THE ARCHITECTS' JOURNAL

standard contents

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

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

AA	Architectural Association, 34/6, Bedford Square, W.C.1.	Museum 0974
AAI	Association of Art Institutions. Secy. : W. Marlborough Whitehead, "Dyneley," Castle Hill Avenue, Berkhampstead, Herts.	
ABS	Architects' Benevolent Society. 66, Portland Place, W.1.	Langham 5721
ABT	Association of Building Technicians. 5, Ashley Place, S.W.1.	Victoria 0447-8
ACGB	Arts Council of Great Britain. 4, St. James' Square, S.W.1.	Whitehall 9737
ADA	Aluminium Development Association. 33, Grosvenor Street, W.1.	Mayfair 7501/8
APRR	Association for Planning and Regional Reconstruction. 34, Gordon Square, W.C.1.	Euston 2158-9
ArchSA	Architectural Students' Association. Department of Architecture, School of Building, Ferndale Road, Brixton, S.W.4.	Brixton 7048
ARCUK	Architects' Registration Council. 68, Portland Place, W.1.	Welbeck 9738
ASB	Architectural Science Board of the Royal Institute of British Architects. 66, Portland Place, W.1.	Langham 5721
AScW	Association of Scientific Workers. 15, Half Moon Street, Piccadilly, W.1.	Grosvenor 4761
BAE	Board of Architectural Education. 66, Portland Place, W.1.	Langham 5721
BATC	Building Apprenticeship and Training Council. Lambeth Bridge House, S.E.1.	Reliance 7611, Ext. 1706
BC	Building Centre. 9, Conduit Street, W.1.	Mayfair 8641/6
BCC	British Colour Council. 13, Portman Square, W.1.	Welbeck 4185
BCCF	British Cast Concrete Federation. 17, Amherst Road, Ealing, W.13.	Perivale 6869
BCIRA	British Cast Iron Research Association. Alvechurch, Birmingham.	Redditch 716
BDA	British Door Association. 10, The Boltons, S.W.10.	Flaxman 7766
BEDA	British Electrical Development Association. 2, Savoy Hill, W.C.2.	Temple Bar 9434
BGF	British Gas Federation. 1, Grosvenor Place, S.W.1.	Sloane 8266
BIA	British Ironfounders' Association. 145, Vincent Street, Glasgow, C.2.	Glasgow Central 2891
BIAE	British Institute of Adult Education. 29, Tavistock Square, W.C.1.	Euston 5385
BID	Building Industries Distributors. 52, High Holborn, W.C.1.	Chancery 7772
BINC	Building Industries National Council. 11, Weymouth Street, W.1.	Langham 2785
BOT	Board of Trade. Millbank, S.W.1.	Whitehall 5140
BRS	Building Research Station. Bucknalls Lane, Watford.	Garston 2246
BSA	Building Societies Association. 14, Park Street, W.1.	Mayfair 0515
BSI	British Standards Institution. 28, Victoria Street, S.W.1.	Abbey 3333
BTE	Building Trades Exhibition. 4, Vernon Place, W.C.1.	Holborn 8146/7
CABAS	City and Borough Architects Society. C/o Johnson Blackett, F.R.I.B.A., Borough Architect, Town Hall, Newport, Mon.	Newport 3111
CAS	County Architects Society. C/o F. R. Steele, F.R.I.B.A., County Hall, Chichester.	Chichester 3001
CCA	Cement and Concrete Association. 52, Grosvenor Gardens, S.W.1.	Sloane 5255
CCP	Council for Codes of Practice. Lambeth Bridge House, S.E.1.	Reliance 7611
CDA	Copper Development Association. Kendals Hall, Radlett, Herts.	Radlett 5616
CIAM	Congrès Internationaux d'Architecture Moderne. Doldertal, 7.Zurich, Switzerland.	
CID	Council of Industrial Design. Tilbury House, Petty France, S.W.1.	Whitehall 6322
CPRE	Council for the Preservation of Rural England. 4, Hobart Place, S.W.	Sloane 4280
CUJC	Coal Utilization Joint Council. 13, Grosvenor Gardens, London, S.W.1.	Victoria 1534
CVE	Council for Visual Education. 13, Suffolk Street, Haymarket, S.W.1.	Reading 72255
DGW	Directorate General of Works, Ministry of Works, Lambeth Bridge House, S.E.1.	Reliance 1761
DIA	Design and Industries Association. 13, Suffolk Street, S.W.1.	Whitehall 0540
DOT	Department of Overseas Trade. 35, Old Queen Street, S.W.1.	Victoria 9040
EJMA	English Joinery Manufacturers' Association (Incorporated). Sackville House, 40, Piccadilly, W.1.	Regent 4448
EPNS	English Place-Name Society. 7, Selwyn Gardens, Cambridge.	
FAS	Faculty of Architects and Surveyors. 8, Buckingham Palace Gdns., S.W.1.	Sloane 2837
FASSC	Federation of Association of Specialists and Sub-Contractors. 21, Tothill Street, S.W.1.	Whitehall 9696
FBI	Federation of British Industries. 21, Tothill Street, S.W.1.	Whitehall 6711
FC	Forestry Commission. 25, Savile Row, W.1.	
FCMI	Federation of Coated Macadam Industries. 37, Chester Square, S.W.1.	Sloane 1002
FDMA	The Flush Door Manufacturers Association Ltd. Trowell, Nottingham.	Ilkeston 623
FLD	Friends of the Lake District. Pennington House, nr. Ulverston, Lancs.	Ulverston 201
FMB	Federation of Master Builders. 26, Great Ormond Street, Holborn, W.C.1.	Chancery 7583
FOB 1951	Festival of Britain 1951. 2, Savoy Court, Strand, W.C.2.	Waterloo 1951
FPC	The Federation of Painting Contractors, St. Stephen's House, S.W.1.	Whitehall 3902
FRHB	Federation of Registered House Builders. 82, New Cavendish Street, W.1.	Langham 4041
FS (Eng.)	Faculty of Surveyors of England. 8, Buckingham Palace Gdns., S.W.1.	Sloane 2837
GG	Georgian Group. 27, Grosvenor Place, S.W.1.	Sloane 2844
HC	Housing Centre. 13, Suffolk Street, Pall Mall, S.W.1.	Whitehall 2881
IAAS	Incorporated Association of Architects and Surveyors. 75, Eaton Place, S.W.1.	Sloane 5615
ICE	Institution of Civil Engineers. Great George Street, S.W.1.	Whitehall 4577
IEE	Institution of Electrical Engineers. Savoy Place, W.C.2.	Temple Bar 7676
IES	Illuminating Engineering Society. 32, Victoria Street, S.W.1.	Abbey 5215

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ASCOT

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2. 

3. 

4. 

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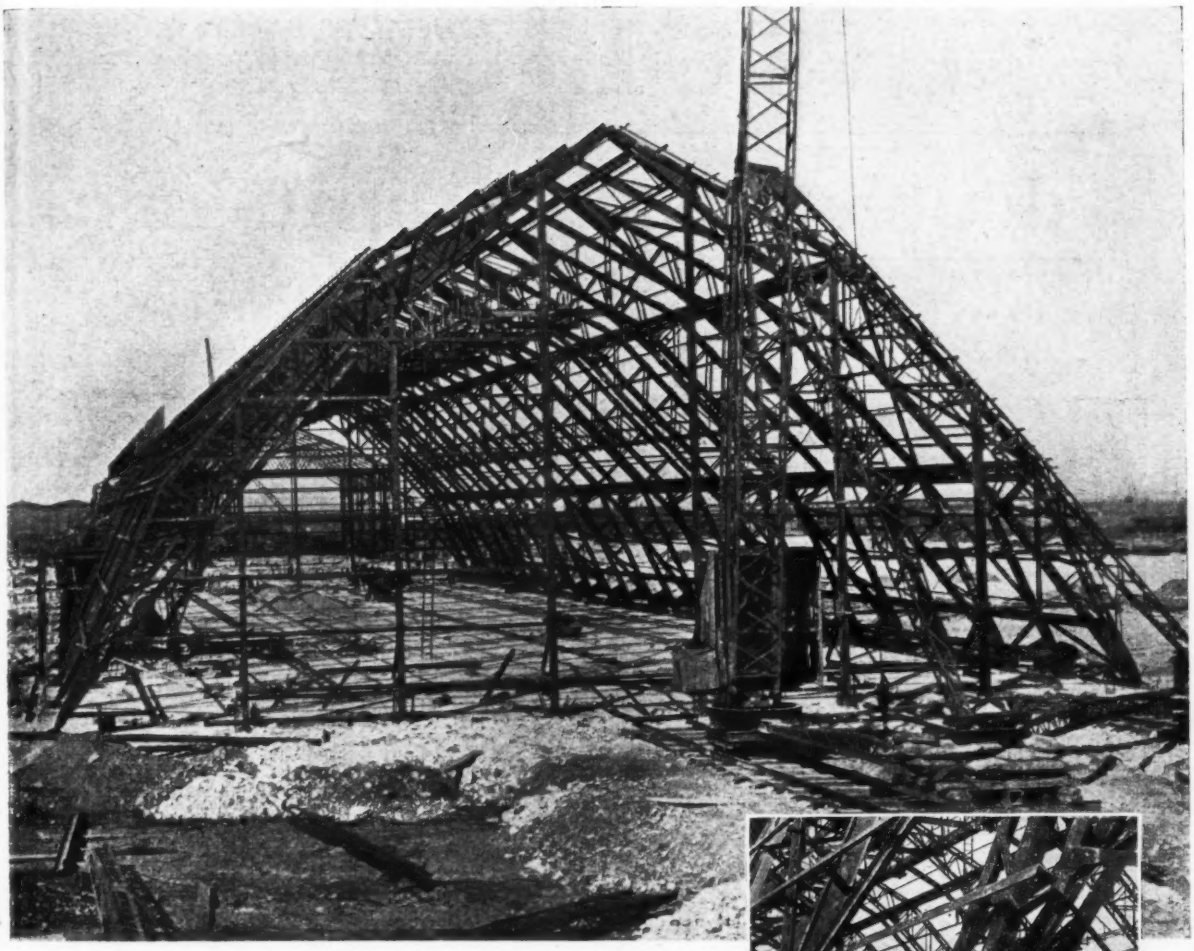

Joint Consulting Engineers: Sir Alexander Gibb and Partners, and Maunsell, Posford and Pavry.

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(Inset). A close-up view of the foot of a Main Arch Rib.

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ADVICE TO DEVELOPERS

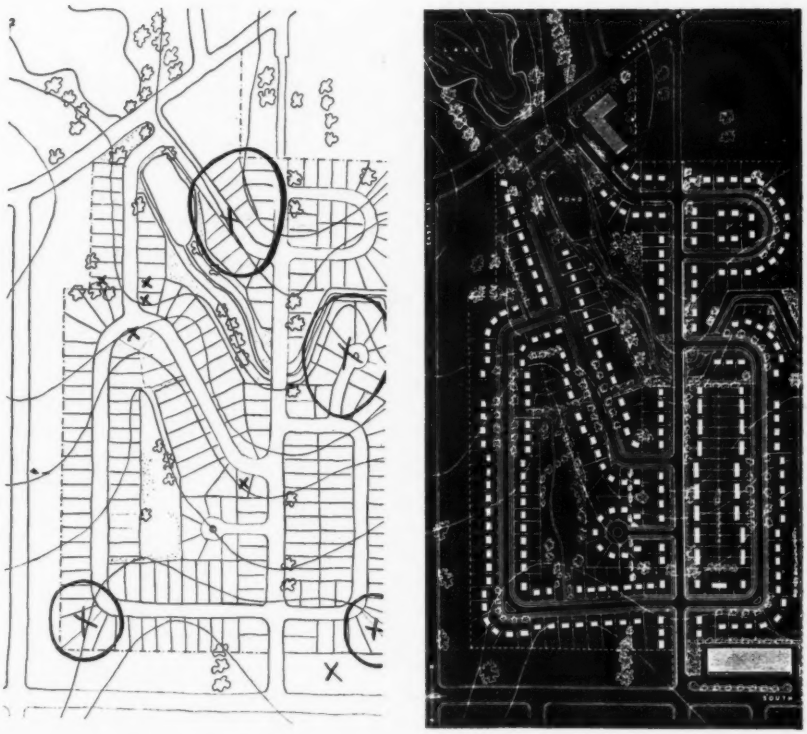
I referred in this column a week or two ago to the efforts Kent County Council are making to improve the standard of design for buildings erected by non-architect employing patrons. They have now, through their Planning Officer, produced a dozen panels showing how to mitigate the worst offences. However, while the intention is of the best, a great deal of the labour expended could be saved by simply exhibiting as advice to those about to develop, " Employ a good architect."

