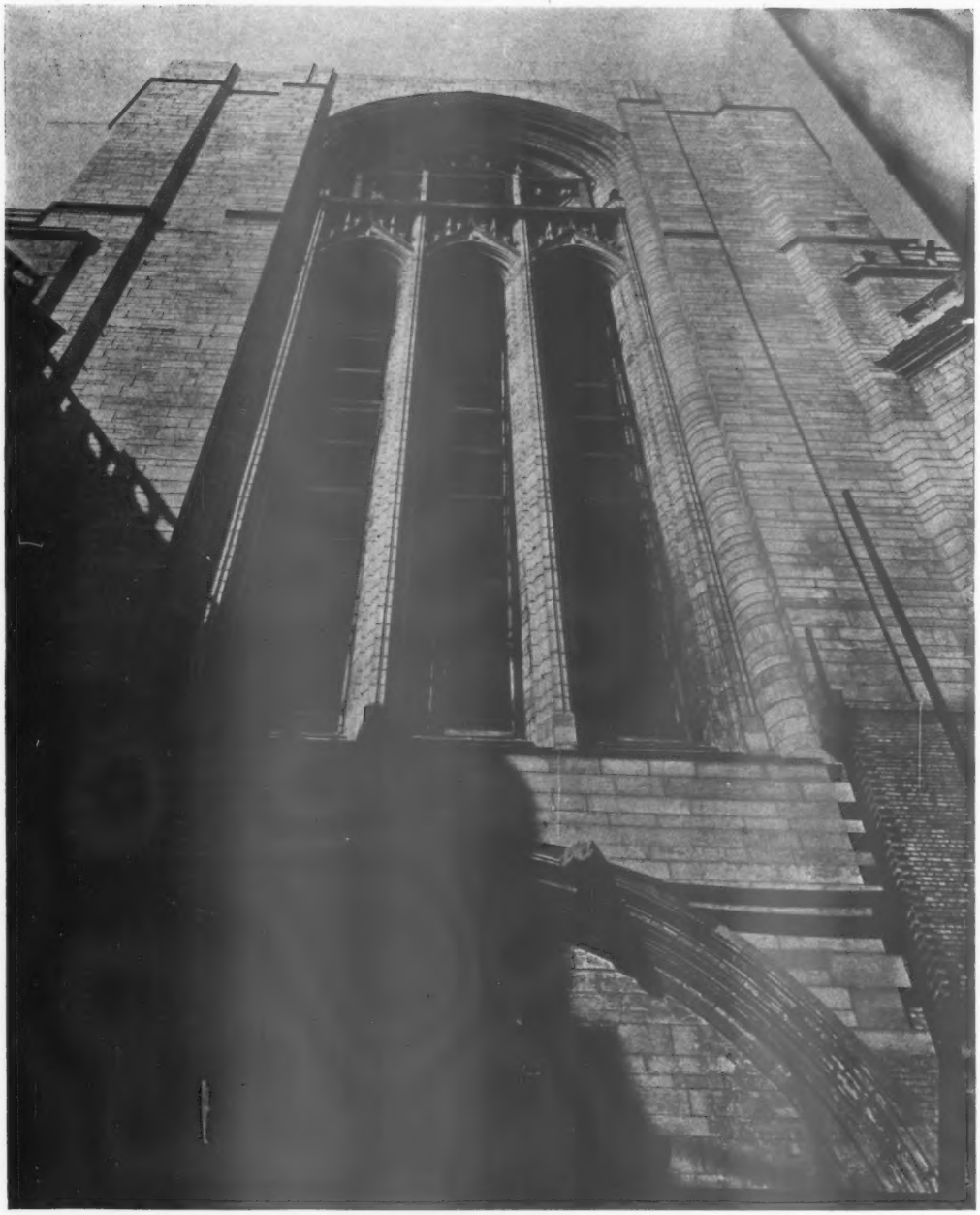
A NEW COASTAL VIADUCT

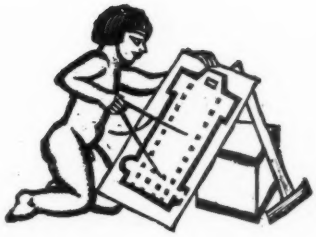
COMPLETION OF A WELSH SCHEME

THE new Peniclip viaduct on the coast road between Penmaenmawr and Llanfairfechan, North Wales, was opened last week. The 700 feet viaduct forms part of a new stretch of road constructed to supersede the older road above. Work was started in 1931, and the total cost was £200,000. The photograph shows the old road marked by telegraph posts with the new viaduct and its short approach tunnel below. In the foreground is the railway viaduct carrying the Holyhead-London main line.



PROGRESS AT LIVERPOOL CATHEDRAL

An unusual view of the central tower of Sir Giles Gilbert Scott's building taken in the course of the progress of the work. The illustration shows one of the great windows in the lower part of the tower, seen from below, with the adjoining stone and brickwork keyed for the continuance of the cathedral.



RETURN

AT the beginning of October those who earn their livings in offices feel themselves in many ways to be facing a new year. Summer holidays, even the most deferred, are over, and with them a period possessing its own special irritations. A few weeks of freedom from the time-scheduled routines of cities have had their disadvantages in the work more fully understood by holiday-makers which has had to be carried on by those remaining. And such anxious labour has not been lightened by the frequency with which the " man who knows " in other firms has also been found to be amongst the carefree.

With the end of the holiday season, however, a fresh start can be made, and there is abroad a sensation approaching a thankful equanimity. Everyone is back again, braced if not brown, and things can go ahead.

Amongst the rest whose work centres upon an office and who are once more settled down to business are architects. These, in many ways, share the satisfaction of staffs fully returned and the prospect of the autumn's work, but in others their case is different and peculiar. The rest of the public may have escaped completely from their daily work during their holidays—the architect rarely or never. The rest of the public may have returned this autumn to a livelihood untouched upon by wider considerations and developments which must receive careful unremunerated attention. But for architects recent legislation has brought to their immediate notice huge problems of infinite complexity which must be understood and mastered by them if they are to keep their proper place in society. For, fortunately or otherwise, it rests today most chiefly with architects how pleasant or otherwise Britain becomes as a place to live in.

The custom, which has intensified during the last century, that those who are called artists should be out of touch with the contemporary life of the country has left architects in a position of peculiar responsibility. As both artists and business men in popular estimation they have remained as a slender bridge between the world as it is and the world of pleasanter surroundings into which it might be made. And the responsibility which has thus accumulated may excuse a certain thoughtfulness amongst architects on returning to work this autumn.

They are aware that their profession is becoming technically more complex with a bewildering speed. They know that recent legislation must shortly result in the production of a great number of local town planning schemes, whilst at the same time they know that the number of men finely and thoroughly trained in town planning is at present negligible ; and they fear for the results. They see that housing of all kinds is still maintaining a vast output, and they cannot disguise their regret at the contribution made by the great bulk of this output to the appearance and reputation of the country. And seeing these things they may wonder what they can do, save to follow the easiest course of a narrow ostrich-like self-interest.

Amongst these big happenings it is more than ever before necessary for architects to retain clear-headedness and to exert their influence wisely and simply amidst a fairly general confusion. And in rejecting defeatism it would not yet seem necessary to retain too much of pessimism.

Today the public is architecturally conscious to an extent unknown twenty years ago, and though this development may show itself at present most often in battles of the styles, architects may recognize in this an evolutionary stage not discouraging. In addition, the architect who has spent his holiday in Britain must have wondered that an island so small and crowded could still remain in great part in the condition called " unspoilt "—that is, not yet badly used for the public's purposes. There is yet time to see that this majority will be well used in the future, and the remainder scheduled as " depressed areas " which can be tenderly nursed back to a healthy restful decency of surrounding.

And a holiday tour supplies also the answer to the manner in which architects can best exert their influence to these ends.

In town and country, suburban housing scheme and city streets, the greatest damage done by buildings to the surroundings of living is seen to be an almost pathetic striving for individuality. While the peculiar need of modern life is the restfulness of simplicity, the smallest buildings still strive by all and any means to achieve distinction from their neighbours—as though the ultimate aim of building was the riotous uniqueness of the building which required " at least fourteen people to look at it."

In great building schemes the last ten years has seen this defect lessened, but whilst clients still rate the short-term publicity of a clamorous individuality higher than the lasting distinction of reticent good taste, architecture lacking civic sense must still remain too common. And in smaller buildings the fault stands as a universal barrier to the development of better surroundings of living.

It is in this that architects must use their influence and their example. Unless they show their possession of civic sense, the value of simplicity and restraint in everything from public buildings to garden gates they may be sure that the rest of the country's builders never will ; and progress will be at an end.

Whilst the new developments in housing and town planning are being put into action the motto of builders should be that of Norman Shaw : " Keep it quiet."

The Architects' Journal
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NOTES & TOPICS

HOUSES AND FLATS

AT the present time blocks of flats are being erected all over the suburbs, and as their rents are about the same as the hire-purchase terms for houses of similar accommodation there would appear to be a real demand for this type of dwelling.

*

In many instances these blocks of flats are being built on land which has been scheduled under town-planning schemes for anything from four to 12 houses to the acre.

*

These densities were no doubt fixed with a view to maintaining proper amenities, and it would be very interesting to know whether town-planning authorities have endeavoured to relate the density of building they permit for flats to the density they fixed for houses.

*

If the density of flats is limited there seems to be a great deal to be said in their favour. They present on the whole greater architectural opportunity than small detached or semi-detached houses do, and there is the chance of good sized open spaces, in which trees can be preserved, being left instead of a great many little separate gardens which often amount to little more than wildernesses of privet hedges.

*

If, on the other hand, no regard has been paid to their density then I think the people who complain of the erection of blocks of flats in areas scheduled for houses have real grounds for grousing, but if this has been done I very much doubt whether any town-planning authority has a real (I don't mean legal) right to prohibit flats so long as a genuine demand for them exists.

*

That flats do not necessarily reduce the value of surrounding house property is indicated by the fact that where well designed flats have been built with plenty of open spaces about them speculative builders still think it well worth while to go on building high-priced houses.

*

The preservation or provision of amenities for all classes of housing appears to depend very largely upon the relationship of the space covered by buildings and the space remaining for other purposes.

ONE PLANNING AUTHORITY FOR GREATER LONDON

I was very glad that Sir Raymond Unwin, in his address to the London Council of Social Service on Thursday last, again stressed the need for one planning authority for the whole of greater London.

*

It is quite absurd, that in what is after all one great town, there should be dozens and dozens of planning authorities.

*

A year or so ago I paid a visit to the municipal authorities of a number of continental capital cities to see what they were doing about town planning. I was greatly struck by the advantage which they all, with the exception of Paris, held over London in that their boundaries lay well beyond the cities themselves; thus enabling, in each place, the one municipal authority to deal with all the planning problems of the whole city.

*

In Paris there are two planning authorities, that of the city itself for the inner parts and that of the Department of the Seine for the outer parts. This arrangement is not perfect, but it is infinitely better than that of Greater London, with the London County Council in the centre and, as Sir Raymond says, over a hundred different authorities for the rest.

GOCÁR IN LONDON

London had a distinguished guest last week in the person of Professor Josef Gocár, the Head of the Prague School of Architecture, who holds the sonorous title of Rector Magnificus Emeritus of the Czechoslovakian Academy Schools, besides being an Honorary Foreign Member of our own R.I.B.A.

*

The plans for the Czechoslovakian National Gallery in Prague, on which Dr. Gocár has been working since 1929, are now sufficiently advanced to allow an early start being made with this big building. But before deciding on certain details of its equipment Dr. Gocár came over here to study the lighting and heating systems in the National Gallery, the National Portrait Gallery, the new Elgin Gallery of the British Museum, and the extensions in progress at the Tate Gallery and the Fitzwilliam Museum in Cambridge.

*

Modern town planning and modern architecture alike owe an inestimable debt to Gocár as a pioneer. It was he who in 1908 drew up the celebrated scheme for the street regularization and radial extension of Hradec Králové (alias the famous moated eighteenth-century fortress of Königrätz) which has since taken shape as the most completely realized European exemplar of a replanned urban community. Two years later he built what, in almost any other hands, would inevitably have been a "monumental" staircase leading up to the baroque Marienkirche in the same city, but which in his hands became the first untraditional use of naked reinforced concrete.

*

Some will remember Gocár as the designer of the Czechoslovakian National Pavilion at the Paris Exhibition of 1925, but he himself would probably prefer to be judged

Wilton House, Salisbury (Designed by Inigo Jones, c. 1650). A water-colour by Richard Wyndham. From the exhibition of paintings of Country Seats and Manor Houses by contemporary artists, now being held at the Leicester Galleries.

by his stepped-roofed Vrsovice church in Prague (1928) or one or other of his major buildings in Hradec Králové,

*

Ever since Czechoslovakia existed as a separate State Gocár has been the undisputed head of his profession there. By throwing his official influence unreservedly into the scale on the side of rationalism he has enabled his country to make a collective contribution to modern architecture such as no other nation can yet equal. How extensive that contribution is, and how high its general quality, will have been realized by those lucky enough to have been in Prague this summer and seen the official Exhibition of Modern Czechoslovakian Architecture—which, I am told on good authority, will very likely be shown at the R.I.B.A. in the spring.

*

For a man still far short of sixty Gocár has already a very respectable number of important buildings to his credit. There would have been far more, however, had he not so often persisted in standing aside in order to let the younger generation get its proper share of work.

PRIVATE VIEW

I think people who open exhibitions should be chosen on the very strict understanding that their contribution be restricted to its purpose.

*

Mr. Percy Smith was kind enough to send me an invitation to the private view last week of the exhibition of his typographical work at the First Edition Club. Having great respect for his contribution to catholic taste in lettering and typography I determined to go—despite the somewhat forbidding announcement on the invitation card that it would be opened at 6 p.m. " with a short address " by a certain worthy bibliophile.

*

I went, arriving a few minutes after six—and after standing by the door, in company with many other visitors to the private view, listening to the long, long sermon that the " short addresss " had been allowed to become, had to rush away to another appointment at 6.45 only a very short while after the address had at last come to an end. Having got this grouse off my chest (horrid though seasonable metaphor) I can now say that I was really sorry not to have had more time to see the exhibition. I know Percy Smith's work of old. He is a genuine craftsmen in the difficult and circumscribed art of the typographer and letterer.

*

I recommend every architect who enjoys the " hand-worked " tradition in English lettering to go to the First Edition Club and see it at its best.

DESIGN IN EARNEST

Yesterday I went into Bowman's store, in Camden Town, to purchase an article of everyday use, and ran not only into a scene of great activity, but into three architect friends busily engaged in sorting pots and pans, carpets and carving knives.

*

Another exhibition, I sighed, and was about to depart, purchase in pocket, when a very simple, good but cheap, exhibit caught my eye. And then I saw that here was something different in the way of exhibitions, here was something new.

*

And then they told me . . . the D.I.A. has really hit upon a new idea. No more precious exhibitions of industrial designs, but an exhibition in a shop, *of any and every well-designed article selected from the ordinary and everyday stock in that particular shop.*

*

Now if only I had delayed my purchase another week, until this selected exhibition was open to the public, I could have made full use of it and saved both the shop assistant and myself several minutes of time in selecting out of dozens of redundant examples one simple, but not too plain, drinking vessel.

A.A. DECORATIONS

I joined some colleagues the other day at luncheon in the dining room at the A.A. and found the place in the midst of a re-decoration.

*

The walls and ceiling were repainted in ivory and four of the octet of marbled columns had, I almost regret to say, completely disappeared. Not the four structural columns, which remain to lend contrast to the room, but the four sham columns which for so many years have given distinguished speakers a golden opportunity to gibe at the architect at the expense of his sense of sincerity.

*

And as I ate my roast beef and Yorkshire pudding, I heard the criticisms of my neighbours . . . the walls were too white, the walls were not white enough, the paint was too matt, the paint was not matt enough . . . all serenely oblivious of the fact that any criticism of either wall or ceiling was quite unintelligent until the curtains and the lighting fittings were in position to complete the scheme.

*

Consider my surprise when, a few moments later, in the members' room, one of the most vociferous of the critics told the room at large of his difficulties with a client. This client, the foolish lad, had expressed displeasure with his new house, " before " the architect cried " it was finished, before it was even plastered out."

*

And I thought again of that unfinished dining-room, and of all the remarks which will surge around its ivory paint . . . before the curtains are fixed.

ASTRAGAL

NEWS

POINTS FROM THIS ISSUE

NEW HOUSING SCHEMES IN GLASGOW

Mr. David Stenhouse, the Town Clerk of Glasgow, at the opening of the annual Housing and Health Exhibition at Glasgow last week, referring to recent criticism of new municipal housing schemes, said it had been suggested that architecturally the new houses were not quite so good as they might be. Complaint was made that there was want of variety in design, an undesirable monotony, a drabness and architectural dullness, and a failure to preserve natural beauties. All that kind of criticism, he said, was not justified, nor could all the alleged defects be admitted. Urgency in building and financial considerations, however, might have contributed to a certain amount of similarity and a want of variety in some schemes.

PUBLIC WORKS EXHIBITION

The Public Works, Roads and Transport Exhibition is to be held at the Royal Agricultural Hall from November 18 to 23 inclusive. Over three hundred British firms will be represented by a display of material, apparatus and equipment used in the various branches of municipal and public works services.

HOUSING

Sir Kingsley Wood, Minister of Health, speaking at Southampton last week, said that for the first time in the history of the country a great nation-wide house-to-house survey was about to be made by the local authorities in each area to deal with the evils of overcrowding. The work was of considerable magnitude, as there were 6,000,000 working class houses in Great Britain. When the survey was completed every local authority would know where there was overcrowding, and they would then submit their plans for action to the Ministry of Health.

THE ARCHITECTS' DIARY

Thursday, October 10

LONDON MUSEUM, *St. James's, S.W.1. Exhibition of photographs, "New London from the Air." Open until further notice.* 10 *a.m. to* 6 *p.m.*

INTERNATIONAL EXHIBITION OF INVENTIONS. *At the Central Hall, Westminster, S.W.1. Until October* 12.

HOUSING AND HEALTH EXHIBITION. *At Glasgow. Until October* 26.

COUNCIL FOR THE PRESERVATION OF RURAL ENGLAND. *Eighth Annual Conference. At Newcastle-upon-Tyne. Until October* 13. 8.30 *p.m.: Reception by the Lord Mayor at the Assembly Rooms.*

NORTH LONDON HOME LIFE EXHIBITION. *At the Alexandra Palace, N. Until October* 26.

Friday, October 11

C.P.R.E. *Annual Conference. At Newcastle-upon-Tyne.* 10 *a.m., and* 2.30 *p.m.: Conference Sessions in the Connaught Hall, Blackett Street.*

LONDON SOCIETY. *Visit to the works of Spratt, Ltd., Morris Road, Poplar, E.*14. 2.45 *p.m.*

Saturday, October 12

C.P.R.E. *Annual Conference. At Newcastle-upon-Tyne.* 9.30 *a.m.: Conference Sessions. Afternoon: Visits.*

Sunday, October 13

C.P.R.E. *Annual Conference. At Newcastle-upon-Tyne. Visits. (Conclusion of the Conference.)*

Tuesday, October 15

SOCIETY OF CHEMICAL INDUSTRY. *At Burlington House, Piccadilly, W.1. "What the Architect Requires of Plastic Materials." By G. Grey Wornum, F.R.I.B.A.* 8 *p.m.*

HOUSING CENTRE, 13 *Suffolk Street, S.W.1. "Voluntary Associations and their Importance to Housing." By the Rt. Hon. Sir Kingsley Wood, M.P. (Minister of Health).* 8.15 *p.m.*

BUILDING TRADES EXHIBITION. *Birmingham. Until October* 26.

Wednesday, October 16

INSTITUTION OF STRUCTURAL ENGINEERS. *Scottish Branch. At* 129 *Bath Street, Glasgow. Address by A. S. Kinnear.* 7.15 *p.m.*

ST. PAUL'S ECCLESIOLOGICAL SOCIETY. *At the R.I.B.A., 66 Portland Place, W.1. "Some Gleanings from Churches in the Eastern Counties." By F. R. Taylor, F.R.I.B.A.* 8 *p.m.*

LIBRARY AND ART GALLERY, HUDDERSFIELD

Mr. E. H. Ashburner has been appointed by the Huddersfield Library and Art Gallery Committee to supervise the erection of Huddersfield's new Public Library and Art Gallery, the estimated cost of which is about £80,000.

BUILDING LONDON

On October 4 Mr. Eric Jarrett, A.R.I.B.A., delivered the first of a series of public lectures entitled "Building London," at the Architectural Association, Bedford Square, W.C.1.

THE HOUSING CENTRE

The following lectures have been arranged by the Housing Centre, 13 Suffolk Street, S.W.1 :—

Tuesday, October 15 : "Voluntary Associations and their Importance to Housing." By the Rt. Hon. Sir Kingsley Wood, Minister of Health.

Monday, November 4 : "Differential Rent Relief in Practice in Leeds." By the Rev. Charles Jenkinson.

Tuesday, November 19 : "Slum Clearance and Reconditioning : the Practical Way." By Mr. F. R. Jefford, M.R.SAN.I.

Monday, December 2 : "Housing Estate Management." By Miss M. R. Baskett, B.A.

Tuesday, December 17 : "Housing and Territorial Planning in Russia." By Mr. Kaufmann.

Tuesday, January 21 : "Housing in Relation to Employment." By the Rt. Hon. Lord Phillimore, M.C., P.C.

Tuesday, February 18 : "Manchester Gives a Lead." By Sir Ernest Simon.

Tuesday, March 17 : "The Preservation of Urban and Rural Areas." By Sir Fabian Ware, C.B.

The Monday lectures will commence at 6 p.m. and those on Tuesdays at 8.15 p.m.

HOUSING EXHIBITION AT HASTINGS

On Thursday next Lord Eustace Percy will open a housing exhibition at Christ Church Parish Hall, London Road, St. Leonards. The exhibition will remain open until October 19.

BRITISH PAVILION, BRUSSELS EXHIBITION

The British Pavilion at the Brussels Exhibition designed by Messrs. Stanley Hall and Easton and Robertson has been awarded a "Grand Prix" by the exhibition authorities.

ROYAL ACADEMY OF ARTS

The annual distribution of prizes to the students of the Royal Academy of Arts will take place at Burlington House, W.1, on Wednesday, October 23, at 9 p.m. The galleries housing the competition works for the prizes will be open at 8 p.m. They will also be open to the public on Thursday and Friday, October 24 and 25, from 11 a.m. to 4 p.m.

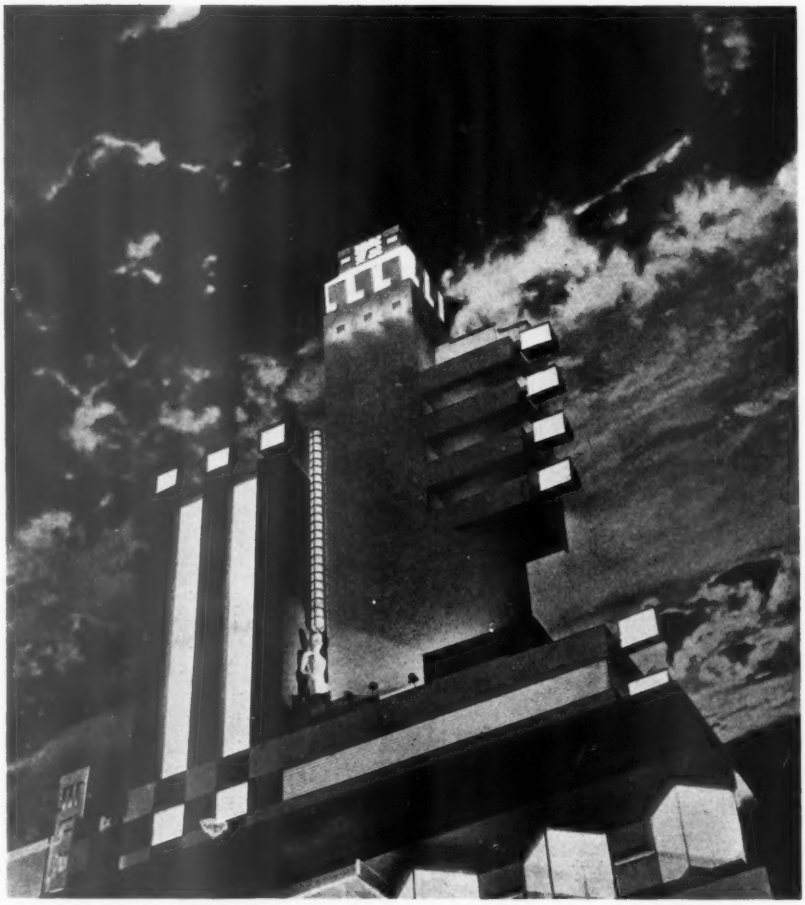
HACKNEY MARSHES

A number of societies have decided to support the objectors to the L.C.C.'s proposal to appropriate 30 acres of Hackney Marshes for housing purposes. The organizations include the London Society, the Metropolitan Public Gardens Association, the National Playing Fields Association, the London and Greater London Playing Fields Association and the Commons, Open Spaces and Footpaths Preservation Society.

BRITISH ASSOCIATION

In a paper entitled "England's Blame if not her Shame," at a recent meeting of the British Association at Norwich, Professor E. G. R. Taylor said so long as 250 years ago there was urged the creation of a green belt about London, the location of industries on selected rural sites, the preservation and creation of urban amenities, re-afforestation, the reclamation of waste lands, national waterways, a planned agriculture, the husbanding and planned utilization of the nation's heritage in the shape of natural resources.

About 1649 an unknown man jotted down a comprehensive planning scheme after reading the scheme of John Dee, Queen Elizabeth's cosmographer, mathematician and astrologer, for creating and maintaining a great English navy. This improver saw in a system of waterways from sea to sea a means of decentralization by



A model of a composite building, designed by R. O. Sutherland, to illustrate how various types of illumination can be employed. The photograph shows all the illuminations in use at the same time, though this would not, in normal practice, ever occur.

which such cities as Hull, Bristol, Chester and Ipswich would fulfil their natural functions as secondary markets and entrepots.

What would the geography of England be today had planning achieved the victory over *laissez-faire?*

Professor Taylor went on to discuss the "green belt" round London. That city presented a unique problem, that of size, dirt, smoke and smells, which provoked John Evelyn's famous essay "Fumifugium." Evelyn proposed that the coal-consuming industries should be removed eastwards to a point beyond Greenwich and Woolwich, where they would be neither seen nor smelt. A green belt was to be established round about Westminster, Southwark and the City, starting from Tothill Fields and Mile End Green and Stepney.

For nearly three hundred years we had waited for the green belt, and its circuit now that it was taking shape would be more remote from the homes of Londoners than Evelyn proposed.

EXPANSION OF THE METROPOLIS

Sir Raymond Unwin, PP.R.I.B.A., deplored the lack of a central planning body for the whole of the London area when he addressed a meeting of the London Council of Social Service on Thursday, October 3, under Lord Dickinson's chairmanship at the County Hall.

"The urgent need for the discussion of the question of the planning and expansion of the Metropolis," said the summons to the meeting, "is precipitated by the credit of forty million pounds by the Government for the improvement of London Transport without adequate reference to Housing and Town Planning which need to be served by any such scheme."

What was wanted, Sir Raymond said, was one central all-powerful body for the whole of the London area, to be able to do in the matter of planning, housing and developing what the London Passenger Transport Board had done in its unification of transport. We had some unification in London Transport, but it had little knowledge and no control of housing.

The metropolis of London, a great community of about 10,000,000 people, bound together by a complex network of relations, and constituting the greatest city in the world, had no one governing body to which had been entrusted the duty or power to guide and plan its development as a whole. The London County Council was doing a great work for central London, but it was responsible for only a fraction of London's area in which there lived less than 46 per cent. of its people. That population was steadily shrinking, at present at the rate of about 50,000 yearly. Outer London was increasing its population at a rate of over 50,000 yearly. London was like an army without a commander-in-chief and without a general staff.

Outside the L.C.C. there were a hundred or more different authorities concerned in planning and housing, each contributing a piece according to their own lights and interests to this veritable patchwork quilt of planning.

There were prodigious migrations taking place. Fifty-five thousand people were flying from the County of London every year into Outer London. Fifty thousand were coming into the region from the rest of the country.

But nobody knew the real extent of these movements, and that was the trouble that we were in.

In the last census we saved a few paltry pounds by omitting to record the work-places as well as the living places of the people. Our rulers were convinced believers in the efficiency of ignorance.

Valuable work had been done by the Greater London Regional Planning Committee, Sir Raymond went on, but there was too little realization of the extent to which the country depended upon the region and of the extent to which the local areas depended upon the country. Some Government-created department, he thought, would be imposed upon the whole area, unless the outside areas recognized London's needs.

So we had episodes like the robbery of a piece of Hackney Marshes for housing purposes. That had no conceivable relation to the size of the problem. And as to the building of flats in central areas, it was true, he urged, that the more you heaped people on top of one another the more people there were who wanted places to play in.

The question of space was negligible in London, Sir Raymond added, for the whole question was one of planning. While the county of London had a radius at present of 6·1 miles, if houses were to be built upon it at 50 to the acre its radius would have to be increased only to 6·35 miles, if at 20 to the acre to 6·8 miles, and if at 12 to the acre to 7·15 miles.

