THE ARCHITECTS' JOURNAL

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The Editor will be glad to receive MS. articles and also illustrations of current architecture in this country and abroad with a view to publication. Though every care will be taken, the Editor cannot hold himself responsible for material sent him.

THURSDAY, DECEMBER 1, 1938. NUMBER 2289 : VOLUME 88

PRINCIPAL CONTENTS

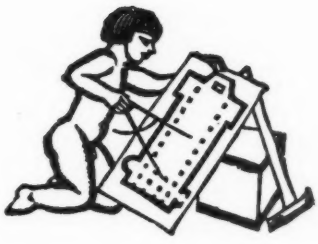
AT THE ENTRANCE TO THE SUEZ

ONE of the lions which form part of the Australian War Memorial at the entrance to the Suez Canal. The architect was Sir Bertram Mackennal.

NEW YORK WORLD FAIR

A progress photograph of the New York World Fair. The numbered sites, showing various stages of construction, are : 1. United States Federal Building, with the Halls of Nations extending toward the lagoon, all partly enclosed over steel ; 2. The Court of Peace ; 3. Canada, foundations started ; 4. Argentina, foundations started ; 5. Norway, foundations started ; 6. Eire, foundations started ; 7. Roumania, up in steel ; 8. U.S.S.R., foundations completed ; 9. Czechoslovakia ; 10. Japan, foundations started ; 11. Belgium, steel partly enclosed ; 12. Sweden, foundations started ; 13. Turkey, foundations started ; 14. Lagoon of Nations ; 15. France, steel being erected ; 16. Brazil, foundations started ; 17. British Empire, steel completed ; 18. Italy, steel completed ; 19. Chile, foundations started ; 20. League of Nations ; 21. Portugal ; 22. Venezuela ; 23. Poland, foundations started ; 24. Netherlands, foundations started ; 25. Switzerland.

In the foreground are shown exposition buildings and those of private exhibitors, many in an advanced state and ready for interior decoration. The exhibition is to be opened next April. The estimated cost is $150,000,000.



MR. ROSKILL TAKES THE LID OFF

ON Monday, November 21, the R.I.B.A. was the scene of a great occasion. For the first time the building industry—components, organization and defects—was the subject of open discussion in the Institute.

In choosing the man to deal with so delicately stacked a pile of high explosive the Sessional Papers Committee served the profession well. They did not pick an architect. Mr. Oliver W. Roskill belongs to one of the newest callings. He is an industrial adviser. An economist, learned in all branches of technology and fully experienced in the building industry, he made an excellent compère, and from the start made it plain that feelings were not going to be spared.

Candour, and only candour, he decided, could begin to throw light on the enormous complication of old crafts and precise standardizations, old labour groups, new materials, price rings and æsthetics which now make up the building industry. Nor can his hearers have avoided the impression that, under this treatment, some aspects of the industry began to look queer.

Architects, if they had expected to hear of the foibles of their associates in the industry rather than their own, were disappointed at once. Mr. Roskill divided the industry into three groups of " partners," the manufacturers, the architects and the contractors (including labour), leaving building owners for later consideration. He began with architects : the designers and co-ordinators.

Architects, he maintained, had by now slid or been pushed into an impossible position. On all but the smallest of building work the qualities and the knowledge needed by an efficient architect could not conceivably be possessed by one man, and only doubtfully by a group. But Mr. Roskill did not stop at that. He pointed out some of the shifts by which architects now attempt to maintain an impossible position : the designs prepared by sub-contractors, prices asked for from sub-contractors on the basis of a rival's drawings, and reliance on the advice of a naturally biased development association for a particular product.

And then, widening his field, the lecturer considered the contractor and his relations with the architect. Building is coming nearer to factory assembly, but in most large building works the designer and the assembly engineer are " on different sides of the fence." This is clearly a vital point.

The architect as designer of a craftsmanship building *de luxe* was not concerned with the organization of building labour and method. Today with high labour costs and the repetitive form of many building details he must be closely concerned with it. It is significant that Mr. Roskill maintained that to see building method at its best one must go to a large speculative estate being developed by capable contractors without architectural control.

This need for closer collaboration over method between the executive partners does not mean, however, that the materials manufacturers can be left out of an enquiry into building economy. The majority of producers of materials have highly organized and technically efficient plants, but in Mr. Roskill's view they not only pay too little attention to the taste of the architect, but have had things too much their own way in matters of price. Cement, bricks, steel, plaster, paint, glass, metal windows, lead, copper tubes and cables are all subject to price agreements, and if the building industry is to stimulate consumption by lowering prices, the associations of manufacturers must collaborate—if not set the example.

The whole change over from heavy to light industries in manufacturing has been caused by " the average man " becoming the country's most important buyer. Luxuries—from motor-cars to lipstick—are now necessities. In the building industry a similar change over has hardly begun ; and the sections which have achieved it are those in which the influence of the architect is smallest.

In this, emphasized throughout Mr. Roskill's paper, architects can find more than enough to think about.

The building industry fulfills two demands : for investment goods—town halls and schools, and for its own kind of consumers' goods — principally small houses. Architects, still some senses at the top of the industry, have the best of reasons for trying to see that it delivers the goods as well as it possibly can.

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NOTES & TOPICS

THE NEXT TWENTY YEARS

THE first three papers of the new session at the R.I.B.A. have a quality in common which ought to be noticed. The President, on November 7, Mr. Oliver W. Roskill on November 21 and Professor Holford—yet to come—on December 5, get right down to the fundamentals of architectural and building methods, defects and organization.

*

This change of emphasis, if it is not just a coincidence, may have remarkable consequences.

*

In his Inaugural Address—always the architectural utterance most widely reported in the lay Press—Mr. Goodhart-Rendel confined himself to the ways in which public collaboration was most needed : to competitions, to giving the young men better chances and to warnings in advance of the demolition of notable buildings. But he also added :—

> It is not impossible that . . . mass-production may eventually absorb the major part of our country's architectural activity, and it will then be the duty of this Institute, even more than it is at present, to mould such mass-production into elasticity and into being accessible to new ideas.

MR. OLIVER ROSKILL

It was this last which seemed the central point of Mr. Roskill's candid survey of the defects of architects, builders and manufacturers in the building industry. He believed that for increased demand for buildings cost must be lowered ; and that to lower costs the industry must be changed to an organization more like that of the motor industry, with designers, suppliers and assembly engineers all " on the same side of the fence."

*

Later speakers pointed out two fallacies in this argument : that building largely makes " investment goods " and it is unlikely that by halving the cost of telephone exchanges and town halls, you will double your demand ; secondly, that housing needs—the nearest to " consumers' goods "—are already nearly supplied for those who can afford hire-purchase. But these criticisms do not spoil one of the best papers ever heard at the Institute.

PROFESSOR HOLFORD

And no one who knows Professor Holford doubts that another healthy shake-up is in store for us on December 5.

The headings of his paper which are now available : " Planning on a wider scale ; social science and social architecture. Civic design . . . as a symbol and focus of social achievements "—warn us that the self-satisfaction of a learned society is going to have a rotten evening.

*

Professor Holford is one of the few men in key positions who profess the sociological implications of the new architecture. What is more, he is lucky enough to have been able to show what he means in the Team Valley Trading Estate. A day spent in that valley beside Gateshead where 120 factories are now going strong will make it clear to anyone what he *does* mean.

WELLINGTON BARRACKS

The newest threat to London's architectural treasures that the Georgian Group are now called on to prevent has been sprung on the public in the usual sudden way : Wellington Barracks, we are told, as though it was a matter of little public interest, are to be demolished, because they are inconvenient.

*

It will be an appropriate turn of events if the Georgian Group succeeds in saving these fine Regency buildings as the Group was called into being partly as a result of the threat to Carlton House Terrace, and the two grace either side of St. James's Park to make a consistent whole that should on no account be spoilt.

*

Wellington Barracks is an elegant range of buildings, whose virtues have been none too clearly discernible under the coat of grey paint that the War Office has recently seen fit to paint it with. If it transpires that the Georgian Group's argument (that the necessary improvements could be adequately made by remodelling the plan behind the present façade) is not tenable, and the barracks *must* be rebuilt, may we at least hope for a cream-surfaced building of simple character ?

*

It is difficult to imagine a better material than Regency stucco as a background to His Majesty's foot-guards. It is certainly impossible to imagine a worse one than red brick in that situation.

TERRIBLE WARNING

Veteran national planner Sir Raymond Unwin received one more tribute last week, this time from Minister of Health Walter Elliot at a dinner of the Garden Cities and Town-Planning Association in London. Mr. Elliot pointed out that the phenomenon of congregating in great cities was not peculiar to this country. Sir Raymond's idea of satellite towns and group development was what we wanted ; it was necessary to plan not merely to preserve the countryside, but also for better living in the towns.

*

Do we know it ? But coming from the Minister of Health, repeated and published often enough, these simple truths may hit the public heart.

*

And the idea has reached Glasgow. A satellite town, built ten or twelve miles outside the city, was advocated recently by Mr. William Power in an address to the Glasgow Junior Chamber of Commerce. London, he said, was a " terrible warning " to Glasgow in town planning. The story spreads.

D.I.A.

The D.I.A. Annual Banquet at Grosvenor House, London, on Tuesday last week was disfigured by insipid

and dreary speeches. Although Lord Sempill, the President, had something to say, he said it with such long-winded earnestness that for all the interest he aroused he might just as well have recited the multiplication table.

*

The toast of "Design—Peace and Prosperity" was proposed by Sir Thomas Inskip. He had nothing to say, apart from some unpleasant things about Mr. Winston Churchill. He complained that designers always wanted a thing to be perfect before it was produced. As an afterthought he added that he believed beauty had something or other to do with design. One can only suppose that he had been invited as a sort of "last hope." Maybe everybody else invited to speak had refused.

*

The Swedish Minister in London, proposing the toast of "The D.I.A.," gave a prolonged and detailed account of the propaganda methods employed by a similar organization in Sweden. At least he dealt with solid facts: but they were perhaps a bit too solid for after-dinner consumption.

*

Sir Francis Joseph, who responded to the toast proposed by Sir Thomas Inskip, began with two funny stories and ended with the pious hope that people would not forget the great service the Prime Minister had rendered to Germany and his own country by concluding the Munich Agreement. It was during this speech that a prominent figure in architecture made the remark, unfortunately not loud enough to be heard *all* over the room, "I wish my nose would start bleeding so that I should have a decent excuse for getting out of this."

*

May I suggest to the D.I.A. that at future banquets they cut out speeches by people with great names and no ideas and allow the interesting collection of people who represent its membership to indulge in that almost forgotten but stimulating art—conversation?

MR. SPRAGG'S TWENTY-FIVE YEARS

Who is Mr. Spragg? Probably not more than two hundred members of the R.I.B.A. have any idea. The Institute since 1918 has risen from an antiquarian society (in public estimation) to a national institution. Mr. Spragg did a large share of the work and we do not even know his name. This is real greatness.

*

Mr. Cyril D. Spragg is Assistant Secretary of the R.I.B.A., and on December 10 will have been at the Institute for twenty-five years.

*

At Conduit Street for some time before the war, he returned after serving with the Queen's Westminsters, and a little later succeeded Mr. Godfrey Swan as Assistant Secretary. Since then the miracle by which Committees are induced to record decisions on relevant questions and thereafter find they have taken part in the coherent administration and development of a great society, has been largely achieved by Mr. Spragg. Executive, Finance, Practice and Competitions Committees and the Allied Societies' Conference have (among others) been guided by him. Anyone who has served on a committee, and knows the kind of letters received and what other committee-men say about them, will have some idea of this man's capacity for work.

*

Architects should take care to pay a tribute to Mr. Spragg next week. They probably will not hear of him again.

NOW THEN, OWN UP

I am informed that last week, on the bulletin board of the Harvard Club in New York, was pinned a letter, addressed thus in a delicate feminine hand:

"Young Architect
(who recently visited New Orleans),
c/o Harvard Club,
New York."

THE A.B.S. APPEAL

"Are Architects Mean?—Their President's View . . ."

This was a headline in the *Evening Standard* on Monday. And though an able journalist no doubt touched up anything Mr. Goodhart-Rendel did say, it is not the kind of headline any of us will like to see too often.

*

The article below was, of course, about the Architects' Benevolent Society and the President's Appeal for funds a month ago. It was not a well-informed article; the profession is not wealthy, and, thoughtless and improvident as they may be, architects are not mean.

*

But, gentlemen, appearances are sadly against us. Excluding the excellent results of the Birmingham Society's determination in the Birmingham area, under £150 has been so far obtained in subscriptions out of about 12,000 previous non-subscribers.

Most of us are being asked just now to help people in desperate straits abroad. But this must not prevent an adequate income being secured for the Benevolent Society.

*

The simplest way to do this is for non-subscribers to fill up the Banker's Order Form on this page. It will appear in the JOURNAL, somewhere, for the next few weeks.

*

A second way is for other Allied Societies to copy the example of Birmingham and have a local appeal. A third, for a hat to be passed round in each office—now.

*

The minimum wanted is £2,000 a year more, or 3s. 4d. per annum per so-far-non-subscribing architect. Not a vast sum.

ASTRAGAL

BANKERS' ORDER

NAME OF BANK .....

ADDRESS .....

.....

Please remit my Annual Subscription of £ s. d. to the account of the ARCHITECTS' BENEVOLENT SOCIETY at Lloyds Bank Ltd., No. 16 St. James's Street, London, S.W.1, now and also on the first of January next and following years until I cancel this Order.*

Signature of Subscriber .....

Address .....

.....

Date.....

*(*If it is not desired to send a subscription for 1938 the words underlined should be deleted*).

When completed, this form may be cut out and posted to the Secretary, The Architects' Benevolent Society, 66 Portland Place, London, W.1.

NEWS

POINTS FROM THIS ISSUE

NEW SCHOOLS FOR SOUTHAMPTON

The Southampton Education Committee has appointed Messrs. Marshall and Tweedy, FF.R.I.B.A., as architects for the new Boys' Senior School and new Girls' Senior School to be erected at Glen Eyre, Violet Road, Southampton.

NEW TOWN HALL FOR SUNDERLAND

The Sunderland Town Council has approved the promotion of a Bill in the present session of Parliament with the principal object of obtaining powers to use the West Park site for the construction of a new Town Hall and civic centre. The scheme is estimated to cost about £200,000.

LORD HORDER TO OPEN HEALTH CENTRE

Lord Horder has accepted the invitation of the Woolwich Council to open the new Woolwich Health Centre in Market Street on January 14.

PRESENTATION TO SIR RAYMOND UNWIN

At a dinner of the Garden Cities and Town Planning Association, held at Grosvenor House, W.1, last week, Sir Raymond Unwin was presented by Mr. Cecil Harmsworth with the Association's first Howard Memorial Medal.

Mr. Cecil Harmsworth said that Sir Raymond was among the earliest of Ebenezer Howard's colleagues and helpers. With him he planned Letchworth, the first garden city, and through the many following years he had given the best of his services to planning. It was not too much to say that all good planning, here or in other countries, had been influenced by the two pioneers.

Mr. Walter Elliot, Minister of Health, said : "We have got to plan to preserve our towns, and as I see in London and Edinburgh, we have got to plan to preserve the countryside around our towns. I was horrified when I came from the North to find the time Londoners spent in trains, attached like sides of bacon to a strap. The Londoner works two hours longer than anyone else—one at the beginning of the day and the other at the end of it. The present unplanned condition of our big cities has served to defeat improvements in road transport. Most of our towns need planning, and we want the advice of the most competent people to make sure that the amount of knowledge now available is applied."

Sir Raymond Unwin, in his reply, appealed to the Minister of Health to establish a National Planning Board. He said : "If you, sir, during your ministry, could establish for this country a national board or commission to study this problem of distribution, and to embody their findings in a master plan to serve as a guiding basis—not a strait-jacket, and if you could establish for this vast city a regional board to provide a basis and to give guidance and support to the hundred or more local planning authorities who are trying in vain to make a coherent plan out of the crazy patchwork which their areas represent in the Greater London region, you would have earned the gift of this medal far better than I have. The true purpose of planning does not lie in the imposition of restraints and restrictions, necessary, incidentally, as some of them may be. That purpose is to afford greater and wider opportunities for securing the right location of human activities, and for creating in our pleasant land an environment more appropriate than any which could possibly result from haphazard development ; and to foster a new and better order of life."

THE ARCHITECTS' DIARY

Thursday, December 1

ARTS AND CRAFTS EXHIBITION. *At the Royal Academy, W.1. Until December 3.*

HOUSING CENTRE, 13 *Suffolk Street, S.W.1. Octavia Hill Centenary Exhibition. Until December 22.*

ROYAL ACADEMY OF ARTS. *Distribution of prizes to the Students. 8 p.m.*

BRITISH COAL UTILIZATION RESEARCH ASSOCIATION. *At the Institution of Civil Engineers, Gt. George Street, S.W.1. "Aerodynamics of Domestic Fires." By Dr. P. O. Rosin. 6 p.m.*

INSTITUTION OF STRUCTURAL ENGINEERS (SOUTH WALES AND MONMOUTHSHIRE BRANCH). *Park Place, Cardiff. "Construction of the Junction Cut Swing Bridge at Barry Docks." By I. Powell. 7 p.m.*

WESTERN BRANCH OF SOUTH WALES INSTITUTE OF ARCHITECTS. *At the Deffet-Francis Art Gallery, Alexandra Road, Swansea. Lecture by Raymond Walker. 7 p.m.*

SOCIETY OF ANTIQUARIES. *Burlington House, W.1. "The Neolithic in Cyprus : Erimi and Khirokitia." By Dr. P. Dikaios. 8.30 p.m.*

Friday, December 2

FACULTY OF ARCHITECTS AND SURVEYORS. *Annual Dinner. At the Holborn Restaurant, W.C.2. 7 p.m.*

LIVERPOOL SCHOOL OF ARCHITECTURE SOCIETY. *Supper, to be followed by a film shown by L. Manthei.*

Monday, December 5

R.I.B.A., 66 *Portland Place, W.1. "The Next Twenty Years." By Professor W. G. Holford. 8 p.m.*

CHARTERED SURVEYORS' INSTITUTION, *Gt. George Street, S.W.1. "The Improvement and Development of a Seaside Resort." By D. Edwards. 6.30 p.m.*

Wednesday, December 7

L.C.C. CENTRAL SCHOOL OF ARTS AND CRAFTS. "*Greek Architecture* (3000–146 B.C.) : *Origin and Evolution of the Corinthian Order.*" *By Sir Banister Fletcher. 6 p.m.*

INSTITUTION OF STRUCTURAL ENGINEERS (LANCASHIRE AND CHESHIRE BRANCH). *College of Technology, Manchester. "Modern Motor Roads." By Professor J. Husband. 7 p.m.*

INSTITUTION OF HEATING AND VENTILATING ENGINEERS. *At the Institution of Mechanical Engineers, S.W.1. "Refrigeration Applied to Air Cooling." By E. S. Green. 7 p.m.*

ROYAL SOCIETY OF ARTS, *John Street, Adelphi, W.C. "Standards of Quality, and the Machinery for establishing them." By E. F. Armstrong. 8.15 p.m.*

HOUSING RECORD

The largest housing contract ever entered into in Scotland has been undertaken by the Scottish Areas Housing Association. It is for approximately 2,000 houses.

Returns received by the Department of Health for Scotland show that at October 31 the Association had contracted for 2,586 concrete houses (of which 470 are under construction) and for 184 timber houses (of which 64 are under construction). The form of construction used in contracts other than that for the largest contract is poured cellular concrete in solid walls.

BOVIS SCHOOL OF BUILDING PRIZE DISTRIBUTION

The Bovis School of Building held its prize distribution on November 23, when Mr. H. W. Mole, A.R.I.B.A., M.I.STRUCT.E., and principal of the L.C.C. Hammersmith School of Building, presented the prizes.

CHANGES OF ADDRESS

The County Architect's Department of the Middlesex C.C. has moved to Middlesex House, 20 Vauxhall Bridge Road, Westminster, S.W.1. Telephone No. : Victoria 9081.

Mr. Max R. Hofler, F.R.I.B.A., of 40 Broadway, Westminster, has moved to a larger office in the same building. The telephone number has been altered to Abbey 7216.

A CORRECTION

In the JOURNAL for November 3 the opening sentence of the article called "Gentlemen All," by Malcolm Mactaggart, read : "It has long been difficult for me to recognize in Timothy Smallbones, my doctor, and in myself, his patient."

This should have read : "It has long been a problem in my mind whether to recognize in Timothy Smallbones, my doctor, or, in myself his patient."

COMPETITION NEWS

The conditions of an open competition for a new Supreme Court in Lagos, Nigeria, will shortly be available.

IN PARLIAMENT

Memorials in Trafalgar Square

Sir John Mellor asked the First Commissioner of Works whether any designs for the proposed memorials in Trafalgar Square to the late Lord Jellicoe and the late Lord Beatty had been approved by the Royal Fine Arts Commission ; and whether he would give an assurance that no design would be executed which had not been so approved.

Sir Philip Sassoon said that on November 24, 1937, he informed the House that he was considering a scheme for memorial fountains in Trafalgar Square Since that date several designs had been prepared and had been submitted to the Royal Fine Arts Commission, to whom he was indebted for many helpful suggestions. The Commission were not finally so sanguine as he as to the possibilities of the latest design submitted to them, but after this design had been further developed and had been shown to Parliament, the Board of Admiralty and, through the medium of reproductions in the press, to the general public, he considered that the decision to proceed should no longer be deferred and he definitely commissioned the sculptors and the architect to proceed with the work.

Cenotaph

Mr. Thorne asked the First Commissioner of Works whether he would consider the floodlighting of the Cenotaph, in view of the large number of people who desired to make pilgrimage to this national memorial, especially at this time of the year.

Sir P. Sassoon said that at the time of its erection four standard lamps were sited on the pavements in the neighbourhood of the Cenotaph in such a way that always and at all seasons it was abundantly lighted. He had grave doubts as to whether the actual floodlighting of it would be an innovation which would be either desirable or would commend itself generally : and, owing to the position of the Cenotaph in the midst of busy traffic streams, this would, in any case, present considerable technical difficulties.