SUB-DIVIDING

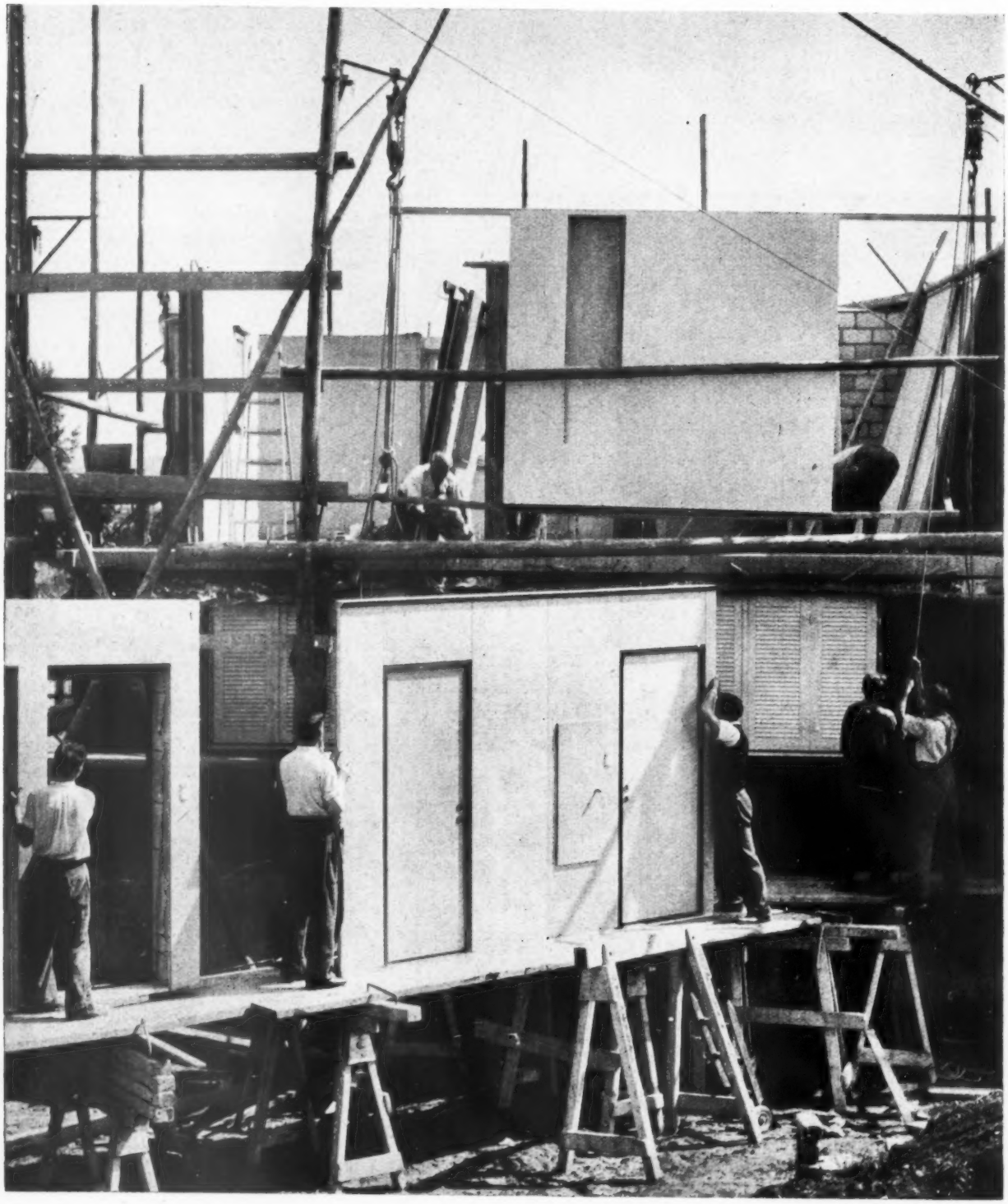
Professor Spence-Sales has, on behalf of the Community Planning Association of Canada, been tackling some aspects of the same problem as that covered by the Kent County Council efforts mentioned above. The Chairman of the Committee on Physical Planning of McGill University has prepared a very pleasantly produced booklet on " How to Sub-divide." In nice red, blue, yellow and stippled pages the history of suburban development is examined. Then step-by-step the reader is taken through the processes by which the planner arrives at his proposals, ending up in a suburban lay-out without a grid-iron pattern. One thing the whole process seems to make clear is that though one goes through all the right motions the habitual has got to be pretty bad to be worse than the improved.

*

In spite of a careful attention to all requirements, placing of open spaces, elimination of dangerous cross-roads, landscaping (described as " the final touch in the design "), the lay-out of the sewers, siting of houses, etc., etc., you can still end up with what can only be described by an ordinary sort of solution—at least to us in England where we are not so tortured by the grid-iron. I wonder whether, after all, the step-



From " How to Sub-divide ". (See note above). Left, an early stage of development, showing errors made in the design ; right, the final layout.



The Way to Build

By far the greatest expenditure in labour and materials in the production of a house is in the finishing and in installation of equipment—it is here that time slips away so fast. Consequently those new methods of house construction which only provide a new way of building the main shell are foredoomed to give, at best, a partial improvement in cost. Appreciating this, G. Schindler, the Swiss architect, set himself the task of developing a method of construction whereby the finishings and equipment were fully prefabricated. This has resulted in a remarkable speeding up of building operations and a complete transformation in the nature of a building site and, indeed, in the nature of building labour, too. The photograph above, showing partition units being hoisted into position for houses in Zürich indicates the simplicity of the system, which has met with considerable success in Switzerland and other European countries, whose housing and building problems resemble our own. A full technical description appears on pages 347-350.

by-step method is really the best way to achieve a fine piece of planning or design. But perhaps there may be something in this brochure that will illuminate some of my weaker Canadian brethren.

GRUMBLE OF THE WEEK

The first housing site in Peterlee New Town has been formally opened. At the ceremony a speech by the Minister of Town and Country Planning (who was unable to be present) was read on his behalf by his Parliamentary Secretary. It is fully understood that the purpose of such a speech is to strike a confident and encouraging note, and the Minister's remarks chiefly consisted of fulsome tributes to all the people to whom this enterprise owed its beginning, ranging from the chairman of the Development Corporation, through the chairman of the Coal Board, the Ministry's regional controller and the representative of the miners, to the members of the local Rural District Council.

*

Throughout the whole speech, however, no mention was made of town-planners or architects, or of the work they have done and still have to do, just as though a new town was something that simply grew at the behest of an assortment of officials and didn't have to be designed by anybody. The profession is used to this sort of treatment from some politicians, but it expects Dr. Dalton to know better.

COALS TO NEWCASTLE

Among our exports (or should it be "re-exports"?) I am astonished to discover a timber house being shipped to, of all places, the USA. There are many architects who are yearning to clothe their delightful brick boxes with the charming silver grey of the cedar shingle. How galling to discover that these same shingles are being returned from whence they came, or near enough.

*

If this surprising achievement results in the increase of import permits for cedar shingles, no one will complain, and in any case Colts, the manufacturers of this fine export, can congratulate themselves that they must have what it takes. Or is it devaluation?

ASTRAGAL

The Editors

INCENTIVE SCHEMES

THE Anglo-American team's report on Building in America emphasised (as did the reports of several other teams) the keenness of the individual operative over there, and the vital part that he plays in the struggle for increasing productivity and for the progressive reduction in costs. American conditions are admittedly very different from British. When the British workman is urged to adopt American methods and attitudes he may, not unreasonably, retort, "All right, if you guarantee me American wages." So how can the vicious circle be broken?

At one time—especially in 1946—"payment by results" was advocated for the building industry as an untried (in peacetime) and probably infallible panacea. As, at that date, building labour productivity was notoriously low, the idea had a considerable plausibility. It was argued that if rewards were geared to results, output would soon improve. Experience has shown that this over-simplifies the issue; as indeed, the union leaders pointed out in a rather crude way at the time. Many factors besides the level of monetary reward affect the productivity of the building worker, both objective (like the supply of materials) and subjective (like the general "mood of the country" or the fact that the foremen are more skilled or more tactful than before). Incentives schemes as a cure-all must go the way of all cure-alls.

Nevertheless, they have been tried out over the last four years and the results have not been valueless. It seems that on jobs where an incentive scheme is working smoothly, ouput is up, costs are down and quality is, if anything, above the average. This will not of course satisfy the chicken and egg critic, who will still want to hear whether these (comparatively rare) jobs where incentives schemes are 100 per cent successful are not specially favoured, and thus the cause rather than the consequence of any successes that are achieved. But perhaps this objection is less important than it now seems. The ultimate purpose of incentives schemes is to raise output, and, if possible, to raise output all round. The way chosen to do this is the incentive scheme. But the main point of the scheme may be not so much its intrinsic value as a stimulus, but the fact that its very existence improves the planning of the job and the relations between management and labour.

Much has still to be learnt before the incentives schemes can be pronounced to be even a moderate success, but at least it is certain that they have not been a vicious and empty failure. Where they are succeeding costs are coming down and work is being done with greater satisfaction to employer and worker alike. But what of the smaller jobs where incentive schemes are rarely applied or the maintenance work where they are practically unknown? One of the chief problems of the industry is the improvement of the worse (which are often the smaller) units, and here some stimulus other than an incentive scheme is needed.

To be concluded.

THE NEW HOUSE OF COMMONS

MOH

Water Main Economies

The MOH has issued a circular to authorities concerned asking for economy in the use of cast-iron pipes for water mains. It is pointed out in this circular that the demand for cast-iron pipes is heavy and that, although the output is greater than it has ever been, it is insufficient to meet all demands in good time.

The Minister's attention has been drawn to instances where water undertakers laying water mains for supplies to new housing sites have required mains to be provided on both sides of every road within the sites, irrespective of their width or of the traffic expected to be carried. The Minister recognizes that, with the object of keeping maintenance costs as low as possible, there is much to be said for this practice, which enables service pipes to be laid entirely under footpaths or grass verges, and so obviates the breaking-up of the carriage way for house connections, repairs or renewals. But the practice of providing a double line of mains on housing estates can, in the Minister's view, be justified only where roads are intended to carry a considerable volume of traffic. In other cases, if it is desired to avoid breaking up the carriage way for the provision of service pipes or for the maintenance or renewal of the mains, it is considered that an adequate result can be achieved by arranging for the main to be laid on one side of the road, with cross-connections to common service pipes of small diameter serving groups of houses on the other side.

