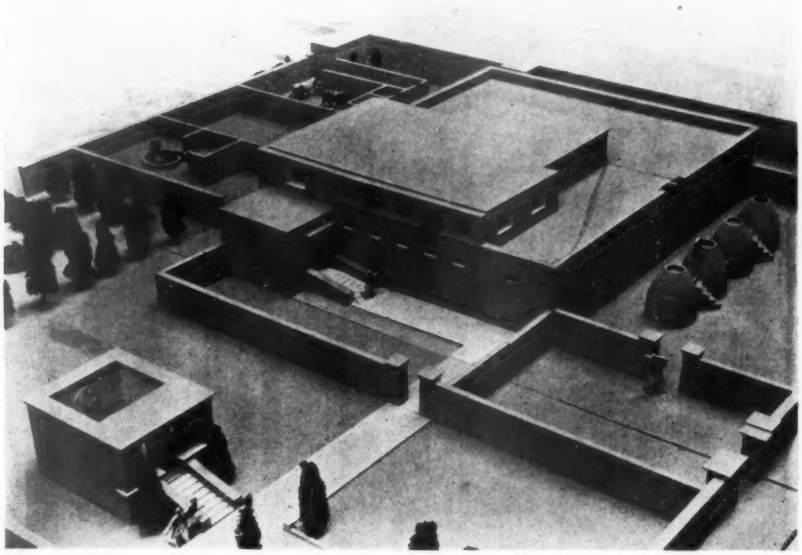
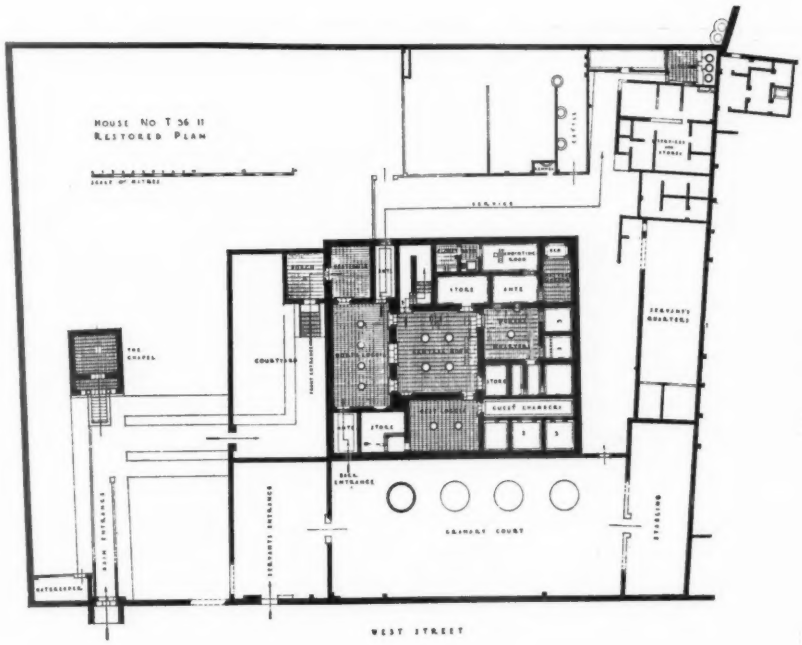
B . C . 1375

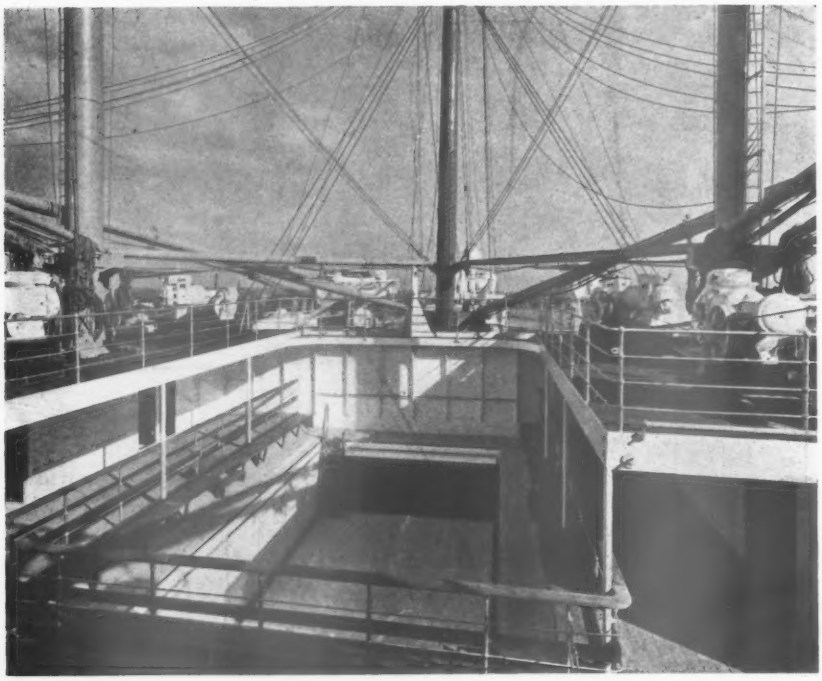
AN EGYPTIAN COUNTRY HOUSE





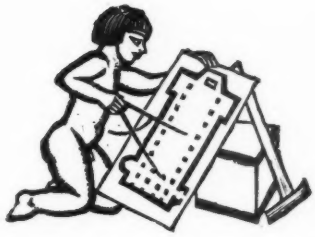
ABOVE is a reconstruction of a typical middle-class country house at Tel-el-Amarna, a city founded by Ahkenaten in 1375 B.C. and abandoned some twenty-five years later. Bearing in mind the social standing and the probable number of servants employed by the owner, the house is very well planned, and the insulation of various rooms from extremes of heat and cold has been carefully studied; the house is built of mud-brick, plastered. The photograph shows an aerial view of the model, with the entrance courtyard and private chapel in the foreground; to the right is the granary court with a row of beehive-shaped corn bins reached by a short flight of steps between each pair. Much excavation has been carried out at Tel-el-Amarna during the last few years by the Egypt Exploration Society, and an exhibition of recent work is now being held at 2 Hinde Street, Manchester Square, W. The exhibition will remain open until October 12.