R.I.B.A. PAPER

ECONOMICS OF THE BUILDING INDUSTRY

ACHIEVEMENTS AND ANOMALIES

[*By OLIVER W. ROSKILL*]

THE ARCHITECT

- *He is in an impossible position. I do not believe it possible for any human being to be responsible for design and æsthetics . . . for planning . . . for materials, which implies an absolutely vast knowledge . . . and at the same time to be his own salesman or shoot partridges with property owners.*

- *It is, I fear, too common for architects to get prospective sub-contractors to prepare for them various parts of the technical details of their designs. . . . If an architect tends to rely on the Copper Development Association, he will use copper, if on the Lead Industries Development Council, he will use lead.*

- *As long as the tenders of six specialist sub-contractors have to cover the cost of six sets of drawings which should have been prepared by the architect or specialist consultant, it is obvious that the fee which should have been paid to the latter is hidden in the extra amount of the tender.*

- *Is the architect going to maintain much longer an independent professional status? . . . the proportion of the total building output on which architects are (so) employed is comparatively small.*

THE BUILDER AND CONTRACTOR

- *. . . The builder is responsible for assembly. But it is assembly very different from the factory. The designer and assembly engineer are on different sides of the fence.*

- *The houses may have no foundations . . . but to see method at its best you have to go and watch the orderly development by one of the better builders of a speculative estate.*

- *The tendency towards tendering by invitation has much to commend it. . . . But it does introduce a new feature of salesmanship into contracting, and, if carried to excess, the personality and entertainments allocation of the managing director may tend to become more important than the figure put forward with the tender.*

BUILDING MATERIALS MANUFACTURERS

- *The chief characteristic of this section of the industry is the enormous number of products which it includes. . . .*

- *The prices of most building materials are very closely controlled.*

- *The large-scale organization of industry is bringing a sense of responsibility and public service to which even the interest of shareholders is sometimes taking second place.*

1. THE PARTNERS IN THE INDUSTRY

THE relationship between the three principal partners in the building industry has changed fundamentally in recent years. I refer to the building materials manufacturers who make the raw materials, the architect who designs and plans the finished product and the builder and contractor who conducts the assembly. I have deliberately put in a secondary position the building owner who provides the finance or pays the bill and his accountant watchdog—the quantity surveyor. Finance should always be the handmaid of industry and not, as it so often tends to be, its mistress. While the property company which is going to own and manage a block of flats or a private individual who is going to live in a house he is having built may naturally feel that they are entitled to a voice in what it is going to look like or how it is going to be planned, they should not do more than lay down general specifications in the initial stages. Interference in detail seldom proves to be in their interest.

The relationship between these partners—never a close one between them all—is changing because the basis of the building industry itself is changing from craft to applied science. It is a change which has taken place in most other industries—in fact building has lagged behind in this respect—but it is proving more difficult in the case of building because of the existence of five partners, all very independently minded, and because of the very large range of materials employed.

2. THE ARCHITECT

Take the architect. He is in an impossible position. I do not believe it is humanly possible for any individual to be responsible for design and æsthetics, which implies a deep sensitivity to environment and historical influences; for planning which implies a full knowledge of contemporary social customs and requirements, and in addition something of the background of motion study; for materials, which implies an absolutely vast knowledge of a score of different industries and a thousand different products ranging from asbestos to zinc; for engineering methods in fields as diverse as steel frame construction, air conditioning, and electrical wiring, and at the same time to be his own salesman and talk intelligently at dinner parties or shoot partridges with property owners. There are several minor points which I have left out such as developing sufficient strength of character to cope with recalcitrant builders. I have a very real respect for the architectural profession in which I have—and hope to retain—many friends; but I repeat, I do not think it can be done.

That many architects agree with this is implicit in several recent developments in the profession. It is, I fear, all too common for architects to get prospective sub-contractors to prepare for them various parts of the technical detail of their designs. An even more undesirable habit—which is at any rate sufficiently common for specialist sub-contractors to have to take steps to prevent it—is for the architect to erase the name from the bottom of the drawings and get half a dozen firms to tender on their competitor's drawings. Architects would do well to bear this in mind when criticizing some of the price rings which have recently become a commoner feature of the industry. Another result is that the sub-contractor who prepares the drawings is naturally going to see to it that the amount of his particular product or material—steel, for instance—isn't stinted.

Another development is for architects to rely increasingly for information on materials on the various organizations—co-operative or individual—who advertise them. No one would deny that the co-operative sales development organizations which have sprung up in such numbers in the post-war years are doing very fine work. I have assisted in setting up several of them and so have every reason to support them. Many employ scientific and technical men who hold strongly to the belief that the best form of sales promotion in the long run is to see that their material is used for the right purpose rather than for every possible purpose. But even so if an architect tends to rely for information on water services on the Copper Development Association, he will tend to use copper, and if he tends to rely on the Lead Industries Development Council, he will tend to use lead. He will neither have the time nor, probably, the technical knowledge to make an independent comparison of the relative merits of the two for the purpose in view. As a periodic user of that most valuable institution I should be ungrateful if I left this subject without a reference to the Building Centre, which has surely done pioneer work in helping to bring a practical knowledge of materials to the architect. But it is not every materials manufacturer who takes space there, and while I think there is a very high standard of impartiality of advice, the absent materials must sometimes tend to get forgotten.

In some cases architects with complementary qualifications form a group in partnership together, but this, I believe, has been comparatively rare, though I should have thought it one of the best ways of meeting the difficulty. In others, architects tend to rely on quantity surveyors for a good deal of information on materials, but this is generally coupled with the necessity to reduce costs by the use of alternative materials or methods and therefore has the danger of leading to a rather negative approach. In any case the quantity surveyor is seldom in a position to suggest fundamental alterations of the whole design, as the matter reaches him at too late a stage.

Cases in which the architect employs a specialist consultant—say in electrical wiring—are still comparativly rare, and I suggest that the fault lies mainly with the method of payment laid down by this Institute. Secondary causes are that while the nominal work of the architect has been enormously widened, it is very difficult for him to persuade the client of the need for additional expenditure on specialists; and in some cases he is unable to sacrifice part of his percentage on those sections of the work on which specialists are employed. One point on which there seems to be very little independent information and which might well be the subject of investigation by a body such as the Surveyors' Institution is whether the specialist can generally save his client the equivalent of his fee even under the existing system of payment. Many specialists claim strongly that they do so.

In any case, as long as the tenders of six specialist sub-contractors have to cover the cost of six sets of drawings which should really have been prepared by the architect or a specialist consultant, it is obvious that the fee which should be paid to the latter is hidden in the extra amount of the tender.

I cannot leave the question of the ability of the architect to cover the whole range of knowledge of materials and methods without a passing reference to architectural education. Ideally, knowledge of design, construction and materials should go together, and it is impossible for the architect to separate the technical from the æsthetic. My question is not whether the architect is to remain responsible for the whole field—he must remain the co-ordinator—but whether he can do so without assistance, whether the mechanism to enable him to use

such assistance is satisfactory and whether he is in close enough contact with his other partners in the building industry. Some schools of architecture are very much concerned with design in relation to current sociology and ideology: others—I believe the Aberdeen school in particular—with materials. I do not know who has been most to blame for the divorce of design from materials and construction. But while many modernists will tell you that they are developing the applications of a new material, such as reinforced concrete, in fact they are much more preoccupied with sociology and ideology than with a study of new materials, and there is a danger of our architectural education propagating a formalized idea of what a modern house should look like.

There is one other related question on which I want to touch in connection with the position of the architect. Is he going to maintain much longer an independent professional status? Government departments, local authorities, property companies, the railways, chain stores and institutional building owners generally are accounting for a constantly increasing proportion of the total building activity of the country and all employ salaried architects. So do many of the biggest industrial concerns, and I know of several other cases where new factories are being built where the architect has been temporarily absorbed into the company concerned. The days of a Vanbrugh and unlimited demand for country houses on *carte blanche* terms are gone for ever, and I would even suggest that after excluding building on which no architect at all is employed, the proportion of the total building output of the country on which architects are employed on a strictly professional (as opposed to salaried) basis is comparatively small. At the same time, the salaries generally offered are comparatively low, which results in failure to attract the best men. I feel that this general trend is probably inevitable, but it is disquieting mainly in so far as an independent position is important from the point of view of design and æsthetics. There are a certain number of architectural practices which are mainly of a consultant type, and these may perhaps point the way to a solution of this particular problem.

3. THE BUILDER AND CONTRACTOR

What is the position of the builder and contractor? To take a simile from engineering, if the architect designs the machine and the building materials industry supplies the raw materials and constituent parts, the builder is responsible for assembly. But it is assembly under conditions very different from those in an engineering shop. First there is the weather and all that that means. Secondly, the designer and the assembly engineer are on different sides of the fence and there is little co-operation between them on method. If the designer of a motor car, as may well happen, designs his mudguards so that pressed steel dies are awkward or expensive to make, the press department will quickly let him know the fact and modifications will follow. If a new and cheaper method is devised for, say, shuttering concrete which requires modifications in design, the builder may know about it, the architect may not. To get it actually used is a matter of great difficulty. The builder is generally at his best on method when he is doing speculative work organized and planned by himself. Please don't mistake me: the houses may be the last word in ugliness, and may have no foundations and a leaky roof; but to see method at its best you have to go and watch the orderly development by one of the better builders of a speculative estate.

The form of contract is a fruitful source of trouble and one to which a great deal of thought is being devoted at the present time. I think there are two tendencies: one is towards combination by contractors to try to eliminate some of the more glaring anomalies of the competitive tendering system; the other towards an extension and adoption by other contractors of what is generally known as the Bovis system.

With regard to the former, building remains an open industry. It is practically impossible to start a new daily newspaper nowadays: it would be very difficult to start the manufacture of motor cars on a large scale or of certain chemicals; but every day a few employees of building firms break away and set up as jobbing builders or speculate a house or two and then try their hand at contracting by putting in a low price for some job which is going. A high proportion go bankrupt often before the job is finished, and it is undoubtedly in the interest of the building industry as a whole to stop this wastage while at the same time retaining freedom of entry to the industry. A further difficulty of the same kind arises from speculators who enter the industry with little knowledge of it and even less care for standards and service. It is fashionable at the present to talk of senseless price-cutting. On the whole, I am strongly in favour of senseless price-cutting, provided: (*a*) that the consumer gets his goods cheaper without loss of quality and (*b*) that it does not react against the efficiency of organization and technical progress of the industry as a whole. In the case of building the consumer may think he is getting his goods cheaper, but he may not get them at all if the contractor goes bankrupt in the middle. I don't say that this is very widespread, but it is sufficiently common to merit consideration. And in any case if the contractor has to put in too low a tender there is an enormous temptation for him to scamp the job which the combined efforts of the architect and quantity surveyor may fail to prevent. I cannot over-emphasize my conviction that unless the relations of the several partners in the building industry are directed towards co-operation in producing the best possible job at the lowest possible price commensurate with a reasonable return to all of them, rather than having the relations of smuggler with Customs officers, progress is going to be very difficult.

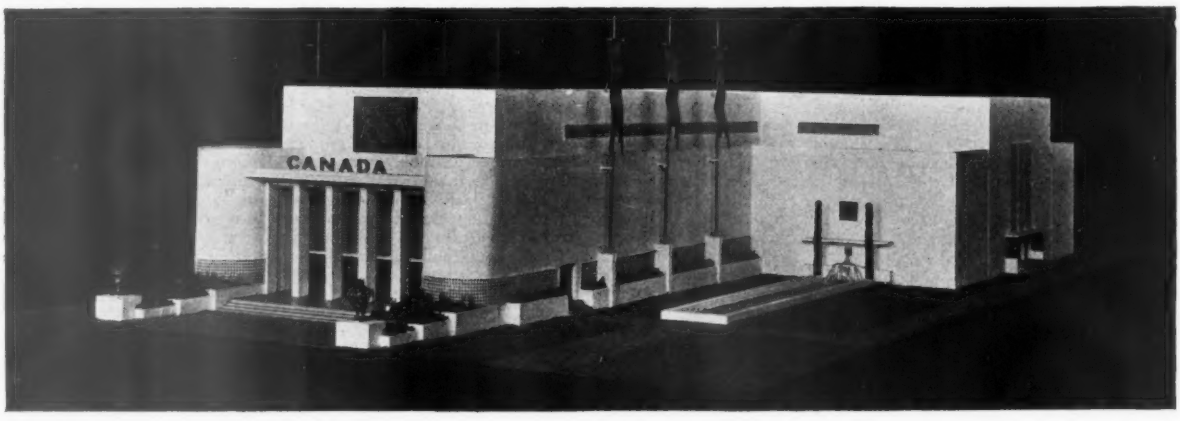
As to the efficiency and technical progress of the industry as a whole, these are very elusive factors. I supported the price-fixing scheme in the spinning section of the cotton industry on the grounds that price-cutting in a shrinking market was not stimulating consumption and that unless the spinners could at least cover their depreciation charges there was no prospect of effecting the technical re-equipment which is so urgently necessary. Is the stimulus of intense competition the right stimulus for effecting technical progress in the building industry, particularly in the field of building methods? Many new methods demand investment in new plant and require practical research and development work.

If provision is made for eliminating excessive price-cutting can it be linked with a drive for technical progress? These are questions which I should hesitate to answer. I do not propose to deal in detail with the London Builders' Conference, which is the latest of the builders' price-control schemes. It has been described recently in great detail by Sir Alfred Hurst in the *Builder*, and I do at any rate herald it as a great advance that its objects and methods should be subjected to the full light of public scrutiny in the industry. It is worth adding that there have been many other local price rings of contractors, though most of them on a rather different basis. There was one in one of the big North Country towns a few years ago—I don't know if it is still in existence. Five tenders, all within a few hundred pounds, were received for a very big job which went to the sixth tenderer, who was ten thousand pounds lower. A week after acceptance he came round, hat in hand, with a piteous story of a clerical error.

Apart from the chequered history of the fundamentally different "cost-plus" system, I believe the origin of the Bovis system lay with the requirements of a building owner carrying out a succession of similar jobs in which the need for speed and experience in the particular type of work concerned pointed strongly in the direction of choosing one builder and sticking to him. It is possible that if each job were put out to tender, there would be an appreciable saving on the price paid for, say 100 jobs. But, the argument runs, this apparent cash saving would be more than counterbalanced by lack of speed and continuity, by dislocation in dealing with many different builders, and by loss of the advantage of bulk purchase of standard materials. I think the argument is justified provided always that the check provided by the independent quantity surveyor is faithfully adhered to. The system is, I believe, spreading to individual jobs, and here, while there remain certain arguments in its favour, there is the danger that it may be used by contractors as a means of selling their services over the lunch table. The tendency towards tendering by invitation is already a strong one and has much to commend it where the building owner, architect or quantity surveyor has knowledge or experience of the efficiency and integrity of any half a dozen firms. But it does introduce a new feature of salesmanship into contracting and, if carried to excess, the personality and entertainments allocation of the managing director may tend to become more important than the figure put forward with the tender. Where the Bovis system is used on individual jobs this argument becomes greatly reinforced. In one interview, the contractor may be able to sell his services and cut out his competitors.

A great many of the troubles associated with the traditional open tender system could be eliminated if the architect took the proverb "more haste, less speed" nearer his heart. Even with the most expensive sites there is little doubt that speed is allowed to assume a disproportionate importance. The building owner wishes to see some practical signs of activity, and the architect is too inclined to be frightened of standing up to him. I feel sure that in many cases it would be possible to convince the building owner that it is possible to make substantial savings by planning the job thoroughly right from the start and avoiding extras and disorganization later. Interest on the value of the site is not the only factor. The building owner wants to let his flats, trade in his shop or start production in his factory as quickly as possible. But I think it should be possible to achieve at least the same speed of building as well as reducing the cost if instead of the architect producing rough plans which are then used as a basis for tendering he were to produce half-inch detailed drawings right at the beginning on which proper bills of quantity could be prepared. In the same way, vague p.c. items should be kept to a minimum. Here again, just as in the case of the employment of specialists, I think it is partly a question of method of remuneration as laid down in the profession. The architect gets out rough plans because he often does not know definitely if the job will be proceeded with or if he will get it. Many of the troubles of aircraft production in the re-armament programme have been due to alterations in design made in the course of production. And in this case also it is a matter which fundamentally affects the method of contract under which the machines are produced.

I have not said very much specifically about labour because I am treating capital and labour as partners in the building and contracting section of the industry. On the whole, labour relations in the industry have fortunately been very good. This can be attributed partly to the excellent conciliation machinery, second to none except perhaps the engineering industry; partly to the carefully thought-out grading and zoning arrangements and partly to the fortuitous circumstance that building has to meet no export competition. But I do feel that organized labour, without prejudice to its long-term interests, could play a much more active part in promoting the improvement in building methods and the reduction of building costs. There are many parts of the country which would benefit greatly by the greater use of building blocks of one kind or another. But is it a mason's job or a bricklayer's? Labour difficulties, actual or possible, have had a substantial influence on the introduction of new materials. The same applies to methods. Experts in labour organization are not always welcomed with open arms in engineering shops.



A model of the winning design, by Mr. W. F. Williams, in the competition for the Canadian Pavilion, New York World Fair.

The sight of a stop watch on a building job will almost certainly mean a strike. I am not suggesting that there is not much to be said from the labour point of view; but I would like to see some initiative on the matter of improved method come from labour. It would be a big feather in the cap of the unions if they would undertake a practical study of the possibilities. The demand for building generally —houses in particular, but even new factories and churches—is amazingly elastic, by which I mean sensitive even to small changes in the price of the finished product. The building materials industries, as I shall presently show, can make the biggest contribution in this direction, but I believe that if by improved method a saving of say 10 per cent. could be made on the price of the finished article there would be a sensible increase in demand—more than sufficient to reabsorb any labour displaced. There is also some case for believing that the unions have been too strict in limiting entry to the skilled trades and opposing any tendency towards dilution. Quite recently, even after activity had fallen from its peak, there were cases of building jobs held up for lack of skilled labour. Even if there was no shortage in the country as a whole—and I am not altogether convinced that there was not—if skilled labour is not sufficiently mobile to meet local shortage, the problem of labour shortage might be considered more from a regional point of view.

4. THE BUILDING MATERIALS MANUFACTURER

The chief characteristic of the building materials section of the industry is the enormous number of products which it includes—most of them separate industries in themselves. Some supply an appreciable part of their output to consumers outside the building industry, but when one considers that bricks, tiles, cement, glass and timber will barely build the shell of a house, some perspective is obtained. A few years ago structural steel was of very small importance to the steel industry and concrete tiles and sand-lime bricks did not exist. It is worth while remarking in passing for those interested in the location of industry what a high proportion of the building materials industries are "extractive" industries. Building is required everywhere where there is population, but gypsum for plaster, clay for bricks and tiles, marl and limestone for cement, stone for facing and slates for roofing—these are all tied to a limited number of localities. This, of course, is the chief reason for the wide differences in materials traditionally used in different parts of the country.

If building itself remains somewhat behind other industries in technique and organization, not so the building materials industries. Most of those which I have mentioned above are large-scale industries, highly organized and, for the greater part, technically efficient. There may be faggot-fired kilns still in Sussex but there are tunnel kilns at Stewartby. It is worth remarking that the change from craft to scientific technique has in many cases not had a very happy effect on the æsthetic side of the building materials industries and sometimes also on the durability of building materials. If the architect does not know all he might about materials, the materials manufacturer is generally out of touch with the taste of the architect. I know that the more far-sighted of them have recently come to recognize this. You have your rustic flettons, but for a nice, rather overburnt purple you may have to go to a small yard in Hampshire, where you will find tradition, but not technical efficiency.

The prices of most building materials are very closely controlled. Until quite recently there was a price-fixing scheme in the cement industry, and even now the Associated company and its group account for such a big proportion of the total output that they are bound to have a commanding influence on prices. The London Brick Company occupies a similar position with regard to flettons, and there are more or less informal price arrangements between the smaller facing brick producers in many different areas. One group controls a very high proportion of the total plaster output. Steel prices are controlled by the British Iron and Steel Federation. The White Lead Convention controls the price of lead paints. Pilkingtons and Chance Bros. occupy a commanding position in the glass industry as far as sheet and plate are concerned. Nearly all the metal casement manufacturers adhere to a price agreement. Lead pipe and sheet, copper tubes, cables—it is certainly a formidable array of controlled prices.

While I haven't a childlike confidence in the disinterestedness of the British industrialist, and while I could mention several rings which I should like to see broken, I am not one of those who believe—perhaps because I work for quite a number of them—that every trade association is a Gomorrah and every fixed price a step towards economic damnation. The London Brick Company reduced the price of flettons at a time when they were arriving almost hot on the site. There is developing a certain vogue in policies of reducing prices to stimulate consumption and this at least appears to have proved one of the cases in which the much-abused economist is right. But can we rely on the vogue spreading? Is it enough? While I believe that the large-scale organization of industry is bringing a sense of responsibility and public service to which even the interest of shareholders is sometimes taking second place, I am doubtful. I think the materials manufacturers have had things too much their own way on the matter of price. I am not blaming them. I think they are more efficient than the building and contracting section of the industry. Unless they combine together for a definite price policy they have little guarantee that any reduction they make in price—particularly in the case of the less important building materials —will ever get through to the consumer, and, thus, affect their turnover. But couldn't they combine to evolve such a policy in conjunction with the building and contracting section of the industry? Here would be a line of thought worthy of the name Building Industries National Council. The motor manufacturers are complaining that steel is too costly. They have found how elastic is the market for cars, and whatever the merits of the case they are big enough consumers to make their voice heard. I am convinced that the market for building—not only houses—is even more sensitive to price.

There are, too, other aspects of the building materials section on which I should like to touch. It is much too difficult to introduce a new building material. I am quite aware of the arguments against rushing into the use of untried materials in building which has got to stand the test of years. But much modern building is not standing the test of years in any case—you have only to walk round a five-year-old speculative estate to see that—so that a slightly more experimental spirit might be justified. Speculative builders are rather ovine in the matter—if one can be persuaded to try a new material, the others will follow if it proves cheaper. But as far as the architect is concerned, even the most intelligent traveller selling a new product of genuine interest finds it a matter of extraordinary difficulty to get inside a busy office, and I do not think the firm developing new products should have to face such a terrific inertia, or what the Americans call sales resistance. It is not a question of the product being untested—even with a B.R.S. test behind him the manufacturer is faced with an uphill fight. I am not at the moment trying to suggest a remedy—I merely draw your attention to what I believe to be a serious trouble the roots of which are probably very deep.

