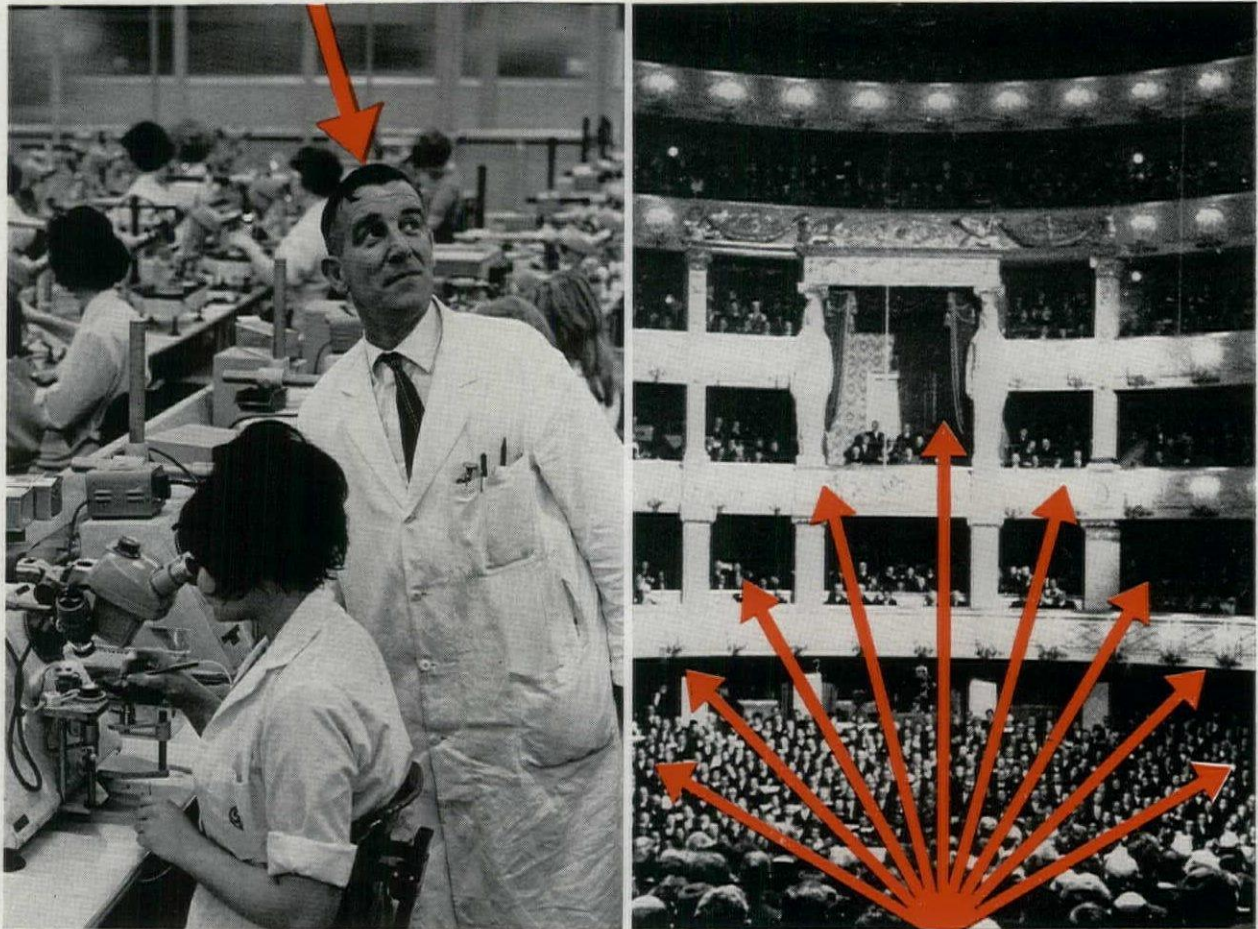


ARCHITECTURAL REVIEW VOLUME CXL NUMBER 837 NOVEMBER 1966 FIVE SHILLINGS





From factory floor to concert hall, new modular **STC** units fit every public address requirement

An entirely new range of **STC** modular units enable the building of public address systems to any size and any specification – cheaply and economically. With these 'off-the-shelf' units the same standards can be achieved as with individually

designed public address systems. Furthermore, the system can be easily expanded or modified if the need arises in the future. Advanced techniques, combined with the use of printed circuits and transistors, make the equipment compact yet robust

and reliable. An attractive range of **STC** matching loudspeaker cabinets, sound columns and ceiling speakers complement this outstanding range of modular units. Please complete and post the coupon below for full information.

Please let me have further details of Public Address.

Standard Telephones and Cables Limited, Private Communications Division, AR6 Footscray, Sidcup, Kent. Telephone: FOOTscray 7788

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POSITION

COMPANY

ADDRESS

private communications **STC**

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Conran Fabrics Limited
5 Hanway Place London W1 Langham 4233
3 Smithy Lane Manchester 3 Blackfriars 4558
Stephenson Way Thetford Norfolk Thetford 2441

name	Hector
number	12
colour	gold
width	50"
content	43% nylon 57% viscose
price	
availability	stock

The other swatches are for sale at special prices of colour

Swinging fabrics

A few examples from the most comprehensive range of modern furnishing fabrics available in this country. A range that includes upholsteries,

curtainings, sheers, semi sheers, stripes, checks, large and small repeats - in a tremendous range of colours. To help you select the fabrics you need we

have produced a comprehensive fully illustrated catalogue. Please ask for this first, then send for actual samples of the fabrics you want to examine.

Conran Fabrics

Write for catalogue and samples to Conran Fabrics Stephenson Way Thetford Norfolk. Better still see them in our showrooms
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Rich, glowing colour
and designs.



Warerite offers you this exciting choice. Warerite puts a selection of colours, designs, woodprints and marble effects at your hands. And you can have your own special designs incorporated in Warerite too. Thus your freedom of design is practically unlimited. Warerite's high standards are fully maintained in its super-hard, melamine surface. And it is made in a wide variety of grades and thicknesses. By any aesthetic, functional or economic test, Warerite is the best surfacing material of its kind.

ASK TO SEE THE WARERITE COMPENDIUM

To: Warerite Sales Department,
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I would like to see your comprehensive
pattern range in the Warerite
Pattern Compendium.

Name

Address

A BXL PRODUCT

AR3

WARERITE



THE BEST OF THE DECORATIVE LAMINATES



Halt! Children crossing Crestaline

Crestaline: a smooth vinyl flooring from Nairn-Williamson. High PVC content makes it extremely flexible and durable. Excellent noise-reduction qualities. High standard of recovery from indentation. Resilient, warm underfoot, doesn't harbour germs or dust. Can be welded for large areas without seams. Cuts time and cost of maintenance. Gauge: 2.0 mm. Sheet size: 72" (183cm.). Crestaline comes

in 28 colours, 24 related to B.S. 2660.

Shropshire County Council chose 6650 sq. ft. of Crestaline for Grove Comprehensive School, Market Drayton, Salop.

Crestaline is one of Nairn-Williamson's many smooth floorings: vinyl or linoleum, sheet or tile, for all contract and domestic installations. For further information and free technical services, get in touch with Nairn-Williamson.

NAIRN-WILLIAMSON LTD
KIRKCALDY, FIFE
SCOTLAND

Telephone: Kirkcaldy 2011



Branches in London, Birmingham, Bristol, Manchester, Glasgow, Newcastle upon Tyne, Dublin, Belfast



Some of Crestaline's 24 B.S. colours

adamsez

make their 'Table Lotus' with an unglazed rim for fixing under bench tops or with a glazed rim to project $\frac{3}{4}$ " above a top. In 2 sizes. 1161: 22" x 17 $\frac{1}{2}$ " x 8 $\frac{3}{4}$ ". 1159: 17 $\frac{1}{2}$ " x 14 $\frac{3}{4}$ " x 8". From Adamsez Ltd. 75 Victoria St. SW1 or Fireclay Works Scotswood-on-Tyne.

If sir can bring himself to
get out of KM26,
I would like to introduce him
to KX27, KX20 and 25ST
(which swivels and tilts) and...oh!
sir please wake up



We never had this difficulty in Southend. Perhaps it was the sea air? Now that we've opened a showroom at 28 Albemarle Street (Mayfair 5961), we are inundated with immaculately dressed London businessmen, who come in to discuss contract furnishing and fall asleep in the first chair they drop into. It's a fine recommendation for the chairs but such hard work for the salesman.

LONDON • PARIS • ROTTERDAM • AMSTERDAM • ANTWERP • DUSSELDORF • STOCKHOLM

KH
KASPARIANS



SECTIONS THROUGH MEMBRANES

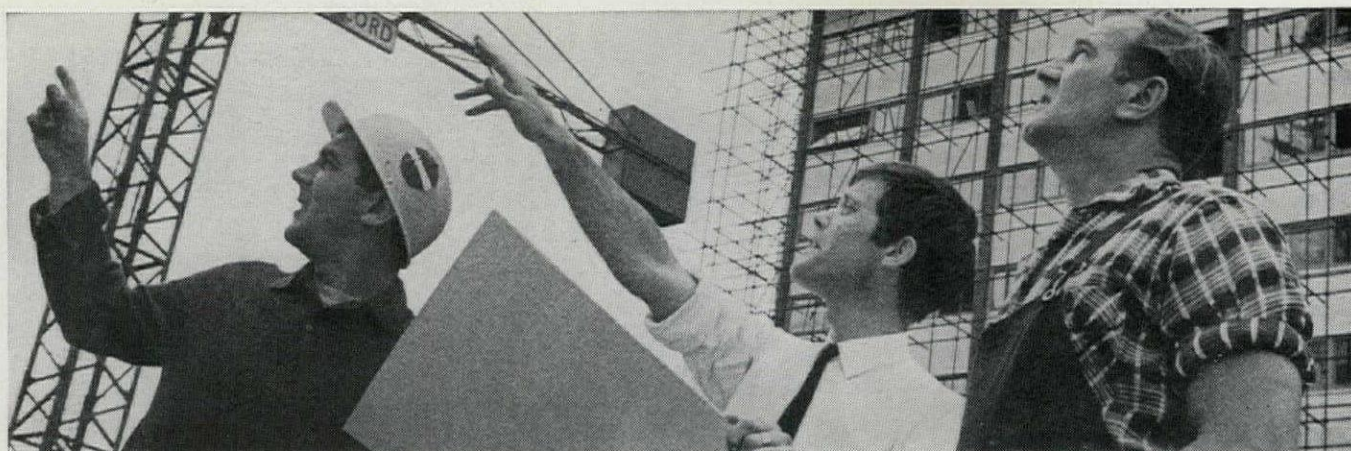
Drwg.No: O2 N.T.S
Drwn: *per* Chkd: *TT*

BRITISH SISALKRAFT LTD, BARKING. ESSEX.

Barrier membranes come in a surprising variety of sectional shapes apart from the plain vertical, horizontal and sloping. Each performs a vital function, e.g. windproofing—protecting—reflecting—lining—flashing—cladding—waterproofing—drainage—insulating—screening—bond-breaking. There's a grade of 'Sisalkraft' to do each of these things... and, in some cases to do two, three, four or more of them. Like Sisalation; a barrier against heat, cold and moisture

vapour. Like Moistop; a barrier against damp, impurities and chemical contamination. And like Copper Armoured 'Sisalkraft'; for flashing, dampproof coursing, waterproofing and electro-static shielding. To find out more about the 'Sisalkraft' range ring DOMinion 6666. British Sisalkraft Limited. Ripple Road, Barking, Essex.





Who's finding the answer... before you even put the problem?

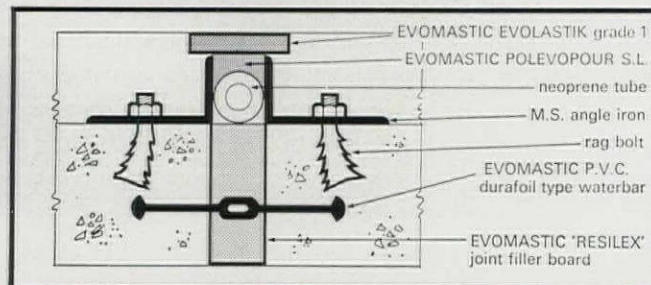
**Most new sealing problems can take a team months to solve.
We don't wait for them, says Chief Chemist Dr. Jackson.
Keeping an Evomastics sized step ahead means much fieldwork
but Keynote is anticipation — underlined twice.**

Ted Hirst (he's now one of our VIP customers for sealing systems) 'phoned us last week. Usually, we 'phone him! What was all the excitement about? He'd been getting his sealant actuals against estimates on recent building jobs and the figures made joyful reading. For years, as a Senior Buyer for a major contractor, he'd been buying sealants from us and other mastics manufacturers, with budget very much in mind. This, in effect, put him in the hot seat as a sealants expert—which he says he's not. A few months ago we told Ted Hirst that we could now solve most of his sealant problems, eliminate his budget headaches in this area, improve his sealant buying and cut his costs—all in one painless operation. He listened politely — (and didn't believe it). But he fixed things by giving us the chance to prove him wrong. So we took over his next couple of projects on a System basis, planned his complete sealant requirements down to the last foot-run. We checked, and double checked, every single structural joint on the job and produced the best possible sealant specification. Some of the larger joints took more than one type of mastic, for economy's sake. We showed him how, by evaluating the project as a whole, we could put up a complete scheme—a Sealing System—

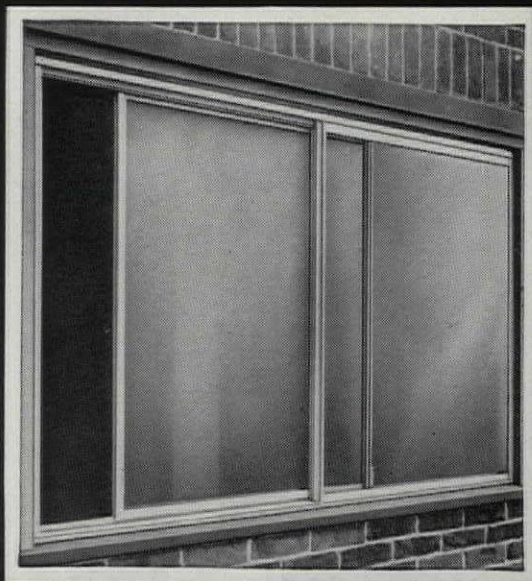
tailored to the job and to the budget. There was no question of embarrassing 'extras' through bad planning.

Ted Hirst began to take real notice after the first project had gone through. He discovered good ideas and dedicated personnel; with a breadth of experience and the intelligence to take a professional brief and come back with a rationalised scheme. By calling them in early he realised that these men could contribute their own know-how at the design stage and chop sealing costs before they developed. By selling him a unified Sealing System instead of individual mastics, Evomastics were able to deliver in step with his critical path planning and give him the extra margins as a result. And we didn't just dump the stuff on site and hope there was someone who knew how to apply it. We sent our demonstration team in on each job to watch our interests—and the client's.

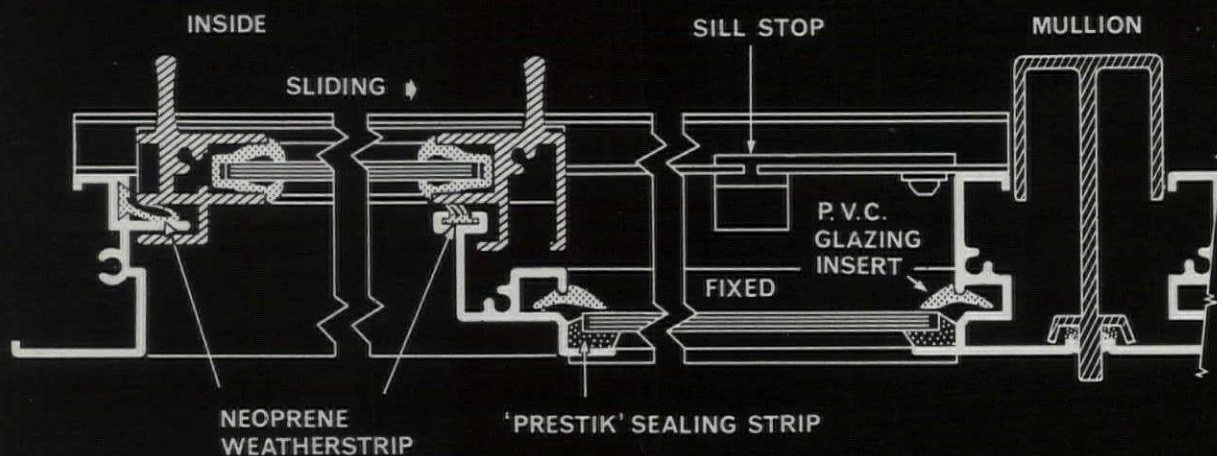
Designing and selling practical Evomastics Sealing Systems for a small or a large project didn't just happen with the wave of a wand. A lot of creative brainpower was brought together: building research chemists, architects, designers, draughtsmen, cost accountants and technical men—we have them all; here at Stafford. The idea is that you should use them as though they were your own.



Evomastics Ltd., Stafford, Tel: Stafford 2241. London Office 450/452 Edgware Rd., W.2. Tel: Ambassador 2425



Crittall '43'- aluminium horizontal sliding window for domestic buildings



The Crittall research and development division has designed this window to meet the need for an economically priced window suitable for domestic low rise dwellings. A range of factory-glazed standard types in widths up to 8' 0", and heights up to 5' 0" including the use of sublights is available. Flap ventilators are available in the fixed panels. Fixed lights, with or without top hung inset ventilators and sublights are available for coupling to form composite windows. Alternatively they can be coupled with 'Suffolk' double hung windows by the use of a special coupling bar.

The Crittall '43' Sliding Window has these special features without sacrifice of quality:

- Economic price.
- Weatherstripped to the stringent Crittall specification.
- Matching fixed lights and coupling detail gives great versatility.
- Factory glazed to minimise site labour.
- 'DELIN' FITTINGS THROUGHOUT.*

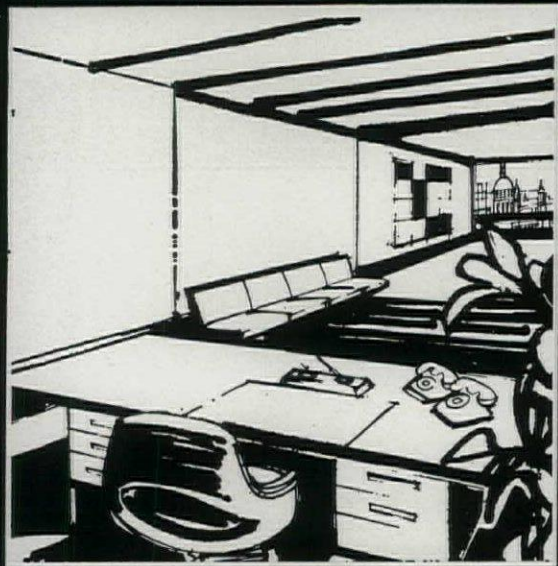
Write for details to:

THE CRITTALL MANUFACTURING CO. LTD., BRAINTREE, ESSEX.

CRITTALL

* Du Pont registered trade mark


CT 225



Pammastic gives you an overall advantage

Pammastic Emulsion is based on a unique Acrylic Ter-polymer medium for increased adhesion, flexibility, opacity and weathering. It can be applied by brush, spray or roller to any wall or ceiling surface without primer or undercoat. Inside and outside, Pammastic dries in an hour to a perfect matt finish. Pammastic has been proved durable under severe atmospheric and climatic conditions, and can be washed or scrubbed—

time and time again. Pammastic is available in a complete range of exciting contemporary colours—including the BS 2660 range plus white. So look out for our new sign. And pick Pammastic, every time.

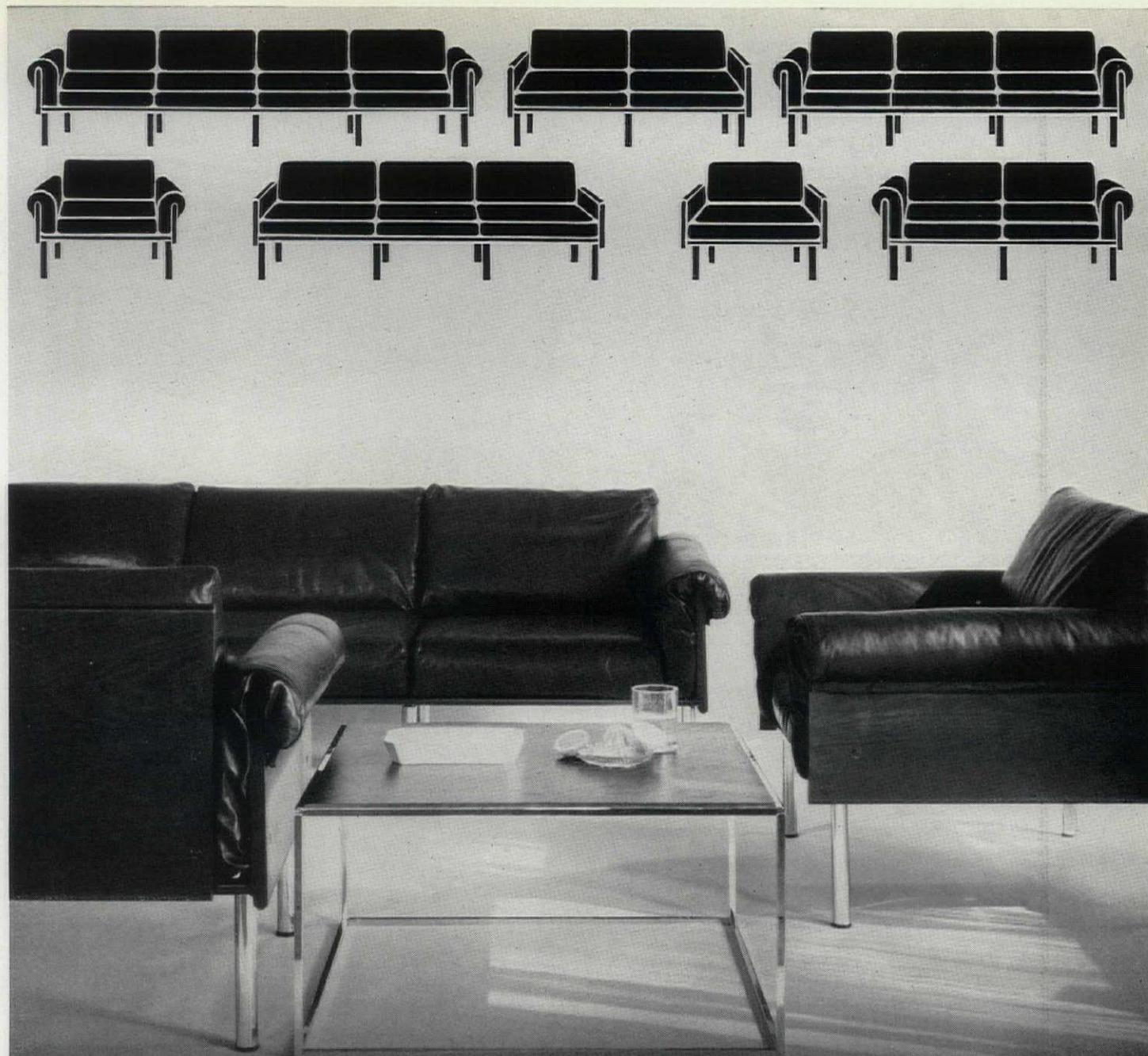
 Pammastic is based on a special grade of DUNLOP POLIMUL. One of the world-famous polyvinyl acetate co-polymer emulsions developed and manufactured by the Dunlop Chemical Products Division.

PAMMASTIC

THE SIGN OF
GOOD PAINT



BLUNDELL-PERMOGLAZE LTD., YORK HOUSE, 37 QUEEN SQUARE, LONDON WC1. MAKERS OF DECORATIVE, INDUSTRIAL, TRANSPORT AND MARINE FINISHES



31 range: 2, 3 or 4 seat sofas, an easy chair and table. Backs and arms in oak, finished natural, red or dark olive green. Legs to match or bright chrome.

Conran Contracts 5 Hanway Place London W1 Langham 4233
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At ICI we believe we have one of the most underworked Complaints Departments in the UK. It's not good luck, it's good labs — ICI is pioneering in every new field of painting development, but testing is so thorough that new paints are marketed only when we are certain that your complaints will be as few as ours. If you are interested in all types of modern surface coatings, you can specify 'Dulux' and other paints from ICI with professional confidence. By the way, you mustn't get the idea that the spider in our illustration has an easy life—his whole day's work is wiped out nightly by the cleaners.

You have a name to live up to...



A.R.I.B.A.

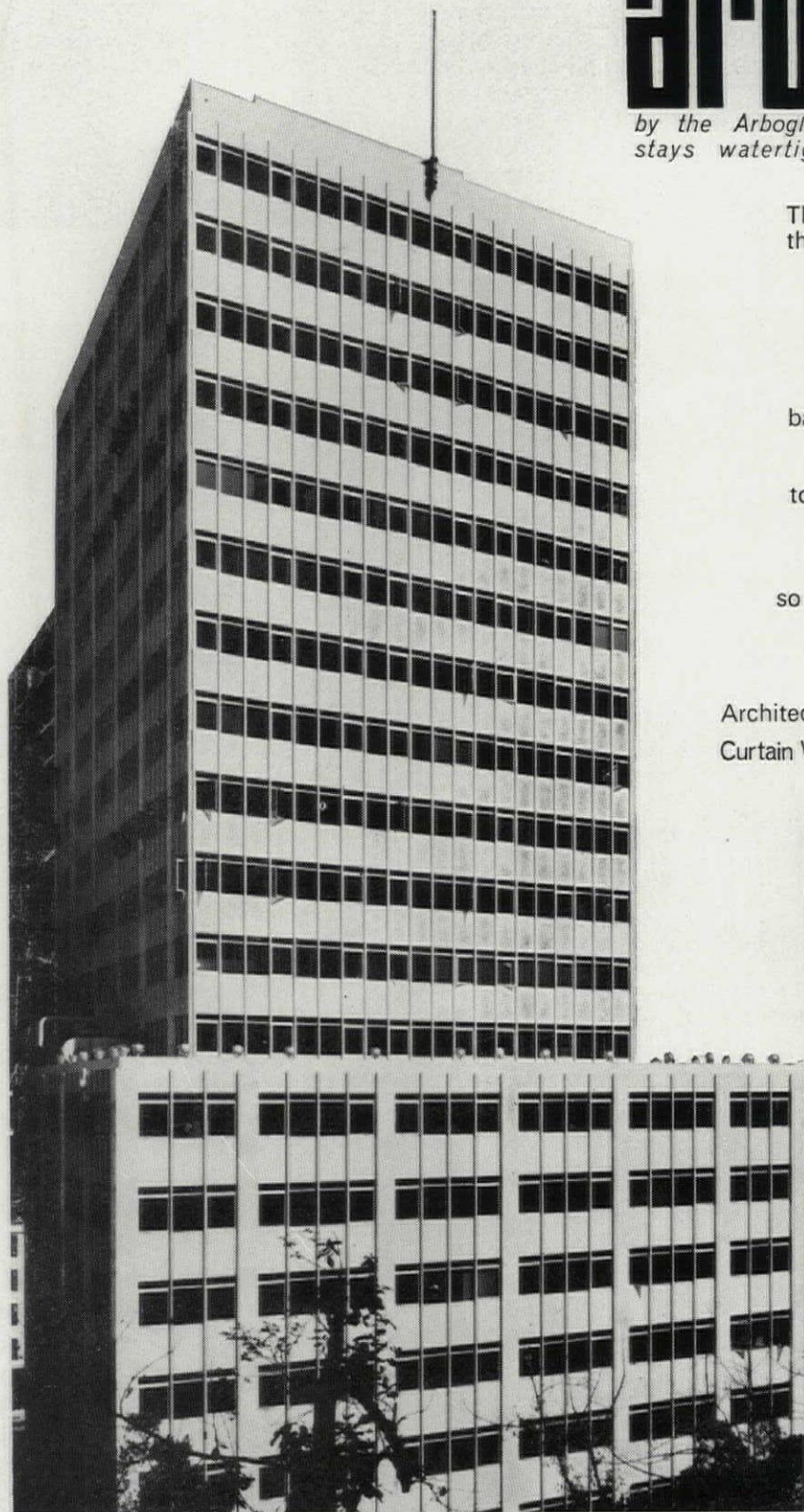
...so do



the Hang Chong Building – Hong Kong

arbosealed

by the Arboglaze system — the glazing system that stays watertight under all exposure conditions.



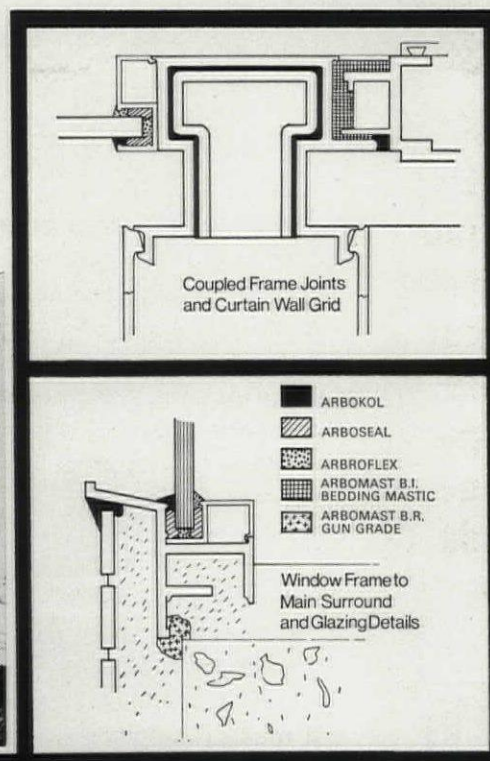
The glazing and frame to surround joints on this unique contract for the French National Bank were sealed by the most modern method known to the trade. Full account

was taken of the Architects requirements that the face of the building should be virtually maintenance free and therefore it was decided to use polysulphide rubber-based sealant as the one having the longest maintenance free life known to the trade.

Design factors were carefully considered to ensure that all joints on the weather face were capable of being sealed correctly with Arbokol Elastomer, and aesthetic considerations were of prime importance so that neat, regular lines both to the glazing and the curtain wall grid were essential.

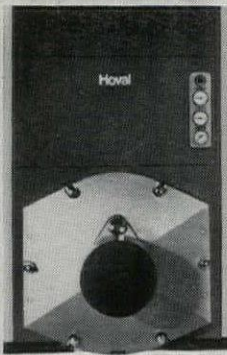
Architects: T. C. YUEN AND CO.

Curtain Wall Framing: HENRY HOPE AND SONS LTD.



For further details of the ARBOGLAZE system, write to the manufacturers.

ADSHEAD RATCLIFFE & CO. LTD. BELPER DERBY Telephone Belper 2891 (4 lines)



Hoval Boilers

Another Hoval boiler on the rooftop!

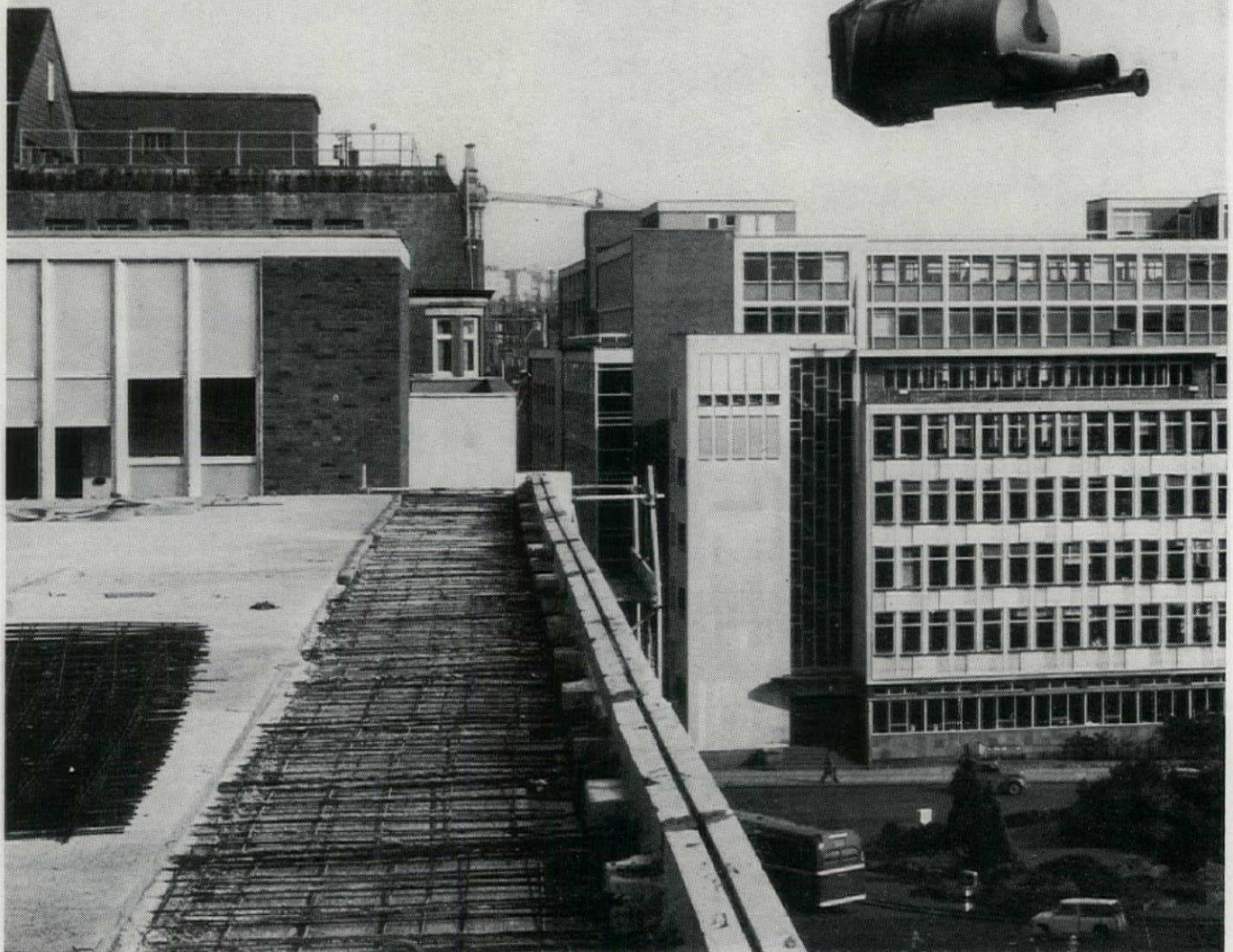
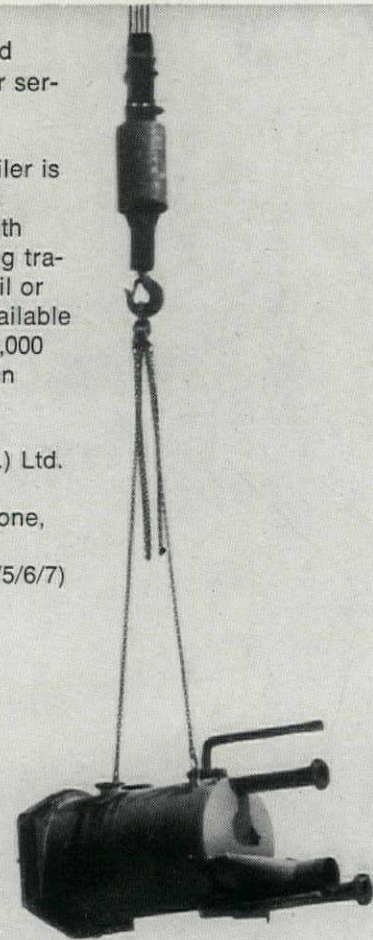
Why are Hoval boilers chosen so frequently for today's rooftop boiler-house installations?

Here are just a few answers to this question: Compact in size — low weight — flue gas exhaust does not depend on induced draught fans — simple to assemble — require less maintenance — increase the boiler-house efficiency — true combination boilers for

central heating and domestic hot water services.

The Hoval TKD boiler is of advanced Swiss design matched with British boilermaking tradition. It can use oil or gas as fuel. It is available in ratings from 400,000 Btu's/hr. to 4 million Btu's/hr.

Hoval Boilers (U. K.) Ltd.
Northway House,
High Road, Whetstone,
London N.20.
(Tel. HILLside 0454/5/6/7)



Barking Brassware make a fitting contribution to kitchens

In the modern kitchen, fittings have to be attractive as well as practical.

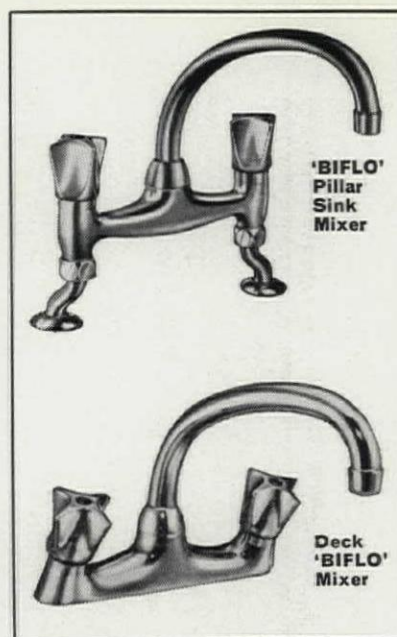
BBC Fittings combine fine design and precision engineering to produce the ideal fittings for the modern kitchen. BBC kitchen fittings are designed to look good and work perfectly.

Perhaps that is why they are the most wanted kitchen fittings on the market today.

Now there is a complete range of kitchen fittings to choose from—a variety of mixers, including the Deck 'Biflo'*, the V 'Biflo' and many more.

Write today for the latest BBC literature and let Barking bring the kitchen fittings of the future to your kitchen now.

*Regd. Trademark



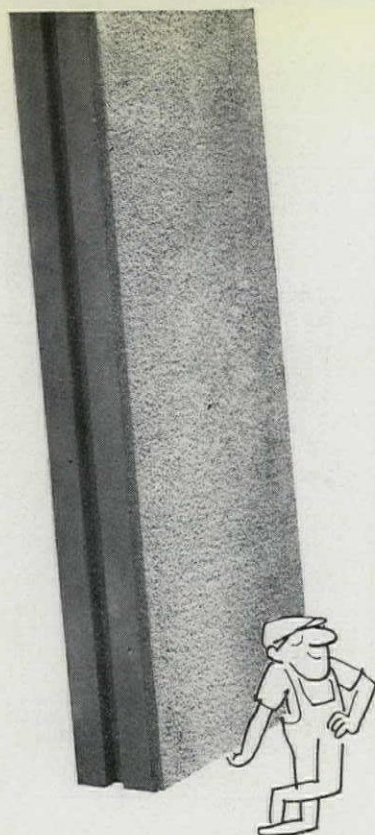
V 'Biflo' Mixer
for single hole fixing. A second hole in the sink can be utilised for the Hot Spray Attachment or a tap for soft water supply.

**BARKING
BRASSWARE**

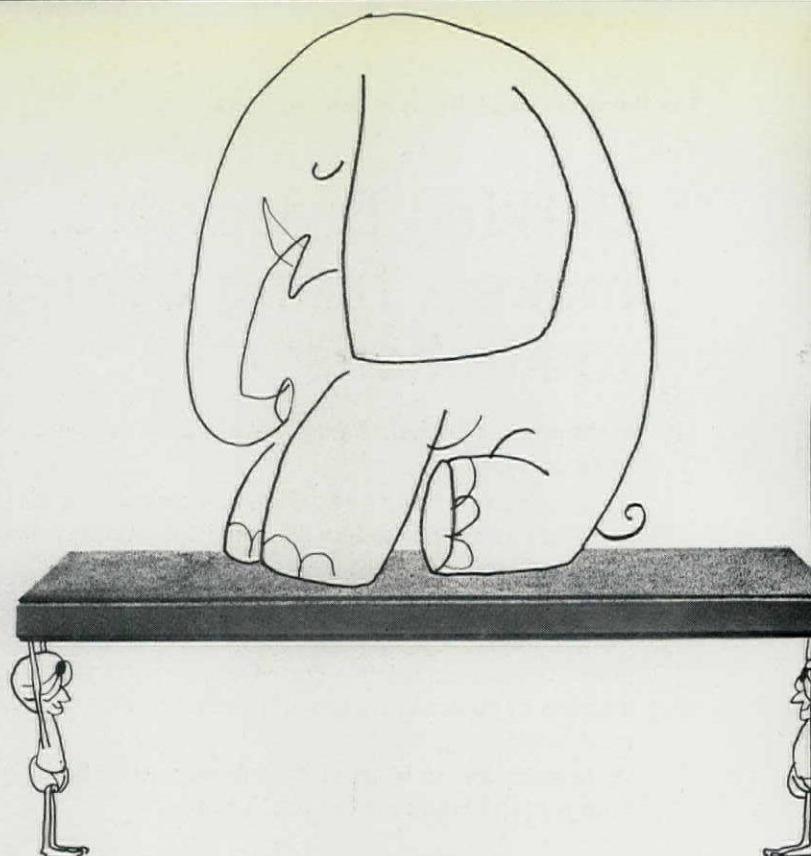


Barking Brassware Co. Limited
5 River Road · Barking · Essex
RIPpleway 3057

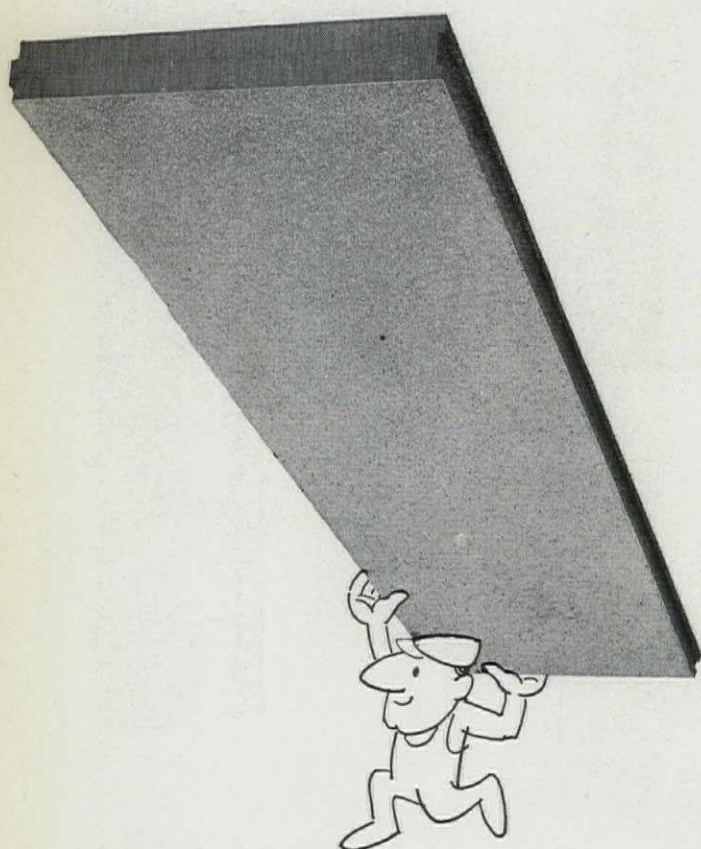
ARB



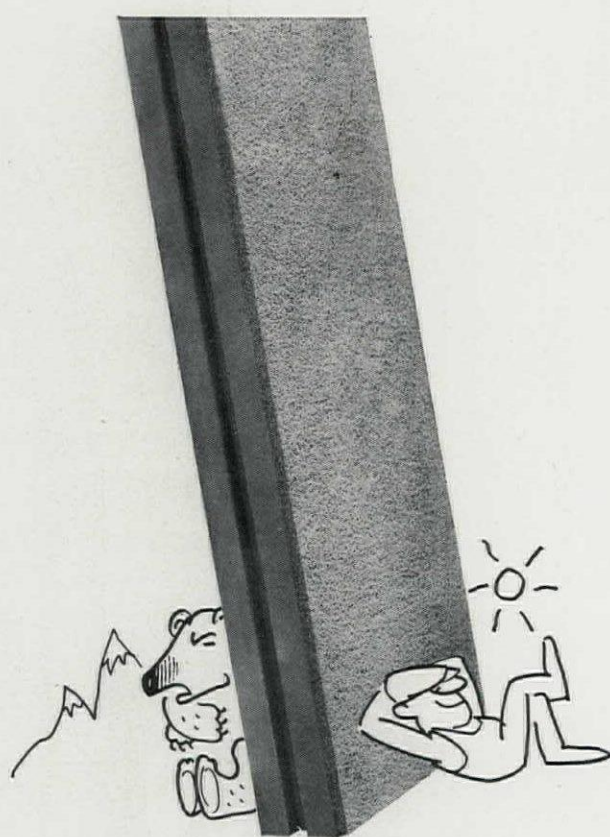
You know that Durox is light ...



strong ...



easy to handle ...



and thermally efficient

But did you know that it comes in 1231 standard building units?

Durox aerated concrete is all of those things above and more . . . with many distinct advantages. Durox comes in floor slabs, roof slabs, vertical and horizontal wall units and partition panels. And in 1231 standard building units. You quite possibly already know about Durox, its many advantages and excellent properties. But did you know about the substantial savings you can get—simply by introducing Durox at the design stage of a system building project? If not, telephone Stanford-le-Hope 3911/7 and ask for the Durox Design Service. It may well be the most profitable call you've ever made!



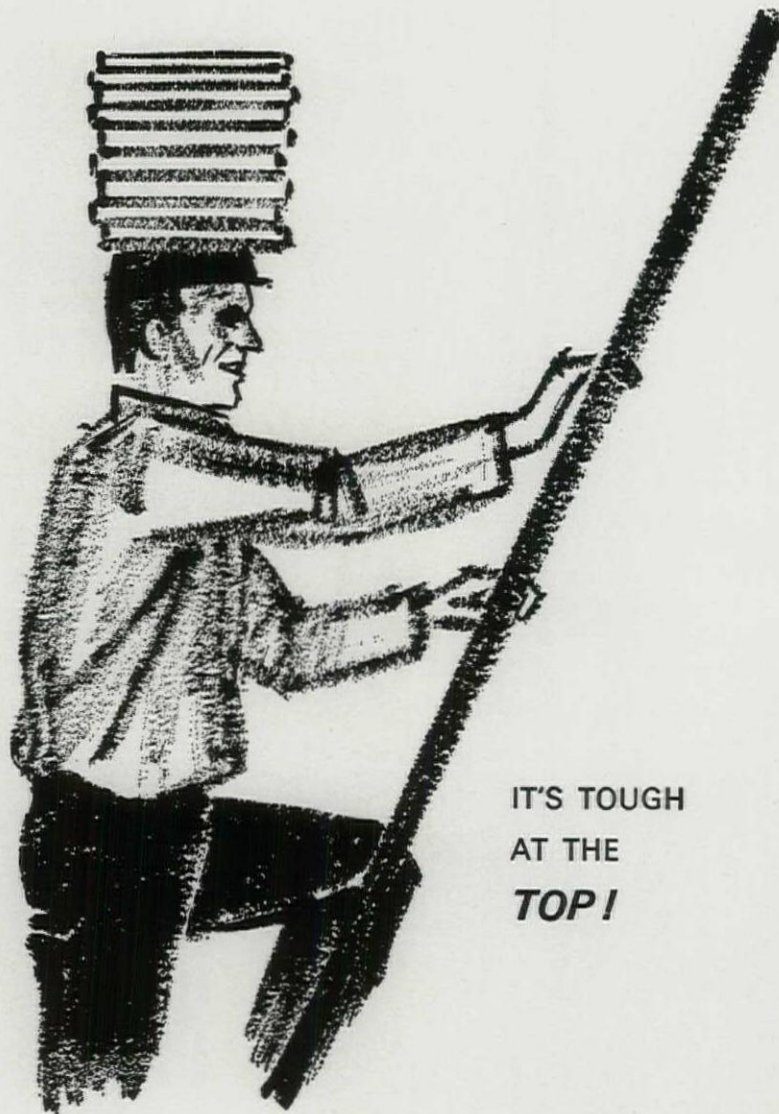
All you have to furnish is the wife

If you want your wife's picture on your desk, you'll have to supply it. But the desk, like everything else, you can safely leave to Hille. Whether you lease or buy, we do the complete job, floor to ceiling, wall to wall, using exciting often unique furniture, fabrics and fittings from the Hille range together with any specially commissioned pieces. Hille Interior Design experts will

hille

plan the project if you wish or we will work to architects' specifications. Either way, we are used to every kind and size of job—we've dealt with all the snags before so we can save you a great deal of time, money and perhaps an ulcer or two. So whatever your furnishing problem get in touch with the Hille Contract Division or the Hille Leasing Service at any of our showrooms

Showrooms: **London** 41 Albemarle Street London W1. Hyde Park 9576-9. **Birmingham** 24 Albert Street Birmingham 4. Midland 7378. **Edinburgh** 25a South West Thistle St. Lane Edinburgh 2. Caledonian 6234. **Manchester** 50 Sackville Street Manchester. Central 6929. **Factory:** 134 St. Albans Road Watford Herts. Watford 42241



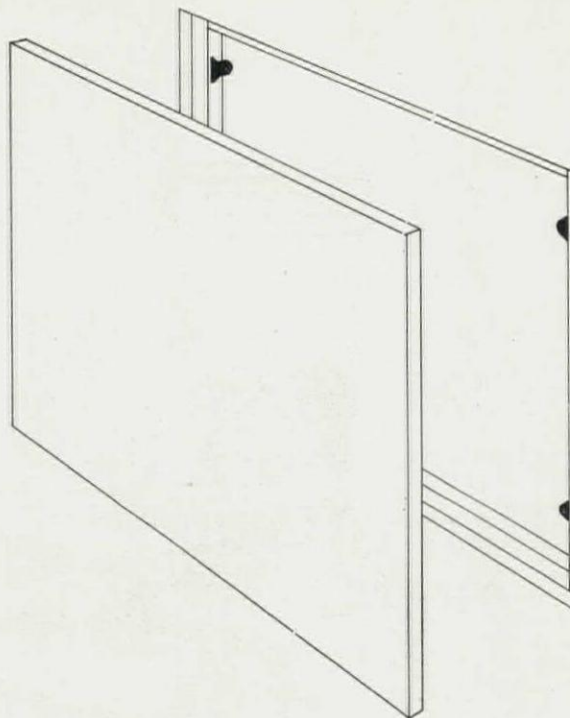
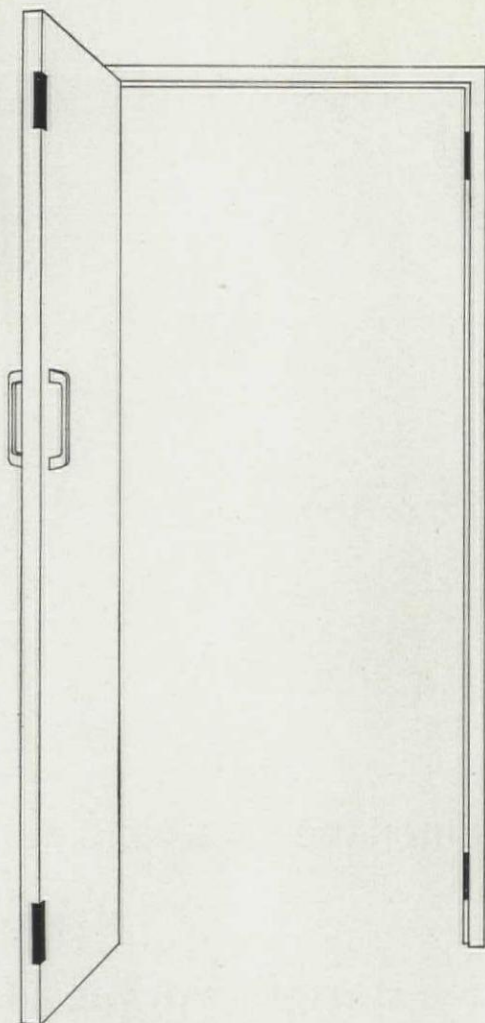
IT'S TOUGH
AT THE
TOP!

Summer heat, winter cold, rain, hail, frost, snow and smog corrosion. Acme clay roofing tiles relish this sort of treatment. Made by Downing's master craftsmen from rich Etruria marls, they not only withstand the worst that Mother Nature can throw at them, they mature and grow richer as time goes by. Time is a friend of the clay roofing tile, weathering its colour into warm tones that seem to reflect the mellow English countryside. Acme tiles have their colour burnt in at high temperature . . . colour is fadeless and permanent. And Acme tiles are extra strong to reduce the risk of site breakage, and to guarantee long, long life with little maintenance. Acme tiles (hand-made or machine-made) are the best there are but by no means the most expensive.

Downing's are makers of Acme clay roofing tiles and ornamental tiles, including profile cladding tiles in various colours: they also make high quality facing and engineering bricks.

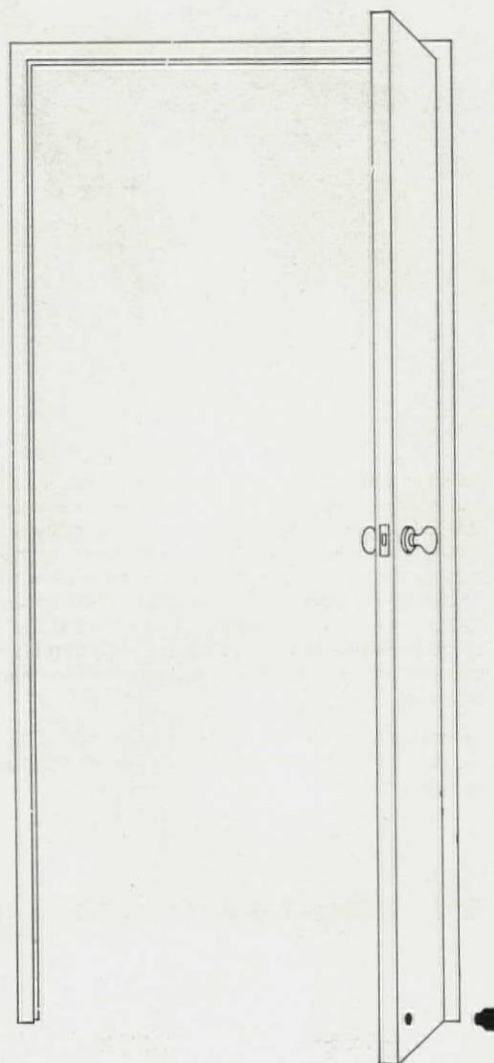


G. H. DOWNING & CO. LTD. Brampton Hill, Newcastle, Staffs.
Telephone: Newcastle, Staffs 65381 (5 lines)



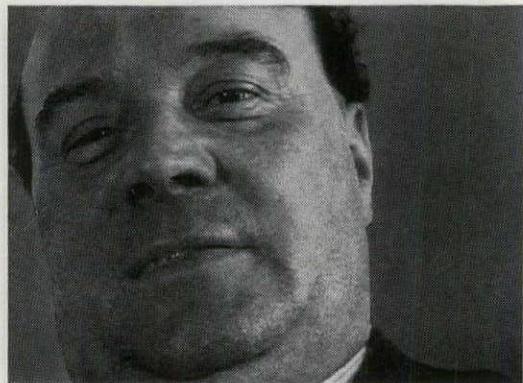
Arelec magnetic catches provide a simple, convenient and reliable method of holding doors and panels in place, either open or closed. They are simple to fix and provide full adjustment to take up unevenness, misalignment and warping. Panels held this way require no visible fixings but are easily and quickly removed for access to services, ducting or walls which they can conceal. Doors held with magnets require a simple push or pull to move them, especially convenient when your hands are full. For full details of this French range of Arelec magnetic catches, write or telephone Magnet Applications Limited, 323 City Road, London EC1, telephone Terminus 6222.

ARELEC
magnets



**We do our
very best to keep
Harry Weldon
out of work.**

Harry Weldon is our chief maintenance man, and we love to see him sitting around.



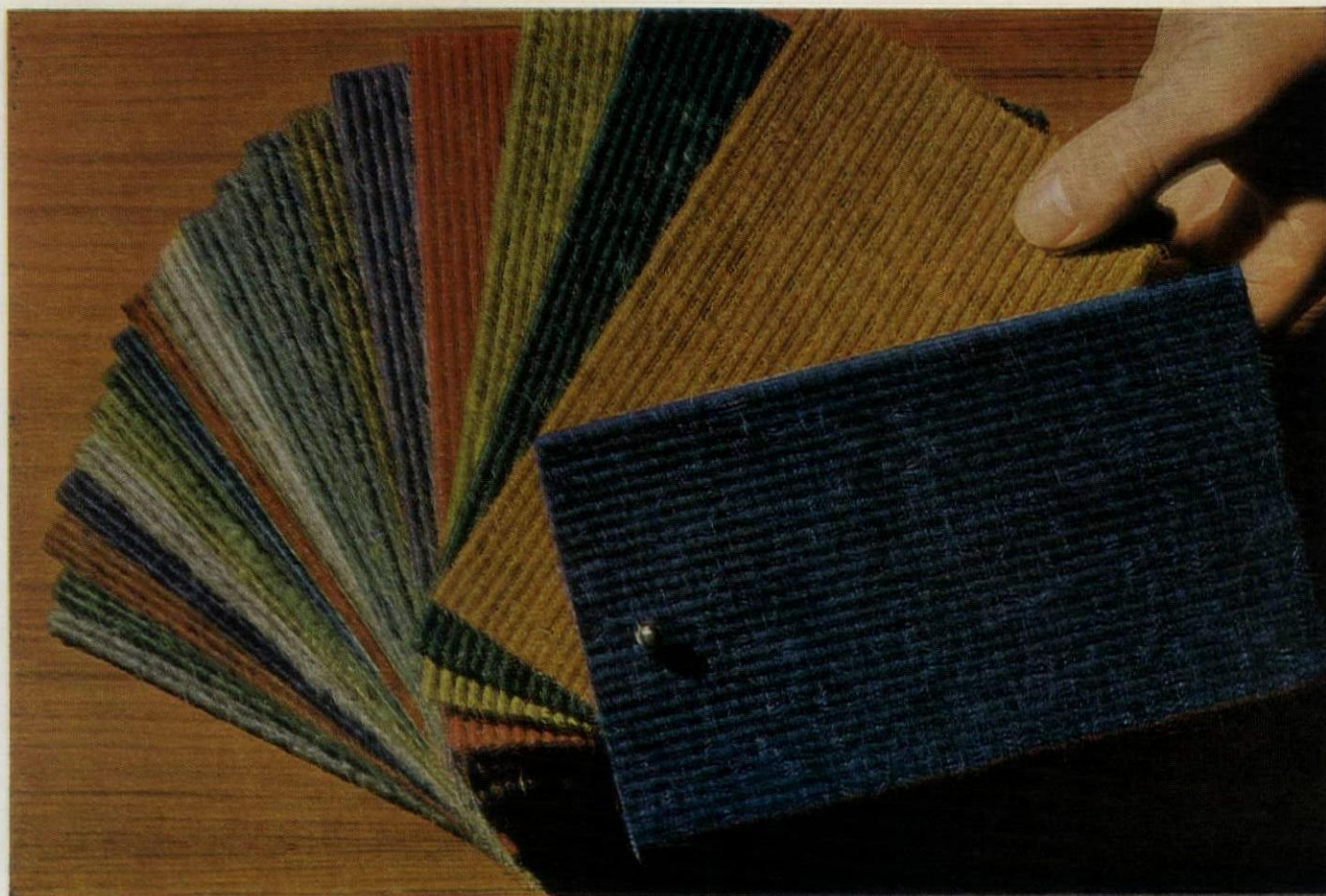
Because when Harry's working it means our apparatus isn't! So the more Harry sits, the more certain we are that our designers and fitters have done a good job — and that our apparatus is running in its usual smooth and trouble-free way.

If you're in the market for central heating, ventilation or air conditioning — you can see what an easy time you'll have with our installation by the easy life Harry leads! And if ever you should need him — he's on your doorstep in no-time. After all, working makes a nice change for him!



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* this is **tretford** carpet

21 planning colours at your finger tips

Tretford cord carpet puts into your hand a whole range of designers' colours that greatly help your colour planning. Tretford is 100% pure animal hair and wool and has all the functional qualities you look for too. It combines extreme durability with economy. It's easy to cut and lay, needs no edge finishing, no underlay—can be built in like a permanent floor surface at the flooring stage. It's a good conductor of heat and can be laid on underfloor

heating without any heat loss. Tretford is easy to clean and maintain. It's mothproof and colour fast. Tretford carpet has been used for years by leading European interior designers and architects, and you come across it more and more in this country in offices, schools, churches, hotels, public buildings and industry. Tretford carpet can be supplied in 26½" and 6' 6¾" widths for wall to wall fitting, squares or rugs.*

Write for further information to.

Tretford Carpets Ltd.
Shenstone, Lichfield, Staffs.
Tel. Shenstone 577

London Office: 248 Empire House,
St. Martins-le-Grand, E.C.4. Monarch 0141

Name _____

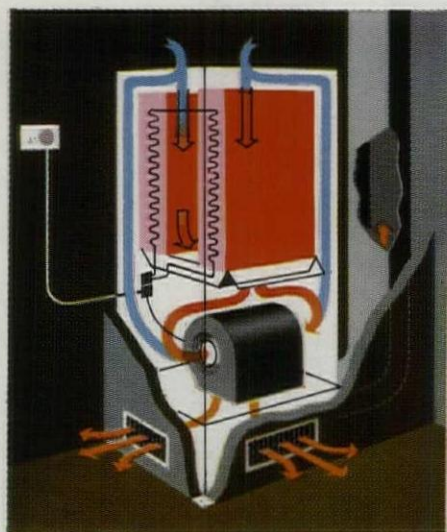
Address _____

AR/13/66

ELECTRICAIRE

the warm-air central heating
that runs on half-price electricity

Electricaire is not only the most economical of all central heating systems to run, it's the easiest to install and it can fit your existing plans. These are just a few of the reasons why it is today setting a new trend everywhere in central heating



A typical Electricaire unit

How does Electricaire work?

Simple! A central thermal storage unit is fitted in each dwelling. This unit heats up on half-price electricity and incorporates a fan which discharges warm air as and when required. The fan can be manually or thermostatically controlled and a boost provides for a rapid warm-up. Units vary in size according to the output required

but a normal unit will fit into a space a little over 2 feet square.

A thermostat in one of the main rooms controls the air temperature at the level desired by the occupier. Warm air is directed into individual rooms through outlet registers. These are unobtrusively sited near the skirting or in the floor.

Whether you're building houses, bungalows or blocks of flats, Electricaire gives you the most efficient and economical central heating in existence today.

7 reasons for choosing Electricaire

1. Electricaire gives you complete freedom to plan homes the way you want to. The central unit can be sited almost anywhere and there are no flues to construct.
2. 100% efficiency. Electricaire, designed to Parker Morris standards, will give full value for every unit of current used.
3. Electricaire runs on half-price, off-peak electricity. It's the most economical of all central heating systems to run.
4. It's the cleanest, healthiest heating, too. No fumes, dust, ashes and the re-circulated air is filtered.
5. No stoking, no fuel storage. In flats, no boiler attendant is needed and storage space is saved. Each tenant controls the heating in his flat.
6. Electricaire minimises condensation.



The unobtrusive outlet register near the floor

The constant background warmth from the central unit, coupled with the absence of combustion minimises the risk of condensation.

7. Electricaire is silent. The fan runs quietly and there is no sound of burners lighting and shutting off.

ELECTRICAIRE

*warm-air central heating on
half-price electricity*

Like to know more? For advice and technical information about Electricaire, just ring your Electricity Board; or write direct to: The Electricity Council, EDA Division, Trafalgar Buildings, 1 Charing Cross, London, SW1.

Issued by the Electricity Council, England & Wales.



**Keynsham Council fit Electricaire
in modern maisonettes**

'It's trouble-free heating', say delighted tenants.
At Keynsham, near Bristol the local Council decided to build 44 really modern maisonettes. The exterior design was carefully chosen, the interiors were planned on the most modern lines and extra special care was exercised in choosing the heating. After weighing up all the factors connected with different types of central heating, Electricaire was chosen by the Council. Electricaire

units each with a loading of 10 kW and an active storage capacity of 40 kWh were installed at a cost of £170 per maisonette. (Similar installations today would cost about £145.) Each unit supplies warm air by stub ducts to the living/dining room, hall and kitchen, while a rising duct delivers warm air to keep the three bedrooms cosy. Tenants praise not only the economy of Electricaire but its cleanness and trouble-free running. It is estimated that a full year's running costs should work out at £40 to £45 per maisonette.

**If you designed an elegant
restaurant 532 feet above London; one
that goes round in circles 2½ times
every hour; that expects 91,000
customers a year...which carpet
would you choose?**



**Choose pure new wool carpets.
The best in the world.
Because they last longer
stronger
richer deeper
handsomer
fresher bouncier
softer safer
than any other carpets
in the world.**



**Pure new w
worsted Wi
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Photograph
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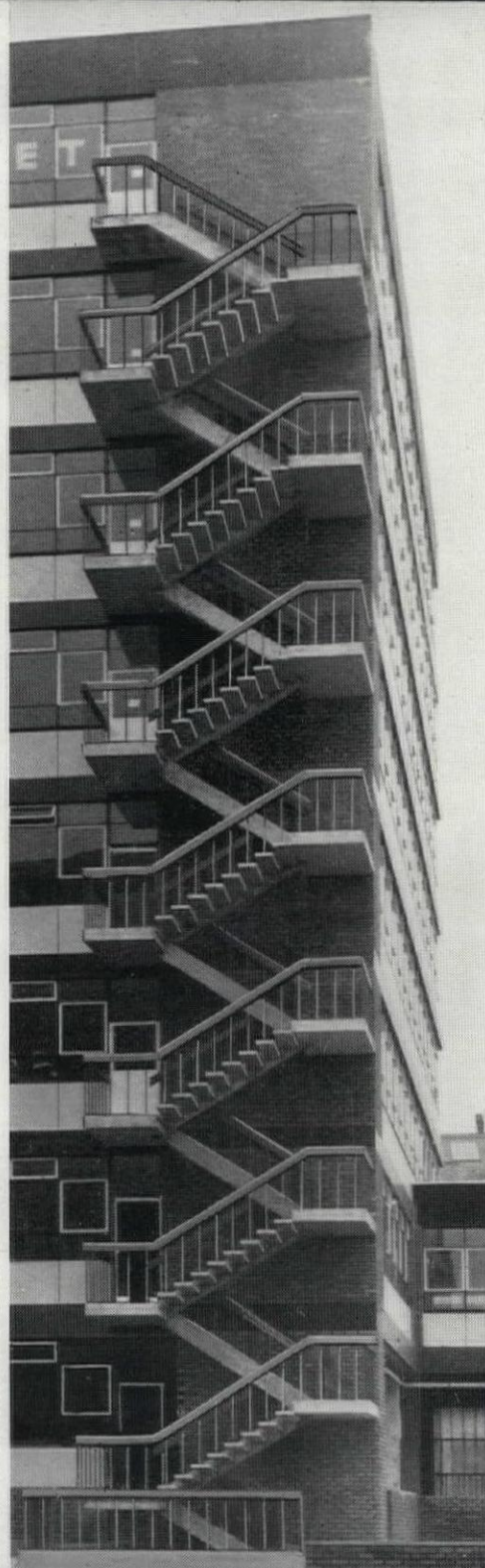


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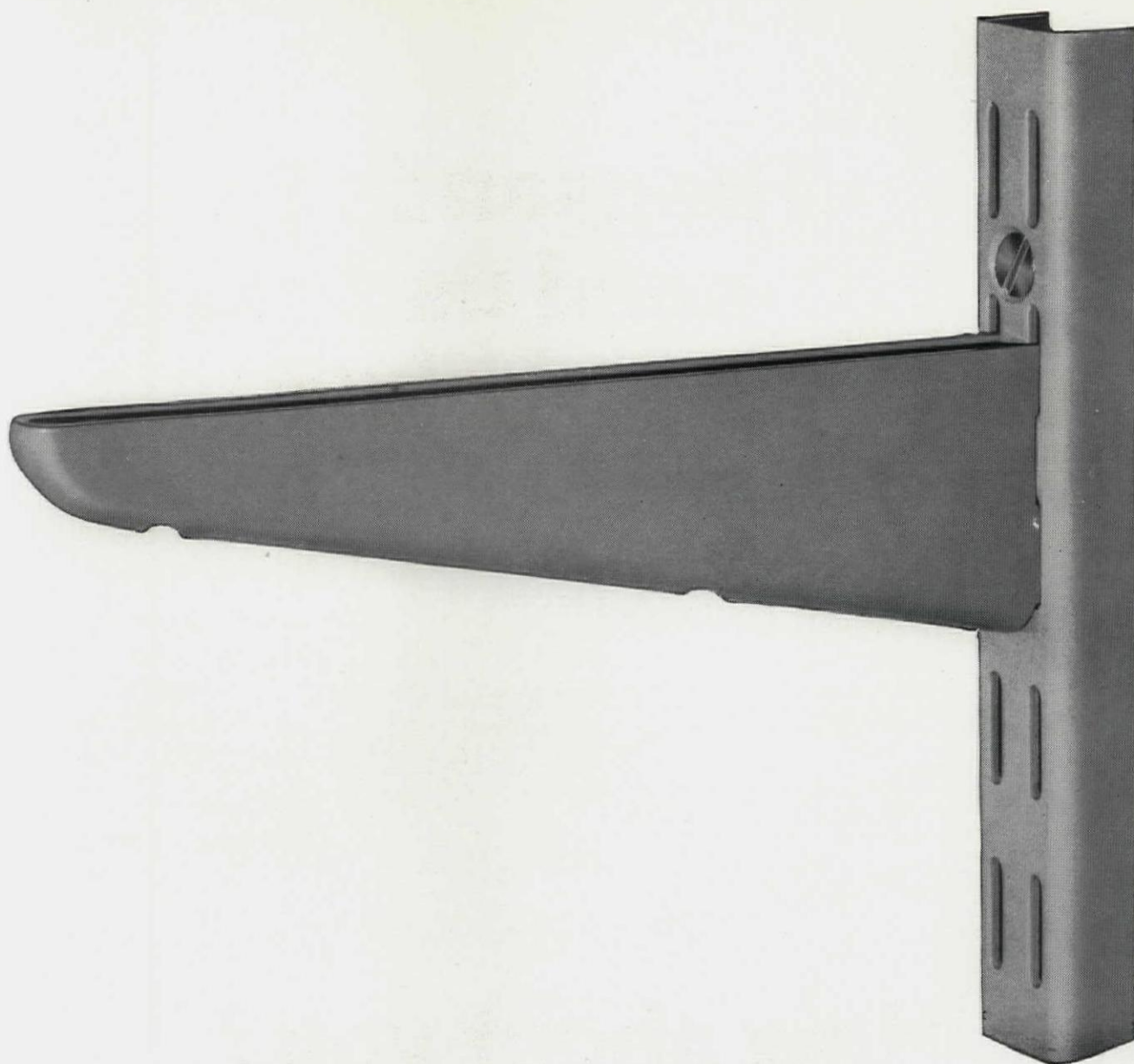
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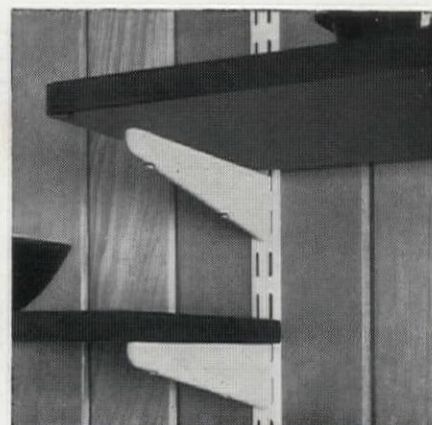
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BARBOUR INDEX FILE No. 65

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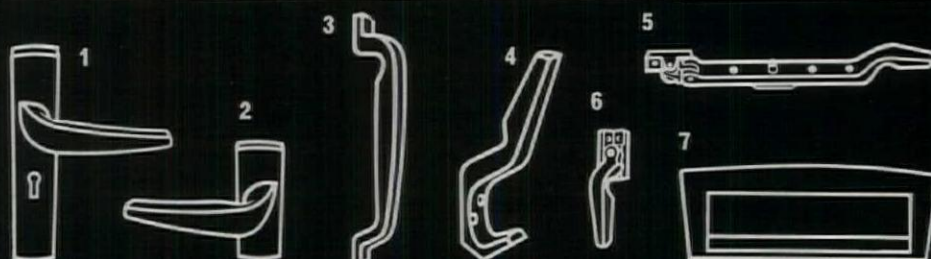


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'AMBLA'

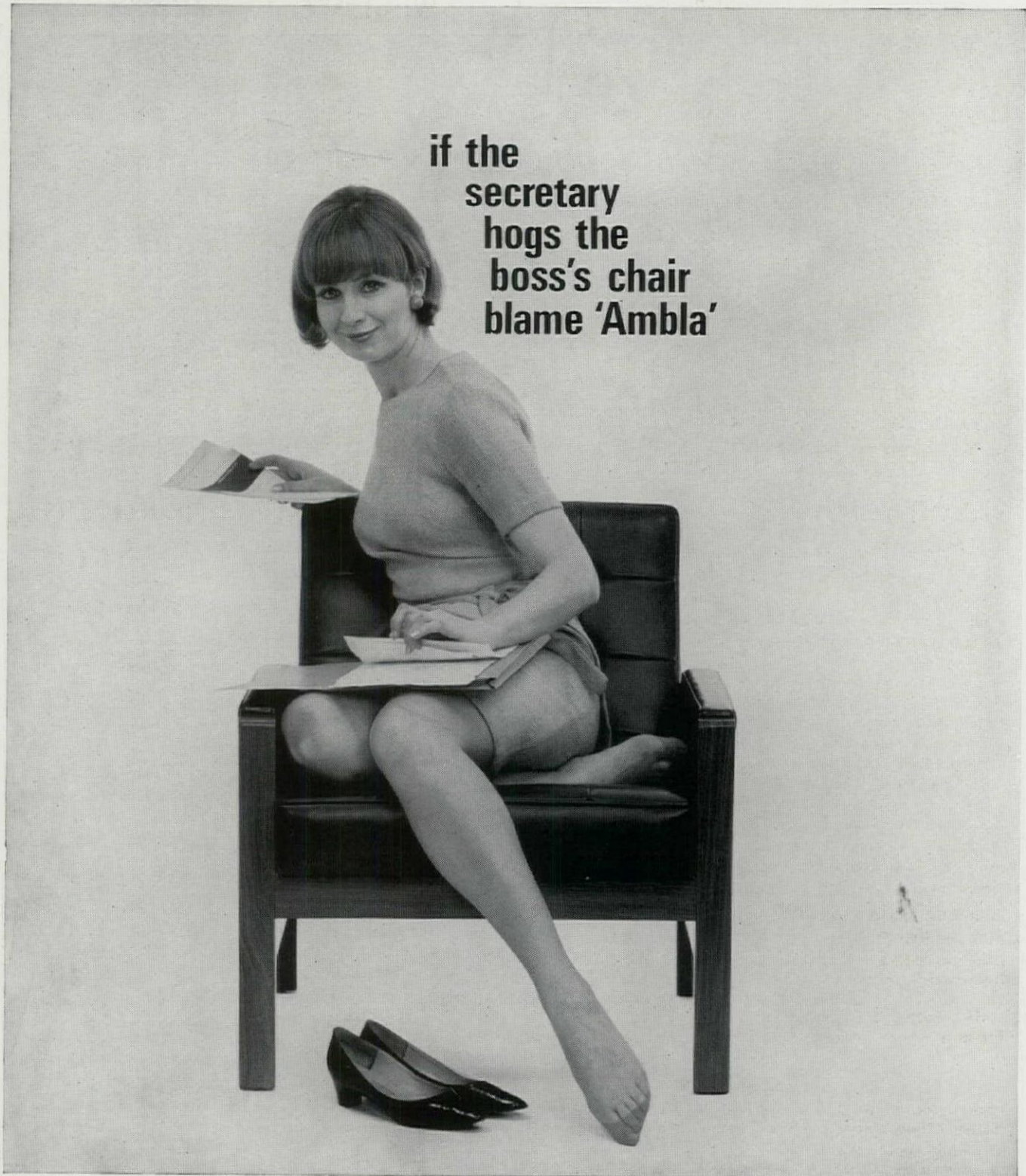
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Marlow Mill Development, Marlow, Bucks. Architects: Seymour, Harris & Partners, W.C.2. Developers: Fitzpatrick Developments Ltd., Waltham Cross.