C



S. S. STRATHMORE

Tomorrow, the S.S. Strathmore will leave Tilbury on her maiden cruise to the West Indies. The photographs show: top, the swimming bath; bottom, tourists' smoking room.



THE NEW HOUSING ACT

WE commented recently upon some of the main provisions of the new Housing Act and expressed the view that the advantages gained by uniting in the hands of public authorities the tasks of dealing with overcrowding and slums were likely to be considerably reduced by the lack of information that would be at their disposal.

The history of the slum-clearance programmes produced by local authorities under the 1930 Act should have served as an object lesson. In Circular 1331 the Ministry of Health mentioned that local authorities had had the duty, for more than twenty years, of inspecting and recording the condition of all working-class property in their areas. But it is surely well known that many local authorities do not possess the adequate records which Acts of Parliament prescribe, and that many small district councils, with part time or hopelessly overworked officials, cannot be expected to do so.

If any doubts on this point existed before 1933 these have been removed by the experience of the Ministry of Health in collecting the slum clearance programmes that year, which led to the appearance of an official reprimand in that department's annual report for 1933-34.

Now the task which local authorities will have to undertake under the new Act is considerably more difficult than that which was involved under the Act of 1930. We suggest that many local authorities are not equipped to perform this task in an adequate way and that such a duty should not have been laid upon them by Act of Parliament.

The local surveys that will be produced will not serve as the components of a national housing survey. There is no indication that the Minister will require every house to be inspected, so that the surveys cannot form a record for any purpose other than the one to which they are immediately directed.

On the other hand, as we have said, the work that will be involved in carrying out the inspection required by the Act will be beyond the capabilities of many local authorities. Our conclusion must be that the task should have been undertaken, on a wider scale and according to a uniform method, either by the central authorities or under their direction and with their funds. It should be emphasized, too, that such a survey should be kept continuously in action.

But the demand for a national *housing* survey is a minimal one. What is really required as a basis for action along several lines—of which housing is only one—is a *social* survey. The material available in official statistics is clearly not adequate for this purpose, though it would serve as a basis in several important sections ; it is apparent that the attitude of mind which regards official statistics as " a by-product of administration "—which really comes down to " trust to luck and never look before your leap "—needs to be destroyed. Knowledge of the present state of affairs, and intelligent anticipation of the course of future events if further action is not taken, is the necessary basis to the formulation of a policy.

The authors of *The Next Five Years** express this viewpoint strongly : ". . . . a sound estimate of the numbers of houses required, the type of house, and the placing of the houses, involve a much wider study than a mere ' survey of the housing situation ' : it is not enough to determine the extent to which, in each area, at the moment, there is a deficiency of supply to meet an immediate demand. Houses last for a period during which vast changes may take place in the numbers, the average age, and the family composition of the population—changes which must be taken into account in a considered housing policy, and which can only be properly estimated by means of careful study of social trends and vital statistics. Vast changes may occur also in the geographical distribution of the population : and those changes will depend largely upon the government's economic policy, which may encourage or discourage the export industries and those situated in the ports and distressed areas ; which may, or may not, take deliberate action to influence the location of new industries."

Just as there is no doubt that some local authorities will find it impossible properly to carry out their first task under the Act, so there is no doubt that many will produce really efficient records of the existing state of housing in their areas. It is a mournful conclusion that the best of these housing surveys may swiftly become useless through action by the central authorities in other fields, or as the result of other social changes which local authorities cannot be expected to foresee.

---

* *The Next Five Years : An Essay in Political Agreement.* By 152 signatories. London : Macmillan. Price 5s.

The Architects' Journal
Westminster, S.W.1
Telephones: Whitehall
9212-7
Telegrams
Buildable
Parl
London

NOTES & TOPICS

HACKNEY MARSHES

HACKNEY MARSHES are to be invaded by L.C.C. Housing and 30 acres of open space is to disappear. Mr. Silkin, the Chairman of the L.C.C. Housing Committee, and Mr. Coppock, the Chairman of the Parks Committee, say it is necessary, and it is hard to doubt them.

*

The Hackney Council agrees with regret, but 30 acres of open space is going and, however well meaning the L.C.C. may be, it will be no easy matter to return 30 acres as useful playing space in the East End of London.

*

No one will deny that an improvement in housing is needed, but decent shelter is not all that is required for decent living.

*

Space is needed not only for housing but for recreational purposes, as well as for efficient industry and transport, and one of the troubles is that no one seems to know how much space anything needs.

*

Can the whole population of our existing cities, when the slums are cleared and the overcrowding abated as the latest Housing Act requires, be put back upon the same area from which they are removed?

*

The space required for various industries, for railway and road traffic must vary somewhat according to local circumstances and to types of industry, but it should be possible to form some approximate idea of the amount of space various populations require for decent living, work and recreation, and it must be done if housing and town planning in our existing cities is to be anything but a very short-sighted affair.

BALCONIES

Having read a great deal in the daily press and having received several circulars on the subject of "Balconies for Babies," I spent some time on a tour of working-class dwellings in London with the object of finding out something more about them.

*

I found that balconies were no new idea; they exist on tenement blocks 50 or 60 years old, places which are now becoming slums themselves. In many instances they have degenerated into unsavoury garbage pits on each floor, a minute back yard, a place into which any unwanted thing (fortunately I saw no babies in them) could be thrown.

*

Where intelligent house management existed the balconies were clean and useful places, demonstrating that improvement in housing must be accompanied by improvement in house management.

SUCCESS WELL DESERVED

I have referred several times in recent months to the Pioneer Health Centre at Peckham, but I make no apology for returning to it again. A number of people I know who have been there can talk of practically nothing else.