This leads me to my second point—that in certain sections of the building materials industry there is room for improvement in selling methods. I hesitate to mention any individual section, but I think the remark may be directed more to those products whose sale is determined by builders themselves rather than by architects. Surely the industry has progressed beyond the point where it is necessary to offer planks, trestles, brushes and ladders to purchasers of paint, according to the quantities taken, and I hope we shall never see the cement industry enclosing a Shakespeare in every sack.

5. THE BUILDING OWNER IN RELATION TO THE INDUSTRY

What is the position of the building owner in relation to the industry as a whole?

At the present time, the trend is for an increasing proportion of the total output of the building and contracting industry to be carried out on behalf of public bodies. Official policy has been to aim at taking up the slack caused by the decline in private enterprise speculative housing by pushing forward energetically with the local authorities' work on slum clearance and the abatement of overcrowding. Though

much remains to be done and though the programme itself may be greatly expanded if standards of overcrowding are tightened up, this work has met with a good deal of success. On top of it has come very heavy building expenditure under the rearmament programme on Army, Navy and Air Force establishments: the prospect of intensified work on A.R.P., and above all a fairly clear indication that the Government is at least considering a policy to which the name "slump control" has become attached—that is to say an increase in public works expenditure when the curve of the trade cycle is on the downward grade. A first essential to such a policy is to plan in advance and in some detail actual projects on which work could be started at the appropriate time. The request by the Ministry of Health for five-year capital expenditure programmes from local authorities shows that this essential has been considered even though the work itself may, owing to the pressure of rearmament, be postponed for some time.

In the past there have been big fluctuations at different times in the proportion of the total building output accounted for by public bodies. These fluctuations have been largely due to variations in Government policy as regards housing, as shown by the various post-war Housing Acts. What has happened before may happen again, but on the whole—and taking into account broad social and economic factors such as the effect of taxation on the trend of income levels—I feel that private enterprise building is likely to account for a decreasing proportion of the output of the industry. By private enterprise building, I mean both building, whether houses or factories, speculated by a builder, and those ordered under contract by a private individual or company. If this is correct, I think the future trend in the sphere of organization is reasonably clear, because an industry whose main market is in the hands of the State is likely to have to submit to a good deal of State control. My suggestion is that the industry would be wise to meet this half-way: rather than building Noah's Arks regardless of cost on the assumption of "after us the deluge," that all sections of the industry should co-operate in improving costs and organization from raw material to finished product. To give you an example of what I mean, one of the best speculative builders in the country, who operates largely in an area where the working-class housing problem is very acute and the local authority rather difficult, was saying the other day that as long as he could make money by speculative building he was not going to extend the contracting side of his business to tender to this local authority. This is what I call a negative attitude. I think it is possible that the Royal Commission on the Geographical Distribution of the Population which is now sitting will recognize that there are certain towns which grew up on the basis of local raw materials which no longer exist, and which cannot hope to regenerate themselves by attracting new industries because they do not offer a location suitable for new industries. The annual sum paid by the Central Government for relief of unemployment in such towns may reach a figure of the same order as the total rateable value of the town, or even more. There is only one logical course in such cases, and an examination of the costs and savings involved suggests that it would be an economic course within a very short space of time, and that is to move the whole town to a suitable location. Here is a gigantic task for the building industry and one that could only properly be tackled by co-operation from raw material to finished product. There is rather a tendency for industry nowadays to expect the Government to take the initiative in everything. If the industry had a central body capable of anticipating demands and planning policy ahead on a scale such as this, it would greatly weaken the case for any interference in it from outside.

There are many other small fields which might be tackled—for instance, co-operation with the Board of Education on the replanning and rebuilding of schools. There is a very big national programme here. Rural housing is another special problem and one which presents great difficulties on the side of the building industry. It also offers a big market, but as long as it is left to rural district councils and small local builders it is never likely to be satisfactorily tackled. Some of the big building firms have great mobility of equipment and organization. If a group of them planned a system, with the backing of the leading building materials manufacturers, for tackling the problem area by area and employing local labour where possible, and let it be known that they were prepared to do this and the price at which it could, in typical cases, be done, I think they would quickly get the orders from local councils.

Scotland is, of course, very behind-hand in tackling the housing problem on an appropriate scale, though many special difficulties are involved up there. Nevertheless, the attitude of the State is illustrated by the terms of the Departmental Committee appointed in September "to inquire and report as to the reasons for the increase in the cost of building working-class houses in Scotland." That is the kind of inquiry which it should not be necessary for the State to appoint, particularly as I suspect that some of the reasons will blush when they see the light of day. At the present time the only action which the State can take regarding building costs is one which leads straight to stalemate. How many times in boom years and even for some time after a boom does one see that "in expectation of a drop in prices of building materials, the Ministry of Health has refused sanction for the new council housing estate at Puddleton." It is not easy for the building industry as a whole to learn the lesson that big turnover is more important than high prices; because it is not the prices of one but of a hundred different companies which affect the result.

The primary point which, as you will see, runs through my whole argument, is that from the point of view of the building owner, whether local authority undertaking housing, or industrial concern undertaking a new factory or extension, the main factor is the cost factor. Design is important, but cannot be separated from the cost. The cause which long delayed the present recovery in the American building industry was that the gap between costs and rents had not been bridged. In most other fields of the national economy concerned with the satisfaction of essential human needs there has developed large-scale production and the problem has been to develop large-scale and efficient distribution which will bring the food, the fuel, and the clothing to the consumer at a price in reasonable relation to that at which it leaves the farm or factory. To a great extent we have now got large-scale production of building materials, but the consumer does not want a thousand bricks or a ton of cement—he wants a house or a factory or may be on occasions a town hall. That is why the problem is so much more difficult in the building industry, and it is one which only close co-operation of the three chief and the two subsidiary partners can solve.

6. RESEARCH AND INFORMATION

Finally there are a few general points on which I should like to touch. Research is a subject on which everyone has views and I'm afraid I am no exception. In particular I wish to plead for an extension of economic research. A building materials manufacturer was complaining at his annual general meeting the other day of the inadequacy of building activity statistics. When examining the statistics of plans passed by 146 local authorities the other day, one of my colleagues found that there is good reason to suppose that in about five years the proportion of the total building activity of the country covered by these plans has varied by about 100 per cent. The Building Industries National Council has gone some way towards meeting the demand for statistical and economic data by collecting all available published information. But a full programme of economic research implies something much more than this—the collection of new information. An outline of the work which has been done and needs to be done was given in Chapter VII of the P.E.P. Report on Housing, and although that was published nearly four years ago, I regret to say that its substance still holds good.

One of the reasons why selling expenses in the industry are so high—this applies mainly to building materials but also affects other sections of the industry—is that information on work in hand is so fragmentary. Some of the trade journals do original work of sterling value in collecting contract news. Others merely copy such items from elsewhere; but at the best only a proportion of jobs on hand are covered, and there are big variations in coverage of different areas.

As regards technical research there is an urgent need for a better mechanism for getting the result of such research used in the industry. The work of the Building Research Station still accounts for a very high proportion of the total technical research work done in the industry. It is, for instance, relatively much more important in the research field than the Fuel Research Station is in the fuel industries, or the Chemical Research Department in the chemical industries. The excellent work done is, however, perhaps necessarily published in a form which combines the erudition of a paper to the journal of a learned society with the guardedness of a Blue-book, and provision for "putting across" the results of research is an important need.

I have said nothing in all this about the town planner, not from any lack of respect but because I feel that it is partly a coincidence that town planning should have been linked with architecture, and that it is likely in the future to develop into an entirely separate profession and to have its main affinities with land planning and utilization as a whole. It will organize green belts and national parks and play a big part in the siting of industry. If the trend among architects is towards salaried employment, I can only feel that this is even more likely to be the case with town planners, as their place is in the counsels of local authorities. I hope their salaries will be high enough to attract men of the calibre that the job deserves. I suppose it will be for the next generation to clear up our mess in land planning just as we are coping with the clearance of the back-to-back hovels of early Victorian industrialization. There can surely be no better example of shutting the stable door too late—and then only half-heartedly—than the Ribbon Development Act.

I should like to make a reference to the quality of building because here, too, action has come too late. The National Housebuilders' Registration Council has objects with which I do not think anyone could disagree, but meanwhile we have had Mrs. Borders in the box and committees of enraged houseowners on speculative estates all round the country who speak with feeling and some warmth of the building industry. In such cases other industries have found that there is no separation of the sheep from the goats. If the good can't control the bad they will be tainted by them. This is a problem for the future. The average life of speculative housing may not be much over 40 or 50 years and it will have to be amortised, after which I hope we shall start again. But I doubt whether the rebuilding—and it will have to start very soon now—will be carried through by private enterprise on its present basis unless private enterprise can assume the responsibilities which are the counterpart of its liberties. So far the N.H.R.C. have not met with that wide measure of support which suggests that responsibilities are just what the smaller speculative builder wants.

If the part played by speculative building in housing as a whole declines, what happens to the building societies, with their enormous assets? Finance, as I said, should be the handmaid of industry, but handmaids—in other fields too—can be very useful and are often difficult to come by. If the co-operation from raw material to finished product which I envisage should come about, there will be a part for the building societies there. Many of them borrow at 3 to 3½ per cent. tax free and could lend at 5 per cent. There has been much housing carried out in recent years on nothing like a 5 per cent. basis.

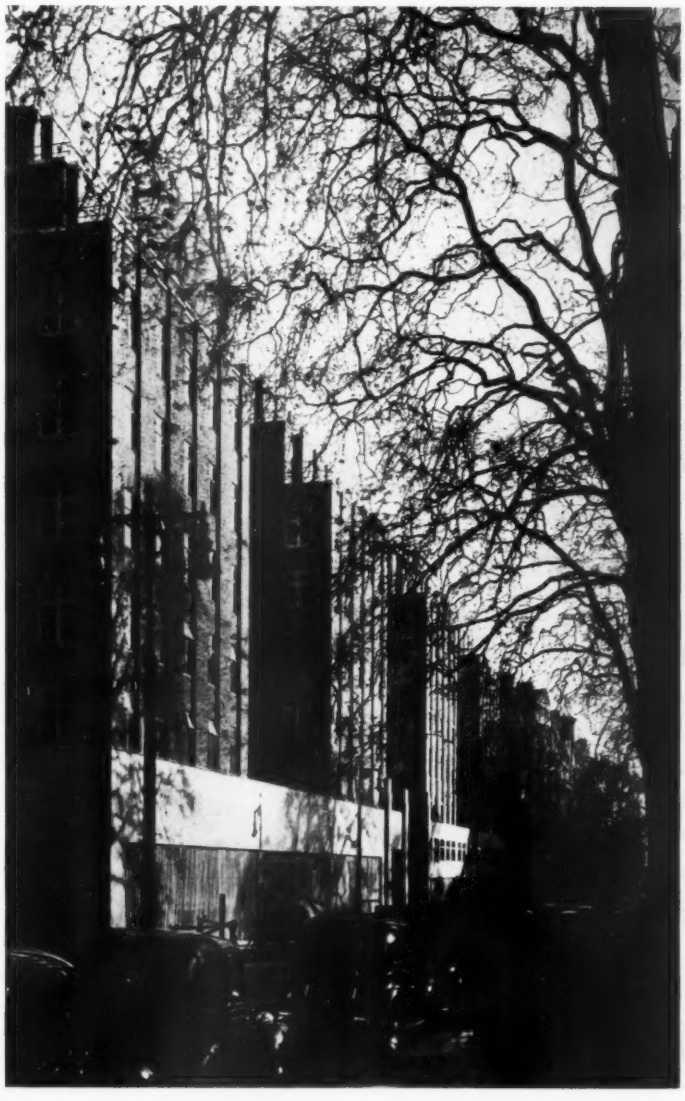
BERKELEY SQUARE HOUSE, W.1

ASSOCIATED ARCHITECTS:

GORDON JEEVES

AND

HECTOR HAMILTON

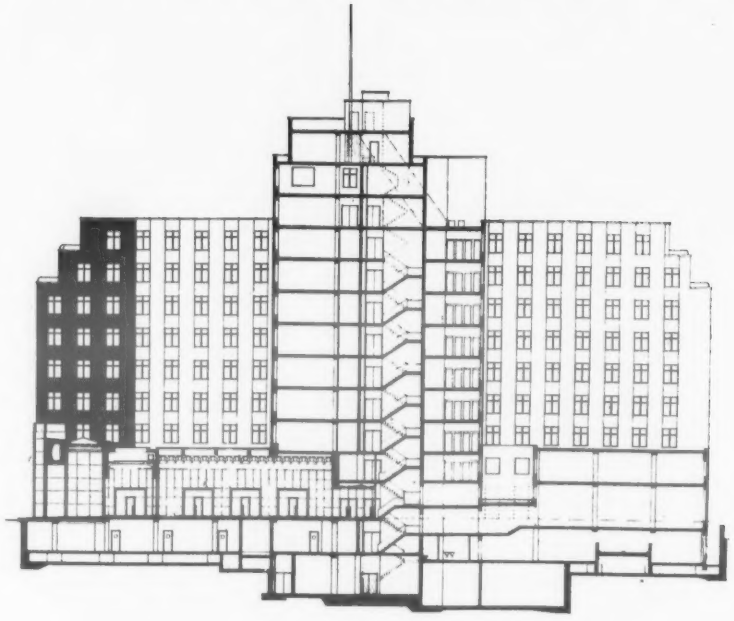


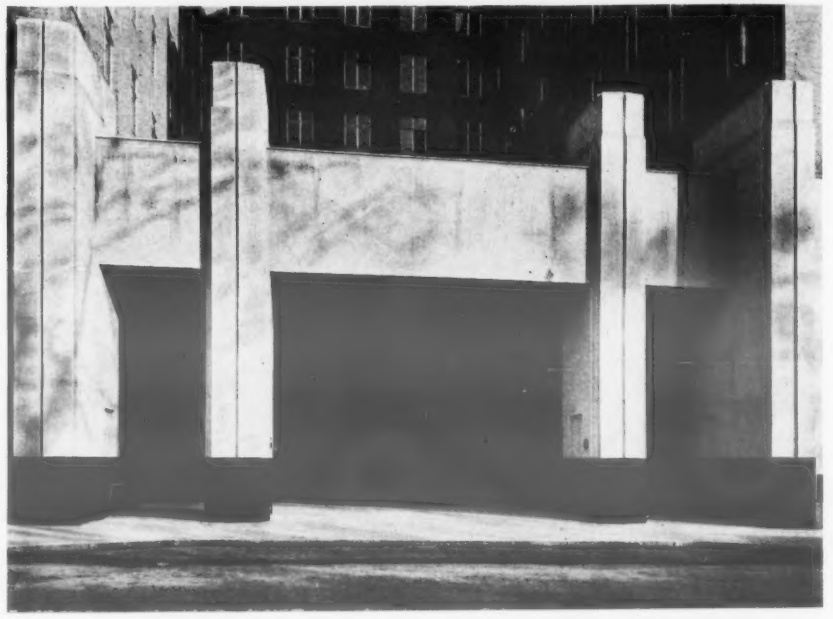
PROBLEM AND SITE—*An office building having the greatest possible floor space combined with the maximum amount of natural light. It was also required that this well-lighted office space should be provided without the use of internal areas. Centralization was insisted upon, and the ground floor was intended to be divided into shops and showroom, and the basement into shop-basement space and garage. Since the basement space was lettable space, it was decided to place most of the services of the building in a sub-basement. The site is bounded by Bruton Street, Berkeley Square and South Bruton Mews, and was intersected by South Bruton Mews.*

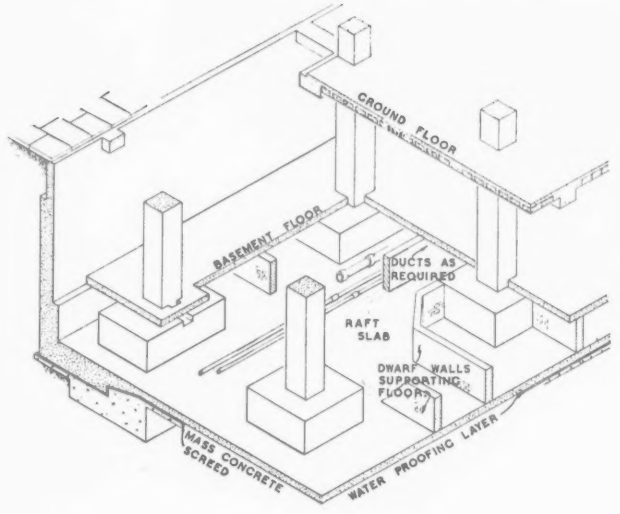
CONSTRUCTION — *R.C. frame structure faced with 13½ ins. external walls, the panels beneath the windows being 9 ins. Reinforced concrete hollow-tile floors, general thickness 8 ins. with 3 ins. of cement screed as a finish to take the tenants' linoleum or rubber. The roof is of the same construction and is covered with screed, 1 in. insulation material and asphalt. Retaining walls are reinforced concrete, and certain internal walls, such as those surrounding the lifts, are 8 ins. reinforced concrete construction and, in many cases, the staircase walls have also been built in this manner.*

Left, top, the rear elevation; left, the Bruton Street front; above, the Berkeley Square façade.

BERKELEY SQUARE HOUSE, BERKELEY SQUARE, W.1.



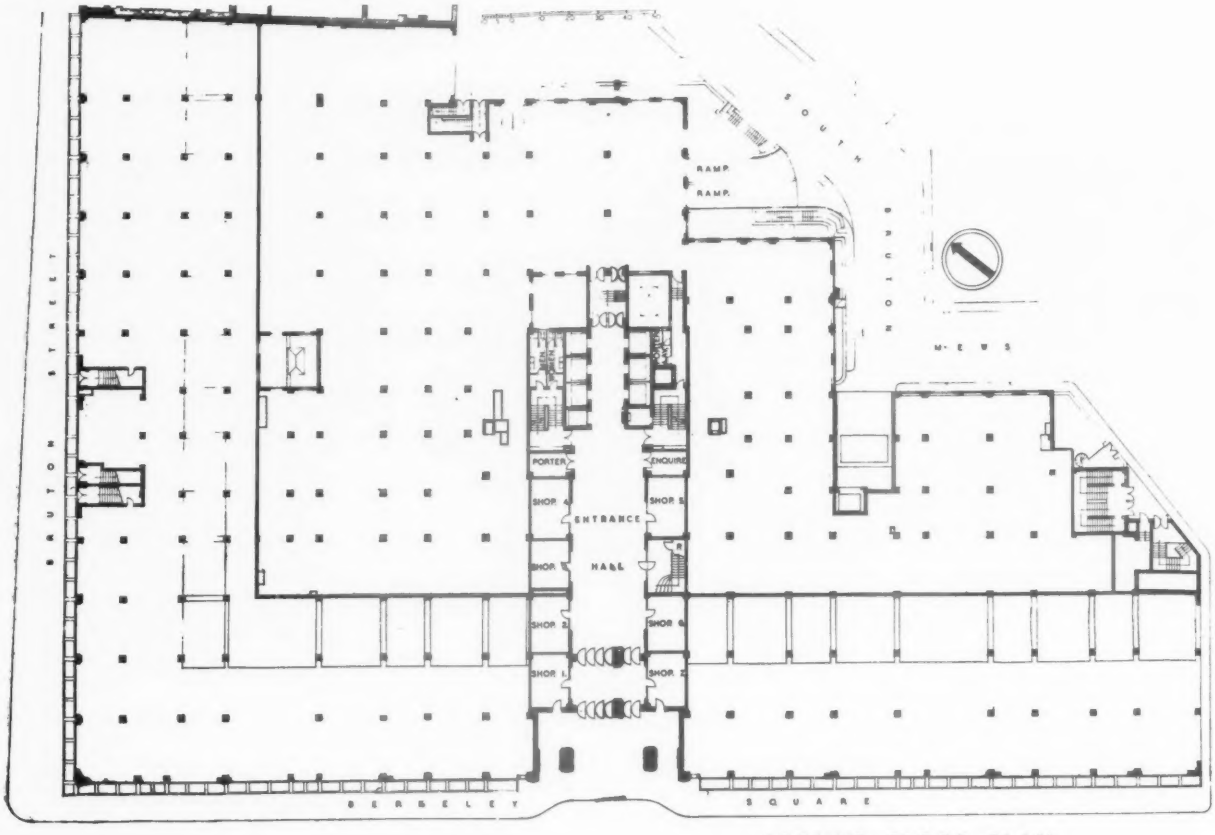




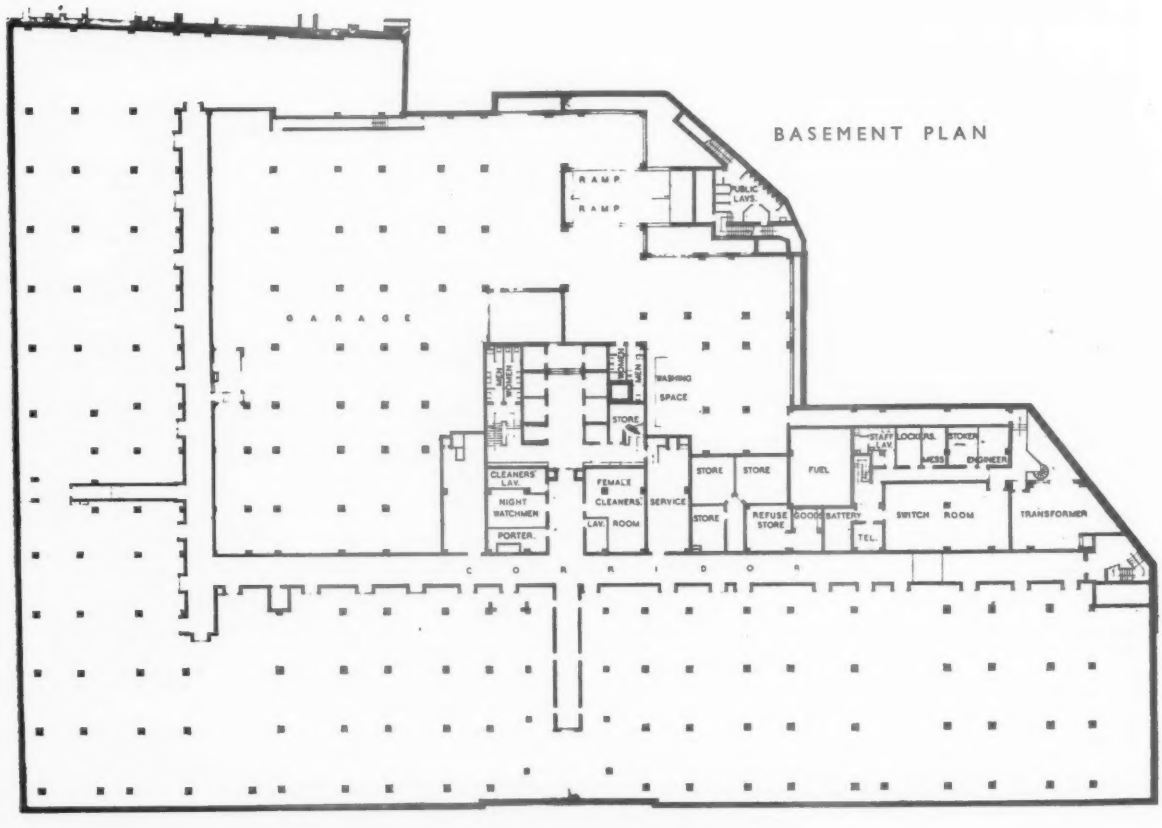
EXTERIOR TREATMENT—*The building is faced from first floor cill level upwards with bricks, buff colour pointed with a mixture of brick dust and patent white cement. The lower floors up to the first floor cill level are in natural Portland stone. The entrance portico has pylons faced with Portland stone with bases of Swedish black granite and a recessed portico faced with black Neros granite. The windows are metal casements with bronze cills, and the panels beneath the windows, which are recessed 4½ ins. to give a vertical treatment, are faced with bricks. Copings to all walls are in reconstructed stone faced with crushed granite. Above, main entrance Berkeley Square; left, progress photograph taken on February 19, 1938, and a drawing of the basement construction. Facing page: the Berkeley Square front.*