The practice of providing common service pipes on housing estates is long established. The Minister has received no information to indicate that it has led to any serious difficulties. The fact that the houses are in one ownership will facilitate the collection of water rates and the execution of repairs.

The Minister, therefore, urges all local authorities and water undertakers to observe as much economy as possible in the use of cast-iron pipes. A general practice of requiring two lines of main on all new housing roads might increase demands for housing schemes by as much as 75 per cent. An increase on this scale could be met only at the expense of the schemes of rural dater supplies that are being put in train throughout the country to supply houses which at present have no piped water supplies, and to meet agricultural requirements.

RESTAURANT

in GROSVENOR GARDENS, S.W.1.
designed by JAMES CUBITT and PARTNERS

The Polonia Restaurant at 27, Grosvenor Gardens formerly occupied the adjoining premises, but due to the expiry of the lease, the owner was forced to move. The new premises were in a dilapidated condition and unsuitable for conversion into a restaurant.

The main entrance

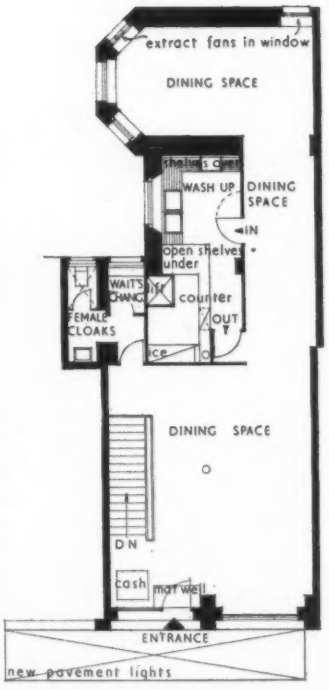
Left, the ground floor, dining room and staircase to basement. Below, the exterior illuminated sign

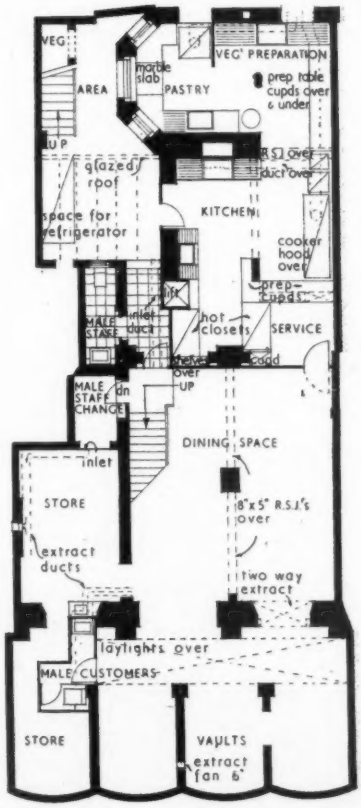
RESTAURANT

in GROSVENOR GARDENS, S.W.1.

designed by JAMES CUBITT and PARTNERS

Ground floor and basement plans [Scale: $\frac{1}{8}$" = 1'0"]





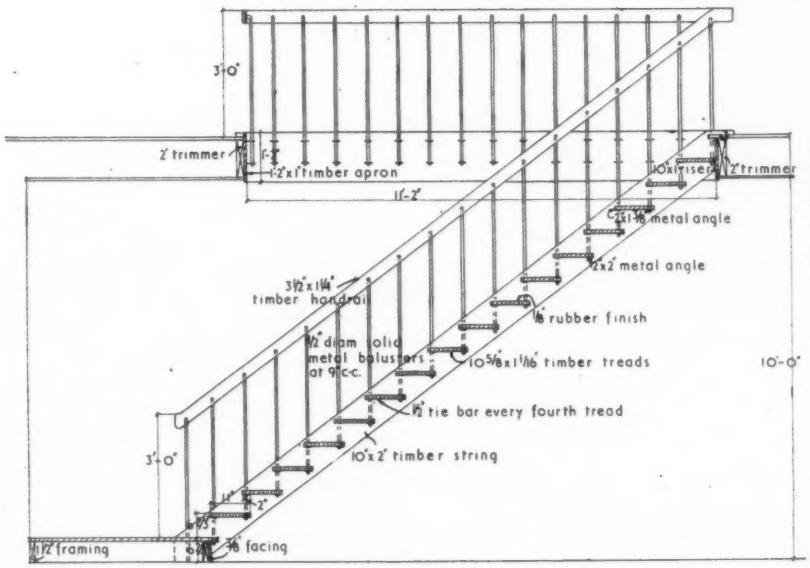
PLAN.—Planning problems were mainly concerned with the kitchens and service arrangements, which occupy a small and awkward part of the premises. The kitchens are cut in two by one of the main load bearing walls and chimney stacks. It was only possible to widen the existing opening slightly and the positions of the downstairs and upstairs serveries was determined by the relative sizes of the two halves of the kitchens. In order to obtain as much seating as possible it was decided to open up the old coal cellars and create an atmosphere suitable to their nature. To give a feeling of lightness in the basement the staircase is designed without risers. The front of the restaurant is kept as open as possible to give the diners a view of the street.

FINISHES.—The Victorian stonework of the exterior is painted dark green. The upper windows have lettering which is silhouetted at night by lamps behind reeded glass. Below the main window a flower rack

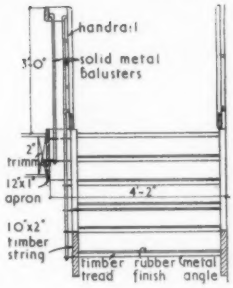
Below, basement dining room converted from old coal cellars. Right, main staircase and basement dining room.

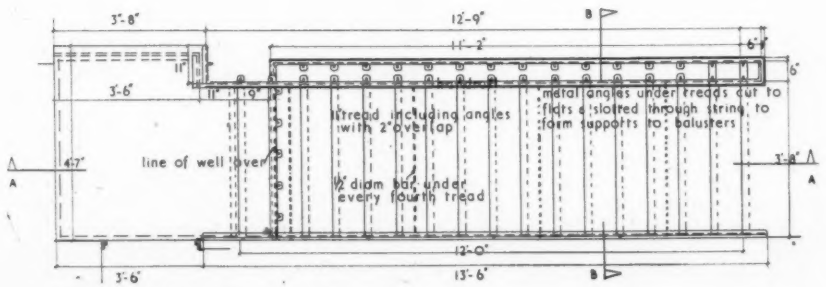
is constructed with a mahogany frame and aluminium slats cut with holes cut to receive flower pots. The illuminated sign is of sheet steel with a tubular steel framing.

Section A-A

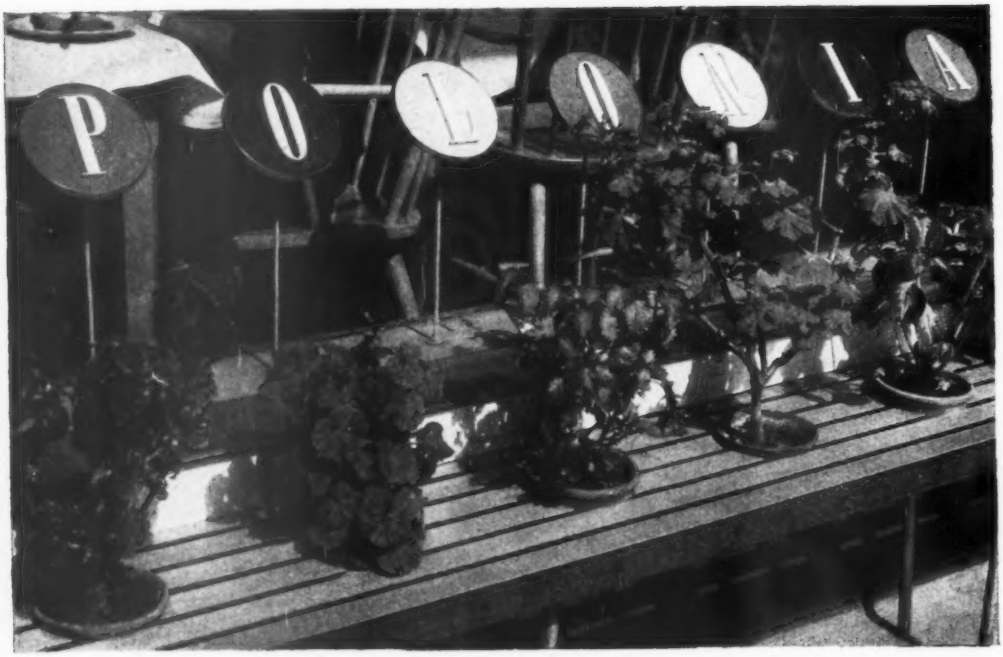


Section B-B





Plan of staircase [Scale : ¼" = 1'0"]



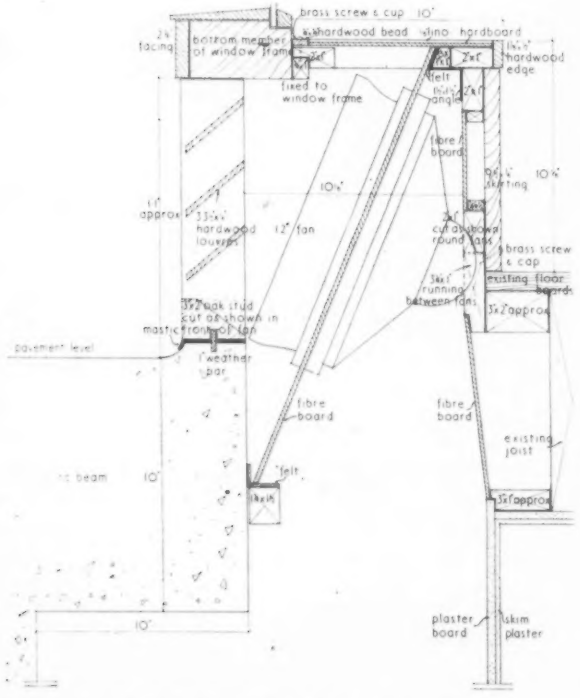
Left, the main ground floor window with alumininum shelves for flower pots below which are extract ventilation louvres. Below right, the facade to Grosvenor Gardens.

RESTAURANT

in GROSVENOR GARDENS, S.W.1.
designed by JAMES CUBITT and PARTNERS

SERVICES.—An electric service lift connects the basement and ground floor serveries, which, together with the office, are served with an internal telephone system. There is one ventilation extract point from the basement dining room, which discharges through the stallboard and there is a fresh air inlet duct from the back yard.

The general contractors were A. Cameron, Ltd.



Section through main window stallboard [Scale : 1½" = 1'0"]

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TECHNICAL SECTION

From the photograph above, it would be difficult to believe that this attractive block of flats in Switzerland was largely prefabricated and was erected in 3 months. This was made possible by the building system of the Swiss architect, G. Schindler. With his system, it is the internal linings, finishes and equipment which are prefabricated, not the external cladding. This is a sound principle, since these aspects of building normally require a disproportionate amount of labour. Not only is this method of building speedy, but it could help to overcome the widespread prejudice which exists concerning prefabrication, since the architect is left quite free to preserve individuality in his design.