*

There is its inspiring building by Sir Owen Williams, a most suitable setting for so original an enterprise. There was the news some while later of the great success of its first few months of operation—the cheerfulness of this news tempered by the difficulty the Centre was having in raising enough funds to keep it going until it could afford to expand into its final self-supporting programme. And now there is the splendid news of Lord Nuffield's gift of £25,000 to tide it over this difficult early period and help to pay off the initial deficit.

*

A condition is attached to Lord Nuffield's offer: that a further £5,000 must be subscribed simultaneously by the public. There should be no delay in completing this amount. The Centre's work is of the utmost value both as a great remedial measure for the low vitality and poor conditions of livelihood of so large a proportion of our population and as a most necessary piece of research into the importance of the environmental factor in health.

*

In a better democracy than ours such a medico-sociological service as the Centre provides would be provided officially. The least our democracy can do to show that we have at any rate the virtue of being conscious of our social shortcomings is to support the enterprise wholeheartedly.

BRIDGE PARTY

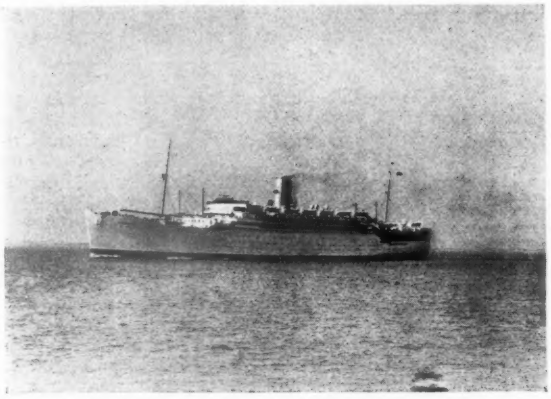
On Saturday night I was attending a private party when, towards midnight, I begged to be excused, for I had promised to see a bridge erected in Bond Street in the early hours of Sunday morning. No one believed me and I could see that my hostess was deeply shocked that I should invent so improbable an excuse to depart.

*

It was nevertheless true, and at midnight I, along with some 29 other architects and engineers, watched the first stages in the erection of the bridge joining the Building Centre with its additional accommodation in the Grafton Galleries.

*

About 5.30 a.m. on the Sunday morning, 20 of us



Two views of the S.S. Strathmore ; the lower shows the first-class foyer.

were still watching the work and almost regretting that it was then nearly completed.

*

For I have seldom seen so absorbing a spectacle. Imagine a cool and gloomy night surrounding one brilliant sphere of artificial light ; in its centre, flat upon an enormous lorry, two large Vierendeel trusses, which we saw rise into the air and take up their final positions in the mews with uncanny precision, to the intensely characterful movements and silent determination of half a dozen men.

*

There was no noise at all, no shouts of command, no clattering of steel, no shrieking riveters, no mistakes. Just a well-designed welded bridge, erected by the most finished group of workers it has ever been my pleasure to see.

*

SIR WALTER TAPPER

I am saddened to learn of the death of Sir Walter Tapper, only a few brief months after we were all congratulating him upon his knighthood.

*

Sir Walter's work, like that of many of the better designers of his generation, was not widely known, but I am constantly finding unpublished examples of his skill. Only recently I casually visited three churches whose exteriors had attracted me, one in the north, one in the midlands and one in the south. . . . and in all three I was shown work by Sir Walter.

*

The work was chiefly confined to wood, in screen, in reredos or choir stalls, but in each case it was the most attractive thing in the building . . . strong, appropriate and scholarly. It all reminded me very much of the man who, several years ago, when President of the R.I.B.A., had presented me with a student prize and spent an hour or so the following morning showing me round his office and personal drawings.

*

I enjoyed that hour or so with Sir Walter Tapper, in the quiet backwater of Melina Place in which he lived and worked . . . and regret it was the last time I had any real personal contact with him.

*

PHILHARMONICS

Over the ashes of the old Philharmonic Hall, controversy arises in Liverpool. What is to be done about a new hall ?

*

The local papers are filled with suggestions and abuses, encouragement and warning, and there emerges the fairly clear idea that the Corporation is willing to co-operate with the Philharmonic Society in building the new hall.

*

The difficulty seems to be to decide what sort of new hall. One group suggests the best that can be done for the purely arbitrary figure of £250,000, a second group wants the best hall that can be built on the site for any figure and still another group demands two halls, one for music and one for dancing.

*

A very simple way out of all this difficulty, of course, would be to isolate a few basic facts—to appoint an architect as a professional adviser, to allow him to exercise his skill in research and report back to the authorities exactly what the site can do.

*

We shall then be nearing the region of brass tacks, a commodity I have always regarded Lancashire as pretty skilful in getting down to.

ORION AFTERMATH

A pity that the shipping companies don't look on me as the final arbiter of what a ship should be inside. I've told the Cunard line exactly what to do with the *Queen Mary* ; I've patted the Orient line on the back for the *Orion* ; and now the P. and O. have done the *Strathmore* in just the way I should have told them not to, if only they'd asked me in time.

*

And it's such a pity : an efficient-looking ship, adequately planned, with good areas for deck games, and the decorations a timid *modèrne*. Even more discouraging, I'm sure the public will *love* it.

*

But the journey—I'd always thought the southern approaches to London were bad enough, but the Tilbury-St. Pancras route is execrable, and the trains go slowly enough for it to be impossible to miss any of it.

ASTRAGAL

NEWS

POINTS FROM THIS ISSUE

BUILDING TRADES EXHIBITION, LIVERPOOL

On Tuesday last Mr. Percy E. Thomas, P.R.I.B.A., opened the Building Trades Exhibition at Renshaw Hall, Renshaw Street, Liverpool. The exhibition, which is the first of its kind to be held in Liverpool, will remain open until October 5 between the hours of 11 a.m. and 9 p.m.

NATIONAL HOUSING AND TOWN PLANNING CONFERENCE

A national housing and town planning conference will be held at Scarborough during the week-end November 29-December 2, under the auspices of the National Housing and Town Planning Council. The Conference will be attended by a large number of delegates from local authorities in England and Wales and Scotland and will be addressed by Sir Kingsley Wood, the Minister of Health, and also by other prominent housing reformers and town planning experts.