ASSOCIATED ARCHITECTS: GORDON JEEVES AND HECTOR HAMILTON

BERKELEY SQUARE HOUSE, W.1, ASSOCIATED ARCHITECTS :



GROUND FLOOR PLAN



BASEMENT PLAN

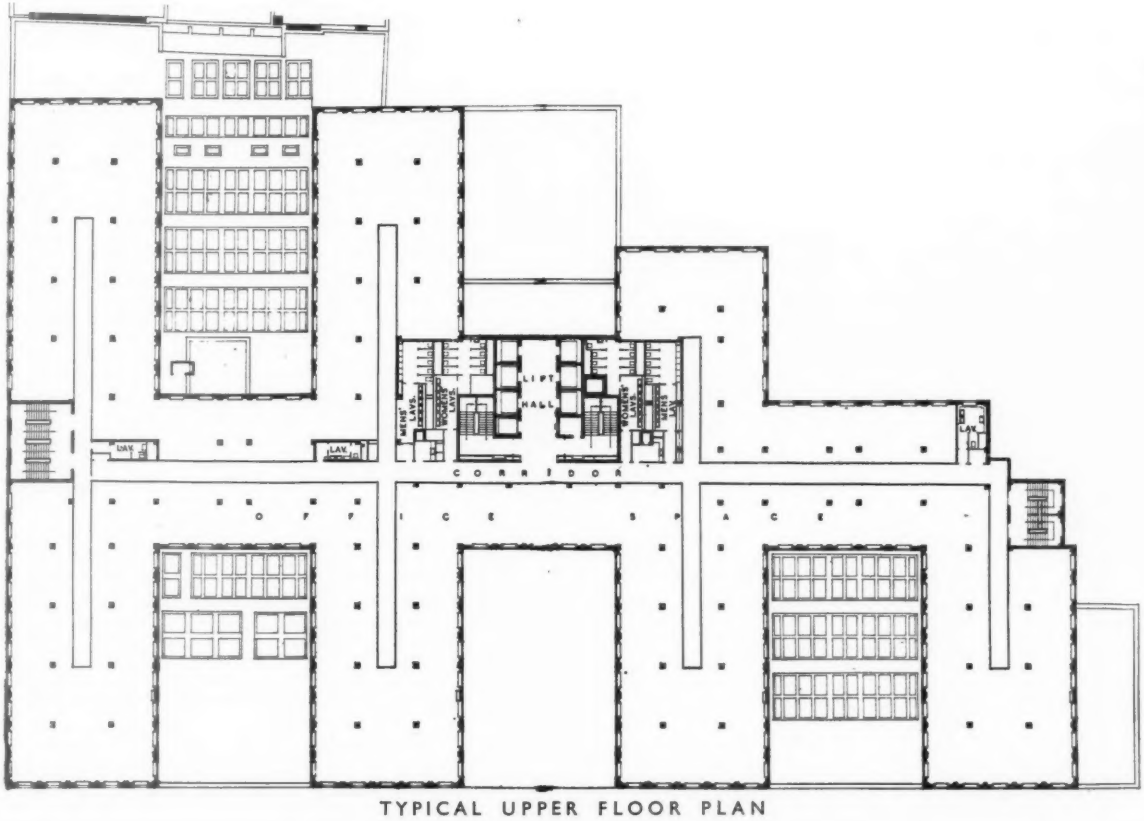
GORDON JEEVES AND HECTOR HAMILTON

INTERNAL FINISH—*The main entrance hall and the vestibule are faced to their full height with Ashburton marble, as are all the lift halls. The ceiling of the entrance hall is elliptical and has been divided with ribs with a portion of laylight between each rib. The lighting to the entrance hall is all indirect and is provided by neon tubes along each rib and on top of the cornice, the ribs having been designed to a special curve to reflect as much light as possible. The laylights between each rib provide daylight from reinforced concrete glass lights over the length of the entrance hall and vestibule.*

The floors of the vestibule, entrance hall and lift lobbies are paved with terrazzo which is divided into a pattern by ¼-in. bronze strips. The main entrance screen and cornice and the screens to the small shops in the entrance hall are in bronze as are all the lift doors and doors to staircases, porters' rooms, etc. The staircases are finished in plaster and paint, paved with terrazzo similar to that used in the entrance hall, and the centre portions of the treads and risers, and the landings are covered with black rubber. Solid balustrades have as a handrail a black rubber capping. The walls and ceilings of the offices generally are finished in plaster to receive the tenants' decorations. All joinery is in walnut.

LIGHTING—*The portico roof-lighting system is constructed in synthetic resin sheet. Thirty-nine panels each three feet square are arranged in three rows of thirteen carried in metal bearers. Each panel is a separate unit and is provided with handles to facilitate removal for cleaning.*

Above, the entrance doors, Berkeley Square front.



TYPICAL UPPER FLOOR PLAN

BERKELEY SQUARE HOUSE, W.1

Above and right, two views in the entrance vestibule.

The general contractors were Sir Robert McAlpine and Sons (London), Ltd. For list of general and sub-contractors, see page 924.

ASSOCIATED ARCHITECTS: GORDON JEEVES AND HECTOR HAMILTON

LETTERS

Building Societies

SIR,—It appears to be against the interest of your JOURNAL to print anything which might be damaging to Building Societies, and yet the comment in paragraph 4, page 749, of your issue for November 10 last contains much food for misunderstanding, and misses the common-sense of the matter.

You state that you have no knowledge of the dispute in question, but surely it behoves you to obtain such knowledge before giving such prominence to your comment.

Your comment does not show that it is an impossible business proposition to make a full advance, and it should do so in common fairness to the Societies, "whose contribution to good housing is self-evident" (your own words).

It is clear that the strikers referred to in the news cutting shown at the head of your column are asking for something that no business institution can give them, namely, "a full-value loan."

If a man employs an architect, obtains tenders, and has a house built by contract, it is admitted that he obtains full value in respect of the house so built. It is obvious, too, if not already within the knowledge of all right-thinking people, that if he discloses that the house cost him, say, £800, or if it is established in any other way that £800 is the value, no bank, building society, or other lending institution will advance him the full £800 on the security of the house alone, any more than a pawnbroker would advance him the full value of a ring he might wish to pawn.

The lenders must have a safety margin so that in the event of the borrower not carrying out his obligations their advance, together with the cost of realizing their security, is fully covered. If "the house on which they make an advance is in itself full security for the advance," there is no such safety margin.

CHAS. L. MASTERS

Mr. Masters' letter has been shown to Astragal, who replies :—

I used a dispute which has received much publicity to point my statement of an opinion widely held by tenant-purchasers of cheaper houses : a legitimate journalistic device.

I said in my note that tenant-purchasers held that building societies ought to have some responsibility for seeing that houses on which they make advances are in themselves full security for the *advances*. I did not say, or imply, that advances should be to the full value of the purchase prices of the houses.

The tenant-purchaser's view is important. If a building society advances £650 on a £700 house the tenant-purchaser is apt to think he has a good house. But if he knew that, simultaneously, the society had arranged with the builders for an additional security of £50—for the society's benefit only—he might feel less confidence in the report of the building society's surveyor. It is this latter practice which is now being called in question.

Trading Estates

SIR,—In your reference to the total possible employment on the Treforest Trading Estate, you say "it must be realised that although trading estates may indicate lines on which to attack unemployment, they do not do more." I submit that the Treforest Trading Estate is attacking unemployment in South Wales at its very roots, and that the good that attack does cannot be measured by the employment capacity of the factories. The fundamental change which this enterprise is bringing about in South Wales is that for the first time men, women, boys and girls in the mining valleys are being trained to factory work.

Midland towns like Coventry have long prospered by their factory tradition and have been able to turn their hand to whatever product was wanted at the moment. In South Wales they have been dependent upon the prosperity of two heavy industries, coal and steel, but Treforest and the factories established by the Trading Estate Company in other parts of the Special Area are creating a new industrial population.

ANDREW REID

WORKING DETAILS : 703

LIFT SERVICE • FLATS AT HIGHGATE, HIGHPOINT NO 2 • TECTON

Owing to the relatively small number of flats the provision of large public staircases was not necessary, and was abandoned in favour of a special system of lift access.

From the entrance hall ramps lead up to one lift on either side. Inside the lift there are two rows of push buttons, one at each end of the lift, which has two entrances. Each push button corresponds to one flat, and has the tenant's name adjacent : when pushed, it operates the lift and simultaneously sounds a buzzer in the flat. The door will be opened from the flat on arrival at the right floor, and the lift leads straight into the hall of the flat itself. Tenants can, of course, open the door from the lift with their latch key. When vacated, the lift returns automatically to the ground floor. For service purposes, there is a small lift (to hold two persons) which is housed in the same well as the passenger lift, and serves on to a landing which is shared between two flats. The lift tower is structurally independent of the flats to prevent the transmission of sound vibration. There is a staircase, in conjunction with the service lift, which is also accessible from the main entrance of the flat in case of necessity.

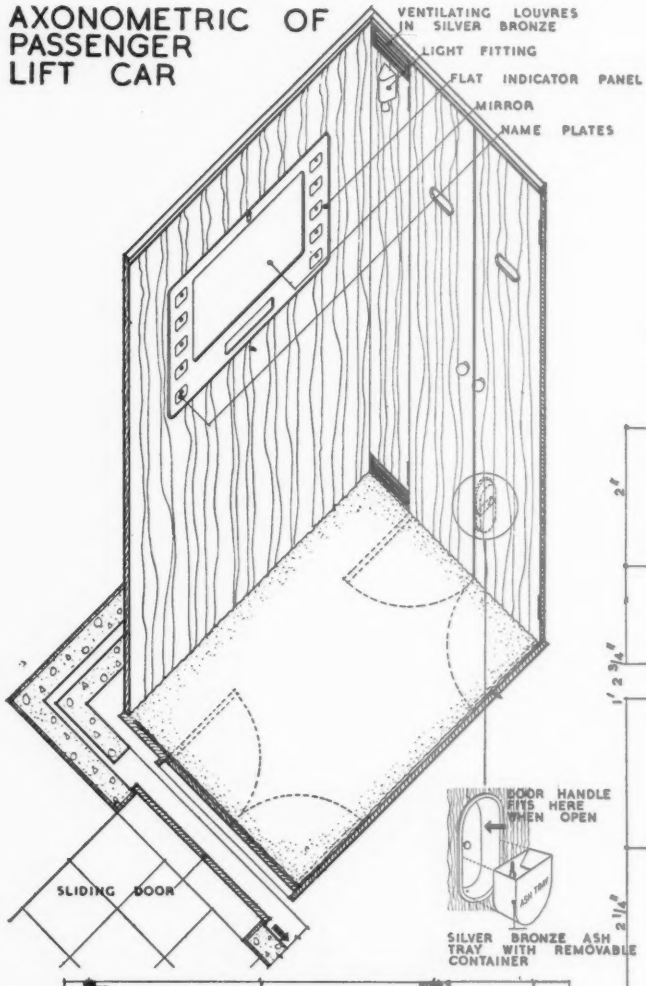
Internally, the passenger lift car is panelled in mahogany veneered plywood, with fittings in silver bronze, the floor being close carpeted. The doors to the lift car open inwards, while there are sliding entrance doors to the flats. Details are shown overleaf.

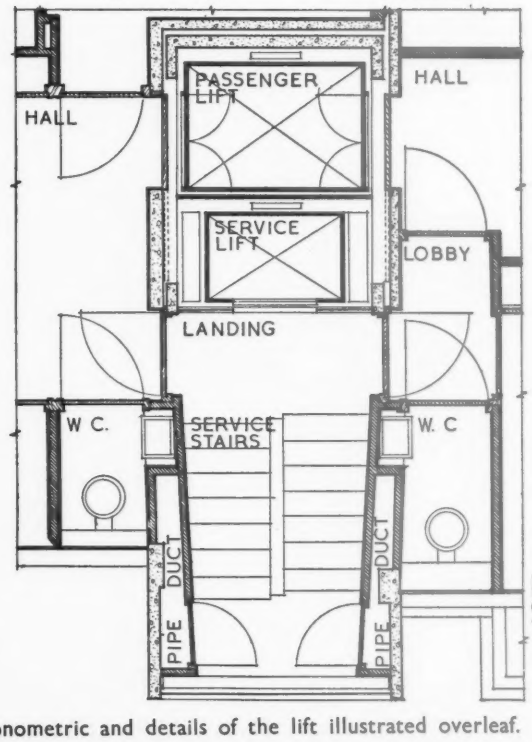
FILING REFERENCE:

WORKING DETAILS : 704

LIFT SERVICE • FLATS AT HIGHGATE, HIGHPOINT NO 2 • TECTON

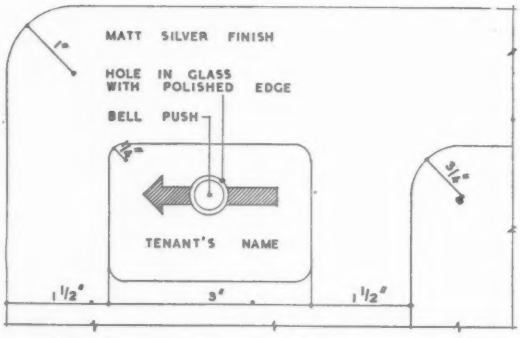
AXONOMETRIC OF PASSENGER LIFT CAR

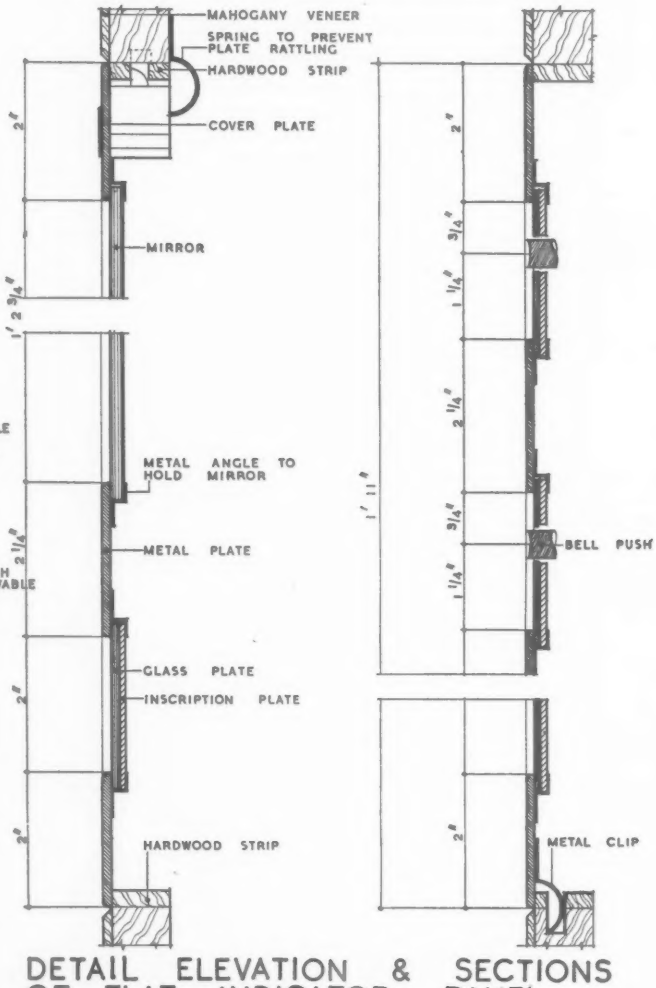




PLAN OF LIFTS & SERVICE STAIRS SHOWING ACCESS TO FLATS

1 0 1 2 3 4 5 10 15 FT.





DETAIL ELEVATION & SECTIONS OF FLAT INDICATOR PANEL

1 0 1 2 3 4 5 IN.

SCALE FOR AXONOMETRIC

1 0 1 2 3 4 5 FT.

Axonometric and details of the lift illustrated overleaf.

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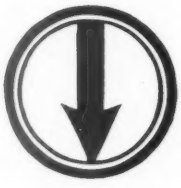
INFORMATION SHEET

SUPPLEMENT



SHEETS IN THIS ISSUE

683 Roofing Tiles

684 Sheet Metals

In order that readers may preserve their Information Sheets, specially designed loose-leaf binders are available. The covers are of stiff board bound in "Rexine" with patent binding clip. Price 2s. 6d. each post free.

Sheets issued since index :

601 : Sanitary Equipment
602 : Enamel Paints
603 : Hot Water Boilers—III
604 : Gas Cookers
605 : Insulation and Protection of Buildings
606 : Heating Equipment
607 : The Equipment of Buildings
608 : Water Heating
609 : Fireplaces
610 : Weatherings—I
611 : Fire Protection and Insulation
612 : Glass Masonry
613 : Roofing
614 : Central Heating
615 : Heating : Open Fires
616 : External Renderings
617 : Kitchen Equipment
618 : Roof and Pavement Lights
619 : Glass Walls, Windows, Screens, and Partitions
620 : Weatherings—II
621 : Sanitary Equipment
622 : The Insulation of Boiler Bases
623 : Brickwork
624 : Metal Trim
625 : Kitchen Equipment
626 : Weatherings—III
627 : Sound Insulation
628 : Fireclay Sinks
629 : Plumbing
630 : Central Heating
631 : Kitchen Equipment
632 : Doors and Door Gear
633 : Sanitary Equipment
634 : Weatherings—IV
635 : Kitchen Equipment
636 : Doors and Door Gear
637 : Electrical Equipment, Lighting
638 : Elementary Schools—VII
639 : Electrical Equipment, Lighting
640 : Roofing
641 : Sliding Gear
642 : Glazing
643 : Glazing
644 : Elementary Schools—VIII
645 : Metal Curtain Rails
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647 : Veneers
648 : U.S.A. Plumbing—V
649 : U.S.A. Plumbing—VI
650 : Ventilation of Factories and Workshops—I
651 : School Cloakrooms (Boys)
652 : U.S.A. Plumbing—VII
653 : Plumbing
654 : U.S.A. Plumbing—VIII
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657 : Floor Construction
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663 : Adjustable Steel Shelving
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666 : Sound Insulation
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668 : Aerodromes
669 : Aluminium
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671 : Rainwater Gutters
672 : Waterproofing
673 : Aluminium
674 : Roof Insulation
675 : Furniture
676 : Ventilation of Factories and Workshops—III
677 : Oil Paint
678 : Ventilation of Factories and Workshops—IV
679 : Plumbing
680 : Aluminium
681 : Corded Curtain Rails
682 : Sound Insulation

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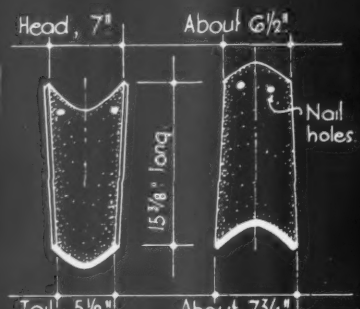
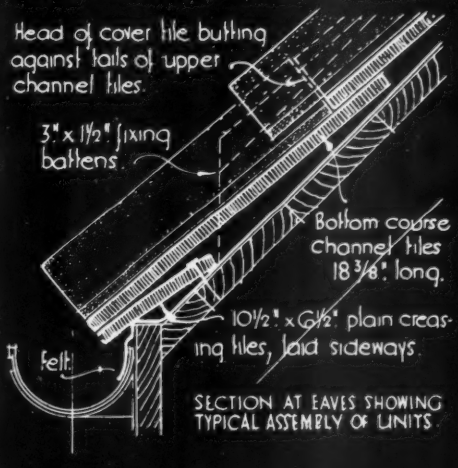
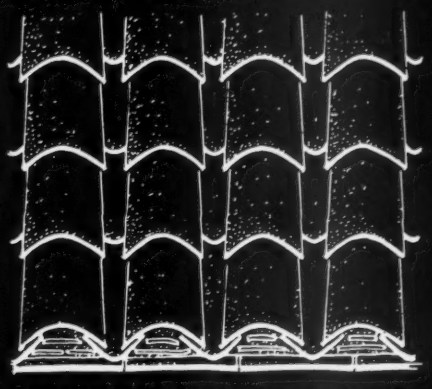
DETAILS OF "TRITON SEVILLE" HAND MADE CLAY ROOFING TILES



VIEWS OF THE STANDARD HOGBACK TILE FORMING THE ROOF UNITS

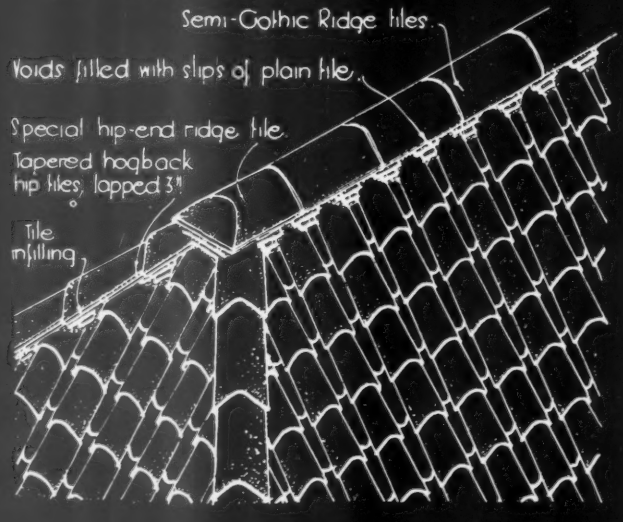


SECTION AT EAVES SHOWING TYPICAL ASSEMBLY OF UNITS.