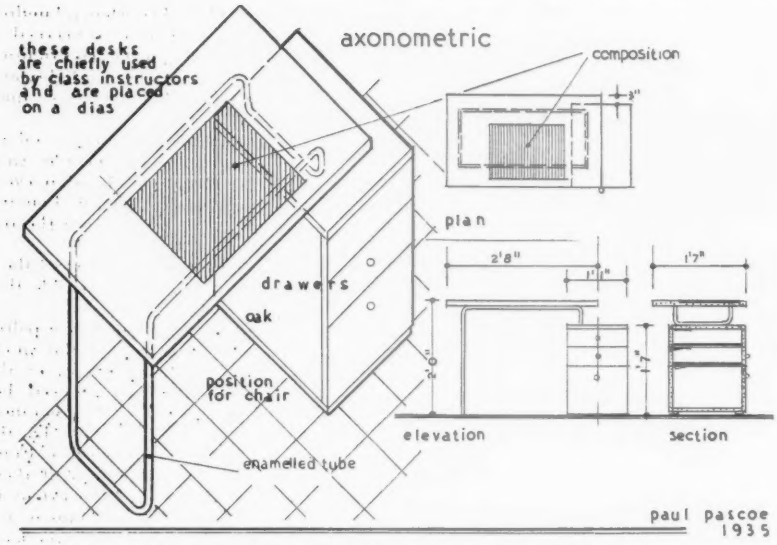
Sir Raymond went on to say that if there had been one authority he could not believe that there would have been permitted, for instance, the aggregation of factories at Slough, where there were no houses for the workers, and the absurdity that at Becontree, where the new housing estate adjoined the huge Ford factory, the workers in the factory had to live in London because they could not get houses on an estate reserved for people who worked in London.

Industries and factories were being established outside London, with the result that hundreds of thousands of workers were continually crossing and recrossing London to their work or to their homes. We needed a National Planning Board and a London Planning Board.

In answer to a question as to how he would deal with the vast area between Blackfriars and Southwark and the river front, which was now largely derelict warehouses and wharves and a few dwellings, Sir Raymond said he would like to see the railway between London Bridge and Charing Cross abolished, at any rate in its present form. They could then envisage a great constructional development.

THE SOANE MUSEUM

We are informed by Mr. Arthur T. Bolton, F.R.I.B.A., F.S.A., Curator of Sir John Soane's Museum, 13 Lincoln's Inn Fields, W.C., that the Museum is open, free, on Thurs-



From a school at Villejuif. Designer: André Lurçat.

days and Fridays in October, from 10.30 a.m. to 5 p.m., and in November from 10.30 a.m. to 4 p.m

R. I. B. A.

The following are the dates on which the forthcoming examinations will be held :—Final Examination : December 4, 5, 6, 7, 9, 10 and 12, 1935. (Last day for applications : November 4, 1935.) Special Final Examination : December 4, 5, 6, 7, 9 and 10, 1935. (Last day for applications : November 4, 1935.)

A list of the R.I.B.A. alternative problems in design for year ending December 31, 1936, is given on pages 533-535 of this issue.

COMPETITION

N E W S

LUMPS FORT COMPETITION

The latest date for submission of designs in the competition for the lay-out of the Lumps Fort site, Portsmouth, has been extended to November 16.

COUNCIL OFFICES, HARROW

The Harrow Urban District Council invites architects of British nationality to submit designs for new offices to be erected at Harrow. The Council has appointed as assessors Mr. C. H. James, F.R.I.B.A., and Mr. S. Rowland Pierce, A.R.I.B.A. The premiums offered are as follows : Design placed first, £350 ; design placed second, £250 ; design placed third, £150.

The conditions and instructions to competitors, together with site plans, may be obtained on application to Mr. Vernon Younger, Clerk of the Council, Council Offices, Stanmore, Middlesex. (Deposit £2 2s.) The latest date for submission of designs is January 24.

ASSEMBLY HALL, SOUTH SHIELDS

The South Shields Town Council last week adopted a recommendation of the Assembly Hall Special Committee to promote an architectural competition for designs for the erection of an Assembly Hall on land in Salisbury Street, at the rear of the Town Hall, to accommodate 2,000 persons, at an estimated cost of £35,000. and also authorized the expenditure of £500 in connection with the competition.

Competitions Open

October 28.—Sending-in Day. Competition for timber houses organized by the Timber Development Association. Assessors : Robert Atkinson, F.R.I.B.A., G. Grey Wornum, F.R.I.B.A. and E. Maxwell Fry, A.R.I.B.A. The competition is divided into two sections and competitors may enter for one or both. In each section there will be the following awards : first premium, £100 ; second premium, £30 ; third premium, £25.

SECTION 1 :—Designs to be submitted for a timber house suitable for a small family, the total cost to be £800. SECTION 2 :—Designs to be submitted for a week-end timber cottage, the total cost to be £350. Conditions, etc., are obtainable from the Manager, Timber Development Association, 69-73 Cannon Street, London, E.C.4. The latest date for submission of designs is Monday, October 28.

October 31.—Sending-in Day. New technical college, Manchester Road, Bolton, for the Bolton Corporation. (Open to architects of British nationality.) Assessors : John Bradshaw Gass, F.R.I.B.A., and Arthur J. Hope, F.R.I.B.A. Premiums : £500, £250 and £100. Conditions, etc., are obtainable from Mr. John A. Cox, M.A., Director of Education, Education Offices, Bolton. (Deposit £2 2s.) The designs must be submitted to the Director of Education before October 31.

November 1.—Sending-in Day. New municipal offices, clinics, etc., proposed to be erected in the grounds of York Castle for the Corporation of York. (Open to architects of British nationality domiciled in the United Kingdom.) Assessor : Henry V. Ashley, F.R.I.B.A. Premiums : £250, £150, £100 and £50. The last day for questions was July 29. Designs must be submitted to the Town Clerk, Guildhall, York, not later than November 1.

November 16.—Sending-in Day. Lay-out competition for Lumps Fort site, for Portsmouth T.C. Assessor : E. Prentice Mawson, F.R.I.B.A. Premiums : £350 and further £200 divisible. Conditions are obtainable from the Town Clerk, Guildhall, Portsmouth. (Deposit £1 1s.)

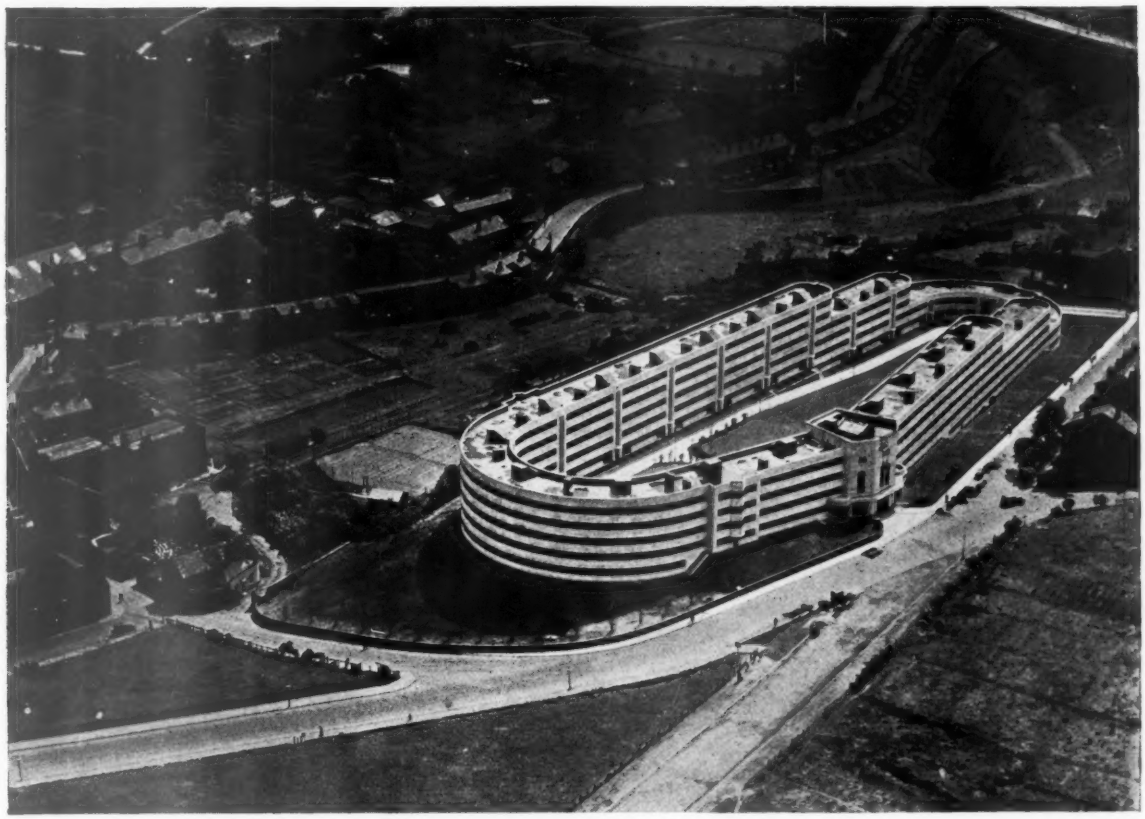
November 30.—Sending-in Day. Public library for the Colchester Corporation. (Open to members of the Essex, Cambridgeshire and Hertfordshire Society of Architects.) Assessor : Professor A. E. Richardson, F.S.A., F.R.I.B.A. Premiums : £150, £125 and £75. Conditions, etc., are obtainable from R. L. Hiscott, Town Clerk, Town Hall, Colchester. (Deposit £1.) Latest date for submission of designs : November 30.

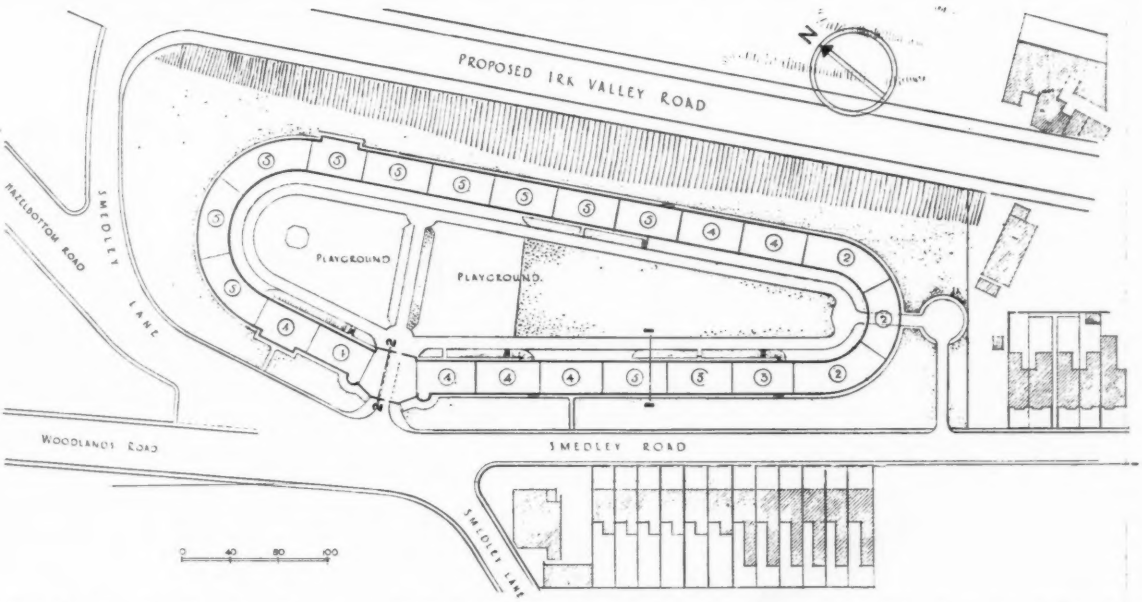
December 31.—Sending-in Day. Proposed town hall, Bury, for the Corporation of Bury. Assessor : J. Hubert Worthington, O.B.E., M.A., F.R.I.B.A. Premiums: £500, £300 and £150. Conditions, etc., are obtainable from Richard Moore, Town Clerk, Municipal Offices, Bank Street, Bury. (Deposit £2.)

January 24, 1936.—Sending-in Day. Proposed offices for the Harrow U.D.C. See Competition News.

January 31.—Sending-in Day. Proposed Parliament House, Salisbury, Southern Rhodesia, for the Government of Southern Rhodesia. (Open to architects of British citizenship.) Assessor : James R. Adamson, F.R.I.B.A. Premiums : £500, £300, £200 and £100. Conditions, etc., obtainable from the High Commissioner for Southern Rhodesia, Crown House, Aldwych, W.C.2. (Deposit £2 2s.) Last day for questions was August 26. The designs must be sent to the Assessor at 19 Silverwell Street, Bolton, not later than January 31.

KENNET HOUSE, MANCHESTER





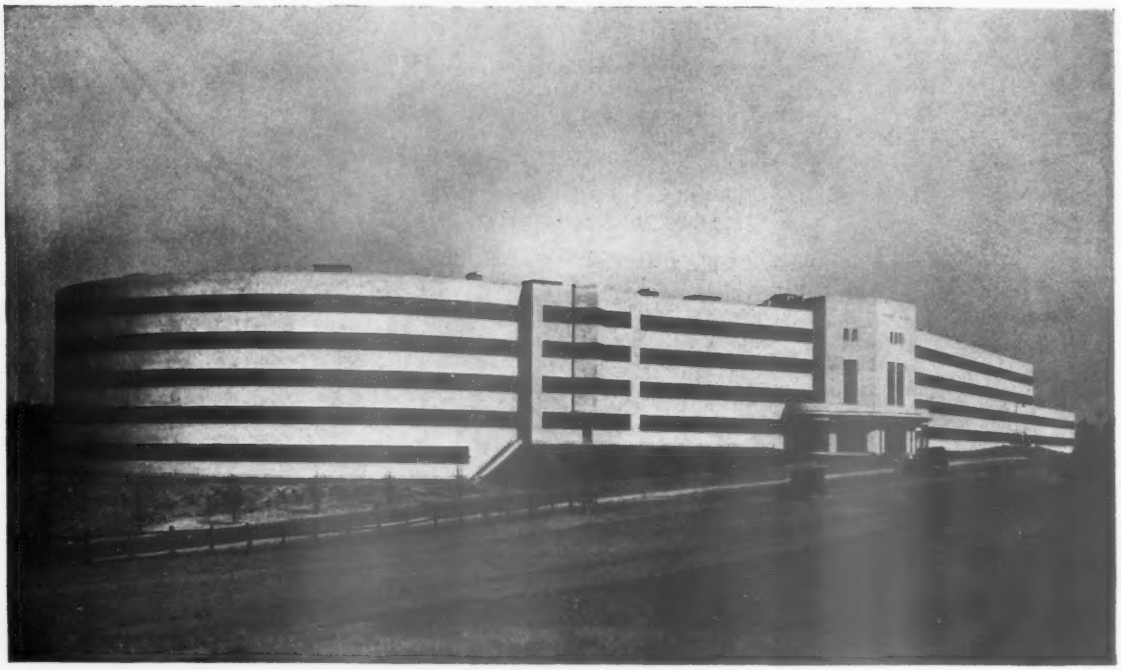
DESIGNED BY LEONARD HEYWOOD

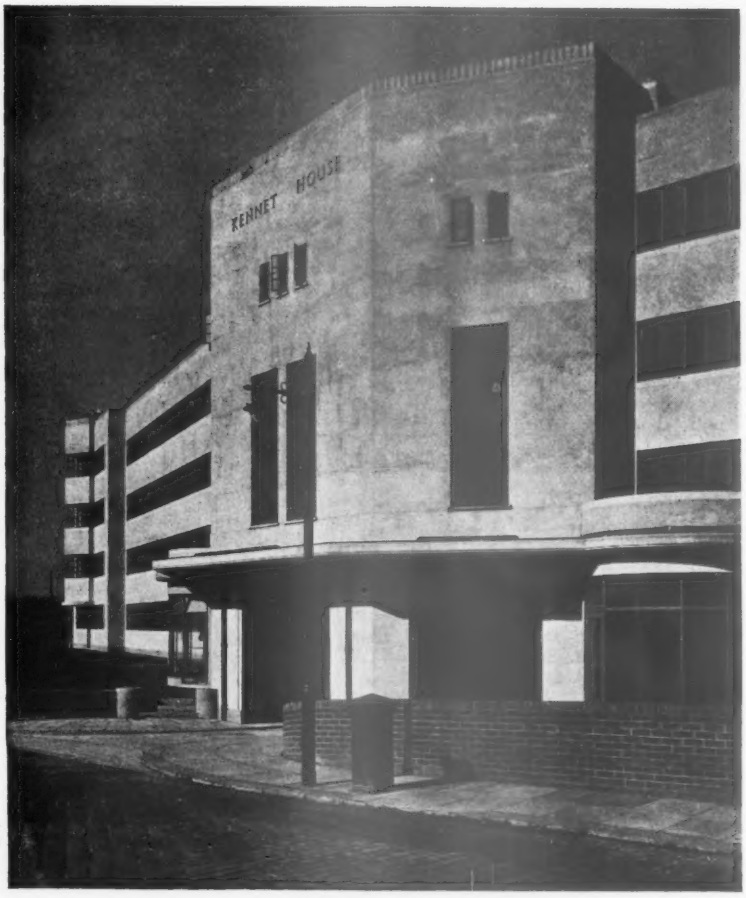
GENERAL PROBLEM AND SITE.—*Kennet House was built to rehouse tenants from slum clearance areas. When the new Irk Valley Road is constructed the site will become practically an island, and its general shape has been followed in the disposition of the building.*

LAY-OUT.—*The plan form adopted both allows the maximum unbroken internal area as gardens and playgrounds and for ample setting back from the road frontages. The stepping down of the floors at the southern end of the building avoids the overshadowing of one part of the block by another. The intermittent balcony plan type has been used to give privacy to individual flats and to prevent overshadowing of living rooms.*

Above is a general view of the scheme from the west.

KENNET HOUSE, MANCHESTER:





PLAN.—*The scheme contains 181 flats and four shops, there being 72 two-bedroom and 104 three-bedroom flats in the block, normally repeating the standardized unit plan shown on page 517. Access is provided from stairways opening on to the internal court and serving two flats on each floor. The number of storeys varies from two to five. Each flat has its private balcony and refuse disposal chute.*

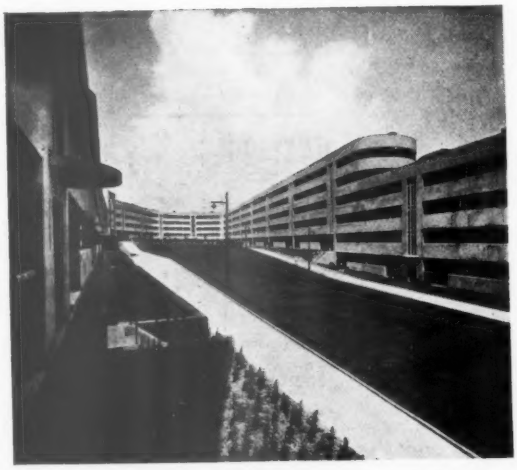
A washhouse, community hall, and external conveniences for the children are included in the scheme, in addition to the four shops.

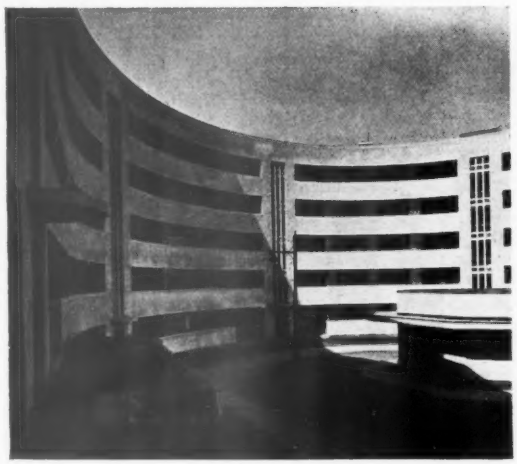
CONSTRUCTION. — *Steel-framed with 11 in. cavity walls. Floors and roofs of hollow tile. Inner leaf of external walls of 4 in. breeze, and internal partitions of 2½ in. breeze. External treatment of white stucco with dark rustic brick piers between windows. Windows of steel casement type set in brick jambs.*

External steps, kerbs, and carriage ways are of reinforced concrete.

Above, a general elevational view from the north-west; left, a detail of the principal entrance.

DESIGNED BY LEONARD HEYWOOD





INTERNAL FINISH AND EQUIPMENT.—*Staircases are in plastic brick with steps of reinforced concrete, grano finished. Flat walls and ceilings are of plaster. Ground floors are of coloured asphalt, and elsewhere of boarding on 3 in. by 1½ in. splayed battens, packed between with breeze concrete. The joinery is kept simple and has been made easily detachable and as free from crevices as possible. Each flat has a coal cooking range equipped with a boiler for hot water supply. In addition an electric griller and kettle are provided.*

Staircase and court lighting is maintained by the management. The use of the central washhouse with its hot water and drying horses is free to all tenants.

Linen and other cupboards are built in. Service pipes are in copper and electric fires are built-in in two bedrooms in each flat.

FURNITURE.—*The furnishing of standard flats in the scheme was supervised by the Manchester and District Branch of the Design and Industries Association. Although it was realized that very few tenants would require completely new furnishings, it was hoped that such flats would be of influence in securing the adoption of light, simple and serviceable furnishing by the tenants. For this reason everything in the flats was obtained from a local store.*

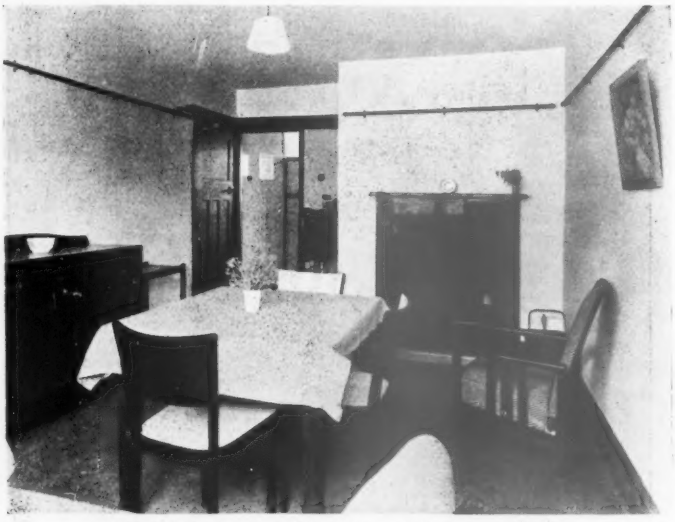
The two-bedroom flat for four persons was furnished completely for under £60, and the three-bedroomed flat for five persons for £80. The furnishing of individual rooms varied in cost from £19 to £9.

COLOUR SCHEME.—*The general internal decorative scheme is in the following colours: brown, beige, terra cotta and sand yellow, and the standard furnished flats have employed in addition dark blue, orange and white, or lime green, bright red and black.*

Above, a detail of the internal court, looking south-east; left, two views of the court, looking north-west.

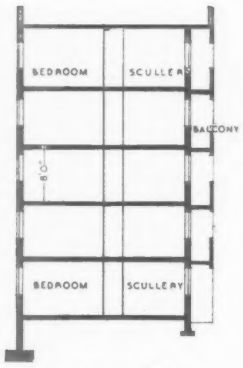
KENNET HOUSE, MANCHESTER

Ground floor flat: living room from door.

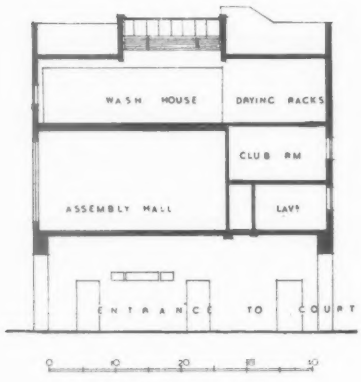


Ground floor flat: living room, looking towards door.

Principal bedroom.



SECTION 1-1



SECTION 2-2

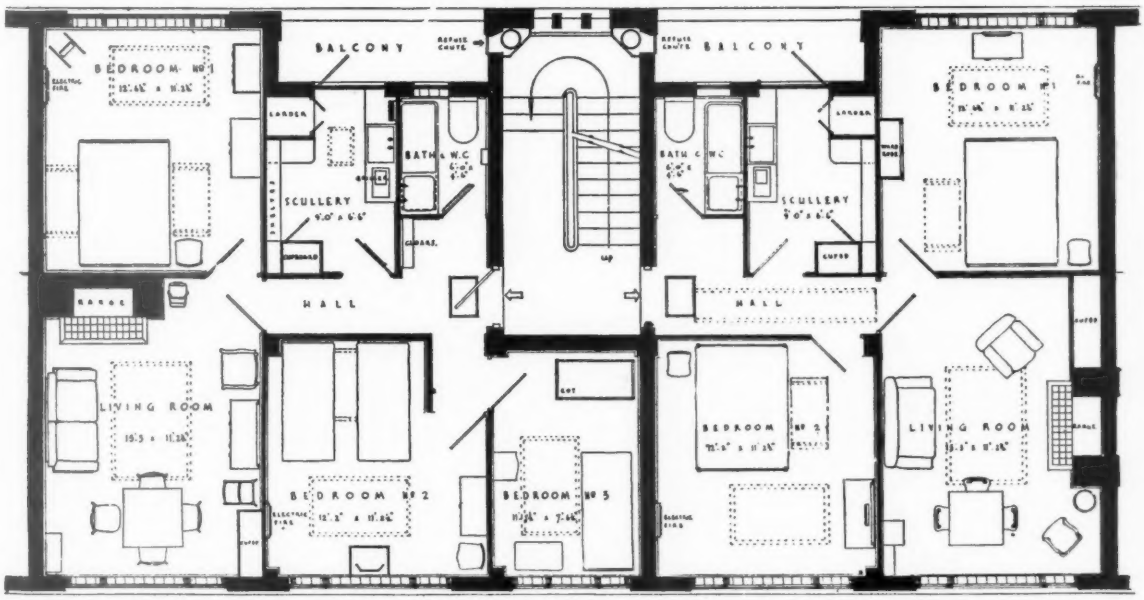
COST.—*The total cost of the scheme was approximately £83,000, and the price per cube foot was 11d.*

The illustrations are of a typical three-bedroom flat.

DESIGNED BY LEONARD HEYWOOD

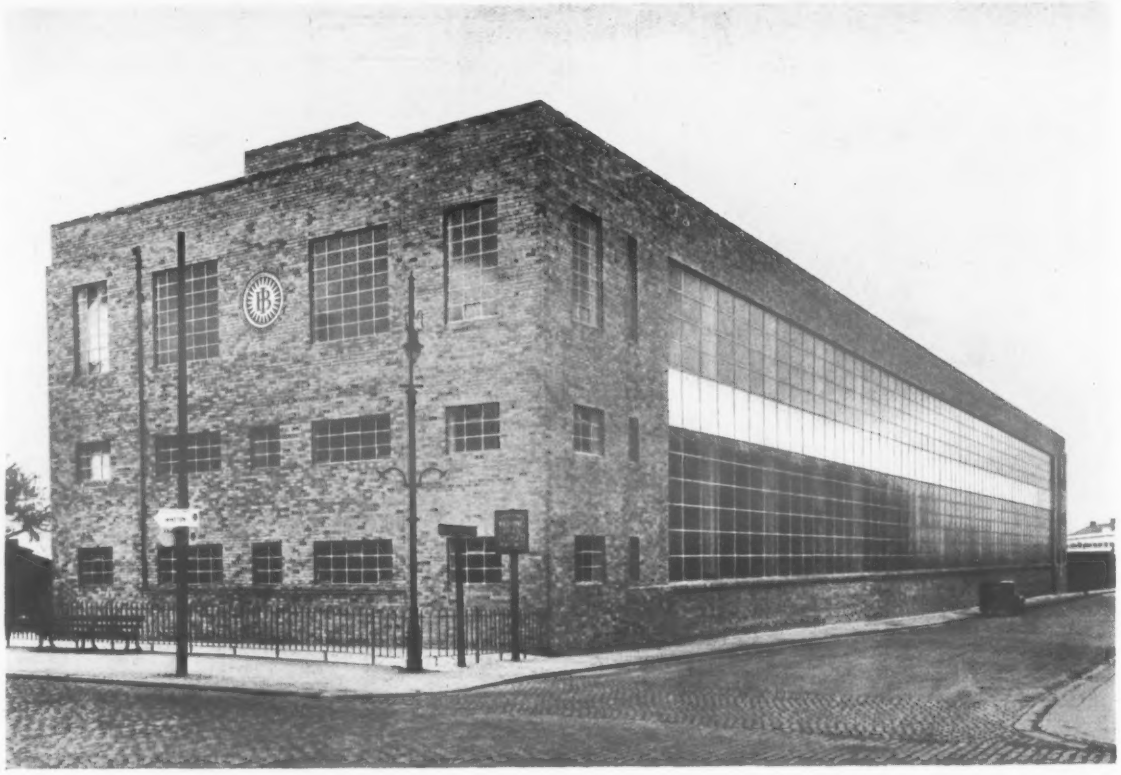
Above, the standard scullery provided in all flats. Right : above, the living-room of a two-bedroom flat ; below, the principal bedroom in the same flat. The furnishing of the rooms illustrated was carried out under the supervision of the Manchester Branch of the D.I.A. as being that most suited to the accommodation and to the average income of the tenants.

For list of general and sub-contractors, see page 536.