The principal subjects for discussion will be the administration of the Town and Country Planning Act, 1932, the Restriction of Ribbon Development Act, 1935, and the Housing Acts of 1930 and 1935.

Full particulars can be obtained from Mr. John G. Martin, Secretary, National Housing and Town Planning Council, 41 Russell Square, London, W.C.1.

EXHIBITION HALL FOR CARDIFF

The Cardiff City Council last week passed a scheme, put forward by a London syndicate, for the erection of a combined public hall, exhibition hall, and sports arena at a total cost of £250,000 on a site adjoining the proposed new omnibus centre. The arena will have an area of 75,000 square feet and seating accommodation for 10,000.

THE ARCHITECTS' DIARY

Thursday, September 26

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.*

SHIPPING, ENGINEERING AND MACHINERY EXHIBITION. *At Olympia. Until September 28.*

INTERNATIONAL CONGRESS OF ARCHITECTS. *At Rome. Until September 28.*

BUILDING TRADES EXHIBITION. *At Liverpool. Until October 5.*

LONDON SOCIETY. *Visit to Richmond.* 2.45 *p.m.*

Friday, September 27

ARCHITECTS' REGISTRATION COUNCIL OF THE UNITED KINGDOM. *At the R.I.B.A., 66 Portland Place, W.1. Fourteenth ordinary Council meeting.* 5 *p.m.*

Wednesday, October 2

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

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

ANOTHER LEEDS SCHEME

In addition to housing schemes costing £14,000,000, the Housing Committee of the Leeds Corporation proposes to embark upon a scheme involving 15,000 houses not included in the present slum clearance programme.

The Corporation Health Committee has also approved plans for the extensions to St. James's Hospital, at an estimated cost of £110,000.

LONDON COUNCIL OF SOCIAL SERVICE

A meeting of the above Council is to be held at the County Hall, S.E., on Thursday next, October 3, when Sir Raymond Unwin will open a discussion on town planning and the expansion of the metropolis. The Council points out that "the urgent need for the discussion of this question 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."

HEALTH CENTRE FOR BERMONDSEY

On September 21 the Mayor of Bermondsey laid the foundation stone of the new Health Centre for the Bermondsey Borough Council. The building is estimated to cost £45,000 and will probably be finished early next year.

BRIGHTON DEMANDS MODERNIZATION

A meeting of Brighton traders last week demanded that the Town Council should proceed with the modernization of the whole of the sea front between the two piers. The Council's reported preference for a £500,000 Town Hall was condemned. It was urged that Brighton could not afford to delay when other resorts were spending money on their sea fronts.

HOUSING SOCIETIES' FEDERATION

The first statutory general meeting of the National Federation of Housing Societies was held at the Housing Centre on September 20. Sir Reginald Rowe was elected chairman and Mr. A. T. Pike secretary. Nearly 50 societies have now joined the Federation.

APPOINTMENTS

The Dewsbury Town Council has appointed Mr. M. H. Forward, A.R.I.B.A., to the position of Borough Architect and Building Surveyor, in succession to Mr. Tom Blakeley, whose death took place two months ago. There were 90 applications for the position.

Mr. H. H. Hughes, M.A., F.R.I.B.A., has been appointed a member of the Royal Commission on Ancient Monuments in Wales and Monmouthshire.

ARCHITECTURAL ASSOCIATION

The new session of the A.A.'s School of Planning and Research for National Development will commence on Monday next, September 30. Full particulars are obtainable from Mr. E. A. A. Rowse, at 36 Bedford Square, W.C.1.

BRITISH INDUSTRIES FAIR

13,000 free sites have been offered by foreign and Empire countries for the display of the poster for next year's British Industries Fair, which opens in London and Birmingham on February 17. Batches of the new poster are being sent abroad to eighty-six countries this week printed in French, German, Spanish, Italian, Portuguese, Dutch, Swedish, Danish and Polish, as well as in English.

LINCOLN CATHEDRAL

Mr. Robert S. Godfrey, the surveyor to Lincoln Cathedral, after the excellent work he has already done to preserve the Cathedral Chapter House, is now finding further settlement in the vaulting of the Angel Choir, where a long crack about 30 ft. long by 8 in. wide has recently appeared. The east end of the Cathedral still seems to be moving away from the rest of the building and the Dean and Chapter have therefore called Sir Charles Peers, F.R.I.B.A., into consultation in connection with the preservation work.

R.I.B.A.

In accordance with the terms of the will of the late Sir Archibald Dawnay, the R.I.B.A. has awarded two scholarships of £50 for the academical year 1935-1936, one to Mr. N. P. Thomas, of the Welsh School of Architecture, the Technical College, Cardiff, and the other to Mr. L. W. D. Wall, of the Welsh School of Architecture, the Technical College, Cardiff.

Mr. A. M. Graham, of the Edinburgh College of Art, and Mr. H. E. A. Scard, of the Welsh School of Architecture, who were awarded scholarships of £50 each for the academical year 1934-1935, have been granted renewals of their scholarships for the year 1935-1936.

The scholarships are intended to foster the advanced study of construction and the

improvement generally of constructional methods and materials and their influence on design.

THE HOUSING ACT, 1935

Lord Balfour of Burleigh will preside at a discussion on "The Housing Act, 1935," which will take place at the Royal Sanitary Institute, 90 Buckingham Palace Road, London, S.W.1, on Tuesday, October 8, 1935, at 5.30 p.m.

CHANGE OF ADDRESS

Mr. Frank Roscoe, A.R.I.B.A., has removed his offices to No. 1 Thornhaugh Street, Russell Square, W.C.1. Telephone: Museum 7860.

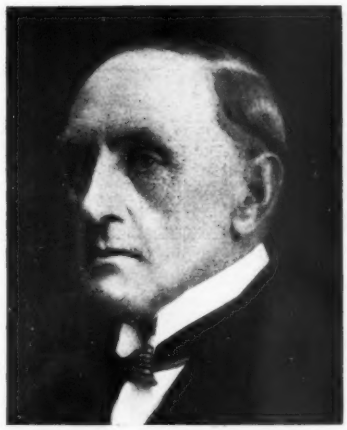
The late Sir Walter Tapper

IT is with deep regret we record the death, at the age of seventy-four, of Sir Walter Tapper, R.A., PP.R.I.B.A., Surveyor of Westminster Abbey.

