the design of the systems, for which no charge was made to the houselholders taking part in the field trials, and to include the price of the automatic control. The costs quoted are those of installing the small-pipe system, on the assumption that the design has been carried out by the architect along the lines recommended in Part 1 of this paper. It has been found that, following the procedures described, it is possible to conduct the design of the average small-pipe system in a matter of approximately 5 hours, for which a cost of perhaps £10 is involved. The design having been completed, a wider range of contractors may be invited to tender for the installation of the system.

A sufficient number of the automatic control devices was manufactured to enable one to be fitted in each of the trial installations, but again no charge was made for this. The automatic control, when generally available, will probably cost about £30, but this amount would be recovered over only two or three heating seasons by the resultant saving in fuel 1

The cost of the boilers used in the various installations varied widely according to whether they were of the cast-iron sectional or welded-steel magazine type, or oil boiler/burner units. Therefore, before any attempts were made to compare the cost of the different installations, the price of the boiler and its accessories was deducted from the total cost of each system.

The figures for the total costs excluding the boilers were first used in an attempt to express the cost of installation in terms of the number of radiators in the system, the installed heating surface in sq. ft., and the total central heating output in B.t.u./h, but wide variations were found in these relationships for the different systems.

The cost per radiator, averaged for all systems, was £27, but variations of from £17 to £44 were found. The costs of systems having 6 radiators ranged from £164 to £237, whilst a difference of £111 occurred in the costs of systems containing 8 radiators.

The attempt to relate cost to the area of radiator surface installed gave no more consistent results. Systems having approximately 100 sq. ft. of radiator surface ranged in cost from £163 to £258 per 100 sq. ft. of radiator surface, with corresponding figures for larger installations of £109 to £199 per 100 sq. ft. There was thus a difference of £149 per 100 sq. ft. of radiator surface installed, between the cheapest and most expensive systems on this basis of camparison.

No better success was met with in relating cost to total central heating output, including the emission from pipes. For systems of approximately 30,000 B.t.u./h. output, the costs ranged from £199 to £281 per

[†] No. of additional rooms with skirting heating.

Private Office and Conference Room The Bowater Paper Corporation Ltd Northfleet, Kent





The Courbaril panels in these fine interiors were manufactured to the Architects' specifications using a stock selected from our very extensive range and we also supplied selected African Mahogany for joinery work.

ARCHITECTS:

FARMER & DARK

MAIN CONTRACTORS:

HOLLAND & HANNEN AND CUBITTS LTD

JOINERY CONTRACTORS :

BOVIS LTD

William Mallinson

TIMBER and VENEER MERCHANTS

130-150 HACKNEY ROAD . LONDON . E.2

Telephone: Shoreditch 7654 (15 lines)

Telegrams: "Almoner", London

for

in by

for

fiel

inst

con

рго

plu

hav proj subs

and figu

MANUFACTURERS OF PLYWOOD, ARMOURPLY, PANELS, COMPOSITE PARTITIONING AND INFILL PANELS

30.000 B.t.u./h., although slightly closer agreement was evident in the case of larger systems, with figures of £165 to £233 per 30,000 B.t.u./h. The overall variation in costs per 30,000 B.t.u./h. was, therefore, £116.

In none of the above cases was there any apparent distinction in costs between systems installed in new and existing buildings, or between those in houses and bungalows. The cost also seemed unaffected by the use of iron pipe instead of copper tube for the heating circuits.

Finally, an attempt was made to express the cost of installation in terms of the floor areas of the field-trial houses and bungalows, and, in this case, reasonable correlation was obtained. The results are shown graphically in Fig. 3. The floor areas taken are the total of the areas confined within the external walls of the houses, measured at ground and first floor levels, and the area confined within the external walls of the bungalows, measured at floor level. The areas of garages and fuel stores within the external walls are excluded.

The installation costs, exclusive of the items already enumerated, range from £158 to £222 per 1,000 sq. ft. floor area for houses of all sizes, giving a variation of only £64. In arriving at these figures, Installation 7, which had a cost of only £113 per 1,000 sq. ft. floor area, and installations 13 and 15, both of which were slightly above the upper limit of the range of costs quoted, were excluded. None of these installations was taken into account in arriving at the cost ranges quoted for the three previous bases of comparison.

Installation 7 was put in by an enterprising contractor, who was anxious to gain experience of the small-pipe system, and so gave an exceptionally low cost quotation to ensure that it would be accepted. Installation 13 has two rooms equipped with skirting heating, which undoubtedly adds to the cost. Installation 15 was more expensive as it was designed, at the householder's request, to give higher room temperatures than those recommended in Part I of this paper, to which most of the field-trial systems conform.

The costs given are, in general, representative of those which may be expected to be charged for small-pipe heating installations. Negotiations with contractors were conducted by the householders concerned, who, in return for the design services rendered by B.C.U.R.A. and the free provision of automatic control, made all costs available for analysis and later co-operated in the field trials. In the case of new houses, the installation of the heating system was subcontracted and the builders were able to provide cost figures which excluded the plumbers' normal work. Some of the contractors have since been interviewed, and have stated that they made satisfactory profits on the small-pipe installations. Also, subsequent independent costing of materials and estimating of labour charges has given figures which are in close agreement with the actual installation costs.

E.2

ondon

NELS

Discussion of Costs

The installation costs, for systems giving approximately similar standards of heating, have been shown to bear a closer relationship to floor area than to the number of radiators in the system, the installed radiator surface, or the total central heating output, including the emission from pipes. This indicates that the size of the house, as indicated by the floor area, takes more account of all the factors influencing the installation cost, than does any one of the three other bases considered.

Generally, the cost of installation, both from the material and labour aspects, depends on the number of radiators, their sizes, and the length of piping and number of fittings required. Therefore, when the number of radiators only is considered, their size is neglected entirely, as are the pipe lengths and fittings required. The same number of radiators may be installed in houses of widely different sizes, but in a small house of compact layout, smaller radiators and shorter pipe runs would be required than in a house having large rooms and a more extended plan. Consequently, the costs of installation would be very different.

If only the installed radiator surface is considered, no account is taken of the number of radiators which have to be fitted, or of the pipe lengths and fittings involved. Installations containing similar areas of radiator surface may have a small number of large radiators on short pipe circuits, or a greater number of small radiators with more fittings and greater labour charges, and possibly longer pipe runs.

The installation costs would, therefore, again not compare. These criticisms apply also when costs are expressed in terms of the total central heating output. Although, in this case, some account is taken of pipe lengths, since their heat emission is included, this is small compared with that from the radiators, and thus there is insufficient allowance for the cost of longer pipe runs.

The floor area specifies precisely the size of the house, and although it contains no direct indication of the number or size of radiators required, or the quantity of pipe and fittings involved, provides a standard of reference which embodies all these factors. Houses of similar floor area may contain different numbers of radiators, but this will be compensated by their size, number of fittings and labour charges. Uniformity of installation costs is, therefore, obtained per unit floor area.

Reference to Fig. 3 shows that there is little difference in cost between the small-pipe

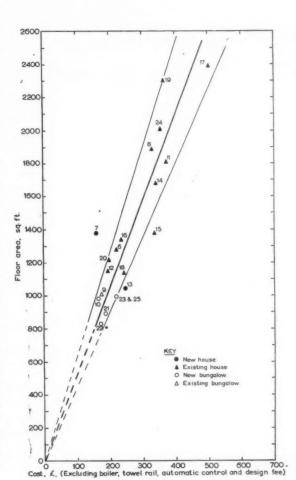


Fig. 3. Costs of installing small pipe heating systems in houses and bungalows.

systems installed in new and in existing buildings. The costs of the two systems installed in new houses, Installations 7 and 13, are not truly representative, as has already been explained. Even so, when the anomalies of these systems are taken into consideration, their costs correspond closely to those of installations in existing houses of similar sizes.

Five new bungalows were equipped with small-pipe systems. The costs of four of these, Installations 21, 22, 23, and 25, were a little above the average for dwellings of equal floor areas, but the fifth, Installation 10. cost correspondingly less. The one system installed in an existing bungalow, Installation 9, had a cost very nearly the same as that of Installation 10, and these two bungalows are of almost identical size. The fact that there is so little difference in the cost of installing the small-pipe system in new and existing buildings is a clear indication of how little structural work has to be carried out in existing houses, and endorses the claim that no redecoration is necessary.

It would seem from the graph, Fig. 3, that there is no appreciable difference between the costs of installing small-pipe systems in houses and in bungalows, but the data available are insufficient to enable firm conclusions to be drawn in this respect. The cost per unit floor area has a similar average value in both cases, although it might be expected that the cost of bungalow installations would, generally, be greater, owing to the increased heat losses and, perhaps, longer pipe runs. The variation in costs of systems having heating circuits of iron as compared with those of copper would also appear to be small. Installations 13 and 14 in houses, and the bungalow, Installation 9. had heating circuits of iron piping. The higher than average cost of the first of these systems was due to the use of skirtingheating units in two rooms, as previously stated, whilst the cost of each of the remaining two installations was close to the mean, Installation 14 being slightly more and Installation 9 a little less expensive. The materials cost of copper tube and fittings is greater than that of iron, but the labour costs are less since no pipe-screwing is involved.

The increase in cost in the cases when skirting-heating units were used instead of radiators cannot be specified from the data obtained for the field-trial installations. No houses were equipped with skirting-heating in all rooms, but Installation 11 had skirting-heating units in the lounge, and Installation 13 in the combined lounge-dining room and the main bedroom. The cost of Installation 11 was slightly above average, whilst that of Installation 13 was considerably greater per unit floor area.

The cost of installing small-pipe heating systems is less than that for conventional systems of central heating, particularly where existing houses and bungalows are concerned, for two reasons. The elimination of practically all structural work, with subsequent making good and redecoration in

existing houses, results in a substantial saving. Secondly, the cost is reduced by the use of smaller pipes and fittings, and often shorter pipe lengths. The saving on these latter items alone usually more than offsets the cost of the electric circulator, and, together with reduced labour charges, makes the system cheaper to install even in new houses under construction.

Reliable installation costs for conventional systems are difficult to obtain, particularly for existing houses, where the cost of structural work and redecoration may be almost as great as that of the heating system itself. Comparison is made more difficult by the fact that the high installation cost of gravity systems often leads to the adoption of lower heating standards by contractors, other than competent heating engineers, whereas the costs for the small-pipe system are for full heating, with radiators under windows.

Full central heating, with properly located radiators, is found in less than 1 per cent. of the private houses in this country, and most of these are in the larger residences, few existing in houses of less than 1,500 sq. ft. floor area, so that comparison on a basis of equal size is difficult.

Installation costs for a gravity heating system in a new house of 1,274 sq. ft. flogr area are given in a 1956 issue of THE ARCHI-TECTS' JOURNAL2. The system was designed to give a temperature rise of 35° F. throughout the house, and cost a total of £393 5s., including boiler and towel rail. If the cost of a cast-iron sectional boiler of the type used (£57) is deducted, and the appropriate allowance (£12) made for the towel rail, the cost of installing the system, expressed in the same terms as those for the small-pipe field-trial systems, was £324 5s. Reference to Fig. 3 shows a small-pipe system installed in a house of 1,274 sq. ft. floor area would cost, on average, £243 plus about £40 to cover the controller and design, some £40 less than the gravity system, but might vary from £203 to £283, plus £40. It is recognized that the standard of heating provided by the gravity installation is slightly higher than that recommended in Part 1 of this paper, but this would not account for the discrepancy between the costs of the two types of system, and the small-pipe installation, with automatic control, would have a much superior performance. Moreover, the cost of installing the gravity system in an existing house would be appreciably higher, whilst little difference would occur in that of the small-pipe system. The cost of installing conventional gravity heating systems in 50 new semi-detached houses on a contract basis are given in a recent Building Research Station Digest3. The houses had a floor area of 900 sq. ft., and the heating systems were designed to give temperatures of 65° F. in the living rooms, and 55° F. in the halls and bed-

The total cost of each of these installations was £385, but this included boiler, towel rail, cold water storage tank, hot and cold draw-off pipes to fittings, and single fuel store. The costs of these items and installation labour charges are either listed or

deducible from figures given in the Digest, and when subtracted from the total cost to give a figure comparable with the costs of the small-pipe systems, leave £281 10s. The corresponding average cost of a small-pipe system is £170 plus £40 for the automatic control and design, but might range from £143 to £200, plus £40.

The small-pipe system would, therefore, probably have been some £70 cheaper to install in each house than the gravity system. The actual saving might well have been even greater, since the costs of the small-pipe systems are for individual installations, and not for 50 houses on a contract basis, as in the case of the gravity systems.

The above comparisons show that the smallpipe system is appreciably cheaper to install, even in new houses, than conventional systems, but the difference in installation costs would be very much greater in existing houses due to the elimination of expensive structural work and the need for redecoration. In addition, the efficiency of heat distribution, controllability and responsiveness of the automatically controlled small-pipe system cannot be matched by conventional central heating systems.

Conclusions

Installation of the small-pipe central heating system, employing the new techniques described, is achieved without difficulty, and the small-pipes are unobtrusive when fitted to the skirtings in the manner recommended. No damage or need for redecoration is incurred in existing houses, and installation costs are reduced even in the case of new buildings.

The small-pipe system will enable house-holders to take advantage of the low cost of heat produced by modern central heating boilers, and it is probable that the demand for this type of central heating will increase steadily in the future. Some indication of the extent of the potential market for small-pipe heating systems is contained in the great number of enquiries received since preliminary information was first published. It is hoped that the data contained in this paper will enable the demand for small-pipe central heating systems to be satisfied successfully.

REFERENCES

 Brook, D. V., Burke, S. A., and Bye, G. H. Automatically Controlled Small-Pipe Central Heating. Special Study of Domestic Heating, Inst. Fuel, May 1956.

2. Heating Costs by R. Baden Hillard and R. J. Playle. The ARCHITECTS' JOURNAL, December 6, 1956.

3. Building Research Station Digest No. 93, October, 1956. (Published by HMSO).

ACKNOWLEDGEMENTS

The author is indebted to Dr. S. A. Burke, Superintendent of the Domestic Appliance Laboratories, under whose guidance the work was carried out and who contributed many original ideas. The author also wishes to acknowledge the help received from B. H. Jones, R. T. Nurse and D. C. Walker in designing and watching over the installation of the field-trial systems, and from L. L. Holmwood, who prepared the perspective drawings. The paper is published by permission of the Director-General of the British Coal Utilisation Research Association.

to

of

pe

m

re.

m.

en

11-

18.

is,

11ıll,

nal

on

st-

ex-

for

of

re-

led

by

ing

de-

and

ted

ed. in-

ion

new

ise-

cost

ing and

ease

of

allthe

hed.

this

nall-

fied

Autoating.

May

Playle.

tober,

endent

whose ibuted

know-

Nurse

er the

wings.

rector-

esearch

18 CONSTRUCTION: THEORY the development of the Notts. system of construction

Below is the fourth and last of the articles on Nottinghamshire County Councils work on schools. It describes the way in which the County Architects Department arrived at the methods of construction for use in mining subsidence areas. The first article (AJ September 26) described the re-organization of the Architects Department, the second (October 3) was an account by the Director of Education, J. E. Mason, of changes in the client/architect relationship and the third (October 10) explained an entirely new approach to the subsidence problem. This week's article, which is by W. D. Lacey and H. T. Swain, should be read in conjunction with our presentation of the prototype school at Bancroft Lane, Mansfield, on pages 637-642. As well as those mentioned in previous articles, the following architects worked development of the system: D. D. Atkins, D. M. Bamford, D. P. Lakin, D. C. Meylon, J. D. Moizer, R. J. Patterson, A. J. Short and W. R. Wilson.

This system of construction is being used for all schools built by the County in the 1957-58 building programme, as well as for a variety of other types of building. It is based on the quantity production of factory-made components for rapid site assembly using the minimum building labour. It differs fundamentally from most other prefabricated systems in two respects. Firstly, instead of being promoted by a single firm, it is sponsored solely by the county council architect's department, which co-ordinates the work of various manufacturers. Secondly, it is designed to enable buildings to be constructed which will adjust themselves to the movement of the ground caused by mining subsidence, without the need for special precautions or additional expense.

The reconnaissance

The first stage of the development programme was the

architects starting in September, 1955, and working within a time limit of three months. In this period the aim was to study the existing situation objectively and determine in general terms the lines on which development work should proceed in the new year. It was necessary to survey the national as well as the local situations as they affected school building. The survey of school planning requirements was being conducted at the same time.

To begin with, a list of headings was drawn up. These headings were the factors which were thought likely to condition the final choice of constructional method. They were:

- 1. Availability of tradesmen and labourers.
- 2. Supply of building materials.
- 3. Availability of site machinery.
- 4. The existence of general contractors interested in school construction.
- 5. Mining subsidence.
- 6. Existing systems of prefabricated school construc-

There were, no doubt, other factors which would influence the decision but the reconnaissance time was limited. These seemed to be the critical ones and an up-to-date knowledge of these would give the architects a sufficiently general picture to be able to settle on the right answer. Information on the planning requirement of the new schools would, of course, be an important additional factor. A list of sources of information was drawn up. In the first instance the important ones were the Ministry of Education Architects and Building Branch, and the Architect's Department itself with its local experience. As the work proceeded, however, many organizations and firms were

1. Availability of tradesmen and labourers: The views of the officials consulted at the Ministry of Education was that the general trend in the country was towards a reduction of the building labour force available for school building. This was largely a result of removing restrictions on the starting of other kinds of buildings such as offices, churches, etc., whilst the size of the building industry remained fairly constant. An additional point was that often less profit could be made by both contractors and operatives on educational buildings than on other types which had not the same fixed cost ceiling.