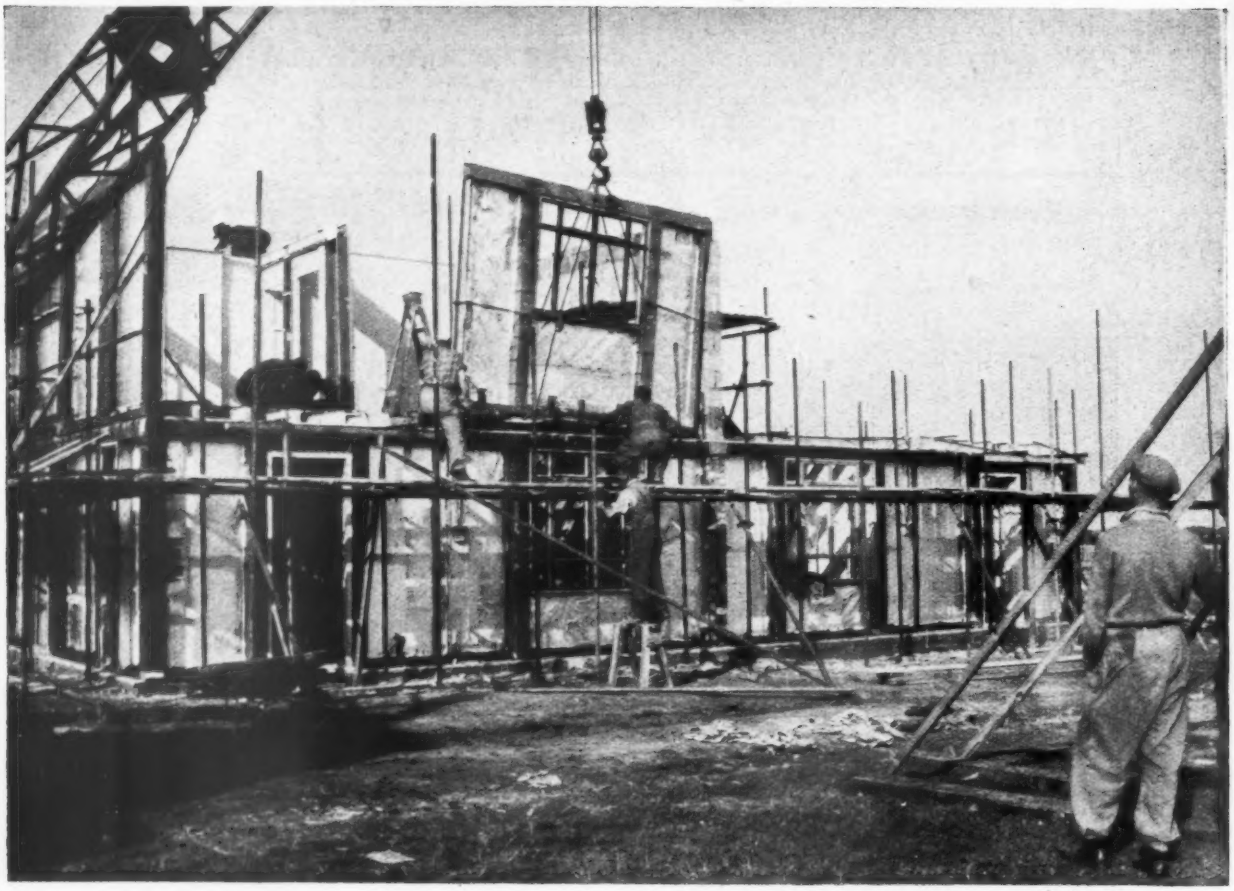


Fig. 1

A NEW METHOD OF BUILDING

Since the war we have, in Great Britain, carried out an enormous experiment in new methods of building houses. We started with the "prefabs" (emergency housing programme), and then there were the BISF houses and the "Airey Rural" houses, which were built in tens of thousands. At the start of the year we had built 157,100 emergency houses and about 120,000 so-called permanent houses by new methods of construction. Opinions differ as to the merits of these houses, but the vast majority of their occupants are quite unanimous that they are warm, dry, convenient to run, well equipped, and people like them well enough. Thanks to the efforts of the BRS and the Burt Committee in vetting the proposals in the early stages, they are technically adequate, and the vast majority of them should call for no undue expenditure in maintenance. Regarded to some extent as a supplement to the houses built by traditional methods, they have probably served a useful purpose, especially in the period immediately following the war, when the traditional industry was experiencing all sorts of difficulties in regaining its tempo. Despite the numbers of non-traditional houses which are giving useful service, it must be admitted, nevertheless, that this very large experiment has so far been only a partial success. It was hoped that industrial technique applied to the production of houses would enormously speed up the processes of manufacture and erection, and that costs would ultimately be reduced. Unfortunately these hopes have not been realized. There has been some speeding up of parts of the erection process, and the best of the non-traditional houses show a useful decrease in labour requirements, but they have not so far proved a powerful instrument in reducing costs, and very few are cheaper than traditional houses. It was fortunate that the opportunity to obtain positive knowledge from this vast experiment was not lost, and the results of painstaking investigations were published by the Chief Scientific Adviser's Division, MOW (now building Operations Research Unit, BRS). A careful analysis was made in these investigations of the way in which labour and material costs were built up in the production of non-traditional houses in comparison with traditional. As a result of these analyses the reason for the partial success of the non-traditional houses became evident and can be stated quite briefly. In the vast majority of cases the new methods of house construction were confined essentially to new ways of producing and erecting the main structural shell, and the walls in particular. Traditional methods were used for the finishings and installation of accessories. Some of the non-traditional houses required more labour in finishing than the traditional houses. Unfortunately by far the greatest expenditure in labour and cost in the production of a house is in the finishing and accessories, and it is here that time slips away so fast. Consequently the new methods of house construction which only provided a new way of building the main shell were foredoomed to give at best a partial improvement in labour and cost. This, in fact, is where we stand in Great Britain at this moment.

It is often profitable to find out how things are developing in other countries, for we certainly have not a monopoly in new ideas in Great Britain. One of the most interesting developments is that of the Swiss architect G. Schindler, of Zürich. Mr. Schindler approached the housing problem on a purely logical basis from the start. He noted that the greatest expenditure in labour and cost of housing is incurred in the finishing and installation of equipment, and he set himself to develop a method of construction whereby the finishings and equipment were fully prefabricated in the factory. He was fortunate in arousing the interest of one of the leading builders in Switzerland, and this firm, Messrs. E. Göhner, applied themselves to the practical realization of the project. The combination was a good one, because Messrs. Gohner had already a good insight into the principles of mechanized production of building elements in very highly organized joinery factories. This was a happy partnership, and the practical results obtained in the early Swiss developments were successful from the very start. Unfortunately from the point of view of the rapid development of the method, Switzerland is the one country of Europe which has only a modest housing demand and no slums to clear, so that the opportunities in that country are strictly limited. Nevertheless the economy of the method has been positively established in Switzerland, and the quality of the resulting buildings placed beyond any doubt. It is worth noting here that the general standard of finish and equipment in building in Switzerland is very high indeed, probably much in advance of anything we can aspire to in the United Kingdom in these days of austerity.

In view of the limited opportunities for development in Switzerland, Mr. Schindler

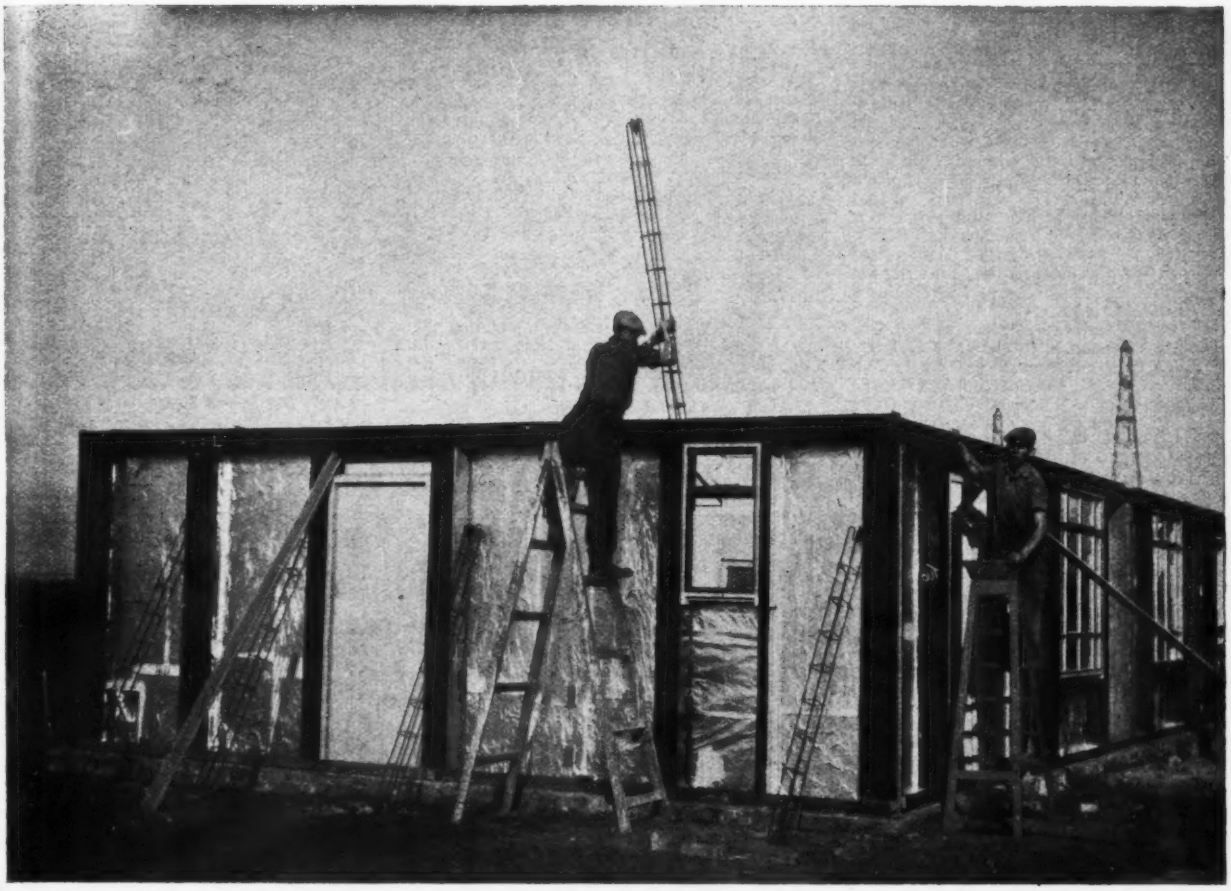


Fig. 2

has introduced his method into a number of other countries, and is building in France and Belgium as well as in Great Britain. The basic system remains the same in all countries, but variations are introduced to meet the conditions of materials supply and type of building demanded in the different countries.

In its essentials the Schindler system is simple. It consists of large factory-built internal panels, with doors hung, and windows glazed and fully decorated. All plumbing, electrical and heating services are fully finished and incorporated in the panels, so that the only work on the site is to make a few connections at the margins of the panels. The panels comprise partitions and internal wall units, and the inner leaf of external walls, together with ceiling panels. They are in principal full room size, so that jointing is only necessary at the room boundaries. The inner linings are framed up on box-like members, so that when the panels are assembled in position the frame elements act as shuttering in which reinforced concrete columns and beams can be cast. The ceiling panels act as shuttering for reinforced concrete floors. The sequence of site erection is then as follows: Erect panels for a complete storey. Couple up the lighting, heating and plumbing services. Drop pre-formed reinforcement cages into columns and beam casings. Concrete the frame members. Concrete the floors, and the storey is then finished. As soon as the concrete has developed its strength the next storey is erected to an identical sequence. As soon as the external wall panels are erected, the external cladding of brickwork, rendered block or whatever is the local preference can be quickly run up and the building is then complete.