Born at Bovey Tracey, Devon, in 1861, he was educated at a private school and articled to the firm of Rowell and Son, architects, of Newton Abbot. He then came to London, and, after a short term as assistant in the office of Basil Champeys, joined the staff of Bodley and Garner, where he remained as chief assistant for a number of years.

In 1900 he set up in independent practice, his first job being repairs at Hengrave Hall, Suffolk. He was soon engaged in domestic work all over the country, including Bicton Hall, Devon; Kenfield Hall, Kent; Hull Place, Deal; Eastham Grange, Worcestershire; Turville Grange, Buckinghamshire; Whinfold, Godalming; house at Beer, Devon; and restorations at Penhurst Place, Sussex, and alterations to Boyton Manor House, Godalming. Although Sir Walter Tapper was responsible for a quantity of domestic architecture, he also carried out a large amount of ecclesiastical work, such as the Church of the Annunciation, Quebec Street, London; Church of the Ascension, Malvern; St. Mary's Church, Harrogate; St. Stephen's Church, Grimsby; St. Erkenwald's Church, Southend; Little Coates Church, nr. Grimsby; Lythe Church, nr. Whitby; Chapel of the Resurrection, Mirfield; School Chapel, Guildford, Western Australia; Church at the Whiteley Homes, Walton-on-Thames; Balliol College Chapel, Oxford; and many repairs and restorations to parish churches. At Eton he designed the war memorial in the Lower Chapel. Sir Walter held the appointments of consulting architect to the Dean and Chapter of York Minster; consulting architect to the Dean and Chapter of Manchester Cathedral; and was one of the advisory architects to the Church Building Society. At York Minster, besides being responsible for the repair and preservation of the fabric in general, he designed the screen and supervized the cleaning and repair of the "Five Sisters" window, which together form the Empire war memorial to women.

In 1928 Sir Walter succeeded the late Professor W. R. Lethaby as the Surveyor to the Fabric of Westminster Abbey. Shortly after his appointment he was involved in controversy in connection with the sacristy which it was proposed to erect on the north side of the choir. So much adverse criticism greeted the design that the authorities erected a full-sized model



The late Sir Walter Tapper.

of the proposed addition in order to allow the public to judge the effect of the sacristy in relation to the Abbey. Mr. D. S. McColl, a member of the Royal Fine Arts Commission, described the proposed addition "as an excrescence tacked on," while the chairman of the Society for the Protection of Ancient Buildings said that his Society "would do all it could to prevent the building being erected." Public opinion finally prevailed, and the scheme was abandoned. Some of his work at the Abbey included the alteration to, and equipment of, the muniment room and library, which was made possible by means of a benefaction of £9,000 given by the Pilgrim Trust; and the restoration of the Henry VII Chapel, completed this year.

Sir Walter was elected an associate of the Royal Academy in 1926, President of the R.I.B.A. in 1927—he was re-elected to the office for a second year—and became a full R.A. in February of this year. He was created K.C.V.O. in the New Year's Honours.

Competitions Open

October 1.—Sending-in Day. Central county buildings, Hertford, for the Hertfordshire County Council. Assessor: Robert Atkinson, F.R.I.B.A. Premiums: £350, £250 and £150. Designs must be submitted to the Clerk of the County Council, Clerk of the Peace Office, Hertford, not later than October 1.

October 5.—Sending-in Day. New Fire Station, Brighton, for the County Borough of Brighton. (Open to architects of British nationality resident in the British Isles.) Assessor: Stanley G. Livock, F.R.I.B.A. Premiums of £200, £125 and £75. Designs must be submitted to J. G. Drew. Clerk, Town Hall, Brighton, not later than October 5.

October 7.—Sending-in Day. The promoters of the Birmingham Building Trades Exhibition invite architects to submit competitive designs for a block or blocks of flats for working men in Birmingham. Assessors: W. T. Benslyn, F.R.I.B.A., Alfred Hale, F.R.I.B.A., and J. B. Surman, F.R.I.B.A. Premiums: £60, £30 and £20. Conditions are obtainable from the Promoters of the Exhibition, 71 Temple Row, Birmingham. The latest date for submission of designs is October 7.

October 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.)

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.

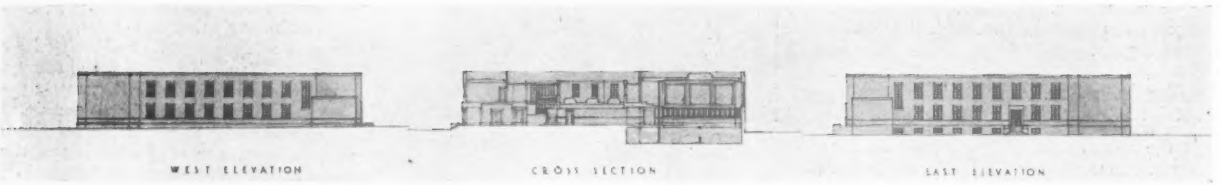
November 1.—Sending-in Day. New municipal offices, clinics, etc., proposed to be erected in the grounds of York Castle for the Corporation of York. (Open to architects of British nationality domiciled in the United Kingdom.) Assessor: Henry V. Ashley, F.R.I.B.A. Premiums: £250, £150, £100 and £50. The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