TYPICAL FLAT PLANS. LEFT: 3-BEDROOMED FLAT. RIGHT: 2-BEDROOMED FLAT

ELECTRIC METER SHOP, PRESCOT, LANCASHIRE

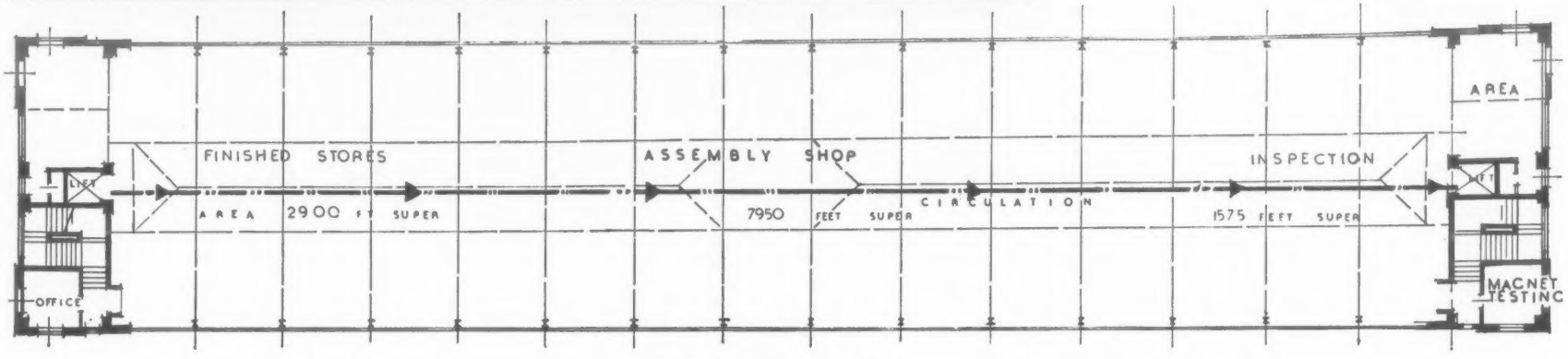


GENERAL PROBLEM AND SITE.—*The purpose of the building is that of a factory for the mass-production of electric meters. The size of the site compelled the adoption of a two-floored production lay-out.*

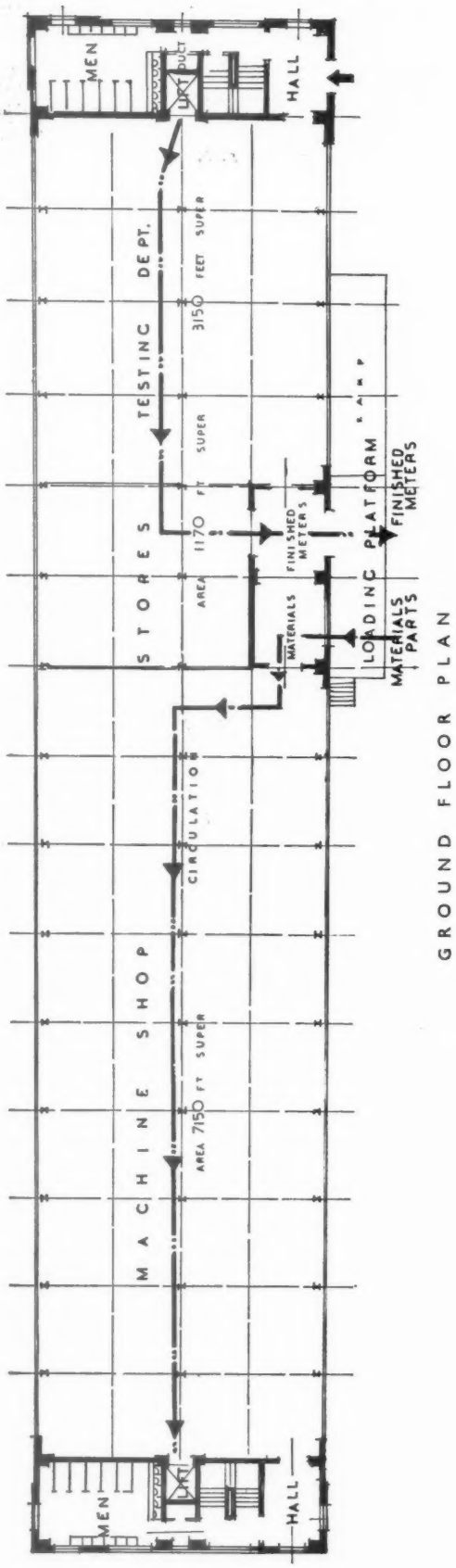
PLAN.—*The continuous production flow necessary, together with the position of the entrance and exit loading dock, controlled the plan form. The material parts of the meters pass through the various processes along the production line shown on the plans reproduced, lifts at the ends of the building supplying communication between floors. Staircases and lavatories are grouped at either end of the building outside the production area. As much daylight as possible was requested for the main working space owing to the extreme fineness of some of the meter parts. The main dimensions of the building are : overall length, 272 ft. ; overall width, 52 ft. ; total floor area, 38,168 ft. super. Floor to floor heights : basement to ground, 10 ft. 6 in. ; ground to first, 19 ft. ; first to roof level, 15 ft.*

CONSTRUCTION.—*The building is steel-framed with a brick infilling and is faced with smooth surfaced brown bricks. The floors and roof are of precast R.C. beams with filler joists. The roof is insulated with fibre board and finished with two layers of rubber sheeting. Walls of main shop are glazed from ground floor cill to eaves with standard steel fixed casements in 4 ft. widths, $\frac{3}{32}$ in. plates being inserted as stiffeners at intervals. Rooflights are of patented steel type.*

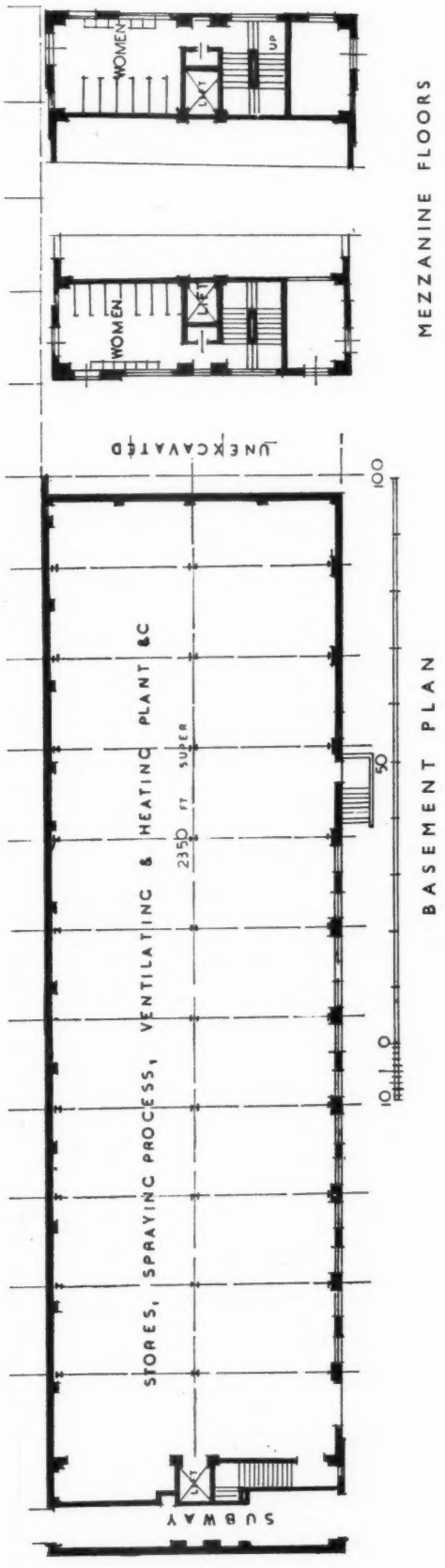
Left, a general view of the building.



FIRST FLOOR PLAN



GROUND FLOOR PLAN



MEZZANINE FLOORS

BASEMENT PLAN

FIRST FLOOR PLAN

DESIGNED BY DUDLEY NISBETT

ELECTRIC METER SHOP, PRESCOT

The photographs show: left, a detail of the continuous glazing to the principal working space; bottom, left, the assembly shop on the first floor; bottom, right, the machine shop.

DESIGNED BY

DUDLEY NISBETT

INTERNAL FINISH.—*Walls and ceilings are colour washed, and heating panel coils are plastered to form raised panels. Workshop floors are in beech blocks throughout. Side glazing is in white rimpled glass save in panel masking first floor, which is in eggshell green glass composition. The lavatory floors and walls are tiled and the ceilings plastered.*

HEATING, ETC.—*Heating is on the low pressure accelerated system by means of panel coils. Ventilation is mechanical to avoid pollution from surrounding workshops, the ventilating plant being on the roof of the building. Internally the trunking is exposed and painted.*

CONTRACT, ETC.—*The building was executed under a single contract, the total price being £20,750. The price per cube foot was 7·6 pence.*

For list of general and sub-contractors, see page 536.

WORKING DETAILS : 339

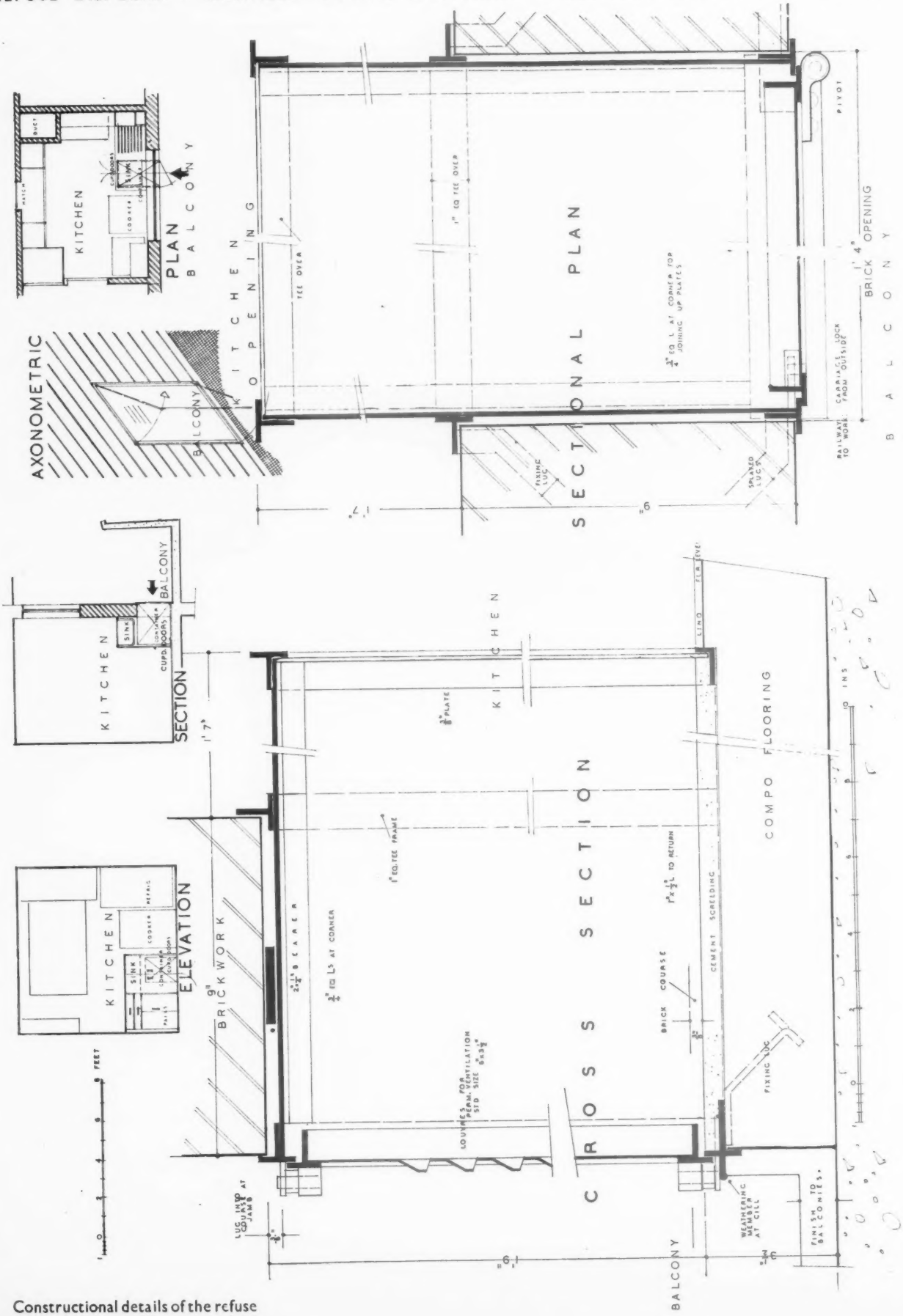
REFUSE DISPOSAL • LICHFIELD COURT, RICHMOND • BERTRAM CARTER AND SLOOT

Each kitchen in this block of flats is fitted with a garbage unit in which is placed a standard bin. The tenant has access through cupboard doors under the sink while the caretaker collects the garbage from the balcony side. Each bin is emptied into a large garbage trolley which can be wheeled along all traffic balconies, down by lift routes and thence to the stand where the Council trucks can collect it. Detail drawings are shown overleaf.

FILING REFERENCE:

WORKING DETAILS : 340

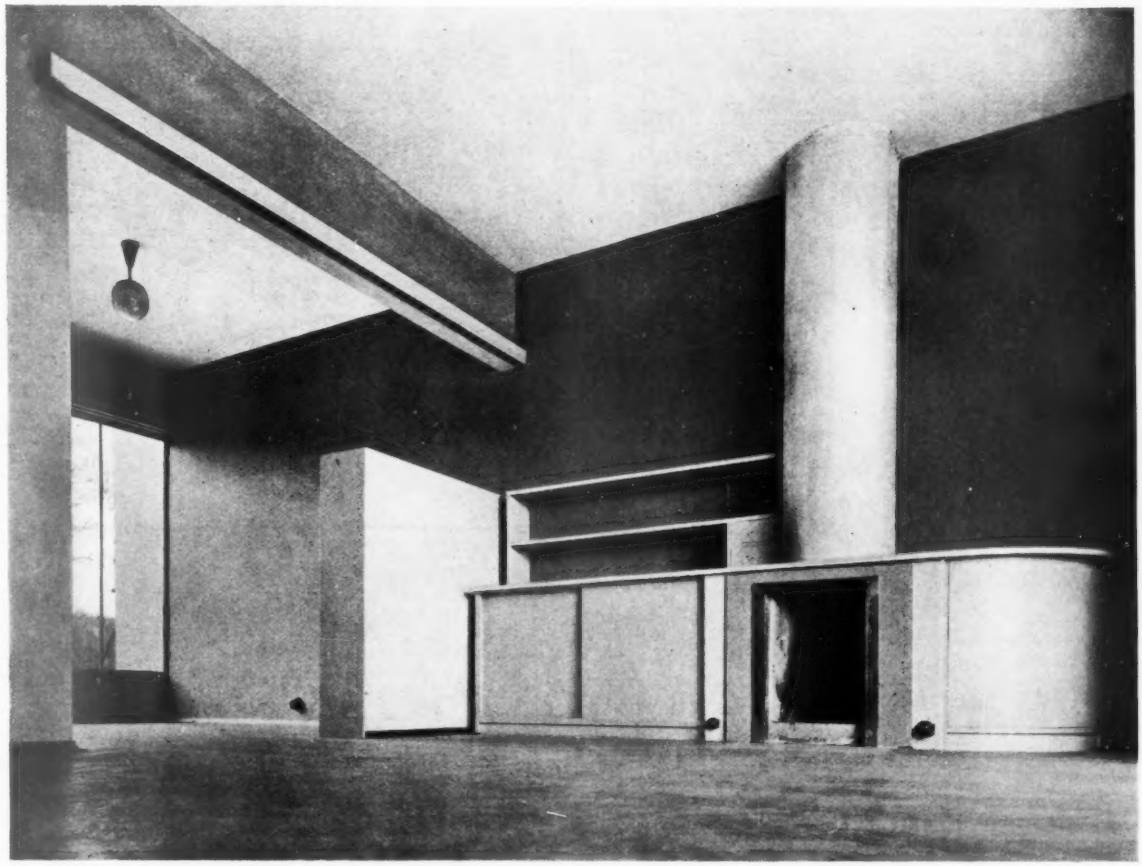
REFUSE DISPOSAL • LICHFIELD COURT, RICHMOND • BERTRAM CARTER AND SLOOT



Constructional details of the refuse disposal system shown overleaf.

WORKING DETAILS : 341

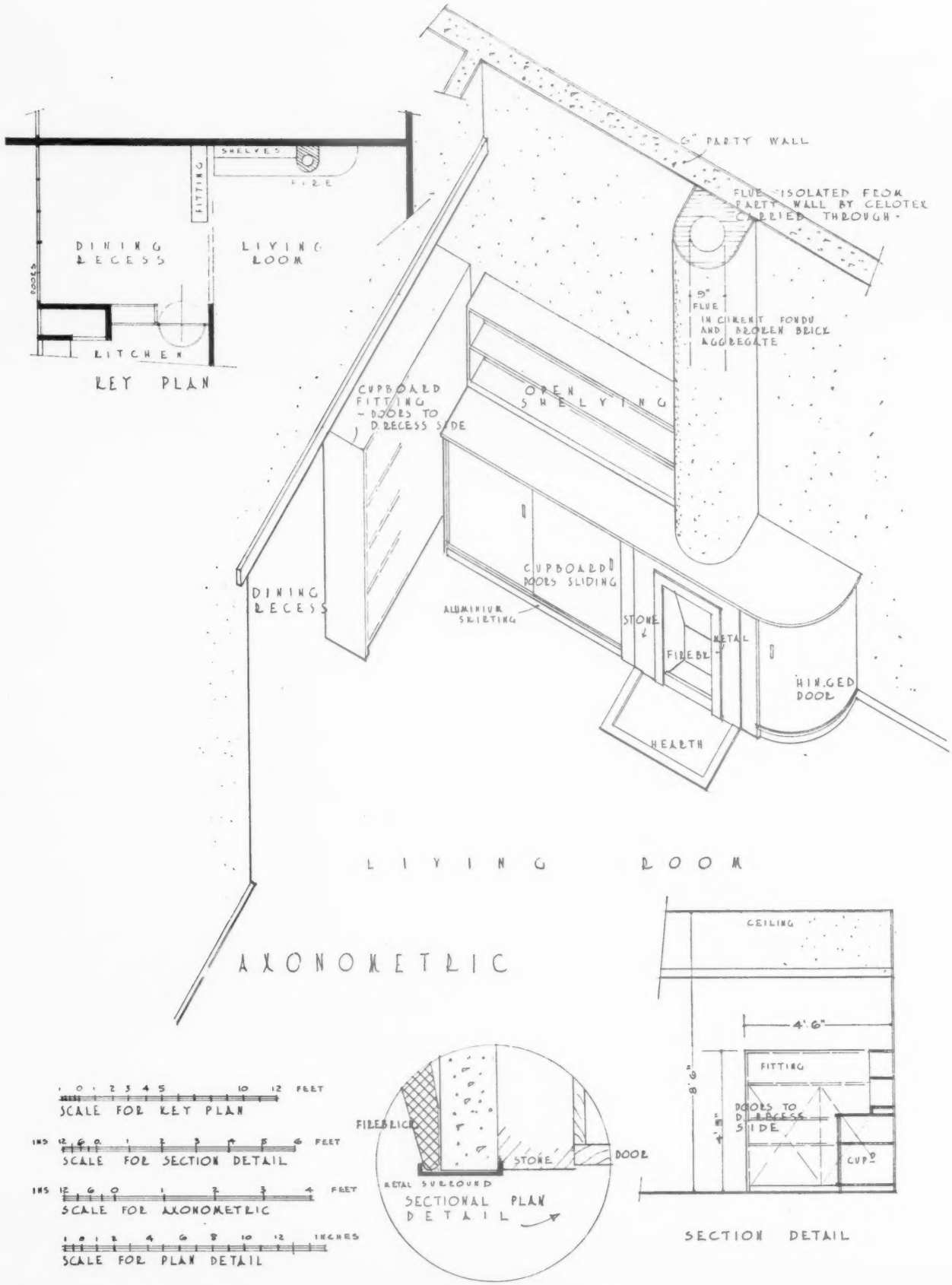
FIREPLACE FITTING • HOUSE AT RUISLIP • CONNELL, WARD AND LUCAS



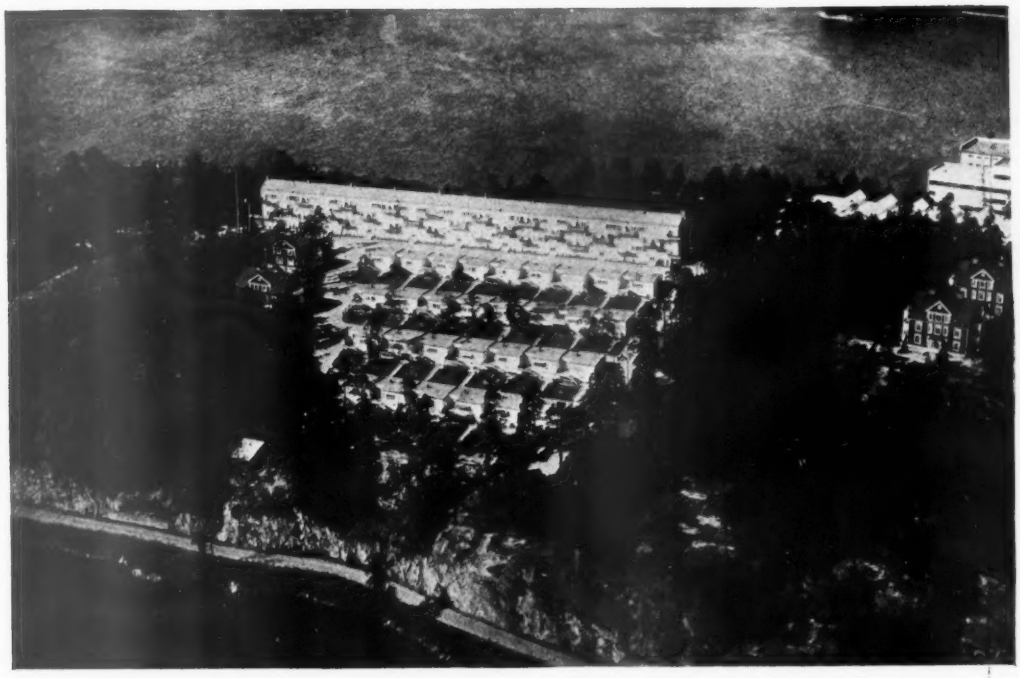
The fireplace illustrated above has a chromium plated surround and the circular flue is carried straight upwards, a sheet of wallboard being interposed between the flue casing and the wall. On either side are cupboards and shelving, there being a gap to take the curtain of the dining recess. An axonometric and details are shown overleaf.

WORKING DETAILS : 342

FIREPLACE FITTING • HOUSE AT RUISLIP • CONNELL, WARD AND LUCAS



Axonometric and details of the fireplace illustrated overleaf.



Houses at Kvarnholmen, Sweden. From "Swedish Co-operative Wholesale Society's Architects' Office."

L I T E R A T U R E

CO-OPERATIVE ARCHITECTURE IN SWEDEN

[*BY HUBERT FITCHEW*]

Swedish Co-operative Wholesale Society's Architects' Office, 1925-1935. Swedish Co-operative Union, Architects' Office, 1925-1935. Swedish Co-operative Union, book department. Price 10s. net.

IN Sweden the co-operative movement thrives. English visitors to the Stockholm Exhibition of 1930 could scarcely fail to become cognisant of the clean, functional architecture of the modern Swedish "co-op. shop." But they may not have had time and occasion to enquire into its origins. That was five years ago, too, and in the interval the organization has made vast strides. And since not many of us can cross the North Sea at frequent intervals, the issue of the present survey (in English that is usually impeccable) is a particularly happy idea.

It emanates from the Architects' Office of the Swedish Co-operative Wholesale Society in celebration of that office's tenth birthday. It was in December, 1924, that a group of ten specialist architects, with Eskil Sundahl at their head, was established to meet the growing demand for premises of many kinds to house the Society's far-spreading activities. In the ten years under review 2,000 shops have been built and/or fitted in all parts of the country, 600 new business premises constructed, 500 more rebuilt, and thirty factories and warehouses erected, not to mention the provision of 2,000 flats to house employees. The sphere of operations has extended even to Iceland.

In quality as well as in quantity it is a goodly record that is here sumptuously illustrated. There is as much letterpress as will give the reader a clear grasp of the general situation, but of how that situation is being met the detail photographs and admirably clear key-plans and sections are left to tell the convincing tale. With characteristic long-headedness the advantages of standardization are exploited, but the mistake of pushing the pursuit too far is avoided.

Let us consider first the retail shop. Shops of about the same size among communities that are similar obviously present common problems, to which common solutions may sometimes be applied. But there are more "variables" than "constants" in the class of work under review. Locality influences the choice of economical building materials—one matter on which more light would have been welcome—and so, although features of planning may be repeated, elevations rarely are.

What has been profitably done is to regimentize fittings. "The standard drawings of the office for shop and storage room equipment number about 40." They cover such points as the universal use of open, bracketed shelves instead of pigeon-holes, and the fitting of steel and lignum-vitæ slides to drawers. Even these designs, however, are kept constantly under review, and in 1931 they were entirely revised.

But though there is a wide diversity among the shops illustrated, certain principles are observed. The majority have a depth of 5 metres. "This is principally due to two causes. First, this depth produces a well-proportioned relation between the space behind and that in front of the counter. Secondly, a distance of 5 metres between outer and inner wall provides an economical span for the flooring." Windows are not limited to the display of certain goods; they reveal the shop in its entirety. Walls are lined with containers, and the island counters are placed so as to leave not less than the 110 centimetres that experience has shown to be the most convenient clearance for circulation around them.

"The floor space reserved for the public is covered with plates or sheets strong enough to resist wear and tear." But to mitigate fatigue for the workers a softer floor-covering is used behind the counters. "Immediately inside

The Luma Factory, Stockholm. From "Swedish Co-operative Wholesale Society's Architects' Office."

the door a grating prevents too much snow and dirt from being carried into the shop."

Some of the excellent natural-colour photographs seem, at first sight, rather to be thrown away on shop interiors, showing, as they do, little but the goods exhibited for sale. Closer inspection, however, reveals the neat, necessary fittings of which the prominent exhibition is the whole aim.

The comparative cheapness of land in provincial Sweden explains the general preference for expanding horizontally. When the scale grows larger, and it comes to a question of warehouses and factories, other considerations rule. In the manufacture of crisp bread and macaroni, and in roasting coffee on a wholesale scale, gravity feed of the materials presents advantages. Some very interesting buildings of this order result from the application of the functional principle. Utility governs the fenestration, with certain reactions on the elevations.

In Stockholm itself is the Konsumhuset, the headquarters of the Consumers' Co-operative Society, a four to six-storey factory in which is installed the coffee blending, roasting and packeting plant. The views of the roasting department, with their rotary mills and plexus of ducts (each kind of coffee travels in a pipe painted with a distinguishing colour) suggest the engine room of a modern liner. Elsewhere in Stockholm are the Katarina elevator, with a restaurant slung from the long, narrow footbridge—very intriguing—and the Luma (electric lamp) factory, a five-storey, flat-roofed building, steel-framed and cased in pumice concrete. With another touch of long-headedness, the test-room is skied aloft, so that at night, the light from thousands of lamps on test shines out far over the water.

At Kvarnholmen, on an island of well-timbered, rocky contours, is a centre of manifold activities. Grouped near the existing silos there have been added, since 1927, a macaroni factory, an oatmeal mill, a crisp bread factory, besides ancillary buildings and—not the least absorbing—housing accommodation for workers. The silos are of concrete, the other structures mainly of brick.

An oil refinery, people's palaces with cinema and open-air theatres, a school, a project for the City of Stockholm Housing Competition (1932), and some essays in furniture, glassware and container design; such are some of the other subjects covered in a publication which deserves to take the rank claimed for it as a study-and-suggestions book for leaders of industry as well as for architects and the like.

Publications Received

Modern Housing. By Catherine Bauer. London: George Allen and Unwin, Ltd. Price 20s. net.

The Arts Today. Edited by Geoffrey Grigson. Contributors: W. H. Auden, Louis MacNeice, Arthur Calder-Marshall, Edward Crankshaw, Humphrey Jennings, John Grierson and John Summerson. London: John Lane. Price 8s. 6d. net.

Six Architects. By Sir Reginald Blomfield, R.A. London: MacMillan and Co., Ltd. 6s. net.

Journal of the British Wood Preserving Association. Edited by A. N. Lloyd and R. C. Gardner. London: British Wood Preserving Association.

Country Houses of Dorset. By Arthur Oswald. London: Country Life, Ltd. Price 12s. 6d. net.

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South Wales Institute of Architects

Following is a list of the lectures arranged jointly by the South Wales Institute of Architects (Central branch) and the Institute of Builders (South Wales Branch) to be held at the Technical College, Cardiff:—

October 17: "Commodity, Firmness and Delight." By Mr. E. R. Jarrett, A.R.I.B.A.

November 21: "Modern Churches." By Mr. Edward Maufe, M.A., F.R.I.B.A.

February 6: "How the Housing Problem is Solved Abroad." By Mr. F. R. Yerbury, Hon. A.R.I.B.A.

March 19: "Modern Architecture and the Craftsmen." By Mr. G. Grey Wornum, F.R.I.B.A.

LETTERS FROM READERS

T. SUMNER SMITH, F.S.A., F.S.I. Arb.

DR. OSCAR FABER, O.B.E.

J. R. KELL, M.I.H.V.E.

Heating by Electricity.

SIR,—In the article under Technical Section, No. 30, which appeared in your issue for August 12, with regard to heating by electricity, the authors state that the resultant energy of electricity received in the building is down to about 20 per cent. of that of coal (as a consequence of losses in transmission due to the inefficiency of successive stages of transformation and to the heating effect on the cables). The authors set out in diagram form (page 387) the loss due to each successive stage : the largest of these being 20 per cent. loss in steam generation and 55 per cent. power loss in mechanically transforming steam into electrical energy, making a total loss of 75 per cent. for these two processes. The authors do not state whether the figure for steam generation is an average derived from tests of power generating stations or not, but it would appear to be too high for modern plants—the efficiency being more in the region of 90 per cent. Also the loss of 55 per cent. due to the transformation of steam power into electric energy would appear to be excessive for modern plants utilizing pass out steam for commercial purposes. Could the authors give particulars as to how this data has been obtained ?