U.S. Plywood PF-L Claddings finished in Du Pont Tedlar PVF

U.S. Plywood PF-L – the new low-maintenance building material guaranteed in writing for the life-of-the-building

U.S. PLYWOOD PF-L CLADDINGS are real wood claddings – made of top-grade exterior plywood finished with factory-bonded Du Pont TEDLAR PVF film. They provide the builder and the architect with a brand-new decorative building material with the built-in strength and stability of plywood plus the tremendous chemical and weather-resistance of poly-vinyl-fluoride.

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U.S. Plywood PF-L Claddings combine all the advantages of wood – and PVF

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the most weatherable, long- life finishes ever developed for building materials

TEDLAR

has been exposed to sunlight and weather since 31st March, 1943; that mahogany board has suffered, but the sample of TEDLAR is still tough and flexible. Why? What's so special about TEDLAR? TEDLAR is no liquid or spray. It's a tough Fluoride film which is factory-bonded to building products with special Du Pont adhesives—it actually becomes part of the material it protects. Paints have to adhere as well as protect—TEDLAR avoids compromise and protects exclusively. TEDLAR can be bonded to many substrates: asbestos, wood, metals, reinforced plastics and vinyls, for example.

TEDLAR

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TEDLAR

for protection and long life

TEDLAR is chemically inert—resists acids, alkalis, solvents, hot tar, oils, greases, caustics...virtually everything. It's ideal for buildings where chemical processes or smog create corrosive vapours, and for buildings by the sea. TEDLAR is really tough—average tensile strength is 16,000 psi. It stretches over 100% before breaking, so movements in the substrate are matched—no blisters, cracks or crazes. It will resist scuffing, marking, sand blast, rubbing and abrasion long after paints have failed.

TEDLAR

for long-term economy and freedom from maintenance

TEDLAR has shown that it will withstand sun, wind, rain and the destructive forces of nature for many years. The smooth surface, together with its inertness, prevents the adhesion of dust, dirt and chemical effluent. Even stubborn stains like roofing tar and oil can be sponged off without trace. After years of exposure, all that may be required to restore the original surface appearance will be a wash down. If necessary, cleaning agents and solvents can be used with complete safety. The exceptional toughness and resistance of TEDLAR, combined with its ease of cleaning, results in a reliable finish which will keep its good looks, with minimum maintenance, very much longer than a conventional finish—in any environment.



New housing at Walkden, Manchester. Architects: Venables, Williams & Ball, Congleton. Contractors: G. & J. Seddon Limited, Walkden

...now available, factory bonded to exterior grade plywood—U.S. PLYWOOD PF-L[†]

TEDLAR

... has been selected for the surfacing of U.S. PLYWOOD PF-L to provide the architect and builder with a building material of improved appearance, durability and colour stability. Styles available are: horizontal lap, flat panels, and a board and batten system.

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For further information about TEDLAR PVF film write to:—

Du Pont Company
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[†] U.S. Plywood PF-L is available through Albert Plaut Limited, Harts Lane, Barking, Essex.



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PL 82

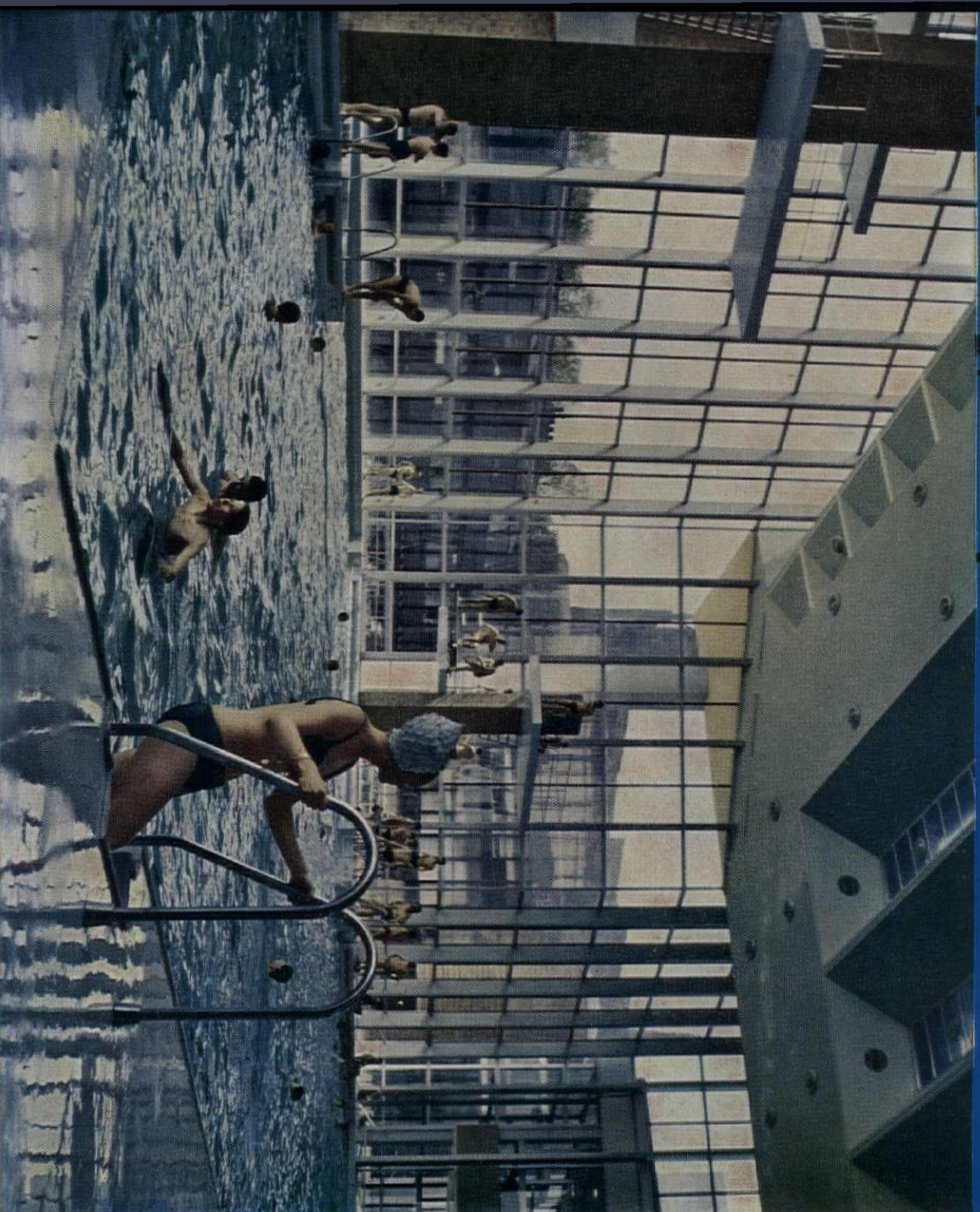


PL 81



PL 80

New grace, speed and economy in Public Building



Distinctive design New public swimming baths at Coventry, Steel provides the enclosing structure which has a roof area of 165 ft by 196 ft. Four compound steel columns outside the building's window walls support cantilevered steel lattice trusses which give a distinctive butterfly profile to the roof.



Steel framed fire station Speed of steel frame construction is an important factor when building needs are urgent and economy essential. Striking individuality in plan and appearance are also possible, as shown in this new steel-framed fire station recently erected by a local authority.

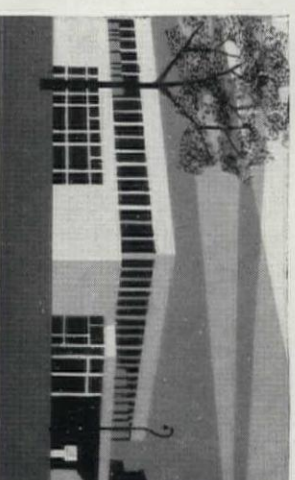
DESIGN IN STEEL



Systems speed completion Flexible A75 and CLASP systems are typical of many using factory-made steel frame components for quick, light and dry industrialised building of schools, universities, clinics, health, welfare, local authority and various new government administrative buildings.



Economical wide spans with pre-stressed high-tensile steel beams For the new Norwich City Hall Extension, 'Preflex' pre-stressed high-tensile steel beams permit a clear span of 60 ft over garage space for Police and Health Department vehicles, and support a heavy vehicle car park above. They enable large spans to be bridged with lower-than-normal construction depths and their controlled deflection permits maximum use to be made of the improved allowable stresses obtainable by high-tensile steel.



Stainless steel is a practical and economical design choice for prominent surfaces in public buildings that must be elegant, yet resist hard wear or corrosive conditions. Its high strength, resistance to abrasion and denting, ease of maintenance, mean long economical service in applications such as this, at Trafalgar Square Post Office, London.

Multi-purpose building Steel provides structures that meet urgent social needs. Economy, speed of erection, suitability of a lightweight steel frame, were reasons for choosing steel-work for this project to serve local community needs. A library, meeting hall, maternity and child welfare clinic, youth club, and old people's club with dining facilities.

REFERENCES

Front page Coventry Swimming Baths, designed in the Dept. of Architecture & Planning by City Architect and Planning Officer Arthur Ling, succeeded by Terence Gregory (Granville Berry, City Engineer, Consultant). □ Quickly erected steel framed fire station for a local authority. □ A75 System Welfare Clinic and Library at Chaele Heald Green, for Cheshire County Council by A. H. Anderson Ltd, 235 Vauxhall Bridge Road, London SW1. **Centre spread** Extensions to Nottinghamshire Farm Institute, Brackenhurst, designed for Nottinghamshire County Council Education Authority by the County Architect, Henry T. Swan, A.A. Dipl., FRIBA. □ 'GIRO' headquarters designed for the GPO in the Directorate General of Works of the MOPBW, Senior Architect and Project Manager, E. H. Banks, FRIBA, FRSA, Senior Civil Engineer, S. G. Silman, M.A. Struct. E. □ Maidstone Barracks buildings constructed using the 'Weak Method', designed by Sir Donald Gibson, Director General of Research & Development, MOPBW. □ West Central Post Office and Sorting Office, High Holborn, London, designed in the Directorate General of Works, MOPBW, Senior Architect and Project Manager, E. T. Sargent, ARIBA, FRAS, Senior Civil Engineer, R. G. Westbrook, M.A. Struct. E. □ British Rail Freight Depot at Sheffield, Coloured Cellulose cladding and roofing by the Cellacell Co Ltd, Highnam, Nr. Rochester, Kent, Constructed by Conder Engineering Co Ltd, Winchester. □ Luton Airport Terminal Building using Space Deck System by Denings of Chard Ltd, Somerset. Designed by Messrs. Torle Rosenberg Madall, Greytola Place, London EC4, for Luton County Borough Council, Borough Engineer, R. Seymour, AMICE. □ New Sevenoaks Hospital project, Regional Architect to the South East Metropolitan Regional Hospital Board, Charles F. Scott, ARIBA, Consultant Architects: Gollins, Melvin, Ward & Partners, F/FRIBA, Structural Engineering Consultants: Clare Nicholas & Marcel. □ Steel Water Tower for the South Lines Water Board by the Motherwell Bridge & Engineering Co Ltd, Motherwell, Scotland. **Back page** 'Preflex' beams for extensions to Norwich City Hall supplied by Boulton & Paul Ltd, Norwich, Norfolk. Architect: David Percival, B.A. (Arch), FRIBA, MIP, City Architect, Consulting Engineers: Felix J. Samuely & Partners. □ St. Helier House Old People's Home, St. Helier, Jersey, clad with vitreous enamelled steel sheet panels by Edward Curran Engineering Ltd, Cardiff, South Wales. Architects: Braxwell & Davies, St. Helier, Jersey. □ Plastic coated steel sheet cladding panels at a Hereford County Secondary School supplied by Panther Ceilings Ltd, Irvine, Ayrshire. □ Multi-purpose building at Jubilee Crescent, Coventry designed by the City Architect, Terence Gregory, Dept. of Architecture & Planning □ Stainless Steel fascia, postal service plates and doors for Post Office, Trafalgar Square, London, fabricated by Architectural Aluminium Ltd, Hucklecote, Gloucester, to design of Directorate General of Works, MOPBW, Architect in charge: P. Watkinson, ARIBA.

Modern forms of steel - in Public Buildings

Steel is helping to meet the many urgent national and social needs that exist for special-purpose buildings and structures. New forms of steel, modern steel-based industrialised building systems, new and ingenious factory-produced steel components and building products, provide practical answers to the call for more productive use of the nation's available labour and resources, together with economy, greater durability in service, and reduced maintenance requirements.



A bright home for the elderly Colourful vitreous enamelled steel sheet infill panels give a decorative, maintenance saving finish to this old people's home. Laminated backings and insulation can give U value specified. Matt surfaces eliminate glare.



Maintenance-saving colour finish Attractive plastic-coated steel sheet cladding panels give a pleasant 'boarded' effect on this new Hereford County Secondary School. Formed from pre-finished steel sheet, paneling eliminates cost of periodic painting and because it is speedily fixed cuts construction times and costs.

DESIGN IN STEEL

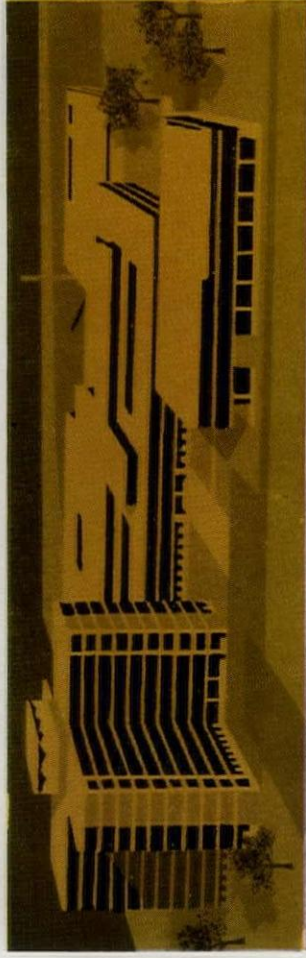
BRITISH IRON AND STEEL FEDERATION
STEEL HOUSE, TOTMILL ST. LONDON SW1

Steelwork brings elegance in form and rapid construction to public projects

Modern steel construction is giving an exciting new look to public building projects. The structural versatility of steel, its speed and convenience in erection, together with its practical and economical advantages for fast, dry, labour-saving construction, are speeding the completion of more and more successful and imaginative public schemes. Steel construction alone provides such adaptability, freedom of architectural design and elevational treatment. Structural steel thus permits public buildings to fit their surroundings perfectly, express true individuality, and match local character and environment. Shown here are some of the many recent outstanding examples of functional, aesthetically pleasing design in steel for national and local government projects.

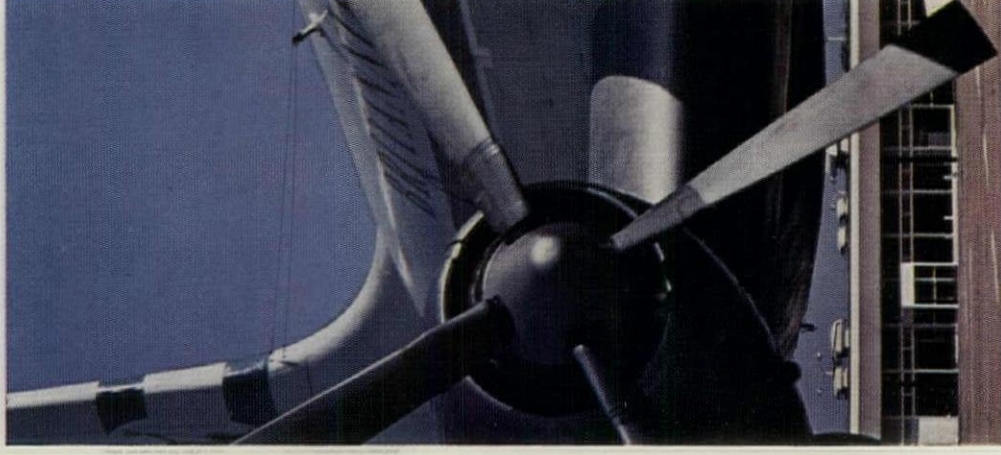


Steelwork speeds the project A wider range of steel sections, improved erection and fabrication techniques, fast dry erection independent of weather—these advantages in building with steel have a significant effect on actual costs and time saved in major projects. Industrialised building elements, steel framing and factory-made components will ensure fast, labour saving construction for the GIRO Headquarters at Bootle—designed to house facilities for the new current account post-office banking scheme. This large scale project has been designed by the Ministry of Public Building and Works.



System building for education More school and college buildings are needed quickly. This modern steel-framed addition to a Farm Institute designed for the Nottinghamshire County Council, has taken full advantage of the speed and economy of a steel-based industrialised building system. The system permits considerable individuality in plan and appearance, and excellent accommodation is provided.

Steel on National Service The Nenk method of industrialised building rationalises the construction process for a wide range of buildings for the Services. Rapidly erected steel-frame structures have 'space-frame' roof and floor decks formed from easily handled and erected steel pyramidal units. Steel is also used for columns, and in staircases at Maidstone Barracks.



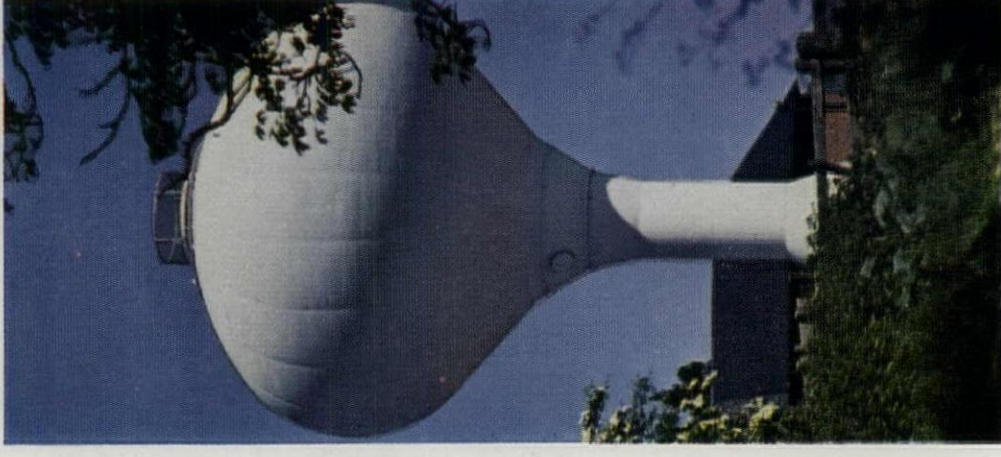
Steel space frame system for jet-age airport New Luton Airport buildings employed the quick, economical SPACE-DECK system using light, easily transported and erected bolted open-steel pyramid units. Large clear spans and wide column spacings now provide improved, economical facilities for the efficient handling of increased 'big-jet' passenger traffic which is expected in future.

Steelwork chosen for GPO buildings Recent major GPO projects which have been designed to take full advantage of the speed, strength and economy of steel construction, include the new West Central District office in High Holborn, London. The steel framework met special requirements of the site, which is directly above the Post Office railway tunnel.



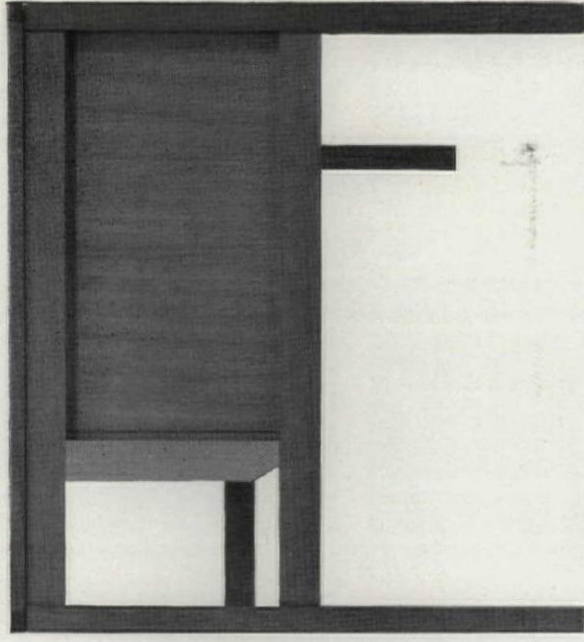
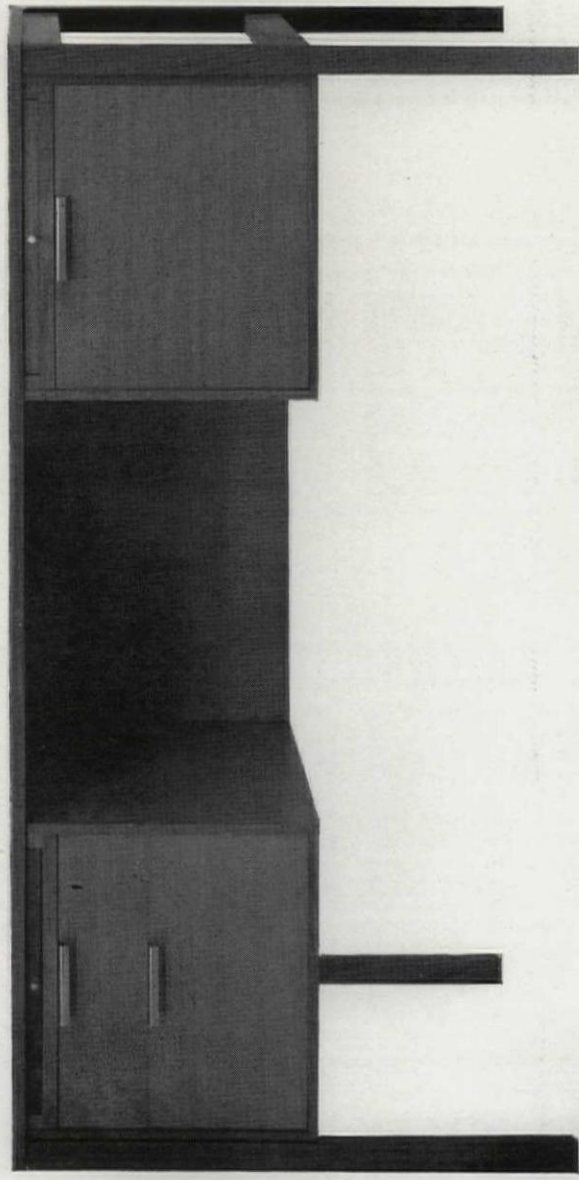
'Fair face' steelwork New Maternity and Out-patient's Dept.—first stage in development of Sevenoaks Hospital into a district general hospital. Steel framed, with exposed, corrosion-protected steelwork enhancing its architectural appearance, it employs castellated beams accommodating services. External load-bearing columns save internal space. Steel frame permits future extension.

Colourful Steel Sheet cladding Corrosion-protected steel cladding and roofing products with permanent colour finish include this attractive 'Cellactite' bitumen/asbestos coated cladding with applied colour finish, shown at British Rail's largest and most modern freight terminal, Grimesthorpe, Sheffield. 360,000 sq ft of steel sheet was employed.



Beauty in utility structures A functional design—an aesthetically pleasing shape. This welded steel water storage tower is one of a range which can now be speedily erected on economical foundations. Capacities up to 2½ million gallons. Low in cost and upkeep. No seepage problems. Special liquid metal finish guarantees 10-year maintenance-free protection inside and out.

See further examples of steel in public building on rear page.



LI LUCAS FURNITURE

Double pedestal desk, Model LD46, from the Lucas Range. Designed by Herbert Berry FSIA and Christopher Cattle MSIA, it is available in mahogany or oak at £35 12s including tax. The construction used makes it easily demountable for access where space is limited. The Range includes double and single pedestal desks, tables and storage. Lucas provide furniture for all contract needs. Four ranges of desks, tables, storage, plan chests, beds and a wide range of chairs. On show in The Design Centre, London, and in our showrooms. Write or telephone for details to Lucas Furniture, Old Ford, London E3, Advance 3232. Barbour Index File No. SfB 82



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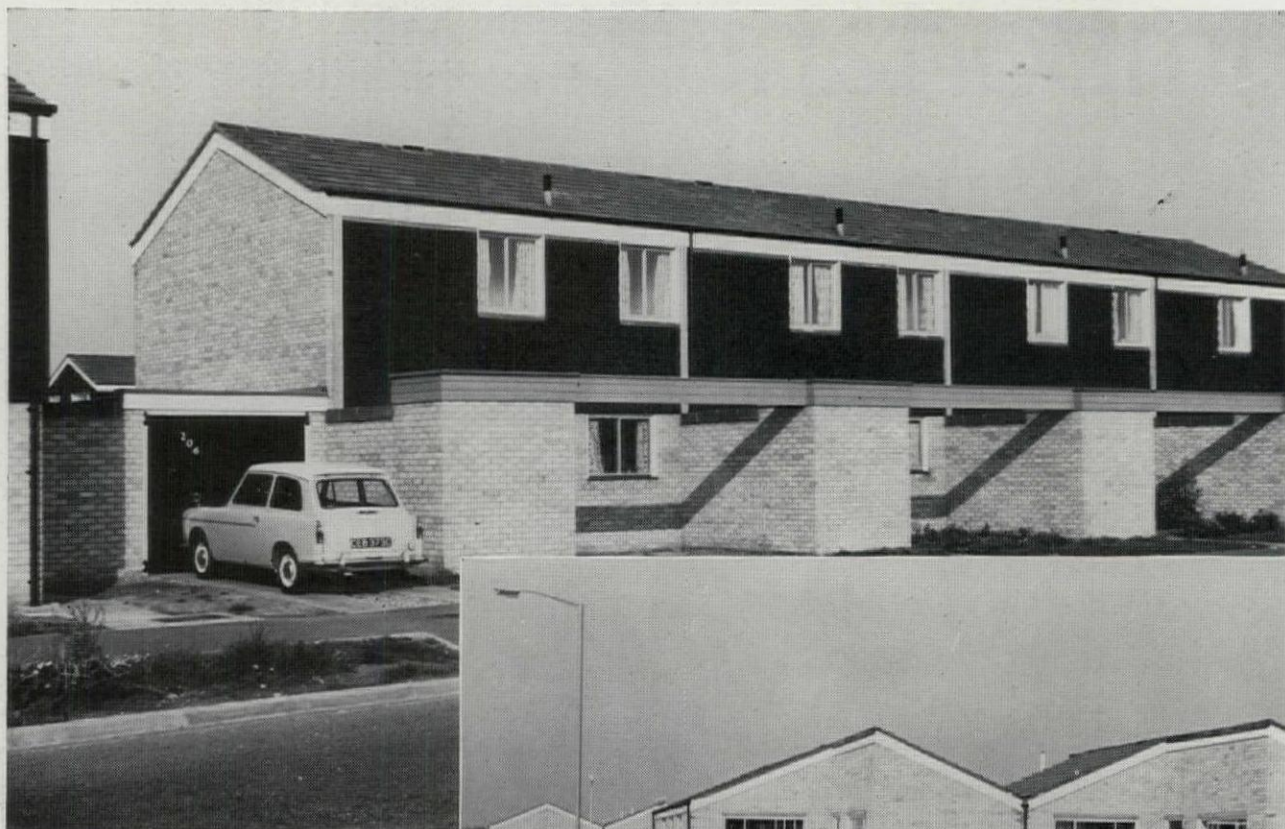
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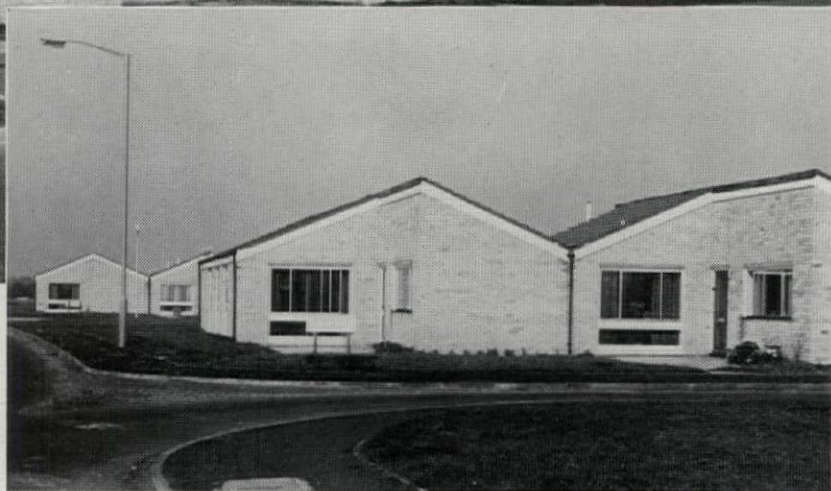
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Housing. . .



...at Arbury Road Estate, Cambridge, for the Cambridge City Housing Project. The light colours of the facings chosen for this housing scheme are particularly suitable for the Cambridge area and create an extremely attractive effect.



The Bricks: Ibstock Light Buff Rustics

Architect: City of Cambridge Department of Architecture and Planning

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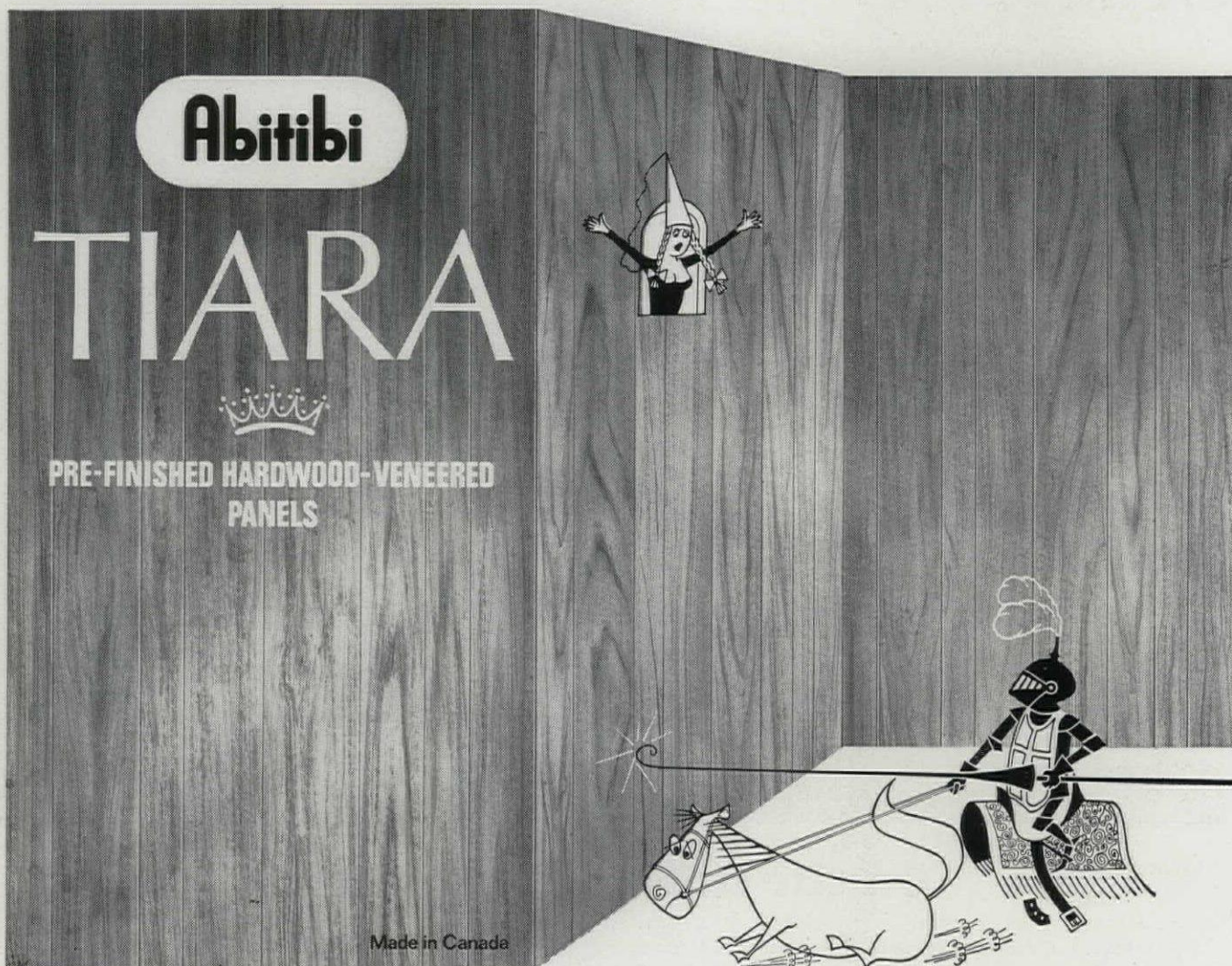
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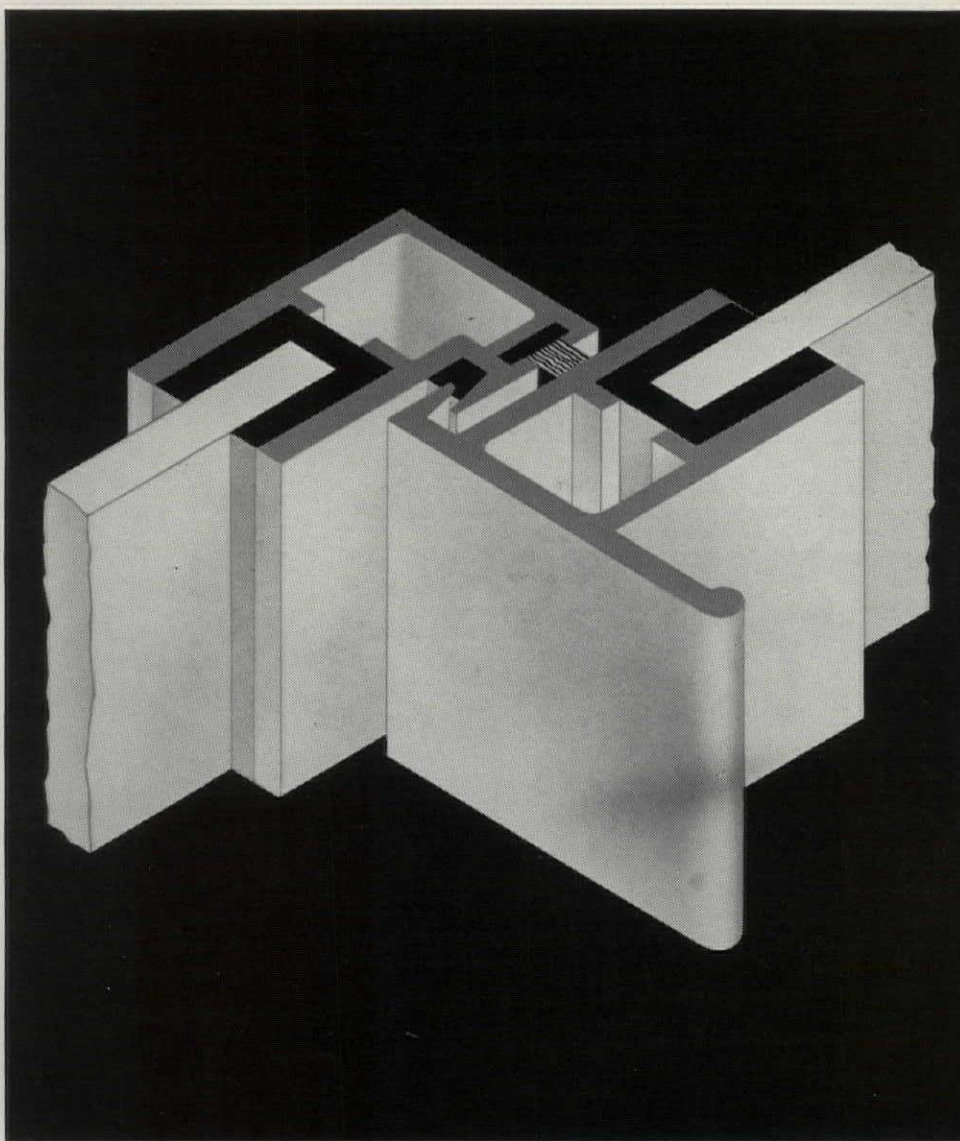
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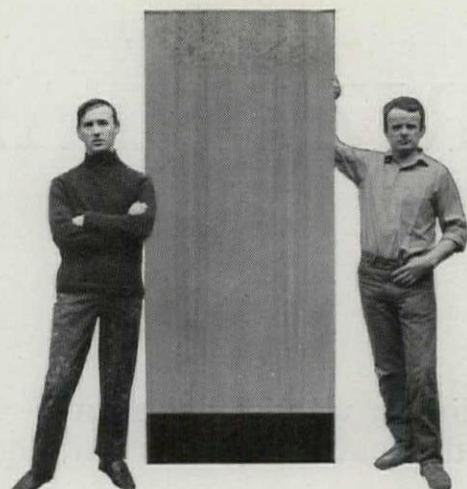
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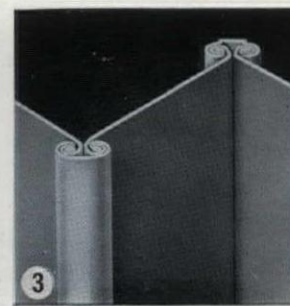
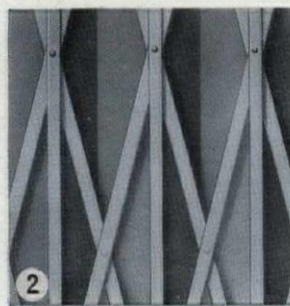
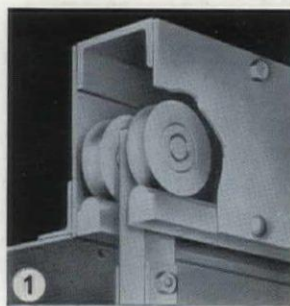
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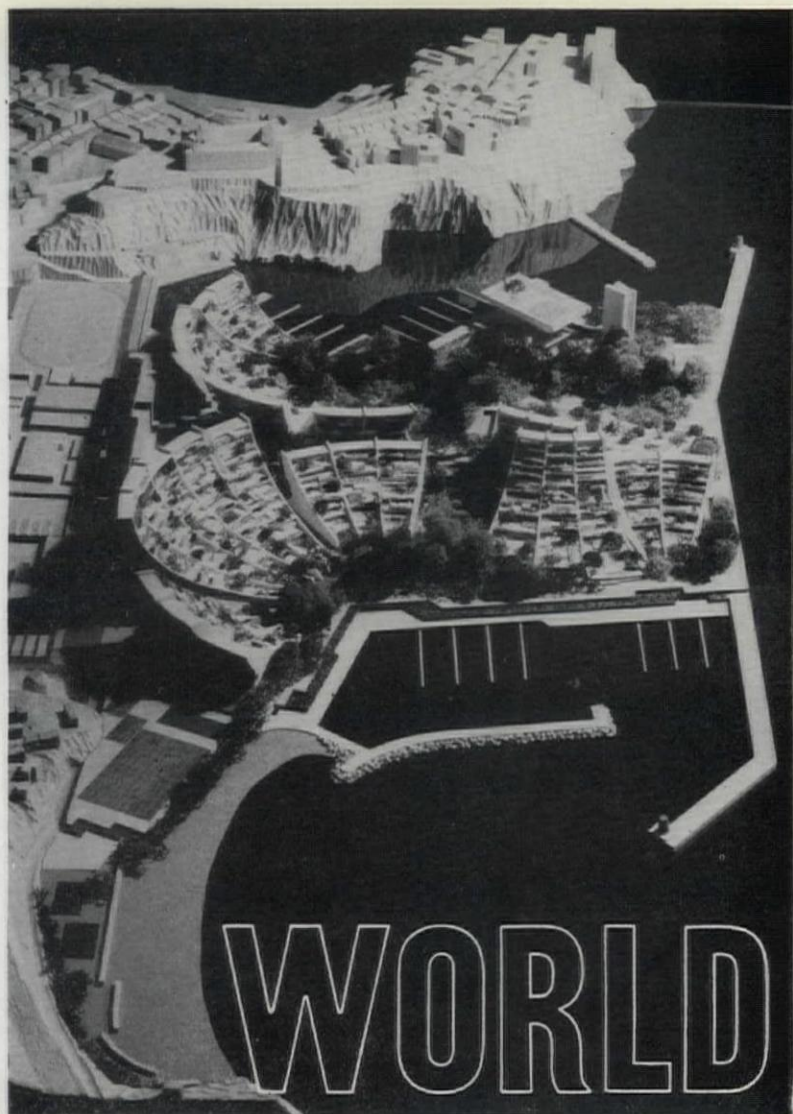
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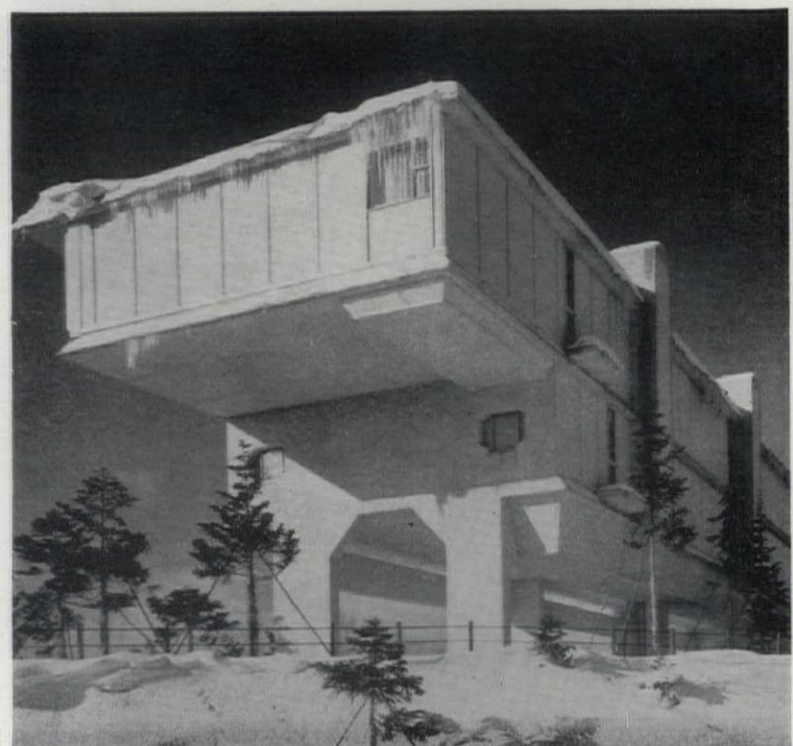
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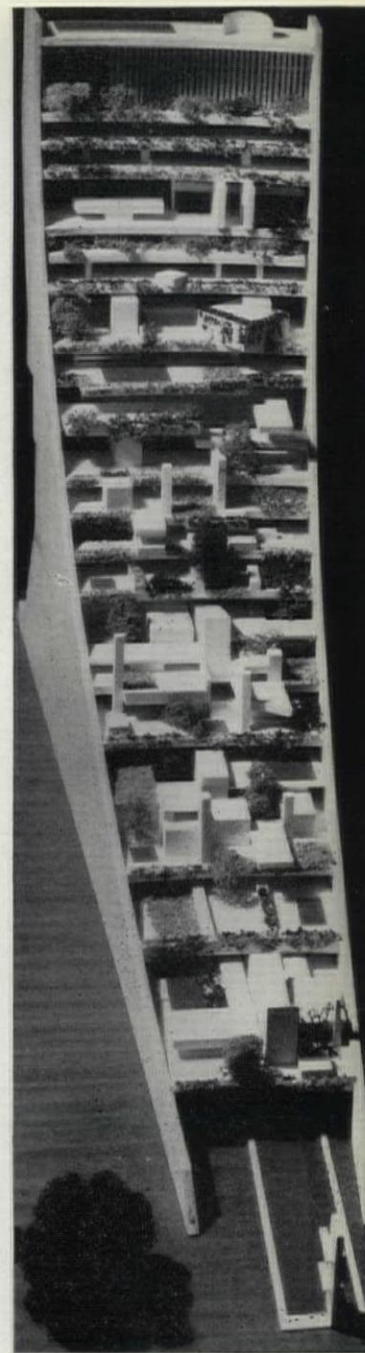
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4

GRAND- STAND

When first published in the AR (December 1963), Manfredi Nicoletti's satellite town for Monaco, though sophisticated in its multi-level separation of traffic, was a relatively conventional assembly of high rise slabs and point blocks on continuous podia. In 1964 its base was begun, an artificial peninsula immediately west of the city and the royal palace on the cliffs (background in 1). Its completion in 1969 will be followed by six years' work on the buildings. The programme at present can be only roughly estimated (forty-five per cent residences, thirty per cent public activities, five per cent light industry and twenty per cent parking and services); so Nicoletti has compressed it dramatically within a few generalized volumes. Stepped crescents of flats and hotels (for twelve to twenty thousand people), will back on to a landward line of main roads, railways and light industry; towards the sea are a cultural centre and a trade and conference centre. Each structure, 2, 'oriented in such a way as to face not the bare intensity of the sea, but rather the more human line where the coast and the sea come together,' will be thickly planted, so as to integrate the green shapes of 'natural' (though in fact artificial) land with the 'artificial' structures. 'Each developer will be left free to create his own architectural solution in accordance with his necessities,' and within these 'primary' shapes all manner of 'secondary' structures will be flexibly contained. Nicoletti's depiction of the skyline against flaming clouds, 3, recalls the kind of pop utopia discussed in his own AR article on Flash Gordon in August.



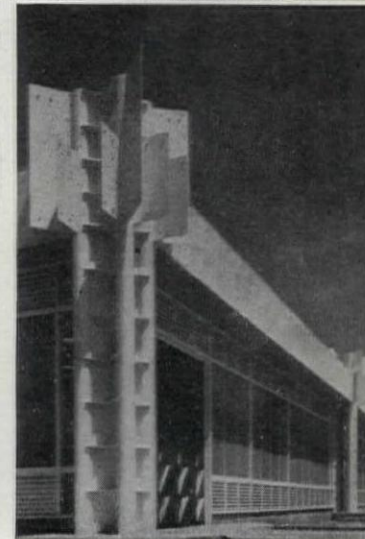
2

JAPANESE METABOLIC STRUCTURES

Beneath Japan's welter of academic fantasies in concrete there lies a substratum of clarity in the works of the Metabolism group who, while romantic in the James Stirling way, are also, like Stirling, basing their designs on 'real' structure, however exaggerated. Kiyonori Kikutake's recent completed Morioka Grand Hotel has a splendid rhythm of almost windowless corridors and duct shafts, 4, behind the more serene, almost SOM-style bedroom facade, 5. The panoramic mountainside view gives reasonable compensation for the long corridors needed for merely single-banked rooms. Noriaki Kurokawa's factory for Nitto Shokuin at Sagae, 6, is even closer to Stirling with its eight glass-walled square bays with giant finned columns at the corners; internally, 8, the cruciform



5



6

acknowledgments

COVER: David Larcher. WORLD, pages 313-316: 4, 5, *Kenichiku Bunka*; 6, 8, 10, 11, 14, *Arquitectos de Mexico*; 9, *Japan Today*; 12, 13, *Japan Architect*; 15-21, *Architektoniki*; 22, *Baumeister*; 27, 28, 30-32, 37, *Architectural Forum*; 29, *Architecture d'Aujourd'hui*; 33, Eddie Chan; 38, 39, Walton Tregaskis. VIEWS AND REVIEWS, pages 317-319: 1, O. G. Jarman; 2, Browne Arphot. FRONTISPIECE, page 320: Penelope Reed. THE FUTURE—CAN WE FACE IT? pages 321-325: 2, Geoffrey Powell; 4, 5, Galwey Arphot. HOUSE AT IVANHOE, VICTORIA, AUSTRALIA, pages 326-328: Marc Strizic. SUPERMARKETS, pages 329-334: 1, 2, 6, 12, 13, 16, J. Sainsbury Ltd.; 4, 5, 8, Sam Lambert; 7, Nairn Arphot; 9, RIBA; 10, 14, H. Tempest (Industrial) Ltd.; 15, Raymond Irons. THE EXPLORING EYE, pages 335-337: David Larcher. HISTORIC PATTERNS, page 338: top, Maguire and Murray; bottom, Norman Gold. ANGLICAN CONVENT, WEST MALLING, KENT, pages 340-342: 1-4, 7, 8, Norman Gold; 5, 6, Maguire and Murray. COLLEGE QUADRANGLES AND UNDERGROUND BOOKSHOP, OXFORD, pages 343-348: 1, 2, 6, 9, Maguire and Murray; 3-5, 7, 10, Galwey Arphot; 8, Thomas Photos. TOWNSCAPE, pages 349-350: Richard Reid. INTERIOR DESIGN, pages 351-356: Studio and Cinema, Mayfair, London, Edgar Hyman; Showrooms and Offices, Bond Street, London, John Donat. GALLERY, pages 357-360: 1-3, 5, John Webb; 4, O. E. Nelson; 8, Tate Gallery. HOUSING, KINGSBURY, LONDON, pages 361-365: 1, 4, 6, 7, Colin Westwood; 2, 3, 5, 8, Galwey Arphot. DESIGN REVIEW, pages 369-370: 4, 6, Rookes. MISCELLANY, pages 373-380: Galleria Milan, Penelope Reed. Paganism, 1, Ken Hoskin; 2, National Monuments Record. Curiosities of the Caucasus, Edgar Knobloch. SKILL, pages 382-388: 3, H. J. Hare & Son; 4, Barry Kirwan; 5, *Western Morning News*; 6, *Wellington Journal and Shrewsbury News*. STOP PRESS, pages 389-390: 2, 3, 5-8, Nairn Arphot.



This month's cover is based on a photograph by David Larcher, one of a series (see pages 335-337) taken by him to record the range of new visual images contributed to the townscape by the motor cars that stand about in the streets. This is part of the front end of a Daimler.

THE ARCHITECTURAL REVIEW

9-13 QUEEN ANNE'S GATE, WESTMINSTER,
SW1 WHITEHALL 0611 FIVE SHILLINGS

VOLUME 140 NUMBER 837
NOVEMBER 1966

SUBSCRIPTION RATE:—The annual post free subscription rate, payable in advance, is £3 3s. 0d. sterling, in USA and Canada \$10.50, in Italy Lira 6940, elsewhere abroad £3 10s. 0d. Italian subscription agents: Librerie Salto via V. di Modrone 18, Milano; Librerie Dedalo, Via Barberini 75-77, Roma. An index is issued half-yearly and is published as a supplement to the REVIEW. Subscribers may have their copies bound in half-yearly volumes at the price of £1 13s. 0d. Postage 2s. 9d. extra on the completed volume.

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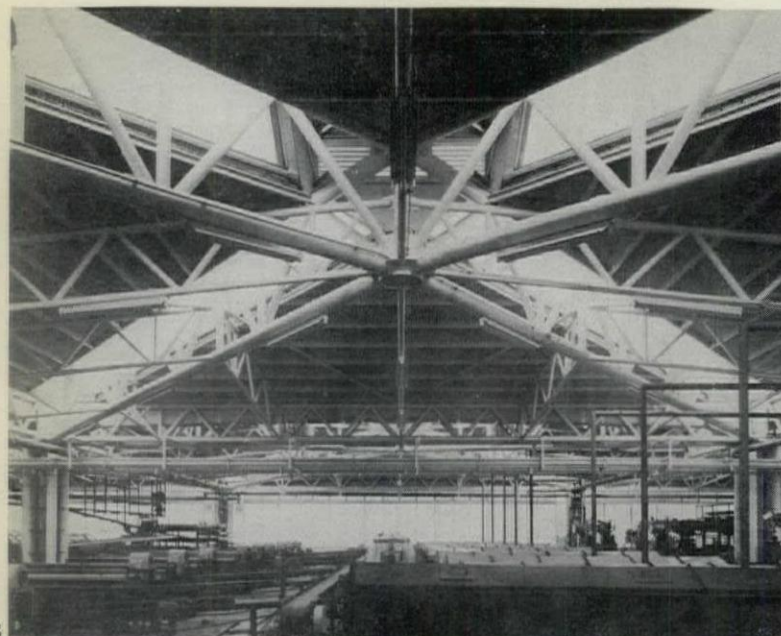
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8

METABOLIC

trusses span freely beneath the roof
lights following the same path.

An encouraging sign of increasing
logic is Kikutake's most recent Tokyo
plan—the so-called Pear City, 9, of



9

half a million people, which, instead of
moving dreamily out to sea, will be
sited on a definite part of the Tama
Hills in the western suburbs. The
developers, who may well actually
build it, are a group operating electric
railways. Three networks of 'green'
pedestrian ways, 'shopping' access and
'transportation' distributors are linked
at nodules called 'city bases.' Apart
from one giant tower, most of the
housing is in the Unité-Park Hill
tradition.

Structural clarity reaches a rather static
perfection in Kikutake's Government
Palace at Tatebayashi, 10, with its pure
Beaux Arts plan, 11, balancing service
towers and lift towers symmetrically
round the central hall, with four side
wings of offices. His back-and-front
contrast at Morioka is repeated in the
Iwate Prefecture Education Centre, 12,
its offices again single-banked in a
superbly restrained terrace, supported
on three lower floors of public rooms
and set against the service towers and
assembly hall behind, 13. The head-
quarter offices of the teachers' union
and 'school living co-operative union'
are on the second floor, with easy
access above and below. Mannerism

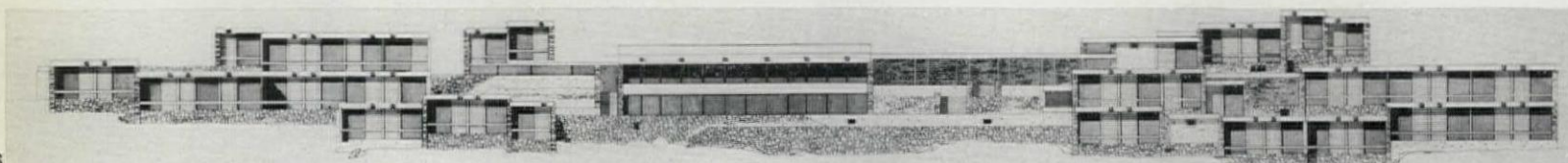


15

HELLENIC CONTOURS

The European Cultural Centre now
building at Delphi, jointly sponsored
by the Council for Europe and the
Greek Government, will conform sen-

sitively to the site's contours, 15. Pro-
fessor Constantine Kitsikis has
designed two separate parts: the Cul-
tural Centre Building (left), containing

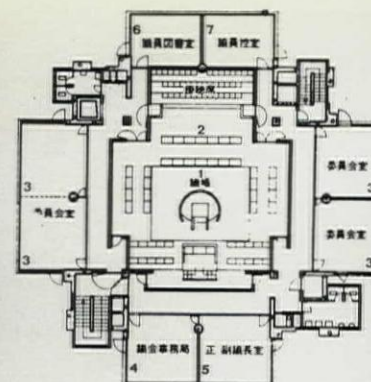


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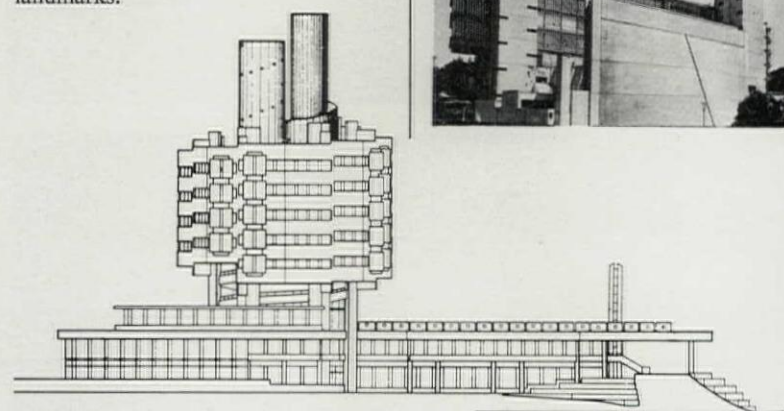


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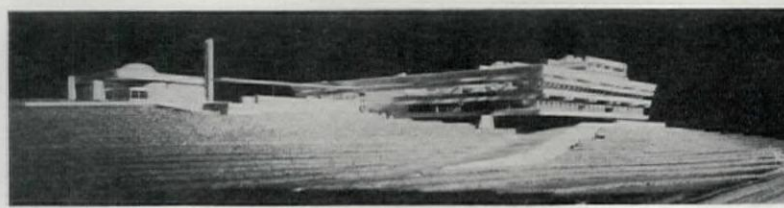


12

raises its warning signs in his most
recent and dangerously fashionable
project for the Hotel Pacific, 14, with
its discontinuous window bands, clip-
on service packages and cylindrical
landmarks.



14



17

assembly hall, exhibition space,
library, offices and open air theatre,
and the Guest House (right), housing
ninety people within an attractive
mixture of local stone and concrete,
16, reminiscent of Aris Konstanidis's
work for the National Tourist Organ-
isation, who are in fact paying for this
building, too.

Similar feeling for landscape is shown
in the competition-winning design, 17,
by Lazaros Kalyvitis and George
Leonardos, for the Faculty of Theo-
logical Studies at Athens University.
A cleverly organized sectional arrange-
ment of classrooms, offices and
auditoria, 18, is controlled by a
rectilinear geometry of circulation



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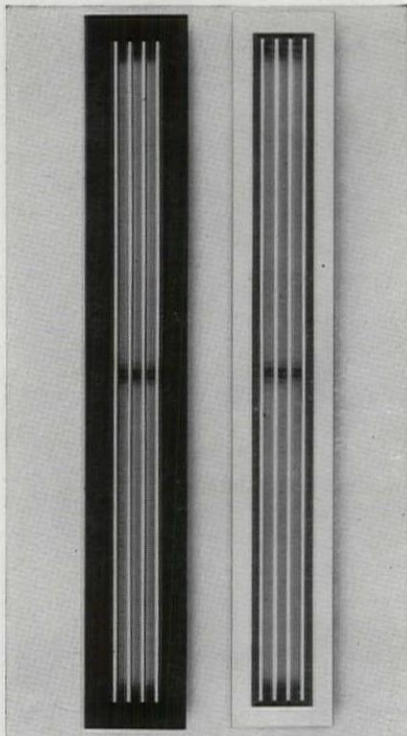
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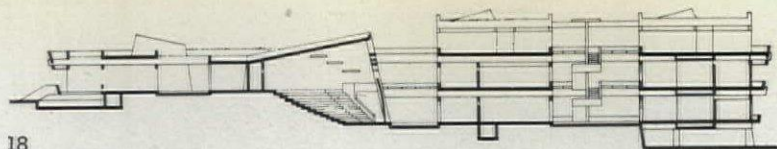
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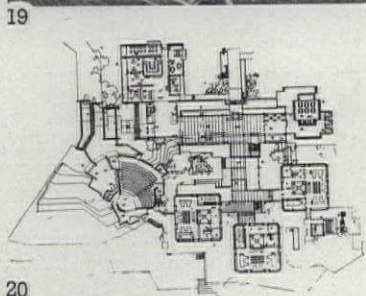
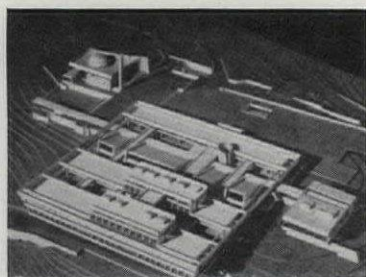
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ATHENS AND ANKARA

ways and closed courtyards, forming a square Corbusian volume, 19, flanked by the campus church (left) and library (right).

In Ankara meanwhile Western finance (Ford Foundation) is helping to build the Middle Eastern University. The linear layout, on a bleak site five miles out of the city, will provide teaching and accommodation for 8,600 single students, 480 married students and 1,031 staff from throughout the Middle East. The detailed pavilion and walkway plan, part shown in 20, has been expressed by the local architects, Altug and Behruz Cinici, in rather rigid concrete forms in the first phase of central hall and library, left in 21, and school

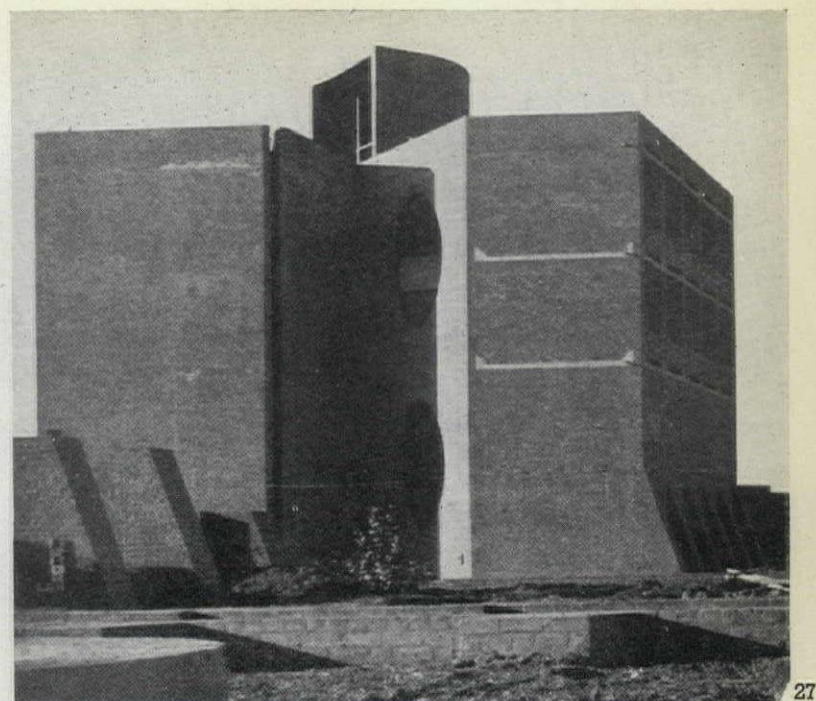
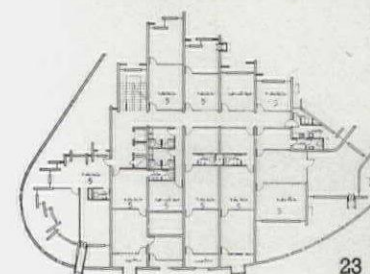
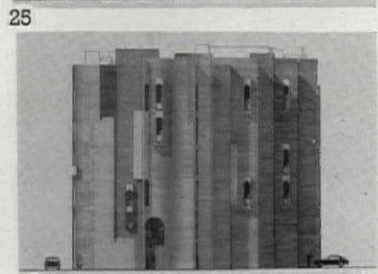
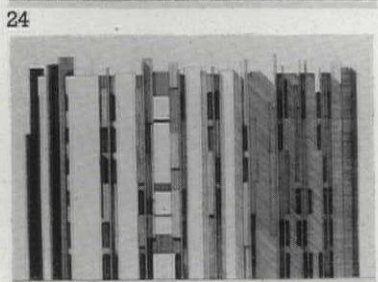


of architecture (right), improving considerably in elegance in the second part, the science lycée, 22.



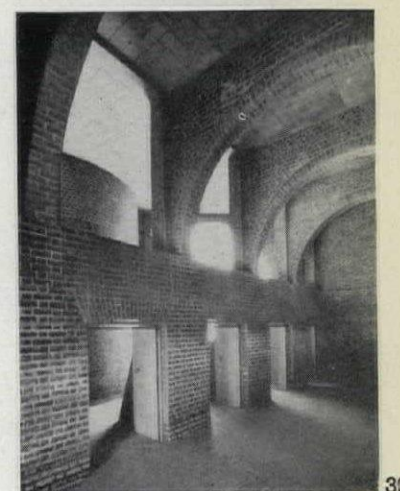
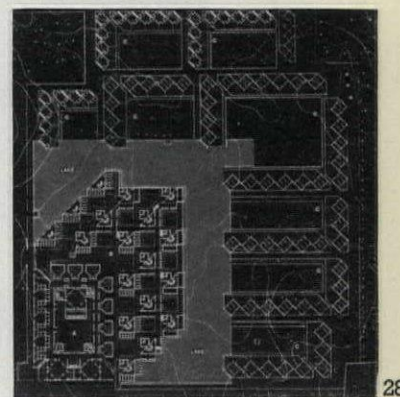
IRAQI

Iraq has been a graveyard of the famous: Wright's Opera House, Aalto's Post Office, Le Corbusier's Stadium—all unbuilt. It is thus encouraging to see the beginning of a distinctive locally based school, in the project, for example, by R. K. Chadirji, for flats (over a multi-purpose ground floor) on land in central Baghdad owned by the Iraqi Flying Association. The plan, 23, is based on cross walls, protected by a strong bounding wall from a heavily trafficked square on the south, 24; the cross walls appear on the north, 25, and at the sides, 26.

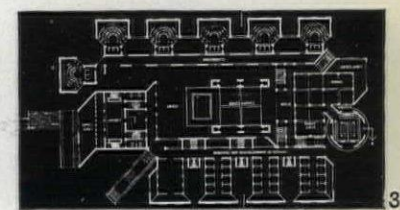
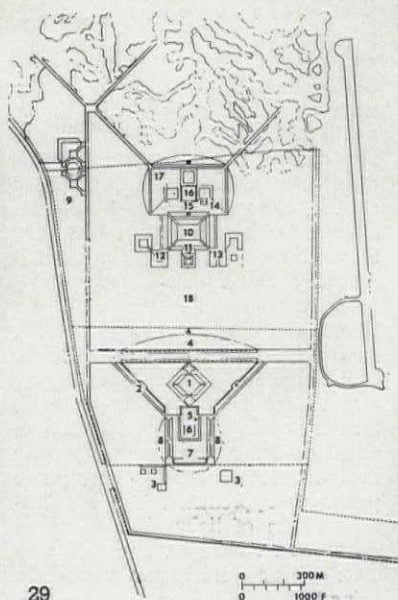


INDIAN KAHN

The American tourist who returned from Agra thrilled at seeing 'the Aga Khan by moonlight' will soon be able to visit ancient monuments by Louis Kahn as well. At Ahmedabad the first buildings are rising, 27, of his grandiose Indian Institute of Management, in which he has positively gloried in primitive technology. 'These buildings may look old-fashioned. An ancient material, brick, is being used, and its order respected. Concrete, a modern material, and its order, is being combined with the brick, forming a composite order.' This means first a brilliantly disciplined layout, 28, in which the central education building is encircled by dormitories, which are in turn separated by a cool lake from the serrated courtyards of staff and servants' housing (five different types) with, just off the edge of 28, a quadrangular 'market place.' Orientation throughout is designed to catch the south-west breezes. Similar hierarchical articulation is shown in Kahn's enormous scheme for the new capital of East Pakistan, 29, at Dacca in the



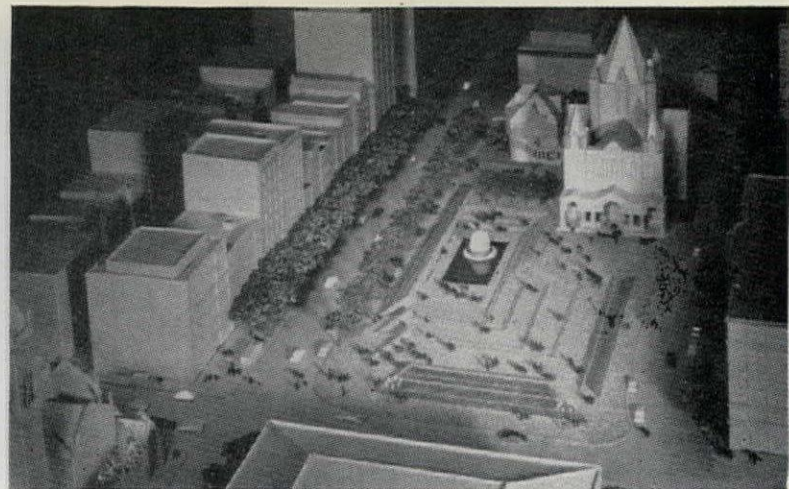
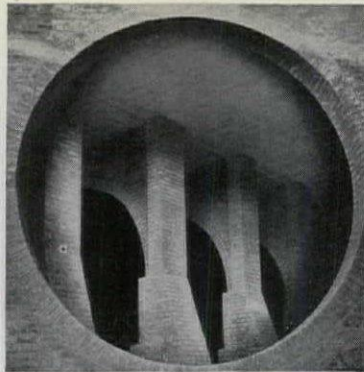
Ganges delta—building of which has already started. It will be even more sublime and child-like than Ahmedabad, where its detailing is foreshadowed, for example, 30, in the brick arches and almost Georgian



KAHN

voussoirs of the double-height hall at the base of the Institute's residential buildings—seen also in a porthole view, 32; these buildings are L-shaped, with a diamond-shaped service tower set against the hypotenuse of each triangle. The plan of the education building is equally ingenious, 31, with diamond library and a central rectangular court, from which classrooms and offices are pushed individually beyond the main volume of the building on each side.

32

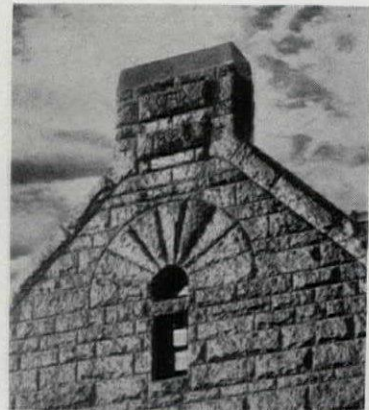


36

RICHARDSON

A recent competition for remodelling Copley Square in Boston has been won by Sasaki, Dawson, DeMay Associates with an ingenious arrangement of steps, walls and fountain, 36, linking Richardson's off-centre Trinity church with McKim, Mead and White's axial Library (foreground) and the street-corner steeple of Old South Church (bottom left). It is a pity that the traffic has not been remodelled too.

Meanwhile Richardson's Glessner House in Chicago, 37, once owned by the local chapter of the AIA, is lying empty. The Weese brothers are rallying their fellow-architects to finance (at \$135,000) a museum of Chicago



37

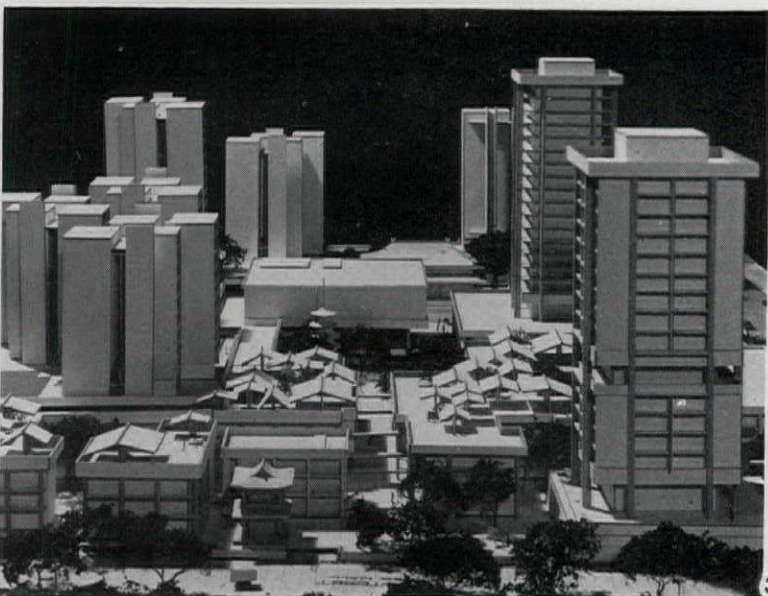
architecture within its eight-inch granite walls run by the Chicago School of Architecture Foundation.

38



CHINATOWN

Downtown Honolulu's Cultural Plaza project, designed by Robert Lamb Hart of John Carl Warnecke and Associates, is no doubt so called to distinguish its motives from the city's Financial Plaza project. Most 'cultural' is the attempt in the shopping malls, 38, at a local flavour 'not by corny devices, but by scale, heights, colour, open store fronts, active second and third storeys etc.' Yet the skyscraper flats (left in 39) and hotel and offices (right) are to be internationally conventional, while the boxy theatre and pitch-roofed meeting hall (centre) partake of both cultures.



39

HONGKONG FACELIFT



34



35

The twin problems of facelifting urban squares and of creating 'oriental' atmosphere are brought together, 33, in the remodelling of Statue Square in the commercial heart of the city of Victoria, Hongkong, by Alan Fitch of the architectural firm of W. D. Szeto. A weakly axial display of parking lots, 34, has been transformed by praiseworthy collaboration between the Hongkong Government and the Hongkong and Shanghai Banking Corporation into a raised plateau of paving, grass and water, giving a pleasantly wide range of shelter and diversion for the lunch-time crowds, including what must be the first bridge in Hongkong, as the colony has no rivers. The disappointment (as in Boston, above) is that the bisecting road has not been closed, although the architect has allowed for this being done later. The tower to the right of both pictures is the City Hall, jointly designed by Fitch when in the Public Works Department (see AR, August 1962). Across the water, dimly seen in the background of 33, is Hongkong's new Ocean Terminal, 35, which maintains the same quality in public architecture, and has a breezy elegance refreshingly different from England's ramshackle passenger approaches. The architectural idiom of lightweight rails and brises-soleil tacked on to rough concrete columns and beams succeeds in being both international and oriental.



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VIEWS AND REVIEWS

marginalia

BURY ST. EDMUNDS ABBEY RUINS

The following is the latest position in the controversy that has been raging about the Abbey ruins at Bury St. Edmunds. One of their unusual and picturesque features is the row of houses built into the remains of the west front of various dates from the later part of the seventeenth century, 1. The borough council, which owns the freehold, is proposing to hand over the site to the Ministry of Public Building and Works who intend to pull out the houses and treat the ruins in the 'normal way.' The aim, a representative of the Ministry has said, is 'to recover the scale and unity of the Abbey site,' which apparently means that someone unable to follow a plan would be able to see the size and arrangement by looking at the footings. They did not expect to make any significant discoveries nor to do any restoration, and it is clear that the picturesque character of the ruins would be destroyed.

None of the other organizations concerned are in favour of the scheme: the Georgian Group, the Suffolk Preservation Society, the Suffolk Institute of Archaeology, the Diocese of St. Edmundsbury and Ipswich and other groups opposed the scheme, and were supported by letters from prominent architects and historians and a public petition, when a special meeting of the council's parks committee was called to consider it in August. Because the meeting was called at short notice, the Royal Fine Art Commission and the Society for the Protection of Ancient Buildings were not able to send mandated technical representatives, but the

1, the west front of Bury St. Edmunds Abbey.



RFAC expressed the hope that the borough council would not come to a decision before hearing its views on so important a matter, and the SPAB wrote to repeat its strong opposition. Although the site is historically important, what little would be left of the west front after stripping would not be of much interest because all the facing stone has gone, leaving only the stubs of the rubble cores. To pull out the houses would be to destroy a unique feature, most attractive in its own right and forming an essential part of the townscape. The Ministry has refused to produce a drawing showing what they would leave. The property is listed as Grade I under Section 30 of the Town and Country Planning Act. In the official description it is said 'the houses built into the arches of this great west front of the Church have helped to preserve it.'

The origin of the council's scheme to hand over the area was apparently the fear that a heavy bill for repairs might fall on the rates, but the main motive now seems to be the preference of those who like their ruins tidied up. The Church has recently offered to take over the houses to form a cathedral close. As the tenants moved away they would put in cathedral staff, and they would immediately free the Council of any responsibility for repairs. At the time of going to press the matter had still to be considered by the full borough council, after the parks committee had recommended, by six votes to two, that the Ministry's offer should be accepted.

CITY AND RIVER

A recent (July) exhibition, 'City and River,' staged in Paternoster by the Architecture and Planning department of the City of London, showed some of its proposals for the future. The idea behind the exhibition, of bringing the public in on what is happening, is highly commendable and long overdue. Unfortunately the presentation managed to hide more than to reveal. A display of ancient maps, models of paddle steamers, sprit-sail barges and excellent photographs of the City (which incidentally carefully avoided all the visual atrocities which have been perpetrated there) gave a general sense of history and well being.

However, plan H, showing intended redevelopment, superimposed on an existing street pattern, was far from reassuring. It appeared, though it was certainly not stated, that many of the subjects of the best photographs



2, Queenhithe Dock, threatened by development plans for the Thames waterfront. See 'City and River.'

in the exhibition would disappear without trace. For example the historic Queenhithe Dock, 2, already shown on maps of 1100, and the splendid row of warehouses east of Blackfriars Bridge, a favourite subject of painters and the nearest thing to Venice in London, would all be destroyed by proposals shown for the area. Again, suggestions for redevelopment around the Monument showed it in a new and highly dubious setting. Today it stands in the line of Gracechurch Street, its great sculptured base large as a house, a marvellous juxtaposition of scale and a most unexpected piece of townscape. This wonderfully casual arrangement, with St. Magnus Church ending the vista, would go; instead the Monument would be backed by an off-centre curve of much higher buildings.

This would be disastrous. A plan of 1842 in the same exhibition showed the key; the monument kept in line with the street and backed by a small square.

Undoubtedly the City Corporation has a duty to keep the public informed of its intentions, but the implications should be really clear and the questionnaire handed to each visitor should ask for opinion on the proposals instead of, as in this case, asking such innocuous questions as 'How did you come to the exhibition?' and 'How long do you have for lunch?' K.B.

WITTGENSTEIN ARCHITECTUS

Wittgenstein was born in 1889 and died in 1951. He went to England in 1912. He was born in Vienna and finally settled at Cambridge in 1929. His *Tractatus* and his *Philosophical Investigations* founded him the most influential school of English philosophers. His father had been a wealthy

steel manufacturer, but the son renounced his worldly goods in 1919 and went to teach in the Schneeberg and Semmering region. However, he was dissatisfied, gave up, decided to be a monk and worked for a while as a gardener in a monastery. At about that time, in 1925, his sister Margaret Stonborough allowed him to design a spacious house for her. He did it in



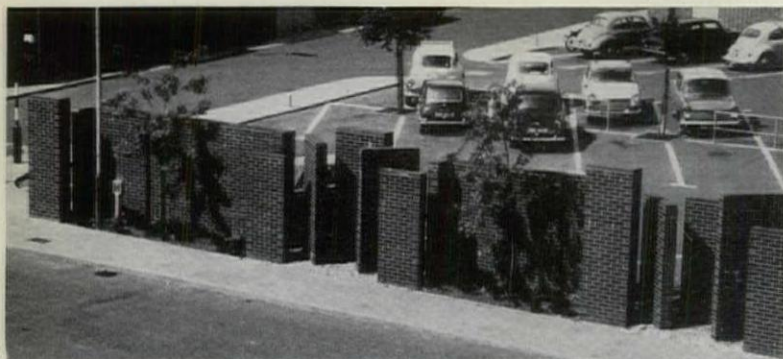
collaboration with the architect P. Engelmann.

The house is Kundmannsgasse No. 19, off the Landstrasse Hauptstrasse. Ugo Giacomini, who traced the house, published it in the Milanese periodical *Aut Aut* (No. 87, May 1965). It is clearly inspired by Adolf Loos and the other young Viennese Moderns who built just at that moment the large municipal housing estates in and around Vienna. The whiteness of the surfaces, the grouping of blocks, the windows cut into the walls without any mouldings and even their proportions are explicit about that. Ugo Giacomini adds to the information: he gives some speculations on the relation of the house to Wittgenstein's philosophy and also an illustration of a bust made by Wittgenstein at about the same time.

PALMA CONVENT

Penelope Reed, whose photographs of the Convent of San Francisco at Palma, Majorca, were the subject of *The Exploring Eye* in the October AR, sends the interesting information that it was from this convent that Father Junipero Serra was sent as missionary to California (then still part of Mexico) in the middle of the eighteenth century.

He founded a number of missions there, including those at San Diego, Monterey, Carmel, Los Angeles and San Francisco, and is said to have been the first white settler in California. Father Serra was born at Petra, Majorca, in 1713 and studied and taught at the Convent of San Francisco. He also held the chair of sacred theology at the Universidad Lulliana of Majorca. His travels as a



Parked cars are seldom a pleasure to look at. There is seldom any reason why they should not be screened, and never a reason why the screen should not be agreeable and interesting. Here, 4, is one that is both; at Cymbran new town; architect, Gordon Redfern.

missionary to the New World took him, together with a group of missionaries from Spain, first to Puerto Rico, Vera Cruz and Mexico City. He built the great church of Jalpan in the Sierra Gorda, which still stands, and was appointed to rebuild the mission of San Sabas after it had been burnt down by the Comanche Indians from Texas. He was in charge of sixteen volunteer Franciscan missionaries sent to take over the missions in Lower California, and it was from here he went on to San Diego in Upper California. He died at his mission of San Carlos of Monterey in 1784.

correspondence

THE LAST FORMGIVER

To the Editors.

SIRS: One sentence in Reyner Banham's article on Le Corbusier struck me as very strange, particularly as it was not elaborated. Banham says, 'From him the modern movement in architecture learned most of its international language of architectural expression, and the fact that this language expresses practically nothing of interest for the second half of the twentieth century is the movement's fault, not his...' Le Corbusier's architecture seems to me very alive today—I spend several hours of each day in his Visual Arts Center. Perhaps Mr. Banham might clarify the term, 'language of architectural expression.' I would also like to know what is of interest for the second half of the twentieth century. Le Corbusier's greatness did not lie in his use of strip windows, 'pilotis,' and sunbreaks, nor even in his system of proportions. It was intuitive and accidental. He was not so perfect, so enormous as Wright, but he came close.

Yours, etc.,

JONATHAN HALE

New York

Reyner Banham replies: The Carpenter Center 'seems very much alive today' to me too—but any moderately lively and inventive building would look so among the arid pomposities of the Harvard scene. But this is not the point at issue—and I suspect that Mr. Hale knows this perfectly well, to judge from his reference to strip-windows, pilotis and sunbreaks. Wherever Le Corbusier's personal greatness lay, his contributions of the greatest historical consequence (as far

as one can judge at this date) were to the repertoire of architectural forms, whereby the modern movement and its academic successors (of the 'fifties and 'sixties) sought to express their 'will to form,' progressive sentiments, longing for the Mediterranean, religious sensibilities, etc. Since it is now widely realised that the use of these forms does not guarantee what they were originally supposed to promise, viz. improved functional and environmental performance, this body of symbolism is of decreasing interest outside architectural circles. And if clients have ceased to be interested in these forms (where they are not actively hostile to them) the architectural profession's programme for survival will be—of necessity—to lose interest in them too.

LE CORBUSIER IN PRACTICE

To the Editors.

SIRS: Several of your readers are, I know, writing doctoral theses on Le Corbusier, so I wonder if any of them can explain exactly when it was that he was first registered (i.e. *patenté*) as an architect in France.

In the first edition of his and his cousin's *Gesamtes Werk von 1910-1929* (1930), but suppressed in the second edition, there are two pages (21-22) devoted to an 'Abattoir Frigorifique de Bordeaux' with the signature 'C. E. Jeanneret—15 novembre 1918.' Above this is the traditional legal phrase: 'dresse par l'architecte soussigné.'

Now we know from Maximilien Gauthier's biography (p. 37) that in the penultimate year of World War I, Le Corbusier accepted an invitation to establish himself in Frankfurt; but at the last minute he changed his plans and went to Paris instead. It seems strange to find him already established as an architect in France by the end of the war, especially as Sigfried Giedion assures us that 'his career as an architect began only about 1920.'

Yours, etc.,

PETER COLLINS

McGill University.

BRISTOL AS IT WAS

To the Editors.

SIRS: In 'Marginalia' of your July 1966 issue you illustrated 'an excellent and early example (1856) of the Gothic warehouse style promoted by 'E. W. Godwin, Ponton & Gough, W. B. Gingell and others...' but, as far as I understood it, you did not state specifically that the actual example

you illustrated was by Godwin himself. I would just like to say that it is, in fact, by Godwin, and was illustrated in *The Building News* for 1858, full page, with recommendations for the reader 'to note how well Gothic can be applied to street architecture.' At some time during the last twenty years it has been demolished without official record. It would seem an excellent idea for planning departments to employ architectural historians for research into areas due for redevelopment.

Yours, etc.,

JOANNA TOLMIE

Bristol College of Science and Technology.

RAIL CLOSURES AND AFTER

To the Editors.

SIRS: I read with much interest the article under the above title in your April issue and have seldom seen the position more clearly or authoritatively stated. Its last paragraph is of particular interest in relation to the plans since put forward in the Government's White Paper on transport policy, which seems to envisage arrangements under which local communities should subsidize services on which British Rail make a loss. But in recent years it has become increasingly obvious that there is only one way to secure the retention of a stretch of railway or waterway threatened with closure as part of the national undertakings, or to bring about the restoration of a section that has already suffered that melancholy fate. This method lies in the transfer of ownership to a new organization (often of trust status) formed by enthusiastic supporters of the kind of transport involved. The equipment and operations of traditional forms of transport arouse more interest amongst those not professionally concerned with them than do the activities of any other industry, and railways and canals have a large following of people who will devote time, energy and money to furthering the future of selected parts of networks which, paradoxically, though conceived in commercialism, can be kept in being only through altruism.

We have seen both the Lower Avon Navigation and the Stratford-on-Avon Canal (lower section) restored by waterway supporters, and the parties of volunteers from the Kennet and Avon Canal Trust, now at work every week-end, show the scope of further schemes. The Tal-y-tlyn, Festiniog, Bluebell, Middleton, Eskdale, and Welshpool and Llanfair Railways have been retained or restored (in some cases only partially as yet) by application of such methods, and have attained results that have caused the movement to grow considerably. Other schemes already well advanced or at different stages of investigation include the following: Keighley and Worth Valley, Midland and Great Northern (Sheringham-Weybourne), Severn Valley (Bridgnorth-Alveley), Dart Valley (Totnes-Ashburton), Yatton-Clevedon, Havant-Hayling Island, Cowes-Ryde, and Kent and East Sussex (Robertsbridge-Tenterden). Perhaps the most ambitious projects that have been mooted are those for the Horsham-Guildford line and for the acquisition

of all the lines in Cornwall by the county council, one of whose spokesmen was quoted in the press last April as saying the proposal was being investigated.

The Government's White Paper repeats the recognition of the value of voluntary effort in the context of canals that had already been affirmed in 1959 by an earlier White Paper, but surprisingly it contains no comparable statement with regard to railways. Whilst it admittedly sets out broad general principles which could provide a background for the application of voluntary effort, it does not offer a specific solution to the problems which at the moment are limiting the scope of just such plans as it advocates. Much of what is said is excellent so far as it goes. It is pleasing to know, from Section 59, that local efforts enjoy official blessing ('The Government welcomes and supports these initiatives'), whilst it is fair that, as Section 61 tells us, 'It is also reasonable that the first source of "outside" support should be revenues from the local community.' Those who suspect the quarters from which the White Paper comes of being committed to a doctrine of uniformity can take comfort from that part of Section 74 which says, 'The needs of public passenger transport vary with the character of each locality.' The need for change is recognized by Section 18's neat distinction between potentially profitable activities and others: 'There are other services, however, which have little or no prospect of becoming directly remunerative in a commercial sense, on the basis of revenue from users, at least until a more sensible framework for urban transport can be established; yet their value to the community outweighs their accounting cost to the railways.'

The problem is how we can best put into effect the need expressed in Section 9 by the words, 'New thinking is required, not only about types and combinations of public transport, but also how they should be financed.' We learn from Section 27 that 'The Government is considering the possibility that local communities might, as part of the long-term arrangements, assume some, at any rate, of the financial responsibility for passenger services whose retention is required for local reasons, if they should decide that the line ought to be preserved as part of the local transport system. This responsibility would devolve on any new transport authorities that might in future be established for the areas concerned.' Unfortunately, the delay here implied could involve the irretrievable loss of certain lines which local communities have already shown they want to keep. Far from there being time to wait for 'long-term arrangements,' the need for action is urgent, and the kind of action most likely to succeed is that which will enable advantage to be taken of the keenness of those who really want to keep railways open. This will be better than trying to impose new ideas on the professional railway management. For to the present generation of management, a policy which does not make existing or potential profitability the criterion by which a service shall be developed or removed is a new

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idea. The authors of the White Paper say, 'The touchstone of a sound railway policy is the extent to which it meets the country's overall transport needs. Commercial viability is important, but secondary.' They can go on saying that till they are blue in the face, but they will not alter the fact that our railwaymen have not looked at things that way for many years.

If Section 27's reference to local communities assuming partial financial responsibility means paying parts of subsidies for unprofitable services still to be run by British Rail, this is not a good solution, for it is doubtful whether that organization is well fitted for the task. The transfer of given sections to entirely new operators, on the other hand, could be the key to success. The White Paper is certainly right in saying that '... the Government must provide the proper framework within which local authorities can act.' It is in helping solve the financial problems of potential new operating authorities that the Government can most usefully play a part; especially in overcoming the two main causes of the lack of progress shown by what have seemed sensible schemes with reasonable flows of regular or seasonable traffic (such as those involving the Hayling Island and Yatton-Clevedon branches). The first of these causes is the lack of independent arbitration in settling purchase prices; the second is that, although the retention of railways may be claimed as fulfilling the national interest, this country has not so far evolved a method of spreading the expense over all who gain a benefit.

The difficulty over purchase prices seems to be a conflict of attitudes between vendors and would-be purchasers. The British Railways Board, under pressure to improve their financial position, wish to make as good a bargain as possible, an ambition expected—in normal times—of all businessmen, and in dealing with ordinary transactions a commendable one, especially so on the part of those grappling with large losses. Purchasers, however, would say there are reasons why, when a stretch of line and the equipment with which to run it are the subject of negotiation, normal commercial considerations should not apply. What is at stake is part of the country's transport heritage, something bequeathed to us by our forebears, and still having a real value in the area it serves, even if it has not been made to cover its costs with a wholly paid staff. It should moreover be borne in mind that, on closure, demolition expenses would be incurred on bridges and viaducts that would yield but negligible scrap value. Appropriate credit should be allowed on taking over.

There is also the question of contributory value: the concept in transport accountancy which recognizes the value to the main lines of traffic that passes over them because of an existing branch. Evidence cited by Mr. David St. John Thomas in *The Rural Transport Problem* is highly relevant to this question, for it shows that branch closures lead a surprisingly large number of former rail passengers to forsake not only the branches but also the main lines and, indeed, all forms of public transport. It is also

important to bear in mind that sale of scrap and land represents a once-and-for-all contribution to the finances of the Board, whilst the nourishing and strengthening influence of contributory value to the main lines from branches on which they do not themselves make a direct loss is a process which can be expected to go on for ever.

In view of these considerations it seems clear that it is wrong for local communities to be discouraged from plans for self-help by purchase prices assessed on too narrow a basis, and that there is a case for disagreements on what is a fair price to be settled by an independent arbitrator appointed by the State. One of the best known acts of the present Government on the domestic front has been the introduction under their Rent Act of independent judgments on how much tenants should pay. If State intervention is thought right in settling issues such as this, it may be deemed even more justified in adjudicating between local communities who wish to retain threatened railway services and the existing operators.

Once a fair price had been arrived at, there would be in some instances justification for a Government grant or loan, secured on the fixed assets of the section concerned, after which the economies inherent in the new undertaking would be the key to its covering its costs. Expenditure of this kind would be an agreeable alternative to the continuing subsidies that seem the only other way of keeping services in being.

Yours, etc.,

O. H. PROSSER

Bristol.

book reviews

HONEST GUIDE

A GUIDE TO THE ARCHITECTURE OF WASHINGTON DC. Praeger. \$2.95.

Slowly, guides to US architecture are moving out of the amateur-duplicated phase into that of professionalism and real letterpress. Huxtable's New York, Siegel's Chicago, Gebhardt's Southern California have all been reviewed in these columns recently, covering the major areas of American architectural activity, the cities that have made the biggest contributions to the progress of the art. But Washington DC is another matter—it has ever been a city where lost causes, dying styles, embattled eccentrics, plus not a few ingenious time-servers, have come to rest, and bequeathed to the national capital a menagerie of buildings that aspire (and frequently attain) to very high standards of professionalism but usually in a mode that is about a generation and a half behind the style (and needs) of the US at large. The British contribution is a Lutyens embassy—entirely appropriate. For those of mature taste who can appreciate this kind of thing—and it has certain virtues after seeing the architecture of the rest of the States, not unlike brandy after a meal of deep-frozen Virginia ham and French fries—there exists an admirable guidebook, prepared under the direction of Hugh Newell Jacobsen at the time of the AIA convention last year, and

subsidized by US Steel (of all people). In tall pocket format, it has all the Washington virtues of professionalism and erudition, but is free of the capital's countervailing vices of irrelevance and parochialism. Every building is identified by a photograph (occasionally by two), name, location, date, architect(s), hours of opening where appropriate and a map-reference, and is briefly described in a caption identifying its architectural or historical importance, and there is an excellent introductory essay by Donald Lethbridge. The ravages of Potomac Fever in the text are restricted to the occasional portentous quotation (from sources as diverse as Thoreau and Scott Fitzgerald) by which some captions are prefaced. Typically, the quotation which prefaces the preface—Mies's 'Architecture is the translation of an epoch into space'—gives one grounds for doubting that there is much architecture in Washington, and, like all the others, has an inflationary effect on that which it seeks to justify. REYNER BANHAM

MOVING INTERIORS

RAILWAY CARRIAGES IN THE BRITISH ISLES FROM 1830 TO 1914. By Hamilton Ellis. George Allen & Unwin. 1965. 45s.

109 half-tone plates, 49 line illustrations, three colour plates (charming pictures by the author), 235 pages of text, an 11-page index of rare quality, and the price 45s.; that these facts are not surprising is a tribute, in an age of quickly rising prices, to English publishers.

Inevitably in a small utilitarian object the scope of the designer is small; the smaller the object, the smaller the scope. And in a railway carriage there are very few design considerations (fewer than in an ordinary sitting-room)—comfort in seating, adequate lighting and heating, a good view, lavatory, and corridor if your train has a dining car, buffet or observation car. Mr. Hamilton Ellis traces in great detail—and this is really a study for the glory of steam maniacs, and not a pleasant and casual general-reader survey—what, for once, is undoubtedly progress. The illustrations tell much of the story. At the beginning are the modified horse carriages; by the 1870's carriages (externally) are nearer to our pattern except for a rather vertical and stately appearance accentuated by two-colour painting; by the turn of the century the carriages are much as we know them, and very good at that. The only very obvious difference is the absence of the clerestory.

The inside story might best be separated into the various features. The seating gradually got softer and more comfortable—progress. Heating; to begin with none at all, then foot-warmers (boiling water poured in and later the use of soda acetate crystals), the Baker heater (a water boiler) in the early Pullman cars, and not until this century general steam heating—progress. Lavatories (water closets); to begin with none at all, a water closet in a royal carriage of 1850, a more general provision after the 1860s—progress. Lighting; none to begin with, then oil pots and passengers could buy sucker candle holders at the station, the Argand lamp, compressed oil gas cylinders from the '70s, the incandescent electric lamp from 1881, and various electrical systems in

the '80s and '90s (but in 1906 80 per cent of carriages were gas lit). Food; the first dining car went into service in 1879. Corridors; these had a tortuous history, carriage by carriage (first ordinary side corridor in 1881), and the Great Western Paddington-Birkenhead corridor train beginning in 1892 was famous. Democracy; to begin with the poor travelled in trucks ('airiness' recommended) with holes bored in the floors to cope with bladder strain, penitential accommodation until Sir James Allport, of the Midland, angered other companies by treating 3rd class as human class, doing away with 2nd class in 1875 (and so escalating 3rd class comfort); it paid, and in the first year of general 3rd class conveyance the Midland carried two million more passengers and raised passenger receipts by £220,000. The progress, real enough, was erratic, and one wonders how much better things might have been (and present problems reduced) if the rival company system had never been allowed and if the companies had not been run by monomaniacs or madmen. One of the curiosities Mr. Hamilton Ellis often refers to is the longevity of carriages. One coach built about 1845 was in service until 1887 when it was sold as a house, and so remained until 1932. In 1889 the Great Northern built a carriage for the Queen; it was recently sold to become a church. The larger companies sold their old stock to the smaller ones and so in the remotest places a train would consist of a strange medley of carriages of different shapes and sizes.


Now most of the variety and the differences of colours have gone (no more extravaganzas of French decoration for the privileged), the greatest single and glorious sight of mechanical power, the steam locomotive, is going fast. But no part of British history is so expertly and nostalgically chronicled as railway history—and Mr. Hamilton Ellis has provided in this book further proof that he is eminent in the company of railway historians.

PETER FERRIDAY

BOOKS RECEIVED

POPULATION GROWTH AND PLANNING POLICY. By Eversley, Jackson and Lomas. Frank Cass & Co. 37s. 6d.
EVIDENCE AND PROCEDURE IN ARBITRATION. By William G. Gill. Sweet & Maxwell 30s.
LIGHTING. By Derek Phillips. Design Centre Publication. 7s. 6d.
PALACES AND CHURCHES OF THE KREMLIN. By Karel Neubert. Paul Hamlyn. 35s.
ARCHITECTURAL DRAWINGS. By Helmut Jacoby. Thames & Hudson. 84s.
GREATER LONDON. By Frank Smallwood. Bobbs-Merrill.
SCHOOL BUILDINGS: Vols. 1 & 2. By Karl Otto. Iliffe Books Ltd. 95s. each.
MASTERPIECES OF FURNITURE. By V. C. Salomonsky. Dover. 16s.
FORMWORK FOR MODERN STRUCTURES. By Sir Frederick Snow. Chapman & Hall. 42s.
GEORGE IV AND ROYAL LODGE. By Sir Owen Morshead. Regency Society of Brighton and Hove. 10s. 6d.
WROUGHT IRON. By Fritz Kuhn. George G. Harrap. 42s.
LONDON: AN ILLUSTRATED HISTORY. By Ivor Brown. Studio Vista. 70s.
BUILDING IN HISTORY. By R. A. Stevens. Cassell 30s.
GENERAL GALVANIZING PRACTICE. Hot Dip Association.
A COLLECTION OF WRITINGS AND BUILDINGS. By Harwell Hamilton Harris. School of Design, North Carolina.
THE CHANGING WORLD: URBAN GROWTH IN BRITAIN. By Michael Storm. Oxford University Press. 6s. 6d.
FRANK LLOYD WRIGHT'S FALLING WATER. By Edgar Kaufmann, Jr. Iliffe Books Ltd. 45s.



The Galleria at Milan has long been famous, but it has never been superseded as the finest example of the covered pedestrian shopping street (now so highly favoured by town designers) which also serves as the social focus for the local community. The photograph opposite  was taken by Penelope Reed and on pages 373-375 are further photographs together with an account, by a Milanese policeman who used to stand on duty there, of daily life as it is lived in the Galleria.

Guy Oddie

THE FUTURE—CAN WE FACE IT?

THE ARCHITECTURAL IMPLICATIONS OF INDUSTRIALIZED BUILDING

Evangelical and fundamentalist, the Modern Movement of thirty years ago saw prefabrication as the instrument of an ideal. Responsive to the machine aesthetic and using Ford techniques of mass-production, it was to be the logical means of bringing machine-age benefits to a mass society. Before and since, however, the development of prefabrication on any significant scale has been due, not to architectural ideology, but to *force majeure*. Either there has been no technological alternative—as with the cast-iron frames of the great nineteenth-century glass-houses—or there has been an insurmountable shortage of building labour, as in the case of post-war houses and schools.

The search for lower costs or speedier erection is only an extension of these coupled motivations which, as modern societies pursue their goals of greater wealth and higher productivity, reinforce each other. Hitherto, at least in Britain, the emphasis has been on saving site labour; and although components have been factory-made the factories themselves have been mechanized to a comparatively small extent. But men using machines can produce wealth more quickly: without machines human resources are under-utilized. Henceforth therefore, an increasing effort will be made to save labour in the factories as well as on the site,

and prefabrication must be seen as part of an accelerating trend towards using methods of production which, in economists' jargon, are capital-intensive rather than labour-intensive. Together with associated forms of industrialized building it must now be regarded as the norm rather than the exception.

The situation can only be reversed by reversing the objectives of society, which seems unlikely to be deflected from its course. The prophetic logic of Gropius and Le Corbusier has been confirmed by the practical logic of events; yet the contribution of prefabrication and industrialized building towards an ideal twentieth-century environment has not been marked. Disenchanted by experience, we tend to turn our backs on what appears to be a desiccated, faceless future. But since heads in sand leave backsides vulnerable, a more penetrating examination of the architectural horizon is needed to see how events can be set on a more hopeful course. The recent publication of a history of British prefabrication compiled by R. B. White, an architect at the Building Research Station, affords the stimulus to do so.*

No detailed argument is needed for saying that capital-intensive methods of production thrive on repetition

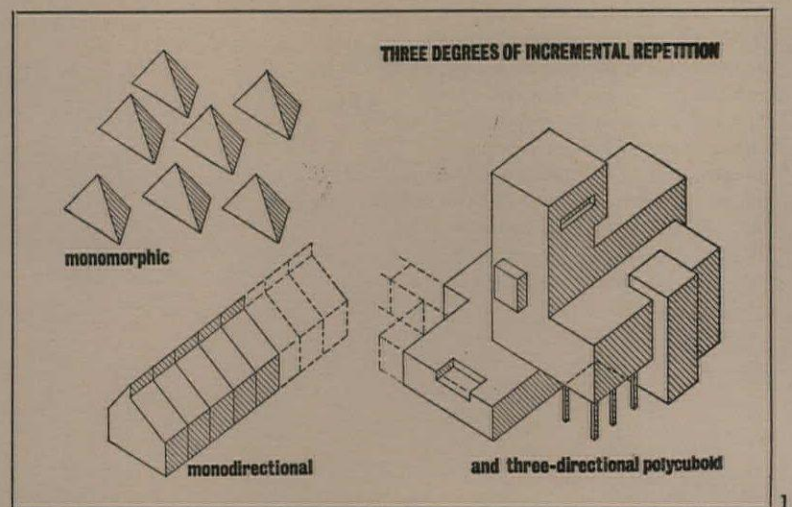
* National Building Studies, Special Report 36: *Prefabrication: A History of its Development in Great Britain*. By R. B. White. HMSO, London, 1965. 50s.

and languish without it. This is equally true of all industrialized construction whether light-and-dry produced off-site or wet-and-heavy produced on the site itself. No satisfactory explanation has ever been given for the high costs which killed prefabrication in the post-war housing programme, but Mr. White thinks it likely that insufficient repetition was a contributory factor. Between 1945 and 1948 the total number of prefabricated houses erected in Britain amounted to only 156,667. Eleven firms were producing eleven different designs and the greatest number produced to one design was 55,000. Volkswagen, by way of contrast, turn out about a million vehicles a year.

In the post-war schools, prefabrication certainly saved site labour and erection time; but it showed no significant cost reduction until the CLASP consortium of school building authorities was formed to increase the size of purchasing orders and hence the degree of repetition. The current volume of CLASP production stands at about £20m. per annum. Allowing (conservatively) an ex-works price of £300 per vehicle, Volkswagen production is fifteen times greater. Admittedly the comparison is specious—it takes no account of how often each component and assembly operation is repeated in either case or of how the total value of production compares with the net annual value of the plant producing it. Nevertheless, the broad figures indicate how much further building must still go before the machine's greed and appetite for repetition can be satisfied. On the other hand it is precisely from horror of repetition that fears for the future stem. If 157,000 pre-fabs gave a dog a bad name, what would a million have done? Thus the key issue for our architectural future is how to satisfy the economic demands for repetition yet ensure that architectural values are established and maintained.

The repetition of standard components such as doors and windows does not in itself cause concern so much as repetition of a quite different order. For this other order of repetition a convenient and immediately descriptive term is difficult to find; it is the kind of repetition which occurs when enclosing elements such as walls and roofs are made up wholly of prefabricated or repetitive components. Because the lowest dimensional limit of components 'off-the-peg' is appreciably greater than with components 'tailor-made,' there is a minimum volumetric increment by which the shape and size of such constructions may be altered. This kind of repetition, which may therefore be called *incremental*, is central to the effect made by prefabrication on visual values.

Three major degrees of incremental repetition can be discerned, the most primitive extreme of which is seen in the post-war 'pre-fab' houses. Repetition in their case, since the size and shape could not be changed at all, demanded repetition of the house itself, and it may therefore be described as *monomorphic**. The familiar prefabricated greenhouse or shed consisting of identical bays or sections throughout its length typifies a second degree of incremental repetition, which is essentially linear or *mono-directional*. Finally there is the rarer kind of prefabrication, best illustrated by



CLASP,† in which shape and size may be altered by increments of cuboids added to (or subtracted from) the height and width as well as the length of the building, 1. The word 'cuboid' needs emphasis since the large role that squared planning grids play in such construction tends to obscure the fact that plan shapes are not so much a series of equal squares as of different sized rectangles made up of equal squares, while variability of roof and storey height adds further volumetric complexity. This third degree of incremental repetition may therefore be called *three-directional polycuboid*. (Regrettably, any other expression is either less descriptive or even more cumbersome.) In contrast to these three degrees of incremental repetition, pre-industrial individually dimensioned building can be called *polymorphic*. The dimensional choice is infinite, the volumetric increment subject to virtually no restriction on either size or shape.

Even the most advanced degree of incremental repetition of which industrialized building is so far capable falls far short of full polymorphic potential. In practice, however, this potential has been often left untapped. Pre-industrialized building has, for example, many of its own cases of monomorphic repetition including Egyptian pyramids and Apulian *trulli*. Ribbon-developed (and later) suburban housing shows, too, that the worst aspects of such repetition are not confined to prefabrication. Whether monomorphic repetition is tolerable depends, in fact, entirely on how much there is. A Sahara covered with pyramids or *trulli* or Buckminster Fuller domes would look as much a desert as an endless suburb of monomorphic semi-s or aluminium bungalows. Mono-directional repetition also has illustrious antecedents, in the classical colonnade or the eighteenth-century street. Again tolerability relates to quantity, as by-law housing and the recent proliferation of tall blocks of offices and flats bear witness. Memories of Bloomsbury or Belgravia or Georgian Edinburgh may at first suggest that the tolerable quantity in this case is nevertheless greater. Further reflection, however, shows that even where repetitive streets and squares are *basically* mono-directional, a strong polycuboid character is imposed, if only by the incidence of

* *Uniform* in its sense of 'one-formness' is equally valid but too generally used for this context. The Oxford Dictionary defines monomorphic as 'not changing form during development,' which is just what we want it to mean.

† CLASP designates both the Consortium of Local Authorities whose Special Programme was originally concerned with schools, and the system of permanent lightweight prefabrication developed for that programme. The system has been successfully used at the new University of York in the buildings to which reference is made later in this article.



2, the painted plaster, tile and stone of a Portuguese townscape, representing the extreme of pleasurable diversity.

balconies and porches or the adjustment of roof and floor levels to changing contours.

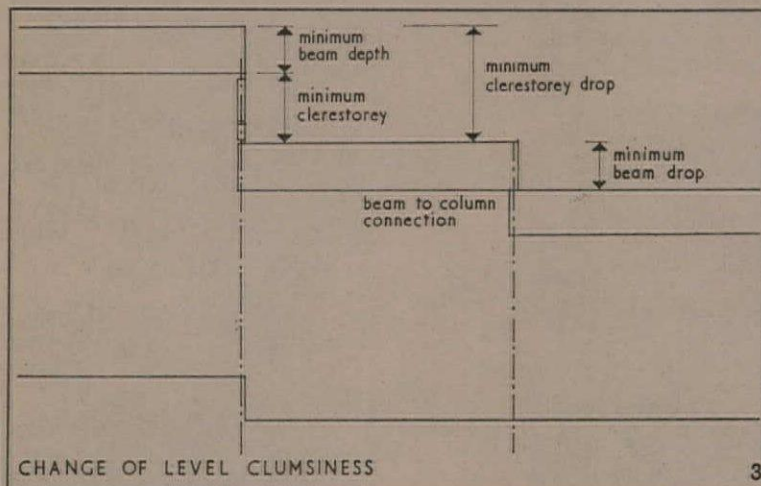
Much value is also rightly attached to the angular subtleties by which mono-directional character is modified as the traditional street skirts a forgotten water course or hedge-marked boundary. These are subtleties denied to any architecture obeying a strict rectilinear convention, regardless of whether it is industrialized or not. At the same time, even where the architecture itself is rectilinear, the architectural relationships need not be so—note, for example, the relative positions of strictly rectilinear temples on the Athenian acropolis. However, where both architecture and inter relationships are rectilinear (as at the present time they tend to be) the tolerability of monomorphic and mono-directional repetition is minimized and the need for a polycuboid character correspondingly increased. Thus while one form of repetition does not exclude the other, the development of monomorphic or mono-directional systems without parallel development of polycuboid systems might well justify pessimism.

Industrialized building for multi-storey housing has focused interest and attention on systems which will be recognized as essentially mono-directional—vertical mostly, rather than horizontal, but mono-directional just the same; but for the architectural and visual future further development of three-directional polycuboid systems is central and vital in industrialized building. Seen from this viewpoint, what directions should further development take and what criteria should it try to meet?

Current developments are directed towards 'interchangeability'; i.e. towards enabling manufacturers to make components to such dimensions and profile that they will fit any building system*. This, it is argued, will open both a wider market to the manufacturers and a wider choice to the designer. But is this kind of choice between a more extensive range of components, materials and textures, what visually the

* Terminology easily becomes confused. Thus, present systems are regarded as closed and consequently unable to accept components not designed for them. If full interchangeability is achieved all systems of prefabrication will disappear and be replaced by one system of dimensional co-ordination. So where designers now lament restricted choice of components they will then have unlimited choice of components but will risk lamenting restricted choice of dimensions!

designer needs? Most admired townscapes are distinguished more by homogeneity than by diversity of material and texture. Assisi or Chipping Campden may be exceptional, but the painted plaster, tile and stone of the Portuguese townscape in 2 represent the opposite extreme, of pleasurable diversity, beyond which lies the wild chaos of modern Oxford Street. Nor, functional purposes apart, is great variety needed in components: the photograph shows only three patterns of window and two patterns of door. So far, present trends appear to open a prospect of embarrassing richness rather than restraint. Further analysis of the illustration, however, reveals three important choices which pre-industrial building offers and industrial building so far denies. The first of these, not easily evident at a casual glance, is a wider choice of *vertical* dimension. Few of the projections and recessions in this townscape would lie beyond the scope of a polycuboid system on a 40 in. grid; it will also be noticed that all openings are virtually the same width—possibly due to lintel restrictions; but, especially in the right hand half of the picture, both heads and cills are at differing heights. In short, vertical dimensional choice is greater than horizontal dimensional choice.



This example is only symptomatic of larger problems which arise when one cuboid abuts another. Because current polycuboid systems have been developed with schools primarily in mind, the vertical increment has been governed largely by the combined factors of roof-beam depth, ceiling height and useful depth of clerestory, 3. Assuming, for the argument, that floor, roof and clerestory depths are each 2 ft., a vertical difference of 4 ft. will occur between roof levels. Even where clerestories are not needed, the desirability of avoiding complicated beam-to-column junctions tends towards a minimum vertical increment of 2 ft.—an increment hardly conducive to subtlety of relationships with storey heights of generally 10 to 12 ft., and especially difficult when buildings have to be accommodated to gentle contours. Admittedly the vertical increment is often smaller than this in relation to cills and heads, but the roof level increments remain a serious problem whose importance grows the more a restricted dimensional system is adopted in the interests of interchangeability.

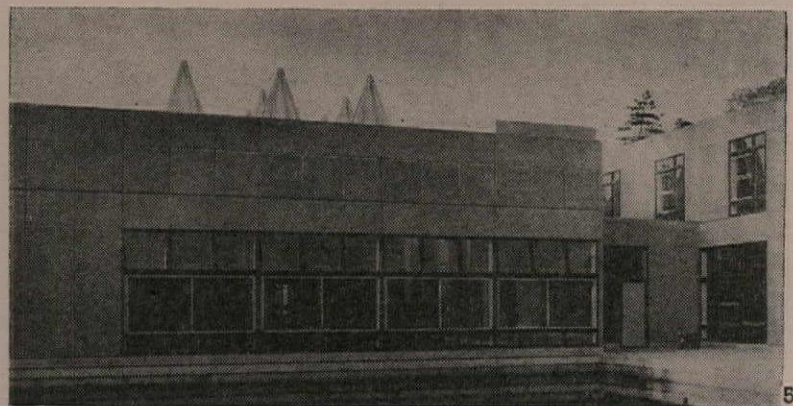
Two other devices so far denied to industrial building are closely linked (again in terms of visual value) with



4, covered way linking residential blocks, York University. Architects, Robert Matthew, Johnson-Marshall and Partners.

vertical incrementation and change of level. They are, quite simply, slopes and roofs. The boundary wall on the right of the Portuguese photograph can both literally and figuratively follow its inclinations. With prefabricated rectilinear panels it would have to follow the line of the black painted dado which so ingeniously and ingenuously effects a visual modulation between the close increments of the steps and the straight slope of the boundary wall. The lack of a device for handling slopes is a main defect of the covered ways built at the university of York, 4. Pitched roofs over any but the simplest form of plan present technical problems of great magnitude, and no doubt there are plenty of leaks in the model townscape; but there is no denying their visual value in articulating the different building heights and in contributing by their rhythms and repetitions to the unity of the composition as a whole. To forego the planning freedom the flat roof offers would be to turn the clock back and admit defeat, but that modern architecture needs the visual equivalent of the pitched roof there seems little doubt. Here York compensates for its covered ways. The spire-like roof-lights, 5, indicate the direction in which a successful solution might lie.

The slope problem, then, is the only one for which a satisfactory solution has not yet been sighted. There are other virtues in admired townscapes which are no doubt lacking—the softness of line and surface, the patina of age, visually acceptable decay; but industrialized building is no more defective here than the contemporary non-industrialized alternative and



5, pyramidal roof-lights over hall, York University.

should not be made the scapegoat for these architectural times simply because it is identifiable. Furthermore, in comparison with that alternative it has positive virtues. The greatest of these arises paradoxically from what appears its principle weakness—from the need for a universally accepted dimensional framework. Only the first studies in that direction have yet been made, but already they clearly rest on a marriage (or at least an attempted reconciliation) between technology and human values, starting as they do from a study of the dimensional requirements of human activity far more searching and realistic than the specious aestheticism of the Modulor*.

The demands of repetition will impose on architects a herculean task of adaptation. As the Building Research Station history shows, tinkering with repetition on too small a scale is to court failure. 'Every genius his own system'—the sort of policy typified by Howell and his partners in their Birmingham Department of Commerce (AR, March 1965)—is only playing at industrialization. A major reorientation of thinking is needed to redirect architectural effort into channels where, as at the peaks of historical achievement, originality and ingenuity have been tautened and refined within a strict and universal formal discipline. This redirection will quicken and emphasize the trend which is transferring importance from the individual building to the inter-relationship of buildings and the space between them. It is at this point that the dangers of repetition are most threatening and where the defences are least prepared. This is why a Portuguese townscape and not an individual masterpiece forms the text for this present sermon.

It will be evident that this agreeable composition contains examples of all three degrees of repetition we have defined—the monomorphic and monolithic mass on the left, the quasi-framed and mono-directional row of houses (over shops? or stables?) in the background and the polycuboid mansion dominating as the centre-piece. The diversity of form reflects, of course, a

diversity of function, and it is this diversity of function *within a single field of view* which gives the scene its essential quality. Can we not therefore conclude that the more building becomes repetitive the more essential it is to diversify functions within areas small enough to be comprehended. We may conceive of towns as a series of diversified nodes set, perhaps, in an undiversified matrix, but closely enough spaced for visual interest to be sustained.

Unfortunately, while diversification is needed for repetition to be tolerable, repetition conspires with administrative tidiness, not only to keep housing, schools, hospitals and roads in separate watertight compartments, but to exclude all the minutiae for which individual and personal enterprise is usually responsible, and which are the binding and humanizing material of the urban fabric. Under what head of authorized public expenditure would modern government pay for the expanses of blank wall which contribute so much by their passiveness to our model townscape? Thus the challenge is not just to architecture but to social and administrative skills. And here a major effort is needed, consciously directed towards environmental integration as its prime objective, an effort in which architectural, social and administrative skills combine. The growing dissatisfaction with local government will not now be long in coming to a head; and when it does so we shall have an opportunity to re-fashion the whole of our environmental administration. The opportunity will not recur; we must be ready to seize it when it comes. A pilot scheme should be started at once. The new universities, with their wide diversity of function, represent a concentrated microcosm of the larger urban scene. With their already unified administration, not too cumbersome and relatively unhampered by precedent, they would form an ideal field laboratory for developing the new social techniques and institutional patterns that will be required. With the use it has made of CLASP, York has already contributed much at the technological level. Let us hope that, with others, it can now pioneer the complementary developments which are no less urgent and if anything more vital.

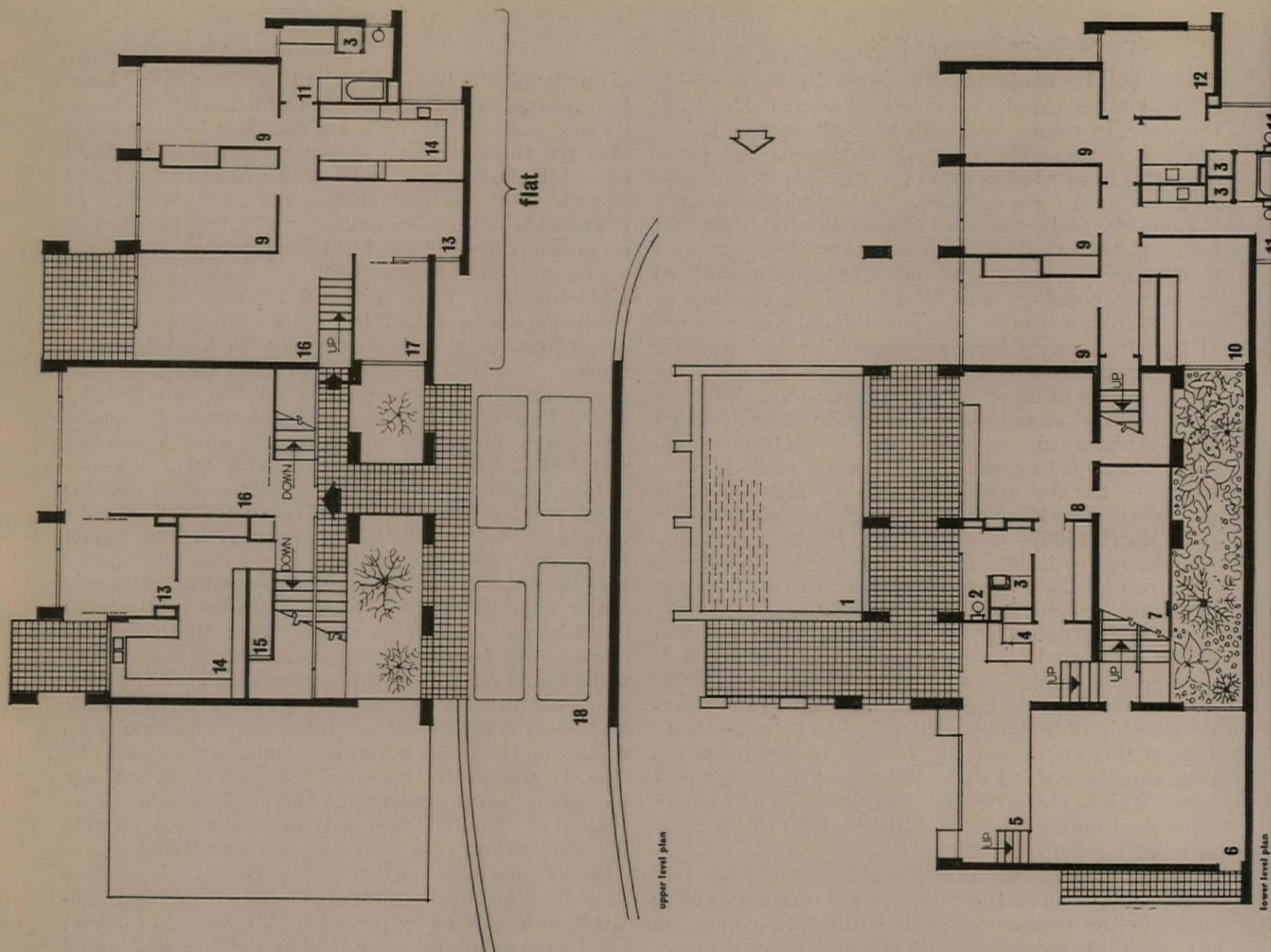
* The reference here is to the thorough and painstaking anthropometric studies which have been made to determine the leading dimensions for window eills and heads, transom levels and so on. The Modulor only replaces Classical distortion of human measures and proportions by twentieth-century distortion: part of the rearguard action against scientific method.

HOUSE AT IVANHOE, VICTORIA

The site of this house is on a busy suburban road and faces west. The ground falls steeply to the east, overlooking a wide expanse of timbered Yarra River flats, with domesticated hills in the distance. The structure takes the form of a series of irregular rectangular brick planes for walls and flat steel planes for the roof. The wall planes run parallel with the street on the west side to close the house against the afternoon sun and street noise. On the east, they turn at right-angles to open the house to the quiet garden, the morning sun and the view. Conforming to the contours of the hill, the five main floor levels are also staggered. The house has an area of 7,000 square feet. One section of it, on the highest floor level, is a private flat but is occupied by members of the family and is planned as an integrated part of the main house. The lowest level opens to the terrace and raised swimming-pool on the east side. The main entrance is across a short bridge over a sunken garden between the car-port and the house proper. The main hall and circulation space of the house, as well as the study, playroom and sunroom, all look on to this small sunken garden. This gives them an outlook on the street side of the house while protecting their privacy.

The house is centrally air-conditioned. Construction is in cavity brick walls with concrete floors. The roofs are steel, utilising the patented Brownbuilt 'K-beam' system, as follows: the brick walls are carried up to a level top; tapered timber plates on edge, serving also as beams over openings, provide a base for the roofing with minimum falls to the east; the steel deck, including the pressed-steel 'K-beams,' spans between these wall plates; fibrous-plaster ceilings are fixed direct to the underside of the steel beams over a 3in. filling of rock-wool. Windows are Western red cedar, oiled internally and externally. Interior walls are sandy-coloured clay bricks, or plaster covered with grass paper. All interior timber is oiled Sapele mahogany. Dark bronze-green carpet extends through the living areas.

Structural engineers, W. J. and W. L. Meinhardt.

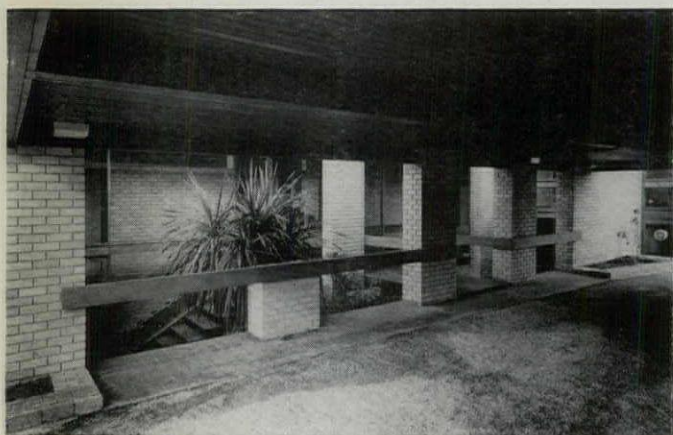
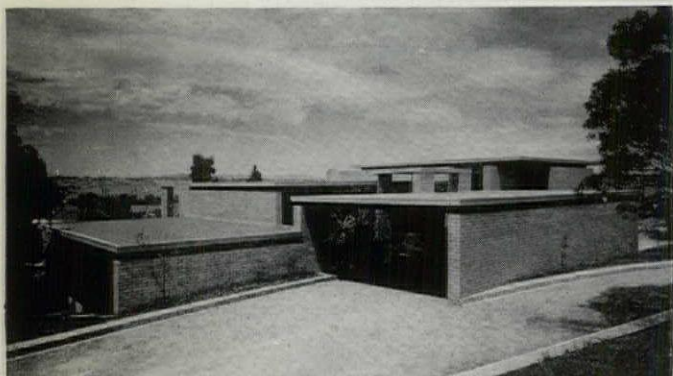


- Key**
- 1, pool
 - 2, W.C.
 - 3, shower
 - 4, bar
 - 5, sitting room
 - 6, playroom
 - 7, air-conditioning plant
 - 8, spare room
 - 9, bedroom
 - 10, study
 - 11, bathroom
 - 12, dressing room
 - 13, dining
 - 14, kitchen
 - 15, store
 - 16, living room
 - 17, sun room
 - 18, car-port



1. from the east, with the wall screening the pool in the foreground.

HOUSE AT IVANHOE, VICTORIA



2, from the north-west, showing the upper level car-port and entrance. 3, 4, the main entrance, which is across the bridge over the sunken garden.



super markets

ELISABETH BEAZLEY

Last year *The Times* reported that new supermarkets, 1, were opening at the rate of one a day in Britain. The count may have included some of the smaller conversions as well as the latest explosion in the High Street, but there is no doubt that the idea is firmly established and is resisted by fewer and fewer of the staunch supporters of old style shopping as they succumb to the convenience of speed and late opening hours. It is said that Tesco's control the shopping habits of entire centres, such as the Elephant and Castle, by the timing of double issues of green stamps. One suspects that some American firms operating in Britain regard us as backward and underprivileged but they seem to have geared themselves nicely to our needs. It may have once been thought proper to resist transatlantic infiltration, but when we find that Sainsbury's, a byword of sense and quality in the South and Midlands, is turning with ever increasing momentum to self-service in all stores both old and new, it is evident that the pattern is established (contrast 2 with 3). This is not an article about the pros and cons of self-service shops; nor does it concern the planning of the storage, preparation and staff accommodation vital to the successful operation of the shop. It is simply an attempt to analyse the self-service shop (mainly selling food) as the customer sees it and how it fits into the pattern of the town.

It is astonishing, on the face of it, that a commercial success story like that of the supermarket should produce such amazingly dull buildings; that a streamlined, thoroughly thought-out, planning problem should so often produce the most unconvinced architectural result. There could be several basic reasons for this. First it seems to be worth looking at the supermarket's predecessors, the chain store or the individual family shop. The parent is likely to have passed on some of its standards to its offspring. With few exceptions, the typical shop-front has been insidiously wrecking

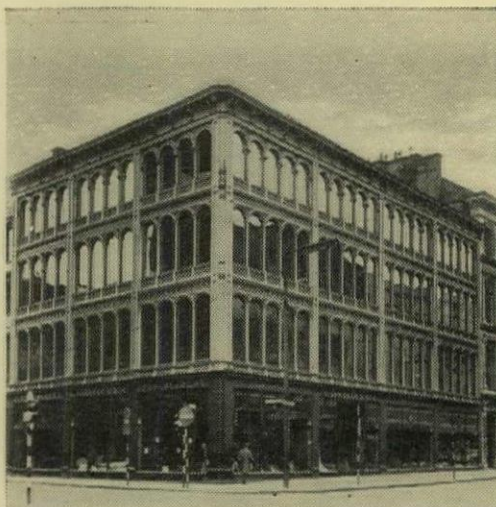


our towns and cities for the last 40 or 50 years. Where, occasionally, it has retained the scale of the building of which it forms part, the fascia itself has usually shrieked in derision at the rest of the street. Glasgow for instance, perhaps the finest Victorian city centre anywhere, abounds in examples of splendid façades above fascia level, hideous below, and only occasionally do we find the marvellous relief of a shop like Gardner's in Jamaica Street, 4, or the bold but scale-conscious intrusion of Minty's, 5. Much of Grainger and Dobson's central Newcastle and other famous streets are ruined by what lies below the fascia line; and this is the level at which we look. How much more of a hotch-potch is the typical High Street, 6 and 7; but here garish fascias and polished plate are often in scale with the module of the units of which the whole street is made up, and their variety contributes to that vitality which is an essential ingredient of shopping.

It has been argued that the High Street scale of shop is obsolescent and that the new 60 ft. to 100 ft. frontage is typical of what is to come, so it is absurd to worry about visual intrusion. This seems doubtful in all but the really big shopping centres, but if it is true, we are still faced with a problem of scale, as against size, and with the problem that supermarkets, being single-storey, create a gash in the townscape. Shopping is a personal activity, conducted on foot. Variety and contrast breathe life into it. Shop-fronts have a vital role to play and it is difficult to maintain our interest with uninterrupted sheets of plate glass even when the greatest skill has been invested in the display behind them.

Architecturally, the trouble begins where one shop has much more frontage than its neighbours; the scale of the street is exploded, 8, because the rhythm and scale of the original building lots are masked by the big shop whose whole frontage has been thrown into one unit, instead of being designed on a module in scale with the structure of the street. Big department stores, rare in such shopping streets, are a different problem. By sheer bulk they often provide a new element which can form a contrast with their neighbours: Peter Jones, a design of such distinction that it might be acceptable anywhere and, incidentally, very human in scale, terminates Kings Road, Chelsea, with exceptional success partly because of this contrast of size. The Odeons of the 'thirties may have wrecked scale in country towns, but these brick elephants have a kind of ponderousness which contrasts with their surroundings completely and this seems to make them more acceptable.

But the gashes so often made when a new self-service store is constructed are usually blown-up versions of smaller shops. They



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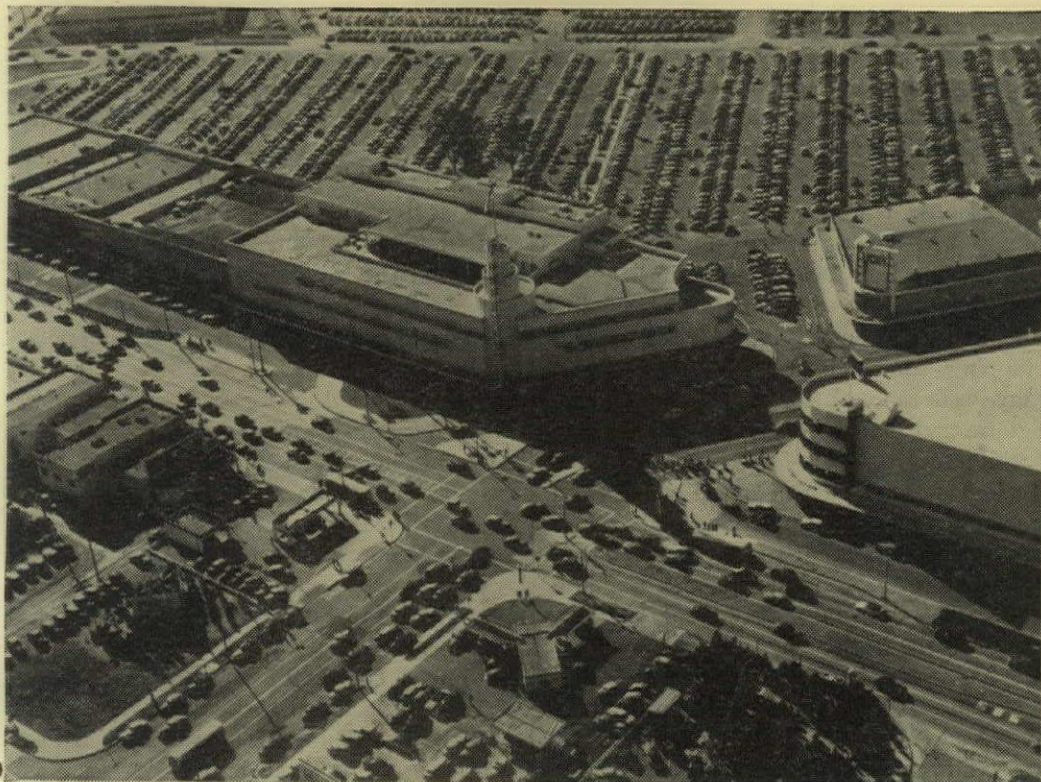
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are simply the logical successors in a long tradition of unsympathetic treatment. The aesthetic standard from which they derive is generally low; so low that we have long become unaccustomed to seeing well designed shopping streets. The latest supermarket is simply a larger version of something to which we have become inured.

All new shops of this size have inherited certain weaknesses; it is not a peculiarity of self-service stores.

This concern about the break up of the visual pattern of the High Street has already been surpassed by the fear that the street itself could disintegrate as a viable part of the town. If we follow the American

super markets



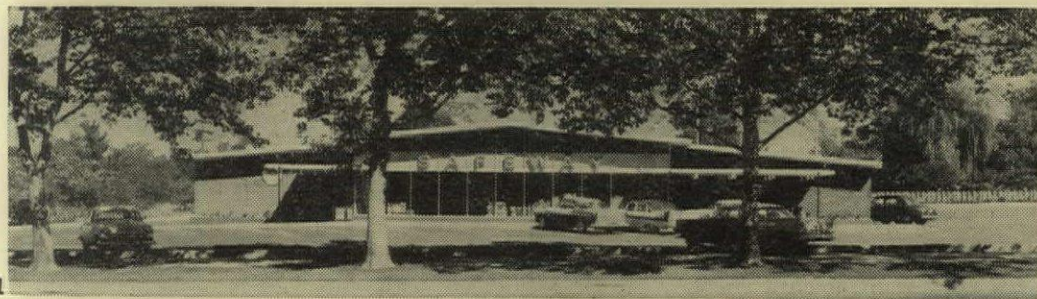
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10

4, splendid facade and fascia: Gardner's warehouse and shop (John Baird senior, 1856), Jamaica Street, Glasgow. 5, bold but self-conscious: Minty's shop, Charing Cross, Glasgow. 6 and 7, the typical High Street hotch-potch: Guildford and Louth, Lincolnshire. 8, the scale of the street exploded:

Kilkenny, Northern Ireland. The street itself disintegrates as a viable part of the town: 9, parking round a city shopping centre in America and 10, the British way, a GEM store outside Nottingham. 11, the out-of-town shopping centre: Safeway's store, Brigham City, Utah.



11

pattern, 9, it may well die on us, 10. Those fervent supporters of the out-of-town shopping centre see no harm in this since they are convinced that they are providing a valuable public service. This theory was succinctly described by the UK representative of GEM (who have recently opened shops in Leeds as well as outside Notting-

ham). The typical American in the mid-income group wants first to get out of the city to live in the suburbs; then he wants to own a car. Having achieved these objectives, he faces the problem of how to use his car. Hopeless to take it back into town to shop; it is difficult enough to get there and impossible to park. So the out-of-town

centre, 11, gives him an enjoyable opportunity to drive. He can reach it easily, park easily, and shopping, instead of being a chore for his wife, becomes a weekly family jaunt. GEM claim that there is nothing they don't know about us and that the reluctance of the English husband to shop simply doesn't exist, but that the opposition from our planning authorities and chambers of commerce is tremendous. GEM would like to find sites such as old airfields; hangers might well convert to retail warehouses. It might be thought that with the population explosion and the enormous increase in car ownership looming over us it would be a good idea to encourage some of these projects. A few could be experimentally combined with the country parks which local authorities have been directed to set up for picnickers. The Saturday afternoon jaunt could then be continued without cluttering the roads further. Although some experienced British retailers seem to doubt the viability of the out-of-town store, it seems a pity to condemn all such ventures out of hand without further trial.

An interesting English development of the out-of-town idea has been provided by Amos Hinton (established as grocers 1868). Ormesby Market (total area 13,000 square feet), four miles from Middlesbrough, shares its car park (100 cars) with a pub, and combines its supermarket with a small shopping centre; the concessionaires here include a chemist, florist, cleaners, shoe repairers and a food bar. As well as a pram park, posts are provided for tethering dogs out of biting range. This market sounds practical and in scale with our needs.

It is not difficult to appreciate the out-of-town idea* nor to visualize the result in

* A logical development of this has been pioneered by a Pembrokeshire grocer. Realizing that many of his customers wanted to buy in bulk but were prevented by parking problems, he has opened his wholesale warehouse to the public. Here are the benefits of wholesale prices and bulk buying, with parking near the door. The fact that it is up to the customer to delve into cases to find what she wants, makes her the keener shopper (perhaps this is the latest device in selling technique?), and the lack of frills and the basic quality of the shed itself also add to the sense of achievement.

town centres if the idea was allowed to run riot. It also brings home the vital point that the parking of the private car is the hub of the siting problems of most of the self-service stores. But not of all. Siting depends too on the density of the catchment area. In traditional shopping streets, there may be no off-street parking. The new Sainsbury's in Chelsea for instance, 12 and 13, will rely first on the customers from its old store just down the road, but doubtless it will also attract younger shoppers stocking up like explorers on Friday evenings. If you buy enough for a week it is almost impossible to carry it away or to board a bus. In Cowley, the BMC wives are said to have changed their habits to twice-weekly shopping at the new centre and the mums now shop by car on Wednesdays as well as with their husbands on Saturdays. Perhaps the same is true of Coventry's supermarkets. The change will probably spread quickly in less car-conscious communities.

The other planning factor concerns sociability rather than practical convenience. If you are stuck in the house alone from 8.0 a.m. with the children eating school dinners, shopping means more than mere food gathering, but as more and more women go out to work so fewer and fewer need to shop in order just to see other people. Thus the old necessity of getting a good site on a shopping street is giving way to that of getting a good car-park at the shop door. In a perfect world both would be sought, but Safeways, for instance, are now well content with a site with a car park one block back from the main shopping street but connected with it by a direct pedestrian passage. They may want an area of 10,000 to 15,000 square feet with 60-foot minimum frontage. Squarish sites are preferred.

Most of the self-service chain stores have their own planning departments in which the architect's brief has been worked out with exact precision. A few architects may feel deprived because their design is not expected to combat, say, the tendency towards perimeter shopping; or they are not asked to dabble in the Chromesh Formula of Space Allocation for Groceries or the Variety Instance Factor. New architectural assistants could while away hours of precious office time on such problems but, fortunately for the principals, the answers have been exactly calculated by his client. The client also knows the correct proportion of sales area to storage to staff accommodation; the finished floor to ceiling heights; the numbers and positions of check-outs; and of course the precise position of the goods to be sold. The architect, who so often cries out for a thoroughly worked-out, exactly calculated, brief, has it here. The key to the plan is flexibility achieved by a standard, uniform

space. The shop sign too is standardized so that it will be instantly recognizable. As one supermarket spokesman explained: 'We determine the layout before speaking to the architect; all we want is for him to interpret it in the light of the local authority regulations.' It is easy to see that this type of job will not necessarily appeal to the enthusiast whose long training has taught him to think things out from first principles. Juggling with the building regulations and clapping somebody else's shop-front (it may well amount to this) on to a pre-determined plan is not everyone's idea of architecture.

To be thoroughly efficient the whole store must be a machine for buying and selling. Too few clients seem to be aware that it is part of the function of the building itself, and not only of its contents, to produce the right environment for any particular activity. It is part of the architect's job to know what is going to make the occupants of his building tick. The brief, however complete, is only one of the tools to be used: quite indispensable, but not in itself capable of producing even a workmanlike building. It is hardly surprising that, given the situation as it now stands, so many brave new stores result in a dull blamange or undigested cliché. GEM's Nottingham store, an unpretentious shed by the Austin Smith, Salmon, Lord Partnership, is one of the exceptions. It is difficult to guess what the retailers themselves feel about this situation, but one suspects that some of them may be perplexed. Having done so much of the work in preparing the brief (which the architect is often forced to do himself) it is hard to imagine they feel they are getting value for money in real architectural terms (as against the legal aspects of negotiations with the local authority). Some of these retailers evidently have high standards; this is reflected in the design of their own offices, the furniture they choose; even the carrier bags they supply. They have the art of selling at their fingertips; they have expert advice on store siting, market trends and every possible aspect of their job. But for some obscure reason the building in which this great operation is to take place belies all this forward-looking efficiency. Could it be another illustration of Vance Packard's chapter heading in *The Hidden Persuaders*, 'The Trouble with People': 'In very few instances do people really know what they want, even when they say they do?' One has a suspicion that the supermarket clients don't really know the full potential of their shops in terms of spaces in which to buy and sell; form, colour, texture, light, but above all, the interrelationship of spaces. Nor do architects know until the problem is analysed. Although the circulation diagrams are clear, the interdependence of certain elements known and

priorities settled, so much thought has gone into the persuasive potential of the packaging and placing of the object to be sold that the function of the building itself is too often forgotten. I do not mean that the detailed brief needs re-thinking; that is beyond the architect's province. But it seems possible that the trees have obscured the wood. Perhaps it is not surprising that some of the better examples are conservatively British rather than new-style American.

The basic need is for a retail shopping warehouse plus loading docks, storage and preparation spaces, and staff rooms. The proportion of backstage area to front of house (where you buy) is not often divulged but it is another part of the brief which will have been settled. Opinions between retailers have differed sharply as to whether or not the whole store must be on one floor. American companies with out-of-town tendencies insist on this. Even the retailers one block off the High Street are keen. Some think it costs 20 per cent in efficiency to have storage on a different level. In the subtler realms of British compromise and awkward sites others believe that it may be as efficient in terms of handling to be on two floors after a certain area has been reached. This means that those in the American school will need a site area of 10,000 to 15,000 square feet while the other school might consider as little as 7,500. GEM (out-of-town) want 80,000 square feet (plus car park) here and 100,000 square feet in the USA. Their latest store in Leeds compares with their first in Nottingham (both with the same total floor area of 80,000 square feet) by having two floors and 200 parking spaces as against Nottingham's one floor and 1,000 parking spaces. But GEM's comment on the Leeds plan is: 'Never Again.'

Everyone now insists that the shopping space must be on one floor; since most shoppers are pushing a trolley this is logical. But a new departure in Brighton by Waitrose Ltd. has solved the problem of a sloping site with access at different levels. A trolley transporter (similar to the moving belt which handles luggage at London Airport, but which in this case keeps it horizontal) lifts the trolleys to car-park level at the back of the store. If this proves to be successful it could alter the potential of many sites, now ruled out by the lie of the land. It could even have an effect on the interiors; it might for instance be fascinating, if the site dictated it, to enter a supermarket on a high-level gallery and see the whole thing spread at your feet.

Crucial to the turnover of self-service stores are the check-outs, 14. For the customer the point of quick shopping is lost if you have to queue. For the owner, it is a waste of space and money. Check-outs

and entrances have to be closely linked because the trolley or basket relinquished by one customer must be handy for the next. It is these check-outs, rather than any need for window display, which governs frontage. Most shops of around 10,000 sq. ft. need, say, about 60 ft. of frontage (again this is exactly worked out in the brief) to take these check-outs. But is there really any need for them to be visible from the street at all? The traditional market hall has entrance doors only and these give little inkling of what lies beyond. In many cases they surprisingly smack of civic dignity rather than commercial enterprise. This suggests that shoppers in markets know where they are going and what they are about. If we are to follow the American habit of concentrated shopping once a week, which, after all, is the old-fashioned country market pattern, the same logic might apply. GEM*, the out-of-town people, have already carried this to its logical conclusion. Their shops, which resemble low hangers, carry all the storage on the perimeter and have no windows. The lure lies in the giant car park in front (8-10 acres to 80,000 square feet of shop) which itself creates another tremendous planning problem, practical and visual. In slack periods, employees park their cars like decoy pigeons out in front. At the opposite extreme is the shop in the new shopping centre. Here there is no need

for protection against the weather, so the shop front can literally disappear. If the centre is shut when the shop is shut, the barrier might as well be solid shutter as plate glass. It is really a return to medieval England on an exploded scale. Not all retailers have yet tumbled to the principle and they still provide weatherproof fronts with separate door and window openings under cover. Some find this cheaper, because it is their standard answer, and they like it because it is instantly recognizable. Food retailers still need a dust barrier for hygienic reasons between the shop and the concourse. Perhaps this could be achieved by differences in air pressure? The self-service shop on the High Street falls between these two extremes. It continues to provide a traditional answer—as much uninterrupted plate glass as possible—for untraditional reasons. The retailer does not want shop window display. The idea is that the whole shop should be on view: there must be a sense of depth and visual penetration. For this reason some of the older English supermarkets, now taken over by American firms, have been re-planned internally with their fittings running at 90 degrees to the shop-front instead of parallel to it. The theory is that we must be lured by a clear view of what goes on inside. That the glass is often obscured by notices slashing prices, 15, is not entirely illogical; THREEPENCE OFF is a much more effective eye-stopper (I think) if stuck in a position beyond which the eye is travelling—that is on glass rather

super markets

than on an opaque panel.* This does suggest that the clear view theory may be open to question.

However, the consensus of opinion among retailers is that an unobstructed glass front is essential and that the scale of the High Street must therefore go under. But it might seem logical that a shop-front divided by fins, deep on plan, narrow on frontage, could more effectively draw the eye into the depths of the store (where the retailers want it); it could also provoke a slightly tantalizing sense of protection to the goods and arouse curiosity in the shopper; it could reduce the cost of the structure by producing smaller spans; and

* There was a case in Stratford-on-Avon where notices were pasted on the glass so thickly that the owner was charged under the hoardings bye-law; that is, a window totally obscured by notices may become a hoarding in the view of the planning authority.



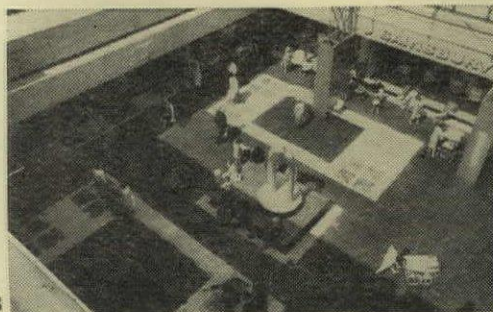
12



15

12 and 13, Sainsbury's, Chelsea. Precinctual shopping is now generally accepted. 12 shows how the lowered raked ceiling gives the sense of drawing one into the shop, 13, how the shop fits into the small square just off the main shopping street. 14, the all-important check-

outs: GEM, Nottingham. 15, slashed price notices. 16, practical canopies visually tying the shop front into the street and providing pram parking space but omitting the traditional window displays: Sainsbury's, Bishop's Stortford.



13



14



16

it could preserve the scale of the street. Canopies too might act as an enticement to shoppers; they have the practical advantage of affording protection to parked prams, 16 (the infants are usually transferred to the shopping trolleys). The fact that Woolworths in Cornmarket Street is set back under cover so that the scale of the shop front is subordinate, does far more for Oxford than the use of Cotswold stone. It is surprising that arcading over the pavement is not more popular with both local authorities and chambers of commerce. The climate demands them and they give the shopper some protection from the motor vehicle as well as the weather, thus making shopping far more enjoyable; they can be designed to any scale that suits the street. Lettering too is vital to the shop-front; standards of typography have soared in the last couple of decades, but inconsistently. It is now as easy to find a well designed packet of tea as it is hard to find an even reasonably good supermarket sign.

Complete flexibility and the minimum of obstruction in the retail space have been the tradition of indoor markets since the beginning of selling. They certainly need not result in drabness. The bazaars of the Middle East are based on grid plans limited only by the span of the brick vaults which cover them; acre upon acre cover street after street of stalls. The Victorian market hall is simply one big space with as few columns as the engineer could contrive. Similarities between such markets and today's self-service stores stop short here. The architectural character of most large spaces depends on its roof and how it is held up. It decides the internal form of the building and often its lighting: what it is like as a space to enter and move about in. The roof of both bazaar and market hall is of major importance (it can also be so in the single-storey out-of-town store). In the bazaar, the forests of evenly spaced piers or columns spanned by brick arches and groined vaults give a mysterious and enticing interior pin-pointed by shafts of daylight and yellow electric bulbs or white pressure lamps.

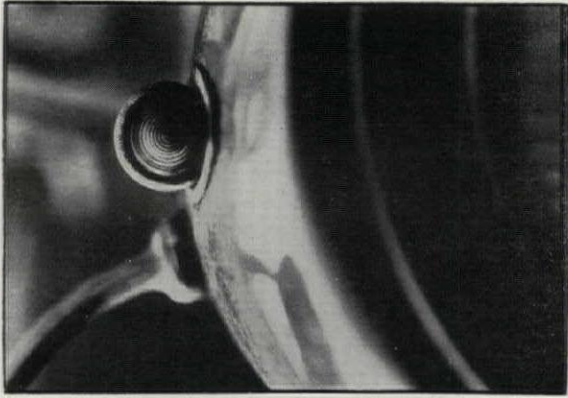
The market-hall roof, high and lofty, floods the building with daylight (it too may be pin-pointed with electric bulbs on gloomy days). Both give a feeling of vitality. Some American out-of-town stores (e.g. Penn Fruits with their sweeping shallow parabolas) have this characteristic. Most modern service stores, by contrast, go for a uniform ceiling height (14 feet is common) unbroken into bays even by beams because it is feared these in their turn could impede flexibility on plan. Sainsbury's latest self-service store in a courtyard off Kings Road, Chelsea, already referred to, is one welcome exception. The sense of enclosure given by the courtyard is

enhanced by the canopy over the shop-front and the raked lowered ceiling over the check-out which draws one into the shop. Typical supermarkets are uniformly lit by fluorescent lighting and uniformly clad, often in glossy plastic sheeting. Sickly lemon ('spring-like') is chosen by too many colour consultants. One firm, in an effort to break this monotony, chose quaint wrought iron frames for their interior signs (naming types of product): an idea designed to suit English taste which is not a success. If nothing else was done, the interiors of most supermarkets could be vastly improved if thought was given to their lighting and the colour and texture of their materials. Nobody would deny them clear visibility, easy cleaning and hardwearing qualities, but too many are unnecessarily unappetising. Again, by contrast, the latest Sainsbury's has introduced drab olive and ochre yellow into its white tiling which smack of groceries rather than synthetic packaging. Uniform sameness does little to help the supermarket and this is made all the more evident by the one built-in drawback of every self-service store. Where everything is packaged the difference between sales areas must be further blurred. The sense of being at one remove from the food, which may be a relief in terms of hygiene, is, in human terms, dull. Gone are the splendid smells which differentiated parts of the market more surely than any visual sign. Open sacks of oatmeal or flour, pans of sugar, heaps of peppers, rope, sacks, harness, coffee beans, tea chests, plastic shoes, all act as subtle lures which guide and move people about buildings. The endless cartons, the polythene round vegetables and the plastic container of the washing-up liquid, have a sameness however well they are designed—and, ironically, lots of them are done very well. But too many of the shops themselves are pitifully below the standard of design of the things they set out to sell. The client is not necessarily getting the best out of the architectural profession. His notions of its functions are disconcertingly far from the mark if they tally with those in the Multiple Shops Federations' *Planning of Shopping Centres*: 'Shops should never be aesthetically discordant, but the architectural appeal of a shopping centre should never take precedence over its functional efficiency as an apparatus for the sale and purchase of consumer goods.' It does not seem to be realized that it is part of an architect's service to provide this functional efficiency in a building where people will positively enjoy spending time (and money). This cannot be achieved by last moment frills but, as we have been taught since we first saw a T-square, by the old basic thinking about function, services, form and structure. It applies to self-service stores as to any other job.



the exploring eye

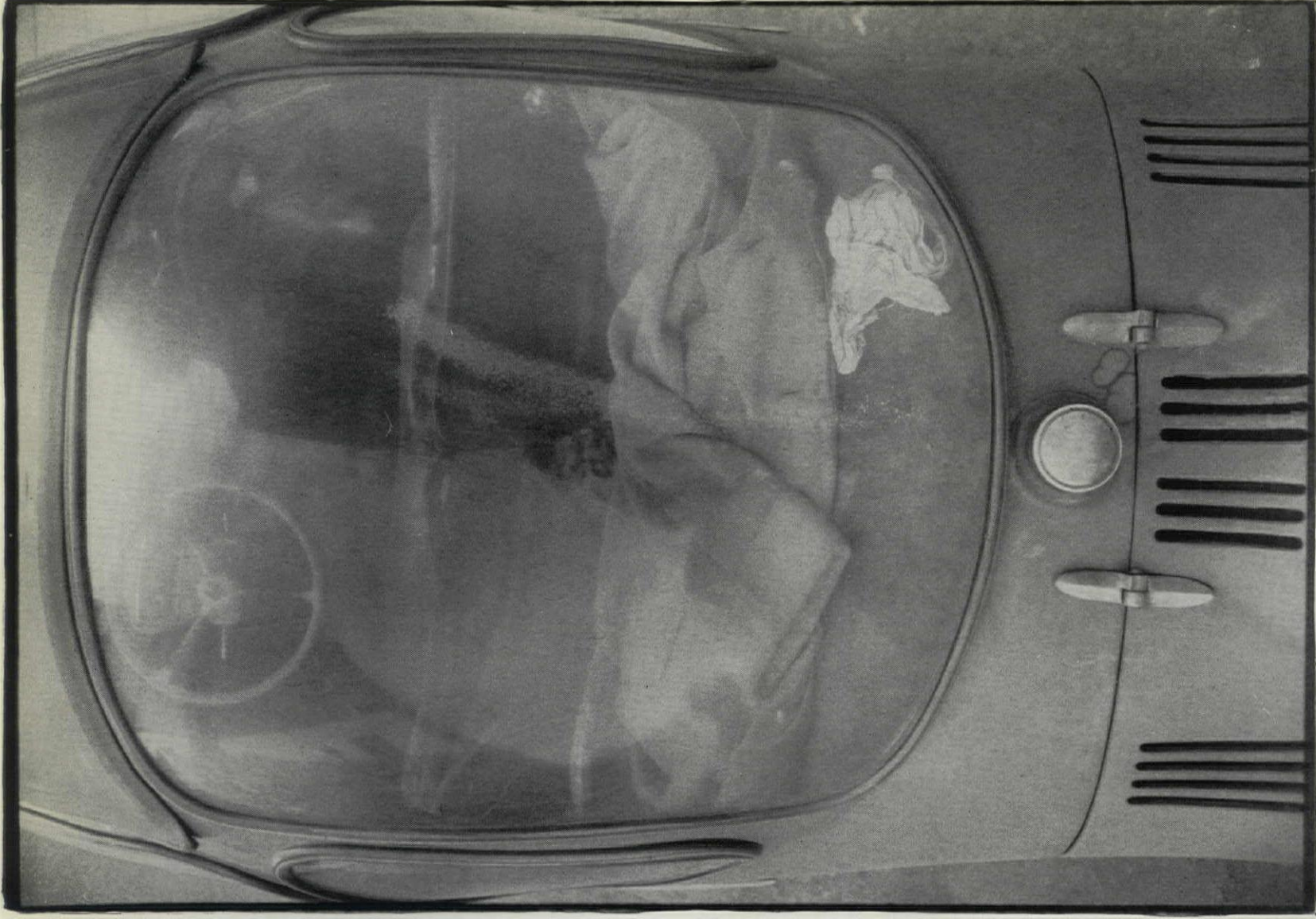
As motor-cars, stationary or in movement, have come to provide the foreground to every urban picture, their shiny coachwork and multiple accessories have emerged as permanent additions to the elements composing the townscape. But the actual forms and textures they contribute are seldom closely observed; they are taken for granted, in spite of being as important a part of the scene as the forms and tex-



'Monoptic, at the very least opaquely blind...'

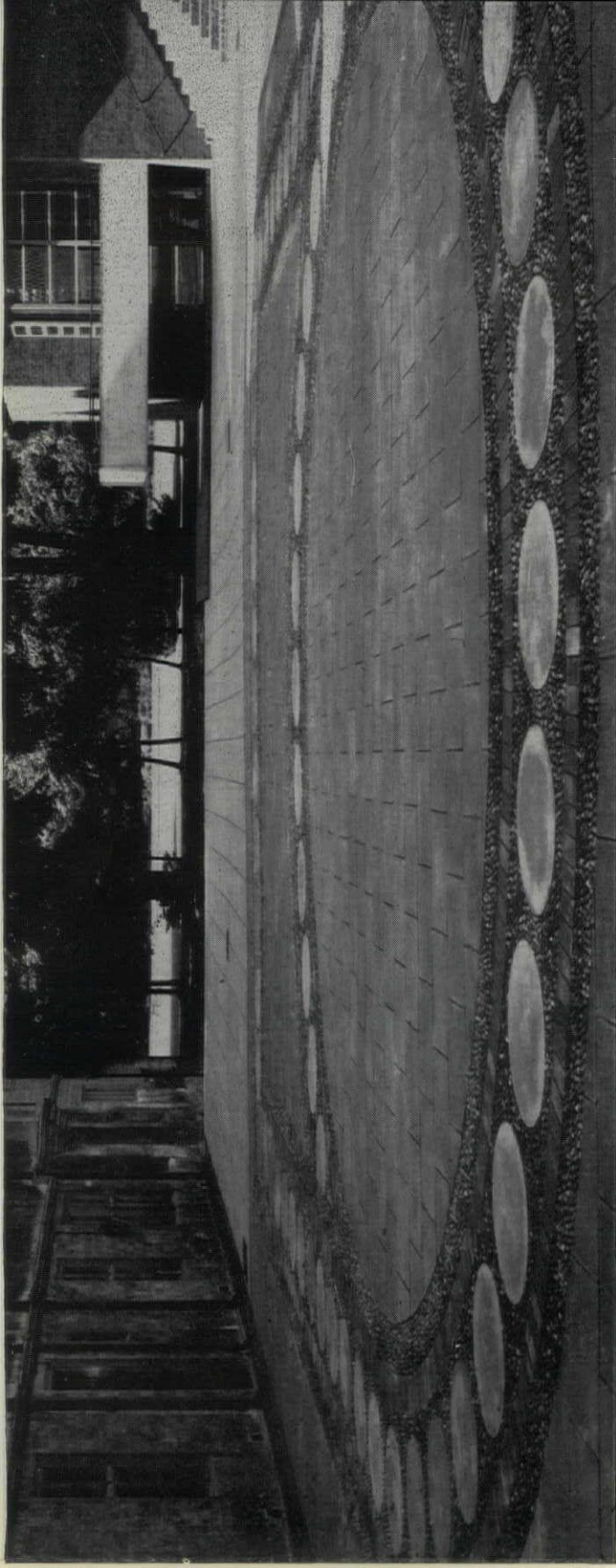
tures of buildings, trees and road surfaces. On these pages (and on the cover of this issue) Mr. David Larcher of the Royal College of Art records with his camera some close-up views of the motor-car as the passer-by, if he is observant, sees it.

'Europa taken; Like her namesake, brutally by half.'



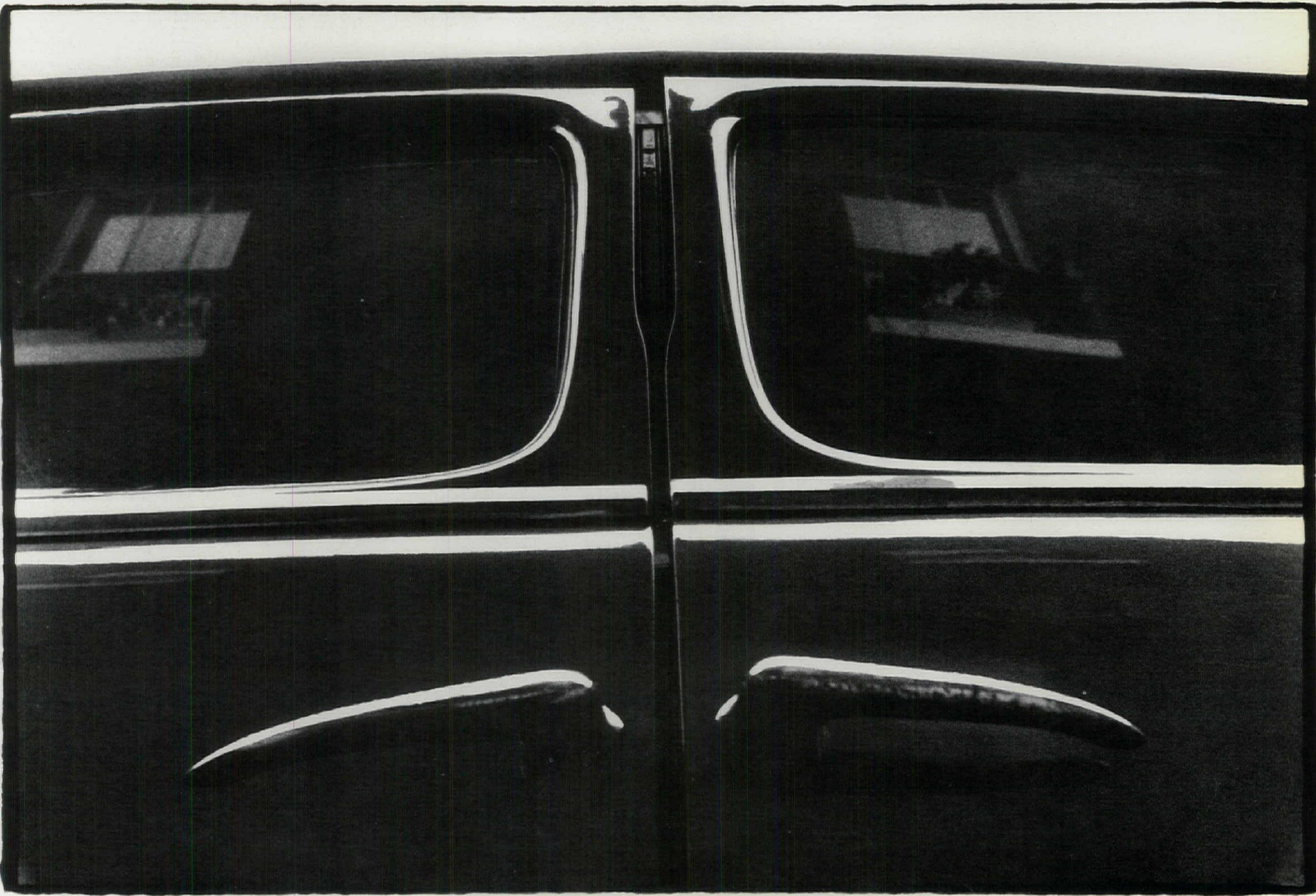
'... steel-skulled, some auto-domesticity, draped in the mouth...'

COLLEGE QUADRANGLES AND SUBTERRANEAN BOOKSHOP, OXFORD



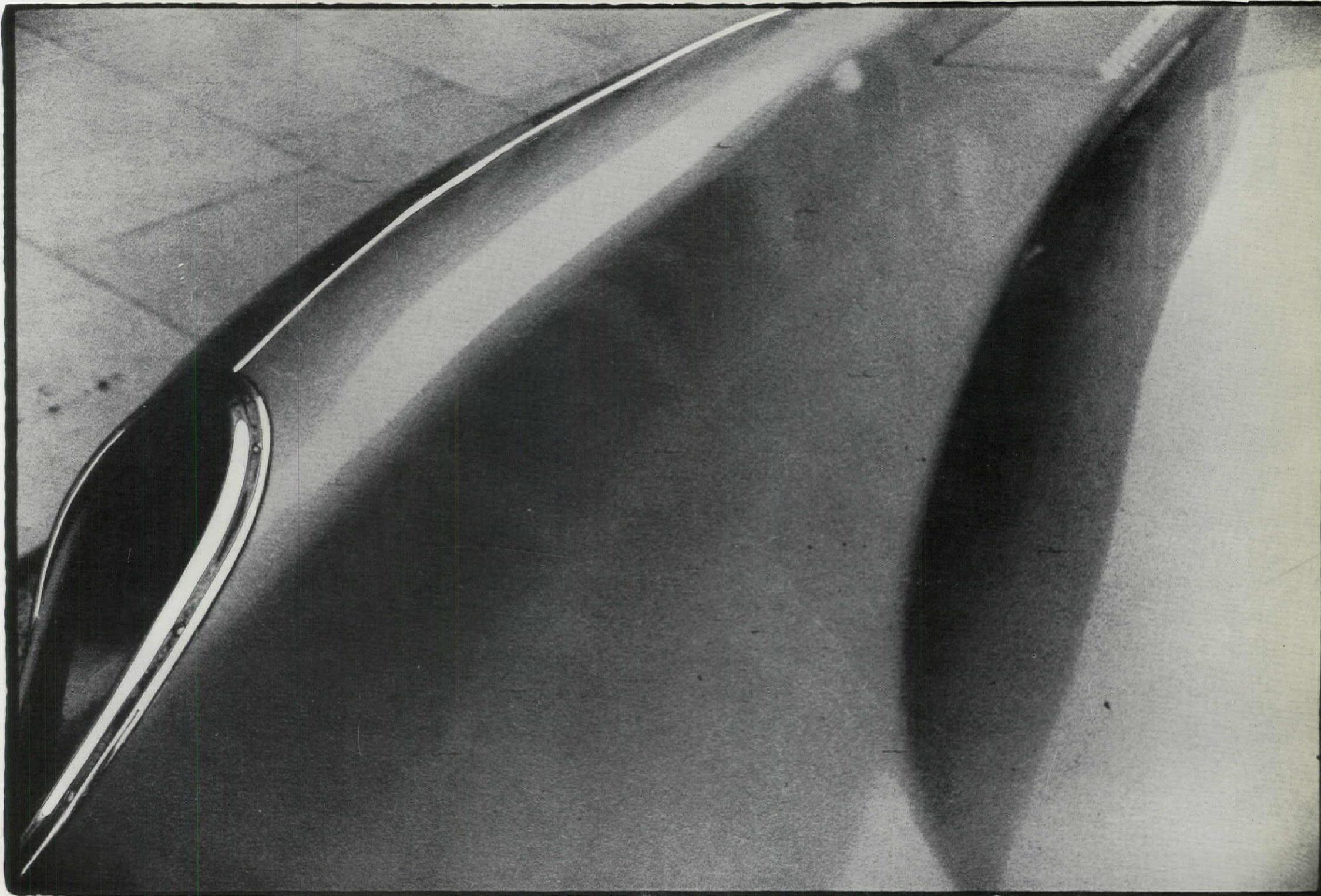
ANGLICAN CONVENT, WEST MALLING, KENT






'... or spectacles of chance, of rhythm, broken in a journey to. ...'

'Seen, but unseemly, Ptera-like and terrible. Wet from a Cyclopean gloom. ...' (Captions are excerpts from *Words from Autistic Graves*, by G. R. MacLennan. Yesterday Press, 1965.)



HISTORIC PATTERNS

 The patterns of movements set up by the routine of a communal life are reflected in the entrance to the enclosed garth of West Mallory Abbey, in contrast to the more static ornament of the Cumberbatch Quad of Trinity College, Oxford. This article discusses the attempts at communal symbolism in these two works by Robert Maguire and Keith Murray, illustrated overleaf.

criticism

Architects may decry the 'harmony' of neo-Georgian and the cosmetic facelifting of the early Civic Trust schemes, but, for all their talk of 'vernacular' and 'organic' and (the latest) 'biological' architecture, only a few have convincingly woven their buildings into the pattern of an historic community: for example, the Smithsons' Economist (AR August, 1965) and Architect's Co-Partnership's Durham University clubhouse (AR, June, 1966). Yet even these architects ultimately had to cover over any cracks with a preconceived geometry of textured boxes. Maguire & Murray by contrast, sacrificing (to their cost) such imposed consistency, have attempted in the extremely beautiful settings of West Mallory and Oxford to face every single problem as something unique, to be solved in relation to a coherent symbolism of their clients' way of life. The medieval master mason was able to express such a thing after camping out on the site for forty years; it is not so easy to achieve it in one year's drawing and two years' contract, and Maguire & Murray therefore offer a bewildering mixture of achievement from alpha plus to gamma minus.

Take floor surfaces (opposite). At West Mallory—a contemplative community dedicated to a discipline of prayer and fixed occasions—the brick paving is of just the right scale on a series of different spaces and levels and expresses with superb restraint the nuns' processional one-ness in work and prayer. At Trinity, the ambulatory perimeter of the two new quads has the same admirable sense of movement, helped, as at West Mallory, by the continuity of the pitched-roofed residences. By contrast, in the centre of the Trinity quads, where plain paving or plain grass by its very modesty would have played up the importance of the perimeter, we are treated to (a) an irritating neo-Roman mosaic in a kind of Cosmati pebble-work and (b) a raised platform of no functional significance whatever with brick paving used merely to give the fashionable post-Jane-Jacobs 'image' of urbanity (hill cities and so on). Even at West Mallory the unity of the paved walks and the admirable micro-climatic solution of pivoting window bays (and the appropriately processional flavour of the newly protected thirteenth-century arcade) is spoilt by the fussy tea-shoppe glazing and by the pantiled roof slopes—the latter directly the result, not of appropriate symbolism, but of irrelevant historical poaching ('The cloister... is more directly related to Roman atria. We have always liked the drawing in Banister Fletcher'). Within the cloister, the discovery of a medieval conduit made possible a fountain which, like any other architect-designed fountain, was an ornamental irrelevance for the nuns; but one day the spouthead was taken off to be cleaned, leaving behind only a subdued ripple in the water—which the nuns immediately recognized as the Living Water of the Spirit, a superb symbol of the well-springs of contemplation. So the spouthead was not replaced.

The architects' inventive wit is perhaps best seen in their treatment of privacy: protection from the World at West Mallory by the west range's Kentish ragstone walling,

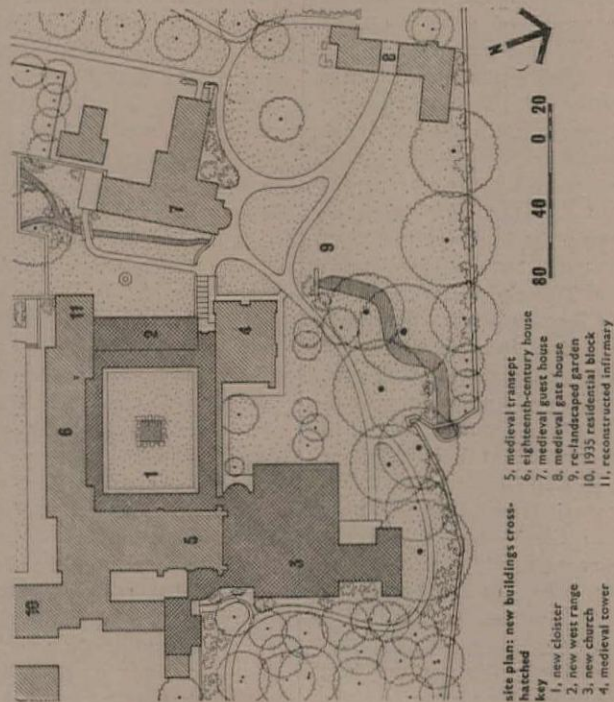
enlivened by re-used scraps of early Perp and Lawrence King; protection from the New Bodleian at Trinity's Cumberbatch North by the brilliant contrivance of an access terrace at high level, which meets Sir Giles Scott's bulk halfway up and subdues most of it visually to 'basement' status along the access road.

At Trinity the main theme is the individual room, its horizontal shelves designed to accommodate firmly students' personal bric-a-brac, its elegant bay window and crisp blockwork establishing an easy continuity with T. G. Jackson's Mannerist domesticity. Scale is admirably handled in the pivotal 'pagoda' of Cumberbatch North and in the two-faced duplex rooms of Cumberbatch South, with excellent joining to the old buildings (only the joint between the two new buildings in the small quad seems untidy). Everything is thrown a bit out of key, however, by the modish muscle-flexing of the rough-shuttered upstands to the floor slabs, showing once again the English romantic addiction to texture at the expense of content (cf. the Roachbed Portland stone at the Economist). At West Mallory abbey church the same thing happens. Sensitively placed in the landscape (and not attempting to rebuild on the medieval foundations, as Nicholson and King both intended), the rectangular bounding wall holds serenely in space the liturgical unity of nuns, priests and guests with altar, stoup and sacrament house. Yet, in the great lantern above, an admittedly brave attempt to symbolize 'the containment of the incontainable,' by analogy with the Mother of God, in a diaphanous womb-space of heavenly light is seriously diminished by the clumsy heaving of the 'thighs' of rough-shuttered structure—forming a crude and overbearing textural 'harmony' with the ruined Norman tower.

Although surviving religious conviction and collegiate loyalty, plus massive bequests in each case, may seem to have made easier Maguire & Murray's task of organic growth at West Mallory and Trinity, this may not be true. For it is in fact in Blackwell's enormous underground bookshop that they have pulled off a real triumph. The amphitheatre for philosophy and theology books is one of the finest internal spaces of recent years. Its centrality and atmosphere of controlled meditation recall the architects' early achievement at St. Paul's, Bow Common, while its tremendous display of thousands of books in an economical layout of well-designed cases under the giant span of man-hole rings (who but they would have thought of such a roof?) is an unashamedly commercial triumph of secular retailing. Just because it is a truly modern 'free space' incapable of historical-pictorial analogy—the same is true of the shimmering smoothness of the adjoining sales area for science books—the architects have here shed all the eclecticism which irritates elsewhere. It was indeed the architects (not Blackwell's or Trinity) who suggested that the bookshop should take advantage of this city centre redevelopment. So-called 'precincts' of shops are badly in need of the full-blooded imagination and the feeling for peculiar kinds of activity that these architects at the moment seem almost to be squandering within the confines of a largely ecclesiastical practice.

N.T.

At West Malling, as at Oxford, the architects' job, in this case the design of a new church and cloister for St. Mary's Abbey, the principal community of 'enclosed' Benedictine nuns in the Church of England, involved enlarging on centuries of continuous occupation. From the village street the massive fifteenth-century gateway leads to a grassed forecourt, flanked on the right by the guest house, once again used as such, then



crossed by a stream and faced by the massive Norman *westwerk* of the original abbey—a square drum with a ruined octagonal tower over. From this tower a substantial height of herringbone walling leads eastwards to the south transept, hitherto the present community's chapel. The whole of the south side of the original cloister garth is occupied by the Gothick mansion (c. 1770) of the Honeywood family, built out of re-used abbey material and incorporating a fine length of thirteenth-century cloister arcade. Sir Charles Nicholson designed in 1935 an almost isolated three-storey residential block to the east of the Honeywood house, with tile-hung gables and mullioned windows over a stone ground floor. Finally, Laurence King in 1961 remodelled small Victorian extensions to the east and to the west of Honeywood.

Maguire and Murray have built three major buildings. First, they have enclosed the garth with a new west wing of ragstone, with a tiled roof ending in tile-hung gables over a King-cum-Victorian corner (remodelled as an infirmary for aged nuns). Brick steps and a ramp lead down to the main entrance, which has a deeply cantilevered tile-hung porch canopy. On the ground

floor is a passage leading to two visitors' rooms (beyond this point the community is 'enclosed') and to the nuns' parlour (lecture and games room). A broad flight of steps from the cloister side leads to an upper passageway, lit by a continuous strip window, and six cells, which face into the garth. Windows to the visitors' rooms are re-used fifteenth-century; those to the parlour have voussoirs pre-made for a cloister (not built) by Laurence King.

The cloister itself has a simple timber lean-to roof supported largely on existing ancient walls. On the south side it is brought forward a bay, leaving the thirteenth-century arcade protected from the weather and released from its previous crude glazing. The new cloister has oak posts and beams on a low stone plinth, each bay having windows with hexagonal leaded lights, which in summer are locked open at right angles.

This combines the traditional openness of a cloister with the separation of the plinth seating into a series of alcoves. The roof is of pantiles. The grassed garth has a central pool which, by using an ancient lead conduit discovered during excavations, has a continuous ripple (a 'subdued fountain').

The third new building, the abbey church itself, is placed roughly on the site of the medieval crossing and north transept. It is entered by a dark passage from the cloister with curving roofit spaces to the left for the large holy water stoup (used occasionally for baptism) and to the right for the sacrament house.

The main space is rectangular at ground level, the nuns' choir being defined by being sunk two steps below the main 'ambulatory' level of consistent brick paving (reddish-brown with blue steps); the altar is raised one step up, and during Communion the nuns come forward to stand (not kneel) on three sides. There are no screens, altar rails or columns. The altar itself is a Hornton stone slab on a concrete base. Behind it is an African-sculptured ebony crucifixion on a yew cross, and against the back wall is a seat for visiting clergy. Choir stalls are of beech-faced blockboard. The lower wall forms a continuous windowless enclosure, externally of 18in. by 9in. ballast blocks, 9in. thick, with slightly recessed joints, and internally (within a 9in. cavity) of similar-sized lightweight blocks made flush and painted white. This supports a tension band, consisting of L-shaped precast units placed toe to toe to form a trough the width of the wall, in which high tensile reinforcement is laid and covered with concrete; the integral gutter in the top is lined with neoprene. The units incorporate semi-circular windows for ventilation, consisting of frameless plate-glass on special bronze pivots. The ambulatory

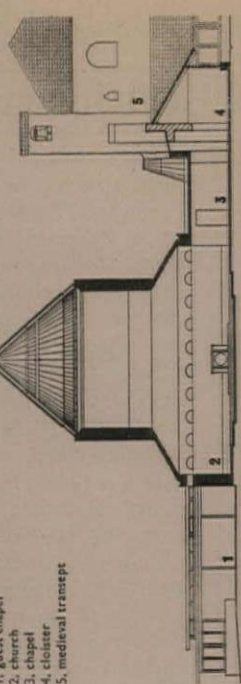
roof, covered in pantiles, has a slab 6in. thick, cast in situ on strip formwork, with the internal surface of the soffit left as struck and the top edge turned up 5f. 3in. as a compression ring; it forms a ductwork transition piece between the lower rectangle and the apse ended upper wall, which has similar blockwork in 9in. cubes. The top ring beam has precast trough units as permanent shuttering, again with a neoprene-lined gutter; it supports the fifty-degree pitch upper roof of calculated timber ribs, stained blue and green inside and clad with plain red tiles outside. Round the base of this roof is a continuous band of patent glazing 3ft. deep, giving the main light to the interior. Artificial lighting is in glass spheres hung from the roof. Heating in the chapel is underfloor, of oil-fired hot water. To the south-east are ample vestries with similar block walling and rectangular rooflights. To the north-east, facing directly towards the altar, are the guest chapel and interview room, designed in contrast as a simple flat-roofed extension in pine beams, joists and boarding, with a cork tile floor. From the guest chapel porch (with an inscription carved by Ralph Beyer) a winding path leads back to the gateway past the Norman tower, through newly landscaped areas along the stream.

Consulting engineer, Richard Birch. For contractors, see page 388.

section through church

key

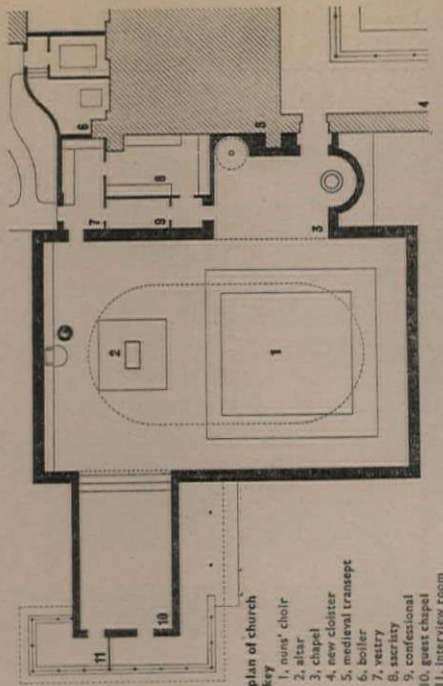
- 1, guest chapel
- 2, church
- 3, chapel
- 4, cloister
- 5, medieval transept

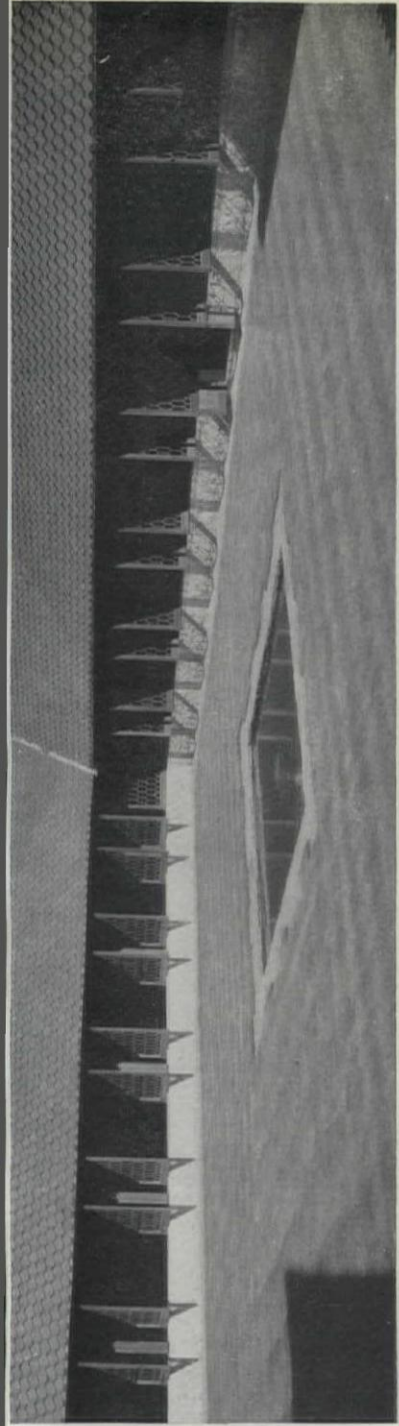
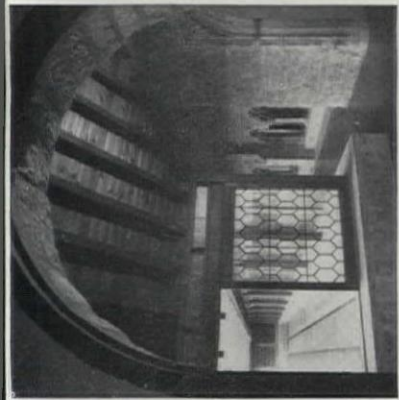
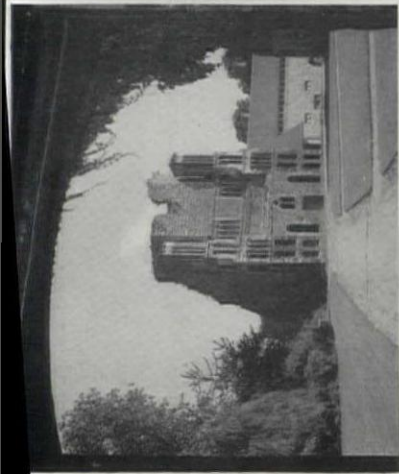


plan of church

key

- 1, nuns' choir
- 2, altar
- 3, chapel
- 4, new cloister
- 5, medieval transept
- 6, boiler
- 7, vestry
- 8, sacristy
- 9, confessional
- 10, guest chapel
- 11, interview room

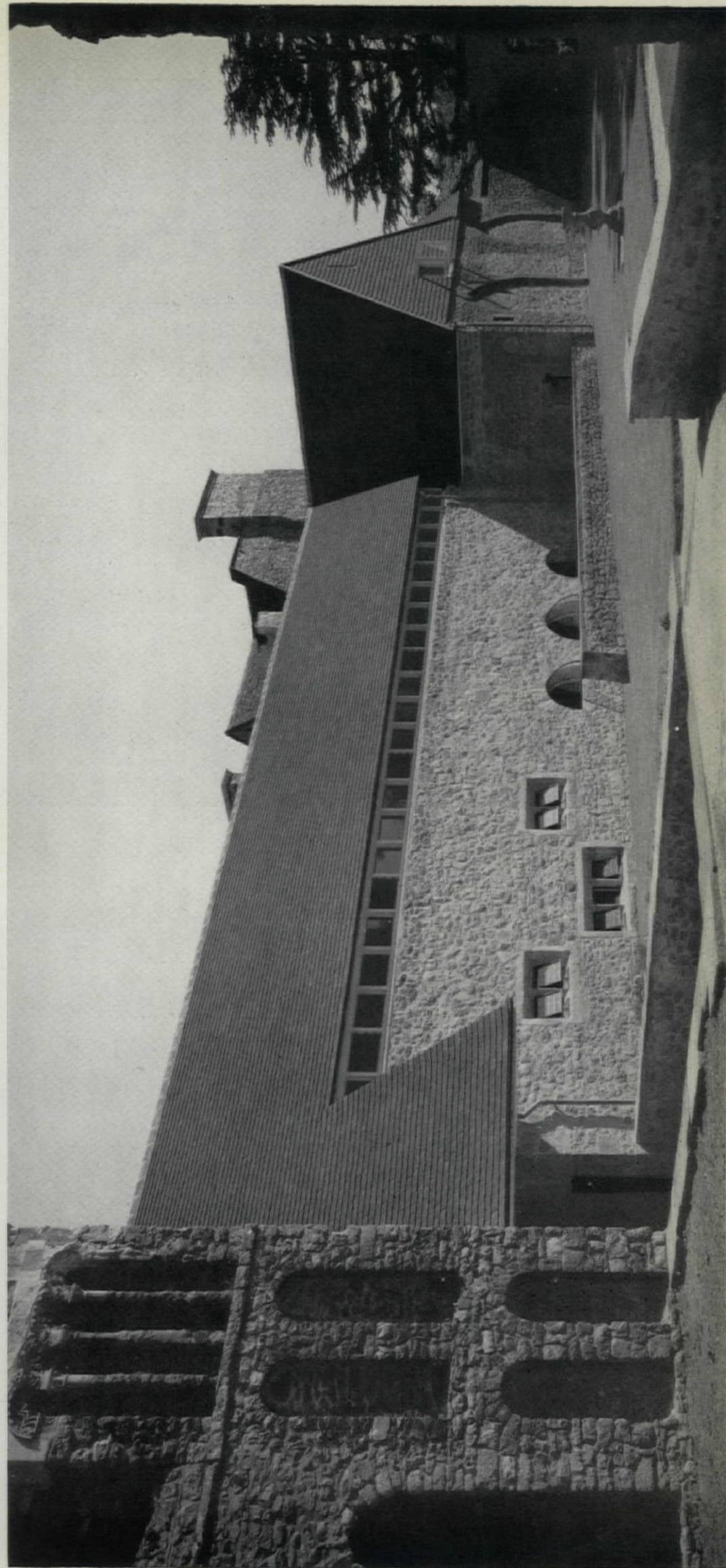


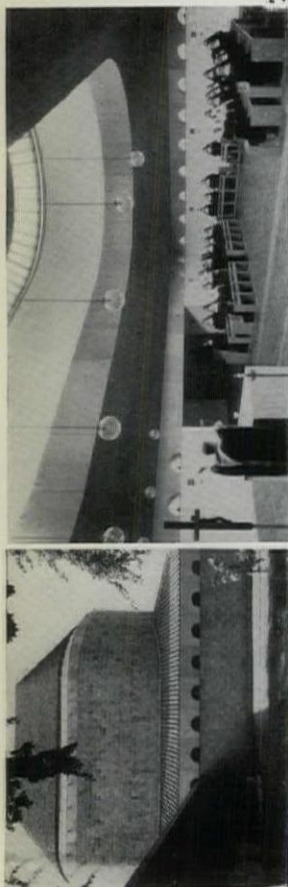


From the fifteenth-century gateway the Norman west tower, 1, appears immediately as a pivotal landmark; the new west wing, 2, with its interview rooms and parlour, connects it to the remodelled infirmary at the western end of the Honeywood mansion. Within the cloister, 3, the same corner joins the west wing to the surviving length of thirteenth-century cloister arcade now forming a screen to the entrance hall of Honeywood. The garth itself, 4, with its 'subdued fountain', is overlooked from the teak-framed windows.

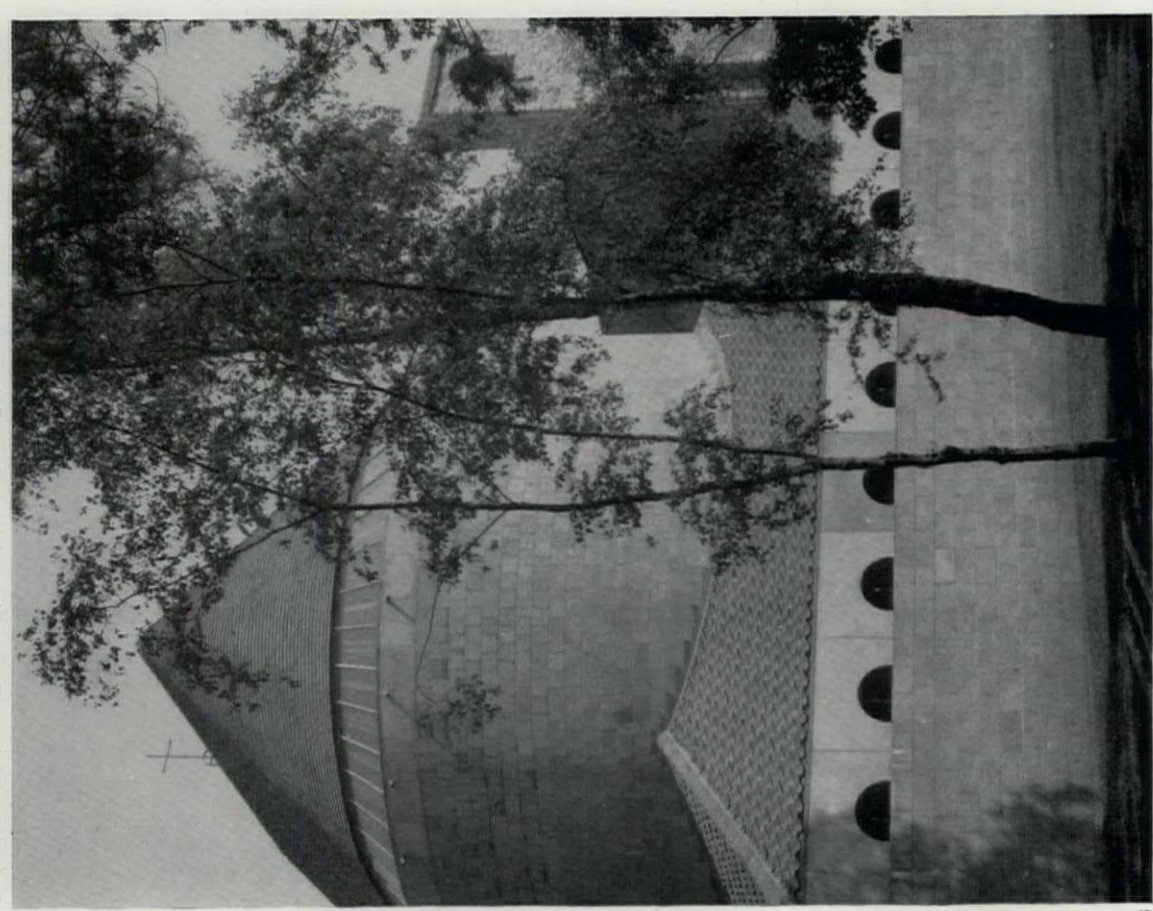
ANGLICAN CONVENT, WEST MALLING, KENT

architects **ROBERT MAGUIRE AND KEITH MURRAY**

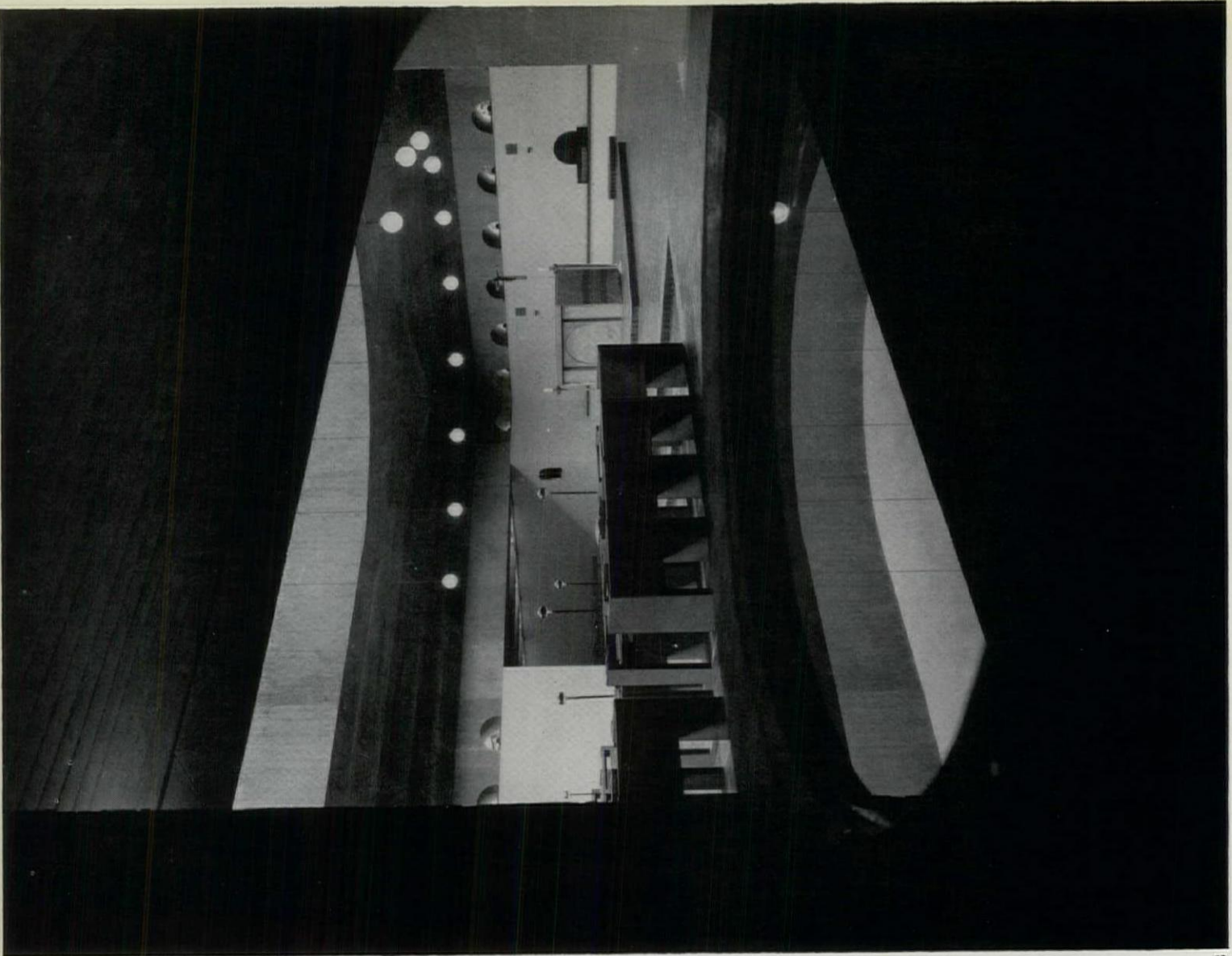




5, the new abbey church seen from the landscaped garden. 6, the abbey church from the west; the bellcote, also new, is attached to the surviving south transept. 7, celebration of Mass in the chapel. 8 looking towards the altar from the stoup.



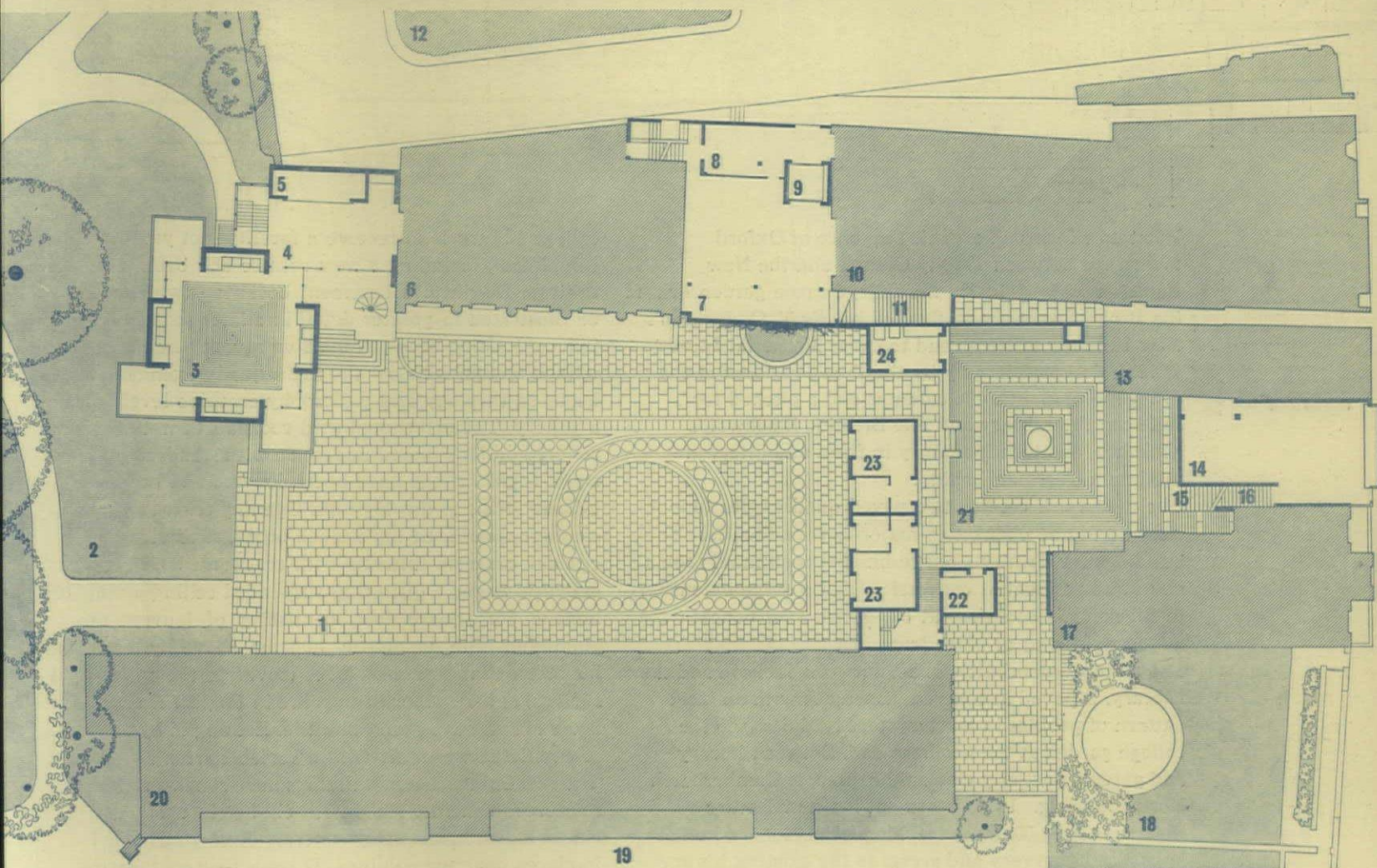
8



ANGLICAN CONVENT, WEST MALLING, KENT

COLLEGE QUADRANGLES AND SUBTERRANEAN BOOKSHOP, OXFORD

architects **ROBERT MAGUIRE AND KEITH MURRAY**



key to ground floor plan

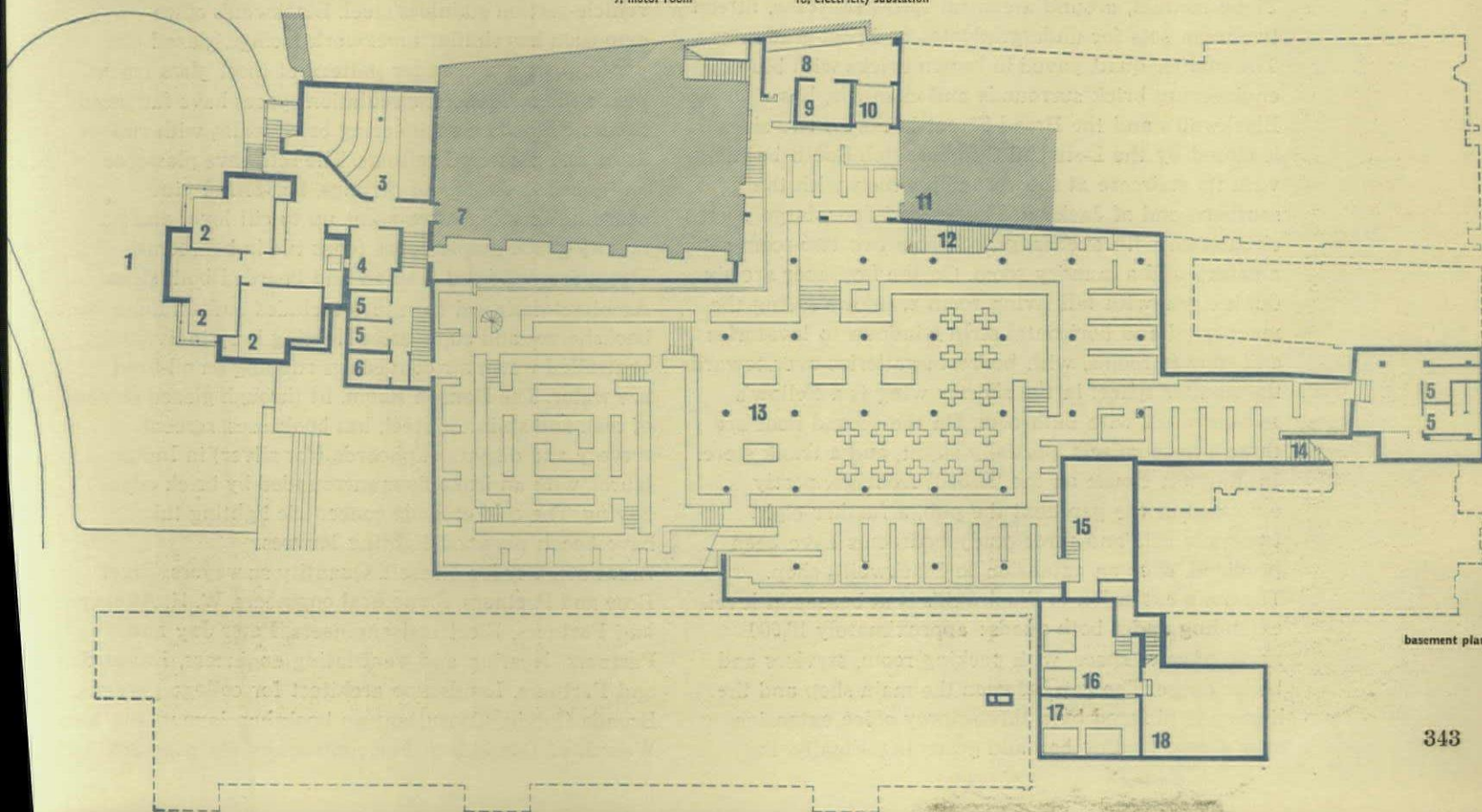
1. North Quad
2. Trinity Garden
3. Danson Room
4. Library entrance hall
5. chair store
6. Trinity Library
7. Blackwell's office extension
8. goods in and out
9. goods lift
10. Blackwell's existing shop
11. stair to basement shop
12. new Bodleian Library
13. White Horse pub
14. Marriott House (ground floor shop)
15. stairs up to college rooms
16. stairs down to basement shop

key to basement plan

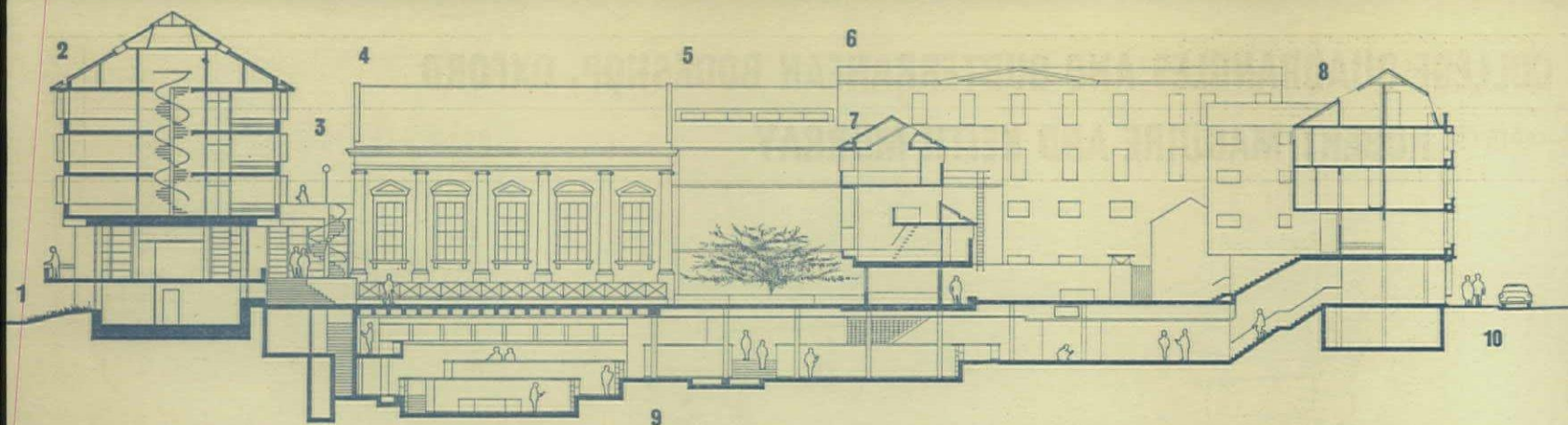
1. Trinity garden
2. teaching room
3. lecture theatre
4. servery
5. lavatories
6. pump chamber
7. Trinity Library basement
8. unpacking room
9. motor room
10. goods lift
11. Blackwell's boiler room
12. stairs up to main shop
13. basement shop
14. stairs up to Marriott House shop
15. ventilation plant room
16. Trinity boiler room
17. oil tanks
18. electricity substation

40 20 0 10

ground floor plan



basement plan



key to section

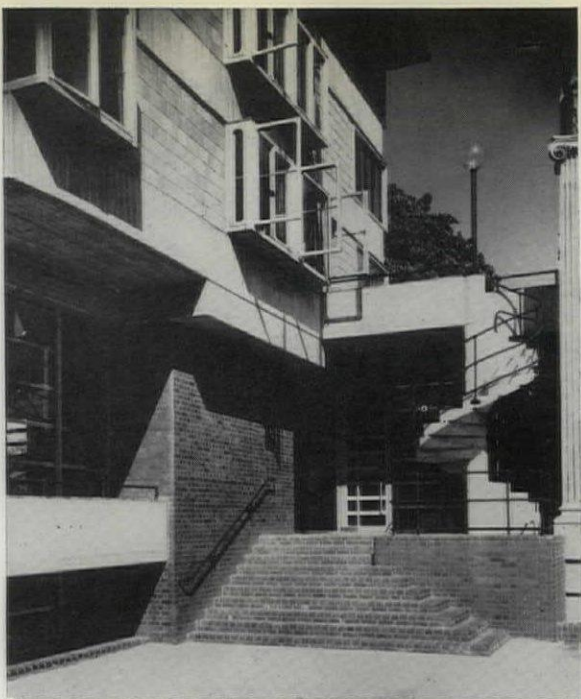
1. Trinity garden
2. Cumberbatch North Building
3. Library entrance hall with access terrace over
4. Trinity Library
5. Blackwell's office extension
6. Blackwell's existing building
7. Cumberbatch South Building
8. Marriott House
9. basement shop
10. Broad Street

What now forms an organic sequence of Oxford townscape between Trinity College and the New Bodleian was originally the college's rose garden behind the Broad Street shops, flanked by Sir T. G. Jackson's New Building of 1881-2 and the War Memorial Library of 1925, designed largely by the then President of the college with giant Ionic columns and a pitched roof. Between the Library and The Broad is Blackwell's bookshop, eighteenth-century in front and interwar minimum-Georgian behind.