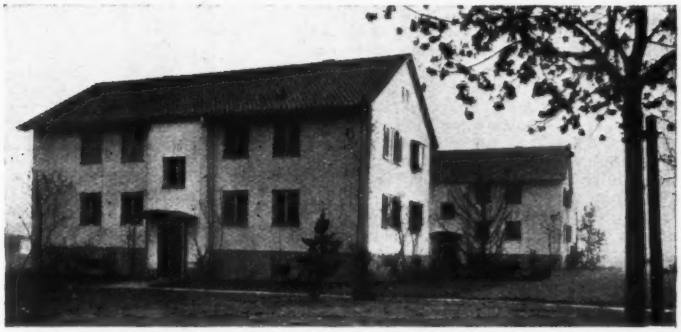


Fig. 4.

Fig. 5.

The simplicity of the system can easily be appreciated from photographs. Fig. 1 shows external wall panels being fixed in houses in Southern England. The backs of the panels are visible and the frame members show clearly. The inner lining is backed with aluminium foil. Fig. 2, also of the same houses, shows column reinforcement being dropped into the column shuttering. Fig. 3* shows partition units being hoisted for houses in Zürich. It will be noted that the hoisting tackle is light and simple for the panels are never very heavy. Fig. 4 shows two blocks, each of four flats, erected at Zürich. When finished they look exactly similar to any other comparable building in the neighbourhood.

Fig. 5 shows a prototype block of four flats erected at Kingston in England. The panels for these flats were made in Switzerland, shipped to England fully decorated, uncrated and inspected at a factory at Uxbridge, and sent to Kingston by lorry, where they were assembled with no decoration whatever. One panel only was damaged in England, and this by sheer carelessness.

Fig. 6 shows a block of Schindler dwellings nearing completion in the outskirts of Paris, and Fig. 7 is of a house in Belgium. Fig. 8 is a typical Swiss development of small detached houses.

The question will naturally be asked, "What is the future for this and similar systems in Great Britain?" There is all the force of logic behind the development, and successful housing in several countries to show that it is not merely theoretical. The speed of completion, which reflects the very real economy of labour in finishing, is established beyond any doubt. To make it a financial success in Great Britain needs a well-organized factory and a drastic approach to economy in material. The process of manufacture of the panels is well suited to mechanized joinery factories, and we should not lack the means of production in this country. The systems call for a readjustment of ideas which is not easy for the building industry. The first reaction of the British industry is to exclaim in horror at the idea of sending fully finished and decorated panels to the building site. It is invariably pointed out that they will be handled by gangs of men with filthy hands, and that the plumbers and electricians will ruin anything that the erecting gangs leave unspoilt. Actually, as the Swiss experience shows, the erecting gangs are only handling clean, fully decorated panels and have nothing on which to soil their hands, and the plumbers have only a few connections to make with a spanner. If it is insisted that all components of building must of necessity be dumped in the mud on the building site, and that the idea of co-ordinating manufacture and erection is chimerical, then no advance in technique is possible. Equally, of course, a factory has to be jigged to make the panels. A considerable range of panels can be made on a modest range of jigs, but the range is limited. Similarly, it is necessary to secure that the whole output from the factory is taken up, and for a reasonable period of time, so that the overheads are spread over a sufficient number of houses. To sum up, it seems reasonably certain that we shall see a good deal of this form of construction in the future. All the efforts which have been made to analyse the results of our post-war ventures into non-traditional house construction point irresistibly to the conclusion that the principle is correct. It is meeting with success in its country of origin and in other Continental countries so why not here? It is, moreover, a logical development of a trend which has been in evidence for a long time; we now use a factory-made door, stair or window. A few people, greatly daring, have brought the door and its frame together in the factory. All we are now thinking about is to bring the door, its frame and the partition together in the factory.

* See page 340

Fig. 6.

Fig. 7.

Fig. 8.

INCENTIVES SCHEMES

By Ian Bowen

Incentives schemes, or Payment by Results schemes (as we used to call them) have been introduced into many housing jobs during the last few years. The results of the schemes can now be reviewed, and the MOW has issued a report on incentives schemes operated by local authorities' direct labour forces. This is a useful report, which helps to lift the questions raised by incentives schemes from the realm of the *ex-cathedra* (and sometimes prejudiced) generalisations of industrial and political pundits into that of factual enquiry.

Of the 158 direct labour forces engaged on new housing in England and Wales, 96 operated incentives schemes. With 34 schemes, all the men on the job were included in the bonusing; on 57, the scheme was restricted to the main trades only; and on 5, to one or two trades. Two conclusions may be drawn from these figures; first, that despite all the difficulties of introducing and operating a scheme, bonusing is undoubtedly practical—if it were not it is hardly likely that 60 per cent. of the local authorities would have continued to employ it; and secondly, it is equally clear that bonusing cannot easily be applied universally.

Few local authorities succeeded in bonusing maintenance work which was found (not surprisingly) to present special difficulties. The Ministry of Works is stated to be "exploring this problem," which may, of course, prove a profitable expenditure of energy; but it might be more desirable to use all the available resources in extending the application of the schemes to new work.

The report states that half of the schemes were operated in conjunction with joint production committees, usually composed of members of staff and operatives of the direct labour forces. This is most important; anyone who has studied the slow growth of effective "joint consultation" in industry generally, will recognize that this is a good proportion; moreover, to place so vital an item of business on the agenda of a joint production committee might well vitalize such a body, and lead to far greater efficiency than would result from the mere act of bonusing.

According to the Anglo-American industrial team's reports, there appears to be far less "productivity consciousness" on the part of rank and file workers (and perhaps on the part of management too) in this country, than in the USA. The evidence is so unanimous that it can hardly be explained by pointing out that the USA is a capitalist country to a very high degree. After all Britain's economy is still mainly capitalist. The greater productivity-consciousness of the American worker arises from a variety of causes, one of which is the existence of much higher hourly wages, which in itself generates productivity-consciousness (as well as being the result of it) and another important cause is the freer flow of ideas from workers to management in many industries. The incentives schemes in building have the double merit of raising wages, and so making each hour's labour more precious, and of stimulating the co-operation of labour and management on the issue of production itself.

The report states that of the 96 local authorities operating incentive schemes, 83 estimated that the schemes had resulted in increased output. Only 32 authorities provided detailed evidence to support their estimates, and the average estimated increase in output on bonused work for these authorities was 27 per cent. Eighty of the local authorities operating schemes claimed that labour costs had been reduced.

There were large variations, of course, in the results achieved on different sites, and similarly there were variations in the amounts of bonus earnings paid. Craftsmen generally earned from 3½d. to 6½d. per hour as bonus, while labourers tended to earn rather less, between 3d. and 5½d. per hour. The average (about 5d. per hour) represented between 15 and 20 per cent. of the men's basic wages.

It must be observed that the share of the saving paid to the men as bonus also varied very considerably from one scheme to another. On the average the men received about 75 per cent. of the savings, but on some sites as much as 100 per cent. was allowed. But it does not follow that the men receiving the largest percentage had the chance to earn most bonus, because this would also depend upon the target levels agreed. It has to be emphasized that incentives schemes are not now, as in the war years, on any uniform basis, so that there need not be any resemblance between the targets adopted on one site and adopted on another. This lack of uniformity is designed to allow fully for variable site conditions, supply of materials and so forth. But an inevitable consequence must surely be that local bargaining-power begins to play a part both in the targets agreed, and in the percentages allocated to the men. Indeed, as the report points out, there is not even uniformity in respect of the intervals at which bonuses are paid. The commonest method is the weekly payment, but monthly, or even quarterly, bonuses are not unknown.

The acceptance of these variations no doubt facilitates the adoption of bonusing schemes under difficult local conditions but it is, therefore. very difficult to compare the results. In general the local authority schemes followed the principles accepted in the industry; that is to say, targets were agreed for particular operations or sections of a house, although the targets might vary considerably, but in some cases, the bonuses, were related to the total cost of a housing scheme, and paid only on its completion.

Undoubtedly it proved easier to operate bonusing on the larger schemes. Thus, where 100 or more men were employed by an authority on new housing, 80 per cent. or more of that labour was on jobs where incentive schemes operated, while for authorities with up to 50 men the average was less than 45 per cent. There may indeed be some minimum size below which it is rarely practicable to work out an "agreed target" in accordance with the practice of the industry; this will not, of course, always apply. But the requisite intelligence, integrity, initiative, and even measuring technique, and the requisite staff, are not to be found on *all* small jobs throughout the country. For this reason alone, bonusing can never be a universal aid to productivity.

At the same time, the report makes it clear that bonusing can, in many instances, go a long way towards improving organisation, increasing output and reducing costs. The local authorities which were applying bonusing were those with the larger labour forces (employing an average of 100 men each, as against the 59 of those not using incentives), and there seems to be little doubt that the possibility of working such a scheme is one of the "economies of scale" which the large employer enjoys.

The range of "size of employer" considered in this study was not very great, since few local authorities had as many as 200 men on new housing work. There are no colossi in this group, employing 500 or 1,000 men on a single type of work. Nevertheless, the report does confirm the view that the relatively large "firms" (in this case authorities) are on the average more efficient (no doubt with many important individual exceptions).

On this vital point, the report is, perhaps unavoidably, inconclusive. "Where the schemes were operated with enthusiasm" it states (statistics of enthusiastic schemes not being given), 'output was substantially increased, cost reduced, and the men's earnings supplemented." Cost must have been reduced on such schemes as provided incentives to work faster, but which were those schemes? This is a question that by its nature can only be answered on the basis of opinion, not of measurement, since it is necessary to guess what the output would have been had no such schemes been operating.

Direct and exact measurement of reduced cost is thus not possible and the conclusions of the report are cautiously phrased.

Industrial psychologists have frequently pointed out that incentives more often stimulate the good producer to produce even more, but fail to encourage the worst producer to come up to the average. For reasons of this kind, it may not be true that incentives schemes, of themselves, will much reduce costs. But that does not mean that they are useless and it may well be that in our society they are a necessary first step towards better management as well as better industrial self-discipline. Any step which directly interests the operative in his output, and in the method of work that he uses daily, is a step forward.

The incentives schemes evidently offer men already a sufficient monetary reward to get them taken seriously. The chance to earn 15-20 per cent. extra on time wages is not to be lightly neglected. In this respect the basis of the schemes adopted by the local authorities seems reasonably sound. The present report omits mention of the quality of the work done, but earlier reports suggested that the quality of work done under bonusing was higher rather than lower than that done elsewhere.

Thus, while this well-drafted report leaves many issues undecided, it does suggest very powerfully that the persistence of many local authorities with these schemes has created a better atmosphere on many jobs, and has served to better labour-management relations, and encourage a more careful attitude towards the appropriate use of labour, which is for Britain, at any rate, a scarce and valuable commodity.

Announcements

Mr. E. P. Lawrence, Director and General Manager of the Merchant Trading Company, Limited, has resigned. His duties have been taken over by Mr. Kenneth R. Slade, who has been associated with the company since it was formed.

The Bakelite Ltd. private exhibition, which will be visiting Scotland for the first time at the beginning of November, has been designed to show applications for plastics in a wide range of industries, including shipping, as well as to demonstrate the specific properties which have prompted their adoption. The exhibition will be held in the Exhibition Hall, The Engineering Centre, 351, Sauchiehall Street, Glasgow, C.2. On Nov. 7 it will open from 2 p.m. to 6 p.m.; on Nov. 8 and 10, from 10 a.m. to 6 p.m.; and on Nov. 9, from 10 a.m. to 8 p.m. Visitors will be admitted on the production of a business card.

The Lead Technical Information Bureau has moved its address to 90, Ebury Street, SW1. The telephone number (Sloane 0474) is unaltered. Applications for publications may be addressed direct to Lead Industries Development Council, Eagle House, Jermyn Street, SW1.