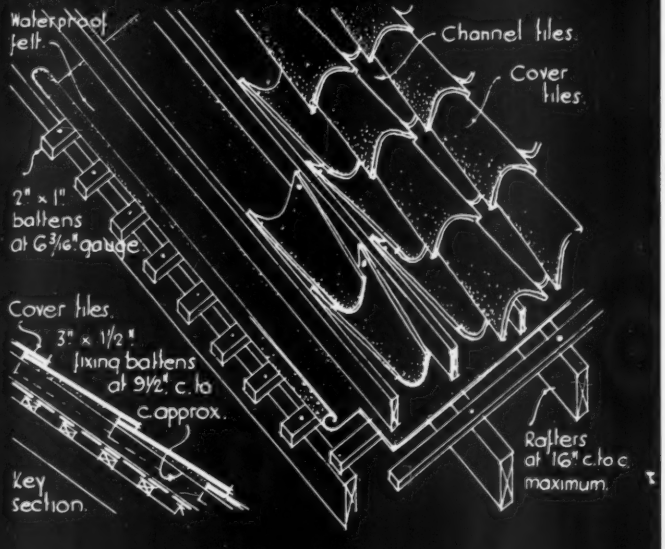


HORIZONTAL ELEVATION OF TILING SHOWING FINISH AT EAVES.

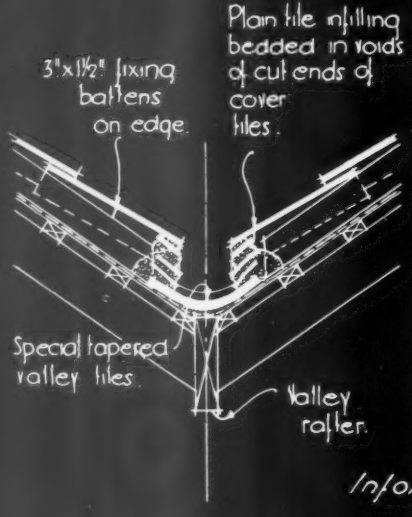
TYPICAL DETAIL OF JUNCTION BETWEEN RIDGE AND HIPS:



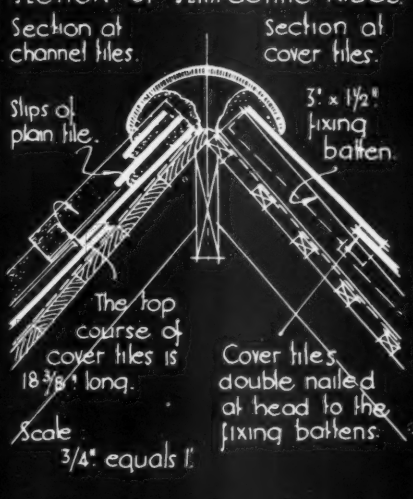
ROOF CONSTRUCTION FOR SEVILLE TILES WITHOUT ROOF BOARDING:



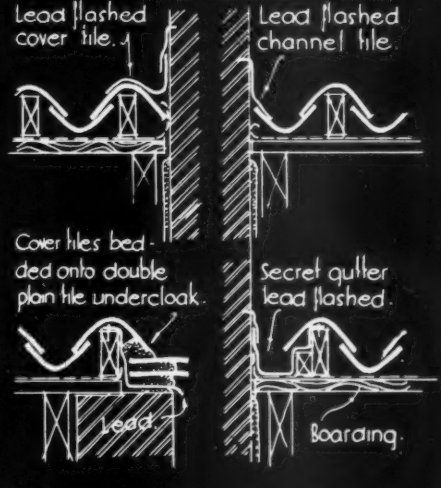
TYPICAL VALLEY CONSTRUCTION.



SECTION OF SEMI-GOTHIC RIDGE.



FINISHES AT ABUTMENTS & VERGE.



Information from Wheatly & Co. Ltd.

INFORMATION SHEET: DETAILS OF ROOFING WITH SPANISH TYPE CLAY TILES

SIR JOHN BURNET TAIT AND LORNE ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON WC1.

INFORMATION SHEET • 683 • ROOFING TILES

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INFORMATION SHEET

• 683 •

ROOFING TILES

Subject : Triton Seville Hand-made Tiles

General :

These tiles are of the Spanish type. Two tiles make up the design : a hogback tile 15⅜ ins. long, tapering from 7 ins. at the head to 5½ ins. at the tail, forming the drainage channel, and a cover tile of the same shape and size reversed, which covers the joint between adjoining channel tiles. The head lap recommended is 3 ins., but this can be increased or reduced if required.

When the tiles are fixed, the head (top end) of each cover tile butts against the tails (lower end) of the channel tiles above it ; the cover tiles are therefore 3 ins. lower down the slope of the roof (if the lap is 3 ins.) than the corresponding channel tiles. The horizontal coursing lines thus have a staggered appearance, except at the eaves where extra long channel tiles are used to obtain an even eaves line.

Pitch :

The minimum pitch recommended is 33 degrees (foot pitch).

Roof Construction :

For the very finest class of work, the roof may be boarded, felted, battened and counter-battened in the usual way and then 3-in. by 1½-in. fixing battens fixed running up the slope of the roof. These battens run between each vertical course of channel tiles and are covered by the cover tiles, and both cover and channel tiles are nailed to them.

For all normal first quality work, a simple and more economical type of construction may be used. Both of the types described below are recommended.

Roof Construction with Boarding

Since both channel tiles and cover tiles are nailed sideways into the fixing battens which run up the roof, the usual battens and counter-battens may be omitted if roof boarding is used.

The roof construction then consists of :—

(a) Rafters.
(b) Roof boarding.
(c) Waterproof felt laid on the boarding.
(d) Fixing battens (3 ins. by 1½ ins.) nailed through the felt to the boarding.

In this type of construction, the felt protects the boarding from damp, and there is ample ventilation around the fixing battens owing to the curved cross-section of the channel tiles.

Roof Construction without Roof Boarding

A slightly more economical form of construction may be used in which the roof boarding is replaced by fairly closely spaced battening. The roof construction then consists of :—

(a) Rafters.
(b) 2-in by 1-in. battens spaced at approximately 6$\frac{3}{16}$ in. gauge.
(c) Untearable waterproofing felt laid over the battens.
(d) 3-in. by 1½-in. fixing battens nailed through the felt to the battens.

In this form of construction, less timber is required than with all-over boarding ; yet the rafters are amply braced and tied by the battens ; the battens are protected from damp by the felt, and there is ample ventilation around the fixing battens owing to the curved cross-section of the channel tiles and to the droop of the felt between the horizontal battens.

Setting Out :

The fixing battens which run up the slope of the roof should be spread out so that the channel tiles fit snugly between them, i.e. at approximately 9½ ins. C. to C. when 3-in. by 1½-in. battens are used. Since all burnt clay tiles vary in size to some extent, the roofing battens should never be set out until the tiles have been delivered and can be measured. When battens are used instead of roof boarding, their position under the waterproof felt may be marked by a chalking cord. This assists in locating the under-battens when nailing the fixing battens.

Nails :

Each tile is nailed at the head with two nails driven into the sides of the 3-in. by 1½-in. fixing battens.

Only non-corroding nails such as copper or yellow metal should be used.

Fittings :

Ridge.—A semi-Gothic ridge tile is made for use with Triton Seville tiles, the voids between the channel tiles and the ridge tiles being filled with slips of plain tile bedded in cement mortar. Semi-Gothic ridges are suitable for roofs pitched between 60° and 33° eaves pitch. Special hip-end ridge tiles are made for the junction between ridges and hips.

Long Cover Tiles.—Cover tiles 3 ins. longer than the normal cover tiles are made for use in the top course so that the cover tiles and channel tiles finish to an even line under the ridge.

Hips.—A tapered hogback tile, 18 ins. long, tapering from 11 ins. to 9⅞ ins., is used for the hips, head nailed with a lap of 3 ins. and the voids between the rolls of the roof tiles are filled as for the ridge.

Valleys.—The valleys are formed with special tapered valley tiles, lapped 3-in. and laid on roofing felt carried unbroken under the valley tile. The voids in the cut ends of the cover tiles may be filled with slips of plain tile.

Eaves.—The eaves may be formed by bedding the last channel course of Seville tiles on a course of 10½-in. by 6½-in. creasing tiles, laid sideways, with two nail holes drilled in the long side. The voids in the ends of the cover tiles are filled solid with mortar and slips of plain tile. The roofing felt should be carried over into the gutter.

An alternative finish at the eaves is obtained by stopping the main roof tiles some distance up the slope of the roof, and continuing to the eaves with three or four courses of plain tiles. In addition to altering the appearance of the roof, this method also helps to spread the water from the channels more evenly during heavy rain.

Long Channel Tiles.—Channel tiles 3 ins. longer than normal are made for use in the bottom course at the eaves so that the channel tiles and cover tiles finish to an even line at the eaves.

Abutments.—The thickness of the fixing battens used determines the spacing of the channel and cover tiles. Where the spacing of tiles must be arranged between fixed points such as abutments, flexibility in setting out can be obtained by varying the thickness of some of the fixing battens.

The maximum amount of elasticity which could be required on any roof is half the centre to centre measurement of the battens, viz. 4⅞ ins., so that a variation of ½ in. either way from the normal spacing of 9½ ins. will allow the maximum amount to be taken up in 10 courses of tiles. This ½-in. variation can be obtained either by reducing the battens to 1 in. or increasing them to 2 ins. Battens thinner than 1 in. or thicker than 2 ins. should not be used. The only difference in appearance by comparison with the remainder of the roof would be either an increase or a decrease of ½ in. in the width of the exposed part of the channel tiles.

The three details shown on this Sheet give alternative methods of flashing the joint between the roof and a wall or the side of a chimney.

Metal flashings are recommended in every case, since it is not good practice to depend upon cement fillets, etc., remaining permanently waterproof.

Verges.—The detail of the finish at a verge shows a metal flashing bedded under the tile creasing. Such flashings (or D.P.C.s) are essential since plain tiles should not be regarded as damp-proof when bedded on mortar.

Bedding Mortar.—It is recommended that a cement gauged lime mortar should be used in preference to cement mortar, a suitable mix being :—

1 part Portland cement.
1 part slaked lime or lime putty.
4 parts clean sand.
All by volume.

Such a mix has adequate strength and adhesion for the work and is less likely to develop shrinkage cracks than the dearer cement mixtures.

Colour :

Natural fired colours : light, medium and dark brindled, blue, and grey.

Stained colours red green, variegated lichen, black, brown and dun.

Covering Capacity :

Approximately 122 pairs per 100 sq. ft.

Approximate Weight :

Five tons 14 cwts. per 1,000 pairs. 14½ cwts. per square (100 sq. ft.).

Laying Seville Tiles :

The information given on this Sheet fully covers the fixing practice recommended for Seville tiles. It is strongly recommended, however, that experienced roofing contractors should be employed for this work.

Manufacturers : Wheatly & Co., Ltd.

Address : Springfield Tileries, Trent Vale, Stoke-on-Trent

Telephone : Newcastle Staffs. 6251

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TABLE OF GAUGES WITH DECIMAL AND FRACTIONAL INCH EQUIVALENTS.

GAUGE (S.W.G.) N°	GRAPHIC SIZE.	THICKNESS OR DIAMETER decimal.	THICKNESS OR DIAMETER fraction.	WEIGHT OF VARIOUS SHEET METALS. (lbs. per sq. ft.) STEEL.	STAINLESS STEEL.	COPPER.	ZINC.	ALUMINIUM.	LEAD.
7/0		.500	1/2	20.37	20.00	23.250		7.04	† 29.67 (1/2")
6/0		.464	15/32−	18.90	18.56	21.563		6.53	
5/0		.432	7/16−	17.60	17.28	20.094		6.08	25.95 (7/16")
4/0		.400	13/32−	16.30	16.00	18.594		5.63	
3/0		.372	3/8−	15.16	14.88	17.313		5.24	22.25 (3/8")
2/0		.348	11/32+	14.18	13.92	16.188		4.90	18.54 (5/16")
1/0		.324	21/64−	13.20	12.96	15.063		4.57	
1		.300	19/64+	12.23	12.00	13.950		4.23	
2		.276	9/32−	11.25	11.04	12.834		3.89	
3		.252	1/4+	10.27	10.08	11.718		3.55	14.83 (1/4")
4		.232	15/64−	9.45	9.28	10.788		3.27	
5		.212	7/32−	8.65	8.48	9.858		2.97	
6		.192	3/16+	7.83	7.68	8.928		2.71	11.13 (3/16")
7		.176	11/64+	7.18	7.04	8.184		2.48	10 lbs.
8		.160	5/32+	6.53	6.40	7.440		2.26	
9		.144	9/64+	5.87	5.76	6.696		2.03	
10		.128	1/8+	5.22	5.12	5.952		1.80	7.42 (1/8")
11		.116	7/64+	4.73	4.64	5.394		1.64	7 lbs.
12		.104	7/64−	4.24	4.16	4.836		1.47	6 lbs.
13		.092	3/32−	3.75	3.68	4.278		1.30	5.56 (3/32")
14		.080	5/64+	3.26	3.20	3.720		1.13	5 lbs.
15		.072	5/64−	2.94	2.88	3.348	2.62 (21)	1.02	4½ lbs.
16		.064	1/16+	2.61	2.56	2.976	2.36 (20)	.902	3.71 (1/16")
17		.056	1/16−	2.28	2.24	2.604	2.13 (19)	.790	3½ lbs.
18		.048	3/64+	1.96	1.92	2.232	1.72 (18)	.677	3 lbs.
19		.040	3/64−	1.63	1.60	1.860	1.54 (17)	.564	2½ lbs.
20		.036	1/32+	1.47	1.44	1.674	1.35 (16)	.508	1.85 (1/32")
21		.032	1/32+	1.31	1.28	1.488	1.16 (15)	.451	
22		.028	1/32−	1.14	1.12	1.302	1.05 (14)	.395	

* Sheets thicker than N° 21 Z.G. are rolled to the Imperial Standard Wire Gauge, or to definite decimals of an inch.

* Zinc sheets are rolled to a Zinc Gauge which rises in number with thickness.

NOTE: Up to N° 28 gauge, fractions are given to nearest 64th.

† Lead thicknesses are calculated in fractions of an inch.

INFORMATION SHEET: STANDARD WIRE GAUGES AND SHEET METAL DATA: N° 1.

SIR JOHN BURNET TAIT AND LORNE ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON WC1. Orca G. Bayne.

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INFORMATION SHEET

• 684 •

SHEET METALS

The following tables set out some of the common properties of the metals whose weights are given on this Sheet :—

(A) *Steel*

Specific gravity	7·88
Weight in lbs./cub. foot	491·4
Melting point °C.	1,350
Thermal conductivity cmg. units at 20° C.	0·06 to 0·12
Coefficient of linear expansion °C., 20°—100° C.	$12·6\times10^{-6}$
Young's Modulus of Elasticity lb./sq. in.	29×10^{6}
Tensile strength tons/sq. in. ...	28-33

(B) *Stainless Steel*
(*Properties vary with different alloys*)

Specific gravity	7·70
Weight in lbs./cub. ft.	480
Melting point °C.	1,400
Coefficient of linear expansion °C., 20°—100° C.	$10·4\times10^{6}$
Thermal conductivity cgs. units ...	0·043 to 0·050
Tensile strength in tons/sq. in. ...	55
Max. shear stress tons/sq. in. ...	45-60

(C) *Copper*

Density, approx.	8·9
Weight in lbs./cub. ft.	558
Tensile strength tons/sq. in. ...	14-16
Elongation per cent. on 2 in. ...	50-60
Brinell hardness	45-55
Melting point °C.	1,083
Relative thermal conductivity at 20° C. (cals./sec./cm.³/°C.) ...	0·941
Coefficient of linear expansion °C. at 20° C.	$16·6\times10^{-6}$

(D) *Zinc*

Specific gravity	7·14
Weight in lbs./cub. ft.	449
Thermal conductivity copper = 100	29·3
Coefficient of linear expansion °C., 20°—100° C.	$39·5\times10^{-6}$
Melting point °C.	419·4

(E) *Aluminium*
(*Commercial Pure Aluminium*)

Specific gravity	2·706
Weight in lbs./cub. ft.	169
Coefficient of linear expansion °C., 20° —100° C.	24×10^{-6}
Thermal conductivity at 100° C. (cals./sec./cm.³/°C.)	0·523
Melting point °C.	659·8
Young's Modulus of Elasticity lb./sq. in.	10×10^{6}

(F) *Lead*

Specific gravity	11·38
Weight in lbs./cub. ft.	707
Coefficient of linear expansion, °C., 17°—100° C.	$29·3\times10^{-6}$
Melting point °C.	327·4
Thermal conductivity (relative) silver	$8·2\times10^{-2}$

Table giving Electrochemical or Activity Series of Various Metals

In this list each metal is electropositive to all that precede it, i.e. two metals in contact in the presence of an electrolyte form a galvanic couple which tends to cause the more electro-positive to be dissolved by electrolysis :

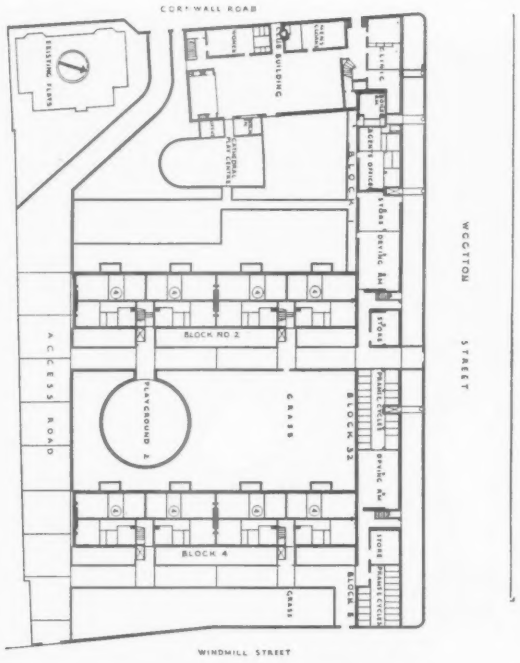
Gold	Lead	Aluminium
Platinum	Tin	Magnesium
Palladium	Nickel	Calcium
Silver	Cobalt	Strontium
Mercury	Thallium	Sodium
Copper	Cadmium	Barium
Arsenic	Iron	Potassium
Bismuth	Chromium	Lithium
Antimony	Zinc	
Hydrogen	Manganese	

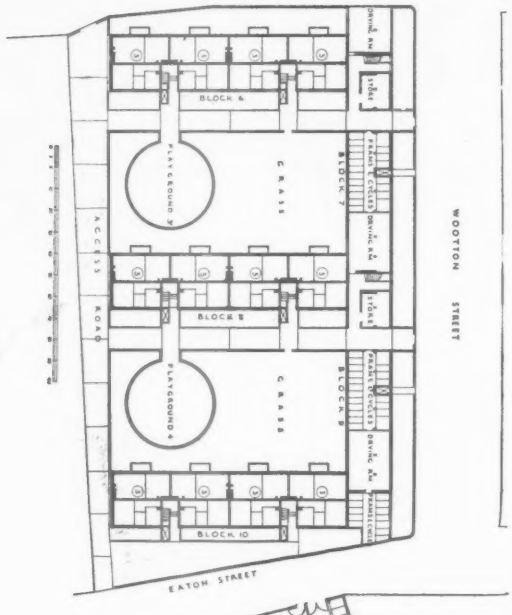
WORKING-CLASS FLATS, LAMBETH

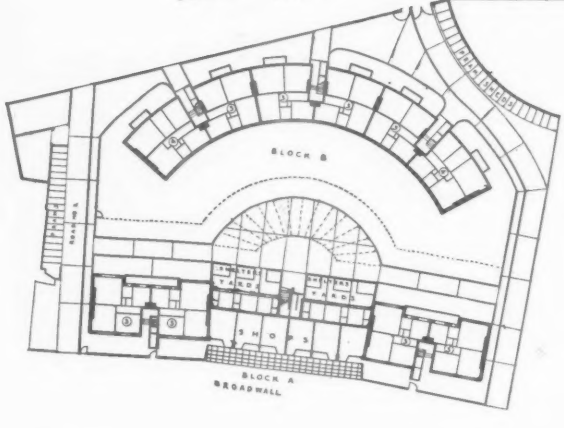
DESIGNED BY EDWARD ARMSTRONG

PROBLEM AND SITE—*One of a series of rehousing schemes for the Ecclesiastical Commissioners being erected in the London area. The scheme contains 66 flats and six shops, and forms the first section of a scheme which is being carried out in three operations and will, on completion, extend from the present site in Broadwall to Cornwall Road, near Waterloo. Above, Block B.*

WORKING-CLASS FLATS, LAMBETH:







SITE—*The site is approximately one acre in extent, and the form of layout is determined by the shape of the site and by orientation requirements. While the long axes of the blocks are generally in a north-south direction, Block A follows the bend in Broadwall, while the curved form of Block B takes advantage of the shape of the site to the rear. Owing to the lack of recreational facilities in the neighbourhood, the buildings are constructed with flat roofs to form additional recreation space.*

Top, the Broadwall front; bottom, a detail of the balconies.