Information obtained locally indicated that bricklayers and plasterers were in extremely short supply. The schools in traditional construction, which the county council was already building, were taking sometimes as long as four years to complete because of shortage of these tradesmen. There were new power stations, housing, and the National Coal Board competing for their services

2. Supply of building materials: Information was obtained concerning the availability of basic materials. The pattern of sudden shortages of materials such as cement and steel appeared to be so arbitrary and unpredictable that it seemed to be impossible to base any technical reconnaissance. This was carried out by two _design policy for the 1957-58 programme on it. This

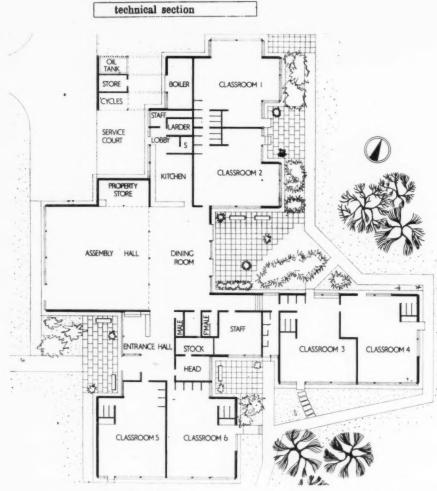


Fig. 1. Plan of the Bancroft Lane infants' school [Scale: \(\frac{1}{2} \)'' = 1' O'']

factor was, therefore, ignored and it was assumed that any material would be available provided the County Council itself placed long-term orders.

- 3. Availability of site machinery: This reconnaissance heading was pursued as a matter of routine. Subsequently, this factor did not appear likely to influence the construction, so investigation was discontinued.
- 4. General contractors interested in school building: Building firms in the area who had previously worked for the county council were briefly studied. Their size, plant, organization, and the quality of their work was noted.
- 5. Mining subsidence: A check of the proposed school sites with the National Coal Board area offices showed that 9 out of 11 were liable to mining subsidence. It was apparent that this was one of the more important factors conditioning the design of schools in the 1957-58 programme. The study of mining subsidence construction has been described in a previous article (see AJ for October 10). The required performance of a structure which would adjust itself to the movement of the ground was as follows:
- (a) A structural frame is to be designed to deflect sufficiently to follow the differential vertical subsidence without cantilevering over the approaching subsidence depression. Hence it must be pin-jointed.
- (b) In order to neutralize the stretching and contraction of the ground, the structure is to rest lightly on

the surface and the ground is to be free to slide beneath it. Hence the building must be light.

- (c) Walls, windows, floors and roofs are to be designed to allow the structural frame to distort with the ground.
- (d) Each part of the structure must be designed in such a way that the extreme but rare and unpredictable subsidence effects cannot endanger life or cause structural instability, and repairs will be cheap and easy.
- 6. Existing systems of prefabricated school construction: Thirteen complete or partially complete systems
 of construction were examined. In most cases, directors and engineers of the firms manufacturing them
 were interviewed. The firms' production capacity,
 design experience, willingness to go on developing their
 systems, organisational record, and the inherent qualities of their systems were noted. Two of the systems
 were based on a precast prestressed concrete structure,
 two on timber and the remainder on steel frames.
 Whilst the technical reconnaissance was proceeding,
 work was being carried out on the survey of school
 planning requirements. This made it possble for the
 planning "performance" of the structural system to
 be defined, as follows:

All rooms to be able to take any shape on a 3 ft. 4 in. planning grid.

External walls to be able to change direction at 6 ft. 8 in. or 10 ft. intervals or any combination of

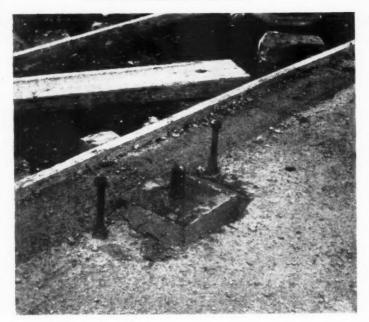


Fig. 2. Stanchion dowel plate on 5-in. thick concrete site slab. The slab is absolutely flat on the underside in both single and multi-storey construction. The highest stanchion base load in three-storey construction is 16 tons which is spread over the ground with a mat of reinforcement in the thickness of the slab under the dowel plate. Maximum stanchion base load in single-storey construction is $4\frac{1}{2}$ tons. The location of stanchion bases by a single dowel means that stanchions can tilt when mining subsidence movement takes place. It also makes steel erection extremely simple.

these dimensions.

Clear spans for all rooms other than gymnasia or halls to be 6 ft. 8 in. to 26 ft. 8 in. in increments of 3 ft. 4 in. Spans for halls and gyms for all types of schools to be 40 ft.

Floor to ceiling heights to be 8 ft., 10 ft., 12 ft., for normal purposes, and 14 ft. and 16 ft. for halls.

Single, two, and three storey construction to be possible.

Change of ground floor level to be in steps of 2 ft.

Conclusions of the reconnaissance

Towards the end of the year a considerable amount of information had been collected defining the requirements of the building method to be adopted and the alternative resources available to meet these requirements. It became possible to summarise this information and draw conclusions. The site labour situation, mining subsidence, and the required planning "performance" were rapidly shortening the list of alternative solutions. Traditional construction was eliminated by the need for erection speed and by the shortage of bricklayers. In addition it was not very safe in areas liable to mining subsidence even when built on heavy ground beams. Prestressed and precast prefabricated concrete construction, although having many advantages, was not suitable because it appeared to be

essentially a rigid construction, depending for stability on poured joints and stiffness imparted by cladding. The main limitation of existing timber systems was that they were inappropriate for more than two storey construction.

The only alternative was steel. What was needed was a system of construction based on a completely pinjointed light steel frame, together with the maximum use of prefabricated components throughout. The construction should be capable of producing the greatest possible variety of individual buildings and room arrangements, and at the same time, achieve a high degree of component standardization. It should be possible to organize the quantity production and stockpiling of steel and other components in advance of starting each job on the ground. No existing system of construction was suitable.

One of the firms which the architect's department had studied was Messrs. J. Brockhouse and Company who had developed a system of school construction using a cold rolled steel frame, in collaboration with the Ministry of Education Architects and Building Branch.

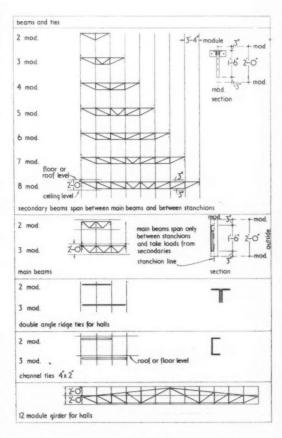


Fig. 3. Beams and ties. Steel components are standardized for all schools. The number of different types have been kept as small as possible in order to obtain the maximum cost advantage from quantity production methods. The same beams are used for floors and roofs but they are always at single 3-ft. 4-in. module centres in floors whilst they are either at two or three module centres in roofs.

ide de-

the ich

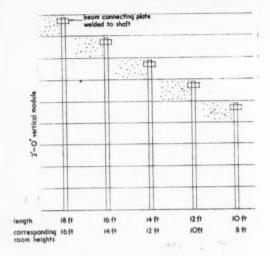
ems rec-

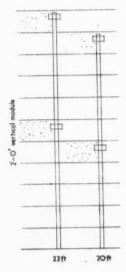
ity, neir aliems ure,

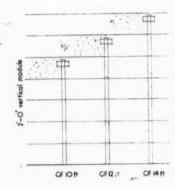
ing.

a at

of







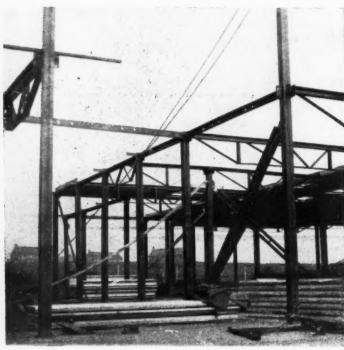
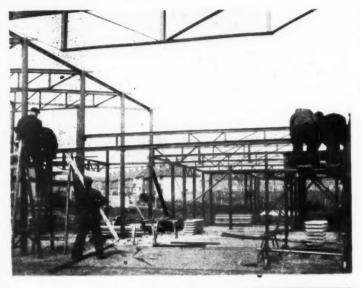


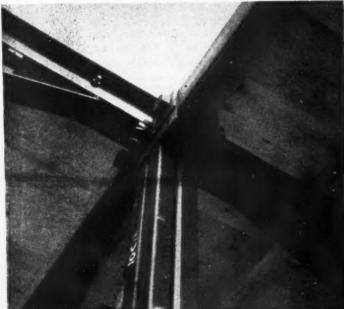
Fig. 4. Stanchions. There are five standard arrangements for welded connecting plates for each stanchion shaft length. Stanchion base plate has a hole in it located by foundation dowel. Two-storey stanchions sit on a similar dowel at head of ground floor stanchions to make three-storey structures. The very slender constant dimension for all stanchion shafts enables all steel to be cased in thickness of 6 in. partitions and external wall cavities. Not shown on diagram are "change of level" stanchions and intermediate length stanchions for pitched gable ends.

The prototype for this construction had been built at Belper for the Derbyshire County Council and subsequently schools of the same kind had been built in Essex and Kent. This type of construction had some of the characteristics required. It was capable of three storey construction and an examination of the school at Belper showed that a very high standard of finish and quality could be obtained with the system without exceeding the Minister of Education's cost ceiling for school construction. A high degree of prefabrication of components allowed rapid site assembly with the minimum of skilled labour. The steel frame, although having rigid connections, was essentially a pin-jointed frame depending on diagonal steel wind bracing for stability. With cold rolled light gauge steel sections it was extremely light.

The system was sponsored by Messrs, Brockhouse as a comprehensive one including walls, roofs, floors. windows, etc., in addition to the steel frame. It was obvious that by starting with an existing system of construction, and by making use of the experience gained in its development both by the manufacturer and the Ministry of Education, the Notts. architect's department would be in a very much better position than if it had to develop a new pin-jointed steel frame system from scratch. After considering all the evidence, the county architect recommended to the council that Messrs. Brockhouse should be nominated as steel suppliers for the eleven schools in the 1957-58 programme provided that the design and price was satisfactory. With the necessary contract agreements, the county council decided to go ahead on these lines. The county architect's department would take the design and cost analysis of the school at Belper as its point of departure, redesign the steel frame with Messrs. Brockhouse, and develop an entirely new system of construction based on it with a number of different manufacturers. With these major decisions made it was possible to start the actual development work on the "Notts. System" of construction on January 1, 1956.

Fig. 5. Steel frame. Secondary beams and channel ties are seen fixed direct to stanchions but on left a two module main beam is picking up the end of a secondary beam to enable perimeter stanchions to be "off-set" for planning reasons. Stability of structure is entirely dependent on the diagonal spring loaded wind bracing units, since there is no stiffness at beam connections or stanchion bases.







T

h

w

of

15

nt

n

are

ain

ble

ns.

nal

iess

Fig. 6 (left). Erecting 8 module (26 ft. 8 in.) secondary beam. This member weighs 470 lbs. and is the heaviest component. The weight of the structural steel on the prototype school is 41 lb. per square foot of floor area. Beams are welded lattices with top chords of hot rolled angles and with flats for lower chords. Fig. 7 (centre left). Stanchion head. End plates of secondary beams are " face bolted" with two side by side 11-in. diameter bolts to the beam connecting plate welded to the stanchion shaft. Ends of channel ties and main beams have single 14-in. diameter bolt fixing only. Tests have proved that these connections allow more than enough articulation for mining subsidence movement. Fig. 8 (bottom left). Roof deck and ceiling. Prefabricated timber deck units 6-ft. 8 in. or 10-ft. long are nailed to timber noggings in top chord of beams and also to each other. The roof, therefore, forms a continuous diaphragm which maintains the squareness of the steel frame on plan and transmits the wind forces to the diagonal bracing. The use of the roof as a stressed diaphragm has simplified and lightened the steel frame. (A similar method is used for upper floor construction.) The suspended plaster board ceiling allows room for service pipes which can run through the open lattice beams. Thermal insulation is provided by \{\frac{3}{2}\-in. \text{ thick roof boarding}\) and a glass silk quilt over the ceiling. Ceilings suspended beneath floors are fibrous plaster to give fire protection to the steel.

How the system was designed

With the decision taken to collaborate with Messrs. Brockhouse in modifying their existing steel frame, and to take the construction at Belper as the starting point, the development of the system of construction was still a major undertaking. There were three reasons for this. Firstly, the one system had to be used for a wide range of school buildings including three storey secondary schools and single storey primary schools and had to be equally economical for all types. Secondly, the buildings had to be articulated throughout to enable them to follow the mining subsidence ground movement. Thirdly, the system had to be designed to be cheap enough to allow sufficient floor area to be planned in the schools within the fixed ceiling costs of the Ministry of Education at a time when prices were steadily rising.

These factors meant that the Notts system was inevitably going to have a lot of new characteristics. For this reason the development was based on a policy of sticking to well tried materials and details wherever this was possible. In almost all cases the design of elements started with the drawings and cost data supplied by the Ministry of Education Architects and Building Branch. In many cases the final design was very different, but this was a reflection of the different requirements of Nottinghamshire and not a result of wanting to make changes for their own sake.

The end product of the development period was to be a set of standard drawings. These were the detail drawings of the components making up the system of construction and the methods of assembly. These standards were to be issued to the general contractors



Fig. 9. Prefabricated timber frames for tile cladding. Studs are 1-in. thick planks. Inner linings of \(^3_8\)-in. thick asbestos fibreboard are fixed to rails and give necessary fire protection. Perimeter stanchions which are always at 6-ft. 8-in. or 10-ft. centres are used universally to support cladding as well as windows.

together with the job layout drawings of each particular job and would cover all constructional conditions on any school designed. The standards were to be used first on the prototype—Bancroft Lane Infants School at Mansfield-and then on the ten other schools in the programme Because the main programme would be under construction before the prototype was complete it was always recognized that there would be very little time for reconsideration if a standard detail did not work out right the first time. A bad design in the standard drawings might well be repeated in a number of schools before it could be corrected. Cost targets for the design of various elements such as windows or roofs were prepared with quantity surveyors. In the first instance the element costs in the cost analysis of Belper were used with 10 per cent. addition to allow for subsequent price increases, but later it was found more convenient to draw an imaginary "pilot" primary school and prepare a complete cost plan for it. Sketch standard details of elements were drawn by the architects and roughly costed by the quantity surveyors; the quanti-

ties being based on the "pilot" plan. If the rough cost came out higher than allowed for in the cost plan the sketch standard had to be revised. In this way it was possible to control the cost of the standard system. The "pilot" plan was a device which enabled cost planning to be carried out at a time when there was no sketch plan of any school started.

The design of the system depended on team work. The different elements were each the responsibility of different architects. One was responsible for roofs and floors, one for windows, one for steel frame and site slab, and so on. Each architect had the task of determining the physical "performance," the dimensional limits, the subsidence movement tolerances and so on for his particular bit of the structure, then of designing components to meet these requirements for assembly in all possible arrangements of the system. He was responsible for checking costs with the quantity surveyors, and finally completing the standard drawings. Meetings were held at intervals to co-ordinate this work and check that progress was being maintained. The majority of the standard drawings were complete by July, 1956, and numbered about 80. The group of architects who had been working on them then prepared the job drawings for the prototype school. In the development work it was necessary to collaborate in the design of components with a number of manufacturers. This occurred when a component was not a standard article-for example, a concrete cladding block to be hung on the steel frame, or a waste fitting assembly with a minimum of couplings. It was usually possible to get excellent co-operation from manufacturers because the components would be standardized for quantity production for all schools and let as a single "programme" contract.

T

th

Aı

At a very early stage a general contractor, Messrs. Simms, Sons and Cooke Limited, was nominated to build the prototype school. This made it possible to discuss the design of the standard system as it developed with the people who were going to use it first. As it was intended that there would be a fair proportion of work in the system for the general contractor, these discussions were invaluable, and helped to obtain economy and speed of erection.

The system of construction

The main characteristics of the developed system of construction are illustrated in the accompanying photographs of the prototype infant school at Mansfield. This job started construction at the end of January, 1957, and opened on schedule at the beginning of September. The other 10 schools in the 1957-58 building programme are either under construction or are about to start. This construction is being used by other local authorities. In particular, since the beginning of the year there has been close collaboration with the Derbyshire County Architect's Department and the Coventry City Architect's Department, both of which, in addition to using it for some of their own schools, have contributed to the development of the system as a whole.

INFANTS' SCHOOL

in LADYBROOK LANE, MANSFIELD, NOTTS; designed by D. E. E. GIBSON, county architect job architect A. B. FULLER; quantity surveyor W. R. J. HILL

The Bancroft Lane Infants' School at Mansfield, which is described in the JOURNAL'S Technical Section this week, is the prototype of the new system devised for mining subsidence areas by the Notts. County Architect's Department. For comparison we also publish, on page 642, a cost analysis of the Tuxford Secondary School, based on competitive tender. This school employs the same system of construction and was part of the programme of schools following the prototype, which was built on a negotiated contract.