CURRENT MARKET PRICES OF MATERIALS

BY DAVIS, BELFIELD AND EVEREST, Chartered Quantity Surveyors

Rates of Wages last rose on July 3, 1950, and are now as follows :—

	Craftsmen.	Labourers.
LONDON DISTRICT		
Within 12 miles radius	3s. 0d.	2s. 6½d.
From 12-15 „ „	2s. 11½d.	2s. 6d.
LIVERPOOL and DISTRICT	3s. 0d.	2s. 6½d.

GRADE CLASSIFICATIONS	A	A¹	A²	A³
Craftsmen ..	2s. 10½d.	2s. 10d.	2s. 9½d.	2s. 9d.
Labourers ..	2s. 5d.	2s. 4½d.	2s. 4d.	2s. 3½d.

Davis

F.R.I.C.S., F.I.Arb.

Prices vary according to quality and the quantity ordered.

Those given below are average market prices and include delivery in the London area, except where otherwise stated, but do not include overhead charges and profit for the General Contractor.

CONCRETOR

Cements

		6 tons and over	In 80-ton freights F.A.S. Safe Wharf in River Thames London Area.
* Portland to B.S. 12	per ton	65/–	62/6
* Rapid hardening to B.S. 12	„	71/–	68/6
† Aquacrete water repellent	„	96/6	
Snowcrete....		(Minimum 1-ton lots) 241/6 (paper bags free)	

Prices for Portland Cement include for delivery to Charing Cross.

* In non-returnable paper bags or jute sacks charged at 12/– net per ton or 8d. each net per bag in lots of less than 1 ton.

* In returnable jute sacks charged at the rate of 35/6 net per ton of cement or 1/9½ net per sack in lots of less than 1 ton. Credit on return at 1/6 net per sack.

* In returnable cotton sacks charged at 66/8 net per ton or 3/4 net per sack.

† Supplied in packages charged 12/– per ton extra.

Aggregate and Sands, etc. (Full Loads)

1½″ Unscreened ballast to B.S. 882, Table 5	per yard cube	16/4
⅜″ (Down) Washed, crushed and graded shingle to B.S. 882, Table 2	per yard cube	14/5
¼″ Sharp washed sand to B.S. 882, Table 3	per yard cube	16/9
Brick hardcore	per yard cube	6/3

(For Sands for Bricklaying and Plastering, *see* respective trades)

Reinforcement

Home trade maximum basis price for mild steel rods to B.S. 785, ⅝″ diameter and upwards, ex mills delivered to station or siding	per ton	£22 1 0
Extras for :—		
Under ⅝″ to ⅞″ diameter	per ton	15 0
Ditto ⅞″ and over ⅝″ diameter	per ton	£1 2 6
⅝″ and over ⅞″ diameter	per ton	£1 10 0
⅞″ and over ⅝″ diameter	per ton	£1 17 6
⅝″ and over ⅞″ diameter	per ton	£2 5 0
⅞″ and over ½″ diameter	per ton	£2 12 6
½″ diameter	per ton	£3 0 0
Under ½″ to ⅜″ diameter	per ton	£4 10 0

Fabric Reinforcement

	16.35 lb.	9.32 lb.	4.71 lb.	1.83 lb.
Steel wire mesh fabric to B.S. 1221, Part A per yd. super.	6/0⅝	3/6	1/9¾	1/1⅞

BRICKLAYER

Common Bricks

Third stocks	per 1,000	112/8
Rough stocks	per 1,000	132/8
Mild stocks	per 1,000	184/8
Sand limes	per 1,000	89/–
Phorpres pressed Flettons	per 1,000	90/–

Facing Bricks

Hand-selected sand limes	per 1,000	124/–
Phorpres rustic Flettons	per 1,000	110/–
Stocks, first hard	per 1,000	219/8
Stocks, second hard	per 1,000	209/8
Southwater pressed sandfaced reds	per 1,000	228/6
Dorking pressed sandfaced multicoloured facings	per 1,000	196/6

BRICKLAYER—(*continued*)

Engineering Bricks

Lingfield engineering wirecuts	per 1,000	165/–
Southwater engineering No. 2 (second quality red pressed)	per 1,000	226/–
*Blue pressed bricks to B.S. 1301	per 1,000	160/–
* Haulage extra		336/–

Glazed Bricks

		Best quality £ s. d.	*Seconds* £ s. d.
White, Ivory or Brown, 9″ × 2½″ × 4½″			
Headers	per 1,000	39 10 0	37 10 0
Stretchers	per 1,000	40 0 0	38 0 0

Prices for glazed bricks + 27½%, seconds.
+ 32½%, bests.

Limes and Sands

		1 ton lots.
†Lime, greystone, to B.S. 890	per ton	90/6
†Lime, chalk, ditto	per ton	90/6
*Lime, hydrated, ditto	per ton	95/6
Washed pit sand to B.S. 1200	per yard cube	16/9

* Including paper bags.

†Hire of jute sacks charged at 1/6 and credited at 1/6. If left, charged at 1/9.

Sundries

10 s.w. gauge galvanized butterfly type wall ties to B.S. 1243	per 1,000	87/3		
Wall ties, galvanized, 8″ × ¾″ × ¼″, to B.S. 1243	per cwt.	71/6		
Damp proof course slates :		Imported	Welsh	
Size 14″ × 9″	per 100	54/–	67/6	
„ 14″ × 4½″	per 100	26/3	31/6	
Hessian base bitumen damp course to B.S. 743	per yard super	4/11		
		9″ × 3″	9″ × 6″	9″ × 9″
Terra-cotta airbricks	each	1/–	2/1	5/3
Galvanized cast-iron airbricks ...	each	2/7	4/2	6/10
Galvanized cast-iron hit-and-miss ventilators	each	2/8	5/1	6/6

Buff terra-cotta chimney pots	1′ 0″ each	1′ 6″ 5/8	2′ 0″ 6/11	2′ 6″ 9/10	3′ 6″ 12/11	5′ 0″ 28/7	48/5

Wall reinforcement supplied in standard rolls containing 25 yards lineal

‡2″ wide black japanned	per roll	3/–
‡2½″ wide black japanned	per roll	3/9

‡ Greater widths pro rata 2½″ price, carriage paid on orders of £7. Discount for quantities.

Partitions, etc.

		2″	2½″	3″	4½″
Breeze to B.S. 492	per yard super	3/2	3/8	4/2	5/6
Hollow clay to B.S. 1190 (keyed)	per yard super	3/3	3/6	4/2	5/3
Moler (keyed)	per yard super	7/6	9/–	10/–	11/3

PAVIOR

2″ coarse gravel for paths	per yard cube	17/6
¾″ fine ditto	per yard cube	19/–
Clean granite chippings to B.S. 1201, Table 4 (in 5-ton loads)	per ton	37/6
Red quarry tiles, 6″ × 6″ × ¾″, to B.S. 1286	per yard super	11/6
Ditto 6″ × 6″ × ½″, to B.S. 1286	per yard super	10/–
Buff quarry tiles 6″ × 6″ × ¾″, to B.S. 1286	per yard super	13/6
Ditto 6″ × 6″ × ½″, to B.S. 1286	per yard super	11/–
Hard red paving bricks, 2″	per 1,000	336/9
Ditto 1½″	per 1,000	319/9

DRAINLAYER

Clay Land Drain Pipes to B.S. 1196

		3″	4″	6″
Pipes in 12″ lengths	per 1,000	148/-	191/-	396/-

Salt Glazed Stoneware Pipes and Fittings

	Orders for 2 tons and over	Standard List + Orders under 2 tons 100 pieces upwards	Orders under 2 tons less than 100 pieces
Seconds Quality	35% less 15%	55% less 15%	65% less 15%
Best Quality	35%	55%	65%
British Standard Quality	42½%	62½%	72½%
Tested Quality....	60%	80%	90%
British Standard Tested	67½%	87½%	97½%

Cast Iron Drain Pipes and Fittings

Socket and spigot pipes to B.S. 437 :—

Weight per 9 ft			Size	9 fts. per yd.	6 fts. per yd.	4 fts. each	3 fts. each	2 fts. each
1	1	17	4″	16/8	18/4	29/4	22/5	18/1
2	0	1	6″	24/11	29/5	47/1	37/7	28/4
3	3	21	9″	45/-	58/8	101/2	77/3	

Tonnage Allowances :—
Orders up to 2 tons nett.

		4″	6″	9″
*Bends (short radius) as Fig. No. 4	each	6/3	13/-	40/-
*Single junctions as Fig. No. 18	each	11/-	22/6	69/-
*Intercepting traps as Fig. No. 33	each	30/-	50/-	123/-
*Gullies ordinary trapped "P"	each	14/6		
*Extra for 4″ vertical back inlet	each	4/3		
*Grease gully trap	each	121/-		

* These prices are subject to 86% plusage.

Channels in Brown Glazed Ware.

Standard list + same discounts as "Best" quality salt-glazed Stoneware pipes.

White Glazed Channels

Orders under 20 pieces. Standard list +10%.

**Manhole covers and frames*

		Size of load	Unit price
C.I. coated double triangular manhole cover and frame, 22″ dia. clear opening to B.S 497, Grade A	each	35 tons	110/-
C.I. coated circular manhole cover and frame, 22″ dia. clear opening to B.S. 497, Grade B.	each	5 tons	60/-

		Size of load	Single seal Flat type	Double seal Flat type
Coated manhole cover and frame to B.S. 497, Grade C, 24″ × 18″	each	1 ton	27/-	40/-
Galvanised ditto, 24″ × 18″	each	1 ton	42/-	60/-
Coated manhole cover and frame, to B.S. 497, Grade C, 24″ × 24″	each	1 ton	38/6	58/6
Galvanised ditto, 24″ × 24″	each	1 ton	62/-	89/6

* Subject to plus 15% on galvanized.

MASON

Yorkstone

Building quality Robin Hoed and Woodkirk Blue Stone.

Blocks scrappled, random sizes	per foot cube	8/11
Add for blocks to dimension sizes	per foot cube	1/1 (each dimension)
Templates with sawn beds, edges rough (up to 4 ft. super and not over 2′ 6″ long)	per foot cube	10/-
Templates with sawn beds, sawn one edge,	per foot cube	11/6
Price f.o.r. Yorkshire, railway rate to London Station per ton. (Minimum 4-ton loads)		45/-

Bath Stone in random blocks

Monk's Park	per foot cube	5/7
St. Aldhelm Box Ground	per foot cube	6/7

Delivered on rail at South Lambeth station.

Portland Stone in random blocks, average 20 feet

Whitbed	per foot cube	6/4½

Delivered on rail at Nine Elms Station.

MASON—(*continued*)

Artificial Stone to B.S. 1217

4½″ × 4″ Sill, sunk, weathered, throated and grooved	per foot run	2/6
9″ × 3″ Ditto	per foot run	3/6
2″ × 12″ Coping, weathered and twice throated	per foot run	3/3
3″ × 12″ Ditto	per foot run	4/9
5″ × 12″ Saddleback coping, twice throated	per foot run	7/6
6″ × 12″ Ditto	per foot run	8/6

SLATER, TILER AND ROOFER

Slates

		£ s. d.
16″ × 10″ Best Bangor Slates to B.S. 680	per 1,000 actual	43 0 0
20″ × 10″ Ditto	per 1,000 actual	63 0 0

Tiles

Hand-made sandfaced 10½″ × 6½″ red roofing tiles	per 1,000	250/-
Machine-made sandfaced best red tiles with continuous nibs, 10½″ × 6½″	per 1,000	215/-
Berkshire hand-made red Pantiles, 14½″ × 10″	per 100	93/-
Concrete plain tiles, 10½″ × 6½″	per 1,000	141/-
Ditto interlocking tiles, 15″ × 9″	per 1,000	480/-

Asbestos-cement

*6″ corrugated sheets, grey	per yard super	4/10

*Prices are for minimum two-ton loads, and are subject to 2½% discount.