DESIGNED BY EDWARD ARMSTRONG

PLAN—*Internal access stairs are used, serving two flats per floor, except in the case of those flats which occur over the shops in Block A. These are served by short access balconies, but no habitable rooms face on to them. The contract also includes the provision of fuel and tool stores, and pram and cycle sheds.*

CONSTRUCTION—*Owing to the marshy nature of the sub-soil, the buildings are carried upon piles which average around 30 ft. in length. This work has been carried out under a separate contract, and includes connecting ground beams and the ground-floor slab. External walls are in brickwork; floors and roof are in reinforced hollow-tile construction; partitions are of 2-in. hollow-tile. The flats are planned with private balconies, those in Block A are recessed with balustrade walls constructed in 4½-in. reinforced brickwork. Those in Block B, which are of special form, are of reinforced concrete cantilevered from floor slabs and fitted with metal mesh panels.*

EXTERIOR TREATMENT—*The external walls are in light buff facing bricks with artificial stone copings, etc. Windows are standard metal casements in timber frames. Reinforced concrete balconies are struck direct from smooth-faced shuttering and finished in patent cement paint. Flat roofs are insulated against temperature variations and paved with a hard-wearing surface.*

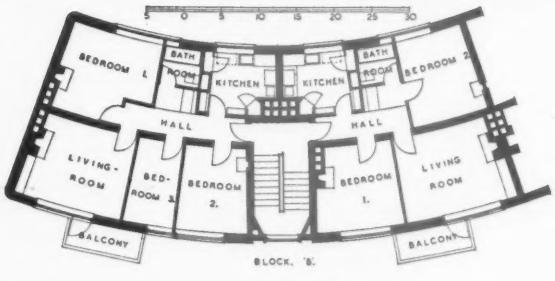
INTERNAL FINISH—*Walls are plastered. All door frames are of steel, grouted solid to partitions. Floors to kitchens and bathrooms are in granolithic coved up to plaster, with a heavy lino inset over the working space in the kitchen. All other floors are in woodblock, laid in mastic direct upon the screed, and finished with a mastic expansion joint against the coved granolithic skirting. Walls of staircases and dadoes in kitchens and bathrooms are finished with a hard cement glaze in colour.*

Above, a view of Block A, taken from the internal courtyard; right, Block B.

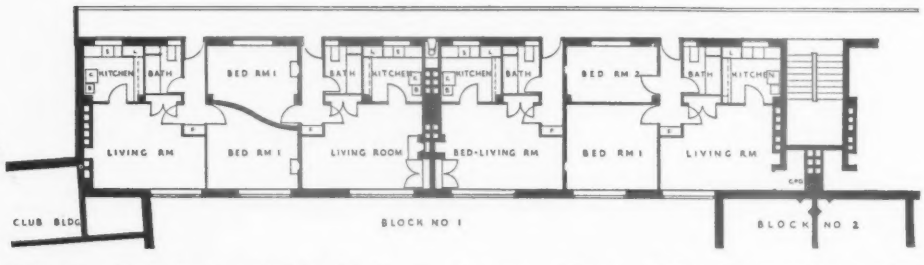
WORKING-CLASS FLATS, LAMBETH

DESIGNED BY

EDWARD ARMSTRONG



TYPICAL PLANS OF 3-AND-4 ROOM FLATS



SERVICES—*Each flat is equipped with its own hot-water installation run from a small coke-burning boiler in the kitchen, supplying hot water direct to bath, sink and copper. Hot-water cylinders with flow and return pipes are placed in airing cupboards. Cooking is by gas, but the buildings are also carcassed for electric power. Each kitchen is fitted with a ventilated larder, dresser and shelving. Each living room and principal bedroom is provided with an open fuel fire, with gas poker point. Secondary bedrooms have gas fires. Refuse disposal is by means of chutes lined with glazed earthenware, accessible at each landing level by self-closing hoppers. Refuse discharges into a wheeled container housed in a refuse chamber at ground level.*

COST—*Built under two contracts, piling and superstructure, at a net building cost of £37,550. Price per cubic foot approximately 1s. 4½d. Average weekly rentals: 1-room flat, 5s. 3d.; 2-room, 7s. 3d.; 3-room, 9s. 6d.; 4-room, 11s. 6d.*

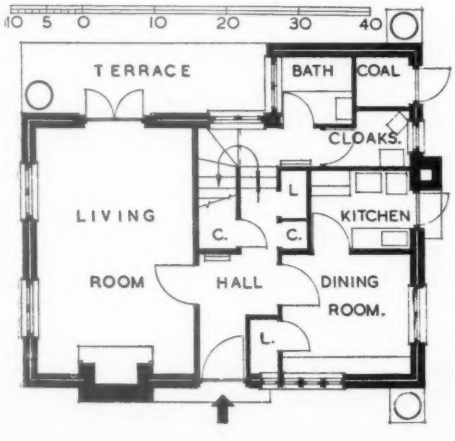
Above, a detail of one of the entrances.

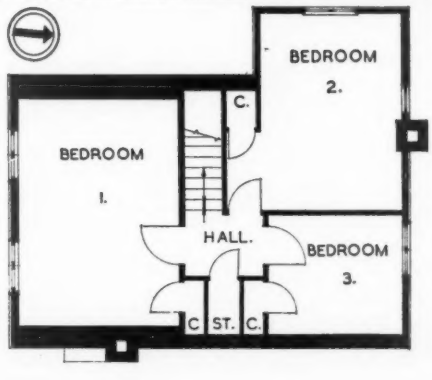
The general contractors were Holloway Bros. (London), Ltd. For list of sub-contractors and suppliers, see page 924.

WEEK-END COTTAGE, DUNSFOLD

PROBLEM AND SITE—*2¼ acres heavy clay site almost completely surrounded by Forestry Commission land. Client's requirements included: a reticent main front elevation facing the approach from the road, and more open elevations on the south and west fronts, which are more private.*
PLAN—*The client required the maximum of accommodation and minimum of cost; to achieve this the whole of the upper floor has been given over to the three bedrooms (each with own built-in hanging cupboard).*
CONSTRUCTION AND FINISHES—*Ground floor: 11-in. hollow walls. External walls are of Sussex Warnham pressed bricks, coloured washed internally. Multi-coloured facing bricks have been used for the chimney stack, fireplace surround and hearth. Upper floor: gable ends, 4½-in. brickwork in wood framing sheathed with cedar weather boarding. Mansard roof: wallboard, covered with brindled red interlocking tiles. Windows: wood casements.*
COST—*£612 (exclusive of drive and cess-pit). Price per ft. cube (approx.) 1s. 0½d.*

Above and right, two views of the main front.





GROUND AND FIRST FLOOR PLANS

Notes from the Building Research Station on*

THE THERMAL INSULATION OF BUILDINGS

PART II—PRACTICE

IN Part I of the Note† reference was made to the importance of thermal insulation, not only from the point of view of preventing undue heat loss, but also in avoiding condensation, pattern staining and cracking due to thermal movements.

The question arises: How much insulation is needed to meet these different requirements? Data on the subject are not as complete and precise as they might be. Doubtless this is largely due to the fact that though increasing attention is now being given to insulation problems, it has not been the practice to consider the provision of insulation in that degree of detail. Broadly speaking, it might almost be said that the practice has been to take it for granted that a building which satisfies the fundamental requirements of strength and stability, rain exclusion, etc., will automatically satisfy insulation requirements to a sufficient degree. It is desirable, however, that the question put above should be faced.

The subject is therefore discussed, in the light of available data and experience, in the following paragraphs and suggestions made as to the requirements. It will be appreciated that space will not permit more than an indication of general considerations coupled here and there with some illustrative example. It would go outside the scope of the present note to discuss at any length the relative merits of different materials and forms of insulating construction.

Before proceeding to consider the separate requirements, starting with those of the avoidance of thermal movement, it may be noted that the requirements for the different purposes are not necessarily additive.

The Reduction of Thermal Movement

Thermal movement in a building sufficient to cause damage is usually due to solar radiation. Consequently, roofs are more liable to it than walls. A flat roof, for example, is more nearly normal to the sun's rays when they are most powerful than any other part of the structure. However, it is only extensive and continuous roofs such as large areas of monolithic concrete with which the thermal movement is likely to be sufficient to cause damage and for which protection therefore is required.

Protection can be provided by the use of a layer of material of high, or relatively high, thermal resistivity. Obviously, to be effective it must be placed outside the main roof structure. Available materials of high resistivity, e.g. cork-board, fibre-board, cannot in general be placed right on the outside of the roof, since usually they require to be protected from dampness, which reduces both their life and their efficiency as thermal insulators. In terms of the familiar example of the concrete flat roof with its necessary waterproof membrane of, say, asphalt mastic, this means that the cork or other material should be placed immediately under the asphalt. Materials such as gravel concrete paving tiles which are not affected by dampness and which, therefore, can be placed on the outer surface, usually have a low resistivity and, therefore, require to be provided in relatively thick layers. So far as such materials are concerned, their thermal capacity matters more than their thermal resistance. The practical distinction between a layer of high capacity and one of high resistance is that the layer of higher capacity takes a longer time to heat up and, therefore, helps to produce a sufficient time-lag to avoid the effects of the sun when it is at its hottest.

Any insulation provided to reduce thermal movement will, of course, add to the thermal insulation of the structure and help to reduce condensation, pattern staining, and heat loss, which are discussed later. In general, however, thermal insulation for these purposes is most advantageously placed on the *internal* face of the shell of the building. This would seem to imply providing an insulating layer both outside and inside, but actually the effect of the insulating layer on the outside can be achieved by some white surface treatment which will serve to *reflect* the sun's rays and prevent in that way the heating up of the fabric by solar radiation. For example, it has been found that a covering of whitewash on ¾-in. asphalt laid on a 4-in. concrete slab is as effective against *thermal movement* as a 2-in. thickness of cork under the asphalt. The protection afforded by a coating of whitewash represents, for practical purposes, the highest that can be obtained by reflection. The question arises whether this is enough. Very little precise information is available in this direction, but experience suggests that protection equivalent to that afforded by a highly reflective surface such as whitewash or 2 ins. or even 1 in. of cork (which is only a little less effective than whitewash) should be sufficient in any structure which is less than 100 ft. in any direction. [In a previous note in this series, it was stated that the provision of insulation equivalent to that of a white surface treatment is quite uneconomical. It has been pointed out, rightly, that this is not true in terms of whitewash and 1 in. of cork which for this purpose is nearly as effective as 2 ins., when the cost of periodical renewal of whitewash is balanced against the initial cost of the cork. There are other factors which might enter in deciding between a white surface treatment and an insulating layer in particular cases, though they are probably not of sufficient importance to warrant any qualification, for general purposes, of the broad statement as to the practical equivalence, as regards performance, of whitewash and a cork layer 2 ins. or even 1 in. thick.]

Where a greater margin of safety is required than that given by whitewash or the cork, or where a dimension of the structure exceeds 100 ft., both forms of insulation might be combined, by the use of a light-coloured surface in conjunction with cork-board or fibre-board. In very large buildings even this protection will probably not suffice; in this case it will be necessary to divide the building into areas of moderate size by suitably designed expansion joints.

The Reduction of Condensation

(1) *Windows*

Because of the high conductance of glass it is impossible to prevent condensation from occurring on single-glazed windows unless special steps are taken by suitable heating and ventilation. With double glazing, the position would be different in view of the extra thermal insulation thus provided. Double glazing, however, is rarely considered justified from the point of view of the reduction of condensation alone, since windows, unlike the rest of the interior surfaces of a building, are unharmed by condensation.

(2) *Walls, Ceilings, etc.*

Condensation on the remaining internal surfaces of a building cannot, however, be ignored, particularly as regards walls and ceilings, since the decoration usual on these surfaces is easily harmed by dampness.

Condensation occurs on a wall or other surface when the heat loss to it is sufficient to lower the temperature of the air in contact with it below the dew point. This heat loss can be reduced, with a corresponding reduction in the risk of condensation, by thermal insulation. The nearer this thermal insulation is placed to the inner surface, the less will be the risk of condensation in the building, for if it is set back, the thermal capacity of that part of the wall which lies between the insulation and the inner surface may be such that its response to fluctuations of temperature is so slow as again to bring a risk of condensation.

Some condensation at times is, of course, almost inevitable where efficient heating and ventilation is not provided, but even where the heating and ventilation is good, it would appear that an amount of thermal insulation at least equal to that provided by an 11-in. sealed cavity wall,‡ plastered internally, is usually necessary to prevent trouble due to condensation. Experience suggests that under the same conditions a solid wall by itself does not provide complete insurance against condensation either because of its high thermal conductance when it is not very thick, or its high thermal capacity when it is very thick.

For the improvement of the insulation provided by a solid wall it can be lined internally with a light-weight and insulating material, such as wood panelling or fibre-board, or with plaster on either laths or plaster-board, fixed to timber battens plugged to the wall. In addition to the insulation value of this lining, the air space between the battens and the wall face contributes markedly to the insulation value of the construction. An alternative method is to line the wall with, say, 1 in. of cork-board or fibre-board fixed directly to the wall face.

The experience of the Station in dealing with practical cases suggests that the provision of a wall having an air-to-air transmission coefficient of 0.3 B.Th.U./hr./sq. ft./°F. difference in air temperature is necessary to reduce risk of condensation to a reasonable level. This insulation is provided by an 11-in. cavity wall or a 9-in. solid wall lined in the above manner.

Similar thermal insulation should be adopted in the case of roofs. A well-built pitched roof with a ceiling beneath usually provides thermal insulation at least equal to that mentioned above. This, however, is rarely the case where a flat roof is concerned—especially where the roof is constructed of concrete. A roof of this nature should be lined on the underside in the same manner as described for walls.

The Reduction of Pattern Staining

Pattern staining is due to temperature differences over the surface of a non-homogenous structure as the result of differences in the thermal conductivity of the parts of the structure. It can be prevented by introducing such an amount of thermal insulation on the inside as will sufficiently reduce these temperature differences. The amount required and the manner in which it is applied will, of course, depend upon the circumstances of the case. Broadly speaking, it is probably true to say that the provision of insulation adequate to reduce condensation will largely obviate pattern staining.

Pattern staining and recommendation for the use of thermal insulation to prevent it, are dealt with at length in Building Research Bulletin No. 10—"The Prevention of Pattern Staining of Plasters" (London, 1931, H.M. Stationery Office, price 4d. net).

The Reduction of Heat Loss

One of the objects of a building is to provide for comfortable temperature conditions inside irrespective of weather conditions outside, and this in the most economical manner possible. This means providing at the minimum of cost for coolness in summer and warmth in winter. In this country the latter is, of course, the principal concern. It remains therefore to consider the question of reducing heat losses through the structure.

It has already been noted that any structure which is designed to satisfy the requirements of structural stability, rain exclusion, etc., must of necessity provide *some* thermal insulation; further, that in order to prevent or reduce condensation, pattern staining, and, perhaps, thermal movement, the thermal insulation of

* Crown copyright reserved. † "A.J.", October 20, 1938.

‡ Note—In Part I of the Note a value was given for the thermal resistance of a 2-in. air space in terms of "per inch of thickness." This was done for purposes of convenience and applies only to the thickness mentioned.

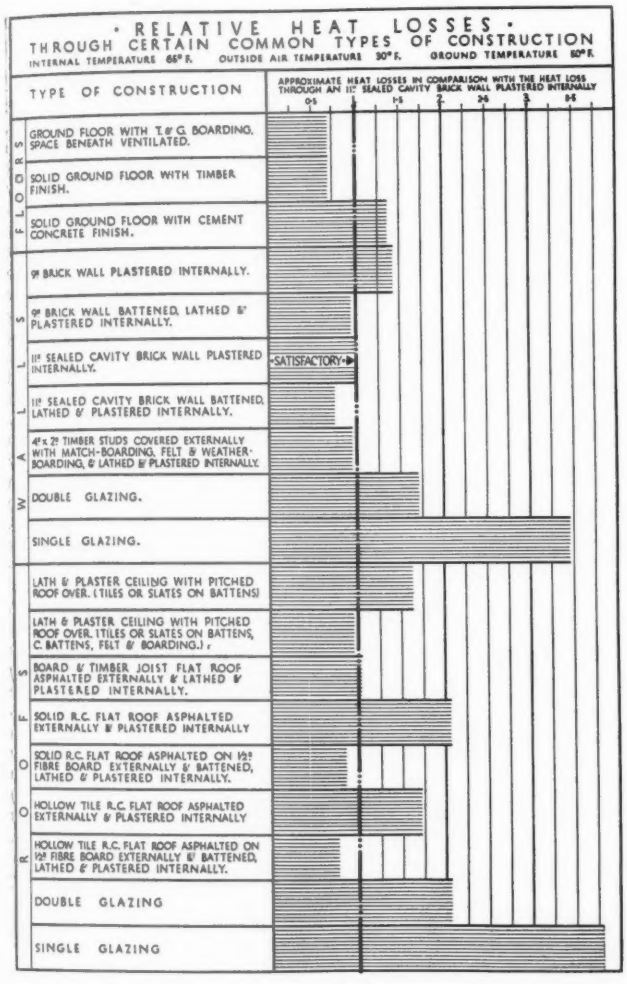


Figure 1

the shell of a building must be of a certain standard.

The question of what extra insulation, if any, is introduced to reduce heat losses is largely a matter of balancing costs—the cost of the thermal insulation being weighed against the anticipated saving in heating costs. At first sight, since the cost of any extra thermal insulation is a non-recurring and usually not very high charge on the building, it would appear that a great increase in the thermal insulation of a building can easily be justified. Actually, however, added insulation to the walls, floors, etc., however great, would only go a certain way towards reducing heat losses. Calculation for a room which was by no means exceptional showed that the heat losses from the room on a particular day were as to 25 per cent. represented by heat lost through the windows, as to 39 per cent. by heat lost in warmed air leaving the room through the flue, etc., and replaced by cold air and only as to the remaining 36 per cent. heat lost through the walls, floor and ceiling. It would, therefore, be irrational to push to an extreme extent the provision of insulation for the walls, etc. Attention should be paid to all three causes of heat loss. Short of double glazing, there is, of course, a strict limit to what can be done in reducing heat losses through windows without unduly sacrificing daylighting. Similarly, some loss of heat through the escape of warmed air must be faced in the interests of ventilation; but anything that is done to reduce discomfort from draughts will at the same time help to reduce heat losses. Further, air-infiltration through open joints in boarded ground floors with the usual ventilated air space underneath, which is a common cause of unnecessary heat loss, can be prevented by the use of tongued and grooved boarding without sacrifice of necessary ventilation.

Due account should therefore be taken of inevitable heat losses through windows and escape of warmed air, in the interests respectively of daylighting and ventilation, in considering the extent of the insulation of the walls, etc., to reduce heat losses. It is, in fact, doubtful whether, in general, any thermal insulation over and above that required for the purpose of avoiding thermal movement, condensation and pattern staining, will usually be justified.

It should, nevertheless, be pointed out that insulation to prevent heat losses is not *entirely* a matter of balancing costs. Take the case of two rooms, one with thin walls and the other with thick. It might at first sight be supposed that, given a bigger fire, the first room could be made just as comfortable as the second. Actually, this is not necessarily the case. The inner surface of the thin wall will be colder than that of the thick one, so that with the bigger fire, but colder wall, the temperature conditions will tend to be less uniform and less comfortable in the first room than in the second. Differences in conditions in practice, however, are not usually such as to make this point of serious importance, though it is not one to be altogether ignored. There is, however, the point, mentioned in Part I, that the provision of an insulating layer on the inside of the walls does make a great difference to the *rate* at which the room can be warmed with a given source of heat—a point of especial importance in connection with intermittent heating.

In Figure 1 above the insulation values of certain common types of construction are compared with that of an 11-in. cavity wall plastered internally which, as indicated, is considered to provide a satisfactory standard of thermal insulation for ordinary purposes.

Further information on the thermal insulation of buildings will be found in "Principles of Modern Building, Volume I—Walls, Partitions and Chimneys," (London, 1938, H.M. Stationery Office, price 10s. 6d. net).

SCIENCE *VERSUS* NOISE

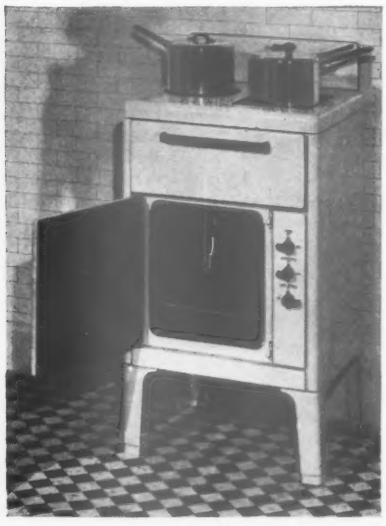
The modern building has its special disadvantages. It is fireproof, but it is not noise-proof. In fact, measurements have shown that it is a good deal noisier than were our traditional designs, where there was a discontinuity of structure, and massive but poorly conducting materials. Steel-framed and ferro-concrete building, cement mortar and plaster, to say nothing of a general ramification of central heating, running water and other piping, have replaced the softer brickwork, lime mortar and plaster, wooden beams, joists and studding, and the localized piping of the older houses.

Dr. G. W. C. Kaye, of the National Physical Laboratory, who has just contributed an article to the *Journal of Scientific Instruments* on "Sound and Noise Insulation," says no one can pretend that we can go back to old methods, but if we are to mitigate the noise nuisance in modern buildings we must adopt measures which are best incorporated during the designing stage.

Dr. Kaye writes, "There are two guiding principles when the question of noise and sound abatement is being considered; the one is that the degree of abatement of a noise in a particular locality need be no more than will conform to the background of noise which obtains in that locality. The other is that in a medley of noises, the loudest must be tackled first to achieve any appreciable benefit, after that the next loudest, and so on. The first line of attack on noise abatement, and in general much the most effective and economical, is to tackle an objectionable noise at the source," says Dr. Kaye, "and find the best means of reducing the output as much as possible. The next step is to find a method of confining or 'smothering' the noise in the place where it is generated. The path of a sound in its journey from source to hearer may be either *via* the intervening air or *via* a sequence of solid materials or structures. Experience had shown that the two effects required very different remedies for abatement.

"Large scale operations require 'sound-proof' buildings to mask them. Doors and windows should be heavy and close fitting and situated on the side remote from that where the noise is liable to be regarded as a nuisance. Doors and windows, particularly high windows and skylights, may require to be doubled and, in extreme cases, it might be necessary to employ double walls mounted on independent foundations. The remedy for structure-borne noises is discontinuity somewhere in the structure either in the form of an air gap or as resilient material. Recent tests show that the insulating value of a single solid wall benefited by the application to both sides of plastered building board, fixed to battens secured by insulating clips."

Dr. Kaye describes three general methods providing a composite structure for floors. The first is to lay on the floor a soft material or linoleum with a sponge rubber backing, the second is to lay a "floating floor"—a supplementary floor supported on insulating material on the structural floor—and to mount an insulated false ceiling below the floor, for example, on insulating hooks. Each of these methods, he states, possesses its own advantages.