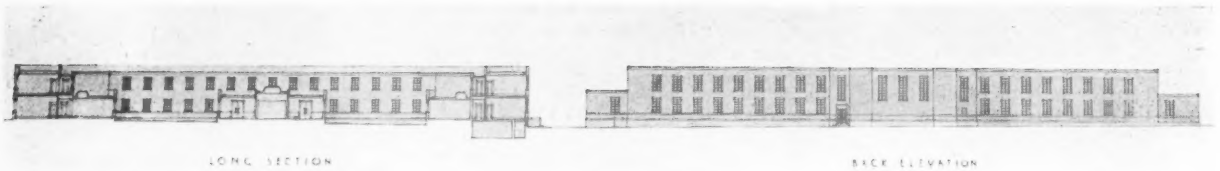
November 30.—Sending-in Day. Public library for the Colchester Corporation. (Open to members of the Essex, Cambridgeshire and Hertfordshire Society of Architects.) Assessor: Professor A. E. Richardson, F.S.A., F.R.I.B.A. Premiums: £150, £125 and £75. Conditions, etc., are obtainable from R. L. Hiscott,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

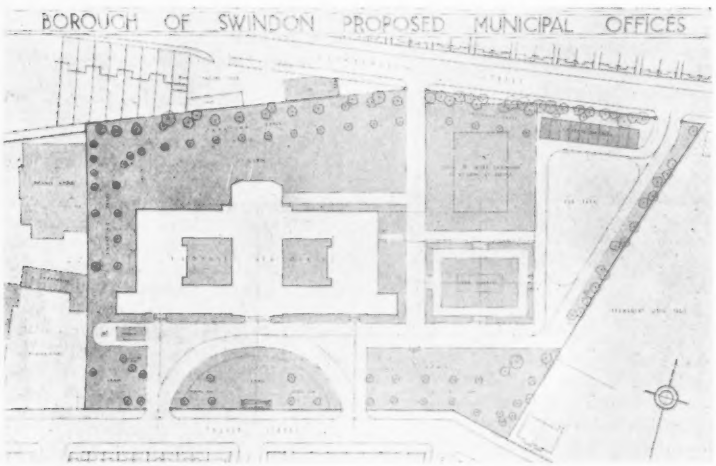
December 31.—Sending-in Day. Proposed town hall, Bury, for the Corporation of Bury. Assessor: J. Hubert Worthington, O.B.E., M.A., F.R.I.B.A. Premiums: £500, £300 and £150. Conditions, etc., are obtainable from Richard Moore, Town Clerk, Municipal Offices, Bank Street, Bury. (Deposit £2.)

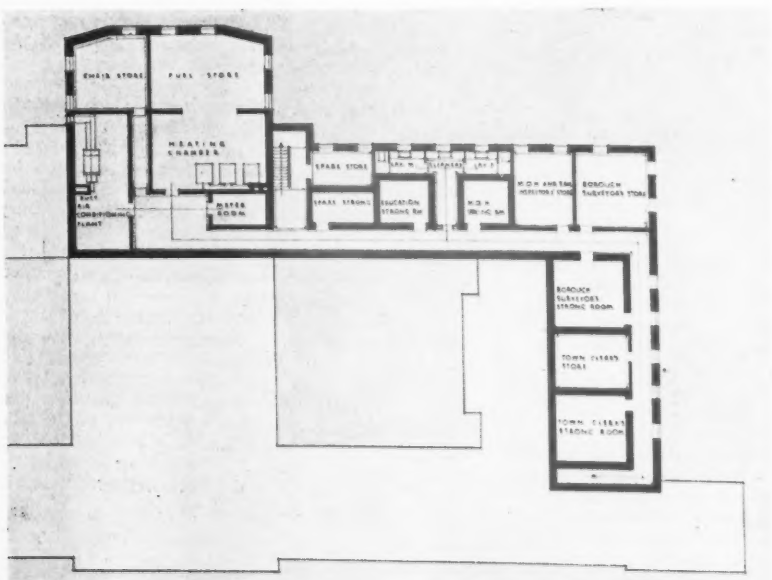
January 31, 1936.—Sending-in Day. Proposed Parliament House, Salisbury, Southern Rhodesia, for the Government of Southern Rhodesia. (Open to architects of British citizenship.) Assessor: James R. Adamson, F.R.I.B.A. Premiums: £500, £300, £200 and £100. Conditions, etc., obtainable from the High Commissioner 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.

COMPETITION FOR PROPOSED MUNICIPAL









BY S. N. BERTRAM,

E. M. BERTRAM

AND

E. M. RICE

Professor A. B. Knapp-Fisher, F.R.I.B.A., the assessor of the competition for proposed municipal offices at Swindon, has made his award as follows :—

Design placed first (£350) : Messrs. S. N. Bertram, E. M. Bertram and E. M. Rice, AA.R.I.B.A., of 28 Holywell Street, Oxford.

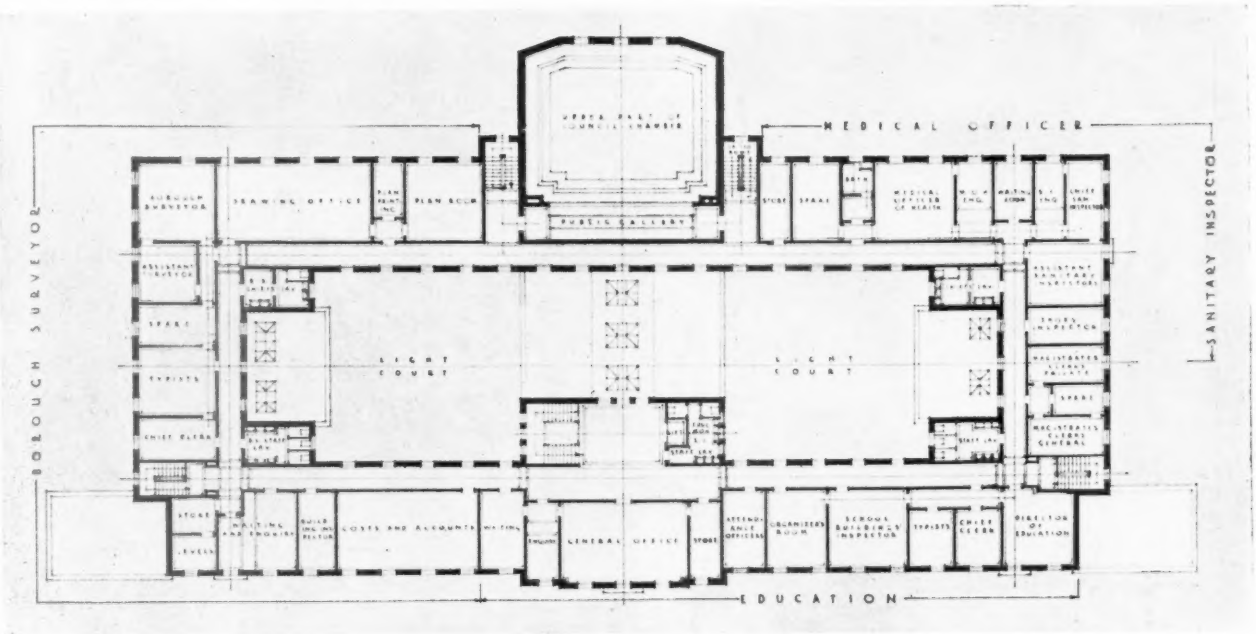
Design placed second (£250) : Messrs. Cruickshank and Seward, FF.R.I.B.A., of 16 Princess Street, Manchester, 2.