Felt

Reinforced roofing felt to B.S. 747	per yard sup.	1/3½
Roofing felt (1-ply bitumen) to B.S. 747, Part I	per yard sup.	1/1½
Bituminous hair felt to B.S. 747, Part II	per yard sup.	2/1½

CARPENTER AND JOINER

Wall boards

	Up to 5,000 sq. ft.	5,000 to 15,000 sq. ft.
¼″ Imported Fibre board (per 100 sq. ft.)	37/6	36/-
	Up to 5,000 sq. ft.	5,000 to 10,000 sq. ft.
¼″ Imported Hardboard (per 100 sq.ft.)	46/6	45/-
⅛″ Imported Hardboard(per 100 sq. ft.)	62/6	61/3

*⅛″ Semi compressed asbestos cement flat building sheets, grey....	per yard super	1/9
* ¼″ Ditto	per yard super	2/6

* Prices are for orders of 2 tons and over. Subject to 5% trade discount.

Sundries

"Sisalkraft" standard grade	per yard sup.	-/7½
"Sisalkraft" subsoil grade	per yard sup.	-/4½

Timber

Softwood for Carpentry (average price)	per std.	£75
Softwood for Joinery (ditto)	per std.	£80
Tongued and Grooved Softwood Flooring (ditto)	per std.	£78
First Quality English Oak (ditto)	per ft. cube	25/-
Teak (ditto)	per ft. cube	45/-

Standard Panelled and Glazed Wood Doors to B.S. 459, Pt. I

Type 4	size 2′ 6″ × 6′ 6″ × 1¾″	each	42/10
Type 2 × G	size 2′ 6″ × 6′ 6″ × 2″	each	51/6
Type 4 × G	size 2′ 6″ × 6′ 6″ × 2″	each	57/9

In lots of from 1 to 11 inclusive.

Standard E.J.M.A. Wood Windows

INP 26	size 2′ 6″ × 1′ 5½″	each	28/11
4V 36	size 3′ 6″ × 7′ 10″	each	125/3
IV 40	size 4′ 0″ × 2′ 2½″	each	35/4
3T 46	size 4′ 6″ × 5′ 11½″	each	125/1
4T 50	size 5′ 0″ × 7′ 10″	each	142/2

Standard E.J.M.A. Kitchen Units

No. 1	size 3′ 0″ × 3′ 6″ × 1′ 7″	each	180/4
No. 2	size 3′ 0″ × 3′ 6″ × 1′ 7″	each	122/7
No. 4	size 3′ 0″ × 1′ 9″ × 1′ 7″	each	109/3
No. 5	size 3′ 10″ × 1′ 9″ × 1′ 7″	each	95/5
No. 7	size 6′ 6″ × 1′ 9″ × 1′ 7″	each	172/3

STEEL AND IRONWORKER

		£	s.	d.
Basis price for rolled steel joist sections, 5″ × 4½″ to 16″ × 6″ in 10 ft. to 50 ft. lengths	ex mills per ton	20	13	6
Extra for sizes :—				
9″ × 7″	Add per ton		5	0
6″ × 3″	,, ,,		7	6
3½″ × 3½″, 4″ × 4″, 5″ × 3″, 10″ × 8″, 12″ × 8″, 14″ × 8″, 16″ × 8″, 18″ × 6″, 18″ × 7″, 18″ × 8″, 20″ × 6½″, 20″ × 7½″	,, ,,		10	0
5″ × 2½″, 22″ × 7″	,, ,,		15	0
4″ × 2½″, 4″ × 3″, 24″ × 7½″	,, ,,	1	0	0
3″ × 3″	,, ,,	1	5	0
4½″ × 1½″	,, ,,	1	10	0
4″ × 1½″	,, ,,	2	10	0
3″ × 1½″	,, ,,	3	10	0
Basis price for angles	ex mills per ton	19	13	6
,, ,, ,, tees	,, ,,	20	13	6
,, ,, ,, solid steel columns	,, ,,	21	13	6

All delivered Station or Siding.

PLASTERER

Plaster and Cement

		1-ton loads	6-ton loads
Thistle (browning) to B.S. 1191, Class B	per ton	121/6	105/3
Gypstone to B.S. 1191, Class B	per ton	80/6	ex Works, Kent.
Paristone (haired) to B.S. 1191, Class B	per ton	83/–	
Ditto (unhaired)	per ton	80/6	
Sirapite (coarse) to B.S. 1191, Class C	per ton	115/6	96/3
Ditto (fine) to B.S. 1191, Class C	per ton	123/6	104/3
Keene's Pink to B.S. 1191, Class D	per ton	166/9	
Keene's White to B.S. 1191, Class D	per ton	172/3	
Cullamix (Tyrolean Finish), 1-ton lots and upwards	per ton from	161/– to 194/6	

Sundries

Sharp washed sand to B.S. 1198				per yard cube	16/9
Cow Hair				per cwt.	84/6
Expanded metal lathing, 9′ 0″ × 2′ 0″ × ⅜″ mesh × 24 gauge				per sheet	5/4
	Up to 149 yards	150-299 yards	300-599 yards	Over 600 yards	
½″ Plasterboard (base board) per yard super	2/2	1/10	1/9	1/8	
Galvanized lath nails				per cwt.	106/3
Hessian Scrim cloth in 100-yard rolls, 3½″ wide				per roll	6/8

Wall Tiles

The following prices are subject to 7½ per cent. addition :

Standard quality white glazed 6″ × 6″ × ¼″	per yard super	18/6
Coloured enamelled bright glazed, 6″ × 6″ × ¼″	per yard super	25/–
Eggshell glazed 6″ × 6″ × ¼″	per yard super	26/3

PLUMBER

Lead and Copper

3½ lb. and upwards milled sheet lead in quantities of 5 cwts. to 1 ton in sheets to B.S. 1178		per cwt.	148/9
Allowance for old lead delivered to merchant or manufacturer		per cwt.	119/9
Hot rolled copper sheeting in 5-cwt. lots (4′ × 2′ sheets), to B.S. 899	23 wire gauge	per cwt.	270/–
Ditto	24 wire gauge	per cwt.	273/–
Zinc sheeting in 2-cwt. lots	14 gauge	per cwt.	170/9

Cast Iron Goods

Percentage Adjustment on List No. 3100 A.B. 1/2/40.

Rainwater Goods (painted or unpainted)	*Plus* 75%
Soil goods (coated or uncoated)	*Plus* 75%

Mild Steel Rainwater Goods

		Standard List
Gutters	(under 100 lengths)	Less 25%
Pipes and Fittings	(,, ,,)	Less 25%

Asbestos-Cement Rainwater Goods

The following prices are subject to 12½% trade discount.

Orders over £30 are subject to 17½% trade discount.

PLUMBER—(*continued*)

Rainwater Pipes.

Prices are for 6′ 0″ lengths, but 10′ 0″ lengths are available in 2″, 2½″, 3″ and 4″ diameters at same prices. Short lengths up to 2′ 0″ are charged as 1 yard. From 2′ 0″ to 4′ 0″ charged as 1½ yards. From 4′ 0″ to 6′ 0″ charged as 2 yards. Over 6′ 0″ charged as 10′ 0″

	Diameter				
Round Pipes per yard run	2″	2½″	3″	4″	6″
	2/6	2/10	3/5	4/8	9/8

Gutters.

Short lengths of gutter up to 2′ 0″ charged as 1 yard ; from 2′ 0″ to 4′ 0″ as 1½ yards, and over 4′ 0″ as 2 yards.

	3″	4″	4½″	5″	6″	8″
Half round gutters per yard run	1/9½	2/2	2/3	2/7½	3/8	4/6
Ogee gutters per yard run	—	2/7½	2/10	3/5	4/2	5/4½

INTERNAL PLUMBER

Lead pipe in coils, 5 cwts. and upwards, to B.S. 602				per cwt.	150/–
Lead soil pipe				per cwt.	153/–
Drawn lead traps with brass screw eye, 6 lb., to B.S. 504	1″	1¼″	1½″	2″	
S. trap	each	5/10	6/9	8/4	11/11
P. trap	each	5/1	5/7	6/11	9/9
Extra for 3″ deep seal " S " trap	each	1/5	1/8	1/10	2/4
Extra for 3″ deep seal " P " trap	each	–/11	1/2	1/2	1/8

Screwed and Socketed Steel Tubes and Fittings for Gas, Water and Steam, etc.

Fittings and flanges and tubes ordered in long random lengths are subject to the following trade discounts :—

	½″ to 4″		
Tubes :		Fittings :	
Class B	36¼%	Lightweight	17½%
,, C	27%	Heavyweight	10%
Galvanized Class B	9¼%		
,, ,, C	plus 3¼%		

Flanges :

	½″ to 2″	2½″	3″ to 4″
Lightweight (Table D)	41½%	37½%	51½%
Heavyweight (Table E) Plus	14¼% less	27½%	42½%

Copper tubing to B.S. 659 and 1386 Basic price per lb. 1/11½

GLAZIER

Sheet Glass, cut to size (ordinary glazing quality), to B.S. 952, Section A.

For quantities exceeding 500 ft. super.

18 oz.	per foot super 4½d.
24 oz.	per foot super 5½d.
32 oz.	per foot super 9½d.

Polished Plate glass, ordinary substance, approximately ¼″, to B.S. 952, Section A.