Electrical energy is a potent force today and the cost thereof is of considerable interest and importance to the building trades, and is increasing daily. In the near future its use will no doubt become a vital factor in the design and equipment of buildings for power, heating and lighting. To the town planner its importance cannot be overlooked. The figures of cost given by the authors, namely, 0·162d. per unit of electrical energy, which they state is about the usual cost per unit, ranging from 0·14d. upwards. But the method by which they have arrived at this cost requires further consideration, for it would appear to be at fault. Let me give it here : " Taking the coal at 13,000 B.T.U.'s per lb., and an electrical unit as equivalent to 3,415 B.T.U.'s it will be apparent that $\frac{13,000}{3,415} \times \frac{100}{20} = 1{\cdot}9$ lbs. coal are consumed in providing one unit at the consumers' terminals." This equation as set out gives 19 lb. and not 1·9 lb. coal. Testing this in another way and making use of the authors' figures it will be found that it is 1·3 lb. coal and not 1·9 lb. coal, that is consumed in providing one unit of electricity. As stated previously, the authors give the resultant energy received in the building down to about 20 per cent. of that of coal, in other words, but a fifth, and a fifth of 13,000 B.T.U.'s = 2,600 B.T.U.'s, so that an electrical unit — 3,415 B.T.U.'s is 1·31 times (to two places of decimals) that of 1 lb. of coal. But is it ? There would seem a doubt about the 20 per cent. efficiency, and what about the B.T.U.'s of coal ? Mr. David Brownlie, B.SC., in *Engineering*, July 12 and 19, 1918, gave the average as 11·822 B.T.U.'s from analysis of coals of 250 boiler plants, and that the average for ash was 11·5 per cent. From this it is clear that coal free of ash would give a combustible coal of about 13,000 B.T.U.'s But is such coal obtainable at a price of 16s. per ton as stated by the authors ?

The supply of fuel and the cost is mainly outside the control of the architect, but the architect has choice in the use of the various fuels available. What interests him mostly is the cost of installation of plant and the economical use and the advantages and disadvantages of the various systems in vogue. We know the respective B.T.U.'s of various fuels, but which of these is the most economical to use and which gives the best result ? For example : what is the cost of electrical installation as compared with gas for lighting and heating, what is the maintenance or upkeep cost of the respective installations ; what is the running or consumption cost of each ; what are the respective advantages and disadvantages of these systems ; and how do they compare as regards efficiency ? As to efficiency, which gives the best working conditions in maintaining a uniform temperature (the ideal being 68 degrees for sedentary occupations), without any injurious effects ? Could the authors give this information ?

The subject is not only of interest to architects, the gas industry, electric power suppliers, coal industry, manufacturers of various appliances for lighting and heating, but to all classes and kinds of consumers. Amongst these there must be some who have data, who would no doubt agree to pool all available information in the general interest. Further, such particulars may indicate the need for further research to the benefit of all.

T. SUMNER SMITH
Manchester

We have submitted the above letter to the authors of the article discussed by the above correspondent. Their reply is printed below.

SIR,—We are grateful to Mr. T. Sumner Smith for so kindly pointing out a clerical error which occurred in our article in the JOURNAL for September 12.

The coal consumed per unit of electricity with a mean annual thermal efficiency of 20 per cent. and a calorific value of 13,000 B.T.U.'s per lb. is :—

$$\frac{3,415}{13,000} \times \frac{100}{20} = 1{\cdot}31 \text{ lbs.}$$

with coal at 16/- a ton, the coal cost is therefore

$$1{\cdot}31 \times \frac{16 \times 12}{2,240} = 0{\cdot}11\text{d. a unit}$$

We much regret the error.

As regards the rest, it must be borne in mind that it is not the efficiencies under test or full-load conditions which count, but the overall annual efficiency, which includes long periods of partial load, boilers banked up, etc., and we believe our figures correctly give such average annual figures.

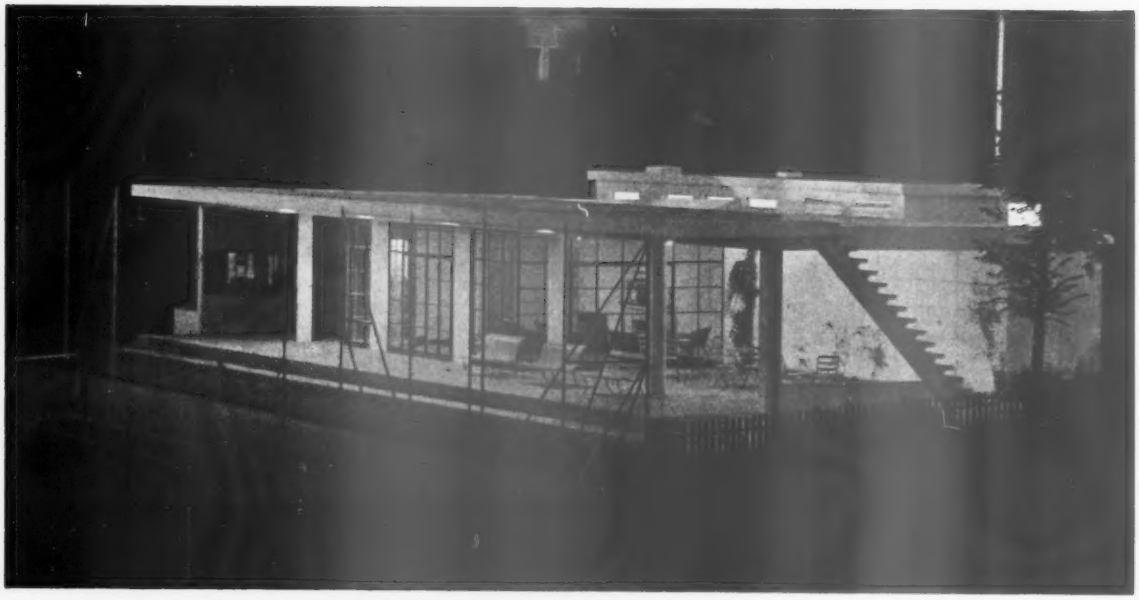
OSCAR FABER
J. R. KELL

L.C.C. Central School of Arts and Crafts

On October 3 Sir Banister Fletcher, PP.R.I.B.A., gave the introductory lecture of a course of 24 University lectures on " Ancient Architecture," to be delivered at 6 p.m. every Wednesday, at the Central School of Arts and Crafts, Southampton Row, W.C.

During the session the lecturer will trace the evolution of architecture in ancient Egypt, Babylonia, Assyria, Persia, Greece, Rome and Byzantium, with special emphasis on the influence of ancient art on all subsequent styles down to its adaptation to modern needs in our own day.

TENNIS CLUB HOUSE



PROBLEM.—*For a small tennis club possessing three hard courts it was necessary to design a building which would provide adequate dressing rooms and accessories for both sexes, a lounge in which light refreshments would be served, and a grandstand for spectators.*

PLAN.—*The building is placed on the south side of the courts, with its long axis running east and west, thus giving a long run of lounge window and pergola overlooking the courts, with extra accommodation for spectators on the flat roof. The kitchen, which is equipped with an electric stove, is intended for light meals only. Access to the flat roof is by a narrow staircase with treads cantilevered from a single central rib. No handrail is provided, as there is no handrail on the roof and it is intended that the staircase shall act as a discouraging factor to any spectators who would be likely to fall from the roof. An unusual but possibly justifiable piece of design, since the members of a tennis club may be assumed to be reasonably youthful and athletic.*

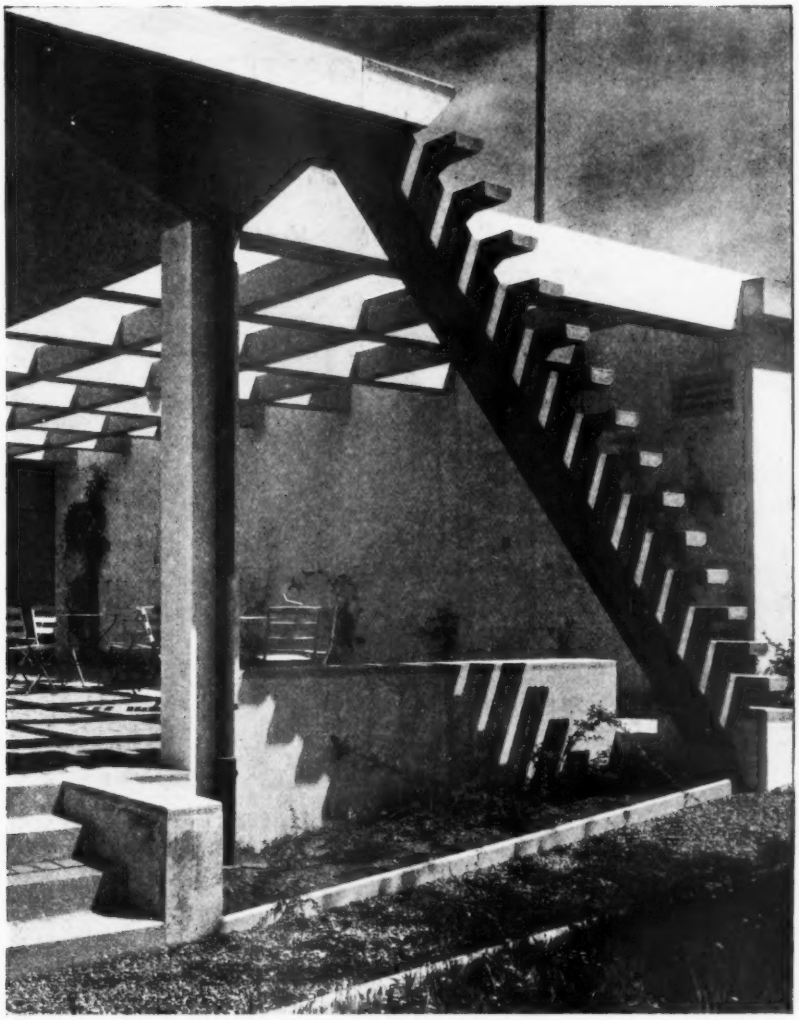
CONSTRUCTION.—*External walls are in concrete blocks finished with a white cement rendering; no form of insulation has been employed, as the building is in use during the warm season only, while for the same reason no central heating has been provided, though there is an open fireplace in the lounge.*

FINISHES AND EQUIPMENT.—*The general white colour of the exterior is relieved by dark blue window frames and light blue soffits to canopies, while the loggia immediately outside the kitchen is distempered to match the red of the courts.*

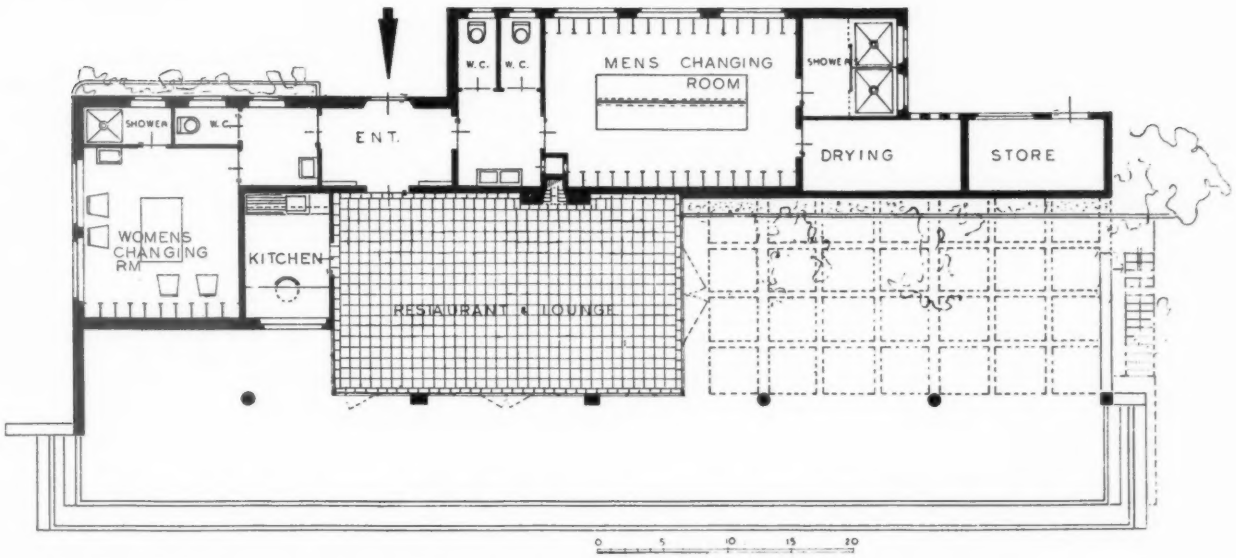
The photographs show the building by day and by night.

AT BADEN, SWITZERLAND

DESIGNED BY MARKUS HOTTINGER



A detail of the staircase and pergola; the latter is now covered with plants to give shade at midday. Below is the ground floor plan.



TECHNICAL SECTION: 34

HEATING, AIR CONDITIONING AND MECHANICAL EQUIPMENT

BY OSCAR FABER

O.B.E., D.C.L., D.Sc., M.Inst.C.E., Hon.A.R.I.B.A., A.M.I.E.E., F.C.G.I., M.I.H.V.E., M.Am.S.H.V.E.

AND J. R. KELL, M.I.H.V.E.

RUNNING COSTS OF HEATING SYSTEMS

SO much has been said and written within recent years on the vexed question of the running costs of heating systems that it is probably impossible to deal with the subject other than in a controversial manner. The electric, gas, coke, coal and oil industries and the makers of equipment have all prepared their cases, but it is only natural that these should be biased in some degree towards the fuel concerned.

Those who are responsible for the selection of a heating system for some new building tend to become confused with this mass of apparently contradictory statements, and begin to think that perhaps after all there is little to choose between any of them.

In fairness, it should be said that, basically, each of the cases put forward is probably sound, but undue emphasis is often given to incidental advantages so as to produce as favourable a set of figures as possible.

It is hoped that by reviewing the facts impartially a clearer conception of the true position will result.

Running costs are made up of
(1) fuel,
(2) labour,
(3) maintenance and repairs,
(4) interest and depreciation,
(5) insurance.

These are all commercial matters. Cleanliness and convenience are often equally important, yet it is often difficult to give a money value to them. A factory, for example, is quite different in this respect from a city bank, and each case must be treated on its merits.

1. Fuel.

The quantity of fuel required for the warming of a building depends on
(*a*) heat input to maintain the specified temperature,
(*b*) calorific value of fuel,
(*c*) average working efficiency over the season,
(*d*) period of use,
(*e*) proportion of full load operation.

(*a*) *The heat input* is the basis of any calculation of fuel consumption. This depends on the heat losses, which can be calculated, as has already been explained.

The heat input figure must include any losses from mains; in fact, the whole transmission from all the radiation and piping installed based on 30 or 32 deg. F. outside temperature. This is the full load heat to be supplied in coldest weather.

Incidentally, direct electric and gas systems which have no mains losses score here by starting with a lower initial heat requirement. This will be referred to more fully later.

(b) *Calorific value* is a clearly established figure for each fuel, and has already been discussed. It must be remembered that solid fuels often vary as a result of the amount of moisture which they contain; in other words, whether they were weighed out just after a shower or not. Moisture may vary from 5 to 10 per cent. of the weight, particularly with coke.

A further point is that where coal is being bought direct from a colliery the colliery weight has to be accepted. This can rarely be made to agree with the weight received in the boiler house, the difference invariably being on the wrong side.

Thus, with solid fuels some allowance should be made for these factors by assuming a definite loss of, say, 10 per cent. by weight.

(*c*) *Average working efficiency over the period.* This is the most controversial point of all.

It has already been stated that hand fired small boilers may be no more than 40 per cent. efficient and that 50 per cent. is a fair figure with normally unintelligent firing. It has also been stated that the application of modern thermostatic controls to a hand fired boiler may reduce fuel consumption by as much as 20 per cent., this being partly due to the better combustion assured thereby, as well as by the reduction of overheating. This has been demonstrated many times in practice and is not a theoretical figure.

The authors therefore consider it only fair, when hand fired solid fuel is being considered, that it should be on the assumption that the boiler is fitted with up-to-date controls, just as other methods of firing are taken on this basis. With this in mind it is felt that an overall working efficiency for the season of 60 per cent. fairly represents what may be expected with present-day apparatus and reasonably intelligent supervision.

In gravity feed magazine coke boilers with automatic controls a figure of 75 per cent. should be maintained indefinitely if the flues and tubes are kept clean, and ash, etc., regularly removed.

Automatic stokers and oil firing depend largely, so far as their efficiency is concerned, on the regulation of the air supply and on the type of boiler to which they are connected. It has already been stated that lack of adjustment may reduce the efficiency to 50 per cent. or less, but here again any comparison must be on the assumption that the system is modern and properly maintained, and when this is so the figures may be 70 per cent. with automatic stokers and 75 per cent. with oil. The authors know of several examples where tests show these efficiencies to be maintained year in and year out.

Gas fired boilers may be taken at 85 per cent. without much argument and electric thermal storage systems at 98 per cent., as already discussed.

With the above factors Table LIX has been constructed, deducing the net therms per ton obtainable from various fuels fired in boilers under the conditions stated.

As a matter of interest the corresponding costs per therm have been taken out for various prices of fuel and placed side by side with the figures of Table VI, which is based on 100 per cent. efficiency. These are given at the bottom of Table LIX. It will be seen later that even these do not represent a perfectly true comparison except where the heating is continuous.

(*d*) *Period of use.* Here we have to assess the occupancy of the building and the length of time the heating system must be at work. The cooling time comes into this.

It divides itself into
Period of use—
per year,
per week,
per day.

For the yearly use a figure of 30 weeks

TABLE LIX. EQUIVALENT HOURS PER ANNUM FULL USE FOR VARIOUS HEAT-REQUIREMENTS.

Type of heat requirement.	Hours of use.	Number of hours per day.	Daily pre-heating in hours.	Days per week.	Total hours per week, "A."	Hours banked at night at 15%.	Days per week.	Equivalent total hours per week, "B."	Extra Monday morning pre-heating in hours, "C."	Week-end banking at 15% in hours.	Equivalent total hours per week, "D."	Intermittent Firing, i.e., oil, gas, electricity (thermal storage), coal or coke with automatic stokers. | Continuous Firing, i.e., hand-fired or magazine boilers with night banking. | Grand total, columns A, B, C, D.	Number of weeks use per annum.	If no banking, deduct columns "B" and "D" hours per week.	Number of weeks use per annum.	Total hours deduction per annum at weather factor of 0·6.	Allow for extra preheating in mornings due to absence of night heating (hours).	Nett deduction hours per annum.	Equivalent Hours per annum.
1. Continuous ..	—	24	—	7	168	—	—	—	—	—	—	168	30	—	30	77	1×30×0·6= 18	59	271
2. Continuous except night-time	8 a.m.—10 p.m.	14	1	7	105	10	7	10½	—	—	—	115½	30	10½	30	189	7×30×0·6=126	63	2,017
3. Daytime, excluding week-ends	9 a.m.—6 p.m.	9	2	5½	60½	15	5	11¼	2	40	6	79¾	30	17¼	30	310	6×30×0·6=108	202	1,238
4. Part daytime ..	9 a.m.—4 p.m.	7	2	5½	50½	17	5	12¾	2	40	6	71¼	30	18¾	30	338	6×30×0·6=108	230	1,054
5. Intermittent, 2 days per week	10 a.m.—8 p.m.	10	4	2	28	28	2	8½	—	—	—	36½	30	8½	30	153	2×30×0·6= 36	117	548
6. Intermittent, 1 day per week	10 a.m.—8 p.m.	10	4	1	14	14	2	4¼	—	—	—	18¼	30	4¼	30	77	1×30×0·6= 18	59	271

TABLE LIX

(*a*) *Efficiency of Installations with different fuels and methods of firing.*
(All assumed to have full thermostatic control.)

Fuel and Method of Firing.	Efficiency.	B.T.U. per lb. (or unit).	Output in B.T.U. per lb. (or unit).	Therms per ton.	With deduction of 10 per cent. for sundry losses (solid fuel) Therms per ton.
	Per cent.				
Gas Coke, hand-fired ..	60	12,000	7,200	161	145
Furnace Coke or Coal, hand-fired	60	13,000	7,800	174	157
Gas Coke, Magazine Boilers	75	12,000	9,000	202	182
Anthracite, hand-fired ..	60	14,000	8,400	188	170
Coal, with Automatic Stoker	70	13,000	9,100	204	184
Oil Fuel	75	18,000	13,500	302	
Gas (in Boiler)	85	100,000 B.T.U./Therm	85,000	0.85 therms per therm.	
Electricity (Thermal Storage)	98	3,415 B.T.U./unit.	3,350	.0335 therms/unit.	

(*b*) *Cost per Therm for Various Fuels.*

Fuel.	Cost.	Cost per therm at 100 per cent. efficiency (from Table VI).	Cost per therm from Table (*a*) above.
		d.	d.
Electricity ..	½d. per unit	7·3	7·5
Gas	9d. /therm	9·0	10·6
	6d. /therm	6·0	7·1
Fuel Oil ..	80/- per ton	2·4	3·2
Coal or Coke ..	40/- per ton	1·8	3·3 } 60 per cent.
	26/8 „	1·2	2·2 } eff.
	20/- „	0·9	1·65 } 12,000 B.T.U.'s per lb.

is commonly assumed and is about right—end of September to mid-May.

The weekly use depends on the kind of building, whether seven days a week, 5½ (when week-ends are omitted) or only one or two days.

The daily use also depends on the type of building. It will be appreciated that very few are heated continuously for 24 hours per day. The shorter the period of heating each day the greater will be the loss due to banking of the boilers if the boilers are constantly alight, or the greater will be the preheating necessary in the morning if the boilers are intermittently fired.

In other words, with coal or coke, hand stoked or magazine fed, the boilers will be banked a part of the day and all night with little result in the building. On opening up in the morning, however, less preheating is necessary after night banking, as the system will all be warm and the building will not have cooled off so much. The whole of the heat at night is not therefore wasted.

On the other hand, if the system is automatic stoker, oil firing, gas or electricity no night running will be necessary (except perhaps in severe weather), but the preheating in the morning will be slightly longer.

In addition, those buildings which are not occupied at week-ends will call for week-end banking or complete relighting early on Monday mornings, which will often take as much fuel with less desirable results. Whichever method is adopted there will be a longer period of preheating necessary on Monday mornings than on other days for these cases.

It is suggested that the "Period of use" may be divided into about six categories as follows :—

(i) Continuous heating. Hospitals, three-shift factories.

(ii) Continuous with reduction at night-time. Houses, flats, hotels, boarding schools.

(iii) Daytime heating. Offices, public buildings, shops, factories.

(iv) Part daytime heating. Day schools.

(v) Intermittent — two days per week. Churches with mid-week meetings. Public halls used two days per week.

(vi) Intermittent — one day per week. Churches, Sunday schools.

Many more intermediate divisions are no doubt possible, but these cover the majority of cases.

(*e*) *Proportion of full-load operation.*—This must be a variable factor depending on the weather. Obviously no system will be called upon to operate at 100 per cent. output based

on 30 deg. F. outside during the whole season.

What proportion of this can be assumed for the purpose of calculation? How does it vary for different parts of the country?

Some interesting notes on this subject have been published* by Mr. A. F. Dufton, M.A., D.I.C., of the Building Research Station, and we reproduce the map accompanying these here (see Fig. 203), by kind permission of the Director of the Research Station.†

The map shows "British degree days." The "degree day" has proved a useful unit of reference in America, where it is the difference between 65 deg. and the daily mean temperature when the latter is below 65 deg. Monthly normals of temperature (maximum, minimum and mean) are published by the Meteorological Office and the number taken is the mean annual total.

In America, as Mr. Dufton points out, 65 deg. was chosen because this is the maximum at which fuel is usually burnt (70 deg. F. being inside temperature), and the amount of fuel burnt has been shown to follow almost directly the difference between 65 deg. and the outside temperature.

In Britain an inside temperature of 65 deg. F. is more common, and fuel is not usually consumed with the temperature over 60 deg.F. This has, therefore, been taken as the base for the British degree day.

In his notes Mr. Dufton mentions that the effect of altitude will be seen in the case of the only two stations above 1,000 ft. (Braemar 1,120 ft. and Princetown 1,359 ft.). Thus Dartmoor appears a cold spot, whereas Snowdon and Ben Nevis do not. However, mountainous districts are thinly populated, and no practical value would be achieved by attempting meticulous accuracy.

The degree day is not an absolute unit, since low temperatures at night produce more degree days than the proportion at that time may warrant. As a means of reference it is, however, a very useful measure.

Assuming that all the degree days are in the thirty weeks' heating season (this is not strictly correct since it is an annual computation) the total number of degree days possible, if the heating system has been designed for an outside temperature of 30 deg. will be $30 \times 7 \times (60\text{-}30) = 6{,}300$ degree days.

Taking an average figure from the map of 3,500 to 4,000, say, 3,750 for the London district, we find that the proportion of full load is:

$$\frac{3{,}750}{6{,}300} = \cdot 6.$$

It is proposed in the calculations which follow to take a factor of ·6 as the proportion of full load use or "weather factor." For other parts of the country this should be increased or reduced in direct proportion to the number of degree days.

Table LX attempts to combine all the foregoing considerations in a simple form.

The amount of preheating necessary must depend on the construction as well as on the length of time of the "off" period.

Similarly, with the intermittently-heated cases 5 and 6 the pre-heating must be a very variable item. In each of these instances it is assumed that some preheating is done the day before and the boilers banked at night.

The first part of the table applies only to constantly fired boilers—i.e., hand stoked solid fuel, or magazine feed.

Where firing is possible intermittently with periods of shut down between, the night running should be deducted and the pre-heat period increased. This gives the reductions shown on the right of the table and the corrected figures may be used with these systems. For continuous heating no difference, of course, results.

It will be seen that there is, in a table like this, plenty of room for argument as to what proper allowances should be made, and it is put forward solely as what the authors believe to be average conditions, met with in their experience. There can be nothing final or dogmatic about it, especially when divorced from any particular job in hand. It does, however, give a rational method for estimating these various factors, and, as will be seen later, appears to agree with the results obtained in practice.

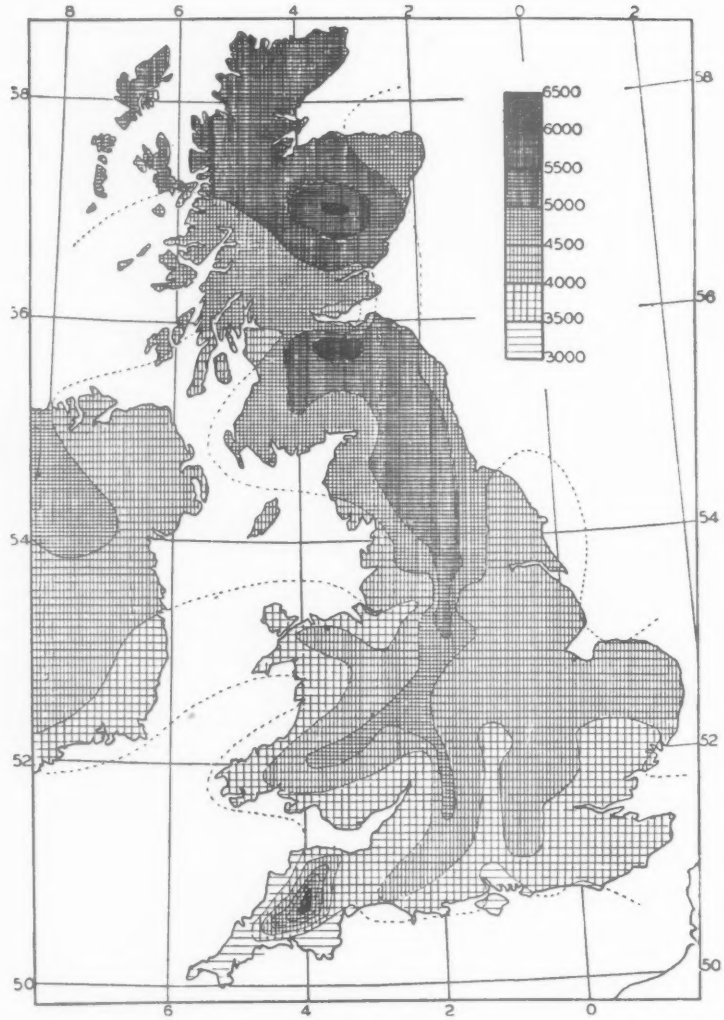


Figure 203.—*British Degree-Days. Reproduced with the permission of the Institution of Heating and Ventilating Engineers and of the Director of the Building Research Station. Crown Copyright Reserved.*

CALCULATION OF FUEL CONSUMPTION

This is now simply a matter of arithmetic, and is given by the formula:

$$F = \frac{B \times E}{T} \times \frac{D}{3{,}750}$$

where F = fuel consumption per annum in tons (coal, coke, oil)

* See *Journal I.H.V.E.*, April, 1934.
† *Crown copyright reserved.*

therms (gas) units (electricity).

B=maximum hourly B.T.U. output (converted to therms, 1 therm=100,000 B.T.U.'s) of heating system including mains, calculated for 30 deg. outside.

E=equivalent hours of full load use per annum (see Table LX).

T=therms per ton, therm, or unit, for fuel and method of firing selected (see Table LIX).