Design placed third (£150) : Mr. Duncan Wylson, of 24 Red Lion Square, London, W.C.1.

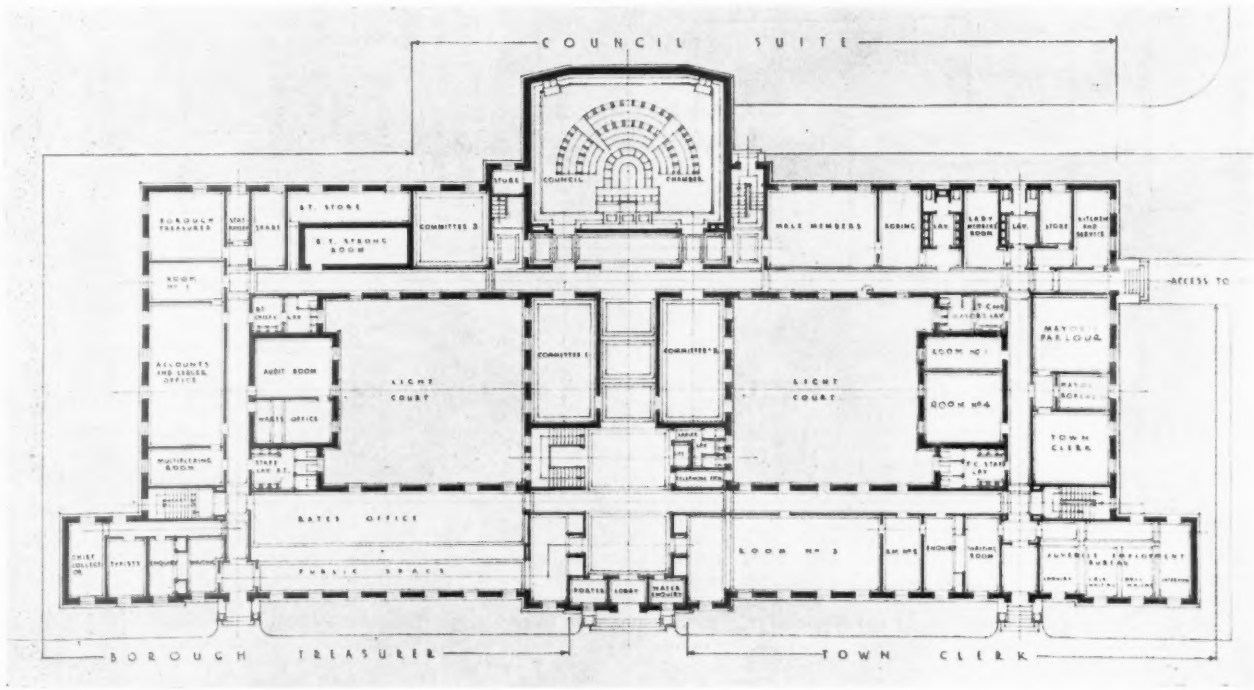
On this and the three pages following we reproduce the first and second premiated designs, the assessor's report and extracts from the report submitted by the authors of the winning scheme.

On the left are shown the site and basement plans of the design placed first.

OFFICES, SWINDON: THE WINNING DESIGN



First floor plan.



Ground floor plan.

THE ASSESSOR'S REPORT

I HAVE carefully examined the sixty-eight designs submitted in open competition for the new municipal offices at Swindon. I consider the response very satisfactory.

In all but very few cases competitors' plans show that much care and thought have been put into their preparation, and in my opinion the Council's action in promoting a competition under R.I.B.A. conditions has been fully justified.

In some cases the general arrangement of the plan is unsuitable for the offices in question, and this has marred what would otherwise have been designs of high merit.

Amongst the defects most noticeable are :—

Too many and poorly lighted and ventilated corridors.

Straggling plans and poor communications between departments.

Inconvenient approaches to, and position of, rates office.

Unsatisfactory position of council chamber.

The provision of high clock towers.