TRADE NOTES

[*By PHILIP SCHOLBERG*]

A Good Cheap Cooker

HAVING made some remarks a few weeks ago about the lack of enterprise of the electrical industry, I am delighted to find that the G.E.C. have produced a cooker which not only looks nice but which sells at a reasonable price and has thermostatic control of oven temperature as well. The photograph at the head of these notes shows that the design has been kept commendably simple. Purists may cavil at the slightly arty handles, but they are, after all, the sort of thing quite a number of architects would design for themselves, and it would be graceless to grumble at details when the general effect is very good. When a manufacturer claims that there is "none of the superfluous exaggeration which accompanies many so-called stream-line commodities," it is such a relief from the usual "re-styling" jargon that one can feel only affection for such a reasonable outlook.

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To call this cooker cheap is not strictly true, for the price is £12 10s. in mottled grey or green, the thermostat bringing this figure up to £14 3s., while the luxury thermostat model, finished in white, is £16. It is, of course, possible to buy the same size of cooker for very much less money, but the fact remains that this is one of the few decent-looking jobs selling at anything like the price, most of them being much bigger jobs altogether, and selling at correspondingly higher prices. The inclusion of a thermostat seems a most sensible idea. Sixteen different heats are shown on the adjusting dial, and there is also a pilot light which comes on when the oven is switched on, going out as soon as the oven reaches the required temperature. Overall dimensions are 21½ ins. wide, 20½ ins. deep by 41½ ins. high.—(*The General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2.*)

Cooker Control . . .

On November 3 I stated that the Horstmann Gear people had intended to market a time-switch control for electric cookers, but that they had decided not to do so. Since this statement is apparently not true, I can only assume that the information given to me by the firm's press agent was due to some internal misunderstanding. Now, however, I am categorically assured by one of the firm's directors that production has been started, that delivery involves a slight delay at the moment, but that supplies will be immediately forthcoming in about a month's time. So now we know where we are.

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In this cooker switch, which is known, by the way, as the H.B.E., the timing is done by a small self-starting synchronous motor which can be arranged, through a series of dials, to turn the oven on and off at any given time. In the illustration below

there are two concentric dials to be seen. The outer one controls the actual cooking time; turning the central knob to, say, two hours, turns on the oven current and also starts the motor, which turns the current off again at the end of the two hours. The inner dial sets the delay action and acts as an over-riding control which in effect postpones the whole operation for any period up to 14 hours. Assume, therefore, that a cooked meal must be ready at 8.0 and that the cooking time is about two hours. The cooking dial is set to 2 and the delay action dial to the number of hours that must elapse before cooking is to start. In the example here cooking starts at 6.0, so that if you want to go out at 2.30 the delay dial is set at 3½, and the switch does the rest. Meanwhile, you can go for a walk, or even crack off a few more full sizes without having to keep an eye on the clock. Bought in the ordinary way this switch is boxed up for fitting on the wall, the existing oven switch on the cooker being removed. Ideally, it should, of course, be built in as part of the cooker itself, but this is up to the cooker manufacturers, who are presumably waiting to see whether the public likes it or not. Offhand, one would say that the public probably will, particularly as the Regulo control for gas cookers has been very popular, and this, if used in conjunction with an adjustable thermostat, quite certainly goes one better. The retail price is 45s., and there is no reason at all why the unit should not be used for controlling other electrical fittings where a delay action may be an advantage. Fires in bedrooms or bathrooms strike one as an obvious example, and there may well be further industrial uses. Current carrying capacity is 15 ampères.

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There is, however, one further point on which information is needed. I cannot pretend to know very much about cooking, but I believe that certain things should be put straight into a very hot oven. This time-switch naturally involves putting all food into a cold oven and bringing the temperature gradually up when the oven is switched on. This is probably not a serious difficulty, but users will have to be taught if there are any real changes in cooking technique.—(*The Horstmann Gear Co., Ltd., Albion Works, Bath.*)

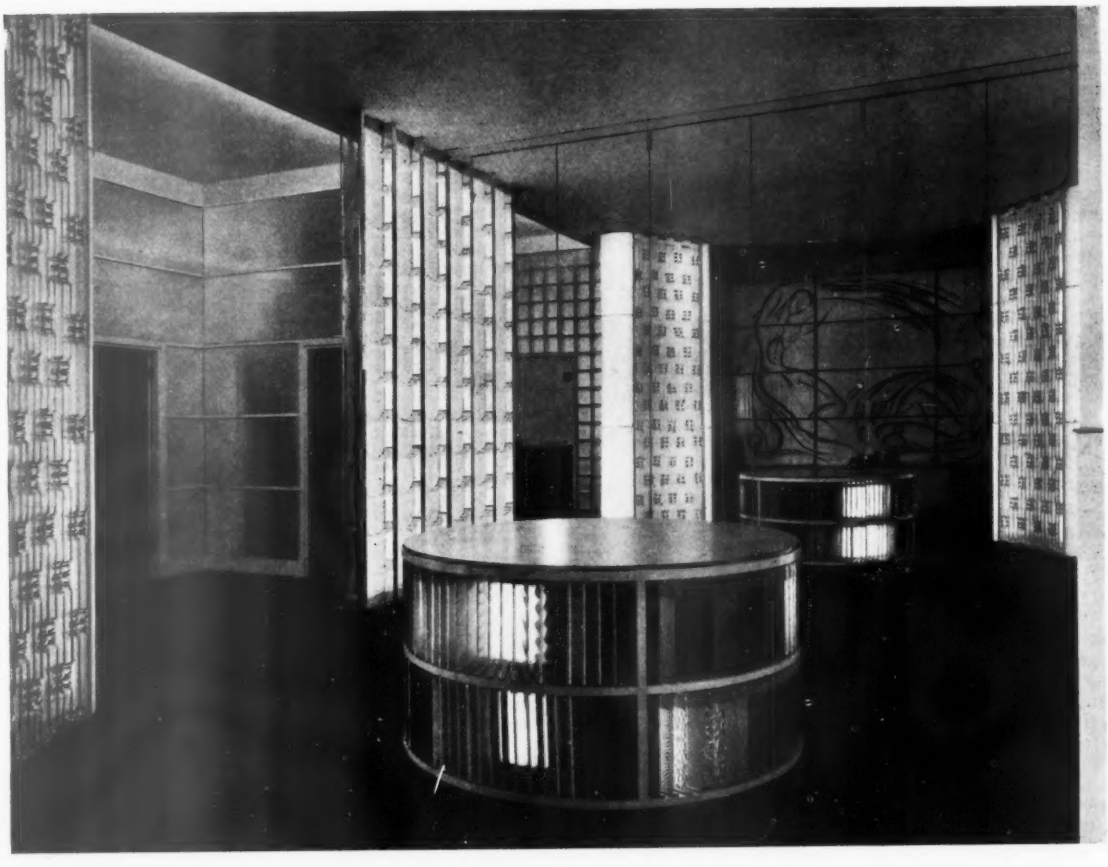
. . . New Model Cookers

Talking of time switches, it is interesting to hear that Bellings will shortly be offering cookers with a fitting of this type, though I do not know whether they are using the Horstmann switch or not. When one firm starts it is to be assumed that others will follow suit in due course, though Bellings are not, I believe, the first, for Hotpoint have a luxury model in which a time switch is used.—(*Belling & Co., Ltd., Bridge Works, Southbury Road, Enfield, Middlesex.*)

Gilding the Pill

Manufacturers can approach the architect in several different ways. From the point of view of the drawing office, there is much to be said for the virtually standardized information sheet technique, what the product looks like, what it does, what it's made of, what it costs, and where you can get it. There is also, however, the question of goodwill, prestige, call it what you like, and many people are grateful (and therefore useful) to a manufacturer who takes the trouble to go further than he strictly need,

NEW SHOWROOMS, 63 PICCADILLY, W.



The new showrooms of Messrs. Pilkington Bros., Ltd., at 63 Piccadilly, W., were officially opened last week. The architect is Mr. Kenneth Cheesman. The photographs show: above, the centre bay. The decorative glass piers are built up of bent No. 4 fluted glasses of special white metal—the inside faces being sandblast. The projecting wings are used to display, on one side, curved and coloured vitroflex, and on the other, illumination through prismatic glass and pressed glass ribbon strips.

The walls of the conference room, right, are faced with pink polished plate glass; ceiling, acoustic slab; floor close carpeted. The far end wall is of glass bricks.

The lighting fitting is built up of individual glass lustre units. Extreme right, a bathroom in Wedgwood vitrolite and pink silvered vitroflex with a new satin finish. The mirror is mounted on bent glass and the floor is of pink silvered glass tiles.

who provides, in an attractive form, information which is useful but which is not essential to the proper use of his product. All this is merely leading up to the statement that Ascots have just produced a 300-page book on flats with only about 30 pages devoted to purely Ascot information. The book starts with a series of general articles on such problems as flat planning, management, noise, A.R.P., Continental practice, the flat of tomorrow, all by acknowledged experts, ten of them altogether, who need not be mentioned by name. Then follow nearly 200 pages of flat plans and illustrations, with explanatory notes and drawings to show how Ascot heaters have been installed in kitchens or bathrooms. These flats have not been chosen necessarily on grounds of merit, but to give a general view of urban flat blocks, both municipal and privately owned, throughout the country. Not all of them exhibit the good points which the introductory articles put forward. Take, for example, Mr. Bagenal on noise. After discussing the advantages of solid structure, he goes on to say that "in working-class flats it is equally important not to put living room against bedroom on the party wall," yet an inspection of the flat plans shows that far too many have this fault. This, of course, is the fault of the architects concerned, and does not detract from the

value of the book, which is so much more than mere propaganda that one must review it on its merits, irrespective of the fact that it is naturally designed to demonstrate the uses and installation of Ascot water heaters. Here one may add that there is no attempt to beat about the bush and pretend that the book is issued for purely high-minded reasons. The introductory articles are quite general, but all the flats have frankly been chosen to show the use of Ascot heaters, and the final notes on installation are also written with this end in view, though even here very nearly as much space is given to flues and the proper position of outlets as to the heaters themselves, the performance data and other details of these being given in not more than 12 pages. Much of this latter information is equally applicable to the detached private house, or for that matter any other installation.

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Ascots seem to do a job properly if they think it is worth doing at all. This book is worth keeping either for the flat plans, for the introductory articles, or for the technical information. Good.—(*Ascot Gas Water Heaters, Ltd., 224 High Holborn, London, W.C.1.*)

Believe It Or Not

Did you know that it is possible to get corkscrews which twist left-handed, and that these are made purely in the interests of left-handed cork drawers? Half-a-crown in stainless steel, and they were shown at the recent Woman's Fair. Where I also discovered that you can get twelve pairs of trousers pressed (or was it cleaned?) for 7s. 6d., always assuming, of course, that you have got twelve pairs of trousers.

Stop Press

I have just heard that Smiths the clock people have also produced a time control which does the same thing as the Horstmann effort. Also a clockwork unit to do the same for gas cookers. Both these units will be described as soon as further information is available.

THE BUILDINGS ILLUSTRATED

BERKELEY SQUARE HOUSE (pages 901-906). Architect: Gordon Jeeves. The general contractors were Sir Robert McAlpine and Sons (London), Ltd., and the sub-contractors and suppliers included: Ragusa Asphalte Paving Co., Ltd., asphalt; Acrow (Engineers), Ltd., shutter props and column clamps; Bath and Portland Stone Firms, Ltd., Portland stone; Waygood-Otis, Ltd., lifts; Williams and Williams, Ltd., steel windows; Brick Makers and Factors, Ltd., facing bricks; Le Grand, Sutcliff and Gell, Ltd., artesian wells; Wm. Boyer and Sons, Ltd., sand and ballast; Matthew Hall & Co., Ltd., heating and sanitation; Bective Electrical Co., Ltd., electric lighting and power installation; London Brick Co., Ltd., hollow floor blocks; Atlas Sprinkler Co., Ltd., sprinkler installation; Kew Transport (Contractors Supply) Co., haulage; Matthews and Yates, Ltd., air conditioning; Roberts, Adlard & Co., Ltd., Fletton bricks; W. N. Froy and Sons, Ltd., sanitary fittings and ironmongery; Abbey Building Supplies, Ltd., anchorages to concrete; J. W. Gray and Son, Ltd., lightning conductors; Hunziker (Gt. Britain), Ltd., white flint bricks; Ernest Hawkins, Ltd., plastering; North British Rubber Co., Ltd., rubber handrails; Haskins, bronze metal doors; Carter and Aynsley, Ltd., bronze metal grilles and door furniture; Fenning & Co., Ltd., granite and marble; Samuel Elliott and Sons (Reading), Ltd., lift car doors; Charles Walker & Co., quarry tiling; D. Burkle and Sons, Ltd., teak and walnut doors; Diespeker & Co., Ltd., terrazzo; J. Clark and Son, Ltd., glazing; Ramsdens (London), Ltd., wall and floor tiling, terrazzo; Bolton Gate Co, Ltd., collapsible gates; Caston & Co., Ltd., goods lift doors; Cement Marketing Co., Ltd., cement; John Healey (London), Ltd., ferro-concrete glazing; H. H. Martyn & Co., Ltd., metal dado rails; John Stubbs (Marble and Quartzite), Ltd., marble to lift halls; Francis Theakston (1933), Ltd., steel turntables; E. G. Payne, Ltd., fibrous plaster; Maple & Co., Ltd., lino; Redferns Rubber Works, Ltd., rubber; Ideal Boilers and Radiators, Ltd., Rayrad radiators and sanitary ware; I. C. I. (Plastics) Ltd., Perspex synthetic resin sheet; Plastilume Products Ltd., moulded and machined I.C.I. plastics to lay light in vestibule; Bull Motors Ltd., Bull super silent motors.

WORKING CLASS FLATS, ETHELM STREET, LAMBETH, S.E.1 (pages 915-918). Architect: Edward Armstrong. General contractors: Holloway Brothers (London), Ltd. Sub-contractors and suppliers included: O'Brien, Thomas & Co., Ltd., fireplaces; Stuart's Granolithic Co., Ltd., artificial stonework; Allen and Greaves, Ltd., balustrading, hand-rails, roof and balcony railings, etc.; Fredk. Braby & Co., Ltd., pressed steel door frames; Crittall Manufacturing Co., Ltd., metal windows and balcony doors; A. Dean & Co., Ltd., electric light and bell installation; South Metropolitan Gas Co., gas installation; Cornes and Haighton, Ltd., hot water installation; Modern Surfaces, Ltd., Muroglaze dadoes to staircase; John Knowles & Co. (London), Ltd., sanitary fittings; R. G. Ward & Co., Ltd., bricks; Vigers Bros., Ltd., woodblock flooring; Frazzi, Ltd., Paropa roofing.

COTTAGE AT DUNSFOLD (page 919). The general contractors were Gower Builders (London), Ltd., who were responsible for the entire work. Sub-contractors and suppliers included, Belling & Co., Ltd., electric cooker; Davis Gas Stove Co., Ltd., Nautilus boiler; Shanks & Co., Ltd., sanitary fittings; Easiwork, Ltd., cabinet; Chas. Constantine, Ltd., door furniture.

THE WEEK'S BUILDING NEWS

LONDON

BERMONDSEY. *Housing.* The L.C.C. is to clear the Freda Street area of Bermondsey and provide rehousing at a cost of £60,000.

CAMBERWELL. *Housing.* The L.C.C. is to erect 174 tenements on the Sultan Terrace area, Camberwell, at a cost of £99,020.

ISLINGTON. *Housing.* The L.C.C. has approved a scheme for the erection of 255 dwellings on the Tufnell Park estate, Islington, at a cost of £152,250.

LONDON. *South Bank Redevelopment.* The L.C.C. has prepared a scheme for the redevelopment of the south bank of the Thames between Westminster and Waterloo bridges at a cost of £1,629,000. It includes the provision of a new embankment and will involve the displacement of 2,000 people for whom new accommodation will have to be provided at a cost of £300,000.

MARYLEBONE. *Electricity Premises.* The Marylebone B.C. has approved plans by Mr. K. M. B. Cross for the new electricity premises to be erected in Blandford Street at an estimated cost of £64,000.

POPLAR. *Housing.* The L.C.C. is to erect 86 tenements on the Grace Street area of Poplar at a cost of £48,850.

STEPNEY. *Housing.* The L.C.C. is to erect 336 dwellings on the Phœbe Street area, Stepney, at a cost of £193,500.

WIMBLEDON. *Flats, etc.* Plans passed by the Wimbledon Corporation: 20 flats, 17 Hill Side; 16 flats, 28 Pelham Road.

PROVINCES

BARNOLDSWICK. *School.* The West Riding Education Committee is to erect an elementary school at Barnoldswick at a cost of £53,235.

BECONTREE. *School.* The Essex Education Committee has approved plans for the erection of the Becontree junior school at an estimated cost of £19,334.

BIRMINGHAM: *Airport Buildings.* The Birmingham Corporation is to erect terminal buildings, hangars, etc., at the airport at a cost of £14,648.

BIRTLEY. *Houses.* Mr. T. W. Armstrong is to erect 10 houses in Ravensworth Road, Birtley.

BISHOP'S STORTFORD. *School Improvements.* The Hertfordshire C.C. is to improve the Herts and Essex High School, Bishop's Stortford, at an estimated cost of £18,941.

BROCKENHURST. *School.* The Hampshire Education Committee has obtained sanction to borrow £32,388 for the erection of an elementary school at Brockenhurst.

CHATHAM. *Hospital Extensions.* The Kent C.C. is to provide accommodation for maternity cases at the County Hospital, Chatham, at a cost of £19,753.

CHISLEHURST. *School.* The Kent Education Committee is to erect a two-department school on the Bexley Lane site, Chislehurst.

CHORLEY. *Houses.* The Chorley Corporation is to erect 92 houses in Brown Street at a cost of £39,202.

COLCHESTER. *Gymnasium, etc.* The Essex Education Committee has approved plans for the erection of a gymnasium, dining-room, common room, etc., at the North-East Essex Technical College and School of Art, Colchester, at an estimated cost of £9,597.

ESSEX. *Laboratory.* The Essex C.C. is to establish a county laboratory at a cost of £17,575.

ESSEX. *School.* The Essex Education Committee has approved plans for the erection of the Buckhurst Way junior school at an estimated cost of £17,394.

GREAT BURSTEAD. *School Enlargement.* The Essex Education Committee has approved plans for the adaptation and enlargement of the Great Burstead Council Junior School, at a cost of £7,687.

HITCHIN. *School.* The Herts Education Committee is to erect a senior school at Old Hall Way, Hitchin, at a cost of £49,391.

HOLYHEAD. *Houses.* The Holyhead U.D.C. is to erect 110 houses in Newry Street at a cost of £38,908.

HORNSEA. *Bathing Pool.* The Hornsea U.D.C. is to provide a heated sea-water bathing pool.

LEEDS. *School.* The Leeds Education Committee has acquired land at Parklands, Seacroft, for the erection of a school.

LEICESTERSHIRE. *Houses, etc.* The Leicestershire C.C. has approved a programme for the erection of 20 police houses; headquarters, at a cost of £12,000; Melton Mowbray police Station, at £900; Coalville police court and station, £30,000; and Loughborough police court and station, £4,500.

LIVERPOOL. *School.* The Liverpool Education Committee is to erect new premises for the Queen Mary High School for Girls at a cost of £54,592.

NORTHAMPTON. *Extensions.* The Northampton Corporation has now approved plans by Mr. Percy Thomas for the extension of the town hall, at a cost of £51,000.

PLOUGHLEY. *Houses.* The Ploughley R.D.C. is to erect 48 houses in various parishes at a cost of £20,410.

READING. *Houses.* The Reading Corporation is to erect 100 houses on the Whitley estate at a cost of £42,056.

REDDITCH. *Houses.* Plans passed by the Redditch U.D.C.: 160 houses, Riverside Park Estate, Mr. S. Hamblin.

RUGBY. *School.* The Warwickshire Education Committee is to erect a junior school for 500 on the Rokeby estate, Rugby.

RYHOPE. *Houses.* The Sunderland R.D.C. is to erect 62 houses in Ryhope Street, Ryhope.

SHUTTINGTON. *School.* The Warwickshire Education Committee has acquired a site in Seckington Road, Shuttington, for the erection of a senior school for 200.

PRICES

On the following pages appears Prices for Measured Work—Part I, with prices last published on October 27, brought up to date.

★ *ANSWERS TO QUESTIONS*

While the JOURNAL, *naturally, cannot presume to undertake the responsibilities of a quantity surveyor, it has arranged with the authors of this Supplement to answer readers' questions regarding any matter that arises over their use of the Prices Supplement in regard to their work, without any fee. Questions should be addressed to the Editor of the* JOURNAL, *and will be answered personally by Messrs. Davis and Belfield. As is the normal custom, publication in the* JOURNAL *will omit the name and address of the enquirer so that it is unnecessary to write under a pseudonym.*

The complete series of prices consists of four sections, one section being published each week in the following order :—

1. Current Market Prices of Materials, Part I.
2. Current Market Prices of Materials, Part II.
3. Current Prices for Measured Work, Part I.
4. A.—Current Prices for Measured Work, Part II.
   B.—Prices for Approximate Estimates.