D=degree days. The factor E being based on a weather factor of ·6, approximately equal to 3,750 degree days, adjustment is made in this way for other parts of the country (see Fig. 203). If there is little difference in degree days this part of the equation is, of course, omitted.

Check Calculations.—It is now proposed to calculate on the above basis the fuel consumption of five jobs of different types, and check the result against the actual consumption of each.

Example 1.

Hospital (Midlands)—continuous as type 1, 3,024 hours.

Coal hand fired—157 therms per ton.

B.T.U.'s per hour—2,145,000=21·45 therms.

(Cube 1,048,000.)

(B.T.U.'s per cu. ft.=2·0.)

Degree days 4,000 (the difference between this and 3,750 will be ignored).

Estimated fuel p.a.

$$= \frac{21{\cdot}45 \times 3{,}024}{157} = 415 \text{ tons.}$$

Actual fuel p.a. (1934-5) = 390 tons.

Example 2.

Small Private House (Home Counties).

Continuous except at night as type 2, 2,080 hours.

Anthracite hand fired—170 therms per ton.

B.T.U.'s per hour 40,000=·4 therms.

(Cube 25,000.)

(B.T.U.'s per cu. ft.=1·6.)

Degree days 4,000.

Estimated fuel p.a.

$$= \frac{{\cdot}4 \times 2{,}080}{170} = 4{\cdot}9 \text{ tons.}$$

Actual fuel p.a. (1934-5) = 5½ tons.

Example 3.

Office building (London).

Daytime heating as type 3, 1,440 hours.

Furnace coke hand fired—157 therms per ton.

B.T.U.'s per hour 1,800,000=18 therms.

(Cube 962,000.)

(B.T.U.'s per cu. ft. 1·9.)

Estimated fuel p.a.

$$= \frac{18 \times 1{,}440}{157} = 164 \text{ tons.}$$

Actual fuel p.a. (1934-5) = 154 tons.

Example 4.

Bank Head Office, London.

Daytime heating as type 3 with intermittent firing, 1,238 hours.

Oil fuel—302 therms per ton.

B.T.U.'s per hour 1,360,000 = 13·6 therms.

(Cube 915,000.)

(B.T.U.'s per cu. ft. 1·8.)

Estimated fuel p.a.

$$= \frac{13{\cdot}6 \times 1{,}238}{302} = 56 \text{ tons.}$$

Actual fuel p.a. (1934-5) = 58 tons.

Example 5.

Church and offices, London.

Intermittent two days a week for half as type 5, remainder as type 3—mean =890 hours.

Oil fuel—302 therms per ton.

B.T.U.'s per hour 1,816,000=18·16 therms.

(Cube 933,000.)

(B.T.U.'s per cu. ft. 1·95.)

Estimated fuel p.a.

$$= \frac{18{\cdot}16 \times 890}{302} = 53{\cdot}4 \text{ tons.}$$

Actual fuel p.a. = 57 tons.

It will be seen that so far as these buildings are concerned the calculated results agree well with the actual figures obtained.

In the next article it is intended to give actual fuel consumptions for a wide range of buildings and to discuss the other items of cost not so far covered. Direct electric heating will also be reviewed as regards running cost.

R.I.B.A. EXAMINATIONS

Following is a list of the alternative problems in design for the year ending December 31, 1936. Copies of the list may be obtained free on application to the R.I.B.A.

INSTRUCTIONS TO CANDIDATES

The drawings, which should preferably be on uniform sheets of paper of not less than Imperial size, must be sent to the Secretary of the Board of Architectural Education, R.I.B.A., 66 Portland Place, London, W.1, on or before the dates specified below.

Each set of drawings must be signed in ink by the author and must bear his full name and address and the name of the school, if any, in which the drawings have been prepared.

All designs, whether done in a school or not, must be accompanied by a declaration from the student that the design is his own work, and that the drawings have been wholly executed by him. In the preparation of the design the student may profit by advice.

Drawings for subjects (*a*) are to have the shadows projected at an angle of 45 deg. in line, monochrome, or colour. Drawings for subjects (*b*) are to be finished as working drawings. Lettering on all drawings must be of a clear, scholarly and unaffected character.

After a design has been approved it may be resubmitted together with the specified working drawings on one of the two published dates for the receipt of drawings immediately following the date on which the design was submitted.

All candidates taking the Final Examination will be required to include in the four Testimonies of Study, for which they must secure approval before being admitted to the Examination, at least one constructional subject and one problem involving an acoustical treatment. In addition, considerations of common-sense acoustics as they apply in ordinary modern design must not be ignored in any Final Examination Testimony of study. Where a reverberation table is asked for it should be as complete as possible and the reverberation formula should be quoted. Acoustic diagrams showing the reflection of sound beams should be to a scale of one-eighth of an inch to a foot. The two subjects set for 1936 which may be treated acoustically are Problems Nos. 14 and 17. The two subjects which may be treated acoustically may be submitted *on any of the published dates* for receiving Problems in Design in any particular year, *provided that they are treated acoustically.* Candidates treating a Problem in Design acoustically must submit the acoustical calculations, etc., when they first submit the design. Design subjects taken from one year's list may not be submitted in any subsequent year.

Drawings which have been submitted by candidates and rejected by the examiners may not be revised and resubmitted unless special permission is given by the examiners. A list of articles and books on the subject to guide candidates in obtaining the necessary information may be obtained free on application to the Secretary, R.I.B.A.

DATES FOR THE SUBMISSION OF DESIGNS IN 1936

Subject No. 13	..	February 28
Subject No. 14	..	April 30
Subject No. 15	..	June 30
Subject No. 16	..	August 31
Subject No. 17	..	October 30
Subject No. 18	..	December 31

No. 13. *a: A Bookseller's Shop and Café.*—A firm of booksellers, who have been established for many years in a cathedral town, propose to rebuild their premises. The site, shown in the accompanying diagram, is an important one, with a total frontage of 68 ft. to the High Street.

The ground is level from west to east, but has a fall of 1 in 20 from north to south.

There is a right of way through the premises giving access for pedestrians to the Cathedral Close. This right of way, which is 8 ft. wide, affects the ground floor only, and the upper floors will bridge over it.

The main 40-ft. frontage of the shop is set back 10 ft. to form a colonnade or arcade, a feature which is continued in the adjoining property "C" (See Figure 1).

The adjoining buildings "A," "B" and "C" each consist of basement, ground floor and two floors above, and are separated from the site by independent external walls. No light is available along the boundaries of these three properties.

The accommodation must include:—*Basement:* Stationery and book stores, heating and staff lavatories. *Ground Floor:* The book shop and lending library, manager's office and clerks' office. *First Floor:* Café, which will be controlled by the firm, and which will be open during shopping hours. It should be approached direct from the shop as well as by an independent stair from the street. Kitchen and service and customers' cloakrooms. *Second Floor:* Small flat for resident manager. Remainder of floor area to be devoted to offices to accommodate the clerical staff of the firm. *Drawings required:* Plan of each floor; main elevation; one section; and one sectional elevation to

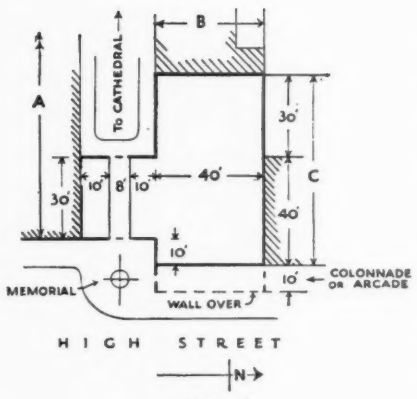


Figure 1.

½-in. scale ; and a portion of the main façade, for the full height, ½-in. scale.

b : Working Drawings.—The design of the bookseller's shop and café may, after it has been approved, be resubmitted with the addition of working drawings consisting of ½-in. scale details of the main façade in plan, section and elevation. The full height of the building must be shown.

No. 14 (In accordance with the Instructions to Candidates (above), this problem may be treated acoustically): *a : A County Court.*—In this court personal actions for small debts and actions founded upon contracts are tried.

The site chosen is in a newly developed part of outer London. It is rectangular, with a frontage of 130 ft. facing east to a wide, noisy street and extending back for a distance of 100 ft. to the grounds of a convent school, where its boundary is marked by a brick wall 7 ft. 6 in. high. The shorter sides of the rectangle are bounded to the north by the wall of a bank and to the south by a side road. The site is level.

The following accommodation is required :—

1. Public entrance ; crush hall or halls ; cash and plaint office for 11 clerks, with public space, counter at least 25 ft., and chief clerk's office entered from the main office, 1,000 ft. super ; office for 15 bailiffs, 400 ft. super ; typists' room for three, 200 ft. super ; retiring room for clerks, to be used also as an audit room, 300 ft. super ; strong room, 100 ft. super ; file store (may be in basement), 200 ft. super.

2. Judge's court, with judge's dais, two witness boxes (for plaintiff and defendant), jury box for eight, seating and writing accommodation for registrar, counsel and four press and seats for 35 to 40 public, which may be in a gallery or on the main floor, 1,100 ft. super ; judge's entrance ; judge's room, 400 ft. super ; jury room, to be entered only from the court, 250 ft. super ; counsel's room, 300 ft. super.

3. Registrar's court, with registrar's dais, two witness boxes and seating and writing accommodation for clerk and counsel. The public will be accommodated as in the judge's court, but no jury or press will be required, 1,100 ft. super ; registrar's entrance ; registrar's room, 300 ft. super.

Anteroom to the above, to be used as an interview room.

4. Lavatories for—judge ; registrar ; staff of 26 males and four females ; counsel ; jury of both sexes, accessible from jury room ; public, small accommodation for both sexes.

5. Heating and ventilating plant.

6. Accommodation for 20 bicycles.

It is preferred that the building should be planned with a basement and ground floor only. The judge and registrar may share one entrance and one lavatory. The judge's room must be in such a position that he has private access to the dais in both courts. In planning the witness boxes in the judge's court witnesses must be placed so as to give a view of at least 45 deg. or a profile to judge and jury. For this purpose an octagonal plan ought to be considered.

All candidates taking this subject must consider acoustic problems in their planning, including designing against noise.

Candidates who are taking this for their specific acoustic subject must submit a reverberation table for one of the courts and state briefly the principles on which their sound insulation has been designed.

Drawings required :—Plans ; two sections, sufficient elevations to present the design to ⅛-in. scale.

b : Working Drawings.—The design for a county court may, after it has been approved, be resubmitted with the addition of : Complete working drawings to ½-in. scale of one of the courts, including furniture.

No. 15 *: a : A Filling Station, Garage and Café.*—It is proposed to erect a filling station, garage and café on an arterial road, which runs north and south. The site is on the west side of the road and has a frontage of 140 ft. and a depth of 250 ft. It is rectangular and level and the building line is 40 ft. from the boundary. No access or light is available on the rear and two side boundaries. The building is primarily intended to cater for the needs of the travelling public, but local customers' requirements are also to be considered

Accommodation required :—*Garage :* Six petrol pumps and three oil containers, all under a hood of sufficient projection to shelter pumps and cars ; display window, with space for four cars and accessories ; waiting room, office, attendants' room and lavatory ; repair shop, not less than 2,500 square feet, with washing space in addition ; inspection pit and hoist ; stores for spare parts ; yard and fifteen lock-up garages.

Café : Accommodation for 60 persons with kitchen quarters adequate to deal with simple cooked meals. Cloakrooms for customers and staff. The café may be on the first floor, but must have easy and obvious access from the outside, independent of the garage.

Attendants' Quarters : Living-room, kitchen, bathroom and w.c., two bedrooms.

Lay-out : Special attention should be given to the approach and forecourt, which should be well planned and attractive. The use of flower beds and shrubs should be considered. The entrance and exit should be adequate for charabancs and provision should be made for the parking of customers' cars.

Drawings required :—Plans, elevations and sections, sufficient to explain the scheme fully, to a scale of ⅛ in. to 1 ft. Detail of a portion of the front, to a scale of ½ in. to 1 ft.

b : Working Drawings for a Filling Station, Garage and Café.—The design for a filling station, garage and café may, after it has been approved, be resubmitted with complete working drawings to ⅛-in. scale with a ½-in. scale detail. Particulars of drainage, and steel or other form of construction, are to be fully shown. There are separate sewers for soil and for surface water in the main road.

No. 16 *: a : A Design for a Housing Scheme.*—The Council of an ancient Borough proposes to clear a central slum area containing 36 families under the Housing Act, 1930, and therefore is under an obligation to rehouse the evacuated population. The only available vacant site close to the town is a three-acre field bounded on north, east and west sides by small villa property, and on the south side by a main road with public sewer and other services. The site measures 550 ft. from east to west and 237 ft. from north to south. For a distance of 75 ft. from the road boundary for the whole width of the site the ground is level, but the remainder of the site rises at an even slope of 20 ft. to the northern boundary.

It is proposed to rehouse the 36 families in cottage dwellings, with a minimum accommodation of 680 square feet and maximum of 900 square feet (measured on both floors within the external walls). Approximately one-third of the houses must have three bedrooms and parlours, one-third to be non-parlour three-bedroom type and the remainder non-parlour two-bedroom type. A separate bathroom must be provided in each house. Approximately half an acre must be planned and equipped as a children's playground.

Drawings required :—(1) Lay-out plan to 1/500th scale, showing buildings (in block), paths, gardens, fences and playground. (2) ⅛ in. scale plans showing each variation in type, with elevations and sections sufficient to illustrate the scheme.

b : Working Drawings.—The design for a Housing Scheme may, after it has been approved, be resubmitted with the addition of :—(1) Complete working drawings to ½ in. scale, showing plans of each floor, sections and elevations of each type of house. (2) Drainage plans of the whole scheme to 1/500th scale showing direction and size of drains on the "separate" system (see Figure 2).

No. 17.—In accordance with Instructions to Candidates (above) this problem may be treated acoustically. *a : A Free Church.*—A Free Church is to be erected on a suburban site (shown on plan, figure 2) by a religious community having a Presbyterian tradition. Importance is attached specially to the pulpit and to the mission element in Christian teaching, but at the same time a communion table is required for a monthly celebration of the Lord's Supper. Some dignity, therefore, is asked for in the building in order to help the faculty of worship without providing for it any specific object of attention. Whether the pulpit or rostrum is to be placed at the side or on the axis has been left to the architect to decide, and likewise the choice of treatment or style in the building as a whole. It is also asked that the font "shall be in view of the people" according to the Scottish tradition.

Accommodation : Seating for 500. Pulpit and reading desk. A gallery is asked for. Choir of 20 to be placed near the organ, and may be in the gallery. Vestries for minister and deacon, with lavatory and cloaks. Sunday school for 100 must consist of a large room divisible by partitions, with lobby, cloaks, lavatories and separate entrance. A tower for a peal of bells is required, and must be designed so that bell tone shall be mixed and diffused so as not to cause too great a loudness in adjoining property. (See *R.I.B.A. Journal*, June 30, 1935.)

Noise.—The main road is noisy and the architect is warned that noise must not disturb the Sunday services. Also the Sunday school may be in use during church services. The planning against noise and proper insulation by structure is part of the subject.

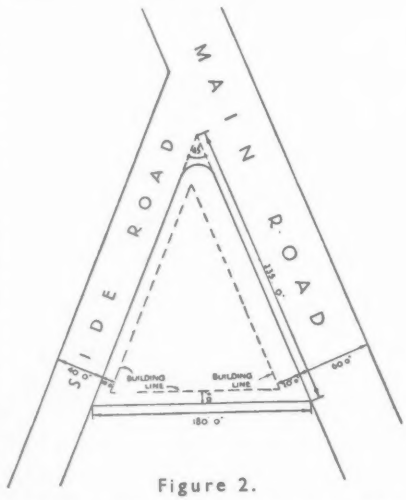


Figure 2.

Drawings required :—Lay-out to $\frac{1}{16}$ in. scale ; ⅛ in. scale plans, section and elevation sufficient to illustrate the scheme. Of these a long and cross section of the church is compulsory.

Note.—Even if this subject is not taken as a specific acoustic subject, regard must be paid to planning for good hearing and to proper sound insulation.

Acoustics.—(*a*) The principles followed in the acoustic design of the church are to be stated briefly as a series of points, and must include

the desirable reverberation time. (*b*) Reverberation table to be given analysing the materials used in the church. (*c*) Two diagrams to be given showing the reflection of sound from interior surfaces of the church and showing the images of the sound source.

b: Working Drawings.—The design for a Free Church may, after it has been approved, be resubmitted with the addition of complete ⅛ in. scale working drawings, together with one ½ in. detail.

No. 18.—*a: A Doctor's House.* A design is required for a doctor's house in a small county town, in any district on a site irregular in shape and contours as indicated below (Figure 3).

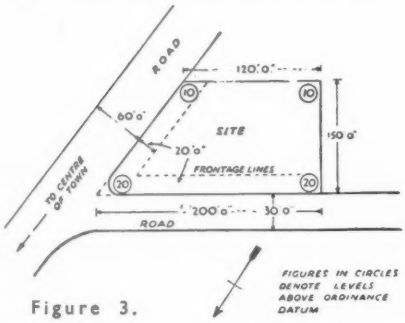


Figure 3.

The candidate is to state on his drawings the district selected.

Accommodation required: Entrance hall, drawing-room, dining-room, day nursery or schoolroom, four bedrooms for the family with dressing-room and two bathrooms. Three single rooms for maids with a bathroom, kitchen, maids' sitting-room and the usual offices, consulting-room, waiting-room, small dispensary and lavatory. Garage for two cars.

Client's requirements:—The house should be planned to obtain the maximum of usable space, light, sun and air. It should be economical to build, maintain and to run. The consulting-room, waiting-room, dispensary and lavatory should be arranged as a self-contained unit with separate approach and entrance and there should be convenient connection with the remainder of the house.

Drawings required:—Site plan to a small scale showing lay-out of garden; plans of each floor to ⅛ in. scale; all elevations to ⅛ in. scale; sufficient sections to show the design; and details of one elevation to ½ in. scale.

b: Working Drawings.—The design for a doctor's house may, after it has been approved, be resubmitted with the addition of complete ½ in. scale working drawings. Detail of main staircase, hall and first floor landing to ½ in. scale.

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A series of eight public lectures entitled "Twentieth-century London" is to be given at Morley College, Westminster Bridge Road, S.E.1, during the present session, as follows:—

October 22: "How London Grew." By Mr. Walter G. Bell.

October 29: "The City." By Mr. Geoffrey Crowther.

November 5: "Housing and Town-Planning." By Mr. Lewis Silkin.

November 12: "The River." By Harold Tomlinson.

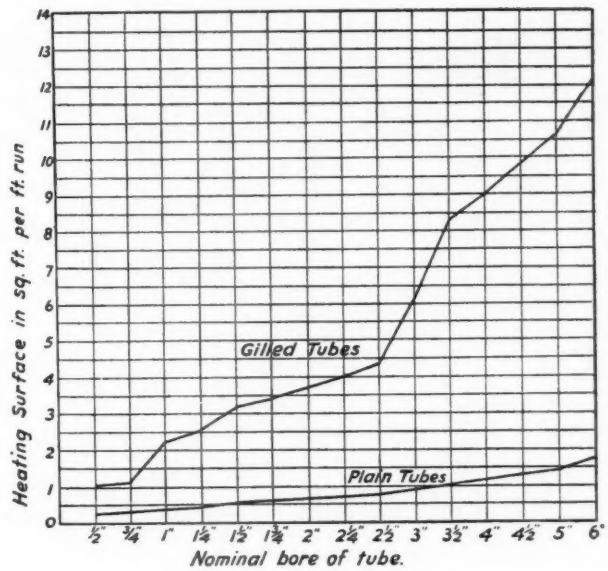
November 19: "Public Health." By Dr. Somerville Hastings.

November 26: "The Theatre." By Mr. Harcourt Williams.

December 3: "Transport." By The Rt. Hon. Herbert Morrison.

December 10: "Education." By Mrs. E. M. Lowe.

Each lecture will commence at 8 p.m.



TRADE NOTES

[*EDITED BY PHILIP SCHOLBERG*]

A New Gilled Tube

THE amount of heat emitted per foot run of heating pipe can be considerably increased if the plain pipe is fitted with gills to increase the heating surface, and a graph showing this increase for various sizes of pipe is shown in the headpiece to these notes.

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The usual type of gill, to which this graph applies, consists of a spiral strip which is crimped to the tube after being wound on cold. The only disadvantage of this method is that the crimping process naturally produces corrugations at the root of the gill, where dust and moisture can lie and cause corrosion.

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A new type of hot shrunk gill, recently introduced by G. A. Harvey & Co. (London), Ltd., avoids this difficulty. This gill has a taper section, and is wound on to the tube at a cherry-red heat, final cooling giving a tight shrinkage and, consequently, good thermal contact.

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The rate of heat transfer is claimed to be 25 per cent. greater than that of the normal crimped gill tube, and this figure is increased to 40 or 50 per cent. if forced draught is used. These tubes are available in sizes from 1½ to 4½ in. outside tube diameter in lengths up to 22 ft. The gills are approximately ½ in. to 1½ in. deep with a pitch from 14 to 48 gills per ft. run, both depth and pitch varying with the diameter of the tube.

Copper Pipe Joints

The increasing use of light gauge copper tubing for hot and cold water services has led to the introduction of a large number of joint fittings. A number of these employ a tapered sleeve which contracts and nips the pipe when the union nut is screwed up.

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A variant of this principle is employed in the Brownall joint, manufactured by Donald Brown, Ltd. With this joint the pipe is cut to length, a loose tailpiece and union nut are slipped on, and the end of the pipe is then expanded by means of a tapered bar. The expanded end of the pipe is then nipped between the tailpiece and the cone on the fitting.

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It is claimed that this fitting has several advantages. Notably that there is no danger of crushing the end of the pipe by screwing up the union nut too tightly, and also that a joint can be made in a few minutes with a minimum amount of tools. The joint can be broken and remade as often as is necessary without the use of any jointing materials such as red lead.

Fireproof Fabrics

The illustration overleaf shows various fireproof fabrics which have recently been introduced by Bell's Asbestos and Engineering Supplies. These products are not, as yet, being produced in any great quantity, and special designs can only be produced if the order is reasonably large.

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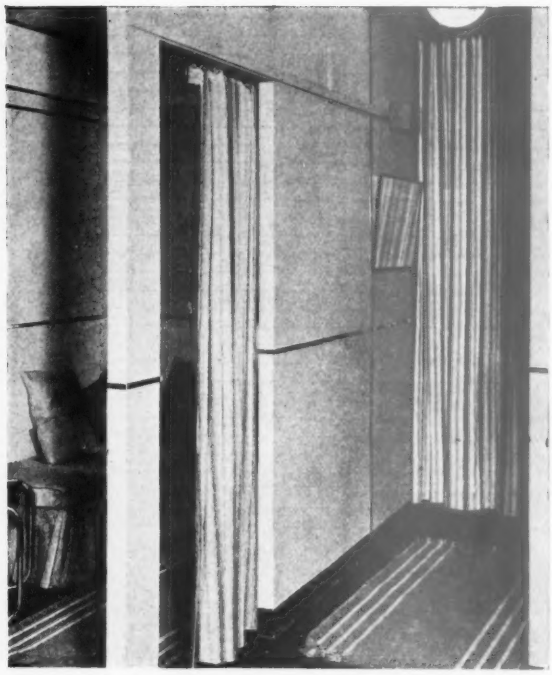
Rugs, however, are available in plain all-over colours, and can be produced to match any desired sample: the same applies to curtains, which are woven in a width of 38 inches, at prices varying from 25s. 9d. to 9s. 8d. per yard, according to the fineness of the fabric, the cheaper quality having a



Fireproof curtains, rugs and wallboard. See note on this page.

rough tweed-like texture. A few standard patterns are also available.

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The partition shown in the phtotograph is built up of a fireproof asbestos millboard, the cost of which is 4s. 4d. a square yard, including fixing.

Publications Received

Home Management in the Machine Age. By Persis L. Wingfield. Reprint of a paper read at the twenty-fourth annual conference of the British Commercial Gas Association held at Edinburgh from September 28 to October 1. Issued by the British Commercial Gas Association, of 28 Grosvenor Gardens, London, S.W.1.

Working-Class Residential Flats in Reinforced Concrete. Full report, with illustrations, of the recent competition for a block of working-class flats, issued by the Cement Marketing Co., Ltd., of Portland House, Tothill Street, S.W.1, from whom copies are obtainable on application, free of charge.

LAW REPORT

COVENANTS TO REPAIR

Cohen and Others v. *Donegal Tweed Co., Ltd.—Court of Appeal. Before the Master of the Rolls, Lord Justice Maugham and Mr. Justice Luxmoore.*

INTERESTING points were raised in this appeal by the plaintiffs, Mr. Stanley Cohen and Others who sued as executors from a judgment of the County Palatine Court of Lancaster in favour of the Donegal Tweed Co., Ltd., of Liverpool.

Mr. Lyon Blease, for the appellants, said the facts were that the Donegal Tweed Co., Ltd., were the assignees of a lease of premises at Oldham Street, Manchester, granted originally by the plantiffs, who claimed a declaration that they were entitled to forfeiture of such lease. The lease contained covenants for repair, and it was admitted that they had not been observed. In addition there was a provision giving the right of re-entry in case of breach, and that the lease would thereupon be determined. To that claim there was a counterclaim by the defendants for a declaration that as plaintiffs claimed to be entitled to possession, the lease had been determined, and therefore plaintiffs' claim operated as a re-entry. The Vice-Chancellor of the County Palatine Court came to the conclusion that the plaintiffs were entitled to forfeiture and to possession, and in defendants' counterclaim he granted a determination of the lease.

Counsel said his clients now appealed on the ground that the Vice-Chancellor was wrong in holding that the lease had been so determined. He contended that as the defendants found the lease unprofitable they wished to determine it. The plaintiffs, on the other hand, took the view that the lease was profitable to them, having some ten years to run at £1,000 a year, and they did not wish it determined. His submission was that there was here no demand for possession and that the Vice-Chancellor was wrong in giving the plaintiff relief, for which they did not ask. Under these circumstances, he argued that the appeal should be allowed.

Mr. E. Ackroyd, for the defendants, was not called upon to argue, the Court dismissing the appeal.

The Master of the Rolls said in the opinion of the Court the judgment of the Vice-Chancellor was correct when he came to the conclusion that the effect of the writ and claim in the action were not merely for a declaration, but a claim for possession. Mr. Blease had urged that because only a declaration was asked by his clients they could get rid of an unequivocal act and say that they still had an election which they might or might not exercise. In his lordship's opinion that was not a possible view. In law, by the issue of the writ and the demand made the plaintiffs had made an entry which amounted to taking possession and therefore upon that forfeiture arose.

Lord Justice Maugham and Mr. Justice Luxmoore agreed.

THE BUILDINGS ILLUSTRATED

List of General and Sub-Contractors

FLATS IN MANCHESTER (pages 513-517). General contractors, the Moston Brick and Building Co., Ltd. The principal sub-contractors and suppliers included :—

Structure.—Banister Walton & Co., Ltd., steelwork ; Limmer and Trinidad Lake Asphalt Co., Ltd., asphalt ; Kleine Co., Ltd., hollow tile floors ; Liverpool Artificial Stone Co., Ltd., artificial stone ; British Reinforced Concrete Engineering Co., Ltd., B.R.C. fabric ; Wm. Townson and Sons, Ltd., shop fronts.

Finishes.—Williams and Williams, Ltd., steel windows ; A. J. Heron and Sons, glazing ; Powell & Co., Ltd., terra-cotta ; Blacker Forge and Hammer Co., Ltd., balustrading ; H. Mason and Sons, Ltd., grates and mantels ; A. Sharrocks, painting ; J. Warrington, plastering.

Equipment.—Bradford Metal Case Co., Ltd., domestic hot water ; A. J. Heron and Sons, plumbing ; E. M. Evans and Sons, electric lighting ; John Faulkner and Sons, Ltd., lightning conductors.

ELECTRIC METER SHOP (pages 518-520). General contractors, British Insulated Co.'s Works Department, who were also responsible for the electric wiring and joinery. The principal sub-contractors and suppliers included :—

Structure.—Edward Wood & Co., Ltd., structural steel ; Siegwart Floor Co., Ltd., reinforced concrete ; Blockleys, Ltd., facing bricks ; Tushingham Metallic Brick Co., Ltd., common bricks.

Finishes.—Williams and Williams, Ltd., casements ; Williams and Watson, Ltd., glass and vitrolite glazing ; R. W. Brooke & Co., Ltd., wood block flooring ; the Ruberoid Co., roof proofing ; Northern Cement Construction Co., Ltd., stair-treads ; Bangham and Fleming, tiling.

Equipment.—Richard Crittall & Co., Ltd., central heating and ventilation ; R. W. Haughton, Ltd., plumbing ; Rowe Bros. & Co., Ltd., sanitary fittings ; John Tanner and Son, Ltd., heating panels and lavatories ; Pickerings, Ltd., lifts.

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Announcements

Mr. Reginald W. Lone, A.R.I.B.A., P.A.S.I., M.R.SAN.I., has removed his offices to 15 New Square, Lincoln's Inn, London, W.C.2. Telephone No. (as before) : Holborn 1795.

Messrs. T. P. Bennett and Son have removed their offices to 43 Bloomsbury Square, London, W.C.1. Telephone : Holborn 9804.

THE WEEK'S BUILDING NEWS

LONDON & DISTRICTS (15-MILES RADIUS)

DAGENHAM. *School.* Essex Education Committee is to enlarge the Heathway School, Dagenham, at a cost of £4,000.

DENHAM. *Houses.* Plans have been approved for the erection of 38 houses for Mr. A. J. Perkins, at Denham Newtown; for 30 houses in Oxford Road for Mr. A. J. Perkins; and for a water tower and delivery mains at Film Studios, for the London Film Productions, Ltd.