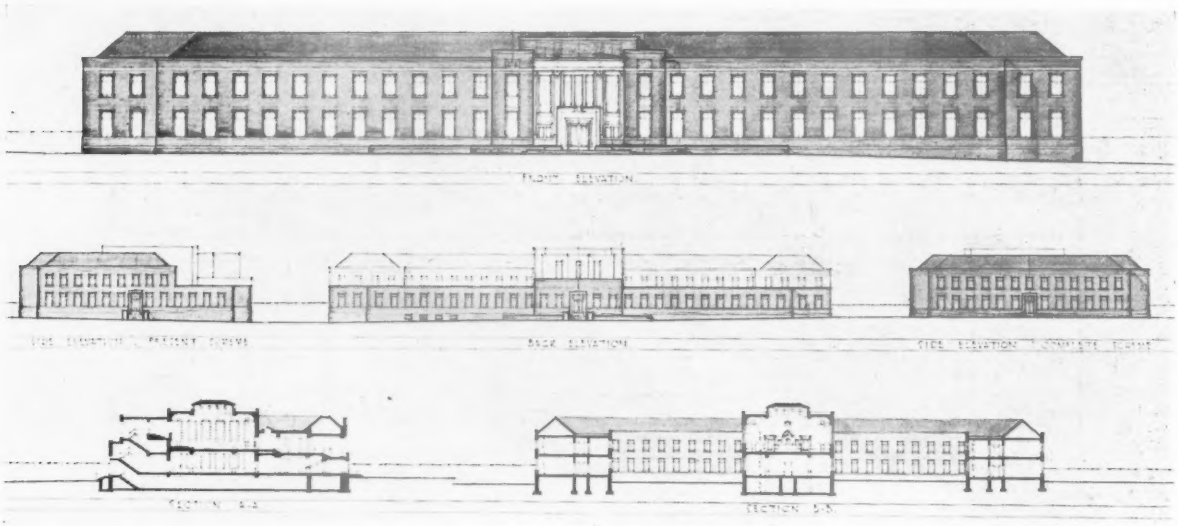
Over elaborate and somewhat pretentiou elevations.

A good plan was the first essential ; and the sum stated in the conditions made it necessary that the *utmost* simplicity and economy in plan and elevation must be the first consideration.

The design placed first, in my judgment, most nearly fulfils the requirements of the Council in accordance with the conditions laid down.

It first provides a building with a good efficient working plan, practical and eco-

COMPETITION FOR PROPOSED MUNICIPAL



Basement plan.

BY CRUICKSHANK AND SEWARD

THE WINNERS' REPORT

Following are some extracts from the report presented by the authors of the winning scheme :—

CONSTRUCTION :

Foundations. To be in concrete.

Floors. Basement and ground floor of 6 in. concrete ; strongrooms to be of concrete specially reinforced. First floor and ground floor over basement to be hollow block.

Walls : A : External. 14 in. brick generally ; council chamber, 18 in. ; basement, two 9 in. with asphalt dampcourse between.

B : Partition. Lightweight partition block such as fosalsil.

Roof. Hollow blocks, with concrete screed and asphalt.

Stairs. Concrete.

External Steps. Concrete, with 2-in. stone slab.

Courts. Granolithic slabs.

MATERIALS AND FINISHINGS :

External. Walls generally to be in local stocks and red hand-made sand-faced bricks for facing. The window heads, architraves, door surrounds, plinths, copings, strings, etc., to be in Portland stone and the steps to be in York stone. The grilles to central windows and windows over secondary entrances are to be in wrought iron and the external doors in English oak.

Windows. To be metal casements.

INTERNALLY :

Walls and Ceilings. Generally plastered with rounded angles and wood skirting. The walls of the council chamber to be finished in hard plaster with dado and gallery front of fumed oak. Council chamber ceiling also to be hard plaster.

nomical ; a plan which provides good light and ventilation to corridors and offices alike. Each department is well placed and conveniently situated. Entrances are well distributed.

The council chamber is particularly well placed with a dignified and open approach. The low central portion helps to make both courts light and airy.

The rates department is very well placed with convenient entrance near to, but separate from, the main entrance.

The principal elevation shows refinement and restraint.

The low east and west wings, and the slight projection in the centre giving emphasis to this part, make a particularly interesting whole, and the simple, orderly, and well proportioned arrangement of doors and windows throughout should, with a carefully chosen brick, give a design of real character and appropriateness to the town.

The position of the building on the site is good and the general lay-out and arrangement of approaches are well thought out.

Some slight alteration in the placing of the gallery to the council chamber will doubtless be necessary, and the position of the future addition will need further consideration. One or two other small adjustments may also be found to be necessary.

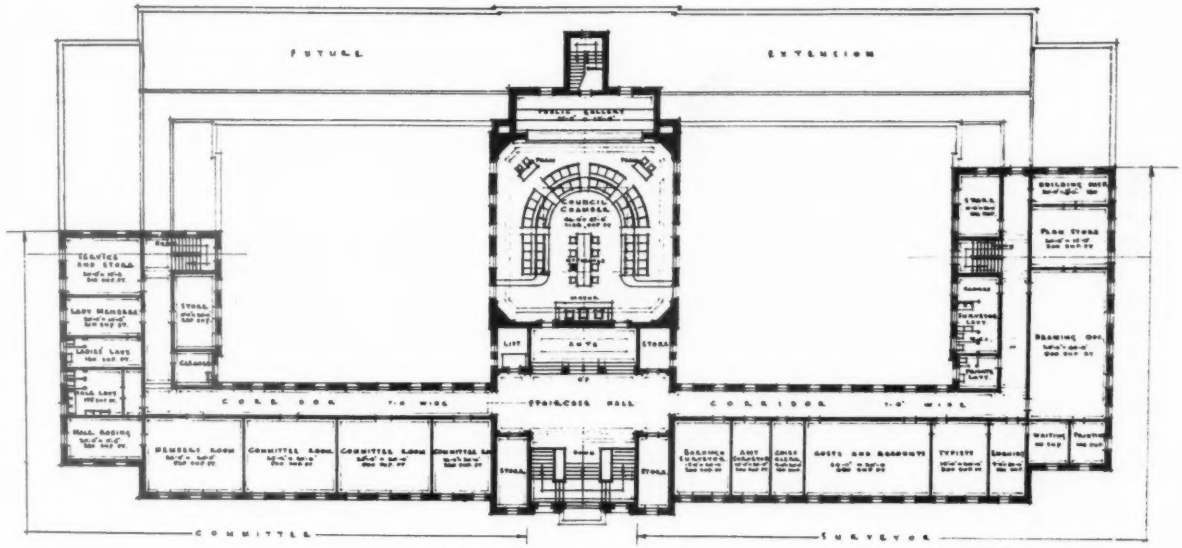
I have no hesitation in saying, however, that, taking everything into consideration, this design is the most suitable for the purpose.

I am of opinion that with care the design can be built within the 10 per cent. limit of the cost mentioned.