Viewpoint 1: the main entrance from the east.



ost way ard oled ere The difand site teronal

ning nbly was

sur-

gh

ngs. this ned. olete p of pre-

orate anunot a lding tting ually ufacdized

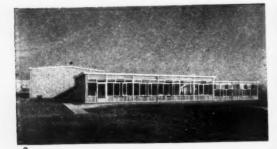
as a

essrs.
ed to
ble to
as it
use it
a fair
connelped

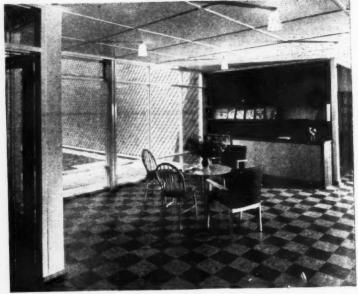
em of mying Mansnd of beginn the astrucbeing ce the abora-

tment, me of evelop-

building illustrated







Gi

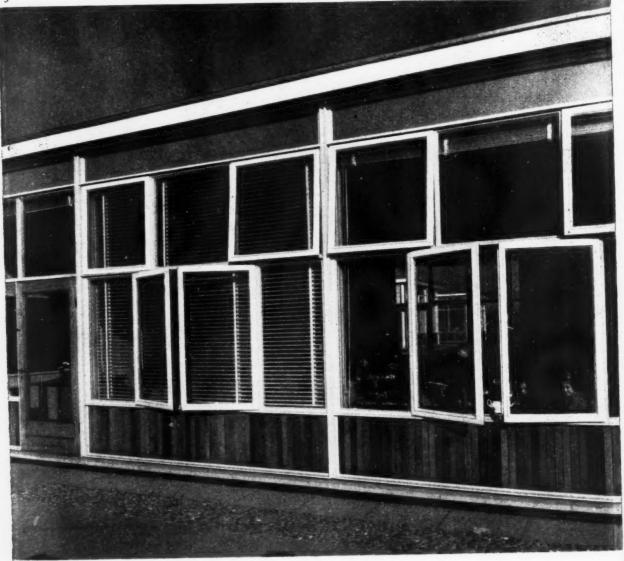
ple
3-j
stri
win
the
diff
ass
alto
infi
tilii

spa Wi thu pan

desi

stri; star can

vitr The



8 10



Ground floor plan with photographic viewpoints [Scale: $\frac{1}{4}e'' = 1'0''$]

OPPOSITE PAGE: Viewpoint 2, from the south. The windows are 6 ft. 8 in. or 10 ft. in width and are all fixed to stanchions. The assembly hall on the left is clad with hand-made clay tiles hung on timber cladding frames. The vertical tiling is light and reasonably cheap and will allow the structure to move easily while remaining completely waterproof. Although the gauge and sizes of the tiles are co-ordinated with the 3-ft. 4-in. horizontal and the 2-ft. vertical module, there is no expression of the structural grid in a continuous wall. Viewpoint 3: the staffroom court. The classroom wing on the left has 8 ft. ceilings; the classrooms on the right have 10-ft. ceilings. In the design of the system of construction the policy has been to provide a number of different cladding methods. This avoids the monotony of external appearance often associated with prefabricated construction and gives the architect a wide range of alternatives. In addition to the windows with their coloured vitreous enamel and timber infilling panels, two of the four cladding systems are shown in this photograph: vertical tiling and precast concrete. The concrete cladding is, like the tiling, based on dry overlapping horizontal joints. Each unit is hung from the stanchions by its two top corners and the wall is therefore free to move with the structure. The vertical joint is waterproofed with a non-setting bonding strip. The finish of the concrete is Lakeland spar, and the white wall makes a contrast to the rough red of the handmade tiles. Window frames can stop at ceiling levels allowing them to be surrounded by cladding thus appearing as "windows in walls" or they can be carried up to eaves with fascia panels closing the roof cavity. Viewpoint 4: a typical detail of windows. The frames and casements are Columbian pine, with joints, glazing and casement tolerances designed to permit structural movement. The glazing sizes have been somewhat limited. Swedish espagnolette bolts are used on all side hung casements and weather stripping is universal. Window frames meet on centre line of steel on outer face of stanchions, to which they are fixed with T-cleats. This means that the thin stanchions can scarcely be seen from the outside and that the frames themselves are partially concealed by the stanchion when seen from the inside. Roof cavity ascia panels are vitreous-enamelled light gauge steel insulated with fibreboard and coloured light blue. They require no maintenance. Low-level panels are western red cedar. The precast concrete plinth runs continuously under windows and cladding. Viewpoint 5: the entrance hall and the school library corner.

analysis

CLIENT'S REQUIREMENTS

An investigation of primary schools in the county was undertaken and in collaboration with teachers and educationists, the architects produced the Primary School Brief.

PLANNING AIMS

This, the first infant school to be built in the county on the basis of the new Brief illustrates the planning principles involved. The classrooms are closely grouped round a large centre comprising assembly hall, dining room and entrance hall. The reception classrooms are designed with alcoves opening from the central area to facilitate their use by children working in small groups at varied activities. As the children progress through the school the classroom designs reflect their progress towards the more formal methods of teaching used in later years.

Nott. C.C. grouped elements

		cost	per	sq.	ft.	S	-
preliminaries,	insurances	and co	nting	genci	es	3	-

STRUCTURAL ELEMENTS

Work below ground floor level	4	1
4½-in. thick concrete slab reinforced with steel		
fabric on 4-in, bed of shale and sand,		

Frame
Special frame of cold rolled steel stanchions and open-web hot rolled beams incorporating spring bracing to allow mining subsidence movements.

External walls and inner linings, windows and doors, including glazing, ironmongery and decorating

Walls of pre-cast concrete slabs, clay weather tiling and weather boarding on stud framing.

Inner linings of 3-in. gypsum plaster board or asbestos fibreboard. Timber windows and doors.

Davis	solid wall	0.326		
Ratio:	floor area	I		
Ratio:	windows	0.487		
Ratio	floor area	1		

Roof construction, including finish 7 0½
Prefabricated timber deck units with two-ply felt finish. Asbestos fibreboard decking over boiler house only.

Rooflights, including glazing and operating gear to opening lights

No. of lights: 24. Total area: 250 sq. ft.

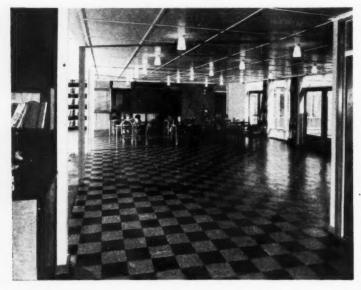
Steel frame lights on timber curbs with plywood lined walls.

total of structural elements 31 $5\frac{1}{2}$

PARTITIONING

Internal partitions and doors, including ironmongery 330 sq. yds. 6-in. gypsum plaster partition. 73 sq. yds. 3-in. gypsum plaster partition.

building illustrated



Viewpoint 6 (top left): the dining room. This room, together with the assembly hall (on the left) and the entrance hall, forms the school centre around which are grouped the six selfcontained classrooms. The hardwood servery hatches are for "family service" of children dining in groups of eight. The stanchions are painted in light grey gloss-oil paint. They do not have to be cased in single-storey construction. Viewpoint 7 (centre left): the assembly hall. The 14-ft. ceiling height contrasts with the 8-ft. ceiling height of the dining room, left of the picture. The wallpaper, the thermoplastic tiles, the hardwood block floor, the mural and the curtains were chosen to create a feeling of quality and richness. The mural is by Fred Millet. It incorporates in its design the pattern of the asbestos fibrebocrd inner lining boards and illustrates wild flowers. Viewpoint 8 (below): the head teacher's room. The asbestos fibreboard inner lining to the tile cladding is seen under the window sill. The wall on the left is precast gypsum plasterboard partition. Finished surfaces are 3-in. inside steel centre lines, which means that except at window conditions, or when free standing, all stanchions are concealed. The curtains are by Gerald Holtom.









Viewpoint 9 (left): a classroom. The classrooms have been designed to accommodate the wide range of activities and teaching methods required in an infant school. Coat and shoe storage are included here. Shoes are kept in wire baskets fixed below the work-tops. Cupboard units are located under the wide window sill, which also forms a workshop. At the far end a book storage unit has been opened out to form a classroom library corner. Perforated plasterboard ceilings are used for sound absorption. Viewpoint 10 (above): another classroom. A lavatory unit is in each classroom. With it are a teacher's storage cupboard and a circulated warm air heater unit.

d

0

analysis

s d

7

6-in. and 3-in. gypsum plaster board partitions generally with fibrous plaster covers where bracing occurs.

er

Il,

lf-

for

he

do

7

the

eft

the

sen

by the

vild

The

der ter-

ntre

hen

are

been

s and

d shoe

s fixed

e wide

a book

library

sound

m. A

acher's

3 13 **Fittings** Hat and coat fittings, shoe lockers and storage

W.c. doors and partitions Aluminium faced plywood doors and partitions.

total of partitions and fittings 9 2



Typical storage bin unit in classroom. All work-tops are teakfaced blockboard. Frames are in beech. Storage bins are painted in bright colours.

FINISHINGS

Floor finishings and skirtings 4 0 Classrooms, entrance hall, dining room and staff rooms: thermoplastic tiles. Assembly hall: woodblock. Kitchen and lavatories: quarry tiles. 3 101 Suspended plasterboard ceilings with perforated areas for absorption backed by glass fibre quilt.

> total of finishings 7 104

SERVICES

cables in roof space.

Plumbing, including sanitary fittings 3 41 3-in. aluminium rainwater down pipes externally. One pipe system with flexible connections to drains through site slab fittings; 19 lavatory basins: 24 w.c.'s; 12 Belfast sinks; 1 drinking fountain. Heating installation 8 04 Warm air units run from oil fired boiler. Internal temperatures 62° in classroom, 57° central areas. Air changes 3 per hr. " U " of walls 0.3. " U " of roof o 15. Gas installation 2! No. of points: 7. Kitchen area only. Electrical installation 3 11

188 light points, 19 power points, p.v.c. sheathed

Drainage

1

Combined system. Pitch fibre for all main runs with cast-iron fittings internally and earthenware externally.

total of services 16 53

£38,500 (net cost excluding external works)

Cost per sq. ft. 72 73 10,367 sq. ft. (floor area measured inside external walls)

Playground and paved areas 1 8 Asphalt play areas, precast concrete slab paths.

COST SUMMARY

Ground floor area: 10,367 sq. ft. Type of contract: negotiated. Tender date: December 11, 1956. Work began: January 4, 1957. Work finished: September 9, 1957.

Tender price of foundations, superstructure, installations

and finishes: £38,500.

Tender price of external works and ancillary buildings:

£5,850.

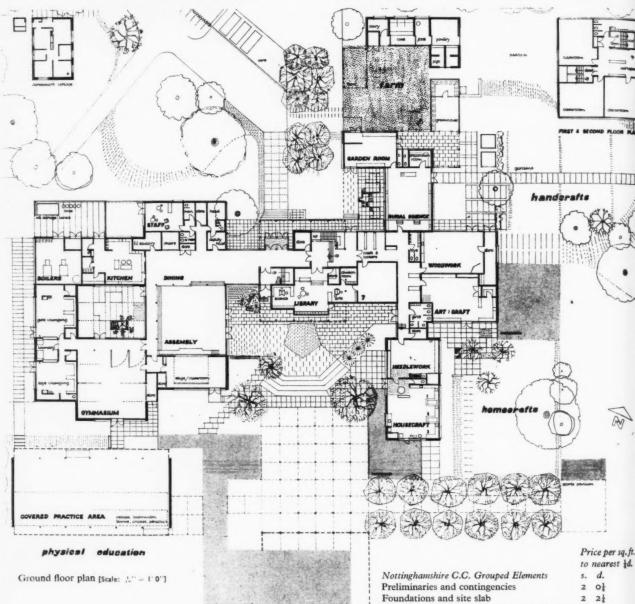
COST COMMENTS

The cost analyses of the school at Bancroft Lane and the school at Tuxford (overleaf) show that the achievement of the Nottinghamshire architects in developing a system of construction to combat the effects of subsidence has been gained at a cost no greater than that of a normal building. The cost of the work below ground floor level at Tuxford is lower than any other cost for this element that has been published for schools. The steel frame (one of the cheapest that has been used in this type of work) is a development of the system used at Belper (AJ, December 15, 1955), and shows costs which do not reflect the increases in the cost of steel and labour and that have occurred in the intervening four years since the Belper school tender. The tender for Tuxford shows that the Authority have achieved a cost per foot super which is well below average. Their policy of choosing a contractor for Tuxford in competition and subsequent negotiation for further schools appears to give good results. On the other hand, a comparable economy does not seem to have been gained at Bancroft Lane. It is possible that this pilot scheme was not sufficiently large to enable the costs of training staff and workmen to be spread over a large enough quantity of work.

CONTRACTORS

General contractors: W. J. Simms, Sons & Cooke Ltd. Sub-contractors-Reconstructed stone-plinth units, concrete cladding slabs: Evans Bros. (Concrete) Ltd. Vitreous enamel fascia panels: J. A. Jordan & Sons Ltd. External tile cladding: Maidenhead Brick & Tile Co. Steel frame: Brockhouse Steel Structures Ltd. Felt roofing: D. Anderson & Son Ltd. Roof lights: Crittall Mfg. Co. Ltd. W.c. partitions: Flexo Plywood Industries Ltd. Ironmongery: Wilkes Berger Eng. Co. Ltd. Sanitary fittings: Adamsez Ltd. Preformed wastes: Econa Ltd. Electrical installation: N. R. Kirk & Co. Ltd. Heating system: Weatherfoil Heating Systems Ltd. Pitch fibre drain pipes: Key Engineering Co. Ltd. Concrete manholes: Mono Concrete Ltd. Suspended ceilings: Thomas Stephens Ltd. Woodblock floors: J. A. Hewetson & Co. Ltd. Thermoplastic floors: Hollis Bros. Ltd. Fixed furniture: A. J. Cattle Ltd. Mastic for curtain walling: Evode Ltd.

RURAL SECONDARY SCHOOL, NOTTINGHAMSHIRE TUXFORD



COST ANALYSIS

This was the first job in the 1957-58 programme to go out for competitive tender. The other jobs in the programme are being negotiated with two general contractors on the basis of the same rates as those quoted for Tuxford. The element costs shown here and the total cost per square foot indicate, therefore, the actual cost of the system of construction. They are lower than those in Bancroft Lane Infant School cost analysis, which inevitably reflect that Bancroft Lane was a single small job and a prototype for a new method of prefabricated construction.

Floor area 26,914 sq. ft. Cost places = 340 Actual places = 360. Sq. ft. per place = 79.16 sq. ft. £6,735 instalments + £2,400 add. classroom. = £264 × 340 Min. of Education + £1,750 Evening Inst. use. net allowance =£100,645 = £3 14s. 9½d. sq. ft.

Cost per sq. ft. Net cost based £3 5s. 61d. on tender

Nottingnamsnire C.C. Groupea Elements	5.	a.
Preliminaries and contingencies	2	01
Foundations and site slab	2	21
External walls, including doors and windows	10	31
Steel frame	8	91
Roof construction	4	31/2
Roof lights	I	41
Floor construction (first and second)		83
Staircase	1	13
Internal partitions and doors	4	91
W.c. cubicles and screens		4
Floor finishes and skirtings	4	21
Ceilings	2	101
Fittings and furniture	4	112
Plumbing (internal, external and sanitary		
fittings)	2	01
Electrical installation	3	61
Heating installation	6	9
Drainage (nett cost)	I	01
Playgrounds and paved areas	2	I 4
Special decoration		13
Covered practice area	I	11
Total net cost per sq. ft. £88,172		
(based on tender) =		6c 61

(based on tender) 26,914 sq. ft. N r sq.ft. est \d.



working detail

CANOPY: FLATS IN BERLIN

Pierre Vago, architect (material supplied by Hans Haenlein)



This r.c. canopy covers a footbridge which gives access to the building over the traffic entrance to the garages below.

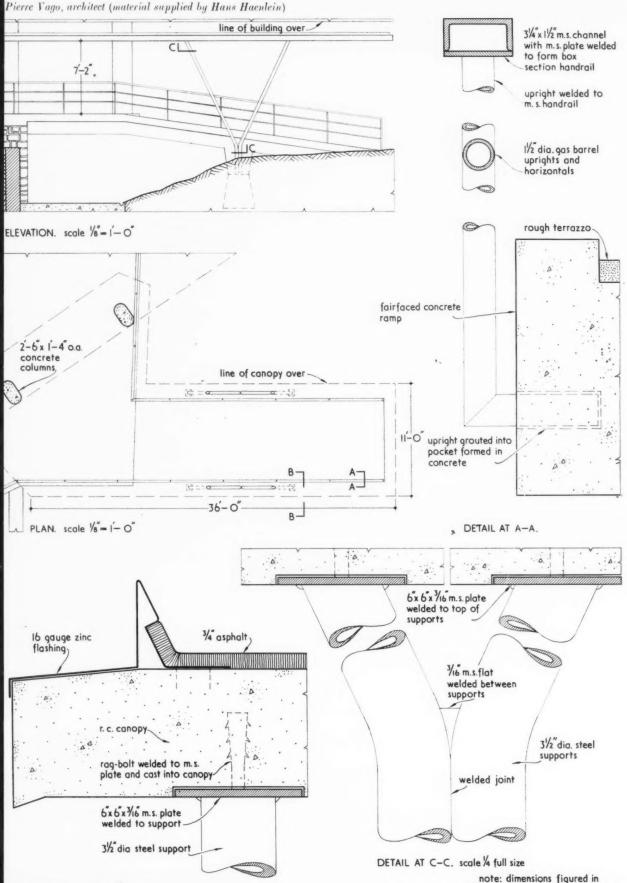
Photograph: Jo chim Diederichs

feet and inches are approximate

working detail

CANOPY: FLATS IN BERLIN

SECTION B-B. scale 4 full size



working detail

GLAZED WALL: OFFICES IN DUSSELDORF

H. Hentrich and Hans Heuser, architects (material supplied by A. Gordon and M. Chaplin)

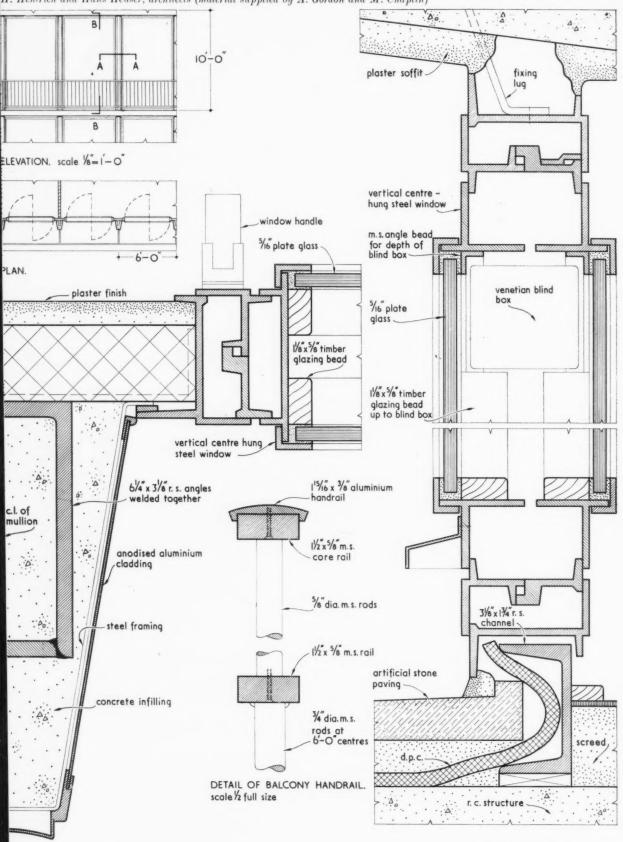


The structure of this facade is unusual in that the main box stanchions are fabricated from two angles welded together and encased in concrete with an anodised aluminium facing.

working detail

GLAZED WALL: OFFICES IN DUSSELDORF

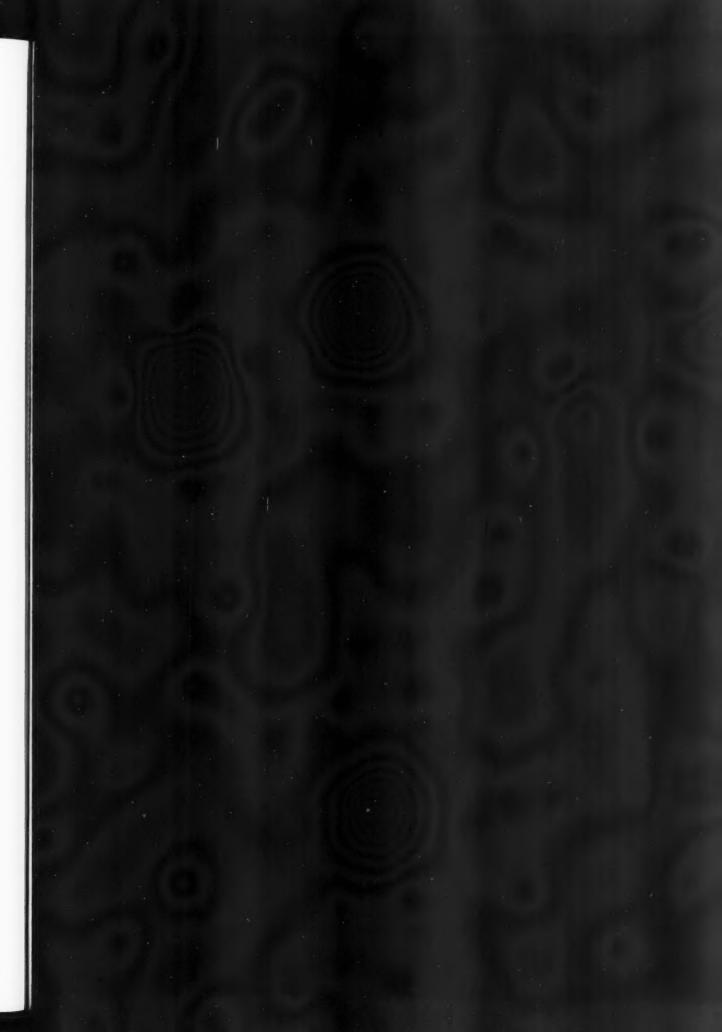
H. Hentrich and Hans Heuser, architects (material supplied by A. Gordon and M. Chaplin)

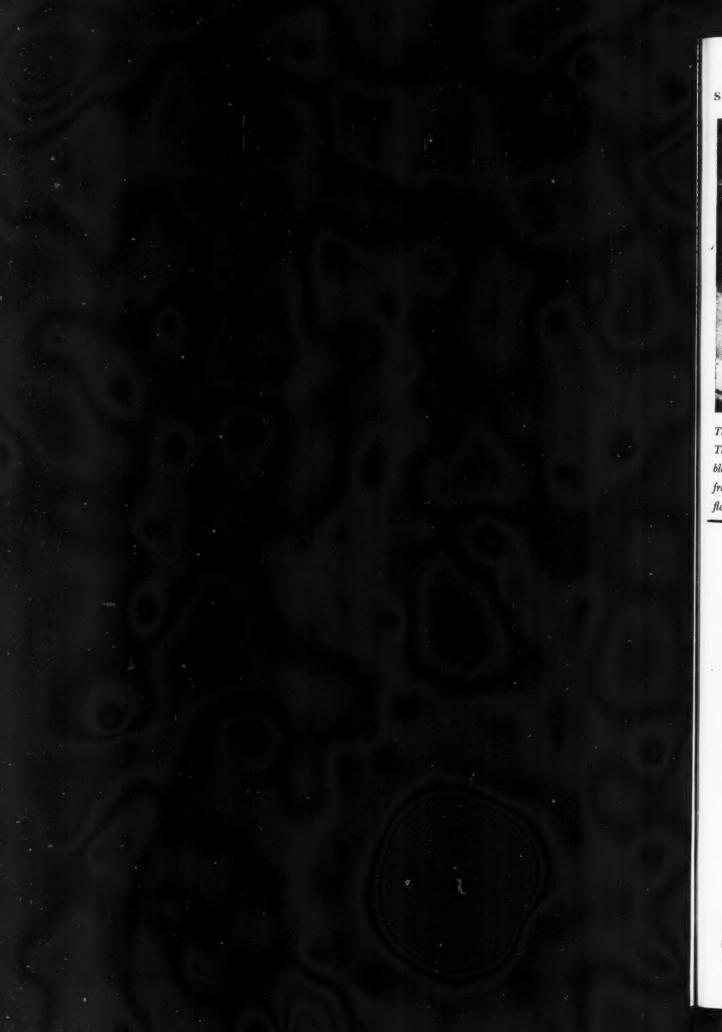


ECTION A-A. scale /2 full size

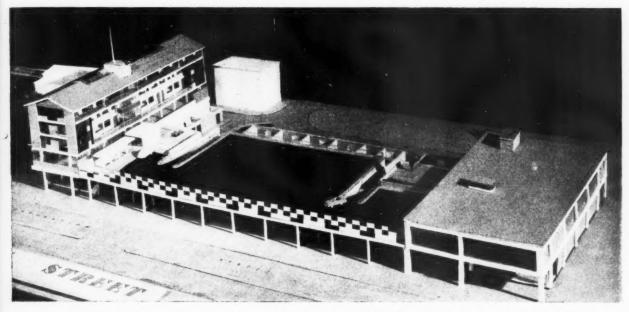
SECTION B-B.

note: dimensions figured in feet and inches are approximate





SHOPS AND OFFICES AT CORBY TOWN CENTRE, NORTHANTS



This model photograph, shows proposed development of the town centre at Corby New Town (chief architect, Dr. D. R. Harper). These buildings, which will be erected to the south of Corporation Street, consist of a two-storey supermarket on the right, a single-storey block of lock-up shops, centre, on the roof of which will be parking space for approximately 45 cars. There are access and exit ramps from the service road at the rear, and staircase access to Corporation Street. The five-storey block will contain shops on the ground floor, offices or further shopping space on the first floor and maisonettes and flats above.

Hangers PAINTS

were used on:

The Humberside Pumping
Station, West Hull and
Haltemprice Joint Main
Drainage Scheme



Photograph published by permission of the Joint Engineers, Wm. Morris, Esq., O.B.E., M.I.C.E. F.R.I.C.S. City Engineer, Kingston upon Hull, and R. B. Heseltine, Esq., A.M.I.C.E. M.I.Mun.E., Engineer and Surveyor, Haltemprice Urban District Council.

Fabriguard Hard Gloss Enamel Paint Fabriguard Emulsion Paint
Special Machinery Enamel

HANGERS PAINTS LTD, STONEFERRY WORKS, HULL

LONDON

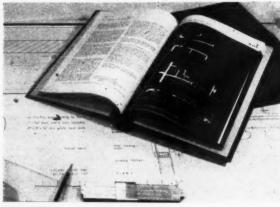
LIVERPOOL

BIRMINGHAM

GLASGOW

TORQUAY

NORWICH



THE LIBRARY OF INFORMATION SHEETS COMPLETE TO SEPTEMBER, 1957

REPRINTS

All Information Sheets published since the Individual Sheets may be ordered (3d. each) new series was started in October, 1947, have been reprinted. Speciallydesigned binding cases to hold approximately 100 Sheets may be obtained at the price of 6s. Od. each. (Postage 1s. 1d.) quote for sets not detailed below

Readers requiring sets or individual Sheets should fill in the form below. Sets in classified order (without binders) are available as follows, and the publishers will

Oct., 1947-September, 1957

... £5 2s. 6d.

ORDER FORM

Please send me	
5.7	

block letters)

Address

Announcements

PROFESSIONAL

Sir William Halcrow and Partners, consulting engineers, of Stanhope House, 47, Park Lane, W.1 (telephone Grosvenor 8171), announce that they have opened a new office at 10, Malone Road, Belfast (telephone Belfast 660050), where R. D. Dungen O. R. F. 600 M. C. F. M. W. F. 1860 M. C. F. M. C. M. Duncan, O.B.E., B.SC., M.I.C.E., M.I.W.E., will be in charge.

J. R. Wetherell and Lamb, L/L.R.I.B.A., of Tweedholme, Picton Place, Newcastle-upon-Tyne, 1, announce that they have taken J. I. S. Gray, A.R.I.B.A., into partnership in their office at 42, Victoria Road, Darling-ton. The title of their practice has been changed to Wetherell, Lamb and Partners.

As from November 1 the address of George Holland, A.R.I.B.A., will be c/o Director of Works, Department of Works. Canberra, A.C.T., Australia, where he will be pleased to receive trade catalogues, etc.

TRADE

Turners Asbestos Cement Co. Ltd. announce that they have retained H. T. Cadbury-Brown, F.R.I.B.A., as consulting designer to assist in the future designing of their asbestos cement products.

Copperad Ltd. announce that the telephone number at their Colnbrook, Bucks. works is now Colnbrook 2521.

E. K. Cole Ltd. of 5, Vigo Street, London, W.1, announce that their Thermovent "FR" portable electric convectors are now available in black as a standard colour, in addition to the walnut finish. The heaters are also obtainable in beige, ivory and red. at a small extra cost.



BOURNE & HOLLINGSWORTH LTD.

Details of a major shopfitting scheme carried out by our organisation at this famous London store.

S

47. (1). ew

le-D. vill

oncen in ng-

een

c/o

will etc.

ting of

elecks.

ion, vent now

, in

red.



ARCHITECTS

COPELAND NOVAK AND ISRAEL

NEW YORK CITY



OUR DESIGN AND TECHNICAL SERVICE IS READILY AVAILABLE TO ASSIST IN THE DEVELOPMENT OF ALL TYPES OF DECORATIVE SCHEMES

Harris & Sheldon Ltd.

The organisation with a background of 75 years experience BIRMINGHAM · LONDON · GLASGOW · TORONTO



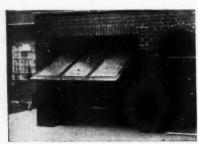
S



The illustration on left shows yet another example of ELLARD "Estate" Sliding Door Gear in the modern dwelling-house. See how simple it is to convert a spacious room to one of cosy and intimate atmosphere. Elegant appearance, ease of operation and long service are the main selling features of this attractive ELLARD Door Gear. The obvious choice for both council estates and private houses is ELLARD Door Gear. The illustration on left

The illustration on right shows ELLARD "Radial" Sliding Door fitted to a private garage. Valuable working space is offered at the entrance to the garage. ELLARD Door Gear provides easy access to and from the garage by a personal entry door. ELLARD "Radial" Sliding Door Gear is low in price and gives long service without maintenance. This gear is also suitable for the larger openings of commercial and industrial garages.





ELLARD "Overdor"
Gear, illustrated on left,
represents the best
method of operating an
overhead-type door, and
it requires the minimum
space, fixing time and
maintenance. An entirely
clear threshold is
achieved, and both side
walls are available for
windows and shelves.
ELLARD "Overdor"
Gear is designed for
doors from 6ft. to
7ft. 3in. high and up to
200 lbs. in weight. The
door is safely balanced
and can be opened and
closed with ease.

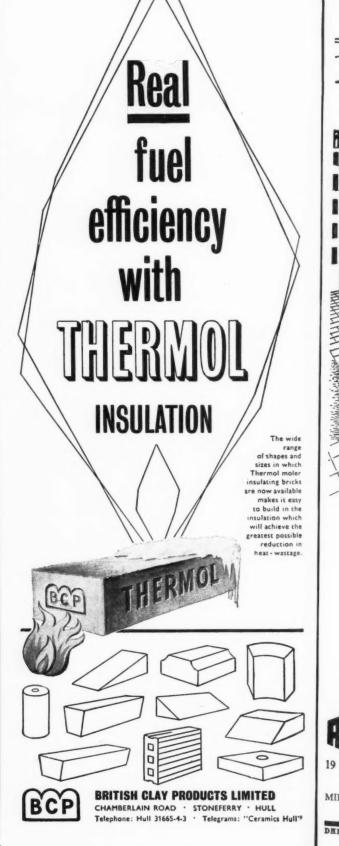
ELLARD Sliding Door Gear is readily obtainable from your nearest ironmonger or merchant.

SEESTAND 596-8 BLDG. EXHIB. OLYMPIA NOV.13-27

ELLARD SLIDING DOOR GEARS LTD. Tel. 613/4

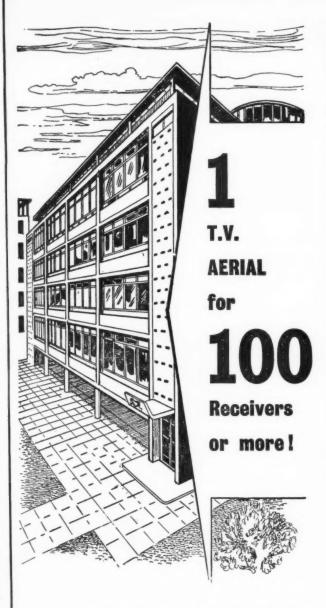
(DESK 6) WORKS ROAD, LETCHWORTH, HERTS.

BMJ



i

きないコート



No need to worry about the provision of adequate television services to blocks of flats, hotels, schools, housing estates, etc.

The Antiference system of centralised T.V. reception does away with those ugly arrays of roof-top aerials—one aerial provides perfect reception!

Hundreds of such installations throughout the country have been carried out by our engineers and we would be pleased to advise and assist on your particular project.

ANTIFERENCE INSTALLATIONS LTD.

19 DUNRAVEN STREET, PARK LANE, LONDON, W.1 Telephone: GROsvenor 1061/2

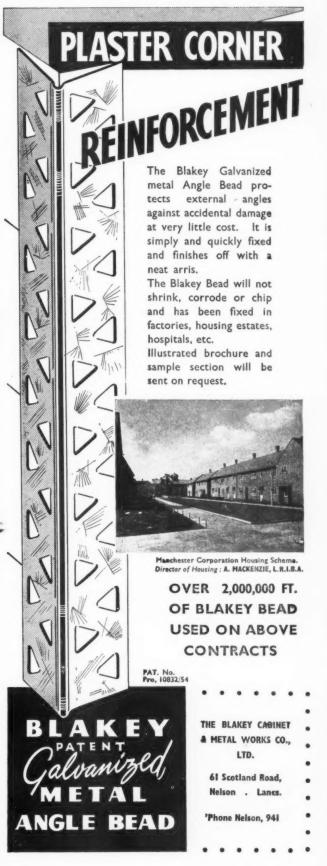
MIDLANDS:— 39 Holland Street, Sutton Coldfield. Phone 5354
NORTH:— 258 Manchester Road, Wigan. Phone 45321

DH B/2979

Hull'9

hich noter ricks lable easy n the

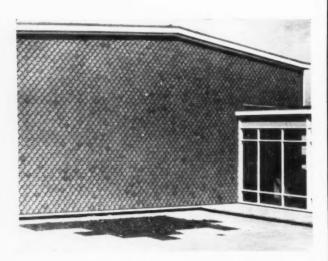
e the ssible on in stage.



MANSFIELD BANCROFT LANE COUNTY INFANTS' SCHOOL

Architect :

D. E. E. GIBSON, o.b.e., m.a., a.r.i.b.a., m.t.p.i.



The Cladding Tiles used were

10½in. x 6½in. HANDMADE, SANDFACED

RED CLUB TILES

2

Supplied by

Maidenhead Brick & Tile Co. Ltd.

(KEYMER BRICK & TILE CO.)
Burgess Hill, Sussex

SLIDING DOOR GEAR

Have you a copy of our book entitled "The Sliding Door?" Please tell us if you have not received yours. When you have a Sliding Door problem, let "Hill Aldam" solve it for you.



HILLALDAM

FOR EVERY DOOR
THAT SLIDES

and

The

e a

or

The and

and th

so y

fact

my

one

you

THE VE

E. HILL ALDAM & CO. LIMITED Britannic Works. Haslemere Avenue, LONDON, S.W.18

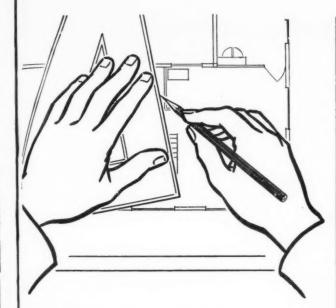
Telephone: Wimbledon 8080 (6 lines) Telegrams: Aldamillo. Put. London

Site Supervision

by A. A. Macfarlane, A.R.I.B.A., A.M.T.P.I.

IN THIS VOLUME the author, a practising architect with a particular enthusiasm for job management, presents in a readable and readily accessible form the knowledge he has gained from half-a-life time's experience of site supervision on a very wide variety of building contracts. He defines the architect's duties and responsibilities on the site, elucidates the mysteries of site etiquette and gives guidance on the complex subject of the architect's relations with client, builder, clerk of works and the craftsmen in the various trades. He explains with precision what are the things to look for and how to find them, what questions to ask and of whom to ask them, what instructions to give, and to whom to give them. He describes the quality of work to be sought after as well as the quality to be expected, and he makes clear what can be accepted and what must be rejected. Size 8\frac{3}{4} ins. by 5\frac{16}{2} ins. 160 pages including 25 line illustrations. Second impression. Price 16s. net, postage Is. od.

THE ARCHITECTURAL PRESS 9-13, QUEEN ANNE'S GATE, SWI



"To a chap like meand I'm proud of my work - my pencil's my living.

OOR

S

I.

, SWI

The pencils I use have to stand up to fast hard work, their grading's got to e absolutely spot on - not almost or nearly but bang on the dot every me.

he leads must hold their points and flow smoothly throughout a long lineno crumbling or 'clinkers' mark you! and if I erase a line it must go cleanly there's no 'furrow' left in my paper so you won't find ghost lines in prints made off my drawings. As a matter of act you can tell from a print when it is my drawing-the print's always first class."

"What pencils do I use?"

Venus drawing pencils of course, the ones with the crackle finish!—how else do you think I keep up my high standard?"



*VENUS Drawing pencils are made in 17 accurate grades from 9H to 6B.

THE VENUS PENCIL CO., LTD., LOWER CLAPTON RD. LONDON, E.S.

Down with jointing costs!



these 3 ft. pipes

made by Doulton, cut your jointing costs on 4" and 6" diameter pipes by one-third and do the job quicker into the bargain.

In a mile run I can save 880 joints — see what I mean?

Yes, it's Doulton for me - every time.

For Underground Resistance put down DOULTON Salt-glazed Pipes. There is security in Doulton Drainage Materials-they have proved their corrosion and abrasion resisting properties for over a century.

Comprehensive range of bends, junctions, gulleys, etc., always available; also pipes in 2' 0" and shorter lengths if required.

DOULTON VITRIFIED PIPES LIMITED

Dept. BEP, Doulton House, Albert Embankment, London, S.E.1







"Our new school's got different walls, they're made of glass instead of bricks, and such a lot of sun and fresh air comes right inside the class that it's like being out in the playground -besides, the colours of the

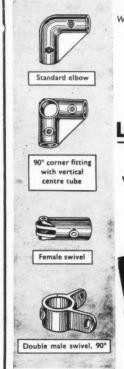
"Melloclad" Curtain Walling specified by the City Architect, J. L. Womersiey, Esq., F.R.I.B.A., M.T.P.I, for the Bradwo County Primary School, Sheffield.

QUE



MELLOWES & CO. LTD

Member of the Metal Window Association.



We specialise in:

Covered Ways Gantries Canopies **Loading Bay Covers**

also Clear Span Buildings up to 60 ft.

WE DESIGN . WE MANUFACTURE WE ERECT

TUBULAR & STRUCTURAL

ENGINEERS

Tubeclamps

Limited

6, LYGON PLACE, LONDON, S.W.I. Tel: Sloane 7291-2-3

> ST. LUKES WORKS, OLD HILL, STAFFORDSHIRE Tel: Cradley Heath 69181 P.B.X.







a new IMPROVED under-floor-draught fire

Here are some of its outstanding features

Will fit any standard tile sur-round with an opening 16 in. or 18 in. wide and not more than 22in. high.

S

a

mes

it's

he

cifieo

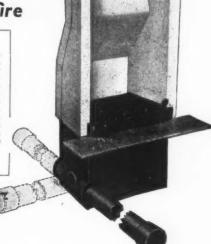
rsiey. radwo

D HAM

round

- It is not necessary to cut the tile hearth.
- The underfloor air can enter the fire base from any one of six
- positions.
 Strong steel ashpan needs emptying only once a week.
 The damper lever fully controls the burning rate of the fire.
- Modern fire front available at no extra cost as alternative to period type front as illustrated.
- * Back boiler to provide ample supplies of hot water can be fitted.
- * Extension trivet can be supplied for overnight burning with safety.
- ★ Bottom grate carrier frame can be removed without disturbing the firebricks.
- ★ Balanced secondary air is intro-duced between the bottom grate frame and side linings without necessity of a separate control.

The design of the "SWINTON" Sunken The design of the "SWINTON" Sunken Fire is such that the air inlet pipe can be placed in any one of six directions to suit the most convenient position for the entry of air. This advantage, together with numerous others, makes the "SWINTON" at the best sunken fire on the market.



QUEEN'S FOUNDRY

MEXBOROUGH .

YORKSHIRE

Tel.: Mexborough 2332-3-4

Universities Staircase Arcadia

October Architectural Review

Vexed by conflicting interests and lack of comprehension of the issues at stake, the design of Universities has become a pro-



3 D shop lettering in Dublin.

blem that excites passion and prejudice, rather than constructive thinking. In the October number of the Review, Professor Pevsner and the Hon. Lionel Brett will attempt to put the problem back on a realistic basis in a special feature covering both

9-13

Queen

Anne's Gate,

Westminster,

S.W.1.

Whitehall

Please

send

me

the

ARCHITECTURAL

REVIEW

until

further

nolice

H

н

bti

H

C

H

H

因

C

H

D

B

A

H

B

B

V

豆

B

the historical growth of universities and their present needs, emphasising the diversity of concepts, both in organization and architecture that the term embraces. Two articles in the same issue will deal with problems of architectural lettering; Nicolete Gray contributing a study of Lettering in Three Dimensions and Skill, surveying the design of Fascia Boards. Also in Skill will be an illustrated description of Arne Rudberger's stunning staircase for the MEA department store in Stockholm, and other recent structures to be illustrated will include a small house by Sir Hugh Casson on the South Coast, and another well-designed adjunct to a department store-G. A. Jellicoe's roof garden on top of Harvey's at Guildford. Two historical features will deal with developments in the first quarter of the present century: Nairn's delayed study of Hampstead Garden Suburb is now expanded into a larger study of Arcadia as a place to dwell in, and Reyner Banham will investigate the implications of recent publications on the position of Mondrigan both as a pioneer of modern design, and as a model to be set up for emulation by architects in the future



Staircase at the MEA Store, Stockholm,

Smithsons Building Exhibition ONNO

November Architectural Review The controversial Smithsons will make their first appearance as contributors to the Review in November, with an illustrated study of the Shape of the Community, in which they set against the exhausted diagrams of CIAM planning their vision of a more humane type of city. For nonvisionaries—and for visionaries too-Skill will provide a full cove age of the Building Exhibition from the technical point of view, as well as an Interiors treatment of G. A. Jellicoe's restaurant and shopping floors at Harvey's of Guildford.

Visionary qualities, spurred by hard practical necessities, illuminate Kenneth Browne's proposals for applying the ONNO traffic-directing technique to Park Lane and west Mayfair. The study of the functional tradition is advanced by Brian Spiller's article on Georgian Breweries. Buildings described in this issue will include the new Bowater Factories by Farmer and Dark, whose cladding provides a practical follow-up demonstration of patent-glazing techniques, and Rangoon University and Technical Institute, by Raglan Squire and Partners, extensively illustrated in colour. Professor



Entrance to the Library of the new Rangoon University. Architects, Raglan Squire and Partners.

Pevsner reviews Tschudi Madsen's important book' on the Origins of Art Nouveau, whose character is summed up in the title Beautiful and, if need be, useful, and Dr. S. Lang will provide a note on Architectural Visitors to Padua, based upon a register kept by the university there, in which practically every English architect and amateur of note signed his name when passing through.

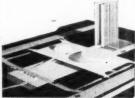
TUC Brasilia Street Lighting

December Architectural Review
Design for public and administrative functions will form the subject of the two most important features in the Review for December. The TUC Memorial Building, designed by David Aberdeen, which is only the second public building of consequence to go up in London since the War, will be described and illustrated for the first time in completed form, and a supporting article in Skill will examine in detail the finishes



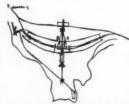
irview drawing of David Aberdeen's TUC Memorial Building.

and mechanical equipment that make this one of the most lavish buildings—outside the commercial field—of recent years. The other major feature is concerned with *Brasilia*, the projected new capital city for Brazil, typically grandiose and Latin-American in conception, but more likely than most such schemes to achieve completion. Sir William Holford,



Oscar Niemeyer's design for the Congress Building at Brassilia.

who was one of the jury who assessed the competition for the new capital's plan, introduces the project and its site, discusses the competition, and adds a few words by way of introduction to the brilliant and unconventional winning scheme, by Lucio Costa, father of Brazil's modern movement, whose report is published in English for the first time.



One of Lucio Costa's sketches for Brasilia.

Another father of his art, John Britton, founder of English topographical studies, will be the subject of an historical article by Peter Ferriday, and the bicentenary of the birth of the great neo-Classical sculptor Antonio Canova is celebrated by one of England's leading neo-Classical scholars, F. J. B. Watson, with a chronicle of English visitors and admirers at the sculptor's studio in Rome. Gordon Cullen will tackle one of the most vexed and debated problems of outdoor detailing, Street Lighting, in terms of distribution and siting, as well as the design of equipment, and interiors to be described include the IBM offices and the Garden Centre, both in new office blocks in Wigmore Street. Foreign reports will cover the Triennale di Milano, and the Berlin Interbau exhibition, and regular features like the Counter Attack Bureau and Robert Melville's provocative art-criticism will continue.



that lavish

. The erned 1 new

ically erican

likely chieve lford,

who

r the es the es the

few

on to

tional

Costa, nove-

ished time.

rasilia.

John

topo-

the le by

oicen-

great tonio

ne of

ssical with

sitors

otor's ullen vexed door

in iting, ment.

ribed d the

office

reign

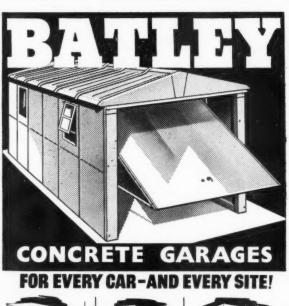
nnale

erbau

tures

ıreau

ative



REDUCED PRICES FROM £49 OR 9/10 WEEKLY

EXTRA WIDTH GARAGE

Easy to erect—no foundation required. Purchased by 275 Local Authorities Fully illustrated brochure on request.

ERNEST BATLEY LTD.

63, Colledge Road: Holbrooks: Coventry

Telephone: 89245/6

mot ANIMAL not VEGETABLE mot MINERAL

A'Re-cap' about one of the most useful recent developments in the field of building materials

but with mineral connections

A mastic sealing strip that is for all practical purposes indestructible—that is the striking advance that Polythene has made possible. Arboseal, made only by Adshead Ratcliffe, with this remarkable new base, has been tested under conditions equal to exposure for twenty years with no deterioration at all.

Arboseal contains no mineral oil, and but for the pigment fillers is entirely synthetic. It adheres like a limpet to any dust-free surface, and never dries out. It is supplied in four shades wound on to reels for all sealing and bedding purposes.



mastic strip with Polythene base

Adshead Ratcliffe & Co. Ltd.

Belper, Perby. Tel.: Pelper 351/2

Scemco Standard 80 watt CIRCULAR FLUORESCENT



in Peach, Daylight, White,
Warm White, Natural

Incorporating the finest control gear available

LIST PRICE

£4.8.6

LESS LAMP

Subject to usual trade discount

SCEMCO

Scemco House, 53, Great Eastern St., London, E.C.2
Tel: Bishopsgate 1319

Where need is greatest—there will be found HOBBS HART Security!

HOBBS HART security equipment is famed throughout the world for strength and

Hobbs HART security equipment is famed throughout the world for strength and ingenuity of design and is installed in the Bank of England, Tower of London, Windsor Castle, Government Departments and leading commercial concerns everywhere. Write today for the latest specialised advice on all security problems.

(Hh)

HOBBS HART

AND COMPANY LIMITED

The Headquarters of Safety and Security

HOBBS HART & CO. LTD, (DEPT. F.), STAFFA RD, LONDON, E10





PAVE THE WAY

For factory and other floors exposed to heavy traffic, impact and corrosion, Accrington Nori, Paving Bricks may be specified with the utmost confidence. Made from the same material as the famous Accrington Engineering Bricks. Samples on request. THE ACCRINGTON BRICK & TILE CO. LTD., ACCRINGTON Telephone: Accrington 2684

ACCRINGTON 'NORI' PAVING BRICKS

planned tiling by experts

in

n, t-

15

st

ty

D

ty

NOVEMBER 13-27

THE NOR TOND SERVICE

24 Edison Road, Crouch End. N.8. Tel: Fitzroy 0171 West End Showrooms, 167/8 Tottenham Court Road, London, W.1. Tel: Euston 4201

Fireplaces . Wall and Floor Tiling

We cordially invite all readers of THE ARCHITECTS' FOURNAL to visit our stand and examine all our publications at the Building Exhibition, Stand 256S, Olympia THE ARCHITECTURAL PRESS

FOR A BETTER SOLUTION CONSULT AIRD, STEWART

- ★ Concrete Waterproofing
- ★ Concrete Hardeners
- * Floor Dressings
- * Waterproofing paint
- * Anti-Freeze Admix
- * Plasticiser
- * Degreasing

Brochures, Test Reports (Stanger) and all information from STEWART LIMITED AIRD, Wembley 5321 (PBX)

Bearing surfaces

BALDWIN BUTT HINGES are craftsman-made, as they have been for over a century. They are smoother in action and last longer, because the solid drilled knuckles give larger bearing surfaces and can never unwrap. The graphite content of cast iron too, provides permanent partial lubrication while helping to resist corrosion.



See name BALDWIN on every hinge. Illustrated list of full series from



ARCHIBALD KENRICK & SONS LTD., WEST BROMWICH, STAFFS.

THE ACME FLOORING & PAVING COMPANY (1904) LTD

ESTABLISHED 1864

River Road Barking Essex

THE COMPANY WILL GLADLY SEND

on request their latest

TECHNICAL BROCHURE

on IMMOVABLE-ACME HARDWOOD FLOORS for Public Buildings, Offices etc., and ACME PAVING for heavy duty factory floors.

Telephone: RIPpleway 2771 (7 lines)

Telegrams: Dowelled-Easphone-London

CLASSIFIED ADVERTISEMENTS

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

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

Public and Official Announcements

30s. per inch; each additional line, 2s. 6d.

ARCHITECTURAL ASSISTANTS
Required by
MINISTRY OF WORKS
For employment in London and Provinces on design and detailing work on construction and maintenance of all types of public buildings.
Salary range £550 (age 21) to £370 p.a., London (slightly less elsewhere).
5-day week. 3 weeks' annual leave initially. Starting pay according to age, qualifications and experience. Good prospects of promotion, with salaries of £1,030 p.a. and above.
Opportunities for permanent posts leading to pensions (non-contributory).
Interviews at Regional Offices, where possible. Applicants should be of Inter. R.I.B.A. standard. State age, training and experience to Othicf Architect, Ministry of Works (A), Abell House, John Islip Street, S.W.1.
7484

LONDON COUNTY COUNCIL
ARCHITECT'S DEPARTMENT
Vacancies for ARCHITECTS and SURVEYING
ASSISTANTS in the Building Regulations
Division as follows:—

(a) For surveys of existing premises and consideration of proposals for alterations and new construction in the Theatres Section;

sideration of proposals for alterations and new construction in the Theatres Section; and
(b) For building control work in connection with applications under the London Building Acts and Bye-laws as regards compliance with the Council's construction and means of escape standards.

Salaries up to £860, with starting rates according to qualifications and experience.

Application form and particulars from the Architect (Ref. AR/EK/47/57), The County Hall, B.E.l. (1610)

SURREY COUNTY COUNCIL tions invited for following appoint-Applications ments:

Applications invited for following appointments:—

1. ASSISTANT ARCHITECT GRADE IV, 2727 15s.—2907 28 6d. p.a. plus £30 London allowance. Must be A.R.I.B.A.

2. ARCHITECTURAL ASSISTANT, GRADE II, 2609 17s. 6d.—2691 17s. 6d. p.a. plus L.A. up to 230 p.a. Must be of good general training, preference given those who have passed Intermediate R.I.B.A.

3. ASSISTANT BUILDING SURVEYOR, GRADE III, 2656—2784 2s. 6d. p.a. plus L.A. 230 p.a. Preference given those who have passed Intermediate R.I.C.S. (Bidg. Sub. Div.). Capable drafting specifications in all trades, prepsentedules of dilaps, detailed estimates for gen. maint, works and surveys of properties for gen. maint, works and surveys of properties. Full details, present salary and three copy testimonials to County Architect, County Hall, Kingston, as soon as possible.

BOROUGH OF WILLESDEN

BOROUGH OF WILLESDEN
BOROUGH OF WILLESDEN
BOROUGH ENGINEER AND SURVEYOR'S
DEPARTMENT
Applications are invited from suitably qualified and experienced persons for the following permanent appointments:—
(a) ASSISTANT ARCHITECTS (2 Posts), Special Grade (£750-£1,030 p.a.).
(b) ASSISTANT ARCHITECTS (4 Posts), Grade A.P.T. II (£725-£345 p.a.).
(c) ASSISTANT ARCHITECT, Grade A.P.T. II (£755-£725 p.a.).
London weighting, maximum £30 p.a., is payable in addition to the above salaries.
The Council is unable to assist with housing accommodation.
Forms of application and conditions of appointment may be obtained from the Borough Engineer and Surveyor, Town Hall, Dyne Road, Kilburn, N.W.6. Applications to be returned to the undersigned not later than 9 a.m. on Monday, 4th November, 1957.
When writing for application forms candidates must state for which appointment they wish to apply.

R. S. FORSTER.

R. S. FORSTER, Town Clerk

7th October, 1957.

Tth October, 1957.

KENT COUNTY COUNCIL

ASSISTANT ARCHITECTS are required for work on the Council's extensive building programme which includes schools, colleges, old people's and children's homes, clinics, fire and police stations and other public buildings. Candidates should be capable of accepting responsibility and displaying initiative, within a group system, in the design and control of building projects, and possess experience and ability in current problems of design and control of costs.

Salaries within Scale 2750 × 240-E1,050 a year. Commencing salary according to qualifications and experience. N.J.C. Conditions of Service. Further details and application forms from County Architect, Springfield, Maidstone. Closing date 7th November, 1957.

CITY AND COUNTY OF CANTERBURY
Applications are invited for the temporary and
permanent appointments of ARCHITECTURAL
ASSISTANTS Grade A.P.T. I. (2665—2725).
Applicants must have passed the R.I.B.A. Intermediate examination.
The successful candidates will be engaged on
school projects, including the design and erection
of a new Technical College. This last project,
which is in the early stages of design, offers
considerable scope for initiative and experience
both in design and construction. Work on the
College is likely to extend over a number of
years.

years.

The commencing salary will be fixed within the Grade according to ability and experience. Opportunities for promotion occur from time to time.

time.

Applications, together with the names of two referees, must reach the City Architect and Planning Officer, Mr. J. L. Berbiers, A.R.I.B.A., A.M.T.P.I., not later than Saturday, 9th November, 1957.

er. 1957. Canvassing will disqualify.

J. BOYLE, Town Clerk.

Municipal Buildings, Canterbury.

Municipal Buildings,
Canterbury.

COUNTY BOROUGH OF SOUTHAMPTON
requires under N.J.C. Conditions of Service:—
(a) ASSISTANT ARCHITECT—
Special Grade £750—£1,050.
(b) ARCHITECTURAL ASSISTANT—
Grade A.P.T. II £725—£345.
(c) ARCHITECTURAL ASSISTANT—
Grade A.P.T. I £725—£345.
(d) QUANTITY SURVEYING ASSISTANT—
Grade A.P.T. I £575—£725.
Duties include site measurement, working up and taking off (under supervision) in connection with housing schemes.
Applicants must possess the appropriate qualifications and experience for special classes of officers under N.J.C. conditions of service. Apply on application forms obtainable from the Borough Enginer and Surveyor, Civic Centre, Southampton.

7819

LONDON COUNTY COUNCIL
ARCHITECT'S DEPARTMENT
Selections for appointment are now being made
from ARCHITECT'S who have passed their Final
Examinations this summer. Starting salaries up
to £712 19s. a year, in scale £537 10s. to £860.
Vacancies also for ARCHITECTS of experience
at starting salaries up to £1,090.
Full programme of Houses, Flats, Schools, and
many other interesting buildings.
Application forms and full particulars from the
Architect (Ref. AR/EK/46/57), The County Hall,
S.E.1. (1609)

S.E.I. (1609)

AIR MINISTRY Works Designs Branch require in London and Provinces ARCHITECTURAL ASSISTANTS experienced in planning/preparation of working drawings and delais for permanent and semi-permanent buildings. Salaries in London up to £1015 per annum for men and £932 for women. Somewhat lower in Provinces. Starting pay dependent on age. qualifications and experience. Long term possibilities with promotion and pensionable prospects. 5-day week, 3 weeks 3 deys leave a year. Liability for overseas service. Normally natural born British subjects. Write stating age, qualifications, employment details including type of work done, to any Employment Exchange quoting Order No. Borough 600. 7187

including type of work done, to any Employment Exchange quoting Order No. Borough 660. 7187

NATIONAL COAL BOARD—N.W. DIVISION DIVISIONAL HEADQUARTERS (1) QUANTITY SURVEYOR, Grade I. Applicants must be members of the R.I.C.S., with considerable experience in a Quantity Surveyor's office and in the preparation of Bills of Quantities for all trades, detailed approximate estimates, specification writing, valuation and measurement for interim certificates, and settlement of final accounts.

Salary according to qualifications and experience in the scale: £1,000×£35-£1,300 p.a.

(2) ARCHITECTURAL ASSISTANT, Grade II. Applicants should have experience in the preparation under supervision of working drawings. A good standard of draughtsmanship is required, and preference will be given to applicants working for the R.I.B.A. Intermediate examination. Salary according to qualifications and experience in the scale £520×£20-£615 p.a.

Applications, giving full details of age, education, qualifications, experience, present post and salary, to the Divisional Chief Staff Officer, 40, Portland Street, Manchester, 1, within 14 days.

CARSHALTON URBAN DISTRICT COUNCIL
ARCHITECTURAL ASSISTANT, Engineer and
Surveyor's Department. Must hold R.I.B.A.
Intermediate Examination Certificate and have
had good training, be experienced in detailing
and a competent draughtsman. Salary within
scale range £575—£725 per annum, plus London
"weighting" (£30 at age £6).
Carshalton has a population of 65,000 and has a
large and varied programme of building works.
Application forms, obtainable from the undersigned, must be returned, with names and
addresses of three referees, not later than 7th
November, 1957.
Canvassing will disqualify.
C. H. DURRANT,
Clerk of the Council.
District Council Offices, The Grove,
Carshalton, Surrey. 7841

District Council Offices, The Carshalton, Surrey.

EDINBURGH COLLEGE OF ART
Applications are invited for the post of
SENIOR ASSISTANT in the School of Architecture. Salary scale £1,300×£50-£1,550 per
annum, placing according to qualifications and
experience.

annum, placing acceptance experience.

Forms of application and conditions can be obtained from the Secretary, Edinburgh College of Art, Lauriston Place, Edinburgh, 3, to whom they should be returned not later than \$th November, 1957.

COUNTY COUNCIL.—PLAN.

they should be returned not later than \$\frac{3}{2}\]
November, 1957.

HAMPSHIRE COUNTY COUNCIL—PLAN.
NING ASSISTANT required in the South-West Area Planning Office, Lyndhurst, A.P.T. Grade I (£575—£725). Commencing salary in accordance with qualifications and experience.

Candidates should preferably have passed the Intermediate examination of the Town Planning Institute or of a related professional body, and have had experience in the Planning Department of a Local Planning Authority. The appointment is pensionable and subject to a satisfactory medical report. In approved cases the County Council assist with removal and other expense.

Applications, stating age, education, qualifications and experience, with a copy of one testimonial and the names of two referees, should reach the Clerk of the County Council, The Castle, Winchester, by 9th November.

Castle, Winchester, by 9th November. 7855
SALOP COUNTY ARCHITECT'S
DEPARTMENT
There are vacancies in the Department for
ASSISTANT ARCHITECTS, and applications are
invited from Associates of the R.I.B.A. who have
experience and are interested in contemporary
architecture, for which the Council's programme
offers considerable scope in a variety of buildings.
Salaries within scale £750×£40—£1,030 per
annum; the commencing point will be determined
by the successful applicant's ability and experience.

by the successful applicants about the concerner.

Housing accommodation will be available if required by the successful applicants. Alternatively, assistance in house purchase will be available, and a disturbance allowance or weekly separation allowance may also be paid to a married man taking up the appointment. Conditions of Service and application forms obtainable from County Architect, Column House, London Road, Shrewsbury. Closing date: 7th November, 1957.

Conditions of Service obtainable from County Architect, Column London Road, Shrewsbury. Closing date: 7th November, 1957.

THE WELSH COLLEGE OF ADVANCED TECHNOLOGY

(In affiliation with the University of Wales)
The Welsh School of Architecture
(With courses in Town and Country Planning)
Applications are invited for the post of SENIOR LECTURER AND STUDIO INSTRUCTOR in the School of Architecture, to be responsible for part of the advanced work in Design and Construction of the Degree and Diploma Courses. Candidates should have been trained at a "recognised" School of Architecture, be Associates of the R.I.B.A., and have had appropriate professional experience.

Special consideration will be given to candidates who hold a qualification, or have had approved experience, in Town and Country Planning.

The salary will be in accordance with the Burnham Technical scale for Senior Lectures, viz., £1,350×£50—£1,550.

R. E. PRESSWOOD,
Clerk to the Governors.

CITY OF WAKEFIELD

CITY ENGINEER'S DEPARTMENT
APPOINTMENT OF ASSISTANT HEATING
ENGINEER

Applications are invited for the above superannable appointment in the City Engineer's Department, at a salary in accordance with Grade A.P.T. III (£845×£30—£1,025), commencing at £845 per annum.

Applicants should have had experience in the design and supervision of the various types of heating installations, and preference will be given to those with some electrical experience. Applications, stating age, training, qualifications and experience, together with the names of two referees, to be sent to J. N. Sedgwick.

A.M.I.C.E., City Engineer, Town Hall, Wakefield. by 4th November, 1957.

CITY OF BIRMINGHAM PUBLIC WORKS

VACANCIES IN THE REDEVELOPMENT

SECTION

(a) PLANNING ASSISTANT, Grade A.P.T. III

(£845—£1,025 per annum).

(b) PLANNING ASSISTANT, Grade A.P.T. II

(a) PLANNING ASSISTANT, Grade A.P.T. III
(£845-£1.025 per annum).
(b) PLANNING ASSISTANT, Grade A.P.T. I
(£595-£745 per annum).
Applicants for post (a) should be Associate
Members of the Town Planning Institute or hold
an alternative approved qualification. Experience in the Planning Department of a local
authority is desirable.
Applicants for post (b) should have passed the
Intermediate Examination of the Town Planning
Institute or hold a Higher National Certificate
or equivalent qualification.
The appointments are permanent, superannuable, and subject to a medical examination.
Applications, endorsed "Planning Assistant",
stating age, qualifications, and naming two
referees, should reach the undersigned by the
9th November, 1957.
Canvassing disqualifies.

HERBERT J. MANZONI,
City Engineer and Surceyor.
Civic Centre, Birmingham, 1.

CITY ARCHITECT'S OFFICE, MANCHESTER Applications are invited for the following appointments on the permanent staff:

ASSISTANT ARCHITECT, Salary Special Grade (£750 to £1,030 per annum),

ARCHITECTURAL ASSISTANT, Salary A.P.T. Grade I. (£675 to £475 pog annum).

st of Archio per

can be College whom n 8th 7856 PLAN-h-West rade I ordance

ed the anning y, and rtment ntment factory County

county penses. ialifica-e testi-should I, The 7856

ent for ons are no have

porary ildings. ormined experi-

able if Alterna-e avail-weekly to a

House, te: 7th 7857 CED Wales)

anning)
cost of
O INc, to be
work in
eee and
Archind have

candi-ive had Country ith the ecturers, vernors. 7858 NT ATING

e super-ngineer's th Grade cing at

types of will be

will be ience, qualificanames of edgwick.

VORKS MENT P.T. III A.P.T. 1 Associate e or hold Experi-a local

assed the Planning Certificate

super-mination ssistant." ing two by the

Surveyor.

ARCHITECTURAL ASSISTANT. Salary A.P.T. Grade I (£575 to £725 per annum).

ASSISTANT STRUCTURAL ENGINEER. Salary Special Grade (£750 to £1,030 per annum). Must be experienced in the design of Reinforced Concrete Structures.

STRUCTURAL ENGINEERING ASSISTANT. Salary Grade A.P.T. I (£575 to £725).

ASSISTANT ELECTRICAL ENGINEER Salary Special Grade (£750 to £1,030 per annum). ASSISTANT QUANTITY SURVEYOR. Salary Special Grade (£750 to £1,030 per annum). QUANTITY SURVEYOR. Salary A.P.T. Grade I (£575 to £725 per annum). The commencing salaries will be fixed according to qualifications and experience. Housing accommodation for a limited period may be provided to successful candidates for certain of the senior appointments. Forms of application from the City Architest, P.C. Box 488, Town Hall. Returnable by 9th November. 1957.

certain of the senior appointments. Forms of application from the City Architest, P.C. Box 488, Town Hall. Returnable by 9th November, 1957.

ARCHITECTURAL STAFF required by the Liverpool Regional Hospital Board, in the Department of the Regional Architect, T. Noel Mitchell, B.Arch., F.R.I.B.A. (1) ASSISTANT ARCHITECTS. Salary scale £700 to £1,015 p.a. Applicants must be qualified architects.

(2) ARCHITECTURAL ASSISTANTS. Salary scale £252 (at age 21 or over) to £530 p.a. Applicants must hold Inter. R.I.B.A. (3) DRAUGHTSMAN. Salary scale £252 (at age 21 or over) to £535 p.a. Applicants should have had 3 years' experience in architectural drawing.

AGE AND EXPERIENCE.

The appointments will be subject to the National Health Service (Superannuation) Regulations and will be either to established posts and subject to one month's notice, or to posts of limited duration extending to possibly 4 or 5 years, primarily in connection with the construction of a 1,000 bedded mental deficiency hospital and subject to 3 months' notice. Applications, stating post applied for, age, qualifications, details of present post and salary, previous appointments, and names and addresses of three referees (two technical) to me by Monday, 4th November, 1957.

VINCENT COLLINGE.

Secretary to the Board.

19. James Street, Liverpool, 2. 7840

NATIONAL COAL BOARD—NORTH-EASTERN DIVISION

Applications are invited for the following appointments in the Department of the Divisional Chief Architect at Conisborough, near Doncaster, ARCHITECT, Grade II.

(Salary scale: £500×£30 to £1,000 per annum.) Qualifications: A.R.I.B.A.

ARCHITECTURAL ASSISTANT, Grade II.

(Salary scale: £700×£30 to £1,000 per annum.) Qualifications: Preferably Intermediate R.I.C.S. or considerable practical experience. JUNIOR QUANTITY SURVEYING ASSISTANT, Grade I.

(Salary scale: £700×£30 to £1,000 per annum.) Qualifications: Preferably Intermediate R.I.C.S. or considerable practical experience. JUNIOR QUANTITY SURVEYING ASSISTANT, Grade II.

(Salary scale: £700×£30 to £1,00

No. 4. Denaby Main, near Doncaster, by 1st November, 1957.

BEDFORDSHIRE COUNTY COUNCIL ASSISTANT ARCHITECTS

Applications are invited from Architects, who have passed R.I.B.A. Final and have suitable experience, for posts on the staff of the County Architect. Scope in design and supervision is offered on a variety of buildings. Salary will be in the special grade which reaches a maximum of £1,030. Application forms from the County Architect. Shire Hall, Bedford, to be returned by 4th November, 1957.

BOROUGH OF STAFFORD APPOINTMENT OF ARCHITECTURAL ASSISTANT

Applications are invited for the appointment of an Architectural Assistant on the permanent staff, at a salary in accordance with the special scale for qualified assistants, £750—£1,030 per annum. Commencing salary according to experience.

Previous Municipal experience not essential.

annum. Commencing salary according to capacience.

Previous Municipal experience not essential.

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

Applications, suitably endorsed, stating age, experience and qualifications, together with the names of two referees, are to be sent to Mr. T. H. Higson, B.Sc., A.M.I.C.E., Borough Surveyor, Mount Street, Stafford, not later than Wednesday, 30th October, 1957.

Wednesday, 30th October, 1957.

T. BROUGHTON NOWELL.

Town Clerk.

7849

SHEFFIELD REGIONAL HOSPITAL BOARD Applications are invited for the post of ASSISTANT QUANTITY SURVEYOR. Salary £700×£25 (3)×£30 (1)×£35 (6)—£1,015. Applicants should preferably hold the R.I.C.S. qualification. The appointment is subject to the Whitley Council terms and conditions of service, to the National Health Service (Superannualion) Regulations, and to one month's notice on either side. Applications, stating age, qualifications and previous appointments, together with the names of three referees, should reach the Secretary to the Board, Fulwood House, Old Fulwood Road, Sheffield, 10, by 11th November, 1957.

Sheffield, 10, by 11th November, 1957. 7862

METROPOLITAN BOROUGH OF LAMBETH APPOINTMENT OF SENIOR ASSISTANT ARCHITECT

Applications invited for post of SENIOR ASSISTANT ARCHITECT. Membership of the Royal Institute of British Architects and extensive architectural experience essential. Duties concerned with the survey of properties with a view to acquisition and the preparation of working drawings and specifications in connection with the building of blocks of flats and the conversion of existing properties. Salary, within the scale of £1,025 to £1,175 p.a., plus London weighting. No housing accommodation provided. Application form from Town Clerk, Lambeth Town Hall, S.W.2 (quote No. 89D). Closing date: 9th November.

NATIONAL COAL BOARD
Applications are invited for the following positions in the Architects' Branch, Production Department, of the North Staffs. Area of the West Midlands Divisional Coal Board.
(a) ARCHITECT, Grade I (salary £1,000×£35 to £1,300).
Applicants must have had considerable experience, preferably in the industrial field, and be capable of taking full control of large scale contracts.
(b) ARCHITECT, Grade II (salary £700×£30 to £1,000).

(b) ARCHITECT, Grade II (salary £700×£30 to £1,000).

Applicants must have a wide experience in the preparation of sketch plans, working drawings, and supervision of all types of buildings in the industrial field.

Applicants for the above posts must be Associates of the Royal Institute of British Architects.

Written applications in full detail should reach the Area Staff Manager, National Coal Board, 72, Leek Road, Stoke-on-Trent, within 10 days of the appearance of this advertisement. 7853

of the appearance of this advertisement. 7853

COUNTY COUNCIL OF THE WEST RIDING OF YORKSHIRE
OFFICE OF THE COUNTY ARCHITECT Applications are invited for appointments of ARCHITECTS, QUANTITY SURVEYORS, HEATING ENGINEERS, STRUCTURAL ENGINEER, ELECTRICAL ENGINEER, and SITE SURVEYOR, in various grades, the salary ranges of which are:

A.P.T. V (£1,75-£1,325).
A.P.T. II (£750-£10,300).
A.P.T. II (£750-£10,300

and V.
ELECTRICAL ENGINEER, Grade A.P.T. V.
HEATING ENGINEERS, Grades Special and
A.P.T. V.
STRUCTURAL ENGINEER, Grade A.P.T. V.
SITE SURVEYOR, Grade A.P.T. IV.
A. W. GLOVER, F.R.I.B.A.,
County Architect.
Bishopgarth, Westfield Road, Wakefield, 7848

Bishopgarth, Westfield Road, Wakefield. 7848

CORPORATION OF GREENOCK
Applications are invited for the position of SENIOR ARCHITECTURAL ASSISTANT in the Burgh Surveyor and Master of Works Department of the Corporation. The salary applicable is A. & P. VII (£875 to £950), with placing according to qualifications and experience. The successful applicant will require to contribute to the Corporation's Superannuation Scheme.
Applicants should be qualified Architects, and preference will be given to an Associate of the Royal Institute of British Architects. The immediate task of the person appointed will be the design of new structures, including shops, offices and dwellinghouses in an area of comprehensive development.
Housing accommodation, if required, is available for the successful applicant.
Applications, stating age, qualifications and experience, accompanied by the names and addresses of two referees, should be lodged with the undersigned not later than Wednesday, 6th November, 1957.

JOHN LIDDELL. Town Clerk.

Municipal Buildings, Greenock. 16th October, 1957.

COUNTY BOROUGH OF BARNSLEY
BOROUGH ENGINEER AND SURVEYOR AND
PLANNING OFFICER'S DEPARTMENT
APPOINTMENT OF CHIEF PLANNING
ASSISTANT
Applications are invited for the above appointment on Grade A.P.T. IV (£1,025—£1,175). THE
COMMENCING SALARY WITHIN THIS
GRADE WILL BE FIXED ACCORDING TO
THE EXPERIENCE OF THE SUCCESSFUL
CANDIDATE AND AN ESSENTIAL USER CAR
ALLOWANCE WILL BE PAID.
Applicants should be suitably qualified, and
should have had considerable planning experience,
including development control and re-development
work.

including development control and re-development work.

The appointment will be subject to (a) the Scheme of Conditions of Service for A.P.T.C. Staff; (b) any other general conditions of service in operation within the Corporation from time to time; (c) one month's notice on either side, and (d) to the Local Government Superannuation Acts for which purpose the successful candidate will be required to pass a medical examination.

HOUSING ACCOMMODATION WILL BE PROVIDED IF NECESSARY, AND 50 PER CENT. OF REMOVAL TRANSPORT EXPENSES WILL BE PAID IN APPROVED CASES.

Applications, stating age, present and previous appointments, qualifications, experience, etc., together with the names of two persons for reference, should reach the Borough Engineer, Town Hall, Barnsley, by Wednesday, 13th November, 1957.

Canvassing will disqualify,

A. E. GILFILLAN,

Town Clerk.

Town Hall, Barnsley. October, 1957.

BASILDON DEVELOPMENT CORPORATION DEPARTMENT OF ARCHITECTURE AND PLANNING Applications are invited for the following posts:

Applications are invited for the following posts:—

(a) ASSISTANT ARCHITECT / PLANNER Grade A.P.T. VI (£902—£1,107 per annum).

(b) ASSISTANT ARCHITECT, Grade A.P.T. VI (£902—£1,107 per annum).

(c) ASSISTANT ARCHITECT, Grade A.P.T. VI (£902—£1,107 per annum).

(d) ASSISTANT ARCHITECT, Grade A.P.T. VI (£815—£994 per annum).

(e) ASSISTANT ARCHITECT, Grade A.P.T. VI (£815—£994 per annum).

(e) ASSISTANT ARCHITECT, Grade A.P.T. VI (£815—£994 per annum).

(f) ASSISTANT ARCHITECT, Grade A.P.T. VI (£815—£994 per annum).

(g) ASSISTANT PLANNER, Grade A.P.T. VI (£856—£794 per annum).

Posts (a) to lead a Planning group developing and implementing a Master Plan for a town of 100,000 population.

Posts (b) (d) and (e) for work on Housing, Industrial or Commercial projects, Outstanding opportunity for fair in contemporary design, Preparation of good working drawings required and also contract management for post (b).

Posts (c) and (f) to be engaged on detailed Planning schemes for housing, industrial and commercial development.

Qualifications required: Post (a), A.R.I.B.A. and A.M.T.P.I.; Posts (b), (d) and (e).

A.R.I.B.A.; Post (c), A.R.I.B.A. and T.P.I. Final Examination; Post (f), A.M.T.P.I. only.

All appointments superannuable.

Rented housing available.

Applications on the special form (obtainable from the Chief Architect) to the General Manager, Basildon Development Corporation, Gifford House, Basildon, Essex, endorsed with the relevant appointment by Friday, 22nd November, 1957.

COUNTY BOROUGH OF BOURNEMOUTH BOROUGH ARCHITECT'S DEPARTMENT Applications are invited for the appointment of:—

Applications are invited for the appointment of:

(a) TWO ASSISTANT ARCHITECTS. Salary Grade Special Scale (£750-£1,050 p.a.).

(b) ARCHITECTURAL ASSISTANT. Salary Grade A.P.T. I (£575-£725 p.a.). Successful candidates will be appointed at present salary if within the incremental scale. Candidates for posts (a) must be fully qualified (by examination) members of the R.I.B.A., for post (b) to have passed the Intermediate Examination of R.I.B.A.

Application forms and further particulars from Borough Architect. Town Hall. Bournemouth. Completed applications to reach me by 10 a.m., 2nd November, 1957.

A. LINDSAY CLEGG.

Town Clerk.

7876

LINDSEY COUNTY COUNCIL

(a) ONE ASSISTANT ARCHITECT, Special
Grade (£750-£1,030). Applicants should be
A.R.I.B.A.

(b) ASSISTANT ARCHITECTS, Grade A.P.T.
II (£725-£4845). Applicants should have
passed Intermediate Examination R.I.B.A.
In special circumstances consideration will be
given to starting salary not more than two steps
up the grade.
X.J.C. Conditions of Service. Canvassing will
disqualify. Candidates must disclose in writing
whether to their knowledge they are related to
any member or senior officer of the Council.
Applications, giving age, qualifications, experience, present salary, and the names of at
least two nersons to whom reference can be made,
to be sent not later tham 5th November to the
County Architect, County Offices, Lincoln.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD

SENIOR ASSISTANT ARCHITECT
Applications are invited from Associate Members of the R.I.B.A. for the post of Senior Assistant Architect. The Board are engaged on a number of new building projects, including a new hospital at Welwyn.
Applicants must have had considerable experience in design and construction, preferably in hospitals and associated buildings.
Salary scale: £1,010×£30 (5)×£35 (1)-£1,195, plus £50 London weighting.
ARCHITECTURAL ASSISTANTS also required to give technical assistance to professional officers. Candidates must have Inter. R.I.B.A. Salary scale: £255×£20 (4)×£25 (5)-£730, plus £20-£30 London weighting.
Apply, giving age, qualifications and experience, together with names of two referees, to Secretary, North West Metropolitan Regional Hospital Board, 11a, Portland Place, W.1, by 4th November.

LANARK COUNTY COUNCIL.—Architects, as

November. 7844

LANARK COUNTY COUNCIL.—Architects, as under, wanted for County Architect's Department, Motherwell:—

(a) SENIOR ASSISTANT ARCHITECT. Salary £1,155—£1,207 10s. Must be A.R.I.B.A. In addition to all-round knowledge of architectural practice, should have knowledge of modern School building, and be capable of assuming position of responsibility.

(b) ARCHITECTURAL ASSISTANTS. A. & P. VIII (£930—£1,005). Must be A.R.I.B.A., with not less than 7 years' practical experience.

(c) ARCHITECTURAL ASSISTANTS. A. & P. VI and VII (£925—£950), Must be A.R.I.B.A., with not less than 3 years' practical experience.

(d) ARCHITECTURAL ASSISTANTS. A. & P. VI and VII (£925—£950), Must be A.R.I.B.A., with not less than 3 years' practical experience.

(d) ARCHITECTURAL ASSISTANTS. A. & P. VI and VII (£926—£950), Must be A.R.I.B.A., plus satisfactory architectural training, or

(2) Passed Parts I and II Final R.I.B.A., plus

(1) A.R.I.B.A. plus satisfactory architectural training, or (2) Passed Parts I and II Final R.I.B.A., plus 3 years practical experience, or (3) Intermediate R.I.B.A., plus 5 years' practical experience, or (4) Satisfactory architectural training, plus 9 years practical experience. In addition to large School Building Programme, work in Department embraces every aspect of building with exception of Housing; appointments, therefore, provide excellent opportunity for extending experience on an interesting and varied programme. Medical examination. Superannuation. No canvassing.

Applications, stating age, qualifications and ex-

canvassing.

Applications, stating age, qualifications and experience, together with names of three referees, should be lodged with County Clerk, P.O. Box 1. Glasgow, by 2nd November. 1957.

7872

CORPORATION OF COVENTRY
ARCHITECTURAL AND PLANNING
DEPARTMENT
ARCHITECTS, Special Grade, £750×£40—£1,030,
required for work on Schools, Housing and
Central Area Redevelopment. Appointments,
within Grade according to experience and present
salary if a proporties.

within Grade according to experience salary, if appropriate.

Housing accommodation in approved cases. Interest free loan for removal expenses. Details and application forms from City Architect, Bull Yard, Coventry, returnable within 10 days of 7851

MIDDLESEX COUNTY COUNCIL
SENIOR PLANNING ASSISTANTS. A.P.T. III,
salary £317, rising at 1.4.58 to £875 to ultimate max.
of £1,055 p.a. (including London weighting of £30;
if under 26 yrs., £10 less). Should have quals. in
Town Planning or other appropriate subjects—
Surveying and Architecture. 5-day week. Established, pensionable, subject to medical assessment. Prescribed conditions. Application forms
from County Planning Officer, 10, Great George
Street, S.W.1, returnable by 11th November.
(Quote W 278.) Canvassing disqualifies. 7843

WILTSHIRE COUNTY COUNCIL invite applications for the following appointments on the staff of the County Architect.

(a) ARCHITECTURAL ASSISTANT. Salary £755 to £725.

Candidates should have had at least 3 years' experience after completing articles, and preferably should have passed the Inter. R.I.B.A.

(b) FOUR JUNIOR ARCHITECTURAL ASSISTANTS. Salary £540 to £620.

Applicants should preferably have served a period of articles and should possess the appropriate G.C.E. certificate.

Applications, stating age, experience and qualifications, to the Clerk of the Council, County Hall, Trowbridge, by the 11th November, 1957, 7886

WILLENHALL URBAN DISTRICT COUNCIL
ARCHITECT'S DEPARTMENT
Applications are invited for the appointment of ARCHITECTURAL ASSITANT, at a commencing salary within Grade A.P.T. I (£575-£725 per annum). The post offers an excellent opportunity to take part in an interesting and varied programme of works, Previous experience in local government is not essential. Appointment terminable by one month's notice on either side and subject to the National Scheme of Conditions of Service (without Examination bar) and Local Government Superannuation Acts.
Applications, stating age and experience, should reach the Clerk of the Council, Town Hall, Willenhall, Staffs., by 6th November, 1957. 7887

PERTH AND KINROSS JOINT COUNTY COUNCIL require an ARCHITECTURAL ASSIS. TANT, for work in New Schools. The appointment will be within Grades A. & P. V/V(a)/VI (£730-£890). Applicants should hold the A.R.I.B.A. qualification or equivalent. Consideration will be given to housing requirements. Particulars of appointment and forms of application from the County Clerk, P.O. Box 15, County Offices, York Place, Perth. Applications to be lodged by 9th November, 1957.

HAMPSHIRE COUNTY COUNCIL.—TECHNICAL ASSISTANT required in the North East Area Planning Office at Basingstoke, A.P.T. Grade II (£725—£485). Candidates should have passed the Intermediate Examination of the R.I.B.A. or of the T.P.I., and have had architectural experience in the Planning Department of a Local Authority. The appointment is pensionable and subject to a satisfactory medical report. In approved cases the County Council assist with removal and other expenses.

Applications, stating age, education, qualifications and experience, together with a copy of one testimonal and the names of two referees, should reach the Clerk of the County Council, The Castle, Winchester, by 16th November. 7884

Architectural Appointments Vacant

4 lines or under, 9s. 6d.; each additional line, 2s. 6d. Box Number, including forwarding replies, 2s. extra.

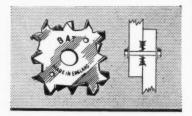
ONDON office with widely varied practice urgently requires all grades of ASSIS-TANTS, preferably with London experience. Five-day week. Lewis Solomon, Son & Joseph, 21, Bloomsbury Way, London, W.C.1

A SSISTANT ARCHITECT. Co-operative Wholesale Society, Ltd., invite applications for the
position of Assistant Architect. Must be capable
of preparing working drawings from preliminary
details. The post is superannuable, subject to
medical examination. 5-day week in operation.
Applications, giving details of age, experience
and salary required. to—W. J. Reed, F.R.I.B.A.,
Chief Architect, C.W.S. Ltd., 99, Leman Street,
London, E.1. 6550

A SSISTANT of Intermediate standard, with office experience, good draughtsman, required for work on Flats and Houses. Please state experience, age and salary required to: R. Jelinek-Karl. F.R.I.B.A., 22, Chancery Lane, W.C.2. Hol. 5695.

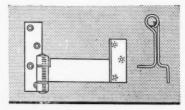
Timber Connectors

Modern structural timber design calls for the use of BAT Timber Connectors. Joints are doubled in strength. Timber sections are reduced. Rigidity is increased and weight saved by simplified designing.



'Easyclean' Hinges

Special feature is the Arm Design which allows for interchangeability with the STORMPROOF Butt Hinge fitting. Other types include the E.J.M.A. Hinge to BS644 and a light type. PRICES AND SAMPLES ON APPLICATION



Sole Manufacturers:





NTY SSIS-point-a)/VI

the Con-nents. appli-x 15,

x 15, ations 7885

ECH-East .P.T. have the archi-tment

nt is edical ouncil

py of erees, uncil, 7884

ant 2s. 6d. extra.

actice ISSIS-tience. oseph, olborn 6531

Whole-

Whole-or the pable inary ect to ration. rience i.B.A., 6350

l. re-Please d to. Lane, 7866

VARIED experience all branches of Building Surveying and Architecture for young ASSISTANTS (B.I.C.S. Inter. and Final standard—2 and 3 years' practical experience respectively, with City Chartered Surveyors and Architects.—Box 7653.

WELL-KNOWN London Architects require ASSISTANTS between Intermediate and Final standard. Interesting projects. Five-day week.—Write, Box 861, c/o 7, Coptic Street, W.C.1.

LONDON Office requires ASSISTANTS of Intermediate standard. Wide variety of interesting work. Five-day week. Study concessions for evening students according to circumstances. Good salaries.—Box 7587.

BUCKINGHAMSHIRE firm of Architects, within 30 miles of London, with a varied practice, require TWO ARCHITECTURAL ASSISTANTS, approaching final R.I.B.A. and experience.—Please write, giving full particulars, to Box 7768.

JOHN & SYLVIA REID require young ARCHITECTURAL ASSISTANT immediately for interesting modern work. Final or Final standard, previous office experience not essential. Salary by arrangement. Write 88, Talbot Road, Highgate, N.6, or telephone Monntview 7131

CO-OPERATIVE WHOLESALE SOCIETY, LTD.

ARCHITECT'S DEPARTMENT,
BIRMINGHAM

PPLICATIONS are invited for the following appointments in the above Branch Office undertaking interesting and varied commercial and industrial projects:

(a) ASSISTANT QUANTITY SURVEYOR, with good experience in the preparation of Bills of Quantities, measuring and adjusting variations and estimating under supervision (salary range 455) to 4290 per annum).

(b) ASSISTANT ARCHITECT, capable of preparing working drawings from preliminary details (salary range 455) to 4290 per annum).

There is a 5-day week in operation, and the appointments offer prospects of upgrading.
Applications, stating age, experience, qualifications and salary required to G. S. Hay, A.R.I.B.A., Chief Architect, Co-operative Wholesale Society, Ltd., 1, Balloon Street, Manchester.

7073

LURGENTLY required for work on overseas.

URGENTLY required for work on overseas projects ASSISTANT ARCHITECTS and ASSISTANTS. Inter-Final standard. Salary according to experience. Offices: London and S.E., green belt area.—Box 7811.

CITY Architect's office require ASSISTANT, of about Inter, R.I.B.A. standard. Must be quick and reliable draughtsman and accustomed to good class work. Interesting varied work and secure future.—Apply, stating experience, age, and salary, Box 7778.

ence, age, and salary, Box 7778.

A RCHITECTURAL DRAUGHTSMAN required at London Co-operative Society's Works Department, Whitta Road, Manor Park, London, E.12. General Architectural Drawing experience necessary. Preference will be given to applicants with experience of preparation of drawings for Industrial and Commercial Buildings. Salary scale from £555 to £663 per annum, according to age and experience. The successful applicant will be required to undergo medical examination, and after transfer to staff, to participate in the Society's Contributory Pension Scheme.—Applications, stating age, details of career and technical qualifications, should be addressed to Staff Office. London Cooperative Society, Ltd., 54, Maryland Street, Stratford, London, E.15. Endorse application. "Architectural Draughtsman."

A RCHITECT'S ASSISTANT (Senior) required, with good general experience for London office. Box 7854.

SEELY AND PAGET have vacancy in their City office. Intermediate standard with 2/3 years' office experience. Ability to work with minimum of supervision essential. Salary by agreement. Telephone MET 8511.

A SSISTANT ARCHITECTS required by British Transport Hotels and Catering Services, located Loudon, R.I.R.A. qualifications or equivalent degree preferable. Apply in writing giving full personal details to Officer for Personnel, Hotels and Catering Services, St. Pancras Chambers, London, N.W.1.

MANCHESTER: ASSISTANT required, congenial office, varied contemporary work. Please write Box 7867, giving full particulars and salary required.

EDINBURGH: ASSISTANT, Intermediate standard or qualified, wanted for recently established practice. Please write, giving full details and salary required to Law and Dunbar-Nasmith. 54. Frederick Street. Edinburgh. 2. 7870

Nasmith, 54. Frederick Street. Edinburgh, 2. 7870

INTER. ASSISTANT required by Harrow
office. Practical exp. wkg. drgs.; specification; surveys, etc. Good draughtsman.—Please
write, with full part., includ. sal. reqd., to Field
& Shaw, 40, Station Road, N. Harrow, Midx.
7728.

& Shaw, 40, Station Road, N. Harrow, Middx. 7788

SENIOR. INTERMEDIATE and JUNIOR ASSISTANTS required for extensive development programme. Salaries from £350-£1,000 p.a., according to experience. 5-day week, lunch facilities.—Annly in writing to Alan A. Briggs, F.R.I.B.A.. 10. Fleet Street, E.C.4. 7787

ASSISTANT ARCHITECT required by a large Brewery Company with offices in Newcastle-upon-Tyne.
Applicants should be Associate Members of the R.I.B.A., and it would be an advantage if they had experience in erection and alteration of licensed premises.
The appointment is temporary, but would be for a duration of at least two years, and the salary would be £1,000 p.a.
Particulars of training, experience, past and present appointments, qualifications, age, together with copies of testimonials, should be forwarded to Rox 7831.

to Box 7831.

URGENTLY required ARCHITECTURAL
ASSISTANT take charge industrial work
new Midland office. Wolverhampton area.
State
experience and salary required. Box 7879,



New German Architecture

by Gerd Hatje, Hubert Hoffmann and Karl Kaspar. With an Introduction by Hubert Hoffmann

The first illustrated survey of post-1945 German Architecture. The modern movement in Germany, under the leadership of Gropius, van der Rohe and Breuer, was forcibly halted in 1933 : not until rebuilding began arou: six years ago were architects in Western Germany again free to develop a contemporary German architecture. Many of Germany's new buildings are outstanding. This book illustrates and describes 134 carefully chosen examples, Hubert Hoffmann, a former Bauhaus student, shows in his Introduction that although these present-day buildings are inevitably influenced by ideas developed elsewhere during Germany's intellectual isolation, the best of them have evolved directly from the German architecture of the modern movement in the 1920s. The building types illustrated include: houses, flats, hospitals, hotels, hostels, schools, churches, theatres and concert halls, sports buildings, department stores, offices, factories and transport buildings. Size 101 × 72 ins., 256 pages with over 540 illustrations in half-tone and line. Price 56s. net, postage 1s. 9d.

The Architectural Press, 9-13 Queen Anne's Gate, London, S.W.I



A RCHITECTURAL ASSISTANT required in busy London Office with varied practice. Good salary and prospects for suitable applicant. Five-day week. Write, giving particulars of age, qualifications, experience, etc., to Box 862, c/o 7, Coptic Street, W.C.1.

A RCHITECTURAL ASSISTANTS required, Intermediate and Final standards, for Industrial and other varied work. Salary between 2500 and £900 per annum, according to experience.—Eric G. V. Hives, L.R.I.B.A., 46, Queen's Road, Reading. Telephone 55484.

A BCHITECTURAL ASSISTANT required, to be employed on industrial work. Salary £500 to £600 per annum, according to experience. —W. Leslie Jones, 59, High Street, Great Missen-den, Bucks. 7830

MPERIAL CHEMICAL INDUSTRIES, LTD., requires a REPRESENTATIVE, to advise clients on colour treatment of factories and other large buildings. Applicants must have had Art and/or Architectural training and possess outstandingly good colour sense, with ability to convey ideas clearly and enthusiastically to others. Good presence and speech are essential. Age 25-55. Salary according to age and experience. Pensionable post.—Apply, giving full particulars of experience, to the Staff Officer. Imperial Chemical Industries, Ltd., Paints Division, Wenham Road, Slough, Bucks.

COUNTRY Practice requires JUNIOR ASSIS-TANT of about Intermediate Standard.

Reply with details and salary required to Box 7880.

Architectural Appointments Wanted 4 lines or under, 9s. 6d.; each individual line, 2s. 6d. Box Number, including forwarding replies, 2s. extra.

RCHITECT'S ASSISTANT, school trained, seeks job London area with some responsity. Box 7821. bility.

DIP.ARCH.,A.R.I.B.A., interest contemporary general building, age 28, seeks post London. Box 7875.

A RCHITECT capable of taking care of pro-jects from start to finish, requires employ-ment in the London area. Own car. Four years' post graduate experience. A.A.Dip., A.R.I.B.A. Salary required £950 p.a. Reply to Box 7838.

B.I.B.A., aged 40, requires a permanent position in the southern half of England conscientiousness and industry will be eciated. Box 7837.

A.R.I.B.A., A.M.T.P.I., school trained, with 7 years' comprehensive experience, offers temporary or part-time assistance to Architects in London or Essex. Box 7882.

TWO Architectural Assistants, used to hand-ling large-scale industrial and tropical projects from sketch design to completion, avail-able as existing team to work on large-scale project with minimum supervision. Salary required 2936 per aanum.—P. Ward, 5, Woodside, London, S.W.19.

A R.I.B.A., Dip.Arch. (41), resident Tyneside, all-round experience, seeks appointment in private practice or company. Box 7839.

Other Appointments Vacant
4 lines or under, 9s. 6d.; each individual line, 2s. 6d.
Box Number, including forwarding replies, 2s. extra.

URVEYOR'S ASSISTANT (BUILDING) required in small Kensington office with varied practice—Write, stating age, experience, and salary, to Box 7813.

HOP FITTINGS. Applications requested for position of SHOP FITTINGS SUPERVISOR. conversant all aspects of Shop Fitting Work including Details, Costing, and with outstanding ability in Contemporary Design, Lay-out and Presentation. Box 7692.

BUCKINGHAMSHIRE firm of Architects, with Quantity Surveying branch, require JUNIOR ASSISTANT, for taking off and working up. Salary according to age and experience.—Write Box 7769.

A LL-ROUND QUANTITY SURVEYOR wanted in Architects' office in North West. Please write stating age, experience and salary required. Box 7865.

Services Offered

4 lines or under, 9s. 6d.; each additiona! line, 2s. 6d. Box Number. including forwarding replies, 2s. extra.

DON" ARCHITECTURAL MODEL MAKERS. We offer the highest grade work with speed and reliability.—Please 'phone Erith 3843 or Hastings 1366.

SITE Surveys and Surveys of Buildings pre-pared at short notice anywhere in Britain. MUSeum 8753. 3103

A RCHITECTURAL, Reinforced Concrete and Steel design and detailing work required. Over 30 Assistants available. MUS. 8753. 5145

BILLS OF QUANTITIES, Specifications, Schedules, etc., typed and duplicated. Quality and accuracy guaranteed. Speedy and economical service. Prompt despatch by registered post.—Josephine Sammons, 53, Brunswick Road, Hove. Tel.: Hove 70051.

A. R.I.B.A., 20 years' experience, offers assist-time later.—Box 7815.

GOOD LETTERING is essential for Commemorative Wall Tablets, Foundation Stones, etc. Designs prepared and estimates given for the finished work in any suitable material. Renowned as a Centre for Lettering since 1934.—Sculptured Memorials, 67, Ebury Street, S.W.I. 9170

THE SITE SURVEY COMPANY.

Blackheath, S.E.3. Tel.: LEE Green 7444-5.

Fully equipped to undertake urgent Engineering and Architectural surveys in any part of the country and abroad. Specialists in h in. scale detailed surveys for extensive city development.

1890

N AMEPLATES AND SIGNS, Bronze, Brass, Plastics. Rubber Stamps. Austin Luce & Co., 19. College Road, Harrow, Middx. Harrow 3839. Estimates and sketches free. 7603

AMEPLATES, PLAQUES, CRESTS, etc., in bronze, brass, and plastic; quotations and ay-outs submitted.—Abbey Craftsmen, Ltd., Abbey Works, 109a, Old Street, London, E.C.1.

REE-LANCE ASSISTANT offers part-time services, 10s. 6d. per hour. 11 years' varied experience. Anywhere London. Box No. 7864.

Miscellaneous

4 lines or under, 9s. 6d.; each additional line, 2s. 6d. Box Number including forwarding replies2s. extra.

J. BINNS, LTD., Specialists in the supply and fixing of all types of Fencing, Gates and Cloakroom Equipment.—Harvest Works, 96/107, St. Paul's Boad, N.1. Canonbury 2061.

A RCHITECTURAL METALWORK of all types supplied and fitted. Gates, doors, balustrades, staircases, steel structures, staff available.—Clayton & Bamber, Ltd., Cartersfield Road, Waltham Abbey, Essex.

DALL MALL, S.W.I. Approximately 1,200 square feet excellent office accommodation two floors available either for four years or nineteen years at 25s. per square foot. Particularly suitable professional use. Phone Hyde Park 8771 or write H. 10, Hay Hill, W.I. 7863

Educational Announcements

4 lines or under, 9s. 6d.; each additiona! line, 2s. 6d. Box Number, including forwarding replies, 2s. extra.

R. I.B.A. and T.P.I. EXAMS.—Stuart Stanley
G. A. Crockett, M.A./B.A., F./F.B.I.B.A.,
M./A.M.T.P.I. (Prof. Sir Patrick Abercrombie in
assn.), prepare Students by correspondence,
10, Adelaide Street, Strand, W.C.2. TEM 1603/4.

R. I.B.A. Inter. and Final EXAMS.
F.R.I.B.A., 115, Gower Street, W.C.1. Tel.:
EUS. 3906.

COURSES for all R.I.B.A. EXAMS.
Postal tuition in History, Testimonies, Design, Calculations, Materials, Construction, Structures, Hygiene, Specifications, Professional Practice, etc. Also in general educational subjects.

ELLIS SCHOOL OF ARCHITECTURE

Principal: A. B. Waters, M.B.E., G.M., F.R.I.B.A.

103B OLD BROMPTON RD., LONDON, S.W.7

and at Albany House, Worcester



PARTITIONS
 FIRE RESISTING DOORS
 LIFT SHAFT ENCLOSURES
 Send for data

Telephone: DURASTEEL LTD WAXIOW 1051 OLDFIELD LANS, GREENFORD MIDDLESEX Suppliers to ADMIRALTY, G.P.O., CENTRAL ELECTRICITY AUTHORITY, Etc.

BROAD-ACHESON BLOCKS for unvarying quality ALL PRODUCTION UNDER

LABORATORY CONTROL BROAD & CO. LTD., PADDINGTON, W.2

8 Jund Second Hand STOCK BRICKS
We have regular supplies of these very versatile Bricks
now accumulating on our demolition sites. All Bricks
are cleaned ready for re-use and are graded into two
categories. Grade!: Suitable for face work. Grade 2:
Suitable for footings and Garden walls. Prices:
Approximately half the cost of new Bricks. Kindly

write or telephone your enquiries.

JEFF ELBUR LTD.

129 STEPNEY GREEN, LONDON, E.I.

After business hours hours Radlett 5667

You can depend on

Manufactured only by JOSEPH FREEMAN SONS & CO. LTD.



fluted have you seen the new

faience?

For further details and general information on Faience please

HATHERNWARE

THE TOUGHEST FAIENCE MADE

Hathernware Ltd., Loughborough, Leics. Tel: Hathern 273.

AJ enquiry service

If you require catalogues and further information on building products and services referred to in the advertisements appearing in this issue of the Architects' Journal please mark with a tick the relevant names given in the index to advertisers overleaf. Then detach this page, write in block letters, or type, your name, profession or trade and address in the space overleaf, fold the page so that the post-paid address is on the outside and despatch. We will ensure that your request reaches the advertisers concerned.

MS. Calcugiene, Iso in

URE B.A. S.W.7

RICKS
Bricks
Bricks
to two
irade 2:
Prices:
Kindly

on

LTD.

S IINIUM E PRICES Postage will be paid by Licensee No Postage Stamp necessary if posted in Great Britain or Northern Ireland

BUSINESS REPLY FOLDER Licence No. S.W. 1761

THE ARCHITECTS' JOURNAL
9-13 Queen Anne's Gate
London, S.W.1.

Alphabetical index to advertisers

Aeerington Briek & Tile Co., Ltd. 93 \[\text{93} \ \ \text{968} \ \ \text{98} \] Falk-Stadelmann & Co., Ltd 61 \[\text{9223} \] Macandrews & Forbes, Ltd	PAGE		
Accrington Brick & Tile Co., Ltd. 93 7 0003 Falk-Stadelmann & Co., Ltd 61 223 Macandrews & Forbes, Ltd	* 0 5	-	CODE
	101		0359
Acme Flooring & Paving Co. (1904) Farmer, S. W., & Son, Ltd	31	-	0809
International Control of Control	86	H	0859
Adshead Ratcliffe & Co., Ltd. 91 0009 Findlay, Alex., & Co., Ltd. 23 0233 Maidenhead Brick & Tile Co., Ltd. Aidas Electric, Ltd. 56 0012 Finlock Gutters, Ltd. 79 0234 Mallinson, William & Sons, Ltd.	80		0367
Alida Slewart, Ltd. 93 0804 Freeman, Joseph, & Sons, Ltd. 16, 98 0244 Marley Tile Co., Ltd.	78		0370
Airscrew & Jicwood, Ltd. 46 0014 Frigidaire, Ltd. 53 0766 Mason, Joseph, & Co., Ltd	27		0373
Alexandria Trading Corporation, Mather & Platt, Ltd	18		0374
Ltd. 96 0237 Mellowes & Co., Ltd	88		0714
Allied Ironfounders, Ltd. (Ray-	28		0386
burn) 76 0824 Midland Woodworking Co., Ltd	13	H	0387
Antiference Installations, Ltd 85 0667 Mills Scaffold Co., Ltd	102		0388
Architectural Press, Ltd. 86, 90, 93, 97 0686 Modular Concrete, Ltd	66		0840
Armstong Carlotte Car	00	-	0010
OF THE OF			
Co., Ltd			
Gyproc Products, Ltd	93	П	0670
Norwood Steel Equipment, Ltd	74		0418
Batley, Ernest, Ltd	39		0438
Pilkington Brothers, Ltd	15		0815
Co., Ltd. 85 0744 Hallam, Vic., Ltd. 68 0704 Hangers Paints, Ltd. 81 0273			
Braby, Frederick, & Co., Ltd., 17 0077 Hardtmuth L & C Ltd 54 0660			
Brady, G., & Co., Ltd			
Brandt, William, Ltd. 69 080 Harris & Sheldon, Ltd. 83 0275 Reed Millican & Co., Ltd	73		0464
Briggs, William, & Sons, Ltd 101 0002 Harvey G A & Co (London), Ltd. 58 0276 Riley (IC) Products	25		0469
Brightside Heating & Engineering Co., Ltd	55		0476
Poittigh Aluminium Co. Ltd. 4 7 0084 Hattersley Brothers, Ltd	33	_	0473
Pritish Clay Products Ltd 84 7 0711 Hill, Aldam, E., & Co., Ltd 80 1 0290			
Proof & Co. Ltd. 98 0784 Hills, F., & Sons, Ltd 66 0291			
Broads Manufacturing Co., Ltd 88 0109 Hills (West Bromwill), Ltd 41 0300		_	
Brockhouse Steel Structures, Ltd. 60 0856 Humo Atkins & Co. Ltd. 48 0846	92		0671
Burn Brothers (London), Ltd 68 0177 T 35 1 T	47		0501
Hunting Mnoglas, Ltd	64		0780
Shires & Co., Ltd.	32		065
Siemens Edison Swan, Ltd	57	Printerson.	050
11 0 72 1 - 7 4 3	19		051
C.T.C. Heat (London), Ltd	92		052
Carrier Engineering Co., Ltd. 72 0857 Stedalls Ltd. (Duraflex)	48		064
Caster & Co. Ltd. 65 0123 James W. & Co. Ltd. 91 0319 Steel Bracketing & Lathing, Ltd.	14		067
Celotey Ltd. 34 0127 Jenson & Nicholson Ltd. 49 0321 Steels Engineering Installations,			
Coburn Engineers, Ltd	28	_	075
Compactom, Ltd			
Copperad, Ltd			
Crittall Manufacturing Co., Ltd 45 9465	33		055
Crompton Parkinson, Ltd 11 0168 Taylor, J. (Syston), Ltd	98	1	054
Teleflex Products, Ltd	:		054
Tentest Fibre Board Co., Ltd			054
Thorn & Sons, Ltd			055
Tretol, Ltd			055
De La Rue, Thomas, & Co., Ltd. 62 0177 Kenrick, Archibald, & Sons, Ltd. 93 0042 True Flue, Ltd.		Actor	083
Doulton Sanitary Potteries, Ltd 87 0188 Key Engineering Co., Ltd 20, 21 0326 Tuberlamps, Ltd.	0:	, _	000
Durasteel, Ltd. 98 0196 Kingston Architectural Craftsmen,			
Ltd 24 0330			
· Venesta, Ltd	41	0	081
Venus Pencil Co., Ltd			058
Vene Fener Co., Ltd			058
Econa Modern Products, Ltd 101 0201		-	
Ecto Insulations, Ltd. 101 0204			
Elbur, Jeff, Ltd			-
Ellard Sliding Doors Gears, Ltd 84 0210 Lewis Tileries, G. W., Ltd. 64 0637 Walker Crosweller & Co., Ltd		9	058
Ellis School of Architecture 98 0212 London Electric Firm, Ltd 51 0354 Waring & Gillow, Ltd		0	058
English Joinery Mfrs. Assoc 54 0681 Lumenated Ceilings, Ltd 77 0356 Wednesbury Tube Co., Ltd		45 1	1701

For Appointments (Wanted or Vacant), Competitions Open, Drawings, Tracings, etc., Education, Legal Notices, Miscellaneous Property and Land Sales, see 94, 95, 96, 97, 98.

Write in block letters, or type, your name, profession and address below, and fold so that the post-paid address is on the outside.

NAME		
PROFESSION		
ADDRESS		

CODE 0359

0815

0581 0582

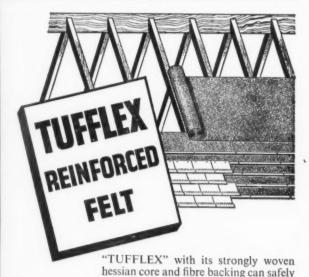
0593 0599

373 W4

W

TYPE SHI





Build with BRIGGSFELT

Samples and Descriptive Literature from
WILLIAM BRIGGS & SONS LIMITED DUNDEE
BRANCHES THROUGHOUT THE COUNTRY

be laid over open rafters without sagging. The extra durability prevents

accidental damage when laying and in addition, provides a continuous water-

proof, insulative and dust-proof barrier.

SPECIFY

"Teco", "Bulldog" & "Trip-L-grip" connectors for all construction in timber, and make practicable cuts in timber and hardware requirements. Fullest data gladly furnished



imber connectors by

MACANDREWS & FORBES LIMITED, 2 CAXTON STREET, LONDON, S.W.I. Telephone: ABBey 4481-3.

CYLINDER JACKETS



EETO

THE UNIVERSAL CHOICE

UNAPPROACH-ABLE in quality and performance. EETO jackets are still the finest in the world.

IS PROMPT
AND
EFFICIENT

EETO INSULATIONS
RIVER ST BOLTON LANCS

1986 (2074)

There's no li - wito Mills Scaffold Structure at the Esso Refinery, Fawley. MILLS Steel Scaffolding For rapid assembly, economy and sheer strength, builders all over the world use Mills Steel Scaffolding. Mills standard steel tubing has a high strength-to-weight ratio, giving firm support with maximum safety (it complies with B.S. 1139-1951). The Mills 90° Clip is simply designed to speed erection. It is fastened with a few turns of a 1" spanner—the only tool required for the whole range of Mills fittings. The Mills 90° Clip gives greater grip as load increases, keeping scaffolding framework rigid and completely safe. MILLS SCAFFOLD CO. LTD. A subsidiary of Guest, Keen & Nettlefolds, Ltd. Head Office: Trussley Works, Hammersmith Grove, London W.6 (Riverside 3011) Depots: BIRMINGHAM · BOURNEMOUTH · BRADFORD · BRIGHTON · BRISTOL CANTERBURY · CARDIFF · COVENTRY · CROYDON · HASTINGS · HULL · ILFORD LIVERPOOL · LONDON · MANCHESTER · MIDDLESBROUGH · NEWCASTLE · PLYMOUTH PORTSMOUTH · PRESTON · READING · SHEFFIELD · SOUTHAMPTON · SWANSEA