ENFIELD. *Flats.* Enfield U.D.C. is to obtain tenders for the erection of 36 flats near Clarence Road, Ponders End.

ENFIELD. *Hall.* Mr. E. R. Knott has prepared plans for the erection of a hall in Lancaster Road, Enfield, for the Enfield Chase Labour Institute.

ENFIELD. *Houses.* Messrs. McManus & Co. have prepared a scheme for the erection of 141 houses at Green Street, Enfield Highway.

ENFIELD. *School.* Enfield U.D.C. has acquired a site at Aylands for the erection of an elementary school.

FRIERN BARNET. *Houses, etc.* Plans passed by the U.D.C.: 30 houses, St. James's Avenue, for Church Farm Estates, Ltd.; 21 flats, Henley House site, Friern Park, for Messrs. P. H. Edwards, Ltd.; 32 flats, Sydney Road, for Mr. C. E. Owen Ward; two houses, Alma Road, for Mr. J. Baird; nine shops and flats, Colney Hatch Lane, for Messrs. Cramb Bros.; 40 flats, Wilton Road, for Mr. W. A. Ross.

MUSWELL HILL. *Flats.* Messrs. Morris Joseph have prepared plans for the erection of 30 flats on the Monkswell site, Colney Hatch Lane, Muswell Hill.

MUSWELL HILL. *Flats.* Messrs. M. E. and O. H. Collins propose to erect 24 flats at the corner of Colney Hatch Lane and Sutton Road, Muswell Hill.

PADDINGTON. *Shops, etc.* Plans passed by B.C.: Shops, petrol station, etc., 415-9 Edgware Road, for Messrs. T. P. Bennett and Son; nurses' home, St. Mary's Hospital, Praed Street, for Messrs. John Mowlem & Co., Ltd.

PADDINGTON. *Road widening.* Paddington B.C. has arranged for widening Andover Place in connection with the scheme of the Ecclesiastical Commissioners to develop land in that thoroughfare and the vicinity for the erection of working class flats.

UXBRIDGE. *Estate Development.* The U.D.C. has granted permission (conditionally) to the development of the Oak Farm Estate where it is proposed to erect 636 houses.

WALTHAMSTOW. *Hospital.* Essex C.C. is considering the purchase of 18 acres at Oak Hill, Walthamstow, for the erection of a hospital for tuberculosis.

SOUTHERN COUNTIES

BOGNOR REGIS. *Town Hall Enlargement.* The T.C. is now considering plans which have been prepared for the proposed enlarged Town Hall, which provides for a new library, museum, additional committee rooms, offices and a fire station.

GRAVESEND. *School.* The Corporation has selected a site on the West Court Farm estate for the erection of an elementary school.

GRAVESEND. *Swimming Baths.* The Corporation is to consider the advisability of the erection of new swimming baths.

GUILDFORD. *Houses, etc.* Plans passed by the Corporation: Six houses, Holford Road, Merrow, for Messrs. R. Holford & Co.; two houses, Rydes Hill Road, for Mr. W. Kenward; two houses, Scillonian Road, for Mr. J. Purser; office extensions, Leapale Road, for Hand-in-Hand Benefit Society; two houses, Shepherds Lane, for Mr. J. Stevens; two houses, Manor Road, for Mr. W. Hoptroff; two shops, Swan Lane, for Messrs. Timothy White's, Ltd.; six houses, Bannister's Farm estate, for Mr. Mr. H. Ashenden; shopping arcade, North Street, for Messrs. Gammons Ltd.; twelve houses, Farnham Road, for Mr. H. C. Watts; garage and workshops, Martyr Road, for Messrs. Biddles, Ltd.; nine houses, Bye Pass Road, for Mr. C. T. Corps.

GUILDFORD. *Houses.* The Corporation is to erect an additional 200 houses on the Westborough estate.

HERNE BAY. *Cinema.* The U.D.C. has granted a provisional licence for a new cinema to be erected for Odeon (Herne Bay), Ltd., to plans prepared by Mr. Andrew Mather.

EASTERN COUNTIES

BISHOPS STORTFORD. *School.* Herts Education Committee is to enlarge the High School, Bishops Stortford, at a cost of £5,338.

CHELMSFORD. *School.* The T.C. has approved the appointment of Mr. H. W. Allardyce, F.R.I.B.A., Barking, Essex, as architect in connection with the proposed erection of the Moulsham Senior School.

SOUTH-WESTERN COUNTIES

BRISTOL. *Flats.* The Corporation is to acquire a site in Upper Cheese Lane for the erection of 60 flats.

HEREFORD. *Houses.* Mr. W. J. James, of Leominster, is to erect 107 houses near Westfield House, Holmer, Hereford.

HEREFORD. *Houses.* The Corporation has arranged for Messrs. Copp Cros., Ltd., to erect a further 97 houses on the Hinton estat,e at a cost of £31,767.

PLYMOUTH. *Nursing Home.* The Corporation has obtained sanction to borrow £130,000 for the erection of a nurses' home at the city hospital.

SWINDON. *School.* The Corporation has acquired a site in Cricklade Road for the erection of a Secondary School.

MIDLAND COUNTIES

CHESTERFIELD. *Cinema, Houses, etc.* Plans passed by the Corporation: Cinema and theatre, Cavendish Street, for Mr. L. Morris; extensions, Derby Road, for Chesterfield Tube Co., Ltd.; eight houses, Ashgate Road, for Messrs. Hucknall and Longden; two houses, Hunloke Avenue, for Mr. S. Wheatcroft; two houses, Somersall Lane, for Mr. G. Witham; two houses, Brimington Road, for Mr. H. O. Clayton; 10 houses, Holland Road, for Messrs. W. Drabble and Sons.

CHESTERFIELD. *Housing scheme.* The Corporation has purchased 16 acres in Bacons Lane for a housing scheme.

HANLEY. *Civic Centre.* Stoke-on-Trent Corporation has had plans prepared for a civic centre at Hanley and has instructed the city engineer to prepare estimates for consideration.

SMETHWICK. *School.* Smethwick Education Committee has asked the borough engineer to prepare plans for the erection of a senior school on the Smethwick Hall site.

WOLVERHAMPTON. *Schools.* The Education Committee is to enlarge the following schools: Springfield senior school, at a cost of £14,000; Prestwood Road girls' school, £10,000; Prestwood Road infants' school, £1,000, and Bushbury Lane school, £15,000.

WOLVERHAMPTON. *School.* The Education Committee is to erect an elementary school at Stafford Road, at a cost of £25,000.

NORTHERN COUNTIES

BLACKLEY. *School.* Manchester Corporation is to erect 120 houses in Briscoe Lane, Blackley, and tenders are to be invited.

BLACKPOOL. *Pumping Station.* The Corporation is to enlarge the Manchester Square pumping station and install new machinery at a cost of £26,500.

BOLTON. *Fire Station.* The Corporation has approved amended plans for extensions at the fire station at a cost of £35,000.

BOLTON. *Hospital Extensions.* The Corporation has approved plans for extensions at the isolation hospital and the erection of a nurses' block at a cost of £81,500.

BOLTON. *Houses.* The Corporation is to erect by direct labour 126 houses and two shops on the Willows estate at a cost of £38,500.

BRADFORD. *Nurses' Home.* The Corporation has purchased land in Trinity Road for the erection of a nurses' home in connection with St. Luke's Hospital.

BRADFORD. *Houses.* Messrs. F. and H. Brown are to erect 31 houses in Cemetery Road, Lidget Green, Bradford.

CHESTER. *Bridge.* Chester Corporation has prepared a scheme for the erection of a suspension bridge at Boughton at a cost of £18,750.

CHESTER. Plans passed by the Corporation: Cinema, Northgate Street for Odeon Theatres, Ltd.; depot alterations, Queen Street, for Messrs. W. Weddall & Co., Ltd.; conversion of premises to flats, Chester Street, for G.W. Railway Co.; alterations, 29 Bridge Street, for Messrs. J. R. Dutton and Sons.

CHORLTON. *Out Patients' Department.* Manchester Corporation has approved plans for the erection of an out patients' department at the Royal Eye Hospital, Nelson Street, Chorlton.

CRUMPSALL. *School.* Manchester Education Committee is to prepare plans for the erection of a junior school at Bowker Vale, Crumpsall.

LEEDS. *Church.* The Corporation has sold a site on the Moortown housing estate to the Leeds Church Extension Society for the erection of a church.

LEEDS. *Cinema and Shops.* The Pickersgill's Estate Co. propose to erect a cinema and shops at the junction of St. Ann's Road and Otley Road, Leeds.

LEEDS. *Church.* Messrs. Chorley, Gribbon and Foggitt have prepared plans on behalf of the Leeds Church Forward Movement for the erection of St. Bede's Church, Armley, Leeds.

LEEDS. *Cinema.* The Corporation has now sanctioned the proposal of Mr. Simon Newman to erect a cinema in Easterley Road subject to the provision of a car park.

LEEDS. *Housing Estate.* The Corporation is acquiring 320 acres adjoining the Seacroft estate for housing purposes.

LEEDS. *Housing.* The Corporation has obtained sanction to borrow £713,000 for the erection of houses.

LEEDS. *Transport Department.* Leeds Corporation is to erect a transport department in Torre Road at a cost of £41,790.

MANCHESTER. *Houses.* The Corporation is to erect further houses on the Newton Heath and Blackley estates at a cost of £57,373.

MANCHESTER. *Power Station.* The Corporation is to enlarge the Barton power station at a cost of £470,000.

MORECAMBE. *School.* The Education Committee has obtained sanction to borrow £26,385 for the erection of a school in Balmoral Road.

MORECAMBE. *Houses, etc.* Plans passed by the Corporation: 10 houses, Fisher Avenue, for Mr. W. Sanders; four houses, West End Road, for Messrs. G. E. Raymond & Co.; 24 houses, off West End Road, for Mr. F. Fisher; works extensions, Westgate, for Morecambe Electrical Equipment Co., Ltd.; four houses' Beaufort Road, for Mr. A. Peel; two houses, Strawberry Gardens, for Mrs. L. Knowles; two houses, Elms Grove, for Mr. A. Ralph; extensions, Souplex Works, Westgate, for Souplex, Ltd.; 22 houses, Tibicar Drive, for Mr. F. Armistead; three houses, Heysham Road, for Mr. N. L. Procter; eight houses, School Road, for Mr. R. Brown; extensions, Regal Hotel, Marine Road, for Mrs. A. Bourne; six houses, Hope Street, for Mr. A. Whitehead.

SALFORD. *Bus Station.* Salford Corporation is to acquire land and provide a bus station adjoining the Exchange railway station at a cost of £34,850.

SALFORD. *Hotel.* Threlfall's Brewery Co., Ltd., is to erect a hotel in Lancaster Road, Salford.

SHEFFIELD. *College.* Sheffield Education Committee is acquiring land in Eyre Street for the proposed College of Arts and Crafts.

SHEFFIELD. *Power Station.* Sheffield Corporation is to acquire land for the extension of the Neepsend power station.

SOUTH SHIELDS. *Houses, etc.* Plans passed by the Corporation: 36 houses, Marsden Road, for Mr. J. R. Henderson; two houses, Central Avenue, for Messrs. W. Fawcus and Son; alterations, 74 King Street, for Messrs. Glass, Harrison and Ash; eight houses, Reading

(*Continued on page xxxvi.*)

RATES OF WAGES

The initial letter opposite every entry indicates the grade under the Ministry of Labour schedule. The district is that to which the borough is assigned in the same schedule. Column I gives the rates for craftsmen; Column II for labourers. The rate for craftsmen working at trades in which a separate rate maintains is given in a footnote. The table is a selection only. Particulars for lesser localities not included may be obtained upon application in writing.

			I s. d.	II s. d.
A_1	ABERDARE ..	S. Wales & M.	1 5	1 0½
A	Aberdeen ..	Scotland	1 6	1 1½
A_1	Abergavenny ..	S. Wales & M.	1 5	1 0½
A	Abingdon ..	S. Counties	1 4	1 0
A	Accrington ..	N.W. Counties	1 5½	1 1½
A	Addlestone ..	S. Counties	1 4	1 0
A	Adlington ..	N.W. Counties	1 5½	1 1½
A	Airdrie	Scotland	*1 5½	1 1½
C	Aldeburgh ..	E. Counties	1 1½	10½
A	Altrincham ..	N.W. Counties	1 5½	1 1½
B	Appleby ..	N.W. Counties	1 2	10½
A	Ashton-under-Lyne	N.W. Counties	1 5½	1 1½
B_1	Aylesbury ..	S. Counties	1 3	11½
B_1	BANBURY ..	S. Counties	1 3	11½
B_1	Banger ..	N.W. Counties	1 3	11½
A_2	Barnard Castle	N.E. Coast	1 4	1 0
A	Barnsley ..	Yorkshire	1 5½	1 1½
B	Barnstaple ..	S.W. Counties	1 3½	11½
A	Barrow	N.W. Counties	1 5½	1 1½
A	Barry	S. Wales & M.	1 5½	1 1½
B_1	Basingstoke ..	S.W. Counties	1 3	11½
A_2	Bath	S.W. Counties	1 4½	1 0½
A	Batley ..	Yorkshire	1 5½	1 1½
A_2	Bedford ..	E. Counties	1 4½	1 0½
A_2	Berwick-on-Tweed	N.E. Coast	1 4½	1 0½
A_2	Bewdley ..	Mid. Counties	1 4½	1 0½
B	Bicester ..	S. Counties	1 2	10½
	Birkenhead ..	N.W. Counties	*1 7	1 2½
A	Birmingham ..	Mid Counties	1 5½	1 1½
A_1	Bishop Auckland	N.E. Coast	1 5	1 0½
A	Blackburn ..	N.W. Counties	1 5½	1 1½
A	Blackpool ..	N.W. Counties	1 5½	1 1½
A	Blyth	N.E. Coast	1 5½	1 1½
B_1	Bognor ..	S. Counties	1 3	11½
A	Bolton	N.W. Counties	1 5½	1 1½
A	Boston	Mid. Counties	1 4	1 0
A_2	Bournemouth ..	S. Counties	1 4½	1 0½
B_2	Bovey Tracey	S.W. Counties	1 2½	11
A	Bradford ..	Yorkshire	1 5½	1 1½
A_1	Brentwood ..	E. Counties	1 5	1 0½
A	Bridgend ..	S. Wales & M.	1 5½	1 1½
B	Bridgwater ..	S.W. Counties	1 3½	11½
A_1	Bridlington ..	Yorkshire	1 5	1 0½
A	Brighouse ..	Yorkshire	1 5½	1 1½
A_2	Brighton ..	S. Counties	1 4½	1 0½
A	Bristol	S.W. Counties	1 5½	1 1½
B	Brixham ..	S.W. Counties	1 2½	11
A	Bromsgrove ..	Mid. Counties	1 4½	1 0½
B	Bromyard ..	Mid. Counties	1 2	10½
A	Burnley ..	N.W. Counties	1 5½	1 1½
A	Burslem ..	Mid. Counties	1 5½	1 1½
A	Burton-on-Trent	Mid. Counties	1 5½	1 1½
A	Bury	N.W. Counties	1 5½	1 1½
A	Buxton ..	N.W. Counties	1 5	1 0½
A_1	CAMBRIDGE ..	E. Counties	1 5	1 0½
B_1	Canterbury ..	S. Counties	1 3	11½
A	Cardiff	S. Wales & M.	1 5½	1 1½
A	Carlisle ..	N.W. Counties	1 5½	1 1½
B	Carmarthen ..	S. Wales & M.	1 3½	11½
B	Carnarvon ..	N.W. Counties	1 3½	11½
A	Carnforth ..	N.W. Counties	1 5½	1 1½
A	Castleford ..	Yorkshire	1 5½	1 1½
A_2	Chatham ..	S. Counties	1 4	1 0
A	Chelmsford ..	E. Counties	1 4	1 0
A	Cheltenham ..	S.W. Counties	1 4	1 0
A	Chester	N.W. Counties	1 5½	1 1½
A	Chesterfield ..	Mid. Counties	1 5½	1 1½
B_1	Chichester ..	S. Counties	1 3	11½
A	Chorley	N.W. Counties	1 5½	1 1½
B_1	Cirencester ..	S. Counties	1 3	11½
A	Clitheroe ..	N.W. Counties	1 5½	1 1½
A	Clydebank ..	Scotland	1 5½	1 1½
A	Coalville ..	Mid. Counties	1 5½	1 1½
A_2	Colchester ..	E. Counties	1 4½	1 0½
A	Colne	N.W. Counties	1 5½	1 1½
A_2	Colwyn Bay ..	N.W. Counties	1 4½	1 0½
A_2	Consett ..	N.E. Coast	1 5	1 0½
A_2	Conway ..	N.W. Counties	1 4½	1 0½
A	Coventry ..	Mid. Counties	1 5½	1 1½
A_2	Crewe	N.W. Counties	1 4½	1 0½
A	Cumberland ..	N.W. Counties	1 4	1 0
A	DARLINGTON	N.E. Coast	1 5½	1 1½
A	Darwen ..	N.W. Counties	1 5½	1 1½
B_1	Deal	S. Counties	1 3	11½
A_2	Denbigh ..	N.W. Counties	1 4	1 0
A_1	Derby	Mid. Counties	1 5½	1 1½
A	Dewsbury ..	Yorkshire	1 5½	1 1½
B	Didcot	S. Counties	1 3½	11½
A	Doncaster ..	Yorkshire	1 5½	1 1½
B_1	Dorchester ..	S.W. Counties	1 3	11½
A	Driffield ..	Yorkshire	1 4	1 0
A_2	Droitwich ..	Mid. Counties	1 4½	1 0½
A_2	Dudley	Mid. Counties	1 5½	1 1½
A_2	Dumfries ..	Scotland	1 5	1 0½
A	Dundee	Scotland	1 5½	1 1½
A	Durham	N.E. Coast	1 5½	1 1½
A_2	EASTBOURNE ..	S. Counties	1 4½	1 0½
A_1	Ebbw Vale ..	S. Wales & M.	1 5	1 0½
A	Edinburgh ..	Scotland	1 5½	1 1½
A_1	E. Glamorganshire, Rhondda Valley District	S. Wales & M.	1 5	1 0½
A_2	Exeter	S.W. Counties	*1 4½	1 0½
B	Exmouth ..	S.W. Counties	1 3½	11½
A_2	FELIXSTOWE	E. Counties	1 4	1 0
A	Filey	Yorkshire	1 4	1 0
A	Fleetwood ..	N.W. Counties	1 5½	1 1½
B_1	Folkestone ..	S. Counties	1 3	11½
A	Frodsham ..	N.W. Counties	1 5½	1 1½
B_2	Frome	S.W. Counties	1 2½	11
A	GATESHEAD	N.E. Coast	1 5½	1 1½
B	Gillingham ..	S. Counties	1 3½	11½
A	Glasgow ..	Scotland	1 6	1 1½
A_2	Gloucester ..	S.W. Counties	1 4½	1 0½
A_2	Goole	Yorkshire	1 4½	1 0½
A_2	Gosport ..	S. Counties	1 4½	1 0½
A_2	Grantham ..	Mid. Counties	1 4	1 0
A_2	Gravesend ..	S. Counties	1 5	1 0½
A_1	Greenock ..	Scotland	*1 5½	1 1½
A	Grimsby ..	Yorkshire	1 5½	1 1½
B	Guildford ..	S. Counties	1 3½	11½
A	HALIFAX ..	Yorkshire	1 5½	1 1½
A	Hanley	Mid. Counties	1 5½	1 1½
A	Harrogate ..	Yorkshire	1 5½	1 1½
A	Hartlepools ..	N.E. Coast	1 5½	1 1½
B	Harwich ..	E. Counties	1 3½	11½
B_1	Hastings ..	S. Counties	1 3	11½
A_2	Hatfield ..	S. Counties	1 4½	1 0½
B	Hereford ..	S.W. Counties	1 3½	11½
A_2	Hertford ..	E. Counties	1 4½	1 0½
A	Heysham ..	N.W. Counties	1 5½	1 1½
A	Howden ..	N.E. Coast	1 5½	1 1½
A	Huddersfield ..	Yorkshire	1 5½	1 1½
A	Hull	Yorkshire	1 5½	1 1½
A	ILKLEY ..	Yorkshire	1 5½	1 1½
A	Immingham ..	Mid. Counties	1 5½	1 1½
A_2	Ipswich ..	E. Counties	1 4½	1 0½
B_2	Isle of Wight ..	S. Counties	1 2½	11
A	JARROW ..	N.E. Coast	1 5½	1 1½
A	KEIGHLEY ..	Yorkshire	1 5½	1 1½
A_2	Kendal ..	N.W. Counties	1 4	1 0
A_2	Keswick ..	N.W. Counties	1 4	1 0
A_1	Kettering ..	Mid. Counties	1 5	1 0½
A_2	Kidderminster	Mid. Counties	1 4½	1 0½
B_1	King's Lynn ..	E. Counties	1 3	11½
A	LANCASTER ..	N.W. Counties	1 5½	1 1½
A_1	Leamington ..	Mid. Counties	1 5	1 0½
A	Leeds	Yorkshire	1 5½	1 1½
A	Leek	Mid. Counties	1 5½	1 1½
A	Leicester ..	Mid. Counties	1 5½	1 1½
A	Leigh	N.W. Counties	1 5½	1 1½
B	Lewes	S. Counties	1 2	10½
A_2	Lichfield ..	Mid. Counties	1 4½	1 0½
A	Lincoln	Mid. Counties	1 5½	1 1½
	Liverpool ..	N.W. Counties	*1 7	1 2½
A_2	Llandudno ..	N.W. Counties	1 4½	1 0½
A	Llanelly ..	S. Wales & M.	1 5½	1 1½
	London (12-miles radius)		1 7½	1 2½
	Do. (12-15 miles radius)		1 7	1 2½
A	Long Eaton ..	Mid. Counties	1 5½	1 1½
A	Loughborough	Mid. Counties	1 5½	1 1½
A_1	Luton	E. Counties	1 5	1 0½
A	Lytham ..	N.W. Counties	1 5½	1 1½
A_1	MACCLESFIELD	N.W. Counties	1 5	1 0½
A_2	Maidstone ..	S. Counties	1 4	1 0
A_2	Malvern ..	Mid. Counties	1 4	1 0
A	Manchester ..	N.W. Counties	1 5½	1 1½
A	Mansfield ..	Mid. Counties	1 5½	1 1½
B_1	Margate ..	S. Counties	1 3	11½
A	Matlock ..	Mid. Counties	1 4	1 0
A_1	Merthyr ..	S. Wales & M.	1 5	1 0½
A	Middlesbrough	N. E. Coast	1 5½	1 1½
A_2	Middlewich ..	N. W. Counties	1 4½	1 0½
B_2	Minehead ..	S.W. Counties	1 2½	11
B_2	Monmouth & S. and E. Glamorganshire	S. Wales & M.	1 2½	11
A	Morecambe ..	N.W. Counties	1 5½	1 1½
A_2	NANTWICH ..	N.W. Counties	1 4½	1 0½
A	Neath	S. Wales & M.	1 5½	1 1½
A	Nelson ..	N.W. Counties	1 5½	1 1½
A	Newcastle ..	N.E. Coast	1 5½	1 1½
A	Newport ..	S. Wales & M.	1 5½	1 1½
A	Normanton ..	Yorkshire	1 5½	1 1½
A	Northampton	Mid. Counties	1 5½	1 1½
A	North Staffs ..	Mid. Counties	1 5½	1 1½
A	North Shields ..	N.E. Coast	1 5½	1 1½
A_1	Norwich ..	E. Counties	1 5	1 0½
A	Nottingham ..	Mid. Counties	1 5½	1 1½
A	Nuneaton ..	Mid. Counties	1 5½	1 1½
A	OAKHAM ..	Mid. Counties	1 4	1 0
A	Oldham	N.W. Counties	1 5½	1 1½
A_2	Oswestry ..	N.W. Counties	1 4	1 0
A_1	Oxford	S. Counties	1 5	1 0½
A	PAISLEY ..	Scotland	*1 5½	1 1½
B_2	Pembroke ..	S. Wales & M.	1 2	10½
A	Perth	Scotland	*1 5½	1 1½
A_1	Peterborough ..	E. Counties	1 5	1 0½
A	Plymouth ..	S.W. Counties	*1 5½	1 1½
A	Pontefract ..	Yorkshire	1 5½	1 1½
A_1	Pontypridd ..	S. Wales & M.	1 5	1 0½
A_2	Portsmouth ..	S. Counties	1 4½	1 0½
A	Preston ..	N.W. Counties	1 5½	1 1½
A	QUEENSFERRY	N.W. Counties	1 5½	1 1½
A_2	READING ..	S. Counties	1 4½	1 0½
B	Reigate ..	S. Counties	1 3½	11½
A	Retford ..	Mid. Counties	1 4	1 0
A_1	Rhondda Valley	S. Wales & M.	1 5	1 0½
A	Ripon	Yorkshire	1 4	1 0
A	Rochdale ..	N.W. Counties	1 5½	1 1½
B	Rochester ..	S. Counties	1 3½	11½
A_1	Ruabon ..	N.W. Counties	1 5	1 0½
A	Rugby	Mid. Counties	1 5½	1 1½
A_2	Rugeley ..	Mid. Counties	1 4½	1 0½
A	Runcorn ..	N.W. Counties	1 5½	1 1½
A_1	ST. ALBANS ..	E. Counties	1 5	1 0½
A	St. Helens ..	N.W. Counties	1 5½	1 1½
B_2	Salisbury ..	S.W. Counties	1 2½	11
A_1	Scarborough ..	Yorkshire	1 5	1 0½
A	Scunthorpe ..	Mid. Counties	1 5½	1 1½
A	Sheffield ..	Yorkshire	1 5½	1 1½
A	Shipley ..	Yorkshire	1 5½	1 1½
A_2	Shrewsbury ..	Mid. Counties	1 4½	1 0½
A_2	Skipton ..	Yorkshire	1 4½	1 0½
A_2	Slough ..	S. Counties	1 4½	1 0½
A_2	Solihull ..	Mid. Counties	1 5	1 0½
A_1	Southampton ..	S. Counties	1 4½	1 0½
A_1	Southend-on-Sea	E. Counties	1 5	1 0½
A	Southport ..	N.W. Counties	1 5½	1 1½
A	S. Shields ..	N.E. Coast	1 5½	1 1½
A_1	Stafford ..	Mid. Counties	1 5	1 0½
A	Stirling ..	Scotland	1 6	1 1½
A	Stockport ..	N.W. Counties	1 5½	1 1½
A	Stockton-on-Tees	N.E. Coast	1 5½	1 1½
A	Stoke-on-Trent	Mid. Counties	1 5½	1 1½
B	Stroud	S.W. Counties	1 3½	11½
A	Sunderland ..	N.E. Coast	1 5½	1 1½
A	Swansea ..	S. Wales & M.	1 5½	1 1½
A	Swindon ..	S.W. Counties	1 4	1 0
A_1	TAMWORTH ..	N.W. Counties	1 5	1 0½
B	Taunton ..	S.W. Counties	1 3½	11½
A	Teesside Dist. ..	N.E. Counties	1 5½	1 1½
A_2	Teignmouth ..	S.W. Coast	1 4½	1 0½
A	Todmorden ..	Yorkshire	1 5½	1 1½
A_1	Torquay	S.W. Counties	1 5	1 0½
B_2	Truro	S.W. Counties	1 2½	11
A_2	Tunbridge Wells	S. Counties	1 4	1 0
A	Tunstall ..	Mid. Counties	1 5½	1 1½
A	Tyne District ..	N.E. Coast	1 5½	1 1½
A	WAKEFIELD	Yorkshire	1 5½	1 1½
A	Walsall	Mid. Counties	1 5½	1 1½
A	Warrington ..	N.W. Counties	1 5½	1 1½
A_1	Warwick	Mid. Counties	1 5	1 0½
A_1	Wellingborough	Mid. Counties	1 5	1 0½
A	West Bromwich	Mid. Counties	1 5½	1 1½
A_2	Weston-s.-Mare	W. Counties	1 4½	1 0½
A_2	Whitby	Yorkshire	1 4½	1 0½
A	Widnes	N.W. Counties	1 5½	1 1½
A	Wigan	N.W. Counties	1 5½	1 1½
B	Winchester ..	S. Counties	1 3½	11½
A_2	Windsor	S. Counties	1 4½	1 0½
A	Wolverhampton	Mid. Counties	1 5½	1 1½
A_2	Worcester ..	Mid. Counties	1 4½	1 0½
A_2	Worksop ..	Yorkshire	1 4	1 0
A_1	Wrexham ..	N.W. Counties	1 5	1 0½
A	Wycombe ..	S. Counties	1 4	1 0
B	YARMOUTH ..	E. Counties	1 3½	11½
B	Yeovil	S.W. Counties	1 3½	11½
A	York	Yorkshire	1 5½	1 1½

* In these areas the rates of wages for certain trades (usually painters and plasterers) vary slightly from those given.

The rates for every trade in any given area will be sent on request.

CURRENT PRICES

The wages are the standard Union rates of wages payable in London at the time of publication. The prices given below are for materials of good quality and include delivery to site in Central London area, unless otherwise stated. For delivery outside this area, adjustment should be made for the cost of transport. Though every care has been taken in its compilation, it is impossible to guarantee the accuracy of the list, and readers are advised to have the figures confirmed by trade inquiry. The whole of the information given is copyright.