● *Prices are for work executed complete and are for an average job in the London Area ; all prices include for overhead charges and profit for the general contractor.*

PART 3

CURRENT PRICES FOR MEASURED WORK—I

BY DAVIS AND BELFIELD

PRELIMINARIES

Water for the works	1½%
Third party and other insurances to persons and property, employer's liability, unemployment and Public Health insurances, and fire insurances (based on value of contract) ..	
Single scaffolding .. .. per yard super	2/–
Independent scaffolding .. per yard super	2/8

EXCAVATOR

	Ordinary Ground	Clay
Surface digging average 9″ deep and wheeling and depositing on spoil heap, not exceeding two runs per yard super	–/9	1/1

EXCAVATOR—(*continued*)

	Ordinary Ground	Clay
Excavating not exceeding 5′ 0″ deep to form basement and getting out per yard cube	1/11	2/10½
Ditto, exceeding 5′ 0″ deep and not exceeding 10′ 0″ deep .. .. per yard cube	2/5	3/6
Excavating not exceeding 5′ 0″ deep to form surface trenches and getting out per yard cube	2/7	3/10
Ditto, exceeding 5′ 0″ deep and not exceeding 10′ 0″ deep .. .. per yard cube	3/7	5/0
Ditto, not exceeding 5′ 0″ deep to form basement trench excavation commencing 10′ 0″ deep, and getting out .. .. per yard cube	3/4½	4/6
Returning, filling in and ramming around foundations .. .. .. per yard cube	1/1	1/5

CURRENT PRICES

BY DAVIS AND BELFIELD

EXCAVATOR, CONCRETOR AND BRICKLAYER

EXCAVATOR—(*continued*)

	Ordinary Ground	Clay
Filling barrows and wheeling and depositing excavated soil not exceeding two runs per yard cube	1/1	1/5
Spreading and levelling from excavated heaps in layers not exceeding 12″ per yard cube	–/9	1/–
Filling into carts or lorries and carting away per yard cube	4/6	4/10
Planking and strutting to sides of basement, excavation, including strutting per foot super	1/–	–/9
Planking and strutting to surface trenches (both sides measured) .. .. per foot super	–/4½	–/3
Hardcore, broken brick, filled in under floors and well rammed and consolidated per yard cube	6/6	
Hardcore, broken brick, deposited, spread and levelled, and rammed to a true surface 6″ thick per yard super	1/4	

CONCRETOR

Foundations and Mass Concrete

Portland cement concrete 1 : 6 with unscreened ballast, in foundations and masses exceeding 12″ thick per yard cube	20/6
Ditto, 1 : 3 : 6, with one part of cement and three parts of sand and six parts of clean gravel per yard cube	21/–
Ditto, 1 : 2 : 4 with one part of cement, two parts of sand and four parts of ¾″ crushed graded shingle per yard cube	25/10
Add if mixed by hand labour .. per yard cube	2/–
Add if in foundations not exceeding 12″ thick per yard cube	2/3
Add for mechanical hoisting .. .. per yard cube	1/6
Add for hand hoisting per 10 feet .. per yard cube	2/3

Surface Beds

Portland cement concrete 1 : 6, bed 6″ thick, spread and levelled .. .. per yard super	3/11
Add or deduct for each inch over or under 6″ in thickness per yard super	–/5¾
Add for surface finished with spade face per yard super	–/3½
Add if laid in two layers with fabric reinforcement (measured separately) .. .. per yard super	–/3½

Upper Floors and Flats

Portland cement concrete 1 : 2 : 4 as before described, 6″ thick, packed around fabric reinforcement (measured separately) finished with spade face per yard super	5/3½
Add or deduct for each inch over or under 6″ in thickness per yard super	–/7½

Casings

Portland cement concrete 1 : 2 : 4 as before, in encasing to steel joists .. .. .. per foot cube	1/3
Ditto, packed around rods (measured separately) in lintols, sectional area not exceeding 36 inches per foot cube	1/5½
Ditto, ditto, over 36 inches and not exceeding 72 inches sectional area .. .. .. per foot cube	1/4½
Ditto, ditto, over 72 inches and not exceeding 144 inches sectional area .. .. .. per foot cube	1/3½
Ditto, ditto, over 144 inches sectional area per foot cube	1/2½

Walls in Situ

Portland cement concrete 1 : 6 with unscreened ballast in 9″ walls packed around rods (m/s) per yard super	6/7
Ditto, in 12″ walls ditto .. .. per yard super	8/–

Reinforcement

⅜″ diameter and upwards mild steel rod reinforcement, cut to lengths, including bends and hooked ends and embedding in concrete lintols .. .. per cwt.	21/6
Under ⅜″ diameter, ditto .. .. .. per cwt.	23/–

Formwork

Close boarded formwork to soffites of floors and strutting up .. .. per yard super	3/9
Vertical formwork to sides of concrete walls, including struts, etc. (both sides measured) per yard super	3/–
Formwork to sides and soffites of concrete lintols and beams per foot super	–/6
Wrot ditto .. .. per foot super	–/7

BRICKLAYER

	Flettons £ s. d.	Second Stocks £ s. d.	Blue Staffordshire Wirecuts £ s. d.
Reduced brickwork in lime mortar 1 : 3 with ½″ joints .. .. per rod	23 0 4	31 19 3	
Ditto, ⅜″ joints .. .. per rod	22 13 4	30 17 11	
Reduced brickwork in cement mortar 1 : 3 with ¼″ joints .. .. per rod	24 15 4	33 13 9	51 15 8
Ditto with ⅜″ joints .. per rod	24 14 0	32 17 8	50 6 4
Add if lime mortar hand mixed .. .. per rod	5/8	5/8	
Ditto cement mortar .. per rod	12/9	12/9	9/–
Half brick walls in lime mortar 1 : 3 ¼″ joints .. .. .. per yard super	5/1	7/–	
Ditto in cement mortar 1 : 3 .. .. .. per yard super	5/5½	7/5	11/3
Labour forming 2″ cavity to hollow walls including wall ties, etc. .. .. per yard super			9d.

	£ s. d.
Add to the price of reduced brickwork for brickwork in underpinning .. .. per rod	4 0 0
Ditto, for brickwork circular on plan to flat sweep per rod	5 0 0
Ditto, ditto, to quick sweep .. .. per rod	10 0 0
Extra for Internal fairface and flush jointing per yard super	1/1½
Extra for grooved bricks as key for plaster per yard super	3d.
Raking out joints ditto .. .. per yard super	4½d.
Hacking concrete ditto .. .. per yard super	6d.
Horizontal double slate damp-proof course 4½″ wide bedded in cement mortar .. .. per foot run	4d.
Ditto exceeding 4½″ in width .. per foot super	10d.
Vertical ditto .. .. per foot super	1/–
"Ledkore" (Grade B) D.P.C. .. per foot super	9d.
Plumbing angles .. .. per foot run	1d.
Rake out joints and point to lead flashings per foot run	2d.
Ditto stepped .. .. per foot run	3d.
Bedding door frames .. .. .. per foot run	1d.
Ditto and pointing one side .. .. per foot run	2d.
Ditto and pointing both sides .. .. per foot run	3d.
Parge and core flues .. .. each	4/–
Set and flaunch only chimney pots .. .. each	5/–
Hoisting and fixing metal windows size 3′ 6″ × 4′ including cutting and pinning lugs to brickwork and bedding frames in cement mortar and pointing in mastic on one side .. .. each	5/–
Ditto, including screwing to wood frame (measured separately) .. .. each	3/–

	9″ × 3″	9″ × 6″
Form opening for air brick including slate lintol and render around in cement and sand to 13½″ wall and build in Terra Cotta air brick each	2/6	3/3
Galvanized cast iron School Board pattern air bricks and building in .. .. .. each	9d.	1/3
Fixing only fireplace simple interior and surround each	27/6	

Partitions

	2″	2½″	3″	4″
Breeze set in cement mortar per yard super	2/11	3/5	4/1½	5/1½
Clay tile ditto .. per yard super	4/5	4/11	5/8	6/4½
Pumice ditto .. per yard super	4/6	5/2½	6/3	7/2
Plaster ditto .. per yard super	4/–	4/11	6/–	7/2
White glazed both sides best quality bricks, set in cement mortar and pointed in Parian cement per yard super ..		42/5		

Facings

Prices are extra over Fletton brickwork and are for raking out joints and pointing with a neat struck weathered ¼″ joint in cement mortar. For raking joints and pointing in white cement add an extra 11d. per yard super to the following prices.

	Flemish Bond	English Bond	Stretcher Bond
Stock facings p.c. 93/– .. per yard super	4/11	5/4	4/1
Rustic Flettons p.c. 70/6 .. per yard super	3/4	3/6	2/11
Blue pressed p.c. 174/– .. per yard super	11/3	12/6	8/10
Sand faced hand made reds p.c. 120/– per yard super	8/–	8/7	6/4
White glazed headers p.c. 470/– and stretchers 480/– .. per yard super	32/–	36/–	24/8
For a variation of 10/– per M. in p.c. of facing bricks size 8¾″ × 2⅝″ on face with ¼″ joints add or deduct per yard super	9d.	10d.	6½d.

CURRENT PRICES

BY DAVIS AND BELFIELD

BRICKLAYER, DRAINLAYER, ASPHALTER AND PAVIOR

BRICKLAYER—(*continued*)

Facings—(continued)

	Rustic Flettons	Stock Facings	Sand Faced Hand Made Reds
Half brick wall stretcher bond in cement mortar built fair and joints raked out and pointed in cement mortar on one side .. .. per yard super	8/7½	9/9½	12/–
Ditto and pointed both sides per yd. super	10/6	11/8	13/10
One brick wall in cement mortar built fair and joints raked out and pointed in cement mortar on one side per yard super	15/5	17/8½	22/1
Ditto and pointed both sides per yd. super	17/3	19/6½	23/10
Half brick wall built in best quality white glazed one side bricks, stretcher bond, in cement mortar built fair and pointed in parian cement .. .. per yard super			31/–
Ditto white glazed both sides and pointed both sides per yard super			41/9
Labour and material in hand made sand faced red brick on end window head and pointing to face and 4½″ soffite per foot run			1/3
Hand made, sand faced brick on edge coping including double course of tile creasing with two cement angle fillets to one brick wall .. .. .. per foot run			2/3

DRAINLAYER

Excavate to form drain trenches for 4″ pipes and get out, including planking and strutting, filling in and ramming, and wheeling and spreading surplus.

Prices per 12″ average depth per foot run :	Ordinary ground	Clay
Trenches not exceeding 3′ 0″ deep	–/2¼	–/3
Ditto, exceeding 3′ 0″ and not exceeding 5′ 0″ ..	–/5½	–/7
Ditto, exceeding 5′ 0″ and not exceeding 10′ 0″ ..	–/8½	–/9½

	4″ pipes	6″ pipes
6″ thick Portland cement concrete bed 6 : 1, 12″ wider than diameter of pipe, and flaunched halfway up sides of pipe .. per foot run	–/8½	–/10
6″ ditto, and completely encasing per foot run	1/7	1/11

Agricultural land drain pipes, laid complete with butted joints, exclusive of digging .. .. .. per yard run	2″ –/4	3″ –/6	4″ –/8	6″ 1/1

British Standard Quality Salt Glazed Socketed Stoneware Drainpipes and Fittings

	4″ pipes Over 2-ton lots	4″ pipes Under 2 tons, 100 pieces upwards	6″ pipes Over 2-ton lots	6″ pipes Under 2 tons, 100 pieces upwards	9″ pipes Over 2-ton lots	9″ pipes Under 2 tons, 100 pieces upwards
Pipes jointed in 1:1 cement and sand per foot run	1/1	1/3	1/7	1/10	2/8½	3/4
Extra for bends .. each	1/4	1/7	2/–	2/4	3/6	4/–
Ditto, single junction each	1/10	2/2	2/–	2/4	3/6	4/–
Trapped yard gulleys with galvanized iron gratings, and setting in concrete and jointing to drain each	9/–	11/6	13/–	14/–	19/–	22/–
Ditto, with horizontal back inlet .. .. each	10/6	13/3	14/6	15/9	20/6	23/9
Ditto, with vertical back inlet .. .. each	11/3	14/–	15/3	16/9	21/3	24/9
Intercepting trap with Stanford stopper and setting in manhole and making good .. each	20/6	24/–	25/6	29/–	—	—

Coated Cast Iron Socketed Drain Pipes

	4″	6″	9″
Pipes in 9′ 0″ lengths and laying in trench, including caulked lead joints per foot run	3/6	5/3	9/3
Cutting and waste .. .. each	1/9	3/6	—
Extra for bends, including extra joints and cutting and waste on pipe each	10/10	20/9	59/5
Ditto, junction ditto .. .. each	17/5	32/6	99/5
Intercepting trap .. .. each	49/–	79/4	183/4

DRAINLAYER—(*continued*)

	4″	6″	9″
H.M.O.W. large socket gulley trap with 9″ gulley top and heavy grating and one back inlet	45/5	79/6	—
H.M.O.W. gulley trap with 9″ inlet with high invert outlet for use with raising pieces	33/5	48/–	—
4″ inspection chamber with one 4″ branch .. .. each		66/–	
4″ ditto with two 4″ branches one side.. each		99/–	
6″ ditto with one 4″ branch .. .. each		95/3	
6″ ditto with two 6″ branches one side .. each		140/–	
9″ ditto with one 9″ branch .. .. each		212/6	
9″ ditto with two 9″ branches one side .. each		326/–	

	White glazed	Salt glazed
4″ half-round straight main channel 24″ long each	5/10	2/1
Ditto, channel bends (ordinary) .. .. each	8/6	3/–
4″ Three-quarter round branch bends (short) each	8/6	6/9
Fixing only, manhole covers and frames, including bedding in grease and setting in cement mortar .. .. each	4/–	

ASPHALTER

Various qualities of asphalte are marketed by different firms. The term "Best" is intended to imply the best quality produced by a single representative firm, and not necessarily the best or most expensive asphalte obtainable.

	Natural Rock Asphalte Best Quality	Natural Rock Asphalte Second Quality
Basement (Tanking).		
1½″ horizontal d.p.c. in three layers on concrete per yard super	8/5	6/10
¾″ vertical ditto in three coats on brickwork or concrete .. .. .. per yard super	11/6½	10/–
Double angle fillet .. .. .. per foot run	–/6½	–/5½
Hard Graded Paving.		
1″ thick .. .. per yard super	7/4	6/3½
¾″ thick .. .. per yard super	6/3½	5/3½
½″ dampcourse finish, with smooth surface to receive lino or other floor covering	5/3	4/8½
Roofing (Flat).		
¾″ thick in 2 layers .. .. per yard super	6/3½	5/3
1″ ditto .. .. per yard super	7/4	6/3½
Extras.		
Felt supplied and fixed .. per yard super	–/6½	—
Expanded metal reinforcement ditto per yard super	1/0½	—
6″ skirting and fillet on brickwork .. per foot run	1/0½	–/11½
6″ ditto on wood (reinforced).. .. per foot run	1/2½	1/1½
Nosing at eaves on lead apron (measured separately) .. .. per foot run	–/3½	–/3½
Parapet outlets .. .. each	4/2½	3/8

PAVIOR

	1″	1½″	2″
Granolithic paving .. per yard super	2/7½	3/6	4/7
Add for dusting with carborundum powder per yard super			–/9
Cement and sand paving (1 : 3) per yard super	1/10	2/4½	—
½″ Jointless flooring, red, buff or brown, finished to a smooth trowelled surface, on concrete sub floors per yard super			5/3
¾″ Ditto, in two coats on spade faced concrete or wood sub floors			6/7
⅝″ thick ditto, reinforced with laths and galvanised wire netting .. .. .. per yard super			6/0½
Add for polishing .. .. per yard super			–/6½
Terrazzo paving, white chips set in white cement, panelled into squares with 1½″ × ½″ deep ebonite strips, on and including cement and sand screed. Total thickness 1½″ per yard super			19/5
Ditto, but white chips set in grey Portland cement per yard super			17/4
Terrazzo tiles, white chips set in white cement :—			
Size 9″ × 9″ × ¾″ .. .. .. per yard super			20/6
Size 12″ × 12″ × 1″ .. .. per yard super			18/8
Ditto, but white chips set in grey Portland cement :—			
Size 9″ × 9″ × ¾″ .. .. .. per yard super			18/11
Size 12″ × 12″ × 1″ .. .. per yard super			17/1

		1/8″	3/16″	¼″
Sheet rubber	per yard super	11/7	14/8	17/10
Rubber tiles	per yard super	13/8	16/10	19/11
		9/16″	⅜″	¼″
Cork tiles, polished ..	per yard super	12/10½	11/–	10/–

CURRENT PRICES

BY DAVIS AND BELFIELD

MASON, SLATER, TILER AND ROOFER, AND CARPENTER

PAVIOR—(*continued*)

Hard red paving bricks laid flat (9″ × 4½″ × 2⅝″)	per yard super	9/–
Ditto, laid on edge	per yard super	11/9

	2½″ thick	7″ thick
6″ × 6″ best quality red quarry tiles	per yard super	10/–	11/–
6″ × 6″ best quality buff quarry tiles	per yard super	10/6	11/6
2″ Yorkshire stone paving, square joints and bedding	per yard super	22/–	
2″ Finished path of coarse gravel finished with good binding gravel to slight camber	per yard super	1/7½	
3½″ Path of clean hard clinker and 1½″ gravel finished to slight camber	per yard super	2/3	
7½″ Carriage drive of 3″ clinker, 3″ coarse gravel and 1½″ binding gravel finished to slight camber	per yard super	3/9	
2½″ Tar paving in two layers finished with Derbyshire spar	per yard super	4/9	

MASON

	Bath	Portland
✱ Stone and all labours of usual character, covering 7″ on bed, roughly squared at back, fixed and cleaned down complete .. .. per foot cube	11/–	16/–

Yorkstone

	Thickness 3″	4″	6″
Templates tooled on exposed faces, sawn beds and joints, and set in cement mortar :—			
Size 9″ × 9″ .. .. .. each	1/8	2/3	3/4½
„ 14″ × 9″ .. .. .. each	2/7½	3/6	5/3
„ 18″ × 14″ .. .. .. each	5/3	7/–	10/6
„ 22½″ × 14″ .. .. .. each	6/6	8/8	13/–
„ 27″ × 14″ .. .. .. each	7/10½	10/6	15/9

Artificial Stone

In steps, copings, band courses, etc., per foot cube, from	9/–

Reconstructed Stone

In steps, dressings, band courses, etc., per foot cube ..	12/6

Slate

	1″	1¼″	1½″
Slate slabs, sawn to size, not exceeding 10 ft. sup. and planed, with rubbed face and fixing as shelving, etc. .. per foot super	4/6	5/–	6/–
Ditto, not exceeding 20 ft. sup. per foot super	5/4	5/10	7/–
Rubbed edges .. .. .. per foot run	–/4½	–/4½	–/4½

SLATER, TILER AND ROOFER

Bangor and Portmadoc Slates

	20″ × 10″	16″ × 8″	24″ × 12″
Slates laid to a 3″ lap and fixed with zinc nails .. per square	79/–	77/–	80/–

Old Delabole Slates

	20″ × 12″	16″ × 10″
Grey medium gradings .. per square	86/–	84/6
Unselected greens (V.M.S.) (weathering greens and grey greens mixed) .. per square	96/6	94/6

Randoms	No. 1 Gradings 24″/22″ to 12″/10″
Ordinary grey greens .. .. .. per square	91/3
Weathering grey greens (V.M.S.) .. per square	101/9
	No. 2 Gradings 24″/22″ to 12″/10″
Weathering greens (V.M.S.) .. .. per square	107/–

Westmorland Green Slates

Randoms	Bests 24″ to 12″ long proportionate widths
No. 1 Buttermere, fine light green .. per square	122/9
No. 2 Buttermere, light green (coarse grained) per square	120/9
No. 5 Buttermere, olive green (coarse grained) per square	117/6

● **Items marked thus have risen since October 27.**

SLATER, TILER AND ROOFER—(*continued*)

Tiles

Hand made sand faced 10½″ × 6½″ laid to 4″ gauge, fourth course nailed with galvanized nails per square	65/–
Machine made ditto .. .. .. per square	56/7

Pantiles

Berkshire hand made surface red laid dry, per square	65/–
Bridgewater hand made red laid dry per square	65/–
Bridgewater double Roman laid dry per square	48/3

Sundries

Stripping, slating down to and including, 18″ × 9″ per square	4/6
Ditto smaller sizes .. .. .. per square	6/–
Add for carrying down and stacking per square	1/8
Ditto stripping battens down to and including 18″ × 9″ .. .. per square	1/4½
Ditto, ditto, smaller sizes .. .. per square	2/3

Cedarwood Tiles

Canadian Cedarwood shingles laid to 5″ gauge per square	47/4

Asbestos

Russet brown asbestos cement roofing tiles 15¾″ × 15¾″ laid diagonally with 2¾″ lap, per square	38/–

CARPENTER

Centering

Turning piece to flat soffites 4½″ wide .. per foot run (For Formwork see "Concretor.")	–/4

Fir Sawn and Fixed

● Plates, dragon ties, sleeper joists and lintols, ground floor (4″ × 2″ and 4″ × 3″) .. .. per foot cube	3/8
Floor joists (7″ × 2″) .. .. per foot cube	4/1
● Partitions (stud) (4″ × 2″ and 4″ × 3″) per foot cube	4/11
● Rafters and ceiling joists (4″ × 2″ and 4″ × 3″) per foot cube	4/8
Purlins (6″ × 4″) .. .. .. per foot cube	5/3
Hand labour wrot face .. .. per foot super	–/2
Machine ditto .. .. .. per foot super	–/1
Rebates, grooves, beads, chamfers and splays, per foot run	–/1
1½″ × 9″ ridge .. .. per foot run	–/6¾
1½″ × 11″ hips or valleys, including cutting ends of rafters against same .. .. per foot run	–/8¼
Extra labour trimming 6″ × 2″ floor joists around fireplace, including notching ends of joists at 14″ centres to trimmer joist 7′ 0″ long and two tusk tenons .. each	6/–
Boring small hole per inch of depth .. per doz.	–/6
Ditto large .. .. per doz.	1/–

Deal Battening for Slates and Tiles

● 2″ × 1″ spaced for Countess (20″ × 10″) slates to 3″ lap per square	11/1
● 2″ × 1″ ditto for Ladies (16″ × 8″) .. per square	14/7
● 2″ × 1″ ditto for Duchess (24″ × 12″) ditto per square	9/1
● 2″ × 1″ ditto for randoms 24″/22″ to 12″/10″ per square	12/2
● 1½″ × ¾″ ditto for plain tiles (10½″ × 6½″) to a 4″ gauge per square	14/5
1½″ × 1″ ditto for pantiles to approximately 11½″ gauge per square	6/7

Roof Boarding

	¾″	1″
● Deal roof boarding in batten widths close jointed per square	28/10	34/10
● Ditto, prepared for patent flat roofing and including firrings to falls .. .. per square	39/3	44/6
Small tilting fillet .. .. per foot run	–/2	
Large ditto .. .. per foot run	–/4	

Felt

Sarking or slaters felt, fixed with 2″ side laps and 6″ end laps .. .. per yard super	–/10½
Roofing felt ditto .. .. .. per yard super	1/1
Bituminous hair felt ditto .. .. per yard super	2/–

Weather Boarding

Rough deal feather edge boarding in batten widths ½″ average with 1½″ laps .. .. .. per square	29/9
Western Red Cedar ditto .. .. .. per square	32/10

Fascia and Soffite Boards

1″ × 6″ deal splayed fascia fixed to rafter feet per foot run	–/4½
1″ × 9″ deal soffite tongued both edges, including grooves per foot run	–/7½

(*To be continued in next Issue*)

✱ **Items marked thus have fallen since October 27.**