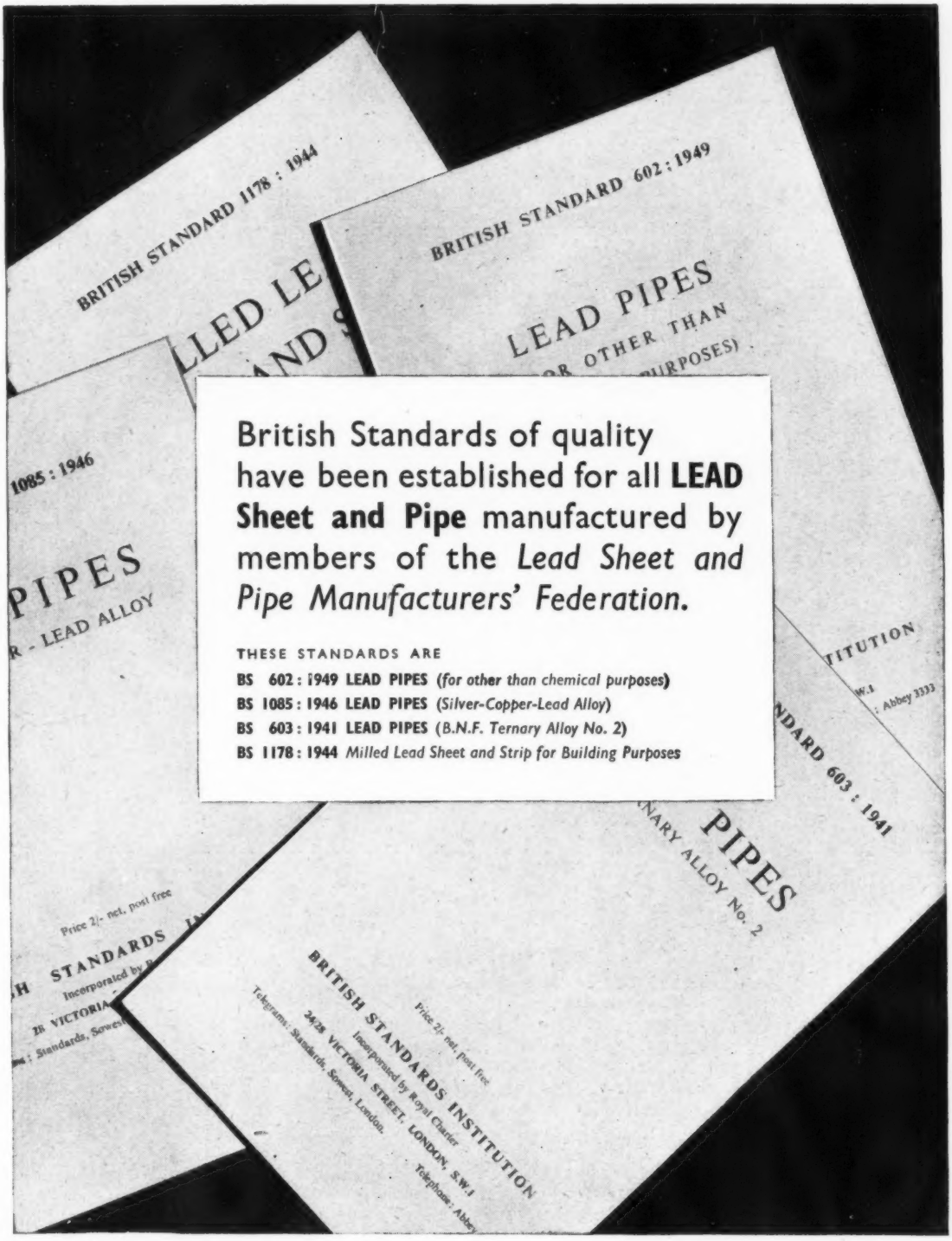
In plates not exceeding :		Glazing quality	Selected glazing	Silvering quality
2 ft. super	per foot super	2/8	2/10	3/4
3 ft. super	per foot super	3/–	3/5	4/1
5 ft. super	per foot super	3/2	3/10	4/7
*45 ft. super	per foot super	3/9	4/1	5/7
*100 ft. super	per foot super	4/5	5/7	7/2

* Extra sizes, *i.e.*, plates exceeding 100 ft. super or 160 in. long, or 96 in. wide, at higher prices.

¼″ figured rolled and cathedral, to B.S. 952, Section B—untinted	per foot super	7½d.
7/32″ or ¼″ rolled plate, ,, ,,	per foot super	8½d.
7/32″ or ¼″ rough cast, ,, ,,	per foot super	8½d.
¼″ Georgian wired cast, ,, ,, Section D	per foot super	10d.
¼″ Georgian wired polished plate ,, ,,	per foot super	3/10d.
¼″ wired cast ,,	per foot super	9½d.

PAINTER

White ceiling distemper	per cwt.	24/6
Washable distemper	per cwt. from	90/–
Ready mixed white lead paint (best), semi-gloss, per 32 lb.	per gallon	53/6
Aluminium paint (best quality)	per gallon	32/–
White enamel paint	per gallon	42/–
Oil stain (scumble)	per lb.	3/4½
Varnish (outside quality), copal oak	per gallon	30/–
,, ,, ,, general oak	per gallon	26/–



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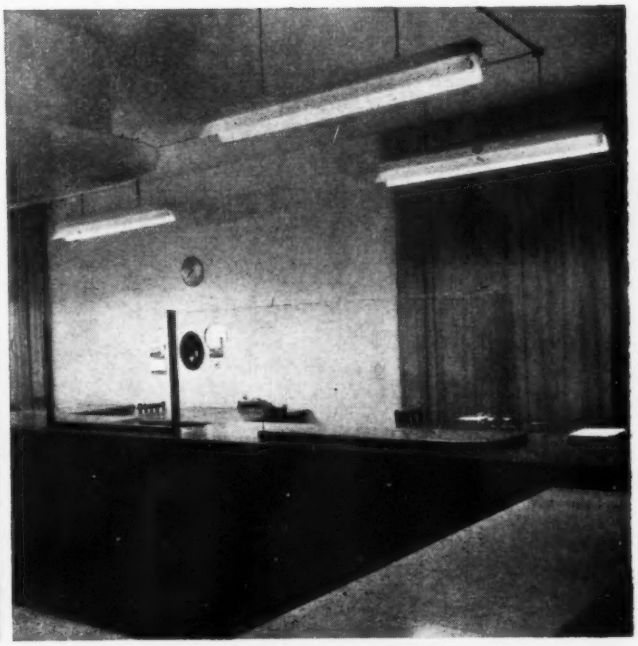

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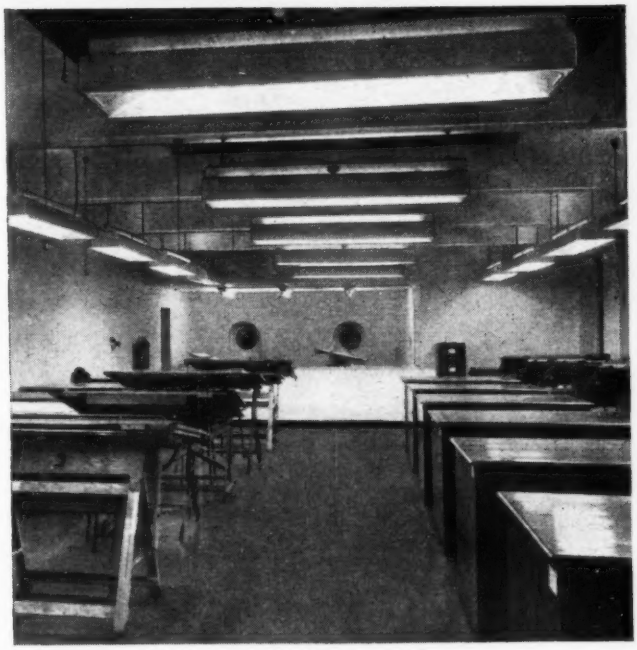

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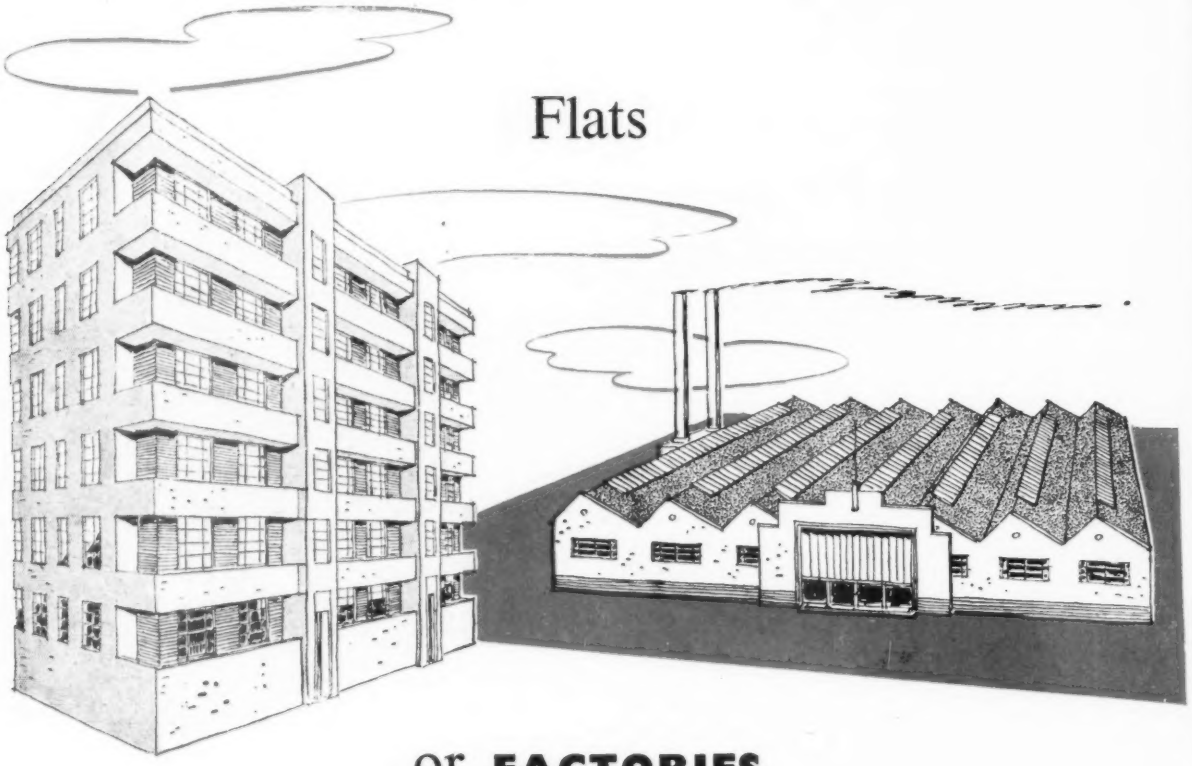

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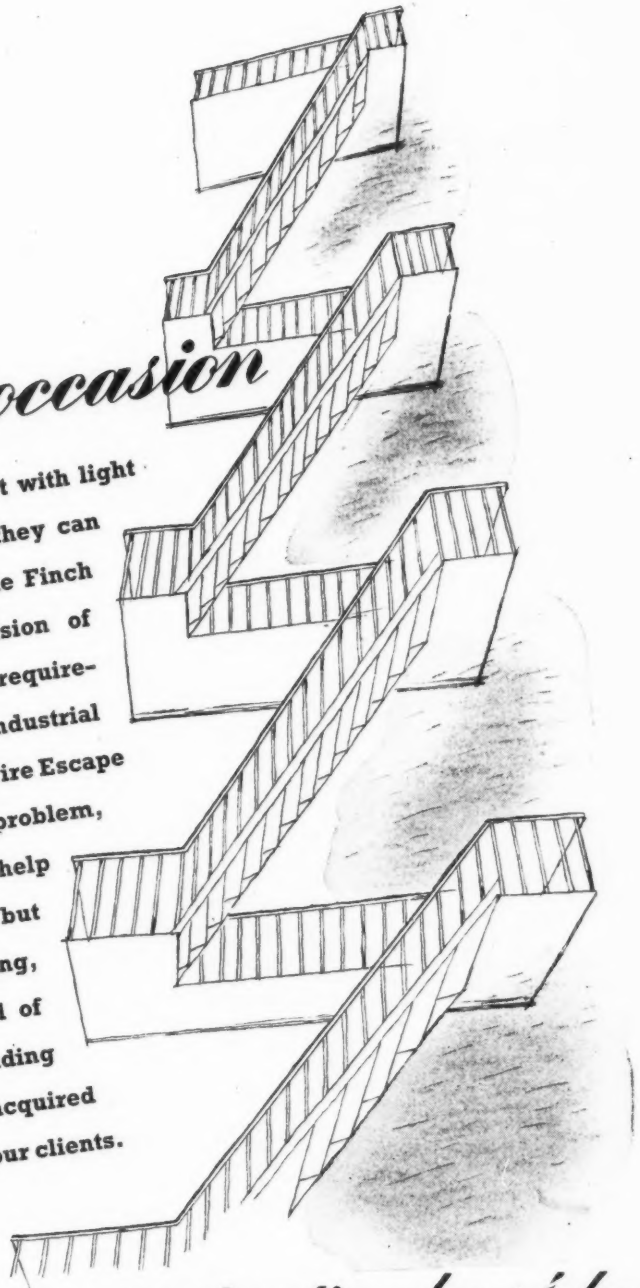

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