WAGES

		s.	d.
Bricklayer	per hour	1	7½
Carpenter	,,	1	7½
Joiner	,,	1	7½
Machinist	,,	1	8½
Mason (Banker)	,,	1	7½
,, (Fixer)	,,	1	8½
Plumber	,,	1	7½
Painter	,,	1	6½
Paperhanger	,,	1	6½
Glazier	,,	1	7½
Slater	,,	1	7½
Scaffolder	,,	1	3½
Timberman	,,	1	3½
Navvy	,,	1	2½
General Labourer	,,	1	2½
Lorryman	,,	1	5½
Crane Driver	,,	1	6½
Watchman	per week	2	10 0

MATERIALS

EXCAVATOR AND CONCRETOR

		£	s.	d.
Grey Stone Lime	per ton	2	2	0
Blue Lias Lime	,,	1	16	6
Hydrated Lime	,,	3	0	9
Portland Cement, in 4 ton lots (d/d site, including Paper Bags)	,,	2	0	0
Rapid Hardening Cement, in 4-ton lots (d/d site, including Paper Bags)	,,	2	6	0
White Portland Cement, in 1-ton lots	,,	8	15	0
Thames Ballast	per Y.C.		6	3
¾" Crushed Ballast	,,		6	9
Building Sand	,,		7	3
Washed Sand	,,		8	3
2" Broken Brick	,,		8	0
¾" ,, ,,	,,		10	3
Pan Breeze	,,		6	6
Coke Breeze	,,		8	9

DRAINLAYER

BEST STONEWARE DRAIN PIPES AND FITTINGS

		4" s.	4" d.	6" s.	6" d.
Straight Pipes	per F.R.	0	9	1	1
Bends	each	1	9	2	6
Taper Bends	,,	3	6	5	3
Rest Bends	,,	4	3	6	3
Single Junctions	,,	3	6	5	3
Double ,,	,,	4	9	6	6
Straight channels	per F.R.	1	6	2	6
¼" Channel bends	each	2	9	4	0
Channel junctions	,,	4	6	6	6
Channel tapers	,,	2	9	4	0
Yard gullies	,,	6	9	8	9
Interceptors	,,	16	0	19	6
IRON DRAINS:					
Iron drain pipe	per F.R.	1	6	2	6
Bends	each	5	0	10	6
Inspection bends	,,	9	0	15	0
Single junctions	,,	8	9	18	0
Double junctions	,,	13	6	30	0
Lead Wool	lb.		6		—
Gaskin	,,		5		—

BRICKLAYER

		£	s.	d.
Flettons	per M.	2	15	0
Grooved do.	,,	2	17	0
Phorpres bricks	,,	2	15	0
,, Cellular bricks	,,	2	15	0
Stocks, 1st quality	,,	4	11	0
,, 2nd ,,	,,	4	2	6
Blue Bricks, Pressed	,,	8	17	6
,, Wirecuts	,,	7	17	6
,, Brindles	,,	7	0	0
,, Bullnose	,,	9	0	0
Red Sand-faced Facings	,,	6	18	6
Red Rubbers for Arches	,,	12	0	0
Multicoloured Facings	,,	7	10	0
Luton Facings	,,	7	10	0
Phorpres White Facings	,,	3	17	3
,, Rustic Facings	,,	3	12	3
Midhurst White Facings	,,	5	0	0
Glazed Bricks, Ivory, White or Salt glazed, 1st quality:				
Stretchers	,,	21	0	0
Headers	,,	20	10	0
Bullnose	,,	27	10	0
Double Stretchers	,,	29	10	0
Double Headers	,,	26	10	0
Glazed Second Quality, *Less*	,,	1	0	0
,, Buffs and Creams, *Add*	,,	2	0	0
,, Other Colours	,,	5	10	0
2" Breeze Partition Blocks	per Y.S.		1	7
2½" ,, ,, ,,	,,		1	10
3" ,, ,, ,,	,,		2	1
4" ,, ,, ,,	,,		2	6

MASON

The following d/d F.O.R. at Nine Elms:		s.	d.
Portland stone, Whitbed	F.C.	4	4½
,, ,, Basebed	,,	4	7½
Bath stone	,,	2	10
York stone	,,	6	6
,, ,, Sawn templates	,,	7	6
,, ,, Paving, 2"	F.S.	1	8
,, ,, ,, 3"	,,	2	6

SLATER AND TILER

First quality Bangor or Portmadoc slates d/d F.O.R. London station

		£	s.	d.
24" × 12" Duchesses	per M.	28	17	6
22" × 12" Marchionesses	,,	24	10	0
20" × 10" Countesses	,,	19	5	0
18" × 10" Viscountesses	,,	15	10	0
18" × 9" Ladies	,,	13	17	6
Westmorland green (random sizes)	per ton	8	10	0
Old Delabole slates d/d in full truck loads to Nine Elms Station:				
20" × 10" medium grey per 1,000 (actual)		21	11	6
,, ,, green ,, ,,		24	7	4
Best machine roofing tiles	,,	4	10	0
Best hand-made do.	,,	5	0	0
Hips and valleys	each			9½
,, hand-made	,,			10
Nails, compo	lb.		1	4
,, copper	,,		1	6

CARPENTER AND JOINER

		s.	d.
Good carcassing timber	F.C.	2	2
Birch	as 1" F.S.		9
Deal, Joiner's	,, ,,		5
,, ,, 2nds	,, ,,		4
Mahogany, Honduras	,, ,,	1	3
,, African	,, ,,	1	1
,, Cuban	,, ,,	2	6
Oak, plain American	,, ,,	1	0
,, Figured ,,	,, ,,	1	3
,, plain Japanese	,, ,,	1	2
,, Figured ,,	,, ,,	1	5
,, Austrian wainscot	,, ,,	1	6
,, English	,, ,,	1	11
Pine, Yellow	,, ,,	1	0
,, Oregon	,, ,,		4
,, British Columbian	,, ,,		4
Teak, Moulmein	,, ,,	1	3
,, Burma	,, ,,	1	2
Walnut, American	,, ,,	2	3
,, French	,, ,,	2	3
Whitewood, American	,, ,,	1	1
Deal floorings, ¾"	Sq.	18	6
,, 1"	,,	1	1	6
,, 1¼"	,,	1	2	0
,, 1½"	,,	1	5	0
,, 1¾"	,,	1	10	0
Deal matchings ¾"	,,		14	0
,, 1¼"	,,		15	6
,, 1"	,,	1	4	0
Rough boarding ¾"	,,		16	0
,, 1"	,,		18	0
,, 1¼"	,,	1	6	0

Plywood, per ft. sup.

Thickness	¼" A	¼" B	¼" BB	⅜" A	⅜" B	⅜" BB	½" A	½" B	½" BB	⅝" A	⅝" B	⅝" BB
Qualities	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Birch 60 × 48	4	2½	2	5	3	2½	7	5	4	8	6	5
Cheap Alder	–	2	1½	–	3½	2	–	–	–	–	–	–
Oregon Pine	–	2½	–	3	2½	–	4	3½	–	5	4½	–
Gaboon Mahogany	4	3½	–	5	4½	–	7	6½	–	8	7	–
Figured Oak	6½	5	–	7½	5½	–	10	8	0	1/–	9	–

		d.
Scotch glue	lb.	8

SMITH AND FOUNDER

Tubes and Fittings:
(The following are the standard list prices, from which should be deducted the various percentages as set forth below.)

		½"	¾"	1"	1½"	2"
Tubes, 2'-14' long, per ft. run		4	5½	9½	1/1	1/10
Pieces, 12"-23" long	each	10	1/1	1/11	2/8	4/9
,, 3"-11½" long	,,	7	9	1/3	1/8	3/–
Long screws, 12"-23½" long	,,	11	1/3	2/2	2/10	5/3
,, ,, 3"M-½" long	,,	8	10	1/5	1/11	3/6
Bends	,,	8	11	1/7½	2/7½	5/2
Springs not socketed	,,	5	7	1/1½	1/11½	3/11
Socket unions	,,	2/–	3/–	5/6	6/9	10/–
Elbows, square	,,	10	1/1	1/6	2/2	4/3
Tees	,,	1/–	1/3	1/10	2/6	5/1
Crosses	,,	2/2	2/9	4/1	5/6	10/6
Plain sockets and nipples	,,	3	4	6	8	1/3
Diminished sockets	,,	4	6	9	1/–	2/–
Flanges	,,	9	1/–	1/4	1/9	2/9
Caps	,,	3½	5	8	1/–	2/–
Backnuts	,,	2	3	5	6	1/1
Iron main cocks	,,	1/6	2/3	4/2	5/4	11/6
,, with brass plugs	,,	—	4/–	7/6	10/–	21/–

Discounts:

TUBES.

	Per cent.		Per cent.
Gas	65	Galvanized gas	52½
Water	61½	,, water	47½
Steam	57½	,, steam	42½

FITTINGS.

	Per cent.		Per cent.
Gas	57½	Galvanized gas	47½
Water	52½	,, water	42½
Steam	47½	,, steam	37½

SMITH AND FOUNDER—*continued.*

		s.	d.
Rolled steel joists cut to length	cwt.	12	9
Mild steel reinforcing rods, ½"	,,	10	6
,, ,, ⅝"	,,	10	3
,, ,, ¾"	,,	10	0
,, ,, ⅞"	,,	9	6
,, ,, 1"	,,	9	6
,, ,, 1¼"	,,	9	6
,, ,, 1½"	,,	9	6
,, ,, 1¾"	,,	9	6
,, ,, 2"	,,	9	6

Cast-iron rain-water pipes of		s.	d.	s.	d.
ordinary thickness metal	F.R.		8		10
Shoes	each	2	0	3	0
Anti-splash shoes	,,	4	6	8	0
Boots	,,	3	0	4	0
Bends	,,	2	7	3	9
,, with access door	,,		—	6	3
Heads	,,	4	0	5	0
Swan-necks up to 9" offsets	,,	3	9	6	0
Plinth bends, 4½" to 6"	,,	3	9	5	3
Half-round rain-water gutters of ordinary thickness metal	F.R.		5		6
Stop ends	each		6		6
Angles	,,	1	7	1	11
Obtuse angles	,,	2	0	2	6
Outlets	,,	1	9	2	3

PLUMBER

		s.	d.
Lead, milled sheets	cwt.	26	3
,, drawn pipes	,,	26	3
,, soil pipe	,,	26	3
,, scrap	,,	18	0
Solder, plumbers'	lb.		9½
,, fine do.	,,	1	0
Copper, sheet	,,		8½
,, tubes	,,		11

L.C.C. soil and waste pipes:	3"	4"	6"
Plain cast F.R.	1 0	1 2	2 6
Coated ,,	1 1	1 3	2 8
Galvanized ,,	2 0	2 6	4 6
Holderbats each	3 10	4 0	4 9
Bends ,,	3 9	5 3	10 3
Shoes ,,	2 10	4 4	9 6
Heads ,,	4 8	8 5	12 9

PLASTERER

		£	s.	d.
Lime, chalk	per ton	2	5	0
Plaster, coarse	,,	2	10	0
,, fine	,,	4	15	0
Hydrated lime	,,	3	9	9
Sirapite	,,	3	6	0
Keene's cement	,,	5	0	0
Gothite Plaster	,,	3	6	0
Pioneer Plaster	,,	3	6	0
Thistle plaster	,,	3	6	0
Sand, washed	Y.C.		11	6
Hair	lb.			6
Laths, sawn	bundle		2	4
,, rent	,,		3	9
Lath nails	lb.			3

GLAZIER

		s.	d.	s.	d.
Sheet glass, 21 oz., squares n/e 2 ft.				s. F.S.	2½
,, 26 oz.	,, ,,			,,	3
Flemish, Arctic, Figures (white)*				,,	7
Blazoned glasses				,,	2 6
Reeded; Cross Reeded				,,	11
Cathedral glass, white, double-rolled, plain, hammered, rimpled, waterwite				,,	6
Crown sheet glass (n/e 12 in. x 10 in.)				,,	2 0
Flashed opals (white and coloured)		,, 1	0 and	2	0
¼" rough cast; rolled plate				,,	5½
¼" wired cast; wired rolled				,,	9½
¼" Georgian wired cast				,,	11
¼" Polished plate, n/e 1 ft.		,, †10 to		‡1	1
,, ,, 2		,, †1	2 ,,	‡1	4
,, ,, 4		,, †2	3 ,,	‡2	6
,, ,, 8		,, †2	9 ,,	‡3	2
,, ,, 20		,, †3	7 ,,	‡4	2
,, ,, 45		,, †3	11 ,,	‡4	7
,, ,, 100		,, †5	0 ,,	‡5	7
Vita glass, sheet, n/e 1 ft.		,,			1 0
,, ,, ,, 2 ft.		,,			1 3
,, ,, ,, over 2 ft.		,,			1 9
,, ,, plate, n/e 1 ft.		,,			1 6
,, ,, ,, 2 ft.		,,			3 0
,, ,, ,, 5 ft.		,,			4 0
,, ,, ,, 7 ft.		,,			5 0
,, ,, ,, 15 ft.		,,			6 0
,, ,, ,, over 15 ft.		,,			7 6
"Calorex" sheet 21 oz., and 32 oz.		,, 2	6 and	3	6
,, rough cast ¼" and ½"		,,	8½ ,,	1	0
Putty, linseed oil		lb.			3

* *Colours, 1d. F.S. extra.*
† *Ordinary glazing quality.* ‡ *Selected glazing quality.*

PAINTER

		£	s.	d.
White lead in 1 cwt. casks	cwt.	2	8	6
Linseed oil	gall.		2	3
Boiled oil	,,		2	9
Turpentine	,,		4	1½
Patent knotting			14	0
Distemper, washable	cwt	2	6	0
,, ordinary	,,	2	0	0
Whitening	,,		4	0
Size, double	firkin		3	0
Copal varnish	gall.		13	0
Flat varnish	,,		14	0
Outside varnish	,,		16	0
White enamel	,,	1	15	0
Ready mixed paint	,,		13	6
Brunswick black	,,		7	6

CURRENT PRICES FOR MEASURED WORK

The following prices are for work to new buildings of average size, executed under normal conditions in the London area. They include establishment charges and profit. While every care has been taken in its compilation, no responsibility can be accepted for the accuracy of the list. The whole of the information given is copyright.

EXCAVATOR AND CONCRETOR

		£ s. d.
Digging over surface n/e 12" deep and cart away	Y.S.	2 9
" to reduce levels n/e 5' 0" deep and cart away	Y.C.	8 6
" to form basement n/e 5' 0" and cart away	"	9 0
" " 10' 0" deep and cart away	"	9 6
" " 15' 0" deep and cart away	"	10 0
If in stiff clay	add "	6
If in underpinning	"	4 0
Planking and strutting to sides of excavation	F.S.	1 0
" " to pier holes	"	5
" " to trenches	"	5
" " extra, only if left in	"	3
Hardcore, filled in and rammed	Y.C.	10 0
Portland cement concrete in foundations (6-1)	"	1 6 0
" " (4-2-1)	"	1 12 6
" " underpinning	"	1 16 0
Finishing surface of concrete, space face	Y.S.	7

DRAINLAYER

		4" s. d.	6" s. d.
Stoneware drains, laid complete (digging and concrete to be priced separately)	F.R.	1 6	2 3
Extra, only for bends	Each	2 8	3 9
" junctions	"	3 9	4 6
Gullies and gratings	"	16 6	18 0
Cast iron drains, and laying and jointing	F.R.	4 9	6 9
Extra, only for bends	Each	10 6	15 6

BRICKLAYER

		£ s. d.
Brickwork, Flettons in lime mortar	Per Rod	26 10 0
" " in cement	"	27 12 6
" Stocks in cement	"	34 0 0
" Blues in cement	"	50 0 0
Extra only for circular on plan	"	2 0 0
" backing to masonry	"	1 10 0
" raising on old walls	"	2 0 0
" underpinning	"	5 10 0½
Fair Face and pointing internally	F.S.	1½
Extra over fletton brickwork for picked stock facings and pointing	"	8
" " " red brick facings and pointing	"	11
" " " blue brick facings and pointing	"	1 4
" " " glazed brick facings and pointing	"	3 6
Tuck pointing	"	7½
Weather pointing in cement	"	3
Slate dampcourse	"	10
Vertical dampcourse	"	1 1

ASPHALTER

		s. d.
½" Horizontal dampcourse	Y.S.	4 6
½" Vertical dampcourse	"	6 9
½" paving or flat	"	4 0
1" paving or flat	"	5 6
1" × 6" skirting	F.R.	1 0
Angle fillet	"	2
Rounded angle	"	2
Cesspools	Each	5 0

MASON

		s. d.
Portland stone, including all labours, hoisting, fixing and cleaning down, complete	F.C.	17 9
Bath stone and do., all as last	"	13 6
Artificial stone and do	"	13 0
York stone templates, fixed complete	"	10 6
" thresholds	"	13 6
" sills	"	1 0 6

SLATER AND TILER

		£ s. d.
Slating, Bangor or equal, laid to a 3" lap, and fixing with compo nails, 20" × 10"	Sqr.	3 10 0
Do., 18" × 9"	"	3 7 0
Do., 24" × 12"	"	3 17 0
Westmorland slating, laid with diminished courses	"	6 0 0
Tiling, best hand-made sand-faced, laid to a 4" gauge, nailed every fourth course	"	3 0 0
Do., all as last, but of machine-made tiles	"	2 16 0
20" × 10" medium Old Delabole slating, laid to a 3" lap (grey)	"	2 16 0
" " " " " (green)	"	4 15 0

CARPENTER AND JOINER

		£ s. d.
Flat boarded centering to concrete floors, including all strutting	Sqr.	2 2 6
Shuttering to sides and soffits of beams	F.S.	7
" to stanchions	"	7
" to staircases	"	1 6
Fir and fixing in wall plates, lintols, etc.	F.C.	3 9
Fir framed in floors	"	4 6
" " roofs	"	6 6
" " trusses	"	7 6
" " partitions	"	8 6
½" deal sawn boarding and fixing to joists	Sqr.	1 14 6
1" " " " " "	"	1 17 6
1½" " " " " "	"	2 3 0
½" × 2" fir battening for Countess slating	"	9 0
Do. for 4" gauge tiling	"	12 0
Stout feather-edged tilting fillet	F.R.	4½
Patent inodorous felt, 1 ply	Y.S.	2 3
" " " 2 "	"	2 9
" " " 3 "	"	3 3
Stout herringbone strutting to 9" joists	F.R.	10½
1" deal gutter boards and bearers	F.S.	1 2
1½" " " " "	"	1 6
4" deal wrought rounded roll	F.R.	8
1" deal grooved and tongued flooring, laid complete, including cleaning off	Sqr.	2 1 0
1¼" do.	"	2 10 0
1½" do.	"	2 17 0
1" deal moulded skirting, fixed on, and including grounds plugged to wall	F.S.	1 6
1¼" do.	"	1 9

CARPENTER AND JOINER—*continued*

		s. d.
1½" deal moulded sashes of average size	F.S.	1 9½
2" " " "	"	1 11½
1½" deal cased frames double hung, of 6" × 3" oak sills, 1¼" pulley stiles, 1¼" heads, 1" inside and outside linings, ¾" parting beads, and with brass faced axle pulleys, etc., fixed complete		3 7
2" " " "	"	3 10
Extra only for moulded horns	Each	6
1½" deal four-panel square, both sides, door	F.S.	2 0
2" " " "	"	2 8
1½" " but moulded both sides	"	2 4
2" " " "	"	3 0
4" × 3" deal, rebated and moulded frames	F.R.	1 0
4½" × 3½" " "	"	1 4
1½" deal tongued and moulded window board, on and including deal bearers	F.S.	1 9
1½" deal treads, 1" risers in staircases, and tongued and grooved together on and including strong fir carriages	"	2 6
1½" deal moulded wall strings	"	2 1
1½" " outer strings	"	2 4
Ends of treads and risers housed to string	Each	1 9
3" × 2" deal moulded handrail	F.R.	1 3
1" × 1" deal balusters and housing each end	Each	2 0
1½" × 1½" " " "	"	2 9
3" × 3" deal wrought framed newels	F.R.	1 3
Extra only for newel caps	Each	6 0
Do., pendants	"	6 0

SMITH AND FOUNDER

		£ s. d.
Rolled steel joists, cut to length, and hoisting and fixing in position	Per cwt.	16 6
Riveted plate or compound girders, and hoisting and fixing in position	"	1 0 6
Do., stanchions with riveted caps and bases and do.	"	19 0
Mild steel bar reinforcement, ½" and up, bent and fixed complete	"	17 6
Corrugated iron sheeting fixed to wood framing, including all bolts and nuts 20 g.	F.S.	11
Wrot-iron caulked and cambered chimney bars	Per cwt.	1 10 0

PLUMBER

		£ s. d.
Milled lead and labour in flats	cwt.	2 0 3
Do. in flashings	"	2 3 9
Do. in covering to turrets	"	2 0 3
Do. in soakers	"	1 15 9
Labour to welted edge	F.R.	3½
Open copper nailing	"	3
Close " "	"	4

		½" s. d.	¾" s. d.	1" s. d.	1¼" s. d.	2" s. d.	4" s. d.
Lead service pipe and fixing with pipe hooks	F.R.	10	1 0	1 3	2 0	2 10	—
Do. soil pipe and fixing with cast lead tacks		—	—	—	—	—	5 6
Extra, only to bends	Each	—	—	—	—	2 0	6 9
Do. to stop ends	"	6½	8	9	11	1 0	—
Boiler screws and unions	"	3 3	3 9	5 0	8 0	—	—
Lead traps	"	—	—	—	6 3	8 9	—
Screw down bib valves	"	6 9	9 6	11 0	—	—	—
Do. stop cocks	"	7 0	9 6	12 6	—	—	—
4" cast-iron ½-rd. gutter and fixing	F.R.						1 0
Extra, only stop ends	Each						1 0
Do. angles	"						1 6
Do. outlets	"						2 9
4" dia. cast-iron rain-water pipe and fixing with ears cast on	F.R.						1 2
Extra, only for shoes	Each						1 3
Do. for plain heads	"						5 6

PLASTERER AND TILING

		s. d.
Expanded metal lathing, small mesh	Y.S.	2 0
Do. in n/w to beams, stanchions, etc.	"	2 9
Lathing with sawn laths to ceilings	"	1 3
½" screeding in Portland cement and sand or tiling, wood block floor, etc.	"	1 5
Do. vertical	"	1 7
Rough render on walls	"	1 2½
Render, float and set in lime and hair	"	1 9
Render and set in Sirapite	"	1 11
Render, backing in cement and sand, and set in Keene's cement	"	2 9
Extra, only if on lathing	"	4
Keene's cement, angle and arris	F.R.	6
Arris	"	
Rounded angle, small	"	3
Plain cornices in plaster, including dubbing out, per 1" girth	"	1½
1" granolithic pavings	Y.S.	3 6
1½" " "	"	4 6
6" × 6" white glazed wall tiling and fixing on prepared screed	"	17 6
9" × 3" " " " "	"	1 2 6
Extra, only for small quadrant angle	F.R.	8

GLAZIER

		s. d.
21 oz. sheet glass and glazing with putty	F.S.	6½
26 oz. do. and do.	"	7½
Flemish, Arctic Figured (white) and glazing with putty	"	1 1
Cathedral glass and do.	"	1 2
Glazing only, British polished plate	"	7
Extra, only if in beads	"	2
Washleather	F.R.	4

PAINTER

		s. d
Clearcolle and whiten ceilings	Y.S.	6
Do. and distemper walls	"	9
Do. with washable distemper	"	1 1
Knot, stop, prime and paint four coats of oil colour on plain surfaces	"	3 3
Do. on woodwork	"	3 6
Do. on steelwork	"	3 0
Do. and brush grain and twice varnish	"	5 6
Stain and twice varnish woodwork	"	1 11
Stain and wax-polish woodwork	"	4 6
French polishing	F.S.	1 2
Stripping off old paper	Piece	2 0
Hanging ordinary paper	from "	2 9

Building News—(*Continued from page 537*)

Road, for Mr. R. C. Shewan; stores, Green Lane, for Victoria Bottling Co., Ltd.

TYNEMOUTH. *Houses.* The Corporation is to prepare plans for the erection of 26 houses for the aged on the Ridges estate.

WALES

CARDIFF. *Clinic.* The Corporation has acquired a site in Newport Street for the erection of a clinic.

CARDIFF. *Flats.* The Corporation is now considering plans by the city engineer for the erection of flats in Bute Street.

CARDIFF. *Houses.* The Corporation recommends the erection of 2,000 houses.

BUILDING CONTRACTS OPEN

Unless the contrary is expressly stated, all deposits required for bills of quantities, etc., are returned on receipt of bona-fide tenders. The words "Fair Wages Clause," inserted in certain paragraphs, signify that persons tendering must conform to a fair wages clause in the contract, which requires them to pay the rates of wages current in the district. Application for plans and particulars should be made to the address given at the end of each entry.*—ED., *A.J.

BRENTWOOD: BUNGALOWS

October 12.—Erection of 16 bungalows, with drains, footpaths, fencing, gates and other works, on a site adjoining Costead Manor Road, for the U.D.C. D. A. Dallas, Council Offices, Ingrave Road, Brentwood. Deposit £2 2s.

ISLEWORTH: CENTRAL FIRE STATION

October 14.—Erection of a central fire station, comprising engine-house, administration buildings, firemen's flats and appurtenant outbuildings at the junction of Spring Grove Road and London Road, Isleworth, for the Heston and Isleworth T.C. J. G. Carey, Borough Surveyor, Council House, Hounslow. Deposit £2 2s.

KEXBORO': HOUSES

October 14.—Building of 34 houses at Allendale Road and Churchfield Avenue, Kexboro', for the Darton U.D.C. Chief Sanitary Inspector, Council Offices, Darton, near Barnsley.

WHITEFIELD: HOUSES

October 14.—Erection of the following houses, for the U.D.C.:—Six four-bedroom type, 15 three-bedroom, 34 two-bedroom, and 10 bungalow type. C. F. Porter, Clerk, Town Hall, Whitefield, Lancs. Deposit £2 2s.

DARLASTON: PUBLIC BATHS

October 15.—Public baths, for the U.D.C. Joynson Bros., Architect, Butcroft, Darlaston. Deposit £3 3s.

SHEFFIELD: HOUSES

October 15.—Erection of 316 houses on the Shirecliffe Estate (building scheme No. 2), for the T.C. W. G. Davies, City Architect, Town Hall, Sheffield. Deposit £2.

OXFORD: HOUSES

October 16.—Construction of 115 houses on the Wolvercote housing estate, for the T.C. J. F. Richardson, City Engineer, Town Hall, Oxford. Deposit £2 2s.

WHITEFIELD: COUNCIL SCHOOL

October 16.—Erection of a new junior Council school at Whitefield, near Manchester, for the Lancashire C.C. S. Wilkinson, County Architect, County Offices, Preston. Deposit £2.

BELFAST: PAVILION

October 17.—(1) Erection of pavilion in Ormeau Road Playing Fields, and (2) erection of boundary walls and railing enclosing Ormeau Road Playing Fields, for the T.C. Education Architect, Victoria Street. Deposit £1 1s.

CHICHESTER: GOVERNMENT CONTRACTS

October 17.—The Commissioner of Works, etc., invite tenders for erection of Chichester Post Office and Telephone Exchange. Room 65d, Third Floor, H.M. Office of Works, London, S.W.1. Deposit £1.

CWMGIEDD: HOUSES

October 17.—Erection of 25 houses and appurtenant roads and sewer works at Cwmgiedd, for the Ystradgynlais R.D.C. W. E. Evans, Engineer and Surveyor, Council Offices, Ystradgynlais. Deposit £1.

ISLEWORTH: CASUAL WARDS

October 17.—Erection of casual wards and superintendent's house, etc., at Mill Plat, Twickenham Road, Isleworth, for the Middlesex C.C. County Architect, 10, Great George Street, Westminster, S.W.1. Deposit £2 2s.

SHOTTON: SCHOOL

October 18.—New Council school at Shotton, for the Durham E.C. F. Willey, Architect to the Education Committee, 34 Old Elvet, Durham.

LEWES: HOUSES

October 19.—Erection of 28 houses and appurtenant works at Winterbourne Lane, for the T.C. C. T. Butler, Borough Surveyor, Town Hall. Deposit £2 2s.

SHEFFIELD: SCHOOL

October 19.—Extensions to Firth Park Secondary School, for the E.C. W. G. Davies, City Architect, Town Hall, Sheffield. Deposit £2.

DUBLIN: HOUSES

October 21.—Erection of 275 three-room and 210 four-room houses on the Crumlin housing area (sections Nos. 5 and 7), for the T.C. City Treasurer, Exchange Buildings, Lord Edward Street. Deposit £5 5s.

GOSPORT: PUBLIC CONVENIENCES

October 21.—Erection of three public conveniences and incidental works at Stokes Bay, Brockhurst and Ann's Hill, for the T.C. A. Barlow, Borough Engineer, Town Hall. Deposit £2 2s.

LANGHO: EXTENSION TO INSTITUTION

October 23.—The Committee of Managers of the Brockhall (certified institution for mental defectives), Langho, near Blackburn, invite tenders for erection of building extensions at the institution, which are estimated to cost between £500,000 and £600,000. The architects for the scheme, Rees and Holt, 64, Rodney Street, Liverpool, will furnish any further information. Clerk and Steward of the Institution. Deposit £10 10s.

NOTTINGHAM: HOUSES

October 28.—Erection of 1,385 houses on the Bestwood and Arnold Estate, Part 2, for the Housing Committee. E. Phillips, Housing Architect, Exchange Buildings East, Nottingham. Deposit £1.

HAMBLEDON: HOUSES

October 30.—Construction of houses as follows, for the Hambledon R.D.C.:—Alfold, six; Cranleigh, 18; Hascombe, six; Chiddingfold, 15; Witley, 50; Thursley, 12; Elstead, 20; Dockenfield, eight. H. A. Merriman, Clerk, Council Offices, Shalford, near Guildford, Surrey. Deposit £2 2s.