The new work creates two paved quadrangles (one closed and one open), two major new residential buildings for Trinity College besides communal rooms and some residential conversion, and a large extension to Blackwell's bookshop at basement level beneath the quadrangles and at office level.

The main Cumberbatch Quad, between Jackson and the Library, is paved in concrete flagstones with an inset pattern of pebbles in mortar; steps lead down to the college garden at the northern end. Between library and garden, partially closing the quad, is Cumberbatch North Building. In its basement is a new lecture theatre seating 50, three teaching rooms for Fellows, lavatories, a servery and access to the existing library basement. At ground level it is entirely occupied by the Danson Room, a formally planned reception room entered from the new Library entrance hall, alongside which, in the open air, a concrete spiral stair leads to a terrace on its roof giving access to the three upper floors. These contain, around a central spiral staircase, fifteen two-room sets for undergraduates and post-graduates. The smaller quad, paved in brown bricks with blue engineering brick surrounds and channels, has Blackwell's and the Broad Street backs on two sides. It is closed by the L-shaped Cumberbatch South building, with its staircase at the corner junction with the southern end of Jackson. The ground floor, largely open circulation with overhangs, contains two two-room sets, a pantry and a laundry room. On the first floor are six duplex sets with tall living room windows facing the main quad and horizontal strip windows to lavatories and shower rooms, with bedroom galleries over towards the smaller space; in the shorter wing is a Fellow's two-room set with bathroom. On the second floor are three two-room sets, partially skylit, and a trunk store. In Marriott House on the 'Broad' frontage, partly extended in the gap next the pub, a further eight two-room sets and three study bedrooms have been provided, over an extension to Blackwell's shop. The main extension to Blackwell's is at basement level, extending under both quads: approximately 10,000 sq. ft. of sales space, with packing room, services and boiler house. The gap between the main shop and the library is plugged by a three-storey office extension over a new loading bay and goods lift. Finally, the

college library is to receive a facelift (not yet completed), including a new cornice and basement railings. Blackwell's basement bookshop (which will be illustrated in greater detail in a later month) has two contrasting areas. A massive square 'amphitheatre' without columns below the main quad accommodates books on theology and philosophy on three levels plus a gallery. The orthogonal grid roofslab, 21in. thick, is coffered on its exposed underside with standard manhole rings. Light fittings have beech louvres and bronze tubular strips to display tops. Opening from this is a southern sales area for science books, subdivided by circular concrete columns with cruciform bookcases between, under a glittering suspended ceiling giving 100 lumens per square foot, consisting of louvres of aluminium film on plastic, lit from above by concealed fluorescent tubes. Bookshelves (covering the entire wall surface) and all other fittings are in English cherrywood; floors are of olive-green lino tile. Heating is by re-circulated warm air with a variable fresh air intake. The two Cumberbatch buildings have rough-shuttered reinforced concrete slabs with cill-height upstands, supported on loadbearing concrete block walls and, in places, concrete columns. There is blue engineering brickwork at ground level; external wall surfaces are otherwise of 8in. square modular concrete blocks. Roofs are timber-framed off the top slab, clad in Welsh slate and trimmed in lead. Windows are of natural teak, triple-rebated for stormproofing, with glazing bars of vehicle-section stainless steel. Blackwell's office extension has similar blockwork facings, glazed (for privacy) with a chequer pattern of inset glass bricks. Inside the residences, circulation spaces have fairfaced concrete block or engineering brick walls, with rubber floors and plastered ceilings. The sets have plastered and painted walls and ceilings, horizontal pine boarding forming a wainscot up to cill level and factory-grade maple floors (cork tile in bedrooms). Doors are softwood framed and boarded both sides. Architect-designed furniture includes built-in bunk beds, bookshelves and cupboards. Heating is by individually controlled warm air convectors running on oil-fired hot water. The Danson Room, lit through glazed screens of teak and stainless steel, has bookcases, screens, servery and display cupboards (for silver) in Indian laurel, with an iroko floor surrounded by brick edge paving. The cold cathode concentric lighting tubes have beech plywood lighting louvres. Associate, Gordon Russell. Quantity surveyors, Nigel Rose and Partners. Structural engineers, W. H. Aubrey and Partners. Electrical engineers, Peter Jay and Partners. Heating and ventilating engineers, David Kut and Partners. Landscape architect for college gardens, Brenda Colvin. Consultant on bookshop layout, Joachim Weerth of Dusseldorf. For contractors see page 388.



1



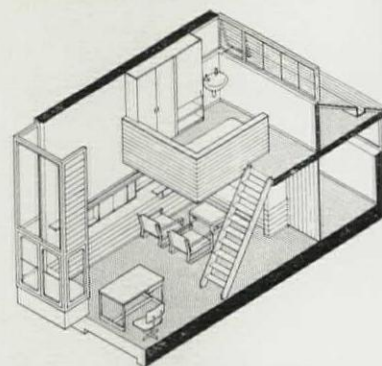
2

1, Cumberbatch North's entrance, with the Danson Room (left), a formal reception room intended for undergraduate cocktail parties and society dinners, and the access terrace to the residential rooms (centre) over the new porch to the library (extreme right). 2, the same corner from across the quad; the new cornice and basement railings for the prewar library have not yet been installed. 3, the view back from the garden past the Danson Room's balconies, with Cumberbatch South's duplex sets in the background and Jackson's 'New Building' on the right.



3

4, the sensitive relationship between Cumberbatch North's bay windows and Jackson's Jacobethan mullions. 5, the Front Quad joint between Cumberbatch South and Jackson. 6 (facing page), Cumberbatch South quad, with Kettell Hall (left) and Jackson (background).



Isometric of duplex set, Cumberbatch South

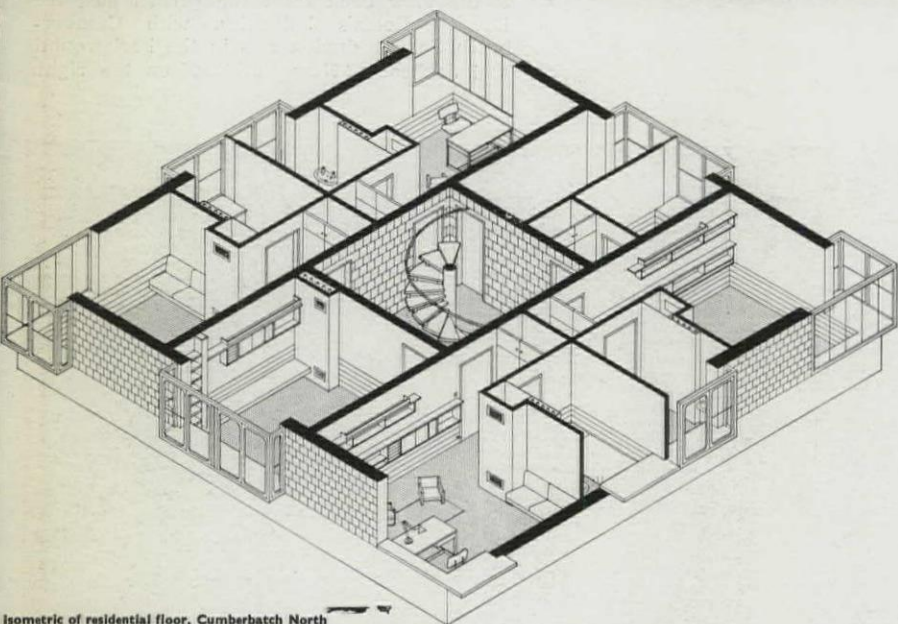


7

7, interior of duplex set in Cumberbatch South. 8, general view of Blackwell's bookshop, showing the columnar science area, with the three-level theology and philosophy 'pit' in the foreground. The underground area is reached from the existing Broad Street shop.



5



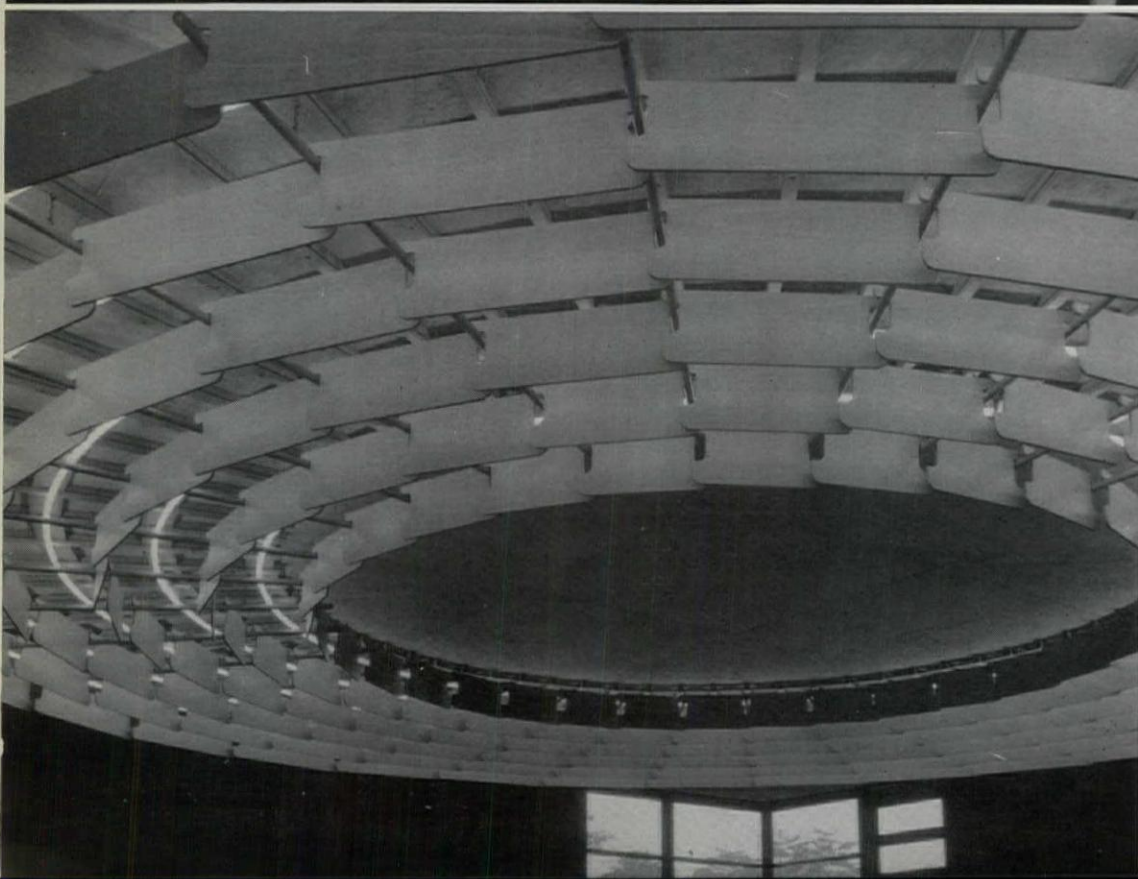
Isometric of residential floor, Cumberbatch North







COLLEGE QUADRANGLES AND SUBTERRANEAN BOOKSHOP, OXFORD



A pattern of movement, the spiral stair to the upper floors of Cumberbatch North, 9, contrasted with a more static ornamental conceit of the louvred ceiling in the Danson Room, 10. The stairs were originally cantilevered, the outer supports being added for structural reasons.

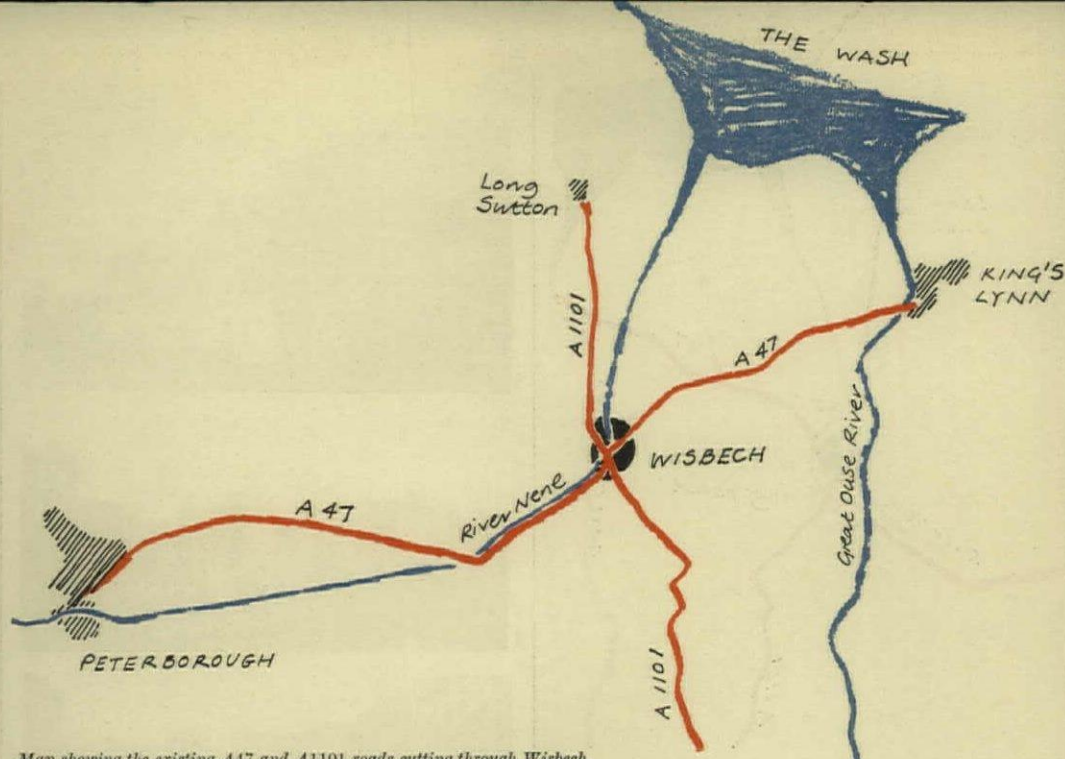
WISBECH

Wisbech, river port and Georgian market town, with a population of seventeen and a half thousand, is the centre of rich agricultural fenland. Situated at the crossing of the A47 from Peterborough to Kings Lynn and the A1101 to Littleport from Long Sutton, Wisbech just hasn't woken up to what amounts to a virtual death sentence by cold blooded throat cutting. The knife is a trunk road which the Isle of Ely proposed in their 1963 Development Plan for the town, to cut right through the neck of Wisbech for the one and only purpose of getting through traffic through the town. This will completely destroy the shape and quality that means everything to Wisbech, unless something is done whilst there is still time.

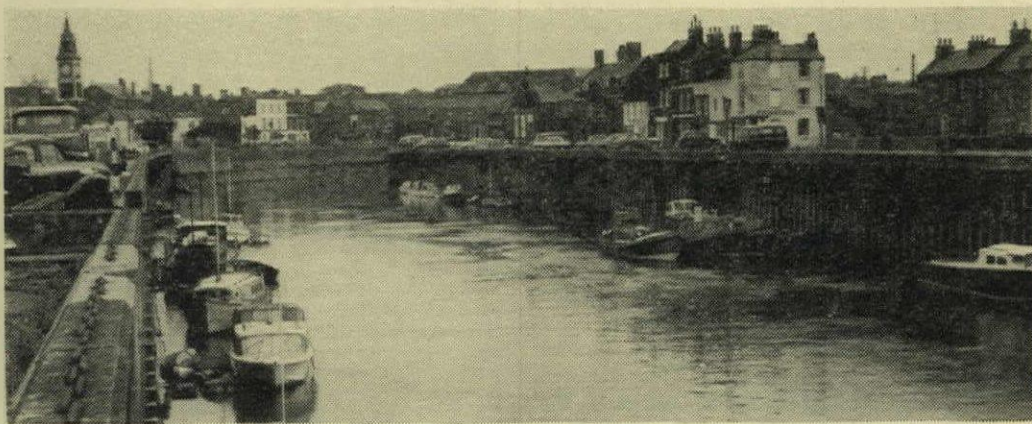
The town's great period of prosperity was the eighteenth and early nineteenth centuries, when river-borne traffic made it one of the important trading centres of East Anglia. Wisbech's chief glory is its front along the River Nene* which flows into the Wash about 11 miles from the town. At Wisbech the river forms a bend, on the bend is a bridge and around this, on either side of the river, the town has grown. On the outside of the bend are the castle, parish church and market place. Across the bridge on the north side are the town hall and Corn Exchange. Along either side of the river are the quays and warehouses that represented real business to the town.

Wisbech is typical of other river ports except for that stretch above the bridge where vessels did not go—this is unique to Wisbech. Here the warehouses give way to the residences of the rich merchants. These form terraces called South Brink

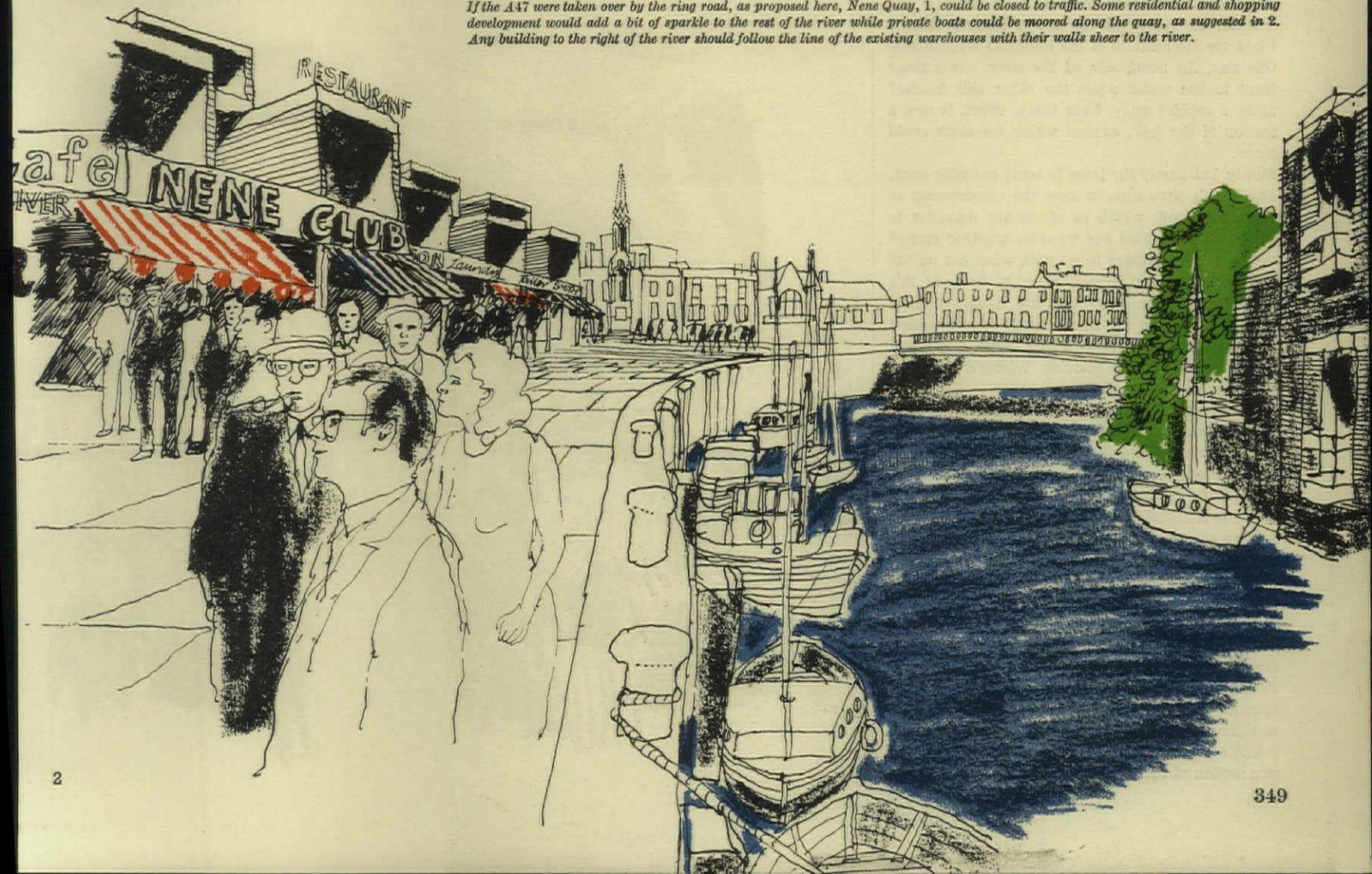
*See AR, December 1939.

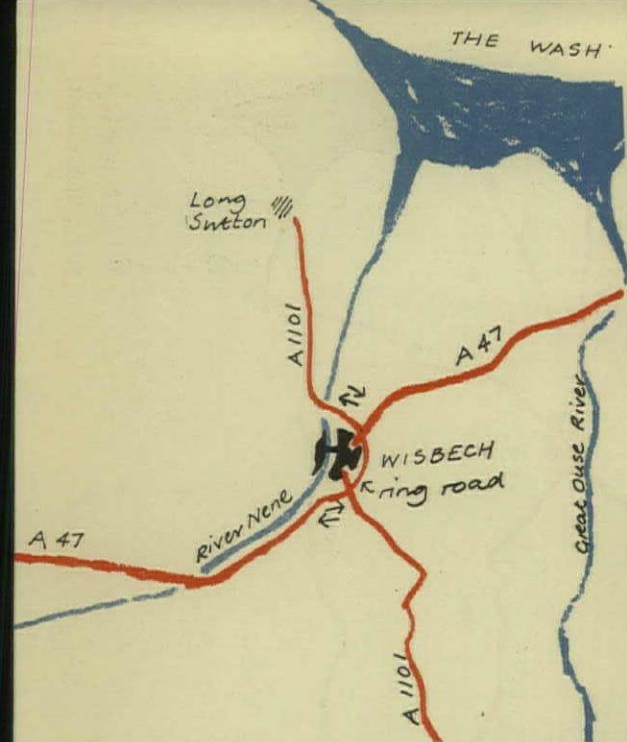


Map showing the existing A47 and A1101 roads cutting through Wisbech.



If the A47 were taken over by the ring road, as proposed here, Nene Quay, 1, could be closed to traffic. Some residential and shopping development would add a bit of sparkle to the rest of the river while private boats could be moored along the quay, as suggested in 2. Any building to the right of the river should follow the line of the existing warehouses with their walls sheer to the river.



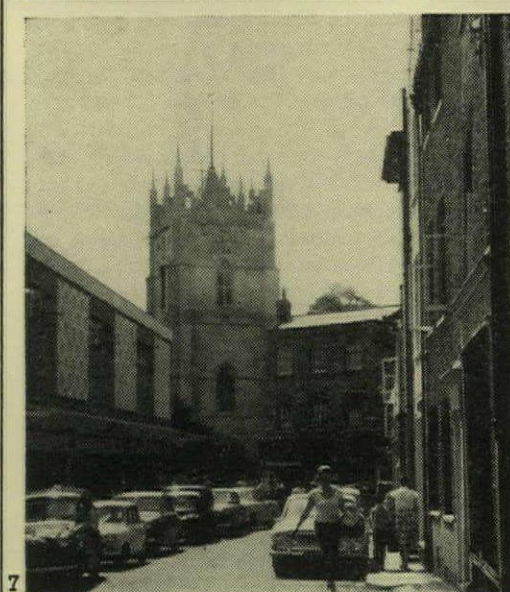
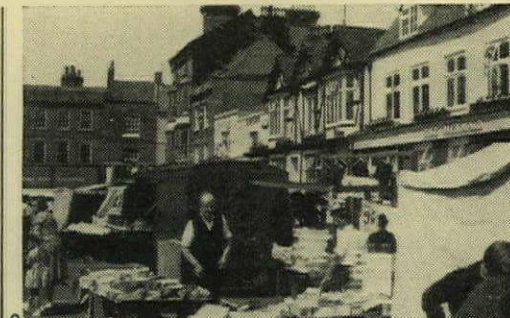
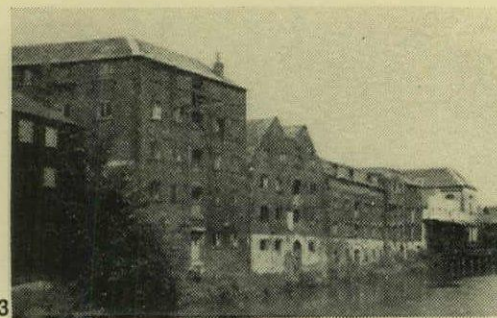


Map showing the suggested ring road taking the existing A47 and A1101 round the east side of Wisbech. The two branch roads off the ring road, on the north and south of the town, lead to car parks at the edge of the town centre. There, the visitor to the town could get out and walk to the shops.

and North Brink, the former stretching for about 400 yards and the latter for just over half-a-mile. A wide roadway separates each row of terraces from the river. (The road running in front of South Brink is the very busy A47.) On the south side of the bridge a narrow street, Bridge Street, leads into the Crescent. The Georgian architecture of the Crescent faces a similar one known as Ely Place while at the east end there is a small dignified square of Georgian houses and the Wisbech Museum. Beyond this is the Parish Church. On the north side, through the middle of the Crescent, a street opens out into Market Place. This is the commercial centre of the town. Behind Market Place are the remains of the imposing warehouses. One side, the north side of the river, has a sheer front to the water while the other side finished along a cobbled quay, Nene Quay, which is now a section of the A47, against which the ships could moor.

Slowly but surely the town is being cut wide open. The 1960's have already seen the construction of Churchill Road, which so effectively manages to divide the town that one wonders whether east of the road has anything to do with what lies on the west. The County Council seem so keen on this trick that before long they are likely to have finished the town off finally with their proposed trunk road cutting right along Nene Quay and South Brink, forever dividing Wisbech from the river that started its life.

The remedy would be to catch the A1101 north of Wisbech and pass it round clockwise to the east across a new bridge over the Nene, picking up the A41 on its way, until it meets the existing line of the A1101 on the south-east, and then continue it round till it meets the other end of the A47 on the south west. All that would be lost is a little agricultural land, and in return a town worth the saving would be preserved. With two roads, one on the south and one on the north (both being south of the river), to take town traffic to car parking out on the edge of the town, cluttering the town centre with cars would be avoided and the County Council's plans for pedestrianization of the town centre would be helped. And what better way to start it than by closing Nene Quay and turning it into a real quay for small boats, thus bringing this section of the river back to life again.



3, warehouses alongside Nene Quay. 4, houses on the North Brink. 5, The Crescent. The draft proposals for the central area of Wisbech, published by the County Council in January 1965, included wholesale pedestrianization, with service vehicles permitted along certain roads. The first stage covers the area between Little Church Street, Blackfriars Road, Falcon Road, and Church Terrace, and in this stage the area offering the greatest townscape possibilities is along Little Church Street. At the west end of this street is the tower of St. Peter's and St. Paul's Church. 7, This view badly needs some sort of arch in the sky to frame it. What better then, than to form a shopping arcade here, 8, giving shelter from the wind and rain? If you gave the arcade a glass roof, you would benefit from the sun as well (if it's too sunny, just wind the roof blinds across); and to the right of Little Church Street is the Market Place, 6, which would make a lively change of tempo to the compactness of the arcade.



Interior Design

Studio & Cinema, Mayfair, London

architect: Trevor Dannatt
assistant architect: Ronald Paxton

photographs by Edgar Hyman

1, detail of rear wall in the cinema.





2



3



4

This, the second stage in the redesign of a building previously broken up into flats, involved the provision of reception spaces, a t.v. studio and a 100-seat private cinema.

The reception area occupying virtually the whole of the ground floor has a low ceiling with lights flush-mounted in random clusters. A continuous cill and fascia/cornice define the perimeter of the area in one broad sweep. Furniture here is principally chrome steel settees and chairs with rust red fabric.

In the cinema, a simple rectangular room at basement level, reinforced concrete beams are left exposed. Walls are subdivided: the upper parts are faced with acoustic boarding; the lower parts, of blockwork, are plastered in a sanded finish with rounded arrises and corners. Colours used in the cinema are white, grey, grey-green and lilac.

The television studio rises through two floors from the basement level and has a roof that splays back on three sides. The finish throughout is of acoustic materials.



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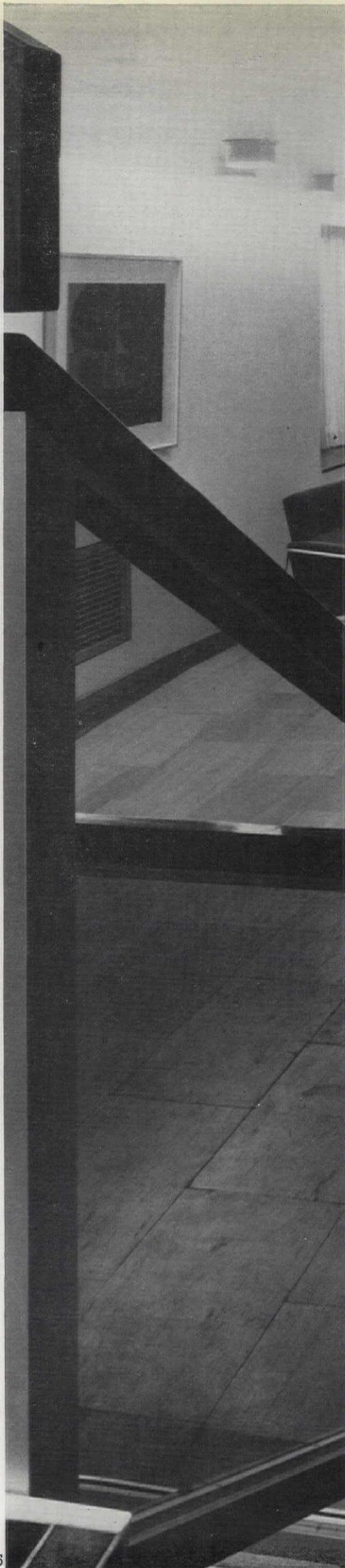
basement plan

key	4, projection room	8, t.v. viewing room
1, t.v. facilities	5, working studio	9, cutting room
2, casting room	6, staff	10, film library
3, control room	7, lower foyer	11, cinema

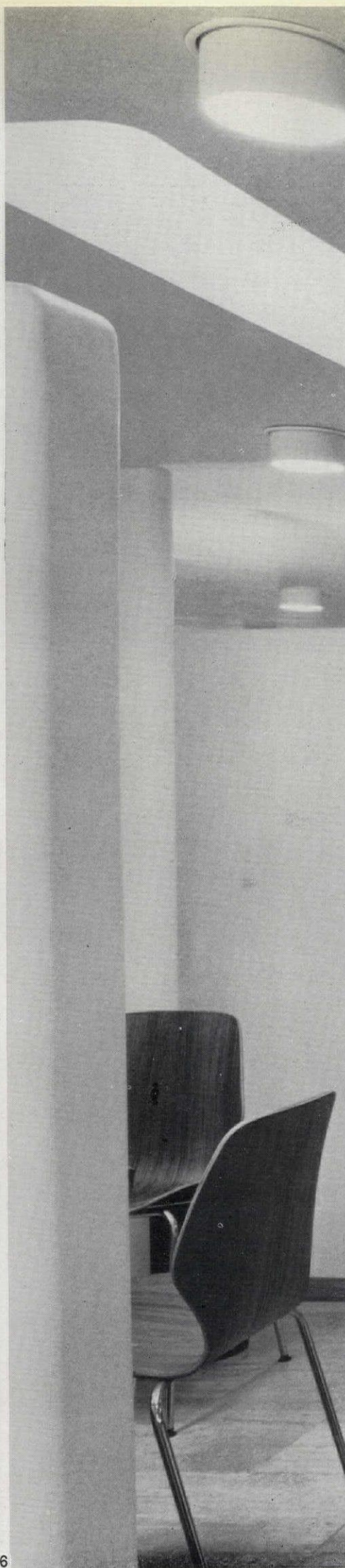
2, reception area, main entrance on right. Walls are white plaster, the floor is travertine. 3, cinema. Upper part of walls dark grey, curtains grey, white and lilac. 4, handles on main doors. 5, reception area from main staircase. Aluminium posts, teak handrails with tinted glass infill panels. 6, meeting-bay with natural top light. 7, television studio.

Studio and Cinema, Mayfair, London

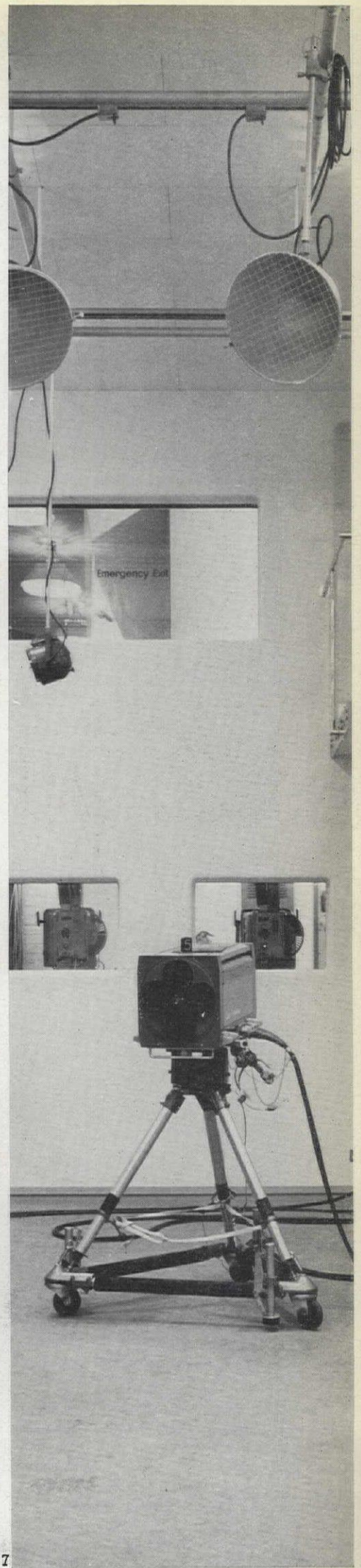




5



6



7

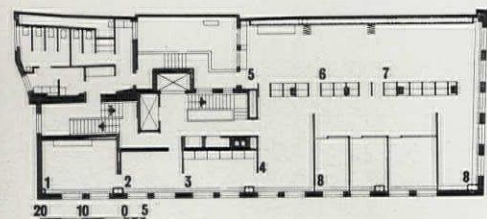
Showroom and Offices, Bond Street, London

architects: Michael Scott and Partners

photographs by John Donat

This, another conversion of a building consisting originally of separate shops and offices, is now named Ireland House and contains tourist and trade facilities relevant to Ireland. On the first floor—with its main entrance in Bond Street—is the tourist reception area and a shop. Further sales and storage space is provided in the basement.

The upper floors, entered from a side door in Bruton Street, are given over to showroom and exhibition space and offices for the Irish Export Board, Irish Television and other Irish organizations. The principal colours used throughout the various interiors are black and white, with dark or pale grey carpeting. All the furniture is of Irish manufacture and the paintings, tapestries, sculpture and lithographs are by Irish artists.

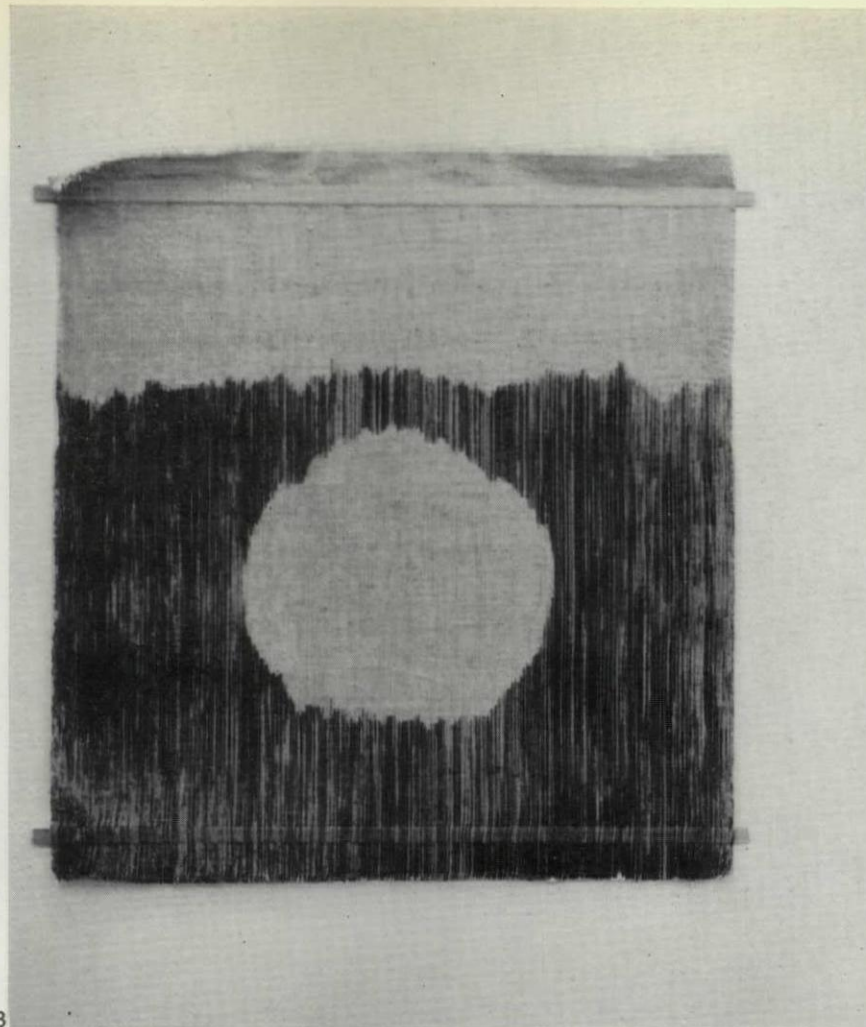


first floor plan

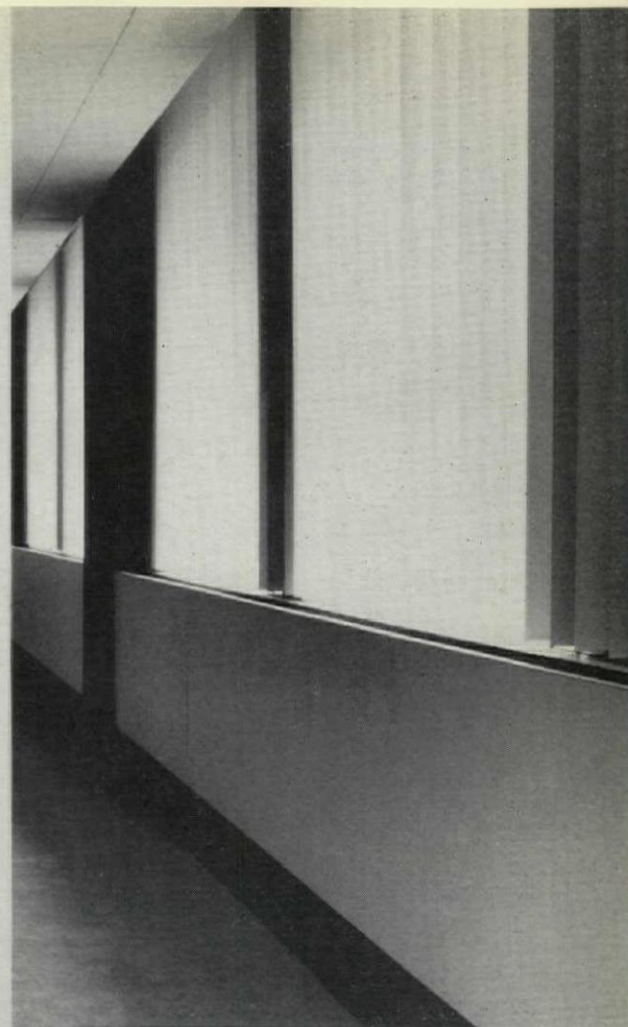
Key		
1, manager	3, library area	6, conference room
2, manager's reception	4, main reception	7, general office
	5, tea room	8, offices

1, first-floor office/conference room area, showing folding partitions, 2, Bruton Street entrance to the building.





3



3. office corridor space with tapestry by Kilkenny Workshops on display wall. Panelling here is of matt white plastic laminate and teak. 4, teak storage units in the corridor area.



4



5



6

5, view down main stairwell. The carpet here is dark grey, the marble handrails to the stairs, black. 6, corridor area on fourth floor, showing louvre drape window blinds.

**Showrooms & Offices
Bond Street, London**



ART AND INDUSTRY

Ken Baynes

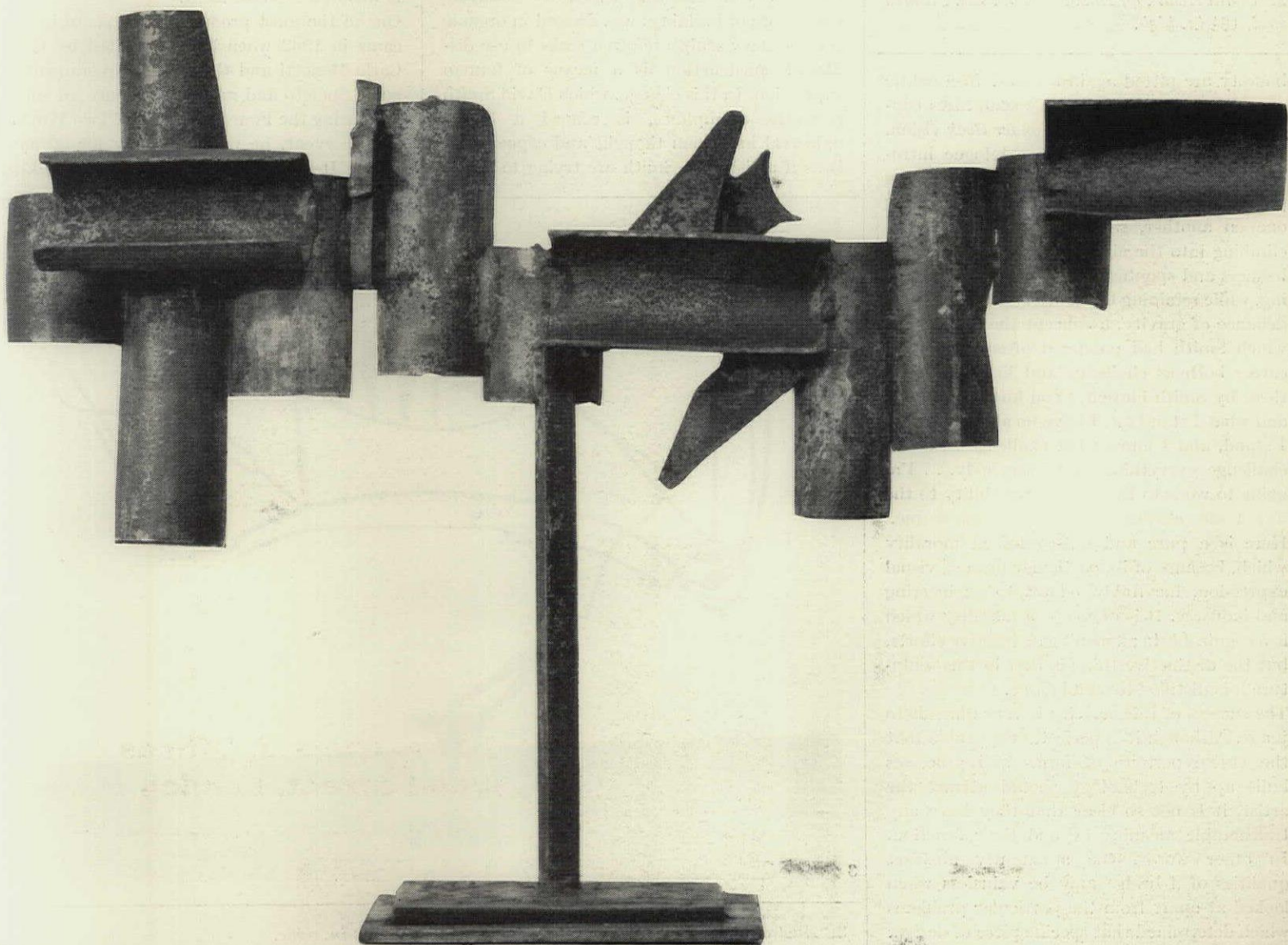
The interaction between art and science, or at least the correspondences and contradictions between the two, have been fairly well explored by critics. Similarly, the terms of psychoanalysis have been applied to painting and sculpture with such success that we are aware of hidden motives behind every picture. Art has itself deliberately flirted with science, and it has actually gone to bed with psycho-

logy to become the proud mother of surrealism. What has been much less fully examined, except in a superficial way, is the impact of industry, engineering and mass production on art. It is true that futurism and pop art both grew out of an attempt to come to terms with aspects of technological society, but there seems no doubt that the influence of industrial forms and techniques goes far beyond these

two obvious examples which happen to use imagery which is easily recognizable.

I was reminded of this by the David Smith exhibition at the Tate Gallery. Walking round the white-screened spaces of the show was like looking at a vast three-dimensional text-book of engineering details; a display at once pure and passionate. I remembered that when I was a boy I had from grandparents a number of books, produced just before the first World War, which celebrated the glories of locomotive, bridge or dam construction. Called *Wonder Books* of whatever it was, the word Romance occurred in them like an alliteration, holding the theme together in a primarily aesthetic, even theatrical, attitude to practical activity. As seen in these books, which appeared at the same time as modern painting was beginning to emerge, the industrial world looks unrecognizably innocent; a paradise of quests in which the old qualities of courage and

1, 'Bouquet of Concaves', by David Smith, 1959. Painted steel, 38 in. wide.





2

2, 'Chain Head', by David Smith, 1933. Painted steel, 18½ in. high.

honesty are pitted against chaos. In a subtle way, it seems to me, Smith's sculptures contain an apotheosis of that *Wonder Book* vision. Take these words from the catalogue introduction by Frank O'Hara; 'The *Cubi* series presents the stainless steel volumes balancing one on another, signalling like semaphores, climbing into the air with the seeming effortlessness and spontaneity of a masterful drawing, while retaining the sobriety of their daring defiance of gravity, a concept the meaning of which Smith had pondered often during his career both as challenge and limitation.' Or these by Smith himself, 'You know who I am and what I stand for. I have no allegiance, but I stand, and I know what challenge is, and I challenge everything and everybody. . . I'm going to work to the best of my ability to the day I die, challenging what's given to me.' Here is a pure and self-contained morality which, because of its particular form of visual expression, inevitably relates to engineering and industry. It is of course a morality which is recognizable in all men's constructive efforts, but the distinctive thing is that in this sculpture it is distilled to stand alone.

The success of this activity is very difficult to judge. Although it is perfectly explicable that the vast repertoire of forms and processes built up by technology should attract the artist, it is not so clear that they have any transferable meaning beyond their function. In other words, the apparently abstract qualities of a bridge may be valueless when looked at apart from the particular problems which determined that specific piece of design.

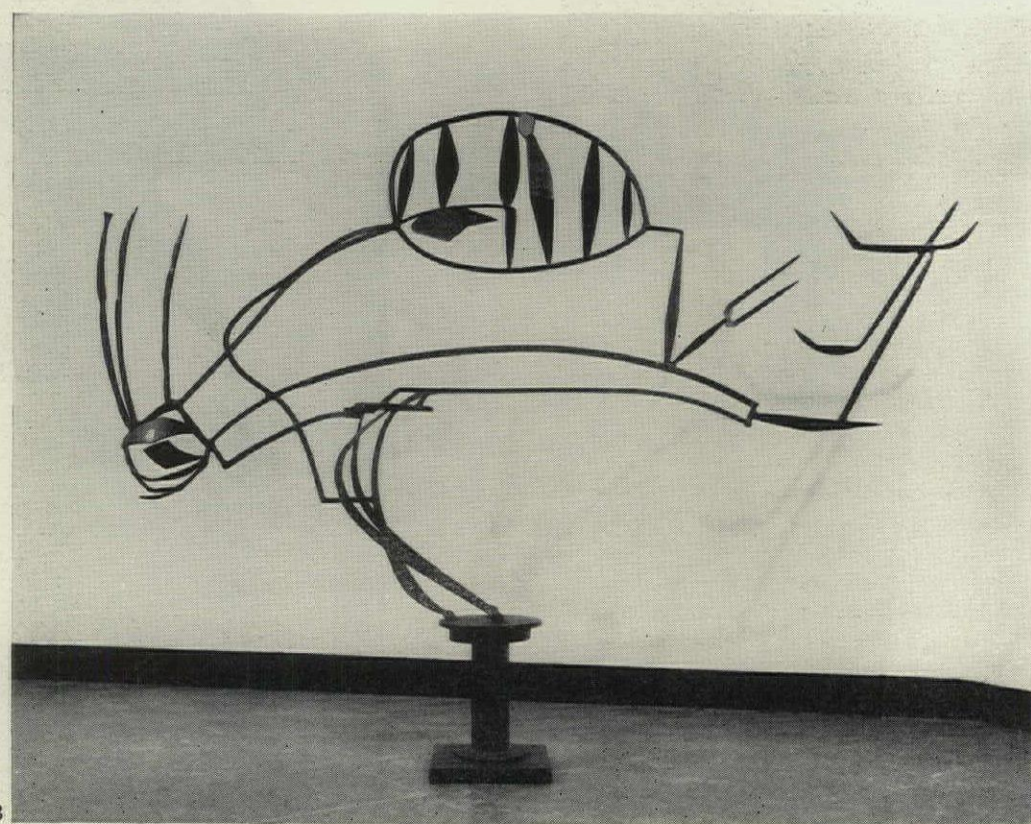
The aesthetic of an express train is indivisible from its purpose in moving people from city to city. A joint in isolation is not necessarily a valid symbol of joining. Or is it? For Smith the question does not seem to have arisen, and he spent his life in a hard struggle to use what he judged the twentieth century uniquely gave him. He said, 'Modern tools and method permit the expression of complete self-identity from start to finish. His (the contemporary sculptor's) work can show who he is, what he stands for, in many different ways and with all the fluency he desires, for every step is his own. His identity, pattern, and goal are shown in a qualitative unity, an integration stated in a manner not open to mind or hand before. . . This is, I believe, a specifically mid-twentieth-century privilege, as long as he knows the tools and materials of his time.'

At its deepest level Smith's work reflects directly on one of the central dilemmas of today. Symbolic of the crisis in which his work is bound up is the reversal of the classic relationship between architecture and sculpture. For centuries the elementary constructional core of buildings was dressed in organic carving; now sculpture often seeks to use displayed construction as a means of human expression. In this change, which David Smith perfectly exemplifies, is echoed a bigger upheaval in human thought and capacity. It is as if artists like Smith are trying to digest

the enormity of technology, its arrogance and frightening self-confidence, by holding it in their hands and using it for their own experiment with identity. Although this is a valid representation in personal terms of the technological problem which faces society as a whole, the communication which results is, like a great deal of honest art, highly ambiguous.

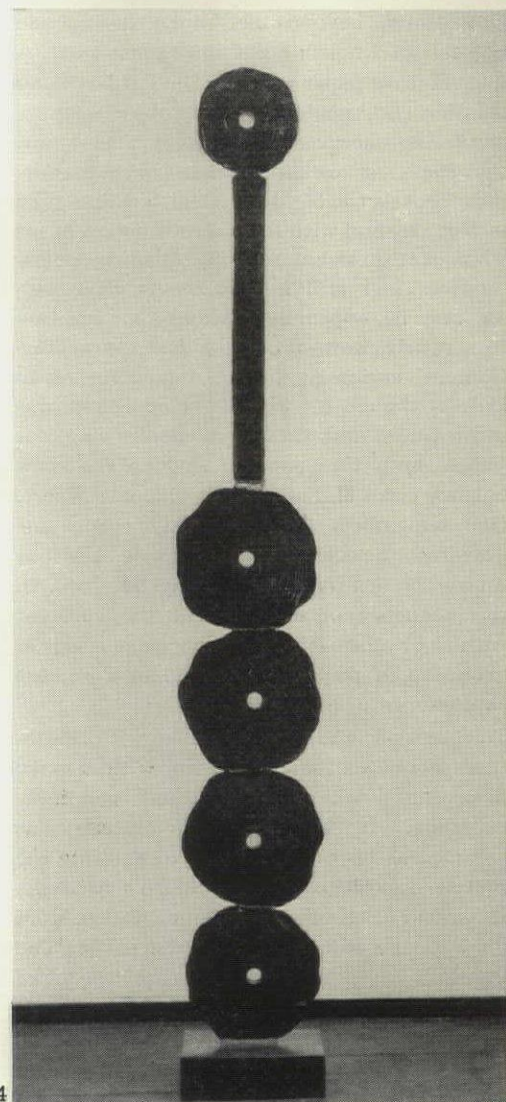
David Smith was born at Decatur, in Indiana, in 1906. His father was a telephone engineer and a part-time inventor, his mother a school-teacher. Of his background he once said, 'Everyone in town was an inventor. There must have been fifteen makes of automobiles in Decatur, Indiana; two blocks from where I lived there were guys building automobiles in an old barn. Invention was the fertile thing then. . . .' Later, when he was nineteen, he worked in the Studebaker factory at South Bend, operating riveting hammers, frame presses and milling machines, and learning the mass-production methods of the motor car industry. When he died, too young, in 1965, it was in a road accident.

One of the most productive periods of his life came in 1962 when he was invited by Gian-Carlo Menotti and the Italian government to go to Spoleto and make a sculpture for showing during the Fourth Festival of Two Worlds. In the event, he worked solidly for 30 days in the Italsider steelworks at Voltri, making



3

3, 'Australia', by David Smith, 1951. Painted steel, 9 ft. 2 in. wide.

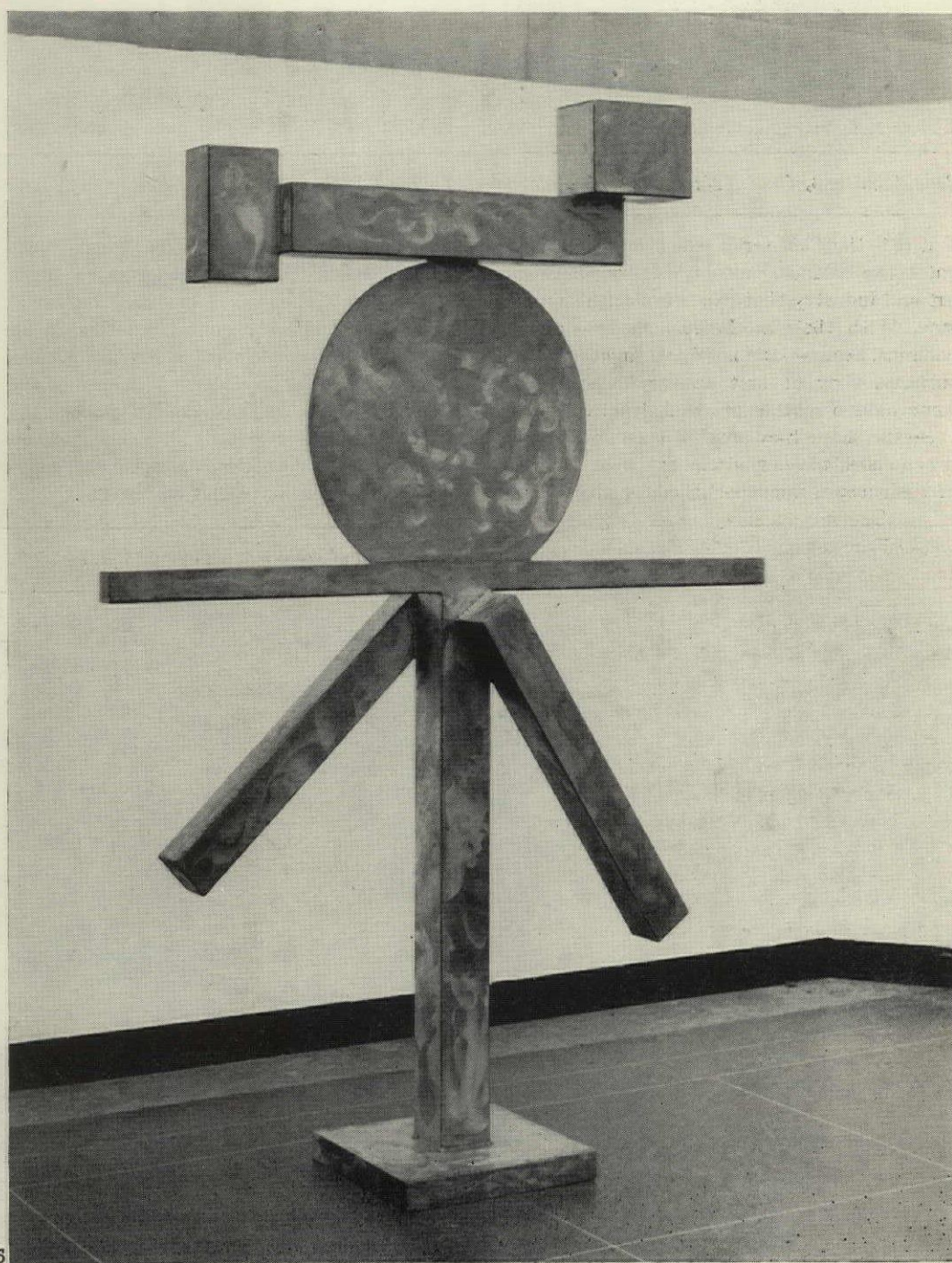


David Smith: 4, 'VBXXII', 1963. Steel, 8 ft. 3½ in. high. 5, 'Cubi XIII', 1963. Stainless steel, 9 ft. 6 in. high.

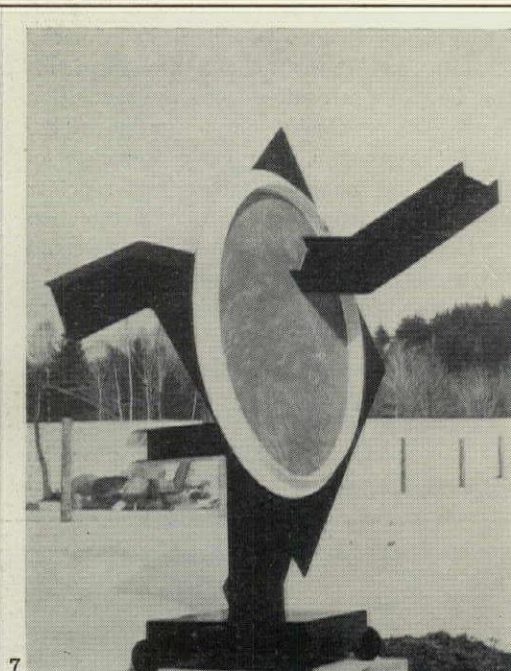
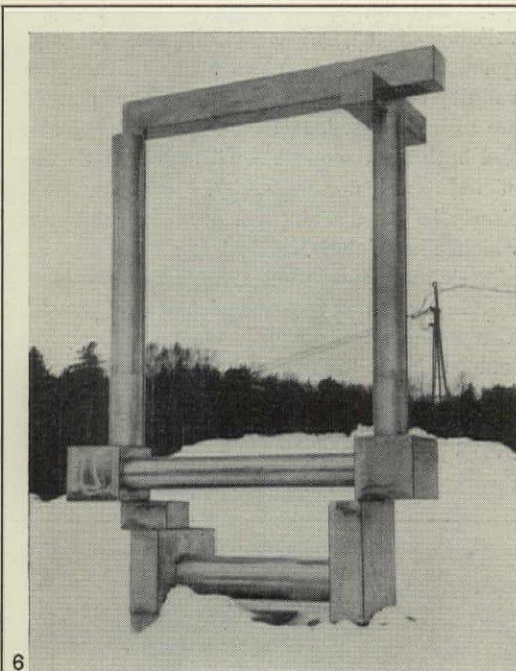
26 sculptures which were displayed in the Roman amphitheatre at Spoleto. This tremendous rush of activity brought to fruition a number of themes which had been maturing in his work over a longer period, and the impetus it gave him continued when he got back to America. Looking at his work as a whole, it is clear that the time in the Italsider factory gave him greater freedom and stature, allowing him to simplify his statements and clarify the monumental nature of his vision. Altogether the influence of industry is stronger in Smith's development than any conventional training. Not only are his ideas essentially bound up with the existence of a technological society, but the direct experience of machines and materials in factories gave him the technical and aesthetic framework he needed. Although he studied for a while at the Art Students' League in New York, this was at a

time when he thought of himself as primarily a painter, and it was mainly through friends that he came in contact with the revolution in art that was going on in Europe in the 1930s. Even then, the early influence of sculptors like Laurens Zadkine and Lipchitz seems to have led him away from the direction in which he finally reached maturity. He could hardly have found his way without the European experiments, but his own best work is often free from the inescapable sense of the past which is to be found in Braque or Picasso. His use of pieces of ready-made steelwork or tools is of a piece with this separate background. Duchamp's ready-mades pose an intellectual question about the nature and

validity of art; when Smith uses a giant spanner as part of a sculpture neither the validity of art, nor the nature of the spanner are to be debated. Both are splendid objects, and both are compatible with the artist's use of industrial materials. This is seen most clearly in those sculptures produced at Voltri which, like 'Voltri XIX' at the Tate, consist of little more than tools arranged on a metal-working bench. It is a kind of solid photograph, a representation of objects for which the sculptor has a high regard; there is caught in it, as perhaps there isn't in some of the more grand pieces, a feeling of Smith's sensitivity to the moral values of work and his humility towards the processes of making.



5



David Smith: 6, 'Cubi XXIV', 1964. Stainless steel, 7, 'Zig VIII', 1964. Painted steel,

But it is the *Cubi* series which most precisely catch the balance, or confrontation, between art and industry that exists in Smith's sculpture. With their mechanical shapes—cubes, columns, beams—and highly wrought polished surfaces, they at first appear logical, as if some hidden mathematics of structure made them the shape they are, but then not so; and it is a shock to see that the apparent stillness of their arrangement is belied by the details

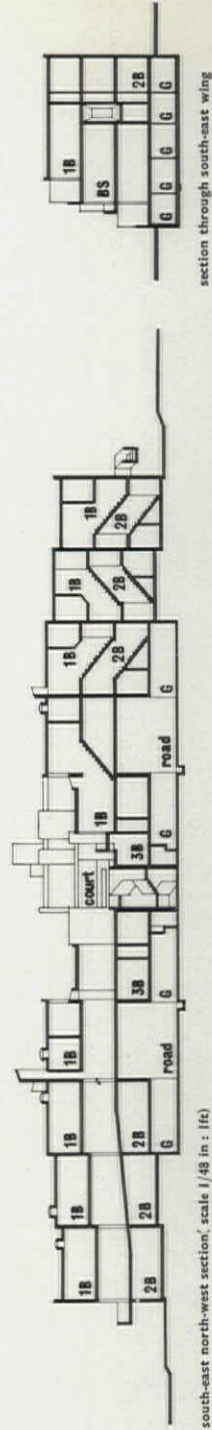
of their construction. In the great 'Cubi XXIV,' where columns supporting a beam forming an archway are balanced on boxes which rest perilously on one another in an impossible counterpoint of edges, the illusion is complete. It is possible to be aware of the massive solidity of the composition and the contradiction of its details all at once. As an experiment in aesthetics it is noble and moving, a fine invention. What else is it?

8, 'The Parakeet and the Mermaid', by Matisse, 1952. Cut-out of gouache on paper, 11 ft. by 25 ft.



Downstairs, beyond the Tate's rag-tag and bob-tail of English painting, a great treat. A huge Matisse paper collage, 'The Parakeet and the Mermaid,' made in 1952, an object of quite staggering energy and gaiety. It is only now that these last works of Matisse's begin to come into focus as the highly original creation they in fact are, and with them a revaluation of his whole stature as an artist. So often his endless interiors and still lifes, however good each one may be, appear as a fairly minor addition to a nearly worn-out genre. But, paralleling Bonnard curiously closely, it now begins to look as though his genuine achievement was in his nudes and, finally, in the drawings for Vence and the paper collages. The new balance gives Matisse a very different aspect. One remembers the poignantly erotic line drawings, the celebratory 'La Danse,' the four bronze 'Nudes from the Back' in the Tate. In this sequence of development the collages, with their affirmation of life, become a logical extension of past work instead of a sudden explosion into something new.

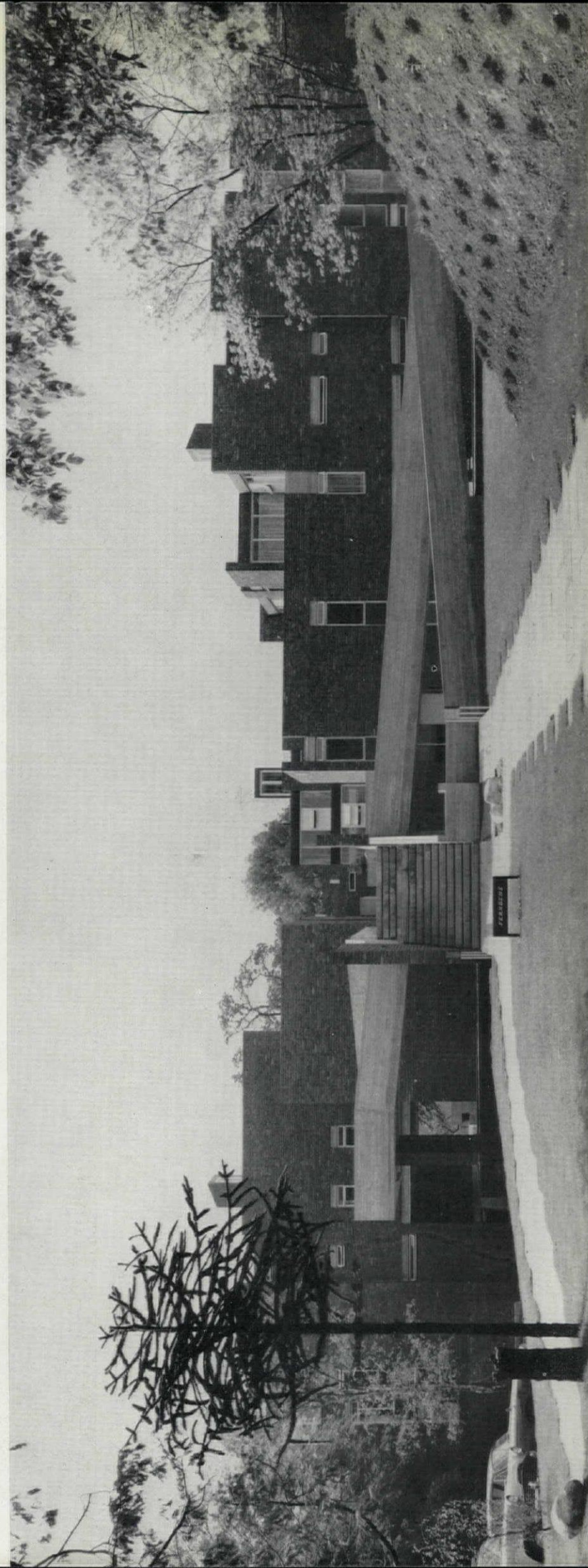
To round off, and to link Matisse with Smith, there is one of those coincidences that make reviewing books or exhibitions genuinely revealing. It happens that Matisse has recorded as his own approach to painting the precise opposite of David Smith's attitude. Raymond Escholier tells how Matisse told him, in the same year that he made 'The Parakeet and the Mermaid,' that 'the chief interest of my work comes from attentive and respectful observation of nature, and from the quality of feeling it stirs in me, rather than a certain virtuosity which nearly always follows honest, constant work.'



HOUSING, KINGSBURY, LONDON

architects **CLIFFORD WEARDEN AND ASSOCIATES**

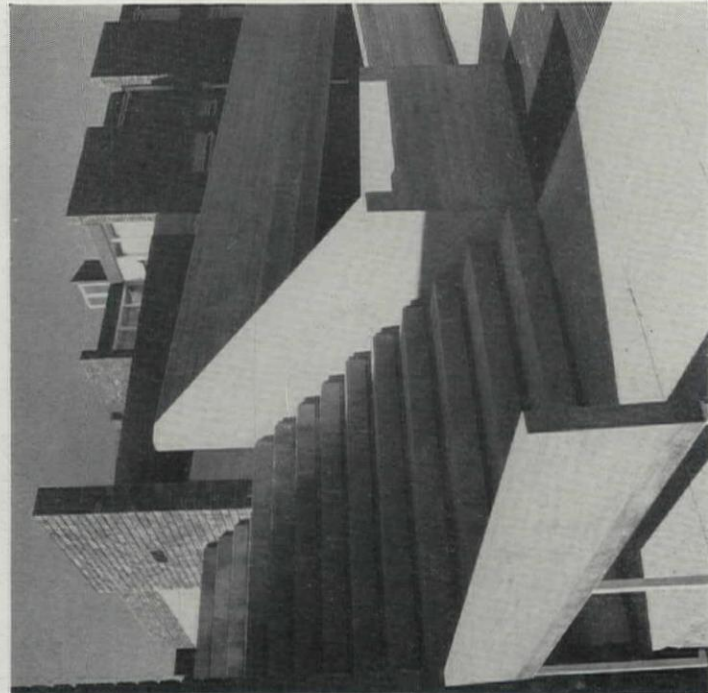
photographs by **H de Burgh Galwey and Colin Westwood**



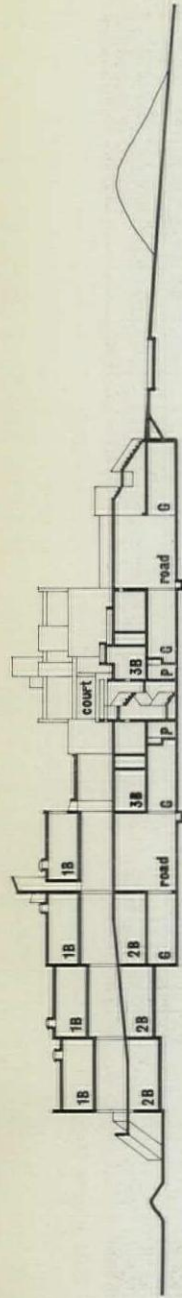
1, the entrance side seen from Slough Lane, with the ramp and steps to the upper-level piazza (centre) and the sunken motor access passing beneath the south-east wing (left).



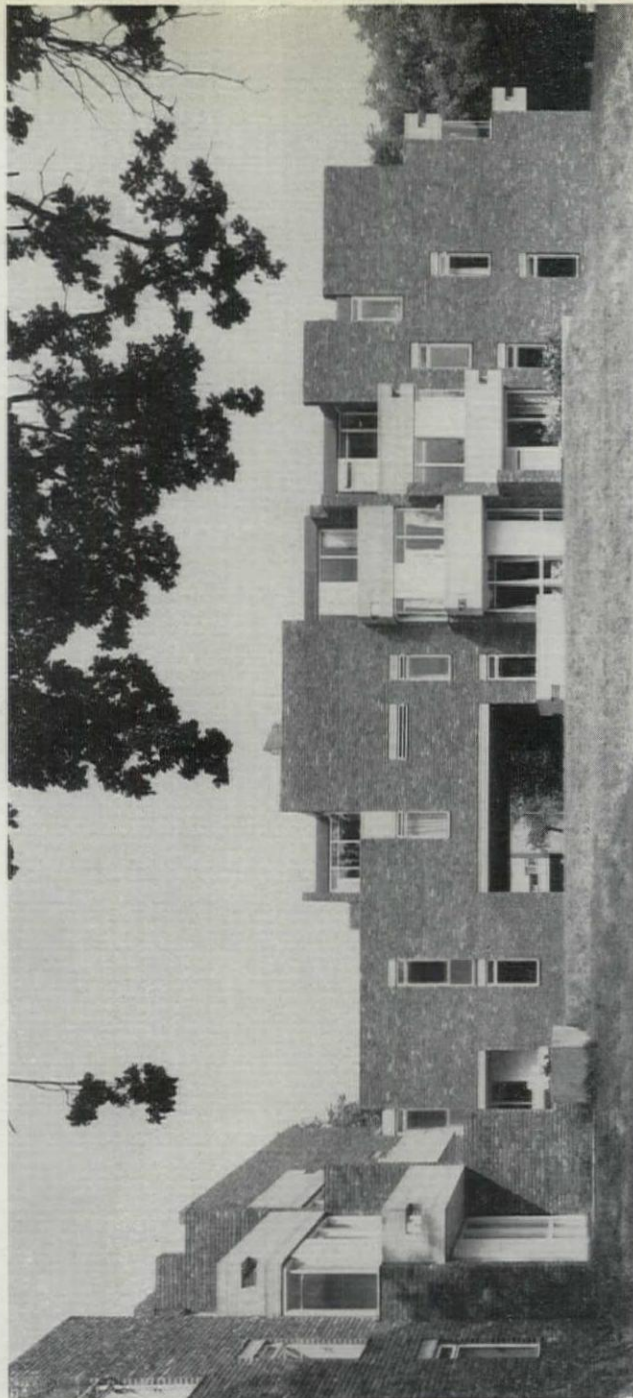
2, the steps which give access at the end of each wing to the internal ramp. 3, the ramp and steps to the main piazza, with boarded concrete balustrade walls. 4, elevation of south-west wing, with upper-level piazza and motor access (centre), seen from opposite side of section (below).



3



south-west north-east section (scale 1/48 in. 1 ft.).



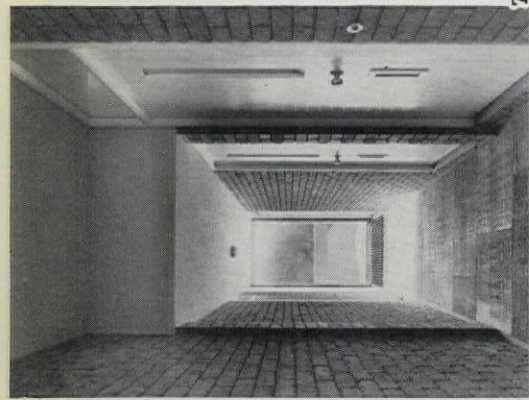
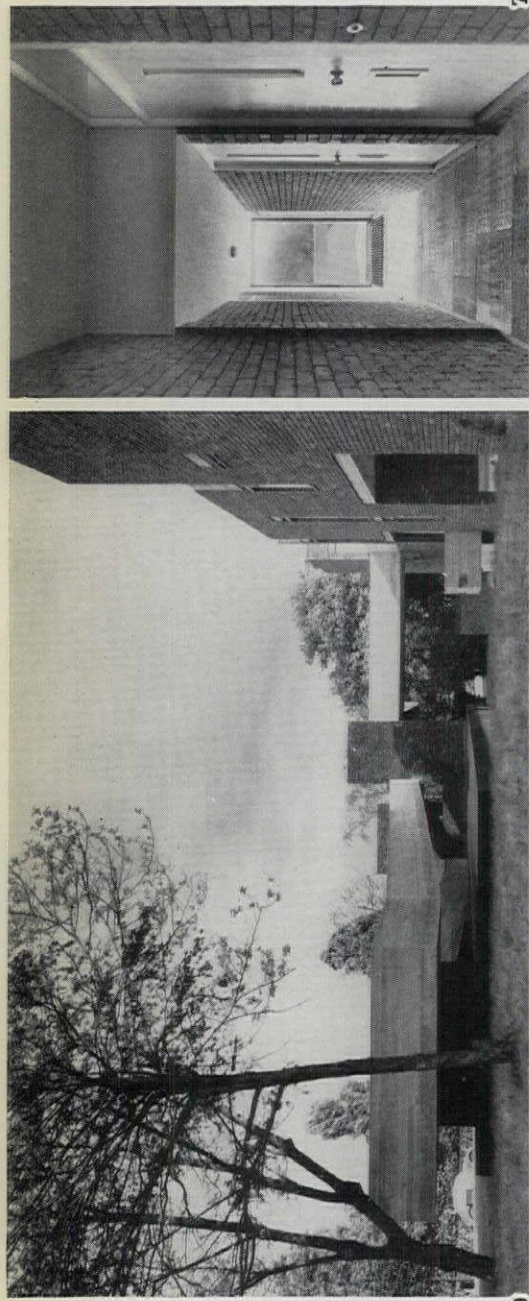
Lack of money, demand for variety and abundance of aesthetes among their members have naturally turned non-profit-making housing societies towards 'high density, low rise' designs in highly modelled loadbearing brick, often forming, as in this Kingsbury scheme, islands of urbanity in outer Metroland. The Hastoe Housing Society, an offshoot from the Sutton Dwellings Trust, purchased 1.22 acres, previously occupied by a Victorian villa in a mature garden and gently sloping from north to south. The site lies midway between Old and New Kingsbury, close to the shops and by-pass, but immediately adjoined by a public house, a primary school and a large open space on the south-west. Within the permitted density of sixty habitable rooms per acre, the architects have provided 37 dwellings: nine bed-sitters, fifteen one-bedroom flats, nine two-bedroom flats and four three-bedroom maisonettes.

Segregation of vehicles from pedestrians is achieved by sinking the service road round a central square block

containing twelve garages, three refuse chambers and four entrances; the other twenty-four garages are built into the ground around the perimeter of the square. The main building overhead consists of three three-storey wings, arranged in a T-shape to preserve most of the mature trees already on the site. The wings meet at a central courtyard raised dramatically to the middle of the three levels; this is reached from the road at the head of the 'T' by means of a flight of steps and a zig-zag ramp leading to a bridge over the service road. From the courtyard, making use of the fall of the ground, passages penetrate each wing in the form of downward-sloping ramps; from these or from the courtyard every dwelling has separate access, directly or by private stairs, thus achieving maximum economy in circulation space. Each ramp ends in a diagonally placed flight of steps down to the garden, and the courtyard is connected to the garage court by a central staircase. The position of the ramps and the width of the wings at each storey were dictated by the



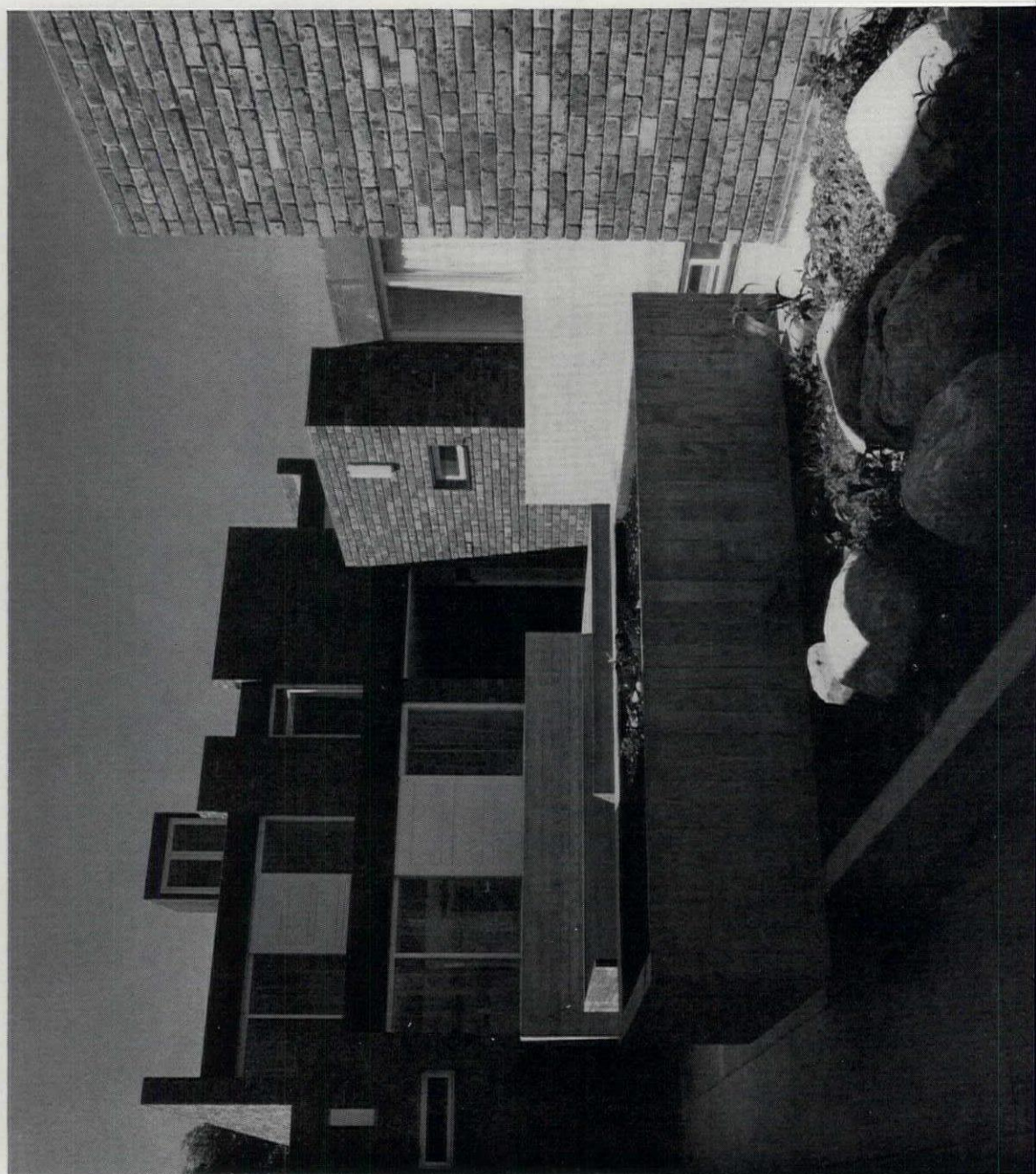
5, detail of elevation of north-west wing, showing texture of boarded concrete and facing bricks with raked joints. Main entrance ramp is seen through arch.



Parker Morris standards for each dwelling type, placed in relation to the maximum permitted distance of the cross walls for light-angles at the end of the wings and to a desire to have all bed-sitters facing west or south (other dwellings all have more than one aspect). Every dwelling has its own balcony or terrace, and in order to give living and dining areas and bedrooms the best views to the surrounding open spaces, kitchens and bathrooms are mostly arranged centrally with mechanical ventilation. Separate pram, cycle or general stores are grouped along the ramps, and all electricity and gas meters are placed for easy reading at garage level with the remainder of the general stores and secondary entrances to the maisonettes.

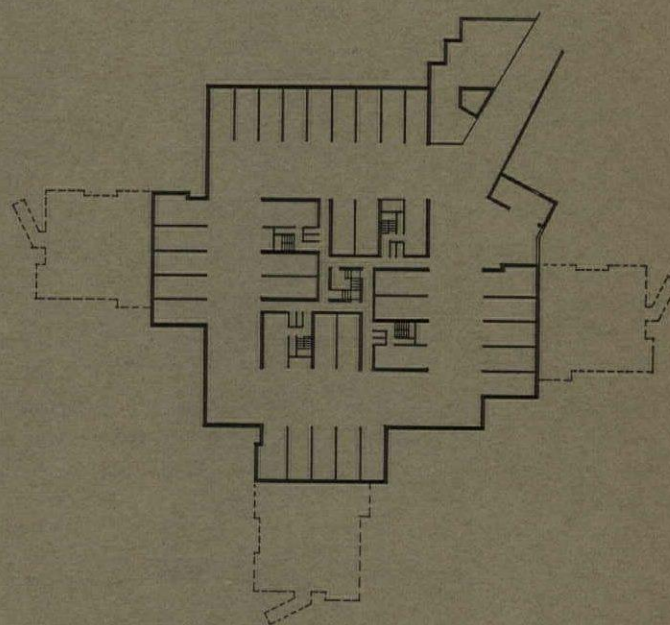
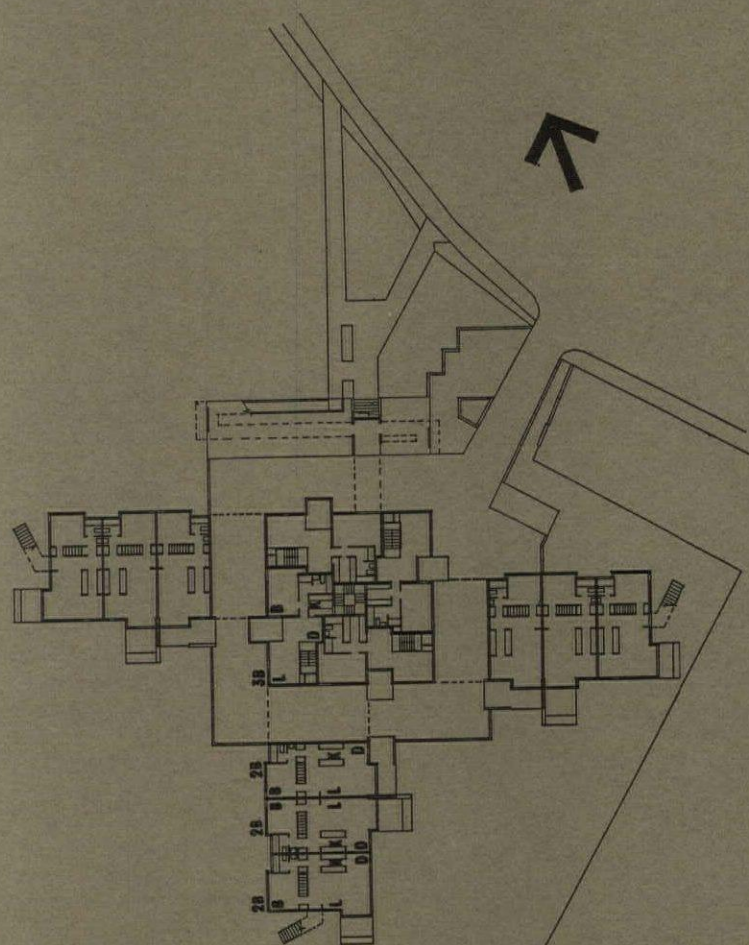
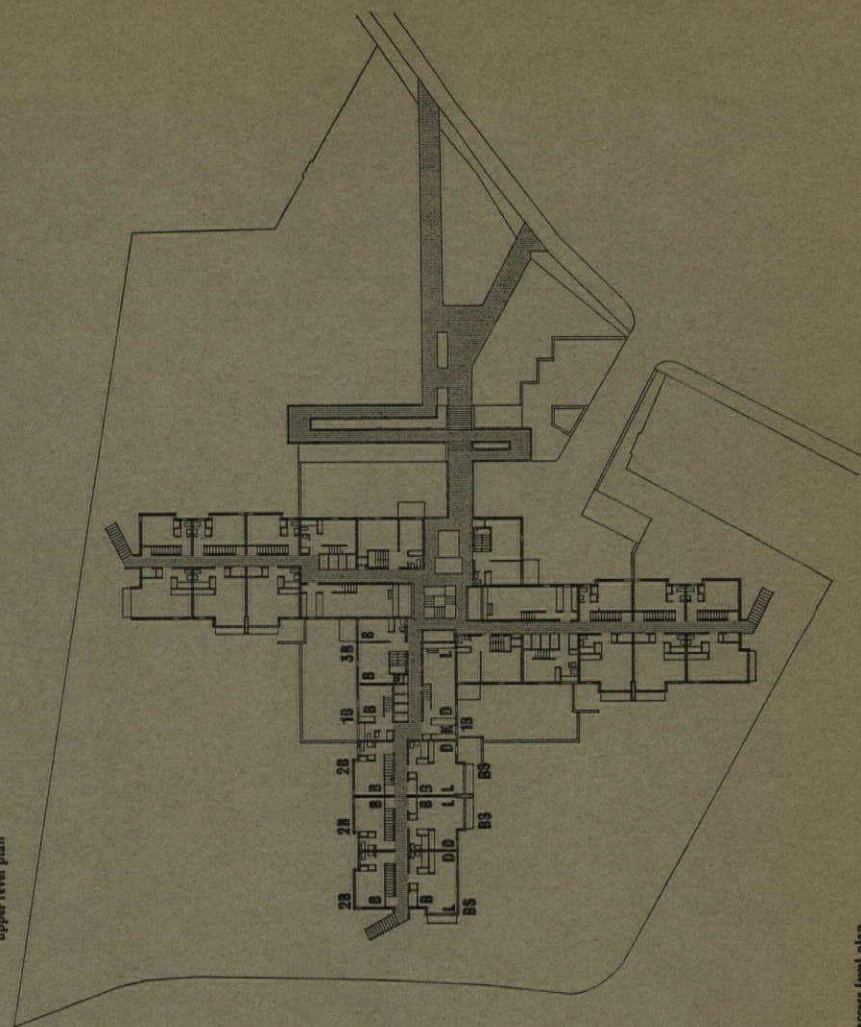
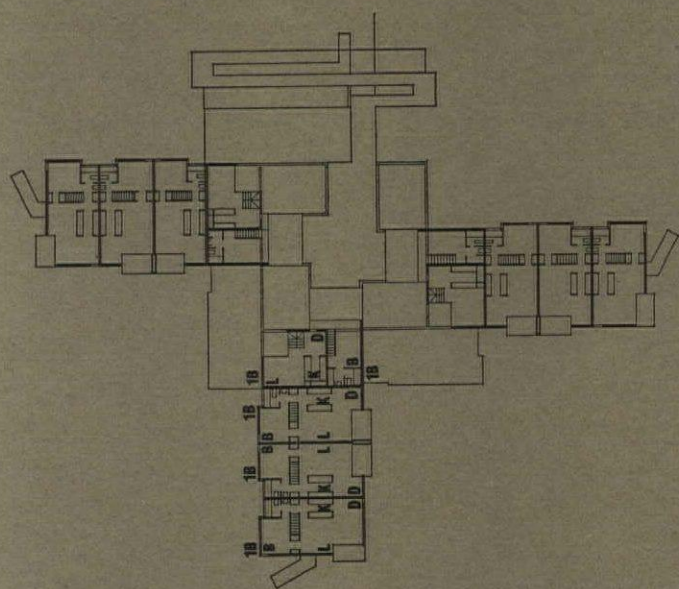
The structure consists of nine-inch calculated brick cross walls, and external cavity walls, either entirely of brick or of brick with an inner skin of concrete blocks. Internal walls are in various thicknesses of brick or block. Floors are of reinforced concrete or patent concrete between dwellings and of timber joists within dwellings and for the main roof, which is covered by wood wool, screed and three-layer felt. Stairs similarly are reinforced concrete if public and softwood if private. The courtyard and ramps have concrete paving slabs; floors otherwise are mainly hardwood tile or thermoplastic tile. Walls internally are plastered, apart from facing brick to the ramps.

The external approach ramps, staircases, lintels and balconies are all of fairfaced concrete. Balcony window frames are of wood; windows elsewhere are of steel. Landscaping includes terraced banks round the centre to conceal vehicles and garages, and grassed mounds and ha-has along the perimeter of the site. Associate, Peter Deakins. Assistants, Tom Clayton, Maurice Eskenazi and Samuel Bettany. Quantity surveyors, Young and Brown. Structural engineer, Thomas Ackroyd. Ventilation engineer, Roy Nicholls. For contractors see page 388.



6, side view of entrance ramp and bridge to piazza. 7, internal ramp seen from piazza end, looking towards steps (seen previously in 2).

8, detail of central piazza, with doorway (background right) to the internal ramp, which is lit from rooftop 'turret'.



HOUSING, KINGSBURY, LONDON



1, lithograph of Chateauneuf by his friend Erwin von Speckter, after a painting by Robert Schneider.

CHATEAUNEUF IN LONDON

STEPHAN TSCHUDI MADSEN

Alexis de Chateauneuf, 1, is one of the most colourful figures in the world of architecture in the mid-nineteenth century. He was born in Hamburg in 1799, but his life was that of a cosmopolitan, contributing to the history of architecture of such different cities as Hamburg, London and Oslo.

In his formative years, with their marked emphasis on classical architecture and the work of the earlier Renaissance, two factors which decisively influenced his development are immediately apparent: his interest in brick and its special qualities, and his great interest in, and understanding of, English architecture and its characteristic features. By 1835 Chateauneuf was not only a fully trained architect, but also a much travelled young man.

Among his important works in Hamburg in the 1830's is the design, 2 and 3, for the new Hamburg Exchange submitted in a competition in 1837. The competition was however not won by him but by his erstwhile teacher Carl Ludwig Wimmer¹, whereupon Chateauneuf, who probably considered his own design just as good, promptly published his entry under the title *Entwurf zur Boerse auf dem Adolphs-Platze in Hamburg* and left Hamburg for England.

But it was not only his failure to win the Hamburg competition that induced him to make his way to England. The English architect Arthur Patrick Mee (1802-68), a pupil of Soane, had in 1837 just completed a so-called 'English Villa' for R. Godefroy on the Elbe, near Hamburg², and so it is more than likely that Mee and Chateauneuf met during the course of 1837, or possibly earlier, and that Mee suggested the move to Chateauneuf. In any case Mee was to enter into partnership with Chateauneuf in London in 1838. Early in that year a splendid prospect opened for the partnership: fire broke out in Jarman's old Exchange in London, one bitterly

cold evening in January, 1838; pumps and other equipment were frozen so solid that a considerable time elapsed before proper rescue work could be organized. By that time the fate of the building was sealed. Next day Jarman's building, completed 1667-69, with its four wings grouped around an open courtyard, was nothing but a heap of smouldering ruins. Malicious tongues declared that the stately old building was splendid, but only on one particular occasion, namely when it was ablaze³.

Soon a competition was announced to design a new Exchange, and Chateauneuf submitted drawings which were probably an altered version of his proposed Hamburg Exchange. An adjudicating committee was set up, and already in November, 1839, its report on the 88 entries had been drawn up⁴. Five designs were selected, which were capable of being carried out, and which were described as 'ranked in the first Class.' The first prize, of £300, went to William Grellier, Chateauneuf was awarded the second prize of £200 (a reported reverse order seems not to be correct⁵), and Sidney Smirke, younger brother of Sir Robert, the third. Next on the recommended list came three designs, the cost of which would far outstrip the sum available for rebuilding the Royal Exchange. The observations of the committee on the first prizes included the following:

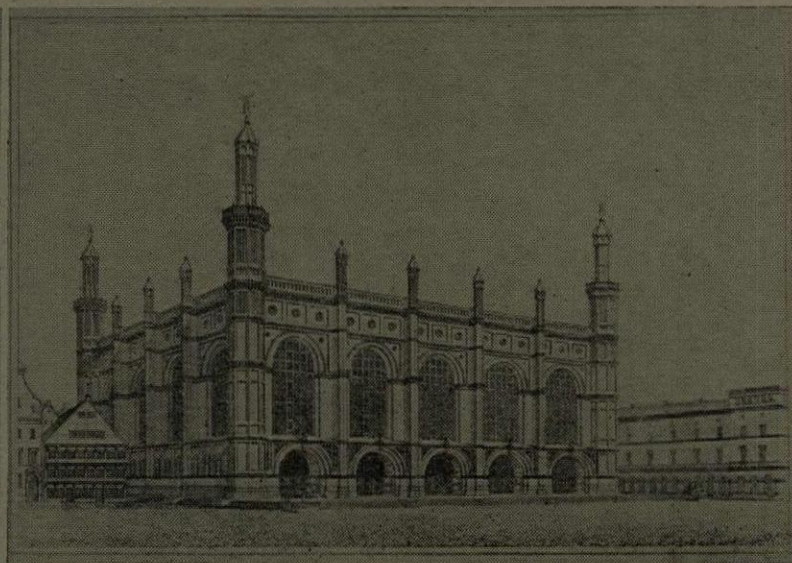
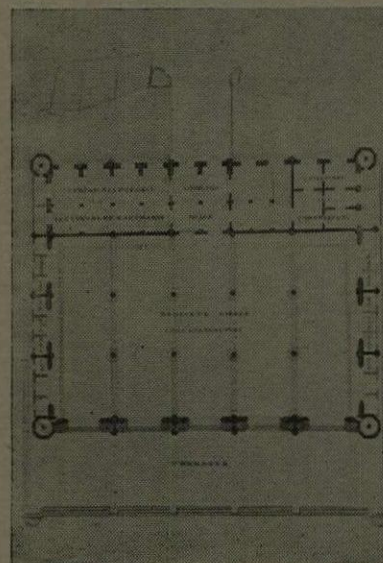
'Mr. Grellier's drawings, too, No. 36, which obtained the first premium, did not attract our notice much, for at all events it has not impressed itself upon our recollections, . . . on the contrary, Mr. Chateauneuf's (No. 48), which obtained the second premium, engaged our attention very much. . . We suppose we may call it Mr. Chateauneuf's, for we suspect that as far as design is concerned his associate Mr. Mee had little to do with it. Though the style is Italian, the expression is decidedly German.

It aims not so much at grandeur as at elegance, and a certain piquancy of taste. The east front is considerably loftier than the rest; owing to which, the elevation of the north and south fronts are not of uniform height throughout, but have an additional storey at that end. The west elevation is exceedingly tasteful, and would we apprehend, be so far preferable to a large portico of a single order as it would not so greatly overpower the centre of the Bank.'⁶

No sooner had the results of the competition been announced, than a storm of criticism broke out, just as violent as in the case of the Nelson Monument, where competition and adjudication ran almost parallel. It was alleged that the committee had shown favouritism in awarding prizes to acquaintance or relatives.⁷ In December two architects were co-opted to investigate and advise the committee. The two were William Tite and George Smith.⁸ The fact that Grellier was or had been a pupil of Smith⁹ did little to silence the critics, nor were matters improved when the second adviser was shortly afterwards commissioned to design the new building.

The winners were clearly encouraged to elaborate their projects. Chateauneuf's modified design, 4 and 5, exists, whereas it has proved impossible to trace Grellier's drawings.¹¹ Chateauneuf appears to have exploited the trapeze-shape of the site very skilfully. He gave the short façade, which faces the Mansion House and the Bank of England, an open lobby—rather like the Loggia dei Lanzi in Florence—flanked by two towers. Behind this modest but tasteful entrance lies the two-storey building itself, terminated by a high block. The effect is to make the building open, simple and light, in contrast to the architectural confusion that dominates the square while the heavy, massive form increase as the site broadens.

2, plan and, 3, perspective of Chateauneuf's design for the Hamburg Exchange competition, 1837.

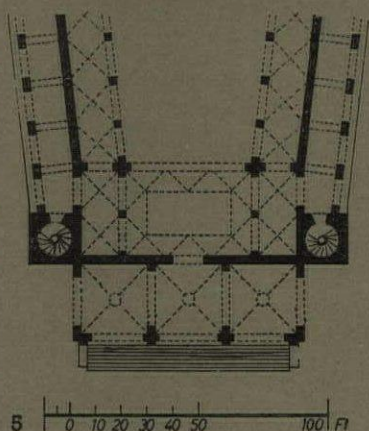




4, perspective and, 5, plan of Chateaufort's modified design for the London Royal Exchange competition, 1839.

The critic who declared that 'the expression is decidedly German' had undoubtedly pierced to the core of the problem. With its calm, clear distribution of mass, the low relief effect of the walls, the interplay between horizontal and vertical articulating features, and the flat pilasters, the building reminds one of Schinkel. Taken as a whole it is typical of the Schinkelian late classicism, which became so widespread in the German cultural sphere and in Scandinavia. This style differs greatly from the Palladian tradition in England, and from the more sculptural approach to architecture and the pillared classicism of the Regency. Where the English resorted to their beloved Tuscan or Corinthian free-standing columns, the Germans preferred to set them flush with the wall, transforming them into pilasters and merging them in with the wall surface to achieve an entirely different effect.

Chateaufort had written an article on Schinkel¹², and this link with Schinkel's style emphasizes an aspect of Chateaufort which has not received sufficient attention. Yet the details in the design are Chateaufort's own—his preference for North-Italian archi-



ture is evident in the Italian shape of the roof, in the Florentine-inspired cornice and the two Romanesque-inspired towers. The special qualities recognized by the English committee resided no doubt in the simplicity, harmony and majestic calm which the building displays, as well as the masterly way in which it fits into its architectural setting, and finally in the somewhat unusual façade, which appeared at once representational and monumental. One is undeniably left with the impression that the committee may have considered awarding the first prize to Chateaufort and Mee, only to shy at the idea of implementing their plans.

Be that as it may, it was to William Tite (1798–1873), who had been appointed adviser to the adjudicating committee, that the job went in 1841. His Royal Exchange is entirely classical in style, with its Corinthian columns, massive window-frames and full-bodied festoons. It is almost a paraphrase of Baroque and eighteenth-century classicism. One is tempted to regard it as heralding the dawn of the Victorian Age—and there are good reasons for agreeing with Nikolaus Pevsner when he declares that 'the building marks the disintegration of the Classical Revival in England.'¹³

Whether Chateaufort's building would have been more suitable in the setting that London's architecture provided is difficult to say, but English Victorianism certainly missed an excellent opportunity of making closer contact with one of the most important stylistic trends on the Continent round about the 1840's, namely Schinkel's sober German late classicism.

The Exchange, however, was not Chateaufort's only attempt at establishing himself in London. He also competed for the Nelson Monument. The architectural idea of Trafalgar Square was Nash's, but when he died in 1834 it was nothing more than a stretch of ground sloping from the Royal Mews in the north—at that time due for demolition—down to the equestrian statue of Charles I. Nash had also been working on plans for the National Gallery on the north side of the square, where the mews stood, but it was left to William Wilkins to complete the present building in 1838. The name Trafalgar had officially been given to the square in 1830, twenty-five years after the death of Britain's naval hero, and during the 1830s plans were set on foot for a monument to Lord Nelson.

In July, 1838, the Nelson Monument Committee—with the Duke of Wellington as its chairman—met

and agreed that Trafalgar Square was to be the site for the projected monument¹⁴. Shortly afterwards the terms of the official competition for a design were announced, with June 30, 1839, as the closing date for entry, and the invitation to compete concluded with a suitably amended form of Nelson's own famous signal: 'England expects every architect to do his duty'¹⁵. The result, alas, was not a comparable victory—neither for the committee nor for the selected architect. The committee was under no obligation to select any particular design, nor to award prizes, and in the spring of 1839 models and drawings were placed on exhibition¹⁶.

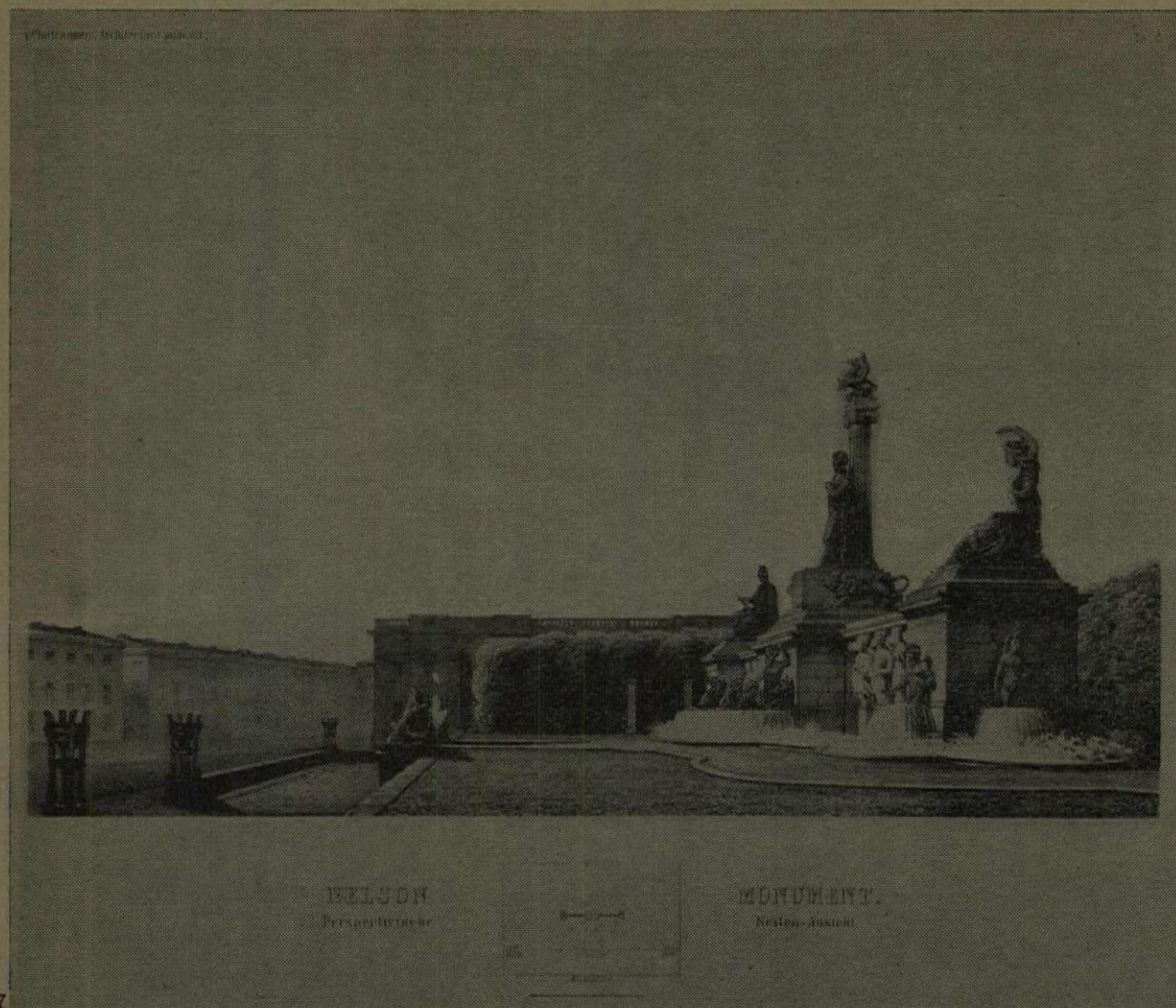
Meanwhile, once again, a rising tide of criticism mounted against the adjudicating committee, its competence, its decision and its methods, which were considered 'so perfectly MONSTROUS as to be scarcely credible'¹⁷. Criticism reached its climax in the autumn of 1839, and the best collection of critical observations and other outbursts is in a pamphlet entitled *The Competition for the Erection of the Nelson Monument critically examined*, published in 1841, the work of a neglected architect by the name of John Goldicutt.

William Railton's winning design is essentially that of the monument as it stands today, except that the planned height was 193 feet, whereas the monument when completed was only 145 feet. The actual idea of a memorial column is naturally inspired by the antique and was a popular one at the time; the people of Paris, who already had their Napoleon Column, erected their *Colonne de Juillet* on the Place de la Bastille at about this time. The idea and actual execution of the Nelson column was thus nothing out of the ordinary at the time.

Before and during erection, criticism continued. 'Should the column—as we devoutly hope it will not—

6, Chateaufort's competition design for the Nelson Monument in Trafalgar Square, 1839.





7, another perspective by Chateaufeuf of his Nelson Monument competition design.

ever be erected, at all events a statue personifying the Collective Taste of the committee ought to be clapped on the summit of it¹⁸. The column also provided a spur to local satirists. We find, for instance, 'Anti Stylitis,' writing in *The Civil Engineer and Architect's Journal* in 1840:

Nelson loquitur:

You see that I stick to my post, stuck up here on the top of a peg, and having before but one arm, I am now left to stand on one leg. Though not on a leg made of wood, Oh no!—'tis a leg built by stone; and so wondrous tall too it is, that I stand 'all aloft and alone'¹⁹.

While the winning design was tame²⁰ there were plenty among the other hundred or so entries which were conspicuous by their originality. On the whole, the competition gives an excellent cross-section of English taste at the close of the Regency period, with its austere and elegant norms, and the transition to the stylistic confusion and richness of the Victorian Age. Joseph Parkinson submitted a plan for a triumphal arch, approximately 100 feet square, and a Corinthian circular temple; both Hopper and Morrison, independently, proposed a temple to the Navy, an idea paralleled by Napoleon's monument for *Les Grandes Armées*, rapidly approaching its completion at about this time²¹. Tottie and Pitt both submitted drawings for a gigantic statue

some 100 feet high, while Foggo's solution was the mast of a man-o'-war bedecked with trophies and a statue of Nelson.

Compared with this medley of designs, of varying and doubtful taste, Chateaufeuf's, 6 and 7, comes as relief. His plan²², took the form of a commemorative grove, in the classical style, shaded on three sides by evergreens. In the middle he placed a plinth, with Nelson, full-size, standing in front of a low Ionic column, flanked by two lions symbolizing the lion-like courage of his sailors. In front of him, Neptune reclines. The central group is flanked on both sides by a row of columns, with female torsos, shaped like the prows of ships, symbolizing Nelson's fleet. The row of columns is terminated with statues of Europe and Africa, while the steps in front are flanked by the Nile and Trafalgar. The whole lay-out was to be enlivened with fountains and running water and, as Chateaufeuf puts it, 'The rich basins are to help the shortage of fountains in London'²³.

The whole set-up is surrounded by an arcade of deciduous trees. This gives the monument and the whole site an air of peace, thus fulfilling one of the main aims of the monument in a dignified manner. Characteristically almost, we find a foreigner endeavouring to curb the unduly national elements and the allegorical pathos. Chateaufeuf, in fact, was attempting

to transform Trafalgar Square into a memorial grove.

One outstanding feature of his design was that it embraced the whole of Trafalgar Square; it comprised not only one column or one temple, but a number of allegorical figures; it was to be a park that filled nearly the entire square. His intention was to create an architectural entity where this quality was highly required. Another advantage was that the monument would not be high enough to spoil the effect of the National Gallery²⁴. In other words, Chateaufeuf was thinking just as much in terms of the square as of the monument itself. If his plans had been accepted, Trafalgar Square might have been an oasis—and not a desert of stone. However, the idea was probably too Germanic for Londoners.

Before leaving Trafalgar Square, we might remember William Morris's vision, in his description of the square taken from his utopian *News from Nowhere*: 'We came presently into a large open space, sloping somewhat toward the south, the sunny site of which had been taken advantage of for planting an orchard, mainly, as I could see, of apricot-trees, in the midst of which was a pretty gay little structure of wood, painted and gilded, that looked like a refreshment stall'²⁵. Among the architects who entered for the competition, Chateaufeuf was the one who would best have understood

William Morris—and at the same time have proved capable of creating an architectural monument with sculpture and architecture harmonizing according to the strict rules for subordination laid down in late classicism. There is at any rate no doubt that Chateaufeuf courageously tackled some of the most controversial architectural problems of Early Victorian England, and that the ideas he submitted were originally artistically viable, and rich in possibilities which might have stimulated English architecture. However, the English architect continued independently along their appointed road, though in recognition of Chateaufeuf's proficiency and his interest in English architecture, he received the distinction of honorary membership of the Royal Institute of British Architects²⁶.

REFERENCES

- ¹ Wimper's project was quite classicistic; it was, however, not carried out at once, but was used when the building was erected after the fire of 1842. W. Mehop, *Alt-Hamburgische Bauweise*, Hamburg, 1908, p. 196, ill. fig. 149-50.
- ² H. M. Colvin, *A Biographical Dictionary of English Architects 1660-1840*, London, 1905, ad vocem.
- ³ *The Civil Engineer and Architect's Journal*, London, vol. 1, 1838-39, p. 131.
- ⁴ 'The Royal Exchange Report of the architects,' *op. cit.*, vol. II, 1839, pp. 436-5.
- ⁵ *The Gentleman's Magazine*, London, vol. CLXVII, 1840, pp. 33-37, stated that Chateaufeuf won the first prize. But there are reasons to believe that the architects' report (see note 6) is correct. This statement is signed and given in *extenso*.
- ⁶ *The Civil Engineer and Architect's Journal*, London, vol. 1, 1838-39, p. 144. The Bar of England was that erected by John Soane 1788-1833.
- ⁷ 'The first premium was awarded to a clerk of the attached architect of the Gresham committee, and the Mercers' Company; the third premium to the partner and brother of one other adjudicator; and the fifth another clerk of the attached architect. Quoted from *Morning Herald*, 12 November 1839, in John Goldcutt, *The Competition for the Erection of the Nelson Monument critically examined*, London, 1841, p. 14.
- ⁸ *The Civil Engineer and Architect's Journal*, London, vol. II, 1839, pp. 473-74.
- ⁹ H. M. Colvin, *op. cit.*, ad vocem.
- ¹⁰ Guildhall Library and Art Gallery, Corporation of London. The author would like to express his gratitude to Mr. A. M. H. for his assistance.
- ¹¹ The archives in the following institutions have been checked, but with negative result: Architectural Association, Commissioners Crown Lands, Guildhall Library and Art Gallery, London County Council, National Buildings Record, The Records of the Corporation of the City of London, Royal Institute of British Architects.
- ¹² A. de Chateaufeuf, 'Schreiben eines Architekten über die Werke Schinkel's,' *Schornsteins Kunstblatt*, Tübingen, 1829.
- ¹³ Nikolaus Pevsner, *London I, The Building of England*, London, 1957, p. 179.
- ¹⁴ *The Civil Engineer and Architect's Journal*, London, vol. I, 1838-39, p. 265.
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- ¹⁶ For a description of models and drawings for the competition for the Nelson monument, see *The Civil Engineer and Architect's Journal*, London, vol. II, 1839, pp. 138-290-96.
- ¹⁷ The decision was made *inter alia* by means of a kind of secret ballot, and aroused a storm of protest. See 'Argus,' 'The Nelson Monument,' *The Civil Engineer and Architect's Journal*, vol. II, 1839, pp. 279-81.
- ¹⁸ *The Civil Engineer and Architect's Journal*, London, vol. III, 1840, p. 355.
- ¹⁹ *Ibid.*, p. 379.
- ²⁰ Vigon's plans from 1816 were completed after his death, by Huvé, and the temple was inaugurated in 1842 as the *Madeleine*.
- ²¹ Alexis de Chateaufeuf, *Architectura Publica*, Berlin, Hamburg, 1860, Preface; *Hamburgisches Künstler-Lexikon*, Hamburg, 1861, ad vocem.
- ²² Attention has been drawn to this monument in the invitation. *The Civil Engineer and Architect's Journal*, London, vol. I, p. 352.
- ²³ John Betjeman very kindly drew my attention to this passage in *News from Nowhere*, as an example of William Morris' prose style.
- ²⁴ Charles Fowler's brief memoir, read at the meeting of the Royal Institute of British Architects, 9 February, 1857, *Architectural Publica*, Berlin, Hamburg, 1860, Preface; *Hamburgisches Künstler-Lexikon*, Hamburg, 1861, ad vocem.

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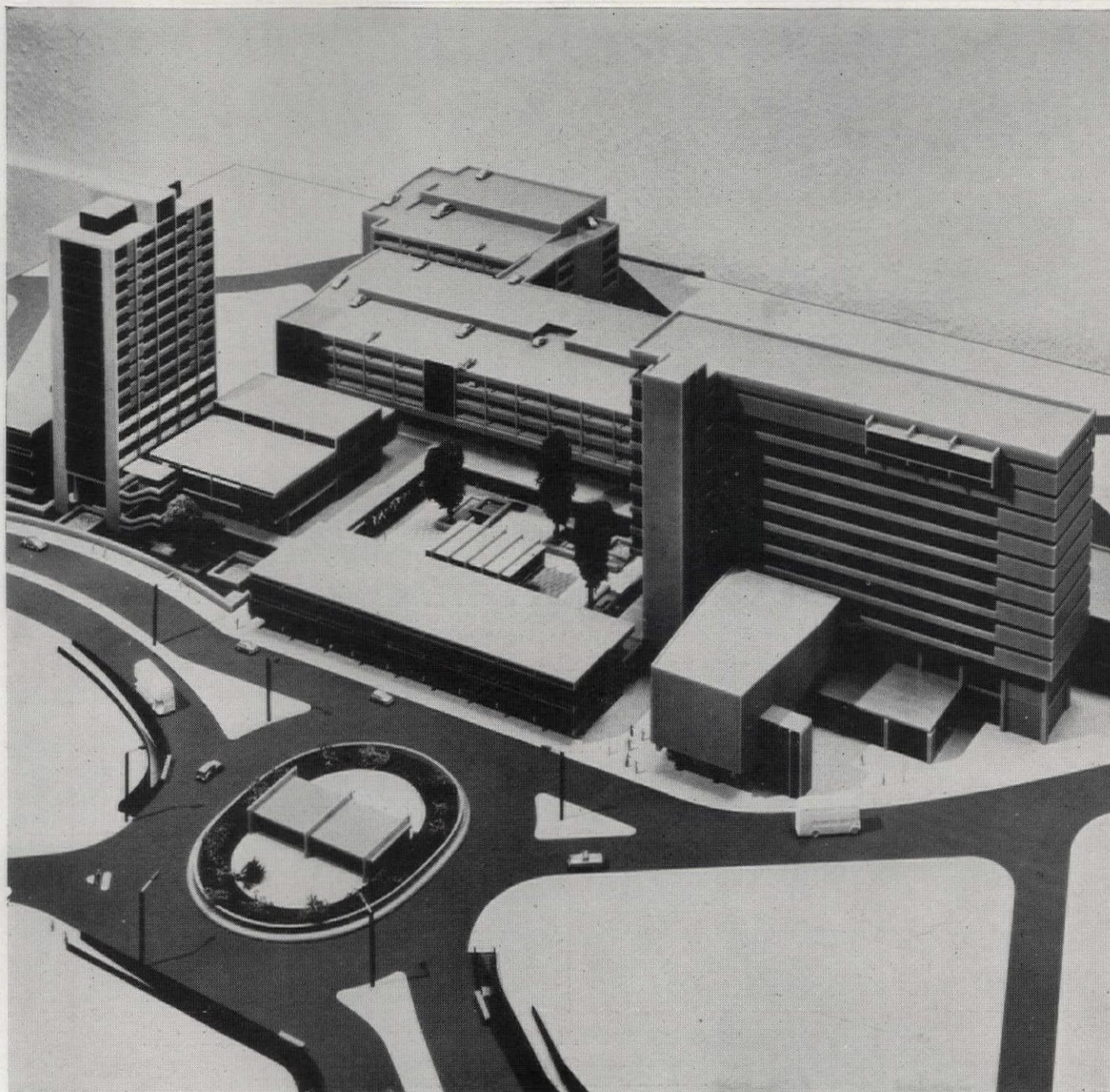
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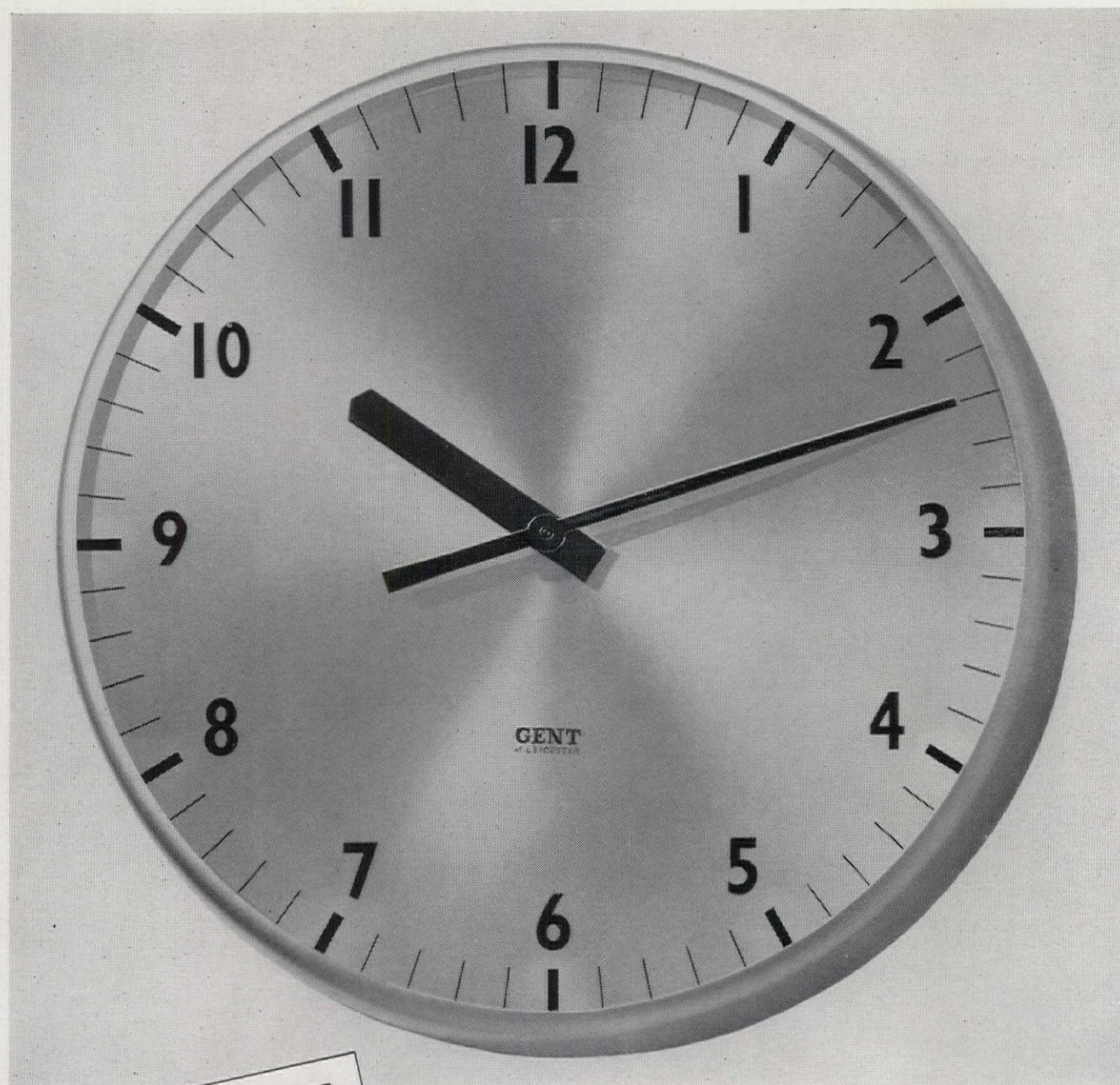
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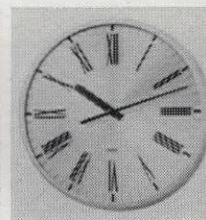
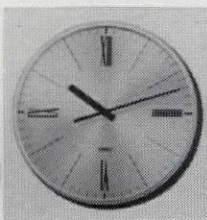


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Design Review

New products chosen and annotated
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DR

Office Furniture



1

Office furniture and equipment that is right for the user, well designed and visually co-ordinated has long been difficult to find. There has been some improvement in recent years since a number of British manufacturers have attempted to produce comprehensive ranges of furniture for office use but the dichotomy between free-standing units and service equipment remains. Telephones, tape recorders, socket outlets and lighting sources, by their piped character, form part of the building fabric but must be directly related to the furniture, its function and the persons using it. The potential for changing requirements and the introduction of newly developed equipment of increasing complexity must also be accommodated. Moreover any attempt to establish boundaries between justifiable demands for comfort and efficiency and the more absurd habits, idiosyncrasies and confused notions of status, is acutely difficult since thorough inquiry is usually obstructed or resisted. An important attempt at breaking through these barriers has been undertaken by the American furniture manufacturer Herman Miller Inc. who initiated several years ago an investigation into the behaviour and work patterns of business executives. This study was directed by an American researcher Robert Propst, and resulted in a penetrating analysis of office procedures. It has formed the basis for an environmental planning concept termed 'Action Office' designed and developed by the architect George Nelson. Enquiry by questionnaire establishes work norms, which are then analysed and followed up 2

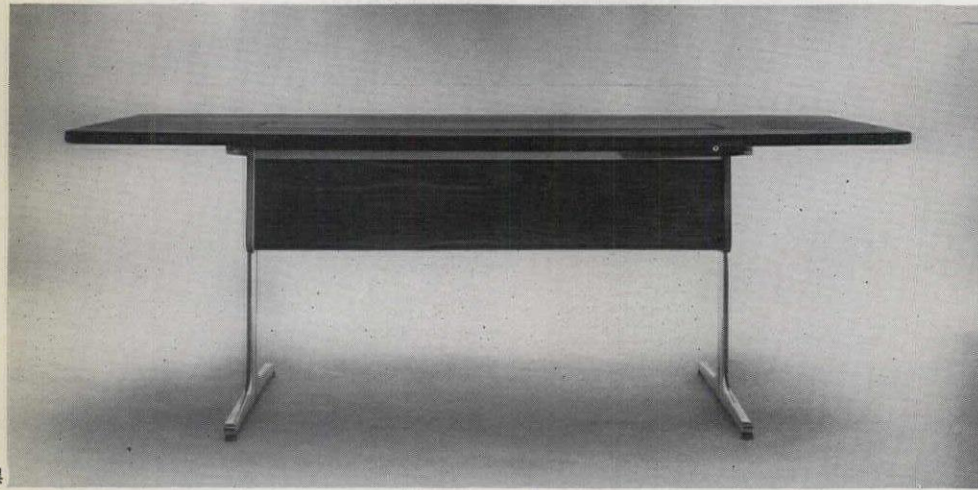
in the form of free-standing units, made up from components brought together in various combinations and tailored to an individual's requirements and temperament to create overall visual consistency and quality. These photographs, 1 to 6, show examples of this furniture in use together and as single units. There is a choice of desks varying not only in size but also in height. One model is meant to be worked at standing up, or sitting on a stool, the stool being part of the range. Many of the desks have slanting tops and are covered with a thick vinyl layer to provide softer writing surfaces, and the front edges are padded for comfortable leaning. Instead of pedestal drawers, an open bin along the back or on wall-mounted tracks exposes all filed material to instant view, and the desk can be cleared by pulling a roll-top over its

entire surface. Apart from tambour shutters and file bins the desks have electrical outlets and foot rails. These and all other units are supported on cantilever die-cast polished aluminium legs working as a single and double base in combination with other units.

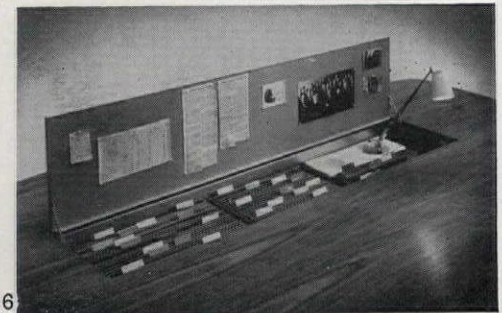
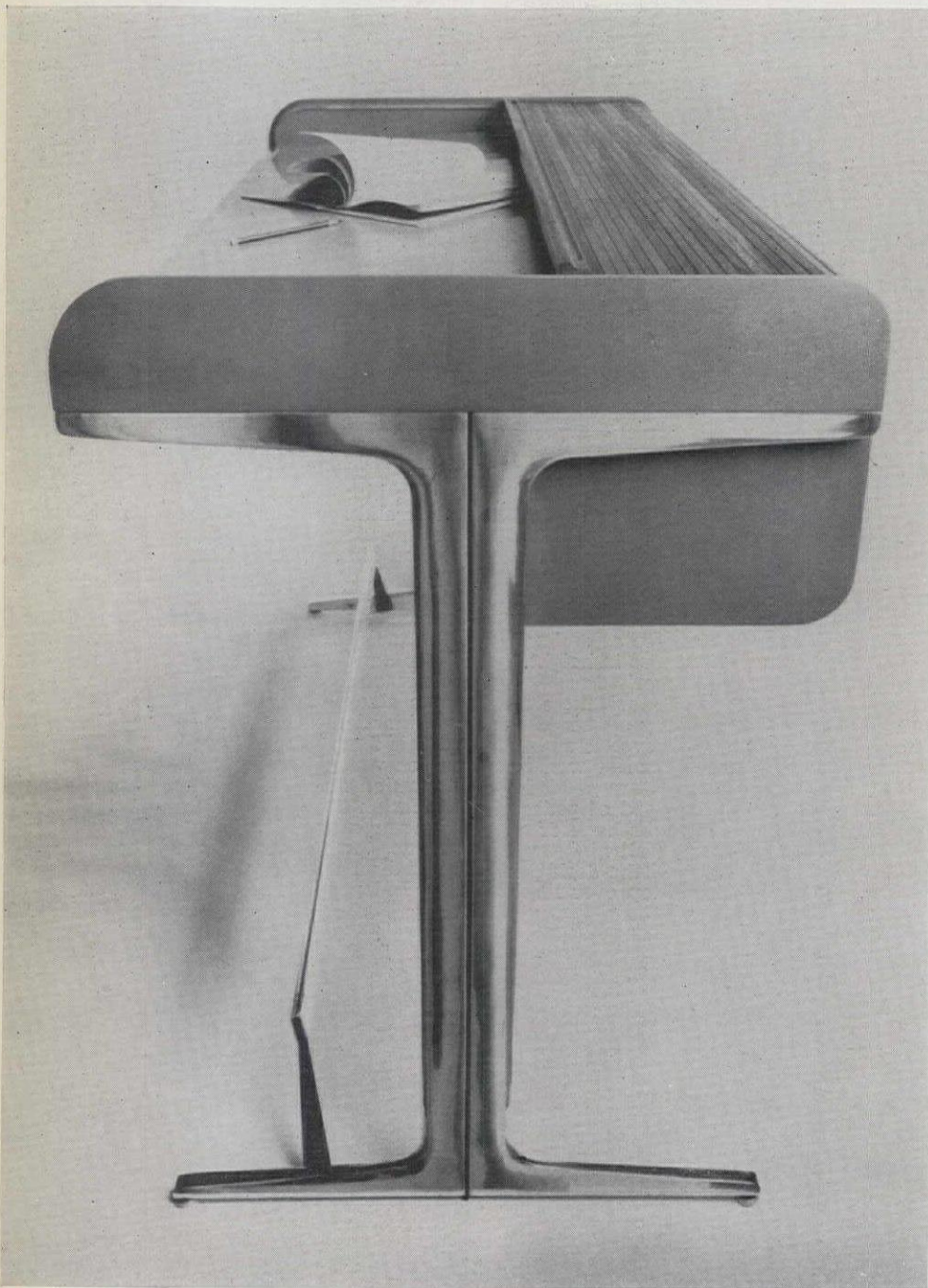
Except for shallow sliding receptacles fitted with moulded plastic trays for pencils, rubber bands and paper clips, there is an absence of drawers; Propst contends that once a stack of papers gets three inches high, inaction on the bottom papers sets in and this dearth of drawer space acts as a curb on vertical paper bottlenecks. Integration of electric mains permits the elimination of separate pieces of equipment, and arrangements for dictaphones, computers and microfilm projectors are installed on the rear face of each work table. Independent communication units



3



are said to guarantee a more efficient utilization of telephones, and built-in phone units provide room for directories, notepads, dictaphones and tape recorders. The designers of 'AO' have been concerned with certain design axioms and have tried and largely succeeded in putting them into effect. They have argued that furniture need not present hard, sharp, square corners and edges to the user, that materials and finishes should be employed in a natural manner and disclose their nature in a graphic way. They state that the furniture should be assembled with highly efficient connections based on extruded plastic and aluminium sections and should be of panel construction with the legs the main method of support, made from mass production parts, the whole reflecting the better use of machine technology. Finally they insist that the furniture should incorporate a practical



module geometry that fulfils varying relative functions and accommodation for standard size papers, documents, drawings, etc., whilst allowing for maximum change and development.

This belated rationalization of the office and its routines by the Herman Miller organization is both admirable and necessary, but one is not entirely convinced that sufficient account has been taken of factors of which many designers will be aware. Namely, the irrational requirements of those unduly worried by status, who express their concern by demanding an enormous desk regardless of function, who require on some pretext more floor space than the next man to emphasize seniority, whose choice of materials and finishes amplify these human foibles. This *angst* confuses logic and inhibits functional analysis, and it is unlikely that a questionnaire will record these aspects for in some cases they are unconscious, in others deliberately and understandably withheld. Clearly Propst is aware of these factors in the complex equation that office design sets, for it is claimed by Herman Miller that their product is not for everyone, that it will probably upset the inflexible and the status seekers and that their market is 'the new breed of thinkers' professionals and executives who are interested in personal productivity, who want their office to serve their mental effort rather than their egos.' For such a band of supermen this furniture will be a vital and welcome acquisition. Aram Designs Ltd. are about to import it and a display of some pieces from the series will be seen at their showrooms at 57 Kings Road, Chelsea, London, SW3 towards the end of the year.

Product: Office furniture.

Manufacturer: Herman Miller Inc.

policemen and carabinieri gathered by the Cambrino, talking about pensions or reminiscing about their old jobs.

All this means nothing to the mass of people who go to make purchases or stroll or visit the government offices in the centre. From eleven o'clock until one you have to look out for the pickpockets, then Milan eats. The coming and going of the morning begins once more around 4 p.m., but in a more imposing way with the addition of rows of prostitutes accosting passers-by whom they think have money and are not too busy—twisting their mouths, convinced they are not being noticed, offering their services and whispering the price; and now and again there waddles a male tart making languid glances and smiling at the tough males. From five until eight, near the big shops or inside them, it is 'pickpocket time' again. From eight onwards people are on their way home or on their way to the various evening shows.

Hidden among these masses, and playing hide and seek with the police and the night watchmen, are the tramps, amongst them the famous Domingo, Horrible Mary and the Blind Man with the Dog, who with weeping and wailing try to wrest from your compassion a hundred lire to put together the wretched sum needed for buying . . . a new flat. And now a new species comes to life, the agitators, who hold their meetings in the square to talk about politics and boil themselves up in speeches to an audience which, for the most part, listens

to them only with amusement and now and again asks awkward questions that the speakers try to answer to the diversion of the crowd. From time to time there is a stampede and the arrival of the shock police—this can happen up till one in the morning on days of political calm—otherwise up till dawn.

At ten at night the 'ballerinas' appear again, with the cloakroom attendants, the provincial types—in fact all the people we will find the following morning tired out after a long night, usually spent badly.

Dedicated to the King, and inaugurated by him in 1867 as a memorial to the unification of Italy, the Galleria was, at the time, the most imposing shopping arcade in Europe. It opens from the north side of the Cathedral Square with a triumphal arch, flanked by a palatial arcaded façade, and is built in the form of a latin cross 640 feet long, 47 feet wide and 88 feet high, with an octagon in the centre crowned by a glass cupola 157 feet high.

After the retreat of the Austrians from Milan in 1857 the Milanese decided to enlarge the square in front of the cathedral

and to create a vast central piazza, surrounded by imposing buildings with a royal palace facing the cathedral. Projects were discussed and discarded, competitions were held for designs, and a lottery was launched to collect funds. Finally, in 1862, the undertaking was handed over to the architect G. Mengoni. He cleared the square and built the glorious Galleria and the two *porticati* palaces, but one day towards the completion of the Galleria he slipped from the scaffolding and was killed. Mengoni's further plans for a royal palace opposite the cathedral and a Palazzo dell'Indipendenza on the south side were not continued with after his death, but his Galleria remains one of the most alive and interesting buildings in Europe.

It contains a pulsating cross-section of Milanese life—with its smart shops, coffee houses and restaurants, and its peculiar groups of business men, who, without premises, stand about in the Galleria transacting deals—jewellers, racing tipsters, estate agents, furniture dealers and money changers.

PENELOPE REED.

4, mosaic floorscape of the central octagon in the Galleria.





building, and this is a factor which allows great versatility of design as well as greatly influencing external appearance. Another factor is Bulgaria's Continental climate: winters are colder than they are in Northern Germany, Scotland and Denmark, whereas summers are as hot as in Italy and Spain. That is why, although the country's capital lies almost on the latitude of Rome and is further south than Nice, Bulgarian architects cannot avail themselves of the advantages of the soft climate of the Riviera. Nevertheless, the first successes of contemporary Bulgarian architecture which won international recognition were in the building of holiday resorts. The most notable are the Black Sea resorts of Golden Sands, Drouzhba and Sunny Beach. These are genuine resort towns, the first two amphitheatrically situated along the picturesque slopes descending towards the sea and overgrown in greenery near the town of Varna, and the third further south, near the small and romantic town of Nessebur founded by Hellenic settlers over 2,000 years ago.

In these three new resorts Bulgarian architects, availing themselves of this exceptional 'summer' pattern of building, began by employing low and more intimate forms of building related to local national traditions; but later on they began to look for more universal and contemporary architectural forms, and the skylines of the resort towns became gradually enriched by tall hotel buildings, giving the towns more interesting architectural accents. A peculiar



1, hotel at Sunny Beach on the Black Sea, 2, Golden Sands resort near Varna.

feature of these resort towns is that they were built on absolutely virgin sites and were designed all at one stage, complete with all service buildings and institutions. Making use of the well-tested methods of

architecture

BULGARIA BUILDS

Two facts are needed for a correct understanding of contemporary Bulgarian architecture: its unusual historical development and the geographic and climatic conditions of the country. Five centuries of foreign domination isolated the Bulgarian people, from the end of the fourteenth century to the second half of the nineteenth, from the cultural development of Europe. That is why Bulgarian architecture did not pass through the series of styles—Romanesque, Gothic, Renaissance, Baroque, Rococo, and Classical—experienced elsewhere. In its peculiar development it makes a leap from the Byzantine style directly into the

eclecticism of the end of the nineteenth century. Having survived five exhaustive wars after her liberation in 1878, in addition to a Nazi occupation, Bulgaria was a poor country with insignificant architecture, and only after 1944, when socialist rule was established and when the first young specialists of the Faculty of Architecture, founded in Sofia in 1942, began their practical work, did Bulgarian architecture show genuine advance.

The danger of earthquakes in the geographical zone of which Bulgaria forms part has made the reinforced concrete frame, with brick infilling, the normal mode of



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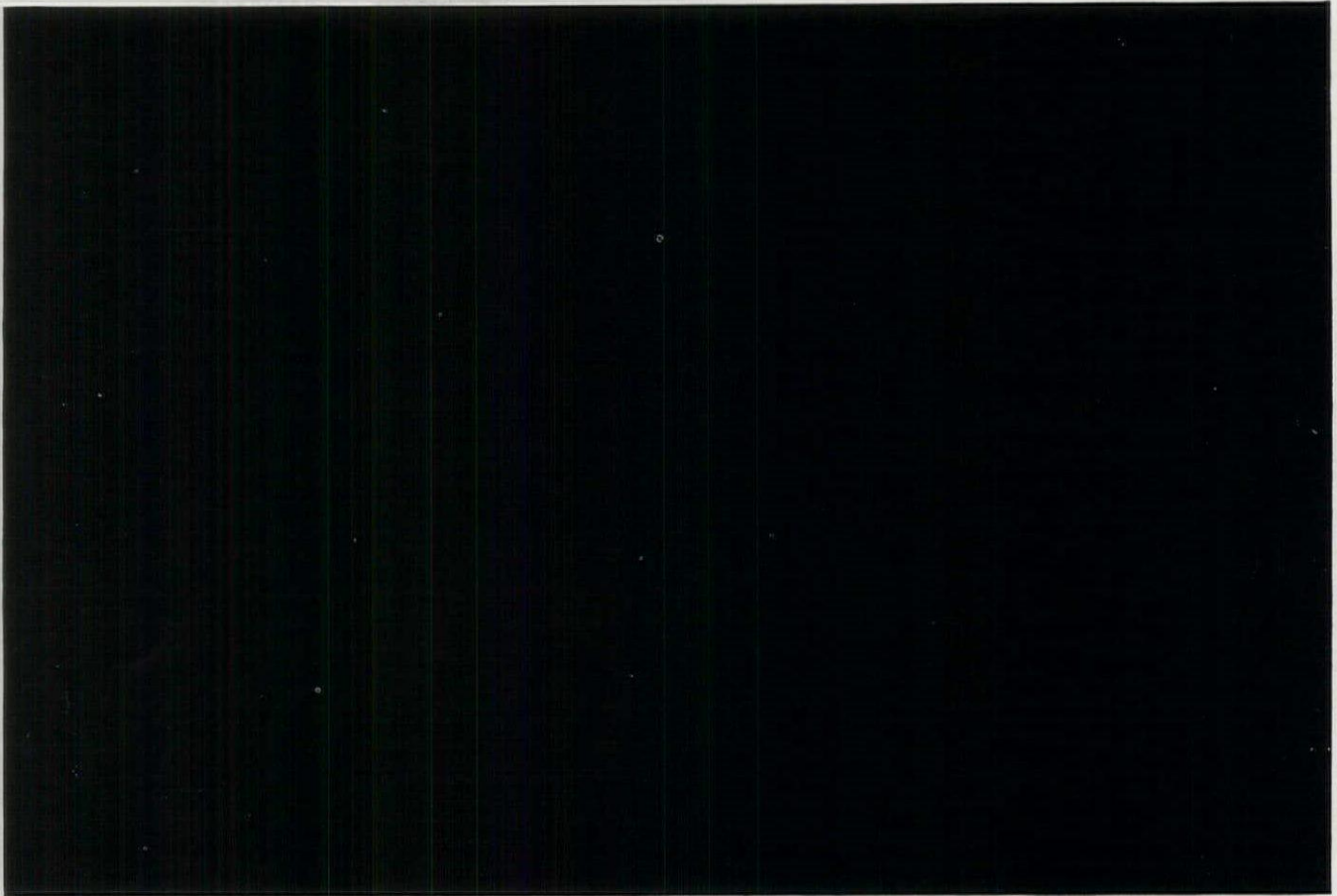
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3



4

3, bar at the Sunny Beach resort. 4, the 'Universiade' building in Sofia. 5, housing at Pernik. 6, prefabricated housing under construction at Sofia. 7, the West Park housing estate, Sofia.



5



6



7

the master builders of the past, their designers are constantly enriching the idiom employed and improving its application on the basis of experience.

Bulgarian architects have gained international experience through architectural and town planning competitions. They took second place in the competition for the reconstruction of the centre of East Berlin, and again in the competition for the town of Tunis and for the monument to be built on the Hiron Beach in Cuba; and first prize in the competition for the new centre of San Francisco was recently won by two young graduates of the Faculty of Architecture in Sofia. Bulgarian architects have also given valued aid to the developing countries.

Housing construction in Bulgaria, though not much publicized abroad, is in no way inferior to that in other countries. It receives lavish financial assistance from the State, organized on a co-operative basis. During the last five years about 80 per cent of the newly built houses in the country's towns were financed by the people living in them. This has been made possible by long-term loans, at very low interest, granted by the State Investment Bank, to every saver whose deposit reaches one-fourth of the sum he needs to pay for his new home.

Housing construction during the last decade or so has followed a pattern, new to Bulgaria, of being concentrated in entirely new quarters, self-contained with all necessary services, utilities, shops, restaurants and cultural institutions. Some of these residential quarters are built on new sites, while others take the form of reconstruction of poorly built city outskirts inherited from the pre-war period. Until recently most of the new blocks of flats were four or five storeys high, but the newly designed residential quarters, accommodating 50,000, 100,000, and even 150,000 inhabitants, will be composed of much higher buildings—eight, ten, sixteen or even more storeys high. Most of the new blocks of flats are built of large prefabricated panels, forming the entire walls of a room, with a maximum weight of 5 tons.

HRISTO ANASTASOV

demolition

PAGANISM

We like to think that the care and preservation of historic buildings in England has now become a matter of relatively sophisticated negotiation between developers, authorities and amenity societies but

occasionally something of sheer barbarity occurs which seems to take the whole thing back to square one. St. Clement's vicarage, 1, at Boscombe (the eastern part of Bournemouth), designed in 1871 by J. D. Sedding and one of the two or three best houses of its date in the new style of Norman Shaw not actually designed by Shaw himself, has been demolished, and replaced, 2, by a prim little villa of familiarly suburban type (architect, Ronald A. Phillips of Bournemouth). Sedding's delightful, if decayed, formal garden has been bulldozed flat, and the high walls with their ornamental copings (a survivor can be seen on the right of 2) have generally been chopped down to half their height. The cloister link from the church has been left as a raw stump, with an abrupt change from gable to flat roof and an equally abrupt change of direction.

The church was one of the three important precursors of Late Victorian Gothic (begun one year after Bodley's Pendlebury, three years before the younger Scott's Ken-



2

nington); and it was faced across its drive by two tile-hung cottages and a Dutch-gabled school, also by Sedding. The same drive leads almost immediately to the Convent of the Sisters of Bethany (1874-75), designed by Shaw himself.

The quality of the detailing in the St. Clement's group was due in some measure to the fastidious taste of the first vicar, George Tinling, himself a former Gilbert Scott pupil, whose sister Sedding married. St. Clement's vicarage was used as such until 1965 (soon after an aged vicar had retired after thirty years' service). The parish was in some difficulties by then, no longer the High Church stronghold it was. The delicate stencilling of the chancel had faded and the landscaped churchyard grown ragged, most pathetically in the south-east corner next to the vicarage where Sedding's pretty Renaissance gravestones to Tinling, his curate Scurfield (they both died young in 1880) and to Tinling's mother now lie flaked and decayed amidst long grass. The vicarage however—at least when visited in 1960—remained in excellent condition. The parish was amalgamated with that next door (which had originally grown from it).

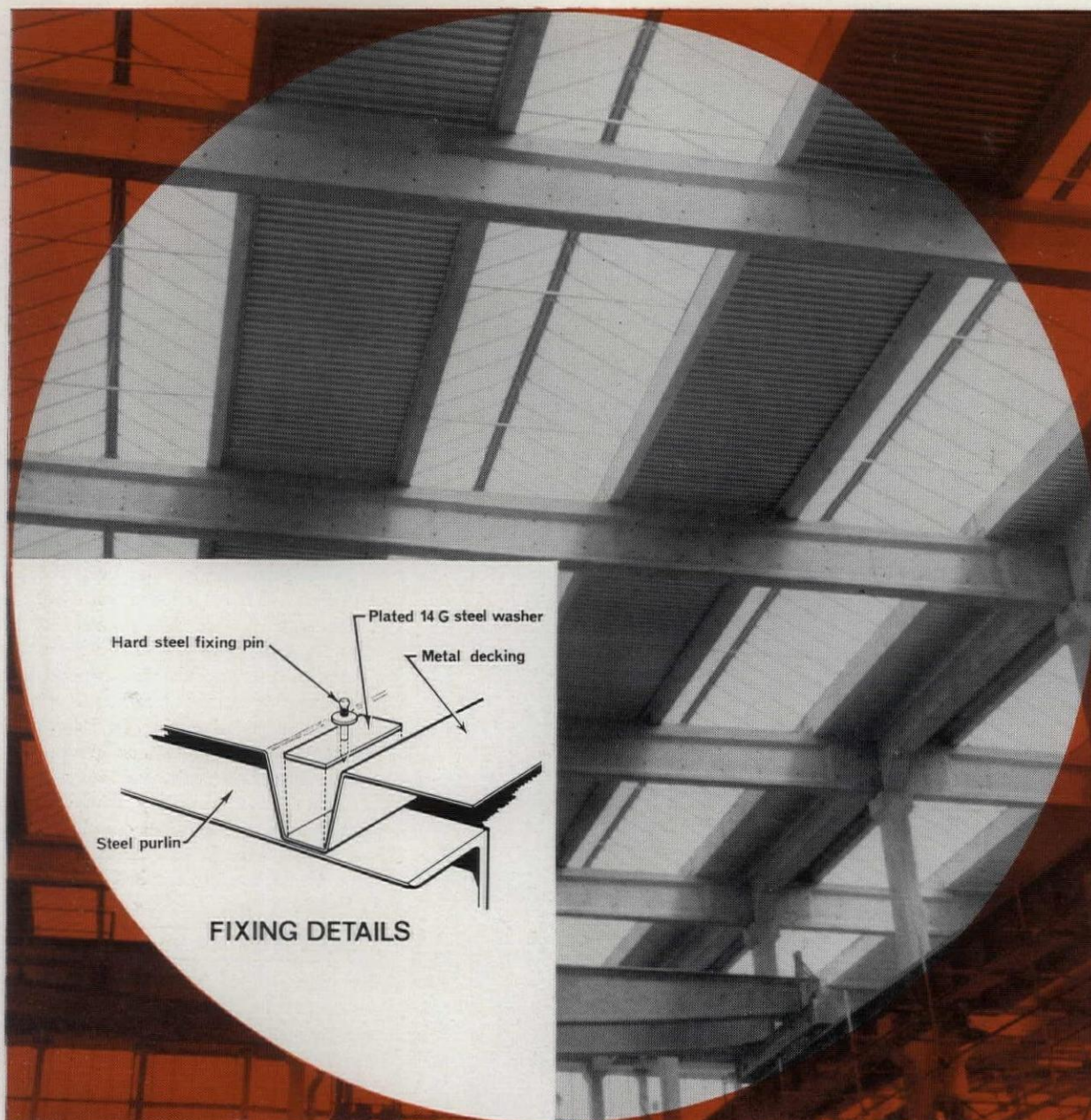


The need for pastoral reorganization cannot of course be denied, but this vicarage was too good a building to lose (let alone in this way and with such an unworthy replacement). How did the disaster happen? It cannot be said that the Church Commissioners or the diocese of Winchester neglected the case. They planned at first to convert the vicarage to house the new vicar and two married curates in self contained flats, but this proved too expensive and, unaware of any possibility of soliciting some money from the Historic Buildings Council or the local authority, the diocese put the vicarage up for sale. The most offered was £3,000 and after long consideration, demolition was decided on. Admittedly it would not have been easy to obtain aid from official historic buildings bodies, as the vicarage was not listed at all by the Ministry of Housing. When in 1960 the Ministry took up the task of listing Victorian buildings systematically, the expert sub-committee recommended a first 'crash listing' of the works of twenty-four architects. Sedding would undoubtedly have been among these twenty-four, if it

had not been felt that, since the great majority of his works were churches (and hence outside planning control), his place was better taken in the emergency listing by a 'secular' architect. By a judgment of Lord Denning in 1964, it turned out that vicarages were outside planning control as well. On the other hand, churches *can* still be listed, in a separate column by themselves. St. Clement's, Boscombe, was listed—and so, in view of the linking cloister, it could perhaps legally be held that the vicarage, as an integral part of it, was listed as well.

All this is now academic: the Ministry did not know of the vicarage's plight, and the council (a county borough) did not care. Two things seem clear: until the Ministry's Victorian lists are completed, these things will continue to happen, particularly as it is still taking five years or more for the Ministry to convert provisional lists into statutory lists; and secondly, the Church's stewardship of its inheritance still seems too fallible to justify its remaining outside the law (see 'Whose Redundant Churches?' AR, March, 1966).

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Any man who is 'something in the City' knows that the old Winchester House in Old Broad Street was one of the best-known, best organised centres for company meetings. A new and essentially modern Winchester House is rising in its place—a magnificent building of 22 storeys with two levels of basement and incorporating a car park with five levels below ground. Working to a tight time schedule the first phase of this project is now nearing completion. Rosser & Russell are the designers and installing engineers responsible for the air-conditioning (including Velovent system), heating, hot-water system, ventilating, and oil-fired boilers costing £250,000. The Winchester House project is but one of many Rosser & Russell undertakings.

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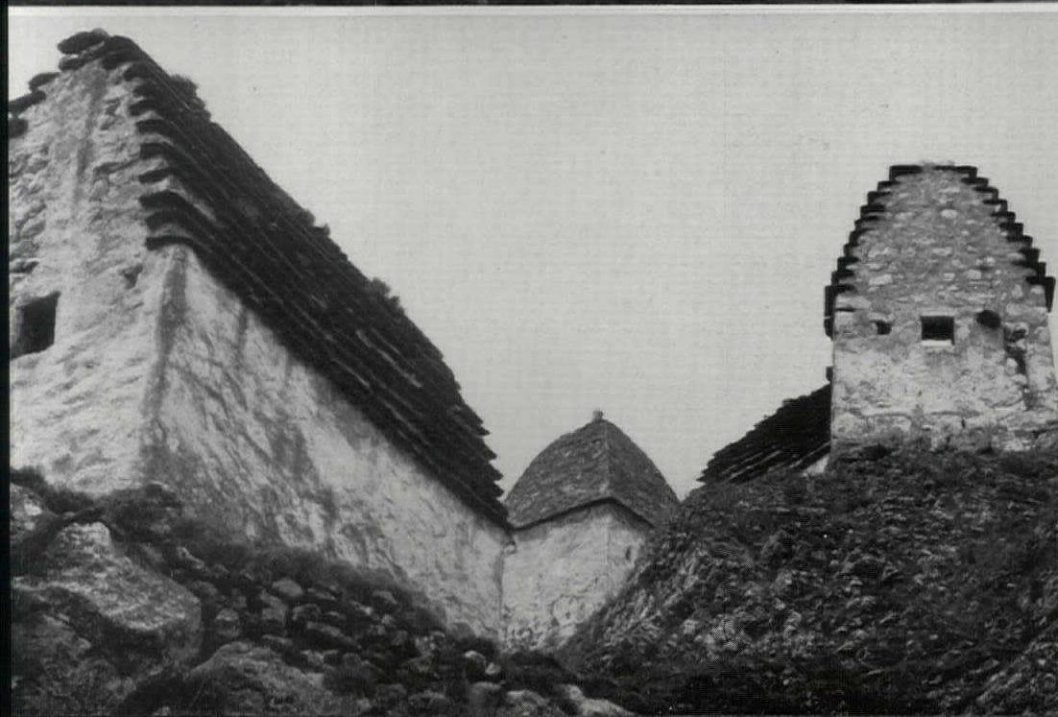
Architects: Gunton & Gunton, London.

Main Contractors: Trollope & Colls Limited, London.

ROSSER & RUSSELL

Heating and air-conditioning from design to installation. Rosser & Russell Ltd., Queen's Wharf, Queen Caroline Street, London, W.6. RIVerside 4161.

CURIOSITIES OF THE CAUCASUS



High in the valleys of the central Caucasus, in an altitude over 6,500 ft., there lived up till the mid nineteenth century the Ossetians, an Indo-Iranian tribe who, in medieval times, were known as Alans or Aas and were in fact descendants of the ancient Sarmatians. Their settlements were abandoned when the Russians occupied the entire area and resettled the belligerent mountain tribes in the plains below, and all that remained were the so-called 'villages of the dead,' 1, groups of stone-built tombs, each one belonging to a family or to a clan, inside which the Ossetians, Christianized since the ninth and tenth centuries, exposed their dead to the mumifying influence of the mountain air.

The tombs, shown close up in 2, are tiny houses built on a rectangular or square plan approximately 3 ft. by 7 ft. up to 5 ft. by 10 ft., and some 4 ft. high, with a curious pyramid-shaped roof, in some cases curvilinear, made of horizontally laid stones with protruding slate shingles between each layer. In the front wall of each house there is a small square opening through which the corpse, laid on a wooden board, was inserted and left on the board inside. When the time came for the next member of the family, the board was simply overturned and the mumified corpse fell to the bottom. There are still skulls and bones scattered everywhere, obviously dragged out by animals from some of the collapsed tombs.

Linked together, this burial habit and the architecture of the buildings seem to lead to some conclusions. First, in these rocky places burying under the surface was virtually impossible, but the old nomad habit of burying in barrows (kurgans) seems to have had some influence there. Further, exposing of corpses to the effect of the air might be a reminiscence of the Zoroastrian rites in ancient Iran. And, finally, a curvilinear roof in many layers is an old tradition in Indian architecture and I would not exclude the possibility of a repercussion of it in this remote area.

Another typical specimen of Caucasus architecture is the watch-tower. Built along the few passable tracks, these square-planned pyramidal towers, 25-40 ft. high, were used first of all for passing on smoke signals. In villages they were used also as defence installations and places of refuge for the inhabitants. Their structure, 4, is very simple; their entrance on the first floor level was accessible by ladder only; inside, a narrow staircase led from floor to floor, up to a platform protected by ramparts, on the top of the tower. In Georgia, a few miles east of Gori, the birthplace of Stalin, a sandstone hill above the river Kura covers a series of caves, corridors, pillars and vaults. The place is



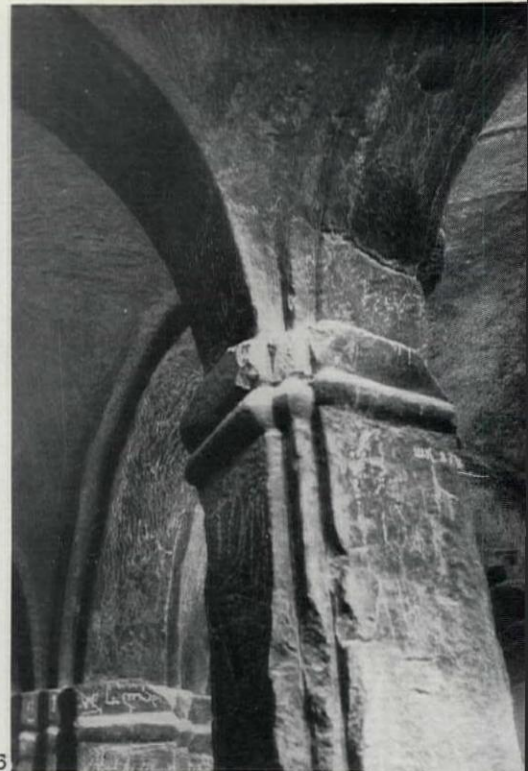
3

called Uplis Tsikhe, or the Rock Town, 3, and used to be a centre of refuge for the population of the river valley in times of invasion. In the sixth century A.D. there was even a temporary residence of the Kings of the Georgian kingdom of Kartli.

It was last used for this purpose in the thirteenth century, during the invasion of Genghis Khan's Mongols. The caves have several storeys. The lowest were used for stables and sheds, a slaughter-house, stores and kitchens, including stone troughs for the pressing of grapes. Above was a large theatre hall with ornamented walls and ceiling, an audience hall, 5, with a false vault, the royal premises and a tiny church, all cut in stone. Still higher were the living quarters, including separate rooms for unmarried women and girls, and the top floor was occupied by sentries and an astronomic observatory. A forty-yard tunnel linked the bottom floor with the riverbed thus providing for escape.

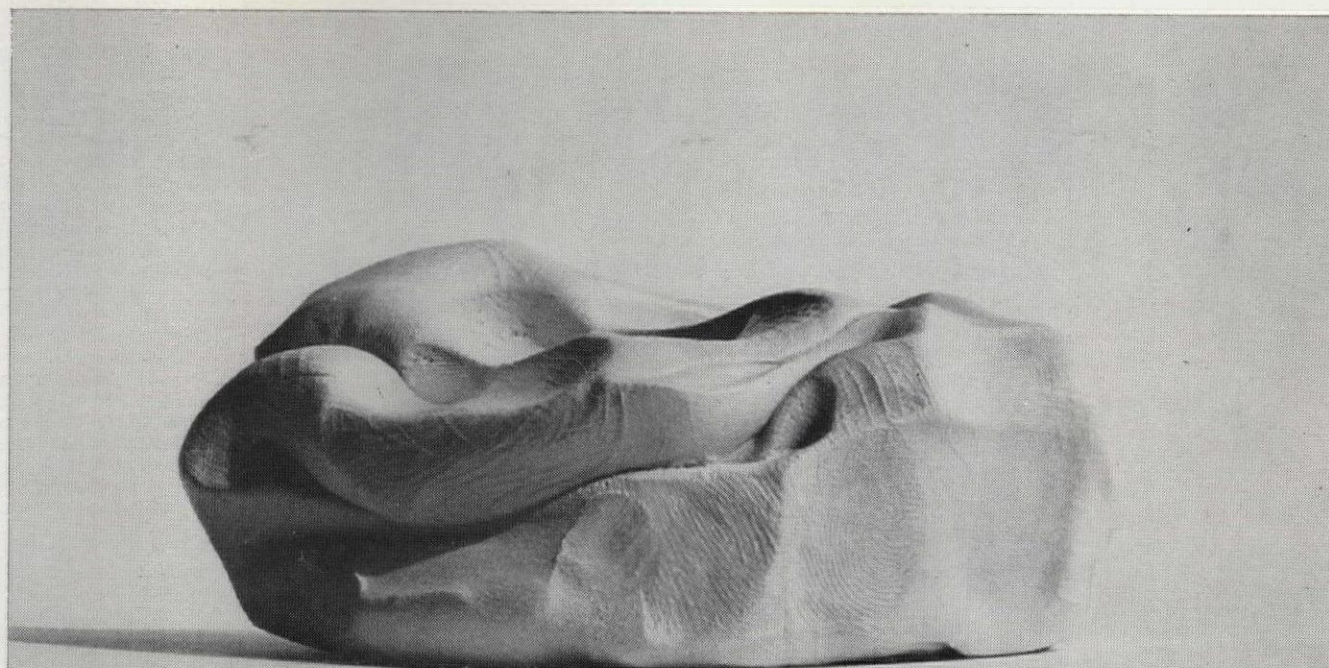
Uplis Tsikhe is not the only place in Georgia with troglodyte dwellings. Frequent invasions and permanent peril forced the population since time immemorial to seek refuge in inaccessible caves, gradually enlarging and converting them into complete and almost comfortable abodes.

EDGAR KNOBLOCH



5





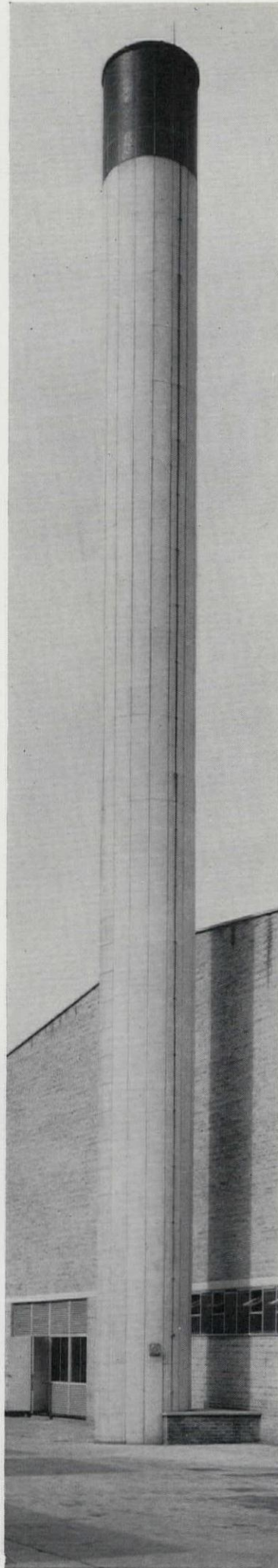
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cost significantly more — **why?**

Turn the page!

Boiler Chimneys

Two factors, the drive for clean air and the development of fuel technology, make the design of boiler chimneys more critical than it used to be. In an attempt to rob this subject of some of its mystery for architects, David Kut describes in this article the technical considerations affecting it. Concerned both with large and small installations, he begins by explaining the requirements of the Clean Air Act 1956.



The publication in 1963 by the Ministry of Housing and Local Government of the Memorandum on Chimney Heights (Clean Air Act 1956) has revolutionized the requirements of Local Authorities relating to the height of boiler chimneys, and it will take some time for architects and their clients to become accustomed to this. At the present time, there appears to be much resistance to the administration of the Memorandum on Chimney Heights, most of the argument being conducted at the nursery school level, i.e. 'why must we build a chimney 90 ft. high, if a similar size and type of boiler plant in a neighbouring building works satisfactorily with a chimney of 50 ft. height only.' This sort of argument will not persuade the Local Authorities to reduce their requirements. It is therefore desirable that the architect should be familiar with the requirements laid down in the Memorandum on Chimney Heights so as to enable him to conduct negotiations on a mutually acceptable basis. The following notes should assist to that end.

The design of a boiler chimney must meet the following essential requirements:

(i) Assist the burning of the fuel by providing adequate draught for the purpose.

(ii) Ensure that the combustion gases are swept clear of the stack.

The height of a chimney is governed in the UK by the provisions of the Memorandum on Chimney Heights. This offers a fairly simple method of calculating the approximate chimney height desirable in normal circumstances, and acceptable to the appropriate Local Authorities, for boilers having a rating in excess of 650,000 B.t.u. per hour.

The method of calculation is based on the quantity of flue gases which the chimney is expected to emit as a function of their maximum rate of emission of sulphur dioxide. Prejudice to health or nuisance from smoke, grit and dust should not occur when chimney heights are calculated in accordance with the Memorandum and where appropriate use is made of the other relevant provisions of the Clean Air Act. (It should be noted that difficulty with grit and dust which might occur with solid fuel fired plant cannot be avoided solely by increasing the height of the chimney; it would be necessary to provide dust and grit arresting equipment.)

The Memorandum includes a number of charts from which the required height of the chimney may be read knowing the amount of sulphur dioxide emitted per hour, the classification of the installation and the type of district in which the building is located.

The various steps in the computation are summarized below:

(i) Estimation of the maximum rate at which sulphur dioxide is likely to be emitted, using the relationship $S = 18WS$

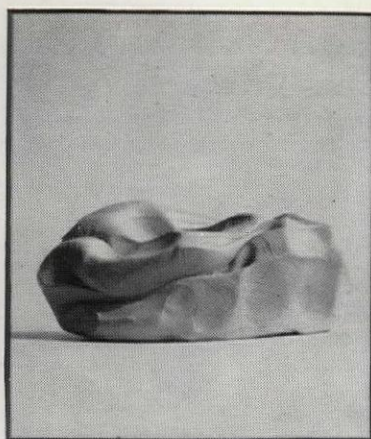
in which W denotes the maximum rate at which coal or other solid fuel is burnt.

S denotes the percentage sulphur content of the fuel.

Relationship (1) derives from the fact that 1 lb. of sulphur produces 2 lb.

[continued on page 38]

1, concrete chimney at British Shoe Corporation warehouse at Braunstone, Leicester (architects: Lewis, Solomon, Kaye and Partners). Height 100 ft.; flue areas, 2,827 sq. ft.



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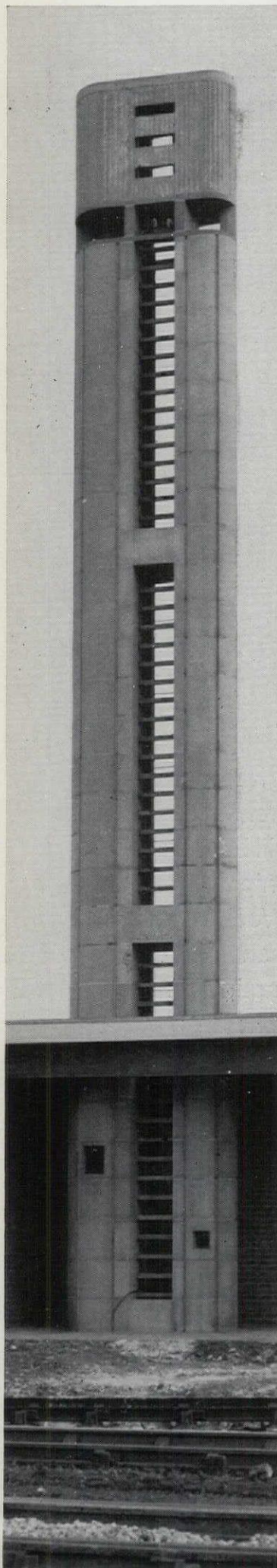
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2

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of sulphur dioxide of which about 10 per cent is retained in the ash.

The average sulphur content of British coals is in the order of 1.6 per cent; the actual percentage for a particular coal is normally obtainable from the fuel supplier.

For oil fuel, all the sulphur content is emitted from the chimney. Hence, $S = 20WS$ (2)

Typical values of sulphur content for the different commercial grades of fuel oil are in the order of 0.75 per cent for gas oil (35 seconds viscosity), 2.72 per cent for light fuel oil (200 seconds viscosity), 3.37 per cent for medium fuel oil (950 seconds viscosity) and 3.4 per cent for heavy fuel oil (3,500 seconds viscosity).

Fuel oil consumption is generally specified in terms of gallons per hour. To obtain the weight of the oil, allow 235 gallons per ton.

(ii) The character of the surrounding district decides which of the classifications applies to the project. The Memorandum specifies areas in the following categories:

(a) An undeveloped area where development is unlikely, in which background pollution is low, and where there is no development within half a mile of the proposed new chimney.

(b) A partially developed area containing scattered houses, a low level of background pollution and no other comparable industrial emission within a quarter of a mile of the proposed new chimney.

(c) A built-up residential area suffering from only moderate background pollution and without other comparable industrial emission.

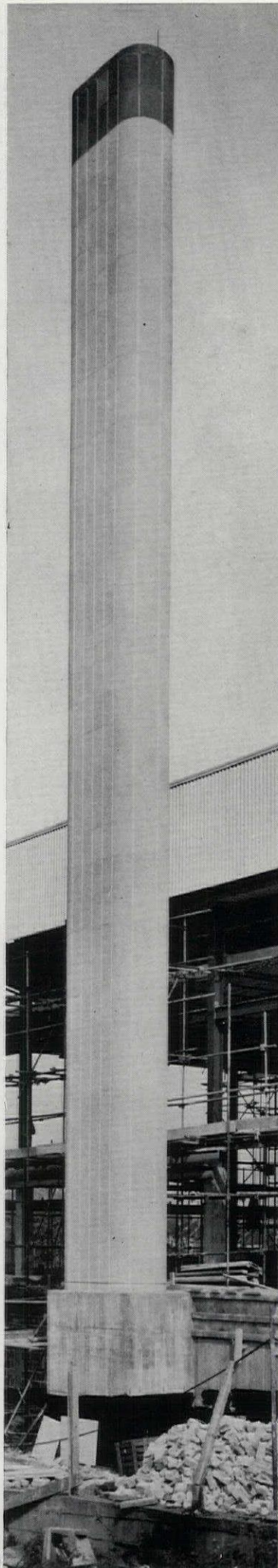
(d) An urban area of mixed industrial and residential development, with considerable background pollution with other comparable industrial emissions within a quarter of a mile of the proposed new chimney.

(e) A large city, or an urban area of mixed heavy industrial and dense residential development, suffering from severe background pollution.

(iii) Select the chart appropriate to the size of the installation. The Memorandum classifies as very small installations those having a maximum emission of 30 lb. of sulphur dioxide per hour, as small those of up to 100 lb. emission, medium those of up to 400 lb. per hour emission and as large those emitting up to 1,800 lb. of sulphur dioxide per hour.

(iv) Read from the appropriate chart—on the right hand side—the appropriate *uncorrected* chimney height. With oil-fired plant designed to burn oil containing more than 2 per cent sulphur, 10 per cent should be added to the uncorrected chimney height to allow for the average reduction in thermal lift of the flue gases compared to that of a similar emission of sulphur dioxide from coal-fired plant. Should the uncorrected chimney height thus obtained prove to be not less than $2\frac{1}{2}$ times the height of the building to which the chimney is attached or of any other building in its immediate vicinity, then the uncorrected chimney height need not be further corrected to allow for the effect of the building and its surroundings, i.e. the uncorrected chimney height represents the final acceptable chimney height.

However, where the uncorrected chimney height is less than $2\frac{1}{2}$ times the height of such buildings, correction must be made for the effect of such buildings to establish the final acceptable chimney height. Such cor-



3

rections are partly based on the ratio between the greatest length and height of the building (to the ridge) since their interrelation influences the effect of down-draught. A further chart relates the height and length of the building and the uncorrected chimney height to the final acceptable chimney height.

In a closely built-up area where the proposed building is lower than the adjacent buildings, the chimney should for this purpose be regarded as being attached to an infinitely long building whose height is the average level of the rooftops in the immediate vicinity.

(v) Check whether the corrected chimney height is not less than 10 ft above the ridge of the proposed building, nor less than the uncorrected chimney height. If it is adjust accordingly.

A number of worked examples in the art of computing acceptable chimney heights are detailed in the Memorandum.

Chimney draught

In a natural draught chimney, the hot flue gases are drawn upward through a vertical chimney system by the joint effect of chimney height and flue gas temperature. The higher the chimney and the hotter the gases, the greater the available draught at the base of the chimney.

Chimneys relying solely on natural draught are expensive in capital cost as these must be of relatively great height and cross section; they are also expensive in operating cost, as for the draught to be effective, a relatively high flue gas temperature must obtain, with consequent waste of heat. Therefore, chimney systems relying on mechanically created draught (mechanical draught) are commonly used for most medium and large size boiler installations.

Natural draught chimneys are generally sized using empirical formulae which constitute a mixture of the theoretical and the practical; a number of Tables relating the carrying capacity of chimneys to the chimney height are published. One such table is included in the IHVE Guide 1966 but this has been criticized as being out of date and leading to the design of over-sized chimneys. The Heating and Ventilating Research Association have carried out useful work on the design of chimneys for natural draught and have published Chimney Selection Tables in their Laboratory Report No. 10. These tables differentiate between steel chimneys and insulated brick chimneys.

Where mechanical draught systems are employed the chimney can be accurately sized to suit the specific draught.

Chimney construction

Chimneys may be constructed of brick, concrete, steel, fibreglass, asbestos or plastic material. Care must always be taken to ensure that the selected material is suitable for the operating temperature condition and is of adequate mechanical strength. Brick and concrete are the

[continued on page 385]

2, concrete double-flue chimney incorporating water tank at Newport Marshalling Yard, Thornaby-on-Tees (architect Richard Pickard and Partner). Height, 58 ft., flue areas, 176 sq. in. and 452 sq. in.

3, concrete chimney with exposed granite aggregate finish at Southgate Swimming Pool (Borough architect J. T. W. Peat). Height, 74 ft. 6 in. with three flues, each of 254 sq. in.



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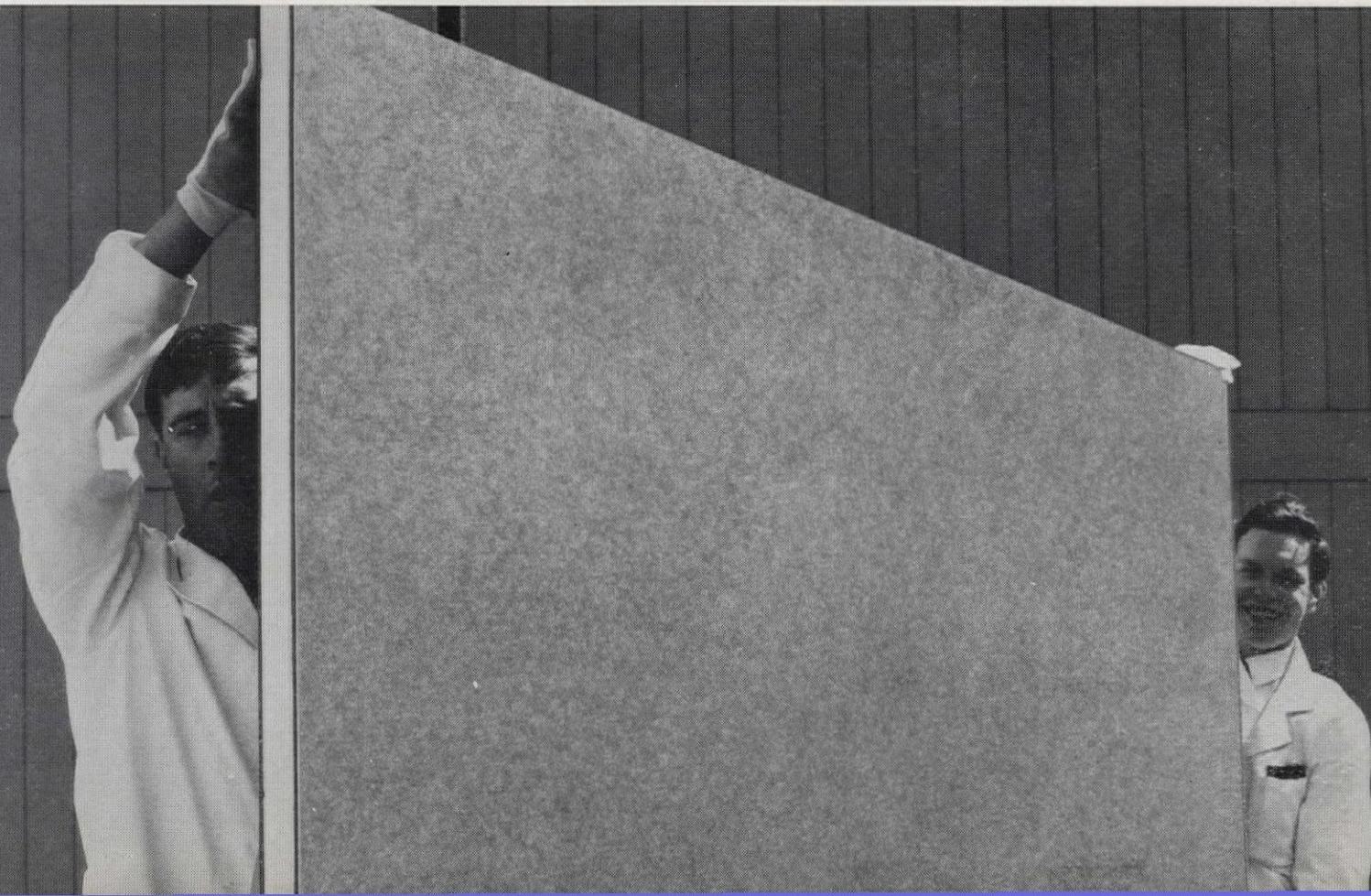
In addition, interior walls constructed from slabs made from 'Styrocell' can – literally – be moved in a few minutes. By

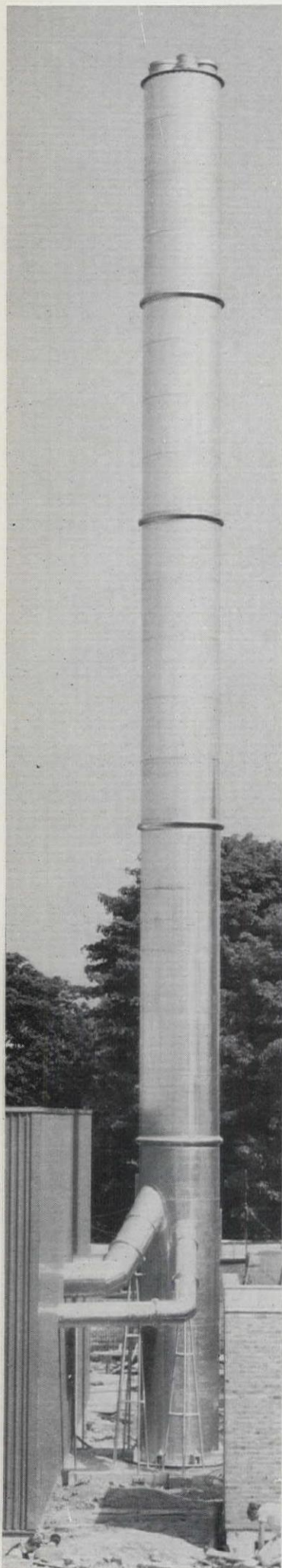
changes in position of the lightweight frame-and-slab walls, the cold rooms within a store are easily enlarged or contracted; incoming deliveries of different foodstuffs can be conveniently stored at different temperatures, without crowding or wasting space.

'Styrocell'-based materials, whether used alone or in 'sandwich' form, are the answer to many building problems. For information, contact your Shell Chemicals regional office, or Plastics Advisory Service, Shell Chemicals U.K. Limited, Plastics & Rubbers Division, Shell Centre, Downstream Building, London SE1.

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most common materials used in chimney construction, the latter may be carried out either by casting the chimney in situ or by the use of pre-cast sections assembled in position at site, 1, 2, 3.

Internal insulation of brick and concrete chimneys is necessary to protect the primary building material from the corrosive effects and high temperature of the flue gases and to prevent excessive cooling of these. Linings may take the form of insulating bricks, pre-formed chimney liners or flexible continuous liners.

Steel chimneys have at times an advantage over masonry construction, as they occupy less space, need smaller foundations and may be cheaper, 5. However, the use of steel chimneys with oil-fired installations has led to many instances of low-temperature corrosion of the boilers and chimneys; it may also cause the emission of smuts. Corrosion of the mild steel occurs freely when the temperature of the flue gases drops below their acid dewpoint—at a temperature of about 290 deg. F., and when this occurs, condensation of sulphuric acid takes place inside the chimney. Investigations have shown that the flue gas temperature may be maintained above the acid dewpoint by thermal insulation of the chimney itself. The following methods of insulation are in use:

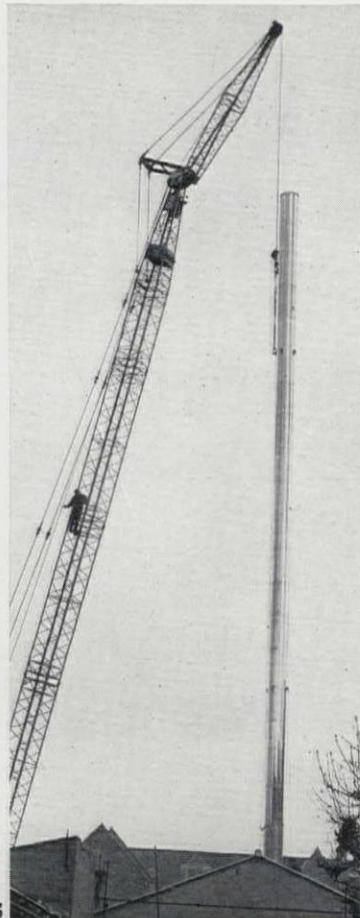
Aluminium cladding: The aluminium sheeting is applied externally to the chimney over suitable spacer rings. In one method of cladding, the chimney after completion presents a completely smooth appearance, with even the flange joints entirely contained within the cladding.

In another method, the aluminium cladding is taken over each set of flanges, leaving it visible as a bulge, 6. Good results have been obtained with aluminium-clad chimneys, and their use is becoming increasingly common.

Double-skin chimneys: In this arrangement, the chimney is constructed of two separate shells, the outer shell acting as insulation shield; in appearance, it looks similar to an uninsulated chimney. Whilst the aluminium-cladding obviates painting, the double skin chimney requires painting and repainting from time to time. User experience with very tall aluminium-clad or double-skin chimneys has shown that these do not always provide sufficient thermal insulation to avoid the nuisance of smut emission arising from flue gas condensation. Further investigations have therefore been carried out, and the published results show that condensation difficulties even in very tall chimneys may be overcome by introducing a thermal insulating material between the chimney and the aluminium cladding or between the two chimney skins, such insulation taking the form of low-density mineral wool of 1 in. to 2 in. thickness; such chimney systems are now commercially available.

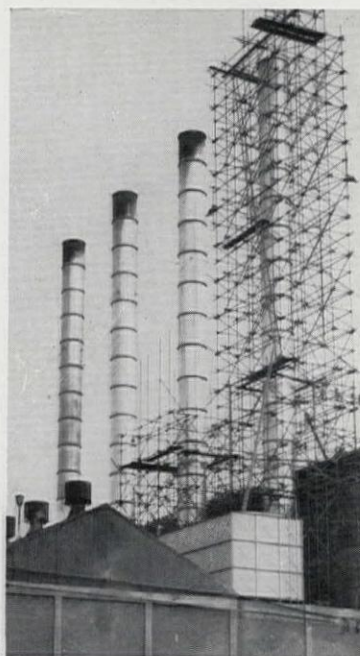
Difficulties with smut emission have been experienced where a number of boilers (or a boiler with a high turn-down ratio) are connected to one single chimney compartment at times when only part of the connected boiler capacity is in use. Such difficulties may be avoided by connecting each

4, an aluminium-clad compartmented chimney showing the separate connections from the various boilers into the base and the separate terminals at the top.



5, aluminium clad mild steel chimney being erected in one piece at Exe Vale Hospital, Warford, Exeter.

6, mild steel chimneys with close-gap aluminium cladding at Donnington, Cheshire.



boiler to its own separate chimney compartment, 4.

Smut emission can occur due to temperature inversion, i.e. when the outside air is drawn from the top of the chimney around its periphery whilst the hot gases rise in the centre. Such inversion is likely to occur at excessively low chimney discharge velocities. Flue gases should be discharged from the chimney at velocities sufficiently high to avoid inversion, and the use of a suitable chimney terminal is recommended. However, care must be taken to ensure that the

boiler house equipment is capable of overcoming the resistance to the flow of flue gases imposed by such a terminal.

Chimneys for the smaller boiler plant

Whilst the Memorandum on Chimney Heights does not apply to boilers which have a rated output of less than 650,000 B.t.u./hr., all boilers above a rated output of 55,000 B.t.u./hr. unless burning a smokeless fuel, are caught in the net of the Clean Air Act, 1956. The Act stipulates that such boiler (furnace) shall be installed in a building unless notice of the proposal to install it has been given to the local authority, and any person who installs such a boiler in contravention of this or on whose instructions a furnace is so installed shall be guilty of an offence.

The Local Authority may impose requirements as to the provision of smoke density meters of the indicating or recording type in the chimney system and for the results of such observations to be made available to the authority's officers.

It is the object of the Clean Air Act to prohibit the emission of dark smoke (as dark or darker than Shade 2 on the Ringelmann Chart) from a chimney.

It is now increasingly uncommon to burn a grade of oil heavier than grade 2 oil in boilers having a rating of less than 1,000,000 B.t.u./hr., so that the possibility of chimney condensation and smut emission is rather remote in a conventional chimney application serving a boiler below such output. There are exceptions, however, which require special care, such as tall metal chimney (which should be insulated or insulation-clad), or fully or partly exposed chimney serving a highly efficient appliance, e.g. wall-flame oil-fired boiler or a controlled output anthracite boiler (which must be insulation-lined to prevent condensation and staining of the chimney exterior).

Chimneys of masonry construction of diameter 9 in. and over require to be lined with suitable insulating bricks. Smaller chimneys may be lined with proprietary flexible liners, heavy weight asbestos pipe or (at the smaller sizes) with salt glazed drain pipe. In all cases, adequate provision must be made for conveniently accessible chimney cleaning access. To prevent the transmission of boiler vibration to the structure, it is good practice to lead the flue pipe into the chimney via an over-size sleeve built into the chimney, the annular space being subsequently packed with asbestos rope.

The walls of a chimney under load will inevitably become warmed by the hot gases rising through the chimney. It is therefore best to route such a chimney through the building in a manner that avoids the unpleasant over-heating that is likely to occur where the chimney passes through bedrooms or poorly ventilated occupied rooms. Alternatively an exceptionally high standard thermal insulation should be applied to the chimney wall.

Care must be taken to avoid chimney termination which is likely to lead to complaints of draughts. Chimneys terminating adjacent to sloping roofs must be taken beyond the eaves level, preferably to above the apex of the roof. Experience has shown that neglect of this requirement with oil-fired

[continued on page 387]

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continued from page 386]

boilers will cause the odour of the boiler exhaust gases to envelop the area surrounding the offending chimney (or chimneys).

Some thought must be given to the arrangement of the boiler flue pipe; this should give a 'lift' to exhaust gases as they move away from the boiler, a requirement which can be met by sloping the pipe noticeably towards the chimney. Sharp bends, dips and dead level horizontal runs must be avoided. Cleaning access doors should be fitted at all changes in direction, arranged to permit cleaning of the flue pipe throughout its length.

Useful recommendations on the design of chimneys for domestic boilers of maximum output of 150,000 B.t.u. per hour, burning solid, oil or gas fuel is given in Building Research Station Digest 60 (second series) *Chimney design for domestic boilers.*

Chimneys for gas-fired boilers

Town gas is classified as a smokeless fuel; hence, chimneys serving gas-fired boilers do not come under the provisions of the Clean Air Act. Condensation may, however, occur in the chimneys serving gas-fired boilers and suitable acid resisting thermal insulation must be applied to obviate this. The chimney should be terminated with a low resistance discharge fitting arranged so that the wind from any direction can flow freely across it and thereby obviate down-draught which could extinguish the pilot or main gas flames.

Boiler room ventilation

Adequate provision for fresh air intake and for the exhaust of hot air must be made in the design of each boiler room. Ideally, all air intake openings should be at low level and all exhaust openings at high level to promote a vigorous circulation of air within the boiler room. Where the intake is located at high level, the air required at the boiler for combustion must move against the natural buoyancy of the warm air and the intake will therefore be less effective. Where an adequate air supply cannot be achieved by natural ventilation alone, fans should be employed. The quantity of air required for combustion depends on the particular fuel being burnt and on the efficiency of combustion.

IHVE Guide 1965 lists the following arbitrary rules for boiler room air supply:

(a) 750 ft.³ per minute per million B.t.u./hr. boiler power.

(b) 15 to 25 ft.³ per cubic foot of gas burnt.

(c) Air inlet area of three times the boiler flue pipe(s) area.

For the larger installation and for those burning uncommon fuels, the required rate of combustion air supply should be computed from first principles based on a proper knowledge of the theoretical air requirement (that assuming perfect combustion—not attainable in practice) and the proportion of excess air which must be provided for smokeless and efficient burning of the fuel. The actual dimensions of the boiler room air intake may then be based on a velocity of 30 to 50 ft. per minute per square foot of the free area of the intake grating; the lower velocity should be used where the air intake is at a level of more than, say, 3 ft. above the air intake of the firing equipment. Extract gratings should

be sized to provide about one-third the free area of the intake.

Air starvation (inadequate air supply) results in inefficient combustion, generally accompanied by soot deposition within boiler and chimney, oppressive boiler room atmosphere and a characteristic 'sooty' smell.

Metrics and mystique

The Editors regret that in Jan Sliwa's article (skill, AR, April 1966) a vital passage concerning the historical development of the metre was cut from the text and replaced by an inaccurate summary. The passage in question should read: 'The concept of a metre started in 1670 in Lyons, France, as a decimal unit of measure and originated from Gabriel Mouton, Vicar of St. Paul's Church in Lyons. He proposed that the unit of linear measure should be the length of an arc of one minute of a great circle of the earth. He named this a "mille" and the "decima" and the "centima" were to be multiples of the main unit. The "mille" was sub-divided by "decima" and "centima" thus giving birth to the decimal system of measurement which formed the basis of the metric system as we know today. It was further adopted in 1790 as the length. . . .'

Contractors etc

Anglican Convent, West Malling, Kent.

Architects: Robert Maguire and Keith Murray. *General contractor:* James French & Son. *Sub-contractors:* *Electrical installation:* J. C. V. Patey. *Slate cills and seats:* W. Perrin (Masonry) Ltd. *Special church furniture:* Cdr. R. M. Fyson. *Metal liturgical fittings and special window pivots:* Albert Brooker. *Metal liturgical fittings and lights:* George Grant. *Paints:* Carson Paripan Ltd. *Metal light fittings:* Harry Jones & Co. (Metalcraft) Ltd. *Foundation stone, consecration stones, altar top:* Hornton Quarries Ltd. *Plate glass ventilators:* D. W. Price & Son. *Lighting fittings:* Anne Storm. *Bell:* Mears & Stainbank. *Underfloor heating installation:* Drake & Fletcher Ltd. *Structural reinforced concrete:* Helical Bar & Engineering Co. *Leaded glazing:* H. G. Hodgton. *Timber stains for structural members:* Solignum Ltd. *Stoneware lining to water stoup:* Hatherware Ltd. *Flue terminals:* Supira (London) Ltd. *Tile roofing:* Hall & Co. *Neoprene gutters:* Lester Lovall Ltd. *Structural facing blocks, concrete window heads, internal insulating blocks:* Atlas Stone Co.

College Quadrangles and Bookshop, Oxford.

Architects: Robert Maguire and Keith Murray. *General con-*

tractor: Bovis Ltd. *Shopfitters (Black-Ltd. Ironmongery):* D. A. Thomas & Co. *Flooring:* S. H. Ware & Co. well's): J. E. Wiltshire & Co., with B. H. Blackwell Ltd. *Sub-contractors:* *Cushions:* Aerofoam Ltd. *Asphalte:* Amalgamated Asphalte Cos. *Specular louvres (fixing):* Anderson Construction Co. *Ardit special screeds:* Ardex Surfaces Ltd. *Automatic door:* Automatic Doors Ltd. *Stonework:* Axtell & Perry Ltd. *Wall boarding:* Baltic Timber Co. *Stainless steel glazing bars:* Beckett, Laycock & Watkinson Ltd. *Steel work:* Ralph Blatchford & Co. *Slate cills:* Bow Slate & Enamel Co. *Patent glazing: lantern light:* British Patent Glazing Co. *Joinery:* Burford Joinery Works. *Re-routed electrical cables:* Cable & Switch Gear. *Paint:* Carson-Paripan Ltd. *Joinery:* Richard S. Castle. *Plumbing:* F. Church Ltd. *Glass:* James Clark & Eaton Ltd. *Joinery suppliers:* Compactum Ltd. *Furniture:* Conran Contracts Ltd., Aston Cabinet Co. *Louvre windows:* H. W. Cooper & Co. *Mixconcrete:* J. Curtis & Sons. *Roller blinds:* Deans Blinds (Putney) Ltd. *Fire escape ladders and spiral stair:* Dornberg Engineering Co. *Ground water control:* Dridig Engineering Co. *Mattresses:* Druce & Co. *Louvre windows:* Elbee Window Co. *Specular louvres:* Elco Plastics Co. *Yorktone pavings:* Ellis Ltd. *Sanitary fittings:* Evered Supplies Ltd. *Stair nosings:* Ferodo Ltd. *Sewage pumps:* Wm. E. Farrer Ltd. *Block work and paving:* Forticrete Ltd. *Joinery:* James French & Son. *Telephones:* GPO Telephones. *Special lighting:* Halolux Ltd. *Brickwork and pavings:* Haunchwood Brick & Tile Co. *Glass blocks:* John Healey Ltd. *Dumb waiter:* Hoisting Appliance Co. *Lighting fittings:* Harry Jones Ltd. *Goods passenger lift:* Keighley Lifts Ltd. *Pavings:* Kengate Products Ltd. *Special screeds:* Laying Services Ltd. *Supplied material:* Lionweld Ltd. *Metal windows:* Mellows & Co. *Fire prevention equipment:* The Minerva Detector Co. *Concrete liners for orthogonal grid slab:* Monoconcrete Co. *Soft furnishings:* Graffham Weavers Ltd. *Paving bricks:* National Coal Board. *Metal balustrading:* F. A. Norris & Co. *Heating engineers:* W. H. O'Gorman Ltd. *Rubber flooring:* Pirelli Ltd. *Soft furnishings:* Primavera (Contracts) Ltd. *Furniture:* Race Contracts Ltd. *Pre-cast concrete spiral stair:* W. C. Richardstone Ltd. *Roof slating:* Roberts Adlard & Co. *Springs:* K. Rodgerson & Co. *Furniture:* Ryman-Edgleys Ltd. *Mosaics:* Roman Mosaics Ltd. *Furniture:* Archie Shine Ltd. *Electrical installation:* Southern Electricity Board. *Flooring materials:* Barry Staines (Sales) Ltd. *Mirrors:* Stitsons Sanitary Fittings Ltd. *Treatment of screeds:* Structoplast (Sales) Ltd. *Lighting fittings:* Anne Storm. *Joinery:* Swindon Woodworking Co. *Plaster and screeds:* A. C. V. Telling. *Special ceiling lighting fitting, ground*

floor reception room: White & Bennett. *Blackboards:* Wilson & Garden Ltd. *Furnishings:* John E. Wiltshire & Co. *Pavings on the first floor terrace:* Norland Tile Ltd. *External works:* William Wood & Son.

Housing, Kingsbury, London. *Architects:* Clifford Wearden & Associates. *General contractor:* Mullen & Lumsden Ltd. *Sub-contractors:* *Paving:* Atlas Stone Co. *Armourplate glass doors:* Aygee Ltd. *Electrical immersion heaters:* J. A. Bunyan Ltd. *Steel refuse containers:* W. P. Butterfield (Engineering) Ltd. *Matador doormats:* Cimex Ltd. *External fluorescent light fittings:* J. & G. Coughtire Ltd. *Electrical installation:* Drake & Scul Engineering Ltd. *Metal windows and roof lights:* Faulkner Greene & Co. *Sanitary fittings:* J. S. & F. Folkard (London) Ltd. *Aluminium grilles:* G. A. Harvey Group of Companies. *Overhead door gear:* P. C. Henderso Ltd. *Plumbing installation:* J. F. Hutchison Ltd. *Curtain tracks:* W. A. Hudson Ltd. *Reinforced concrete:* Kleine Reinforced Concrete Ltd. *Domelights:* Lenscrete Ltd. *Kitchen fittings:* Lord Roberts Workshop. *Metal balustrading:* Mott & Partner Ltd. *Hur seal electric oil-filled radiator:* National Electrical Supplies Ltd. *Slate sign:* Nine Elms Stone Ltd. *Refuse chutes:* R. Passmore Ltd. *Exterior louvre light fittings:* F. H. Pride Ltd. *Ironmongery:* A. C. Roberts Ltd. *Felt roofing:* The Ruberoid Co. *Galvanized sheet ducting:* A. P. Skelton Ltd. *Croxborough medium stocks:* Sussex and Dorking Brick Co. *Turfing and planting:* Tallentire Ltd. *Hardwood and plaster floor tiles:* Vigers, Stevens & Adams Ltd. *Asphalte paving:* Weir Asphalte & Roofing Co.

Showroom and offices, Bond Street, London. *Architects:* Michael Scott Partners. *General contractor:* Cooke (Finsbury) Ltd. *Sub-contractor:* Desks, tables, wall cabinets: Andre Thompson Ltd. *Desks:* William A. Hicks Ltd. *Low marble top tables, ashtrays, stair handrail, wall panels:* Irish Marbles. *Chairs, tweed upholstery:* Gaeltarra Eireann. *Laminated timber stacking chairs:* Ard Chair Factory. *Typist chairs:* John Hogg & Co. *Stainless steel frames:* Ferguson Peacocke Ltd. *Carpets:* Navan Carpets Ltd., Youghal Carpets Ltd., Kincora Carpets Ltd. *Wicklow granite facing slabs:* Ballybrew Quarries. *Aluminium cross sections for fittings:* Unidare Ltd. *Recessed office lighting:* GEC Ltd. *Recessed Lylespan tracks, spotlight Rotaflex London. Curtains, ashtray:* Kilkenny Design Workshop. *Ashtays:* Shanagarry Pottery Ltd. *Natural cane wastepaper baskets:* Blair Workshops. *Stainless steel kitchen units:* Masser Domestic Appliances Ltd. *Lacquer and varnish:* Ulbricht Ltd.

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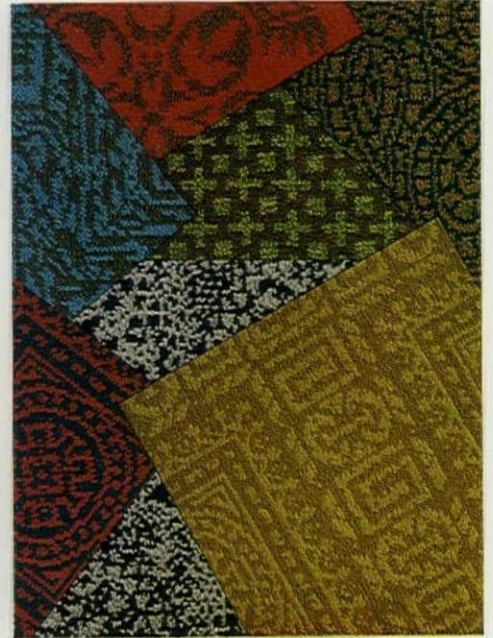
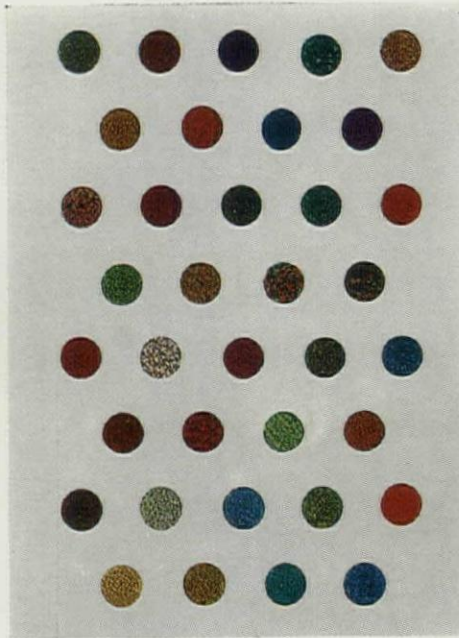


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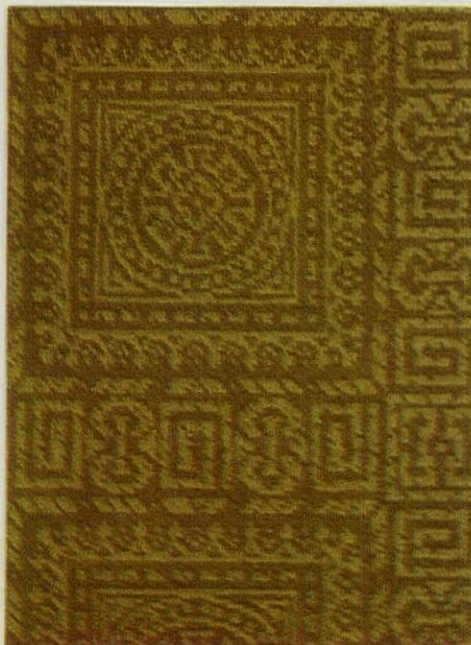
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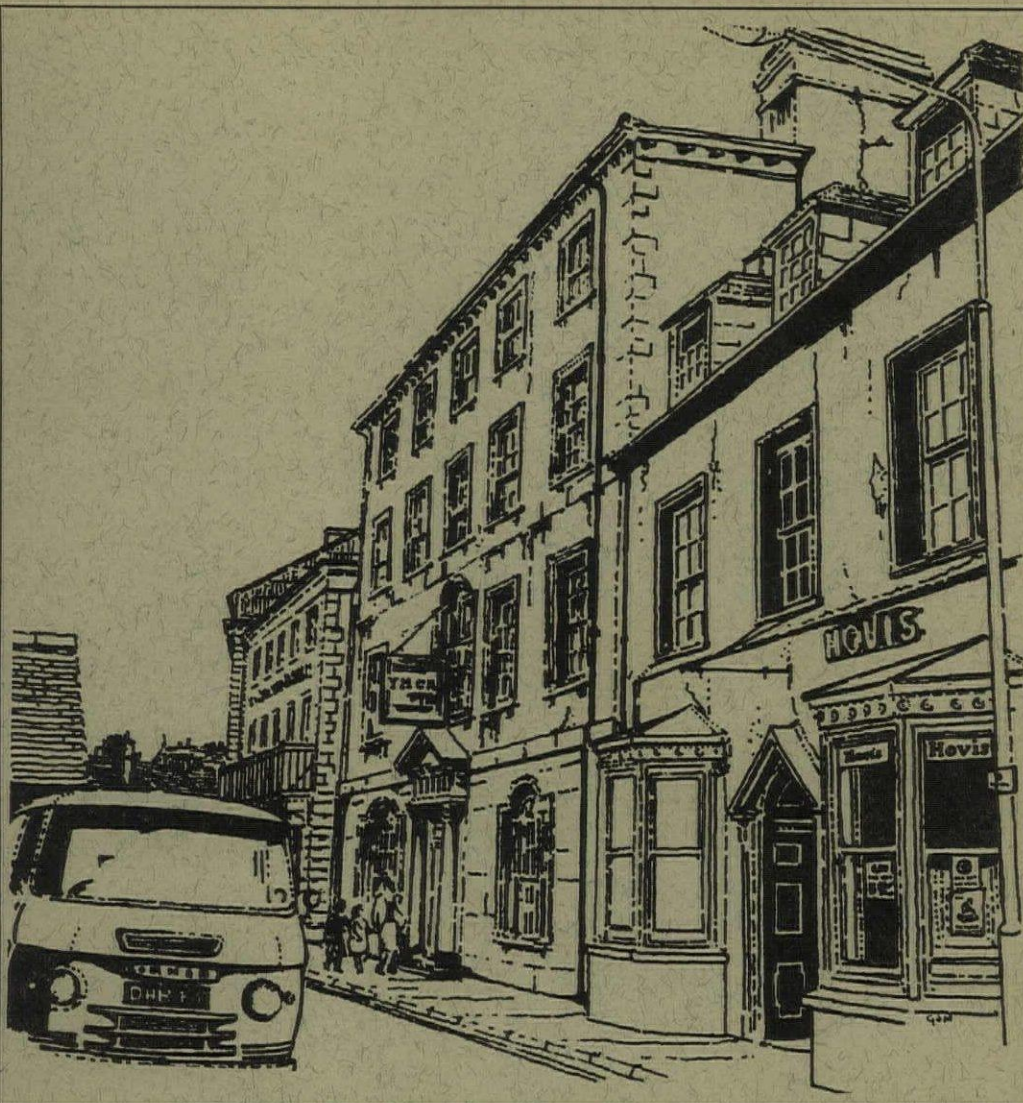
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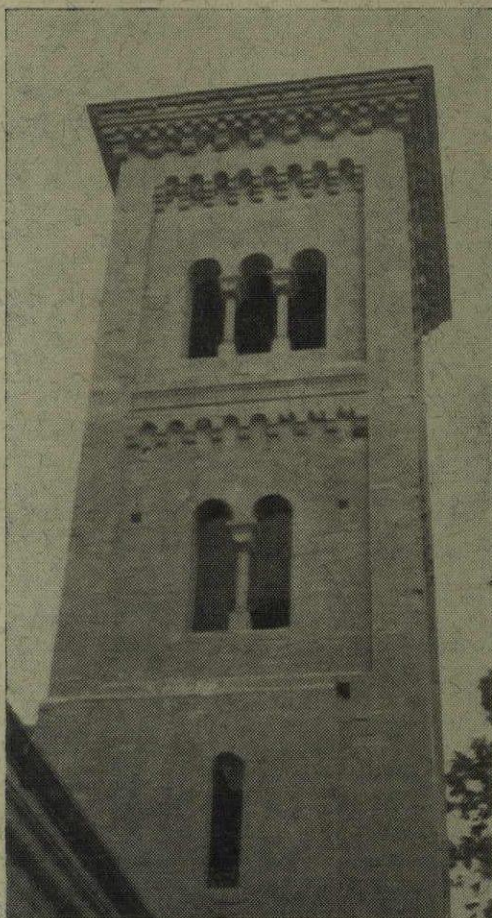
A good big Georgian house, 1, formerly the YMCA and now empty. This delightful town could ill afford to lose it.

HOARWITHY, HEREFORDSHIRE

J. P. Seddon's wonderful extravaganza on Byzantine and Romanesque ideas is looking a bit worse for wear, 2 and 3. So far nothing more than broken windows in the rectory and an air of neglect; but



1



2

the diocese is not too fond of Victoriana, to judge by its ideas on the removal of Skidmore's metal screen in Hereford Cathedral.

ST. IVES, HUNTINGDONSHIRE

Bridge House, 4, an important townscape anchor for the medieval bridge and chapel. Decision on demolition is now with the Ministry, after a ten



3

year delay in which the owners have offered it to the town and been turned down and have applied for an HBC grant and been turned down.

OUTRAGE

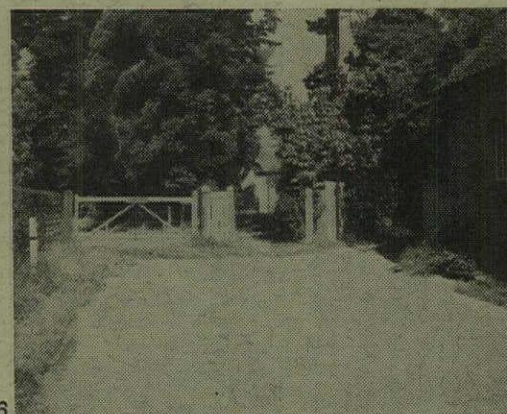
NEAR SWISS COTTAGE, LONDON

The latest idea on how to maintain the Picturesque tradition in St. John's Wood, 5.

CREDIT

ICKFORD, BUCKS

The way to church, with for once no attempt made to prettify or add fussy souvenirs in the way of olde lych-gates or crazy paving, 6 and 7. Thanks.



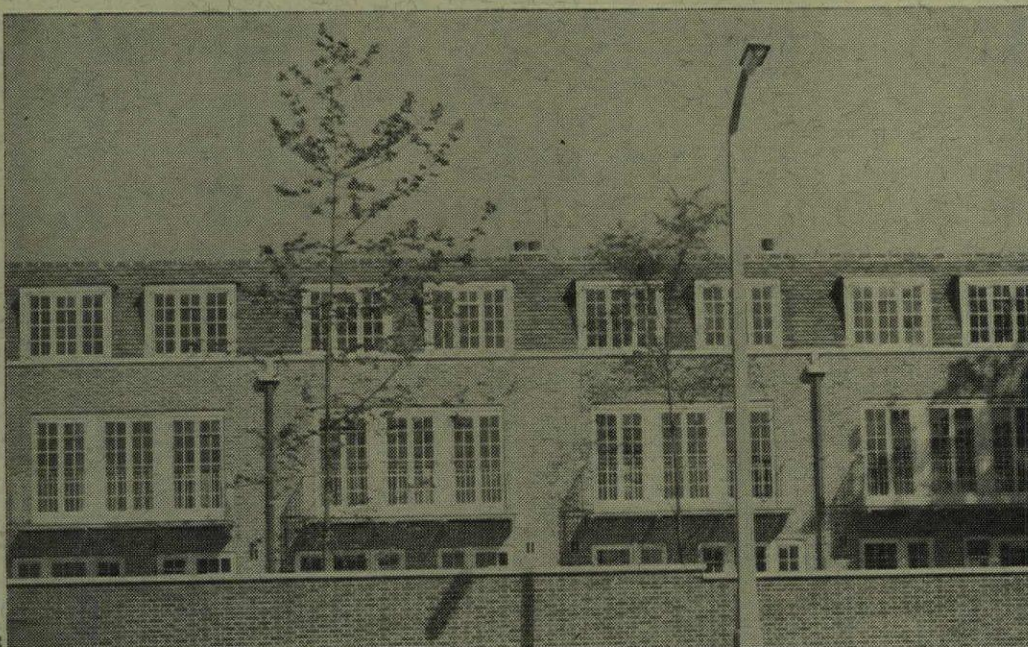
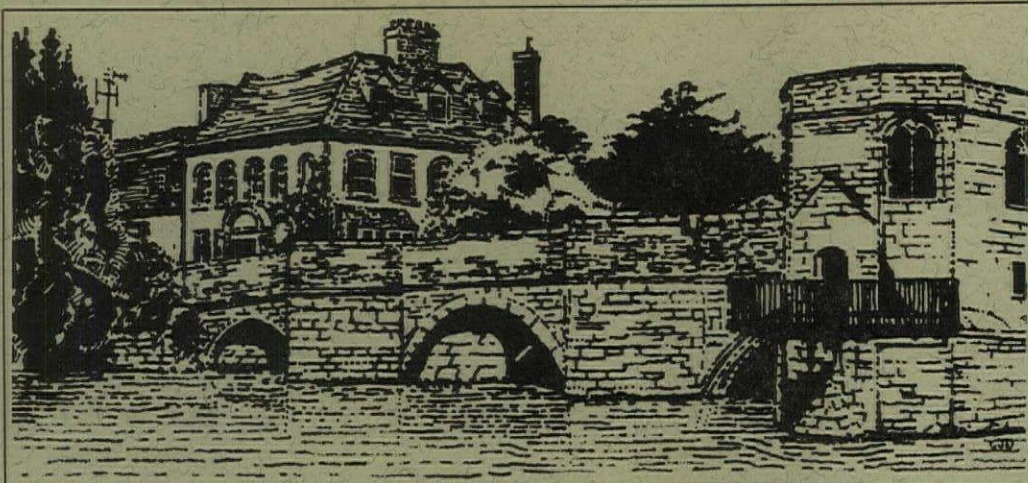
LONG HANDBOROUGH, OXON

The traditional 'eyesore' of generations of planners can in fact look splendid if it is done with personality and vitality and doesn't smother an existing environment, 8.



FISHGUARD, PEMBROKESHIRE

A neat pedestrian amenity in a crowded street: the pavement removed and let into the building to make a miniature arcade, 9. It could be used on a much bigger scale—in Oxford Street, for one example.

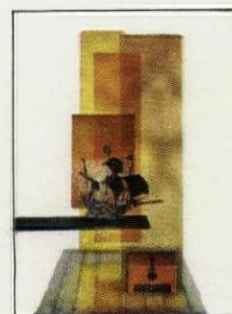




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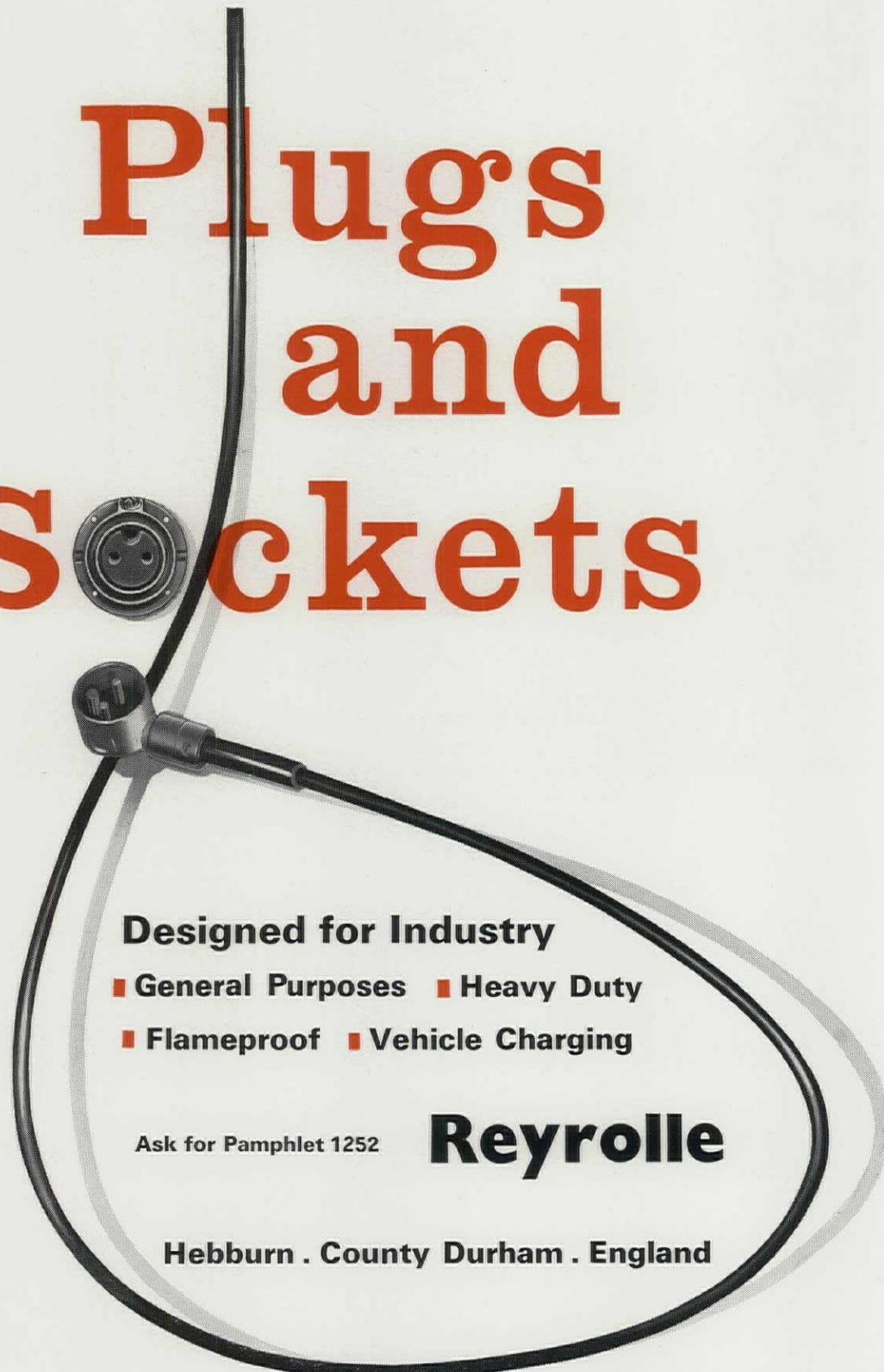
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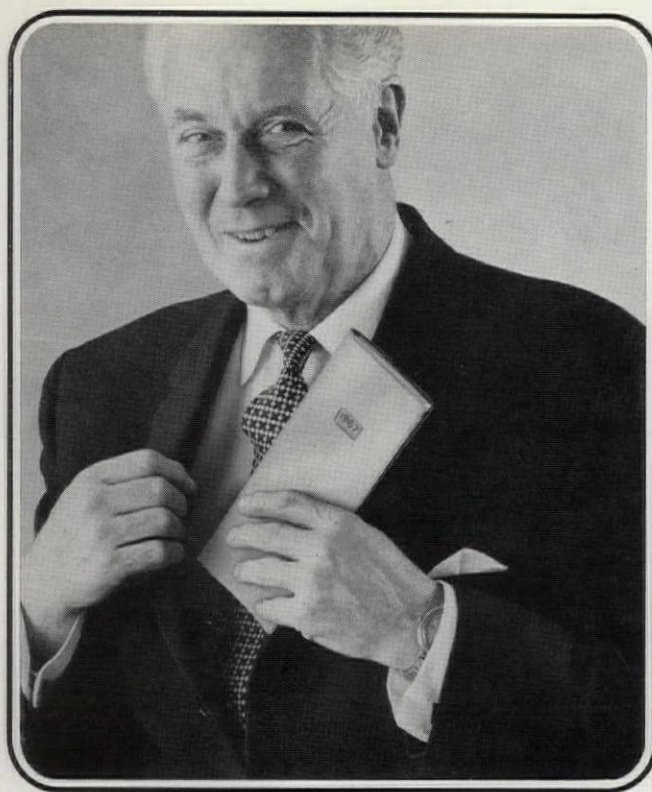
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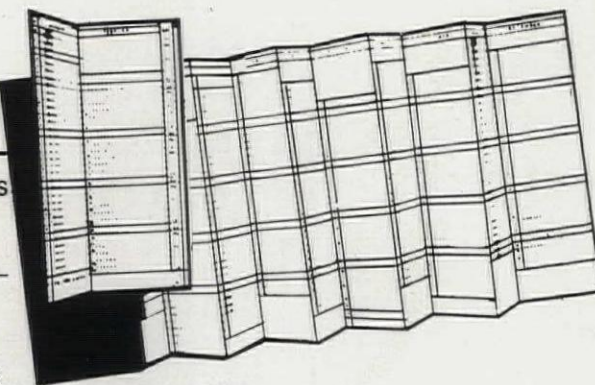
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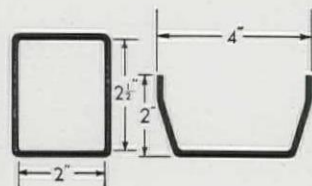


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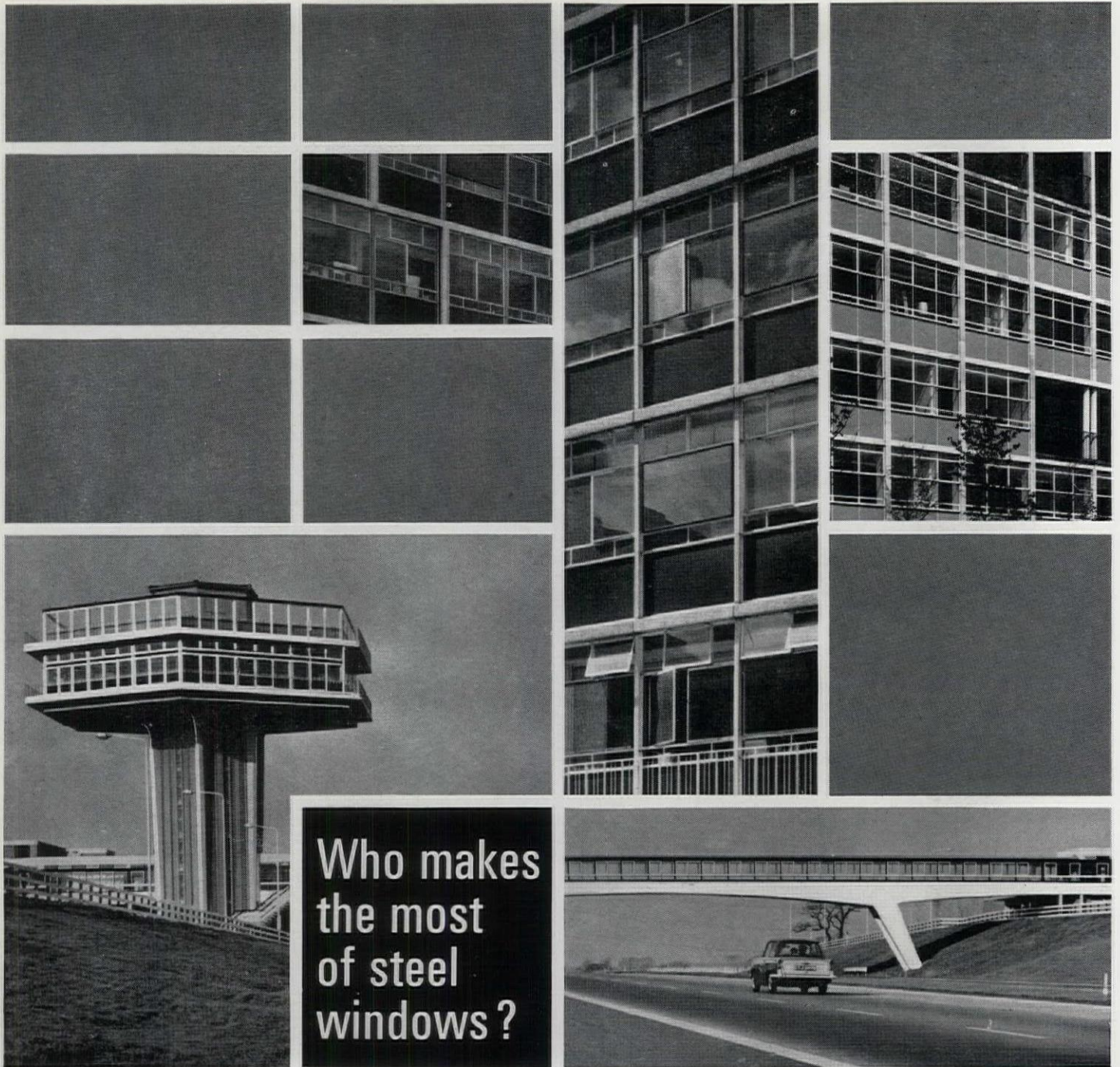
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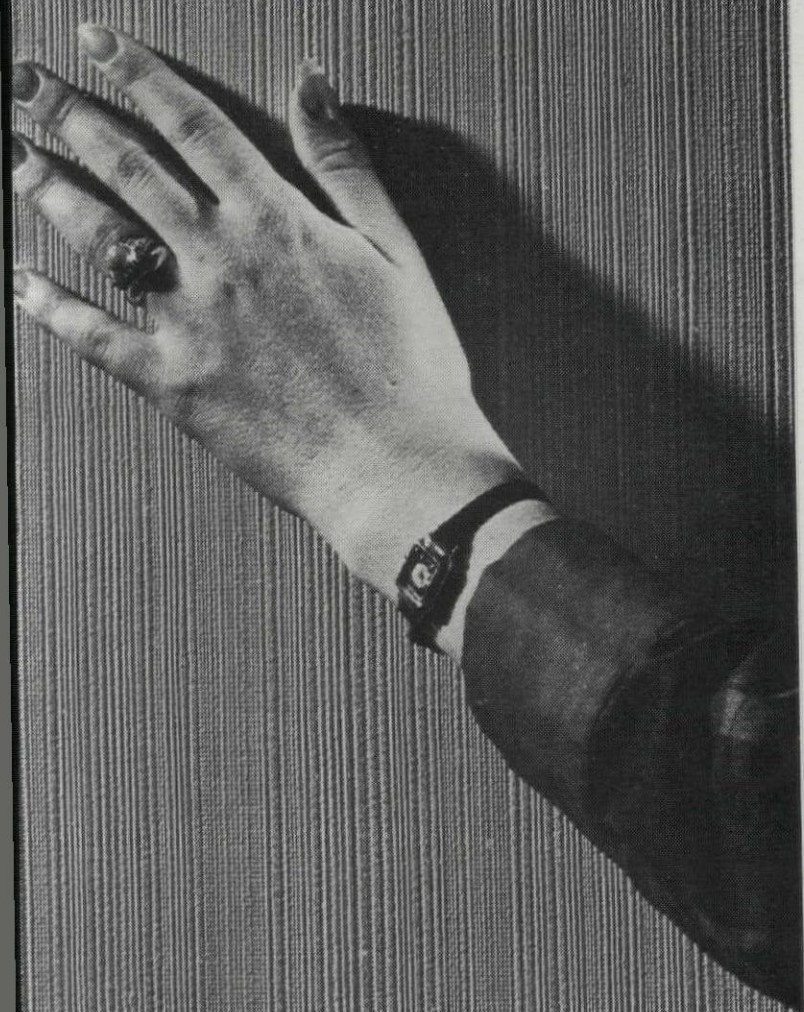
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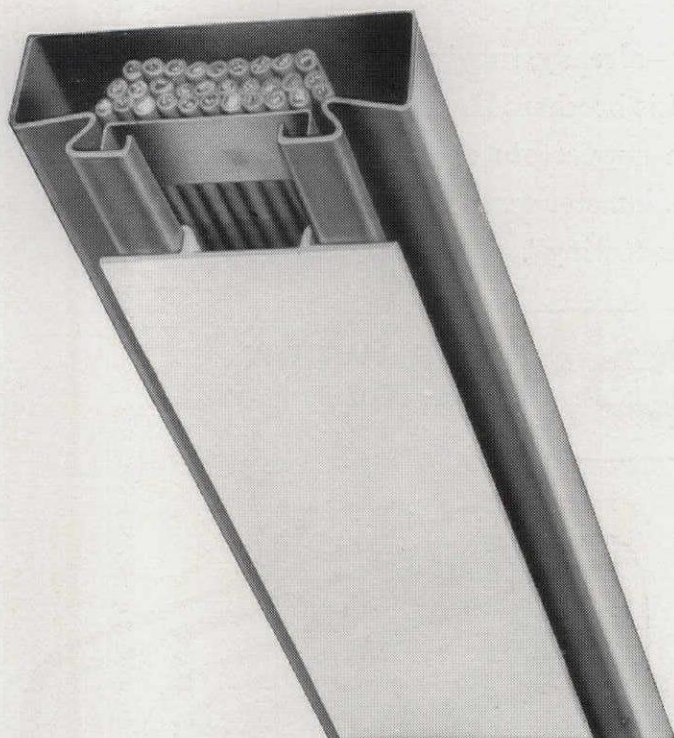
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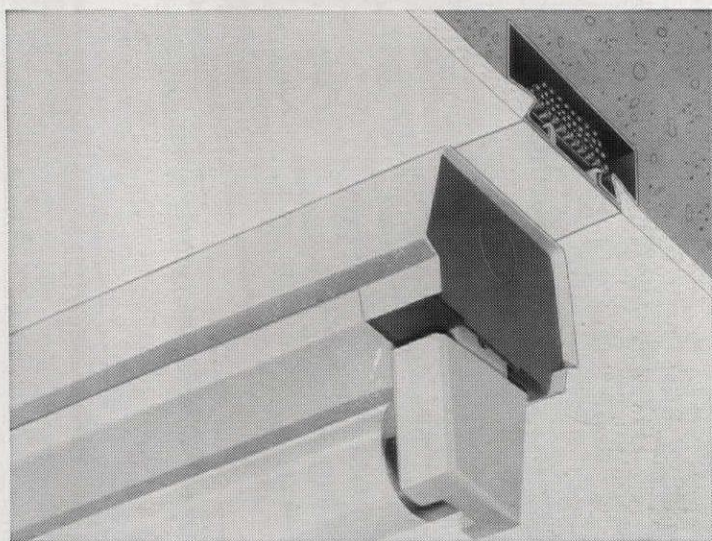
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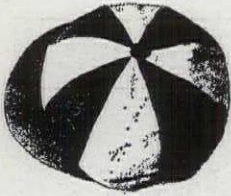
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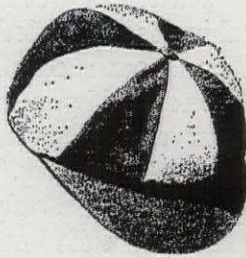


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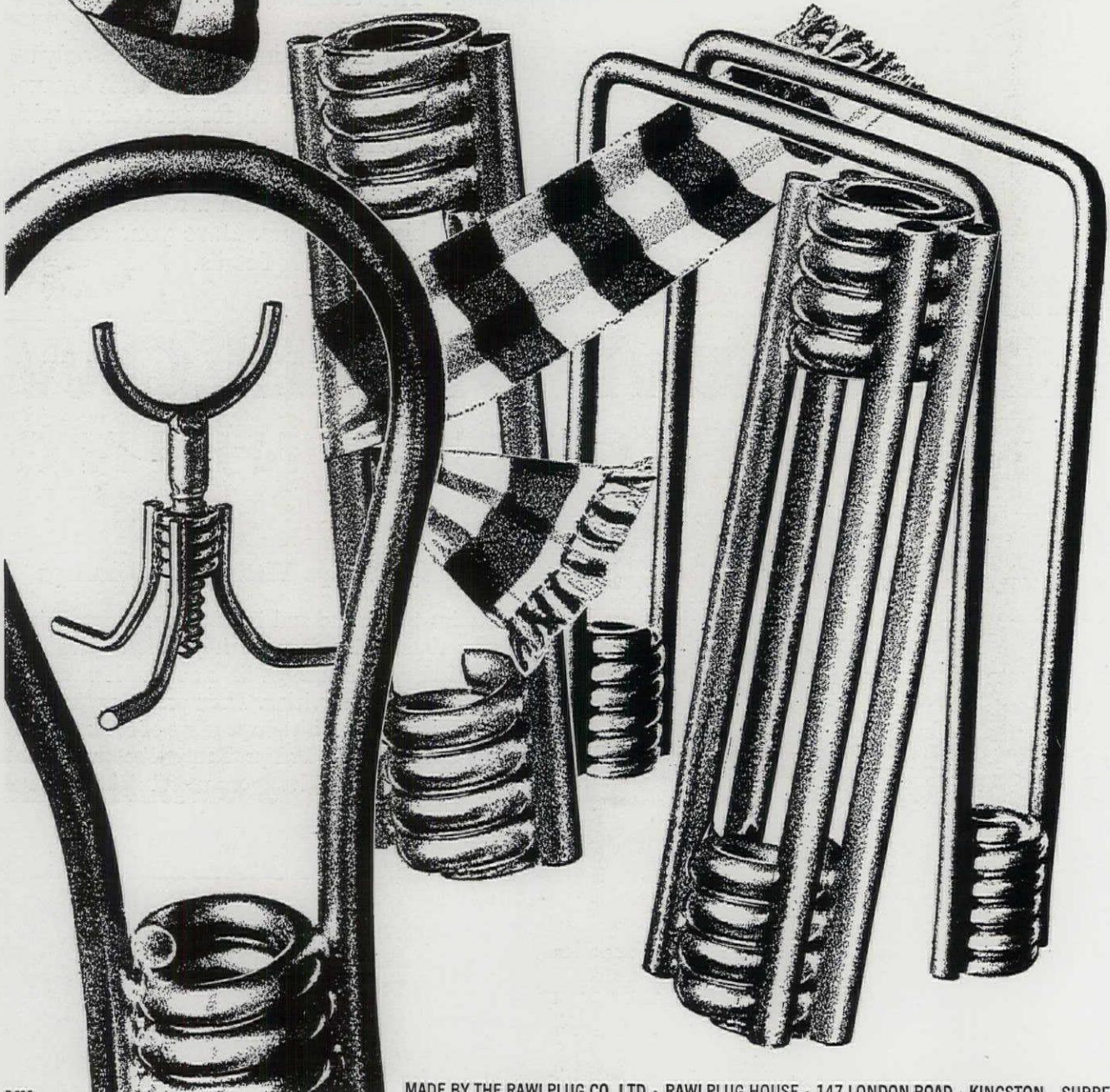
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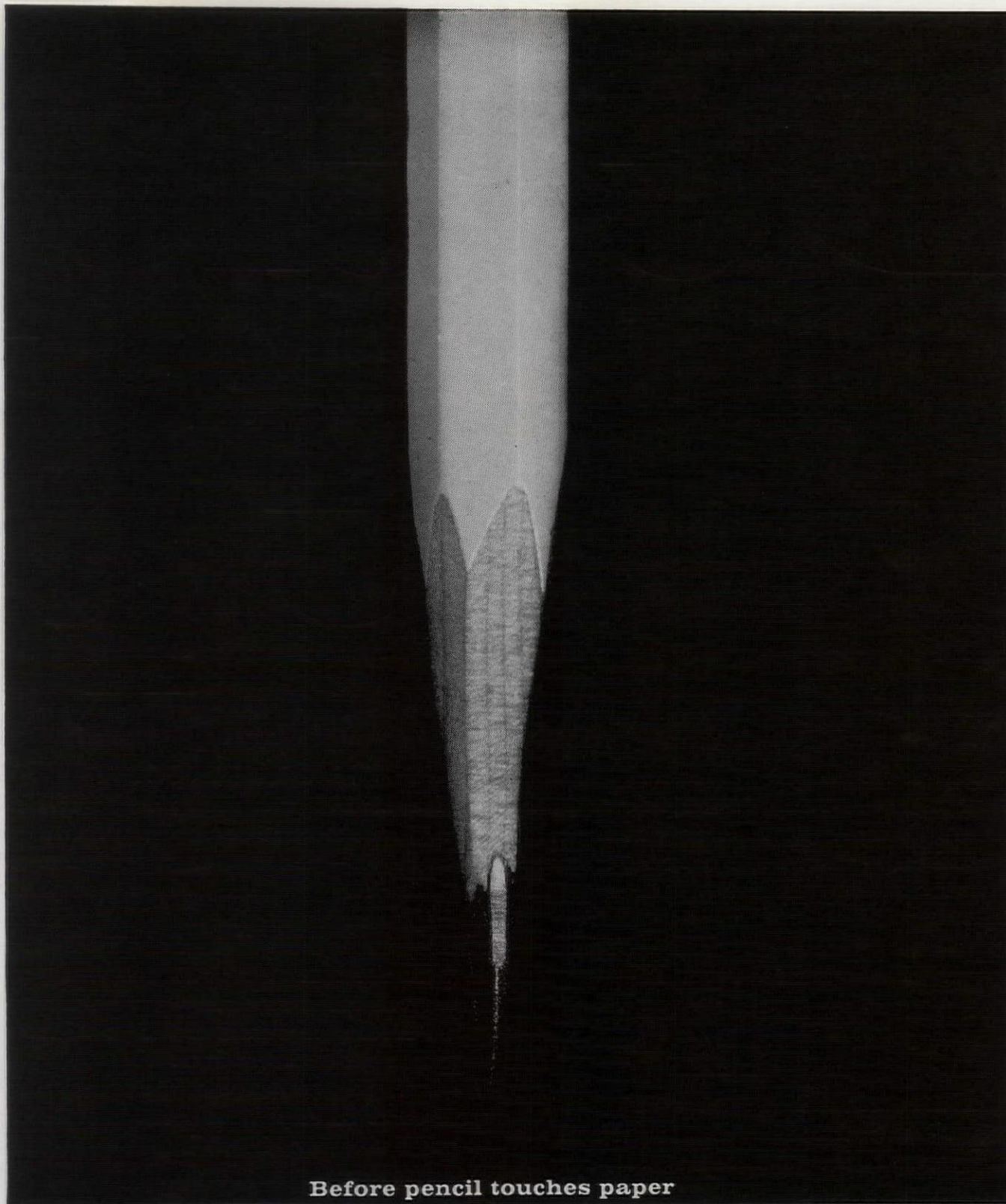
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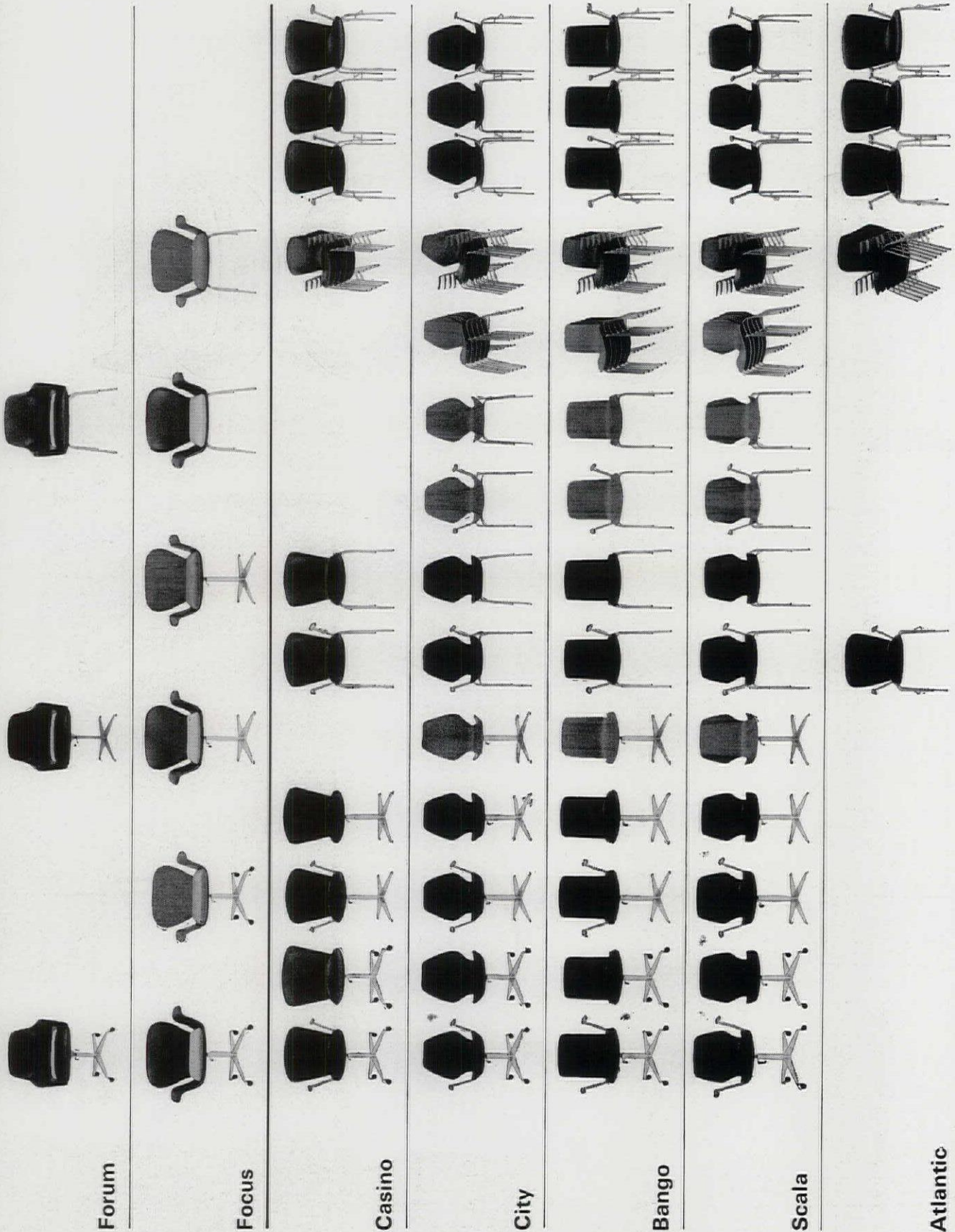
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- 2 They do not require painting
- 3 Ease of production permits up-to-the-minute design
- 4 Their high-quality sliding sashes are simple to operate
- 5 Aluminium windows require a minimum of maintenance and do not rust, warp or distort

These five good reasons have not been invented by Alcan. They are considered comments by Burns-

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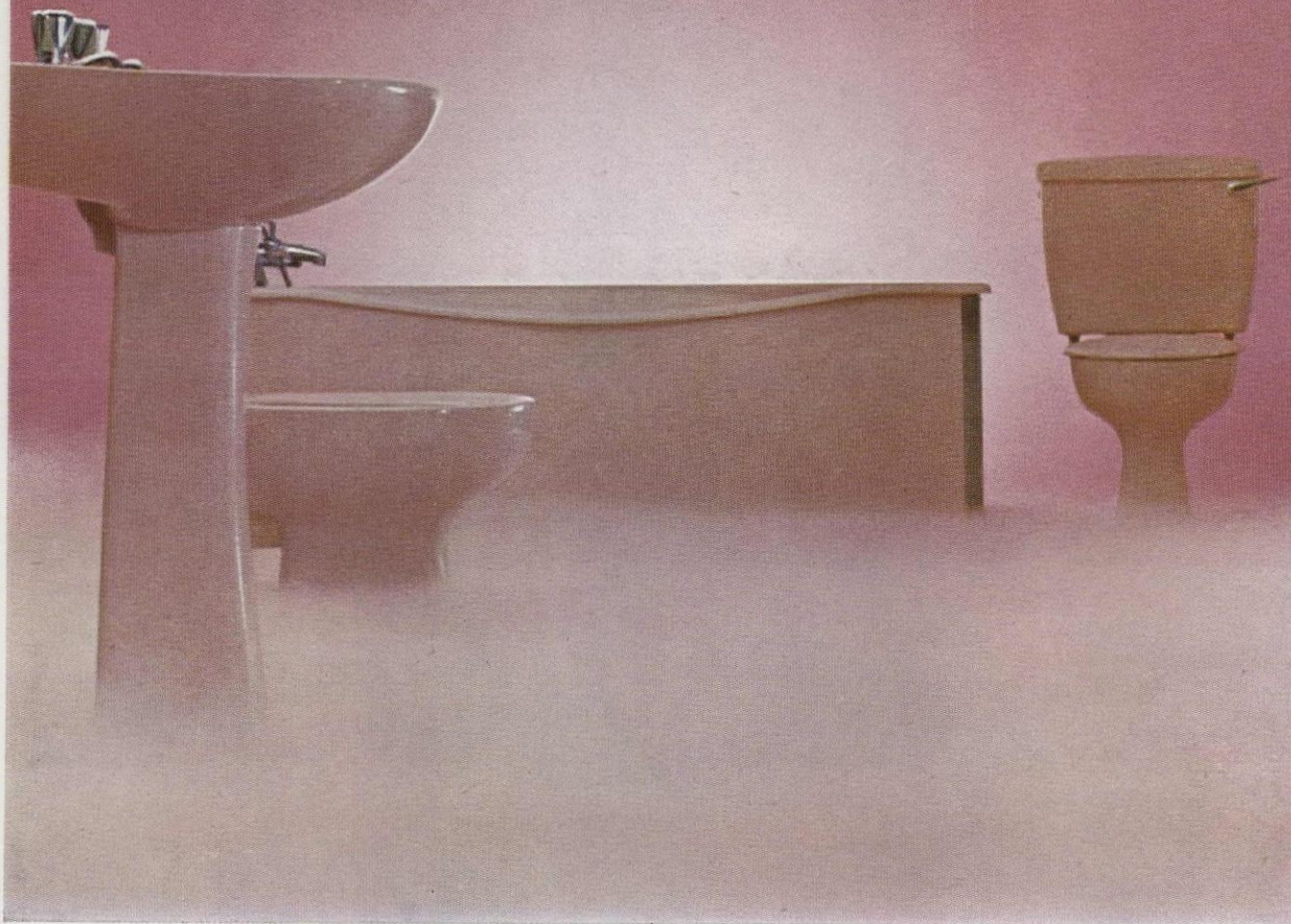
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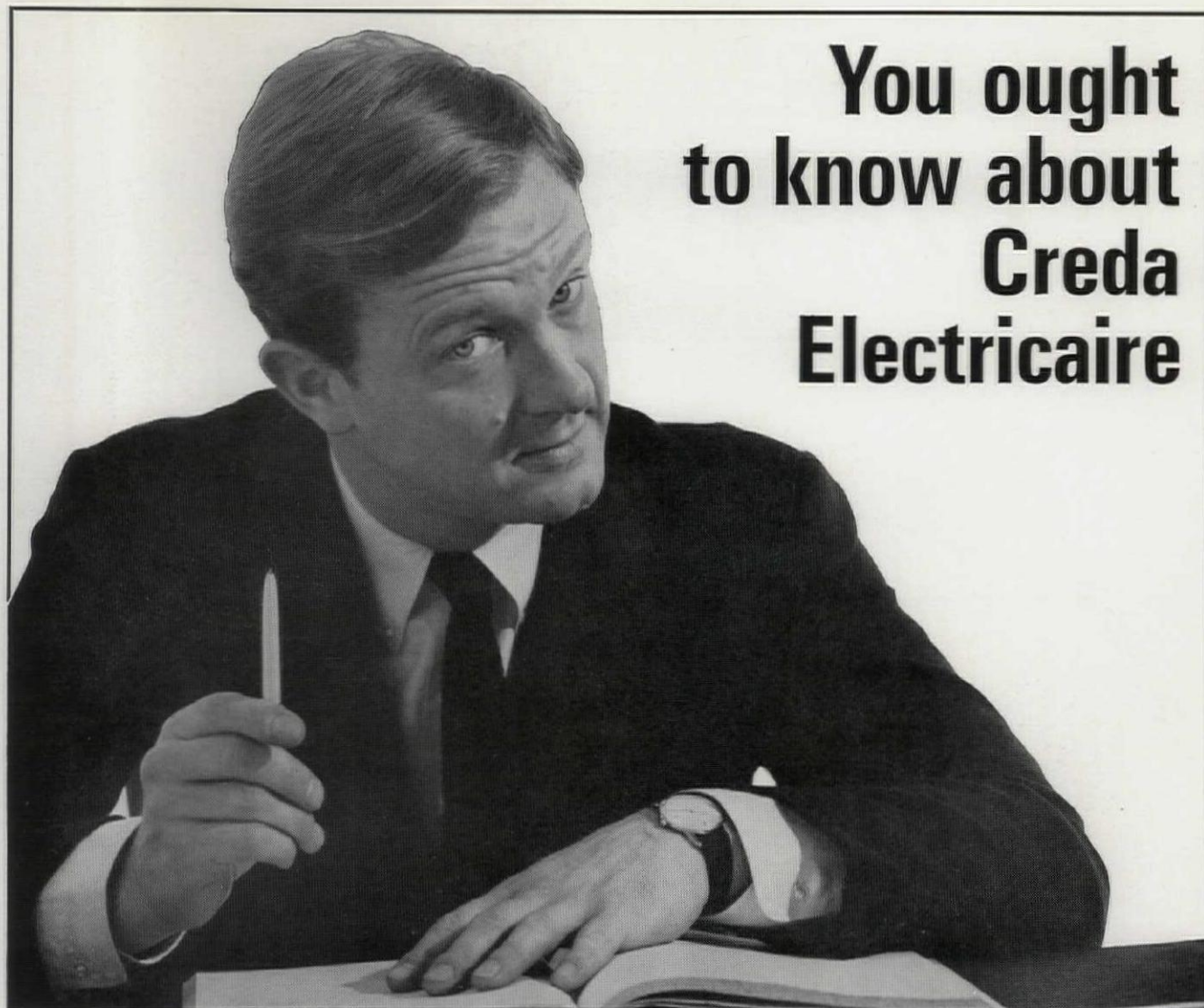
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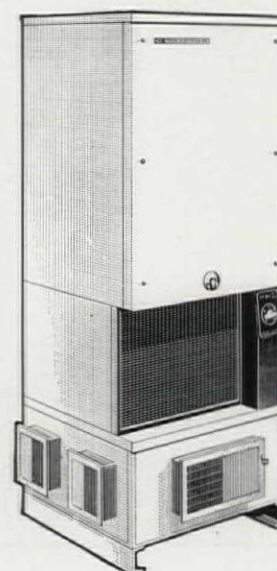
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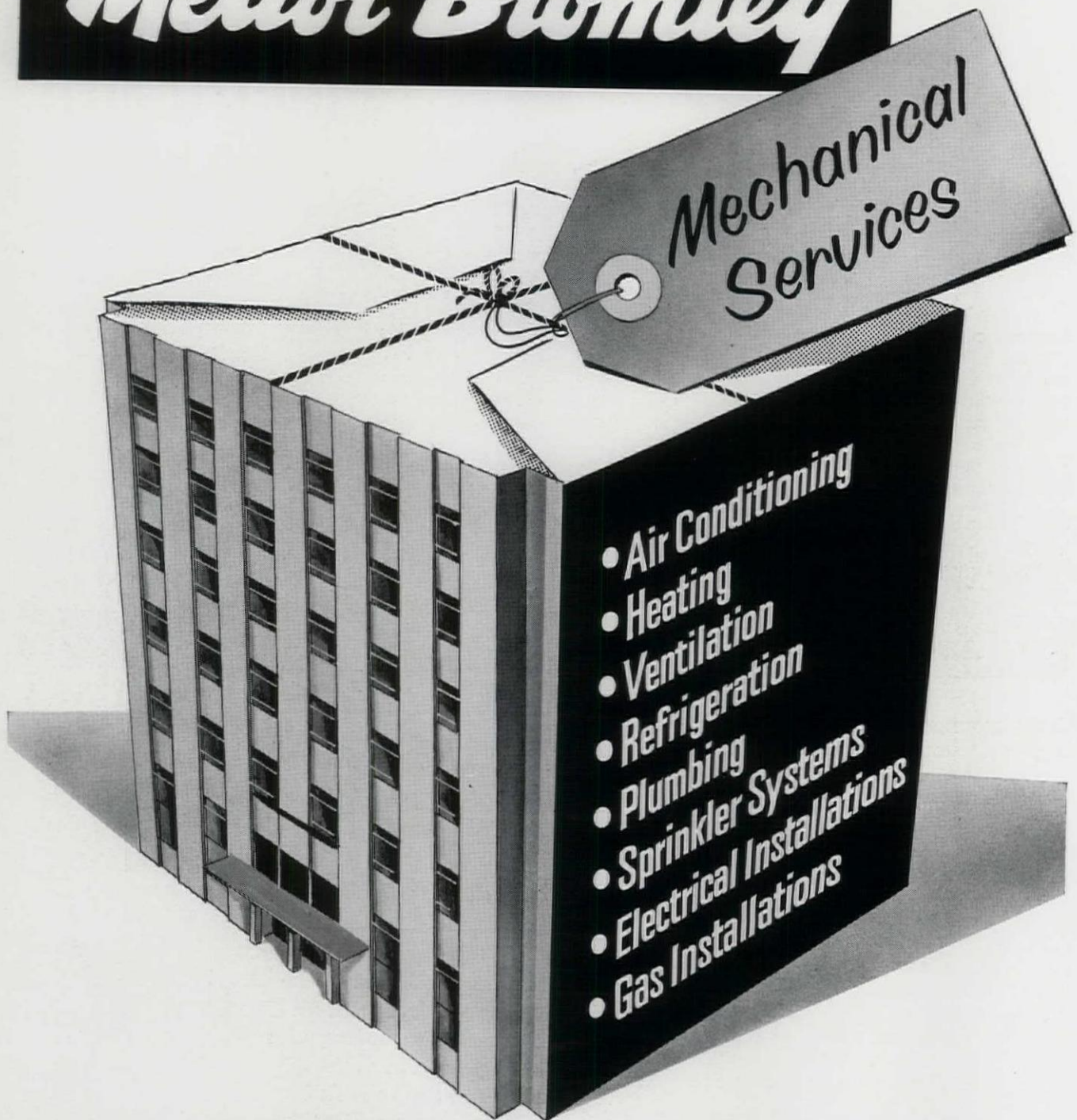
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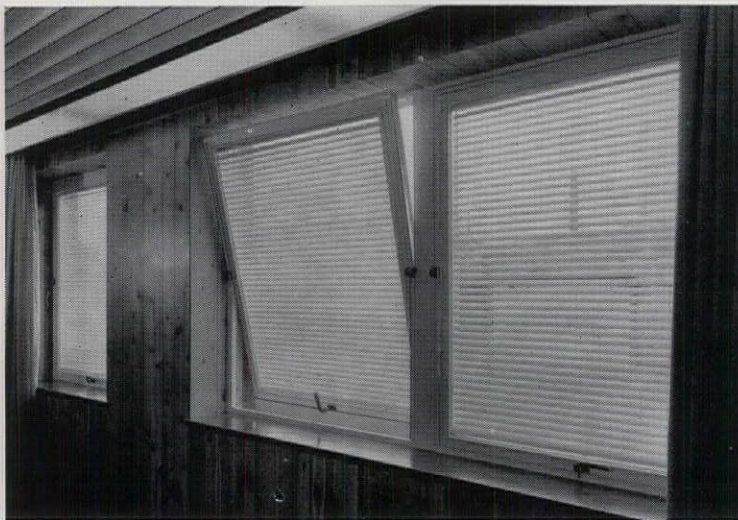
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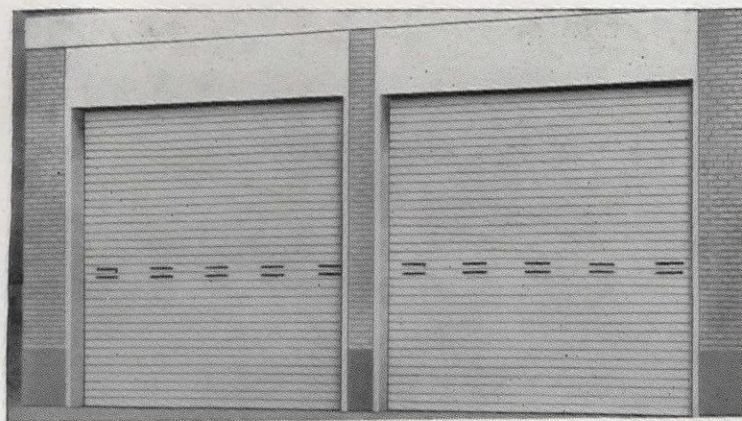
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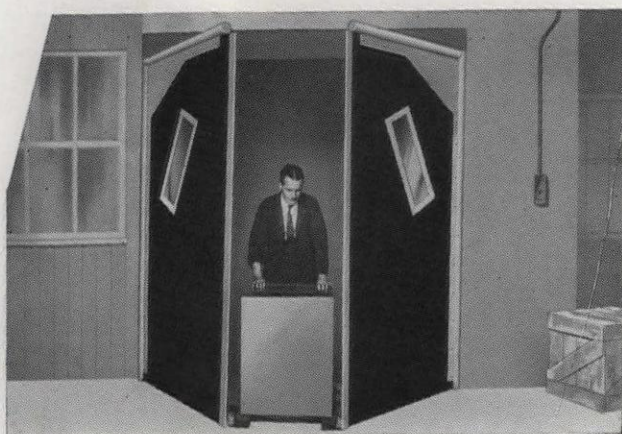
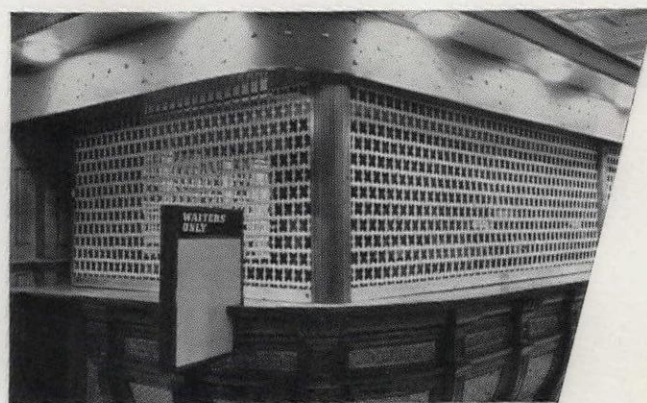


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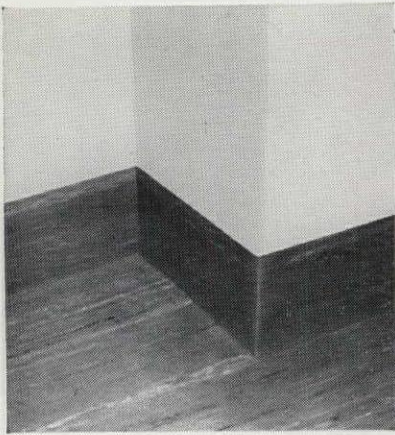
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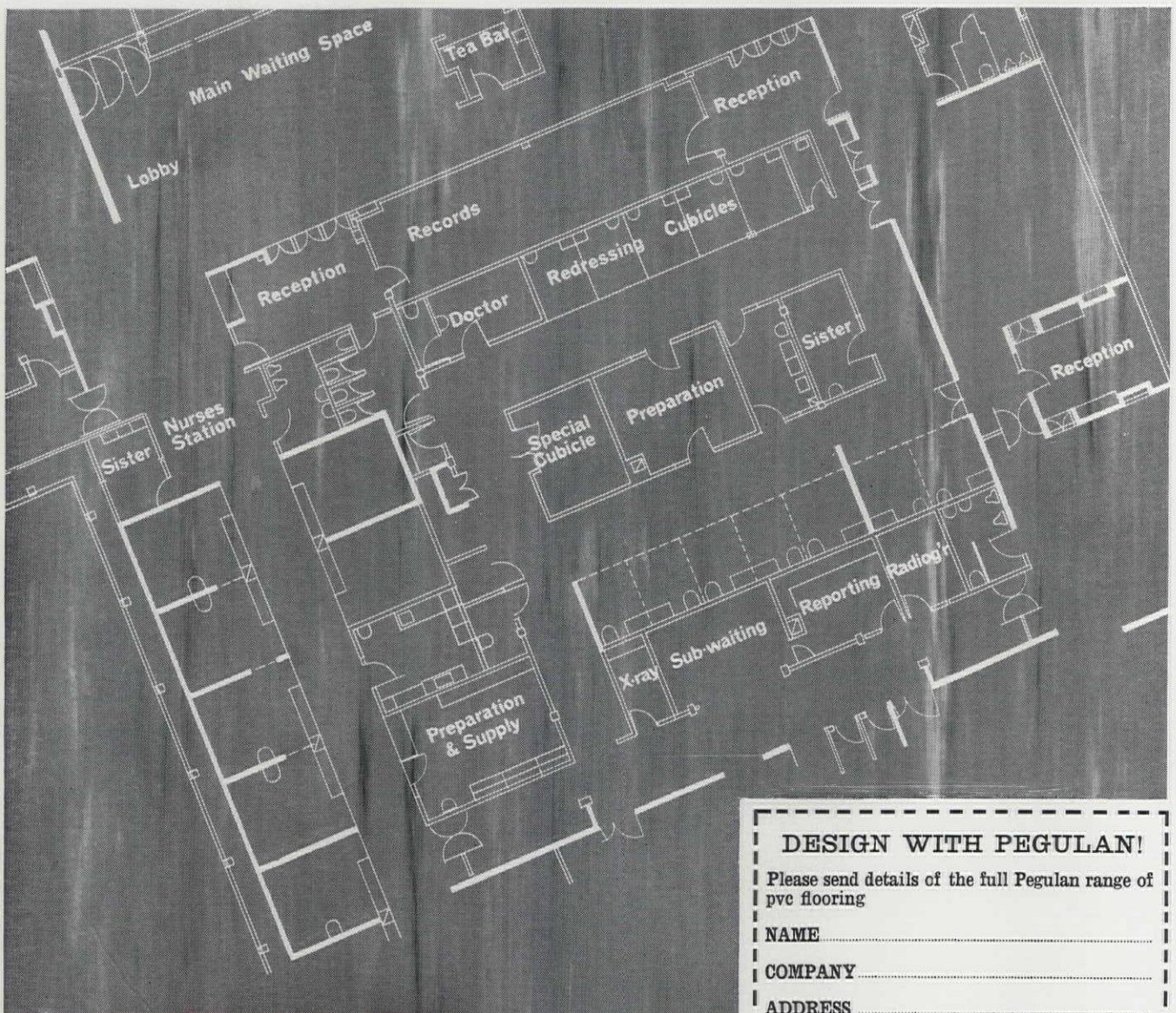
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Alcan Snaprib provides the perfect finish

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Supplying Britain's architects and builders with *more* than aluminium

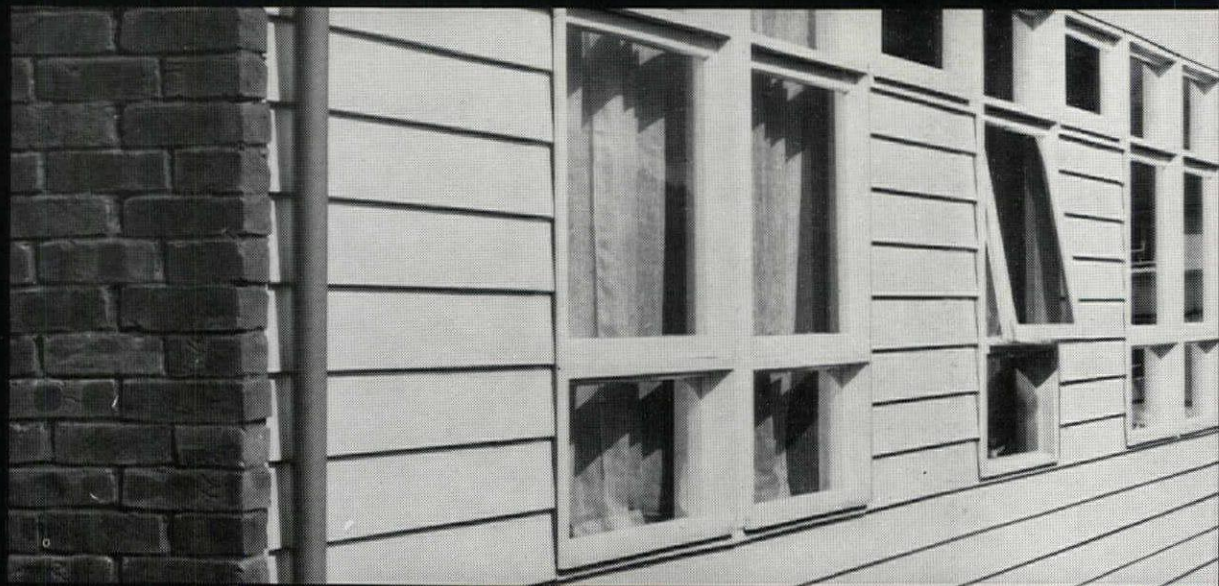


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*Architects' offices at Bovingdon: Derek Phillips & Associates, A.R.I.B.A.
Alcan Weatherboard is covered by patents held by Cookson Sheet Metal Developments Limited*

Take a long look

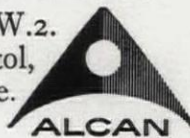




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(Architect: Cumberland Hotels Premises Dept.)

e.g. Norgas House, Killingworth. The special metal tray ceiling built for Northern Gas Board at Killingworth, (Lighting, Air-Conditioning, and Acoustics). Norgas House won the regional award for architectural design in 1966. (Architect: Ryder and Yates & Ptnrs.)

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(Architect: Elder and Lester).

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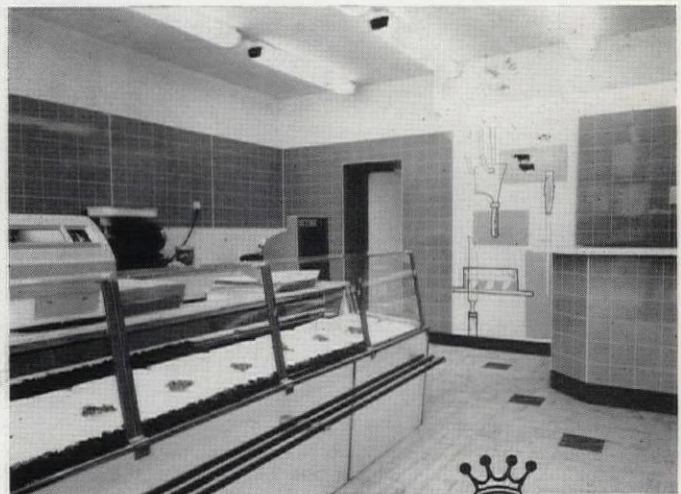
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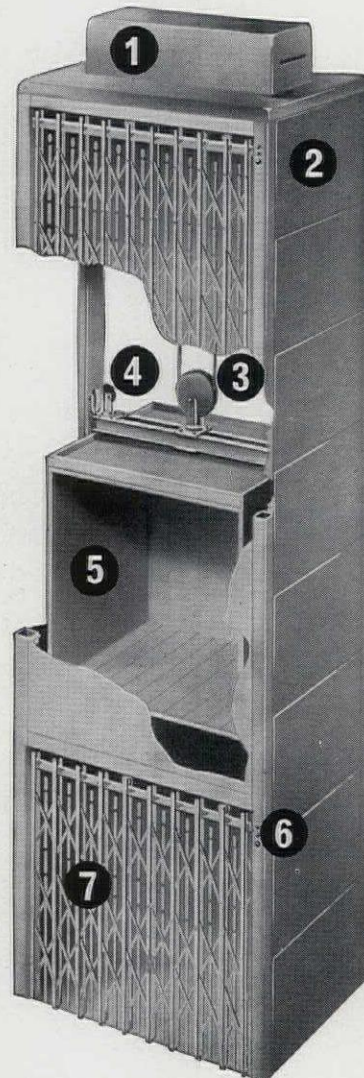
AR/11

Marshall have maximised freight elevator efficiency

The Marshall Freight Elevator provides an efficient way to move goods from one floor to another. It is a self-contained prefabricated unit with a built-in power unit, so that it can be placed wherever it is required either inside or outside a building, with heights to serve any number of levels. It can be free-standing or built into an existing shaft. The Marshall Freight Elevator is designed and built to give maximum trouble-free service with minimum maintenance.

SfB (66)
UDC 69.026.6/7

floor to floor
movement
of goods



These seven Marshall design features add up to a built in bonus of complete reliability

1. the power unit

Normally sited on top of the shaft, it can, if necessary, be located elsewhere to suit special circumstances. An electromagnetic brake is incorporated ensuring, in the event of current failure, that the carriage stops immediately. The electric switch gear is mounted beside the power unit. A cover is fitted when used outside.

2. the enclosure

Of four-sided smooth, preformed flanged sheet metal cladding, providing a clean, neat finish with rounded corners, and adding to the structural strength of the finished installation.

3. the wire cable

A special grade of wire cable is provided with a safety factor of approximately 10:1 with the diameter varying according to load capacity of hoist.

4. the guide wheels

Eight polyurethane wheels are used to provide minimum friction, long wear and silent travel.

5. the carriage

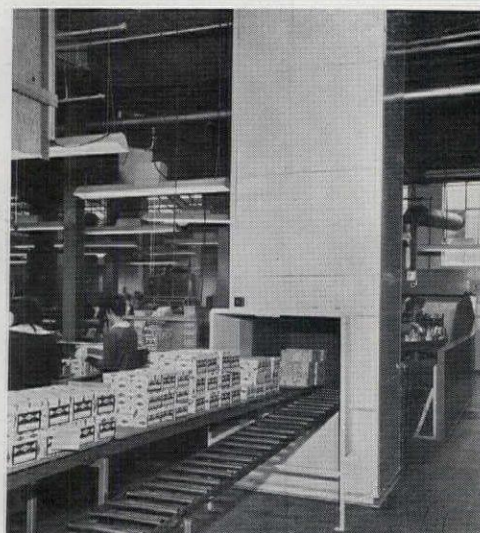
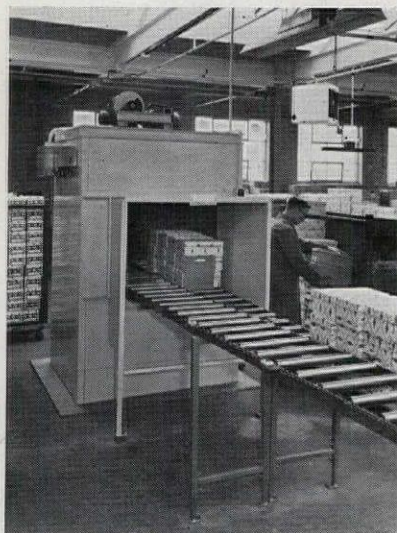
Robust steel frame covered with sheet steel. Floor is of wood or steel chequer plate to suit goods.

6. the controls

Movement of the carriage is controlled by "Send" and "Call" buttons on each floor, with Emergency Stop button if required, and automatic alignment of levels is ensured by limit switches. Gates are electro-mechanically interlocked for safety.

7. the gates

Marshall Freight Elevators are supplied either with the mid-bar picket or the shutter type of gate.



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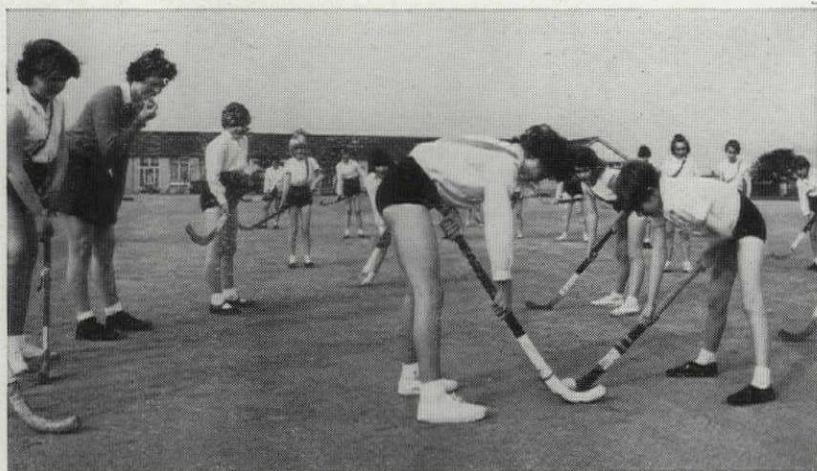
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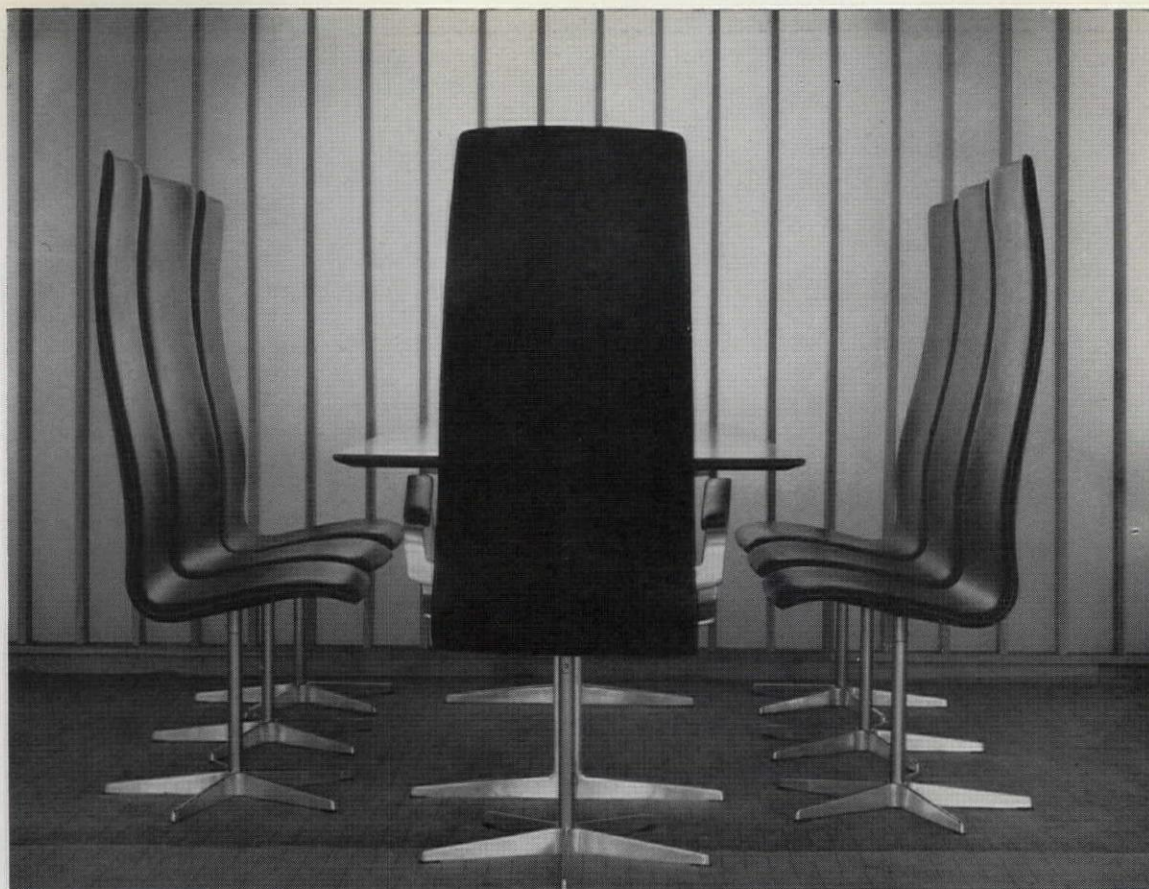
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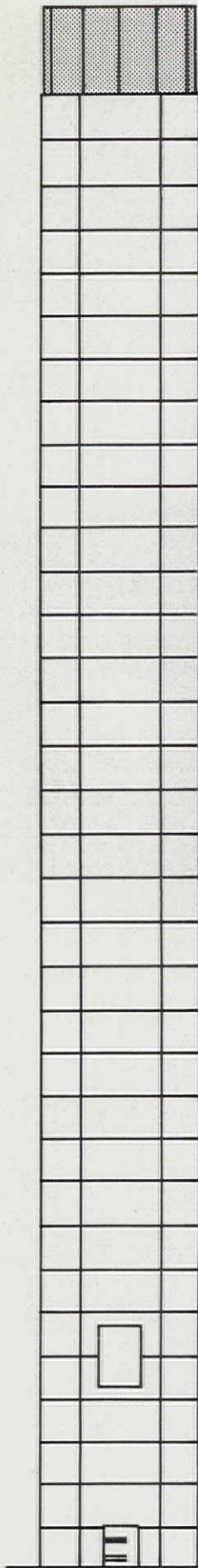
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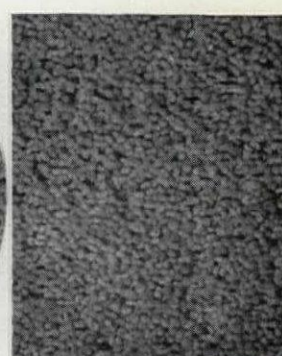
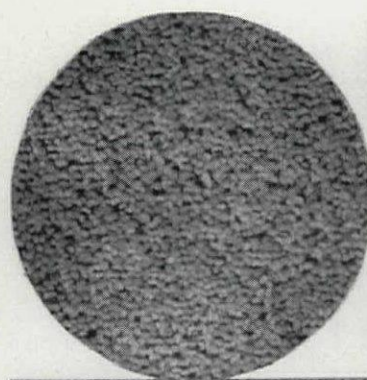
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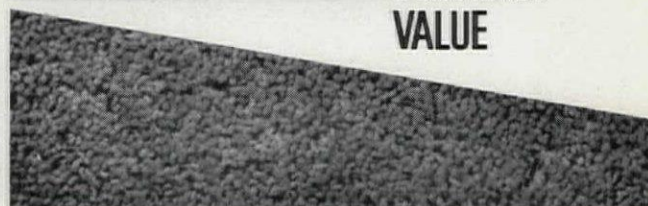
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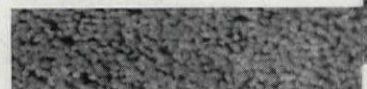


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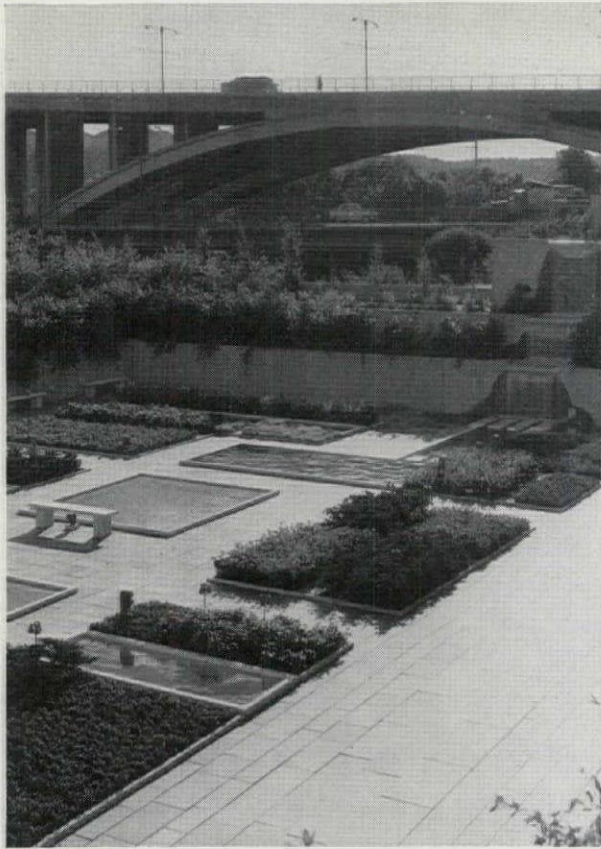
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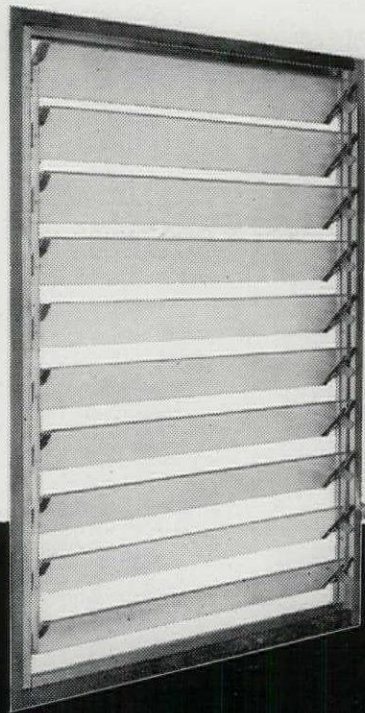
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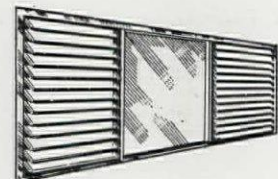
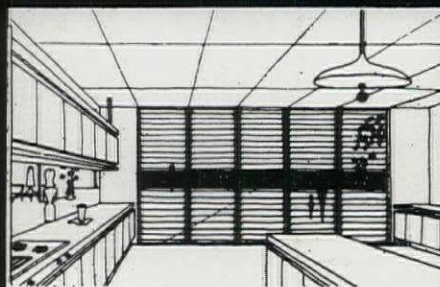
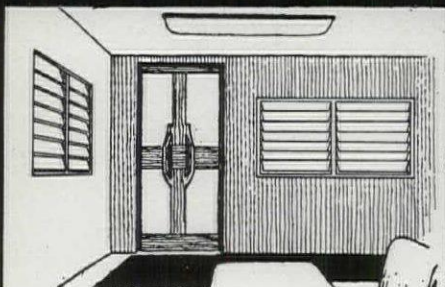
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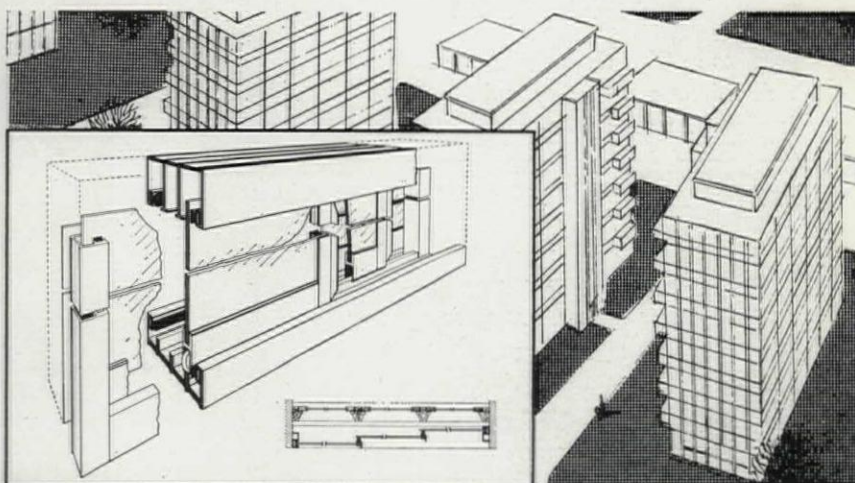
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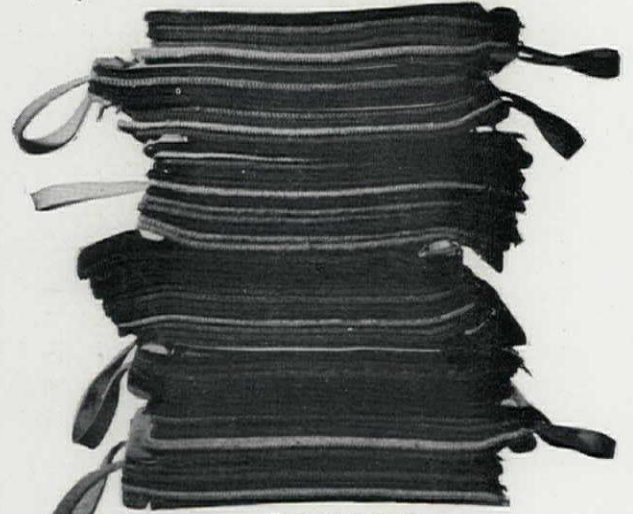
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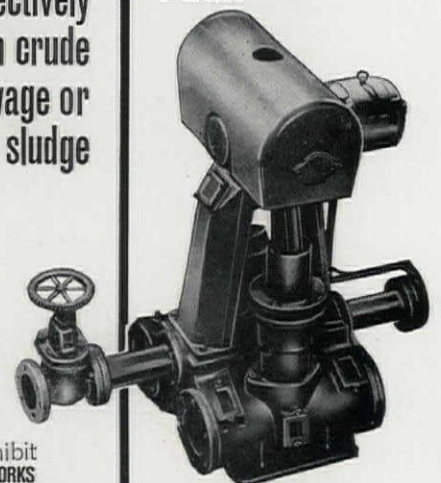
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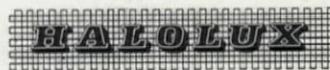
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