LEYBOURNE GRANGE: HOSPITAL WORK

October 30.—Erection of a hospital block and portion of nurses' home at the Leybourne Grange Colony, West Malling, for the Kent C.C. W. H. Robinson, Springfield, Maidstone. W. L. Platts, Clerk, Sessions House, Maidstone. Deposit £5 5s.

HARROW: FIRE STATION

November 6.—Construction of a main fire station at Pinner Road, Harrow, for the U.D.C. Council Offices, Oxbridge Road, Stanmore, or at the offices of Swannell and Sly, High Street, Rickmansworth. Deposit £3 3s.

FISHERGATE: SCHOOL

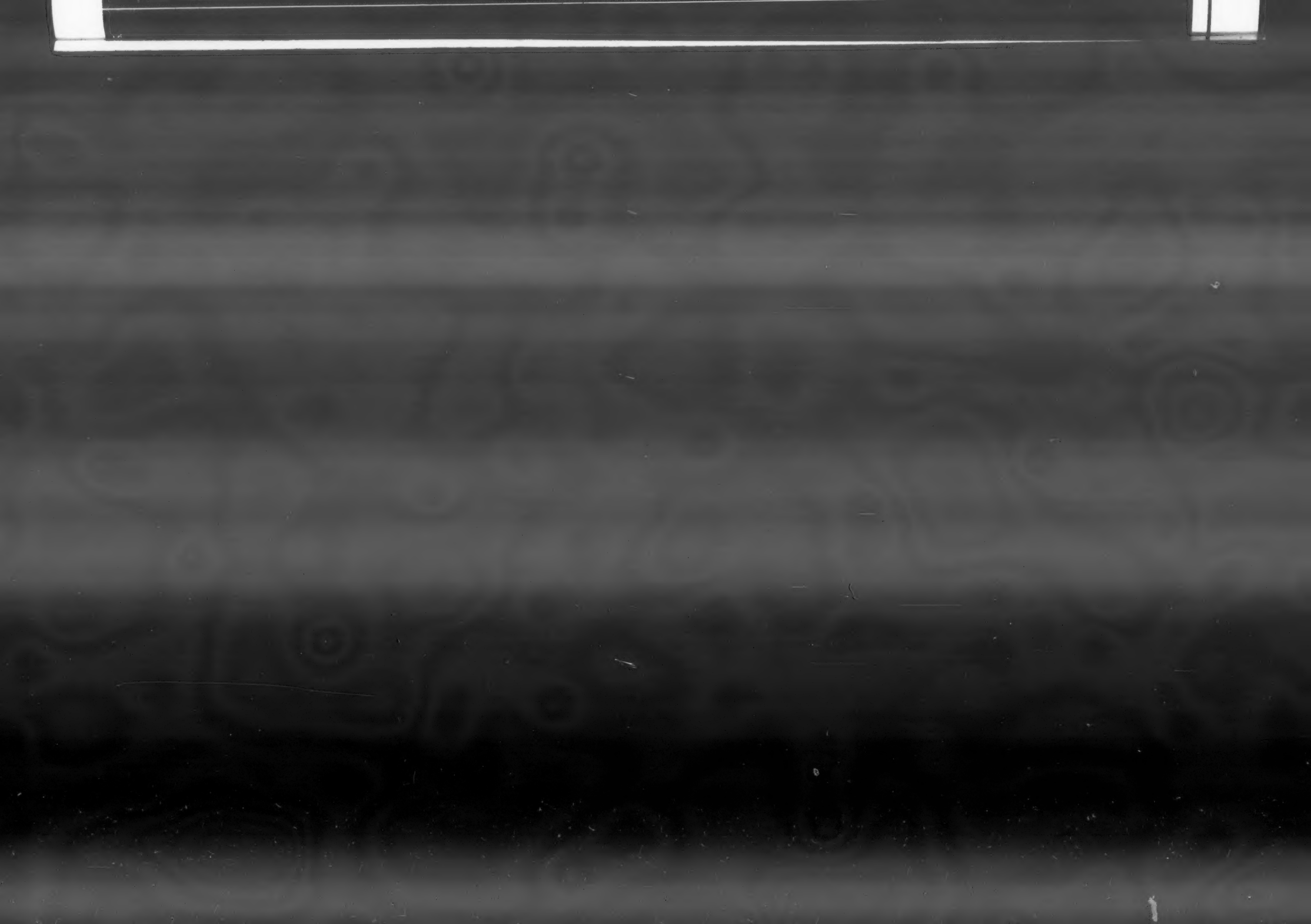
November 8.—New infants' school at Fishergate, near Portslade-by-Sea, for the West Sussex C.C. C. G. Stillman, County Architect, North Street, Chichester. Deposit £2 2s.

HARBURY: HOUSES

No date.—Erection of 24 houses at Harbury, for the Southam R.D.C. Quick and Lee, Architects, 11, Waterloo Place, Leamington. Deposit £1 1s.

LEAMINGTON: HOUSES

No date.—52 houses on the Shrubland Hall housing estate for the T.C. J. Sutcliffe, Borough Engineer, Town Hall, Leamington Spa. Deposit £3 3s.



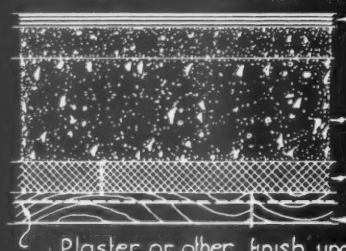
THE ARCHITECTS' JOURNAL LIBRARY OF PLANNED INFORMATION

DATA CONCERNING •CIRCLED OAK• CORKBOARD :

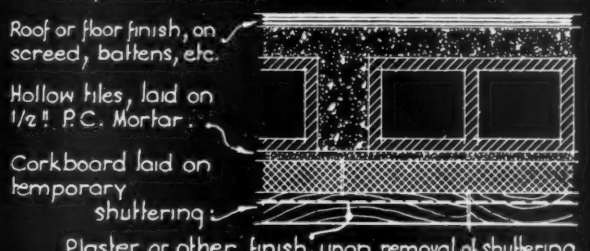
THERMAL CONDUCTIVITY.	STANDARD SIZES.	AVERAGE WEIGHT.	REMARKS.
0·30 B.T.U's per Inch thickness per Square Foot per 1° F. difference in temp. per hour.	36" x 12"; & 36" x 24" Each size is made in the following thicknesses, 1"; 1½"; 2"; 3" & 4"	9 lbs per Cubic Foot, = ¾ lb. per board ft. (Note : one board foot is taken as 1 Square Foot of board 1" thick).	Corkboard sheets may be hand sawn to comply with obstructions such as roof vents, flues, etc.

(A.) SOFFIT FIXING FOR INTERMEDIATE FLOORS OR SMALL ROOFS :

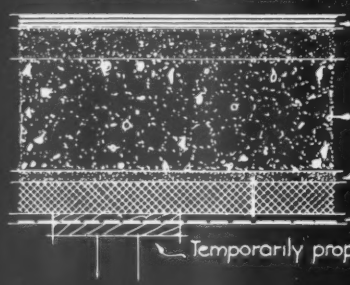
Fixing to new reinforced concrete roof or floor.



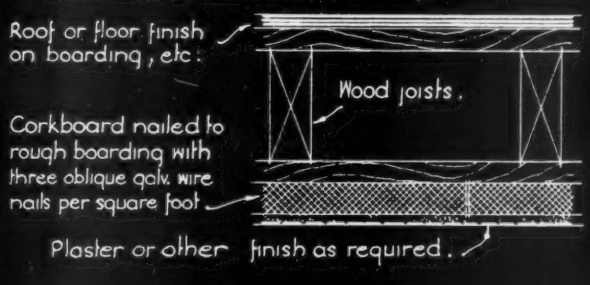
Fixing to new hollow tile roof or floor slab.



Fixing to existing reinforced concrete roof or floor.



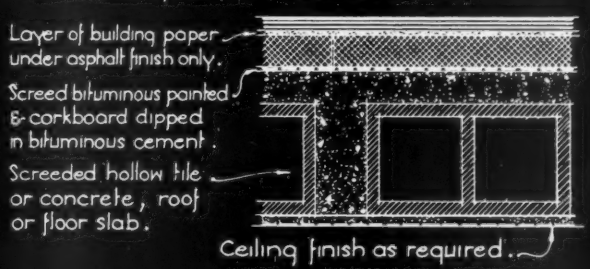
New or existing wooden roofs, flat or pitched.



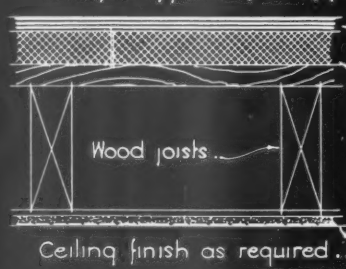
(B.) FIXING TO UPPER SURFACE OF INTERMEDIATE FLOORS AND LARGE ROOFS :

New or existing reinforced concrete roof or floor.

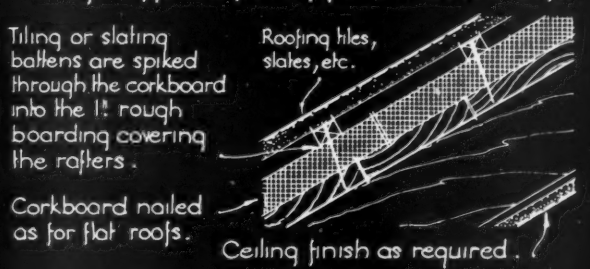
New or existing hollow tile roof or floor slab.



Fixing to upper surface of flat wooden roofs.



Fixing to upper surface of pitched wooden roofs.



Information from the Corkboard Information & Research Bureau.

INFORMATION SHEET • CORKBOARD ❶ • THERMAL INSULATION OF ROOFS & FLOORS

SIR JOHN BURNET TAIT AND LORNE ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON WC1 • Otto A. Bayne.

INFORMATION SHEET • 263 • INSULATION OF ROOFS AND FLOORS

THE ARCHITECTS' JOURNAL
LIBRARY OF PLANNED INFORMATION

INFORMATION SHEET • 263 •

INSULATION OF ROOFS AND FLOORS

Product : Corkboard

Quality of Cork :

Corkboard is especially manufactured for building work, by a number of manufacturers, to a rigid specification laid down by the Corkboard Information and Research Bureau.

Corkboard made to conform with this specification is branded with the device of the Bureau.

Corkboard, as recommended for use in the insulation of buildings, consists of granules of pure cork compressed into slabs and baked. During the heat treatment the natural resin in the cork is liquefied, and this resin then serves to bind the granules of cork together, forming a non-absorbent cellular slab. The insulating properties of the corkboard are derived from the imprisoned air particles in this cellular structure.

Thermal Conductivity.

The thermal conductivity of corkboard has been established by National Physical Laboratory tests at 0·280 B.T.U.'s per inch thickness per sq. ft. per 1° F. temp. difference per hour.

For general purposes, however, the Thermal conductivity will, in these Sheets, be taken as 0·30 B.T.U.'s, thus ensuring conservative calculations.

Fire Resistance.

Corkboard is not easily ignited. If a blow lamp is played upon its surface, the cork will char, but it does not burn or smoulder when the flame is removed.

Resistant Qualities.

Corkboard derives its non-absorbent qualities as mentioned above from the natural resin in its composition. This condition also renders corkboard proof against vermin, rot and all other forms of deterioration.

Fixing and Laying.

A. Soffit fixing for intermediate floors or small roofs.

(a) New Work.

(i) Reinforced concrete roof or floor.

The corkboard is laid on the shuttering and the concrete poured directly on to it, the natural surface of the corkboard providing a sufficiently good key in most cases. In special cases where a large aggregate is being used, ½ in. of Portland cement mortar should be put down before the concrete is poured.

(ii) Hollow Tile Slab.

In this case the corkboard is laid on the shuttering as before. A ½ in. of Portland cement mortar is then put down and the tiles thoroughly wetted and laid in this.

(*b*) Existing Work.

(i) Reinforced concrete roof or floor.

The concrete should be cleaned and watered immediately before the application of the corkboard. A ½ in. of Portland cement mortar is then applied to the corkboard and it is offered to the ceiling, slid into place and propped. This prop should not be removed for 48 hours.

(ii) Wood roof or floor.

Rough boarding is nailed to the under-side of the wooden roof or floor-boards with about ⅛ in. gap between the boards. The corkboard is then nailed to the under-side of this boarding with oblique galvanized wire nails.

B. Fixing to upper surface of intermediate floors or roofs. (New or existing work.)

(i) Reinforced concrete roof or floor.

(a) In Portland cement mortar.

The slab should first be screeded off to a proper fall and finish. A ½ in. bedding of Portland cement mortar is then applied and the corkboard laid on it, care being taken to preserve the lines of corkboard in their longitudinal direction. When the corkboard has been laid, asphalt may be put down directly on top of it.

(*b*) In Bituminous Cement.

The slab should be screeded as before and the final surface cleaned free from grease, loose particles, etc. ; it should then be painted with a bituminous paint so that the bituminous cement does not come into direct contact with concrete or screed. The under surface of the corkboard is then dipped in the hot bituminous cement and laid down on the painted slab. If the finish is to be asphalt, a layer of building paper should first be laid on top of the corkboard. If the finish is to be built-up roofing, no building paper is required.

(ii) Hollow Tile Slabs.

Corkboard may be laid on a hollow tile slab in cement mortar or bituminous cement in an exactly similar way as for a reinforced concrete slab.

(iii) Flat Wooden Floor or Roof.

One inch boarding is laid over the top of the roof or floor-joists and the corkboard nailed to this boarding with 3 oblique galvanized wire nails per square foot.

(iv) Pitched Wooden Roof.

Here again 1 in. boarding is nailed across the rafters and the corkboard in turn nailed to the boarding. Tile or slating battens are then spiked through to the boarding.

Finish.

(1) Plaster Finish.

Corkboard will take plaster quite satisfactorily without any surface treatment such as hacking. Some architects prefer, however, to apply wire netting or expanded metal to the surface of the corkboard to provide a better key for the plaster. Keene's or Portland cement may be similarly applied.

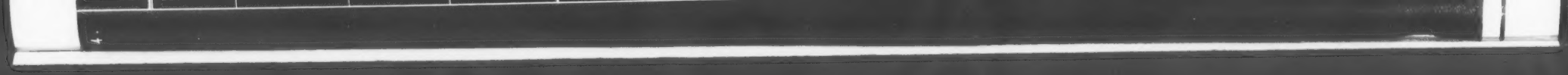
(2) Painted Finish.

Various types of paint may be used, but in each case it is advisable to consult the Corkboard information and Research Bureau as to the correct use.

Issued by : The Corkboard Information and Research Bureau

Address : Melbourne House, Aldwych, W.C.2

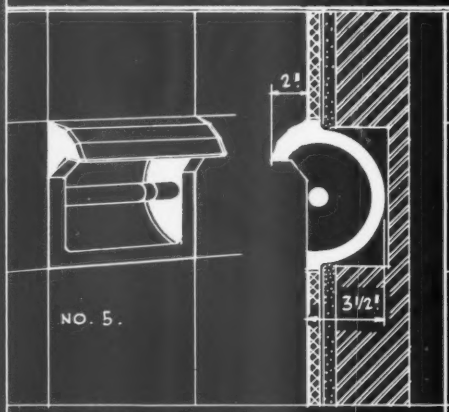
Telephone : Temple Bar 3039



4.

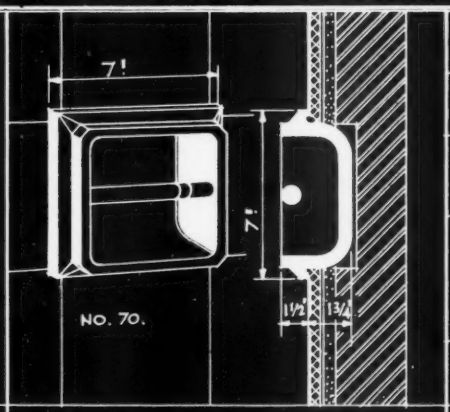
THE ARCHITECTS' JOURNAL LIBRARY OF PLANNED INFORMATION.

BUILT IN BATHROOM FITTINGS IN GLAZED EARTHENWARE.



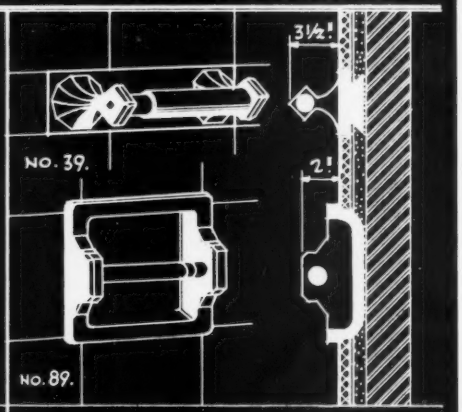
TOILET PAPER HOLDERS. RECESSED:

NO. 3. 6!x 6! without hood.
NO. 5. 6!x 6! with hood (as shown)
NO. 97. 8!x 8! Plain bevelled front.



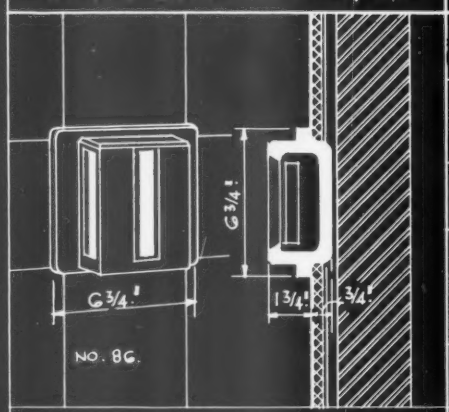
TOILET PAPER HOLDERS. SEMI-RECESSED

NO. 70. Plain, (as shown.) 6!x 6!
NO. 71. Hooded. 6!x 6!



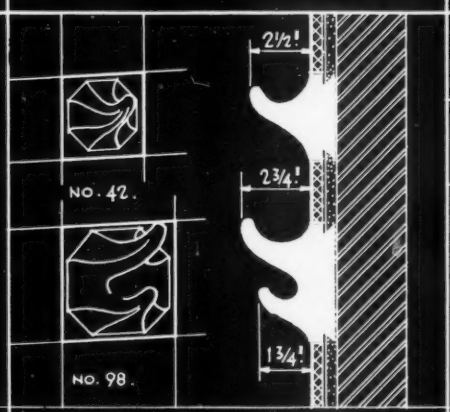
TOILET PAPER HOLDERS. PROJECTING:

NO. 39. 9!x 3! (as shown.)
NO. 58. 8!x 4!
NO. 89. 6!x 6! (as shown.)



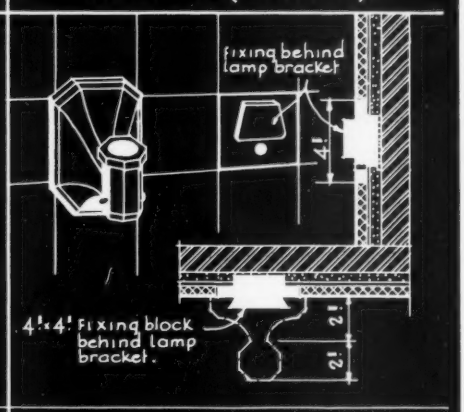
TOILET PAPER BOX.

NO. 86. 6!x 6!



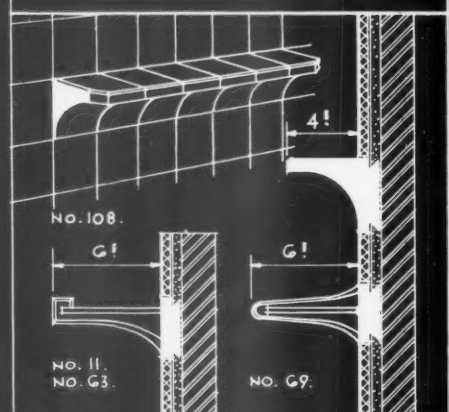
COAT HOOKS-PROJECTING.

NO. 42. 3!x 3! Base. (as shown.)
NO. 46. 6!x 3! Base. Single hook
NO. 61. 4!x 4! Base. " "
NO. 98. 4!x 4! Base, Double hook.



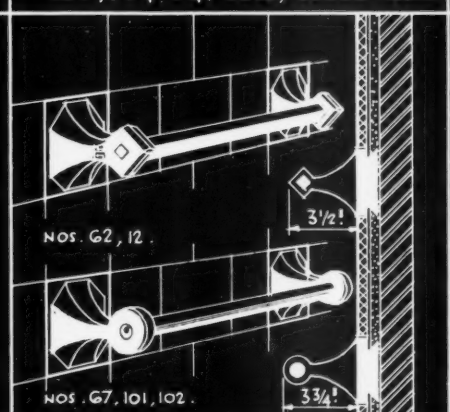
PROJECTING FITTING.

NO. 90. 6!x 4! Lampholder, with 4!x 4! Tile fixing block, as shown. Supplied complete with Switch lampholder.



PROJECTING SHELF BRACKETS.

NO. 11. 3!x 3! Base, for 5! Shelf.
NO. 63. 4!x 4! " " " " .
NO. 69. 3!x 3! " " " " .
NO. 108. 4! Faience Shelf Units of 4!x 4! Base.



PROJECTING TOWEL RAILS.

NO. 12.	3!x 3!	Base.	12A.	centre bracket.
NO. 62	4!x 4!	"	62A.	" " .
NO. 67	6!x 3!	"	67A.	" " .
NO. 101	3!x 3!	"	101A.	" " .
NO. 102	4!x 4!	"	102A	" " .

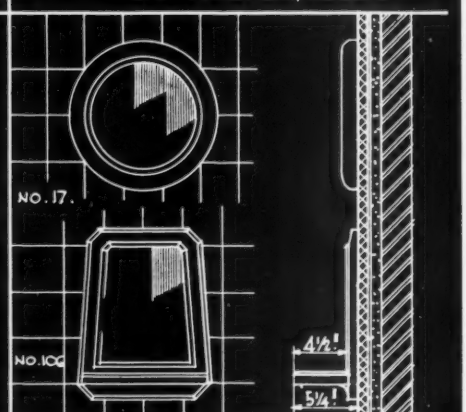


PLATE GLASS MIRRORS.

NO. 16.	Oval	24!x 18!
NO. 17.	Round	19! diam.
NO. 92.	Octagonal	21!x 16!
NO. 106.	Shelf	19!x 14!

(For notes on fixing - See back.)

Information from Richards Tiles Limited.

INFORMATION SHEET: BATHROOM EQUIPMENT: RECESSO FITTINGS. 4.

SIR JOHN BURNET TAIT AND LORNE ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON. W.C.1. Alan A. Bayne.

Supplement to THE ARCHITECTS' JOURNAL for October 10, 1935

THE ARCHITECTS' JOURNAL
LIBRARY OF PLANNED INFORMATION

INFORMATION SHEET

• 264 •

BATHROOM EQUIPMENT

OF GLAZED EARTHENWARE

Name of Product : Recesso Fittings

Types Illustrated : Toilet Paper Holders, Coathooks, Shelves, Towel Rails, etc.

Description :

Recesso Fittings are a range of receptacles of glazed earthenware, for soap, toilet-paper, toothbrush tumbler, etc. They are used in bathrooms, cloakrooms, kitchens, in bedroom basin splashbacks, etc. Fixed *in*, not *on*, the wall. They are neat, clean, sanitary and practically everlasting.

Building-in :

The sizes and depths required for building-in are shown on the drawings. The semi-recessed fittings shown are designed for use in thin partitions.

Colours :

The fittings can be supplied in white glaze and in an almost unlimited range of colour glazes, either plain or mottled, bright or matt, to match the manufacturers' wall tiling glazes.

Shelves :

Faience shelf No. 108 is entirely of glazed earthenware. In length it can be built to any multiple of four inches. For the other shelf brackets shelves of clear or opal glass, sizes 24 in. by 5 in. and 27 in. by 5 in., are supplied.

Towel Rails :

Round rails, for brackets Nos. 67, 101 and 102, are of white or coloured celluloid-covered wood, clear glass, or opal glass. Square rails, Nos. 12 and 62, are of white or coloured celluloid-covered wood only. Sizes 18 in., 24 in., 30 in., 36 in. Where a greater length than 36 in. is required, two rails and the appropriate centre bracket should be used.

Mirrors :

Mirrors are of best English plate glass, in porcelain frames, with heavy silvering rendered damp-proof by a strong backing of electrolytically-deposited copper. Japanned iron fixing brackets are supplied with each mirror ; these are screwed to the wall and engage in slots in the back of the mirror frame.

Previous Sheets :

This is the last in a series of four sheets giving details of the full range of Recesso Fittings ; this series supersedes Sheets Nos. 92, 93 and 99, published in 1934, which are now obsolete.

List of Fittings :

Makers' Number		
1	6×6″	Plain-lipped Soap Holder
2	,,	,, grip Soap Holder
3	,,	Plain Toilet-paper Holder
4	,,	Lipless Soap Holder
5	,,	Hooded Toilet-paper Holder
6	,,	Sponge Holder, without drip hole
6A	,,	,, ,, with drip hole
7	6×3″	Lipless Soap Holder
8	,,	Plain-lipped,, ,,
10	,,	Tooth-brush Rack
11	3×3″	Shelf Brackets, for 5″ shelf
12	,,	Towel-rail Brackets, for square rail
12A	,,	Centre Bracket to ditto
15	,,	Tumbler and Tooth-brush Rack
19	6×6″	Tongue-lipped Soap Holder
20	,,	,, grip Soap Holder
21	,,	Lipless grip Soap Holder
22	6×3″	Tongue-lipped Soap Holder
23	6×6″	Plain-lipped Tumbler Holder
24	,,	Lipless ,, ,,
25	12×6″	,, Sponge and Soap Holder
26	,,	Plain-lipped Sponge and Soap Holder
27	,,	Tongue-lipped Sponge and Soap Holder
28	,,	Lipless grip Sponge and Soap Holder
29	,,	Plain-lipped grip Sponge and Soap Holder
30	,,	Tongue-lipped grip Sponge and Soap Holder
32	,,	Plain-lipped Tumbler and Soap Holder
33	9×3″	Tooth-brush, Tooth-paste and Tumbler Rack
34	6×3″	Tooth-brush and Tooth-paste Rack
36	,,	Plain Soap Dish
38	,,	Grip
39	9×3″	Toilet-paper Holder
40	3×3″	Razor Strop Hook
42	,,	Coat Hook
43	12×6″	Lipless Sponge and Soap Holder, without partition
44	,,	Plain-lipped Sponge and Soap Holder, without partition
45	,,	Tongue-lipped Sponge and Soap Holder, without partition
46	6×3″	Coat Hook
47	,,	Tumbler and Tooth-brush Rack
52	8×4″	Lipless Soap Holder
53	,,	Plain-lipped ,, ,,
54	,,	Tongue-lipped ,, ,,
55	,,	Lipless grip,, ,,
56	,,	Plain-lipped ,, ,, ,,
57	,,	Tongue-lipped ,, ,, ,,
58	,,	Toilet-paper Holder
59	4×4″	Tumbler and Tooth-brush Rack
60	,,	Soap Dish
61	,,	Coat Hook
62	4×4″	Towel-rail Brackets, for square rail
62A	,,	Centre Bracket to ditto
63	,,	Shelf Brackets, for 5″ shelf
64	,,	Tooth-brush and Tooth-paste Rack
66	3×3″	Used Razor Blade Receptacle
67	6×3″	Towel-rail Brackets, for round rail
67A	,,	Centre Bracket, to ditto
69	3×3″	Shelf Brackets, for 5″ shelf
70	6×6″	Semi-recessed Plain Toilet-paper Holder
71	,,	,, ,, Hooded Toilet-paper Holder
72	6×3″	,, ,, Plain-lipped Soap Holder
73	,,	,, ,, Tongue-lipped Soap Holder
74	6×6″	,, ,, Plain-lipped Soap Holder
75	,,	,, ,, Tongue-lipped Soap Holder
76	,,	,, ,, Plain-lipped grip Soap Holder
77	,,	,, ,, Tongue-lipped grip Soap Holder
78	,,	,, ,, Tumbler Holder
79	,,	,, ,, Sponge Holder
81	6×4½″	Sill Soap Dish
82	4×4″	Gargoyle
83	6×3″	Tongued Soap Dish
86	6×6″	Toilet-paper Box
88	9×6″	Sponge Holder
89	6×6″	Toilet-paper Holder
90	6×4″	Lamp Holder (with 4×4″ Fixing Bracket)
91	6×6″	Soap Dish
93	4×4″	Ash Tray
94	6×6″	,, ,,
95	12×6″	Plain-lipped grip Sponge and Soap Holder without partition
96	,,	Tongue-lipped grip Sponge and Soap Holder without partition
97	8×8″	Toilet-paper Holder
98	4×4″	Double Coat Hook
101	3×3″	Towel-rail Brackets for Round Rail
101A	,,	Centre Bracket to ditto
102	4×4″	Towel-Rail Brackets for Round Rail
102A	,,	Centre Bracket to ditto
104	12×6″	Plain-lipped Deep Sponge and Soap Holder
105	,,	Tongue-lipped Deep Sponge and Soap Holder
107	6×6″	Cigarette End Receptacle
108	4″	Faience Shelf of 4×4″ Units

MIRRORS

16	Oval Mirror,	24×18″
17	Round ,,	19″
92	"Octo" ,,	21×16″
106	Shelf ,,	19×14″

Name of Manufacturers : Richards' Tiles, Limited

Address : Tunstall, Stoke-on-Trent

Telephone : Hanley 7215-8

London Office : 25 Victoria Street, S.W.1

Telephone : Victoria 9128

Glasgow Office : 53 Bothwell Street, Glasgow, C.2

Telephone : Central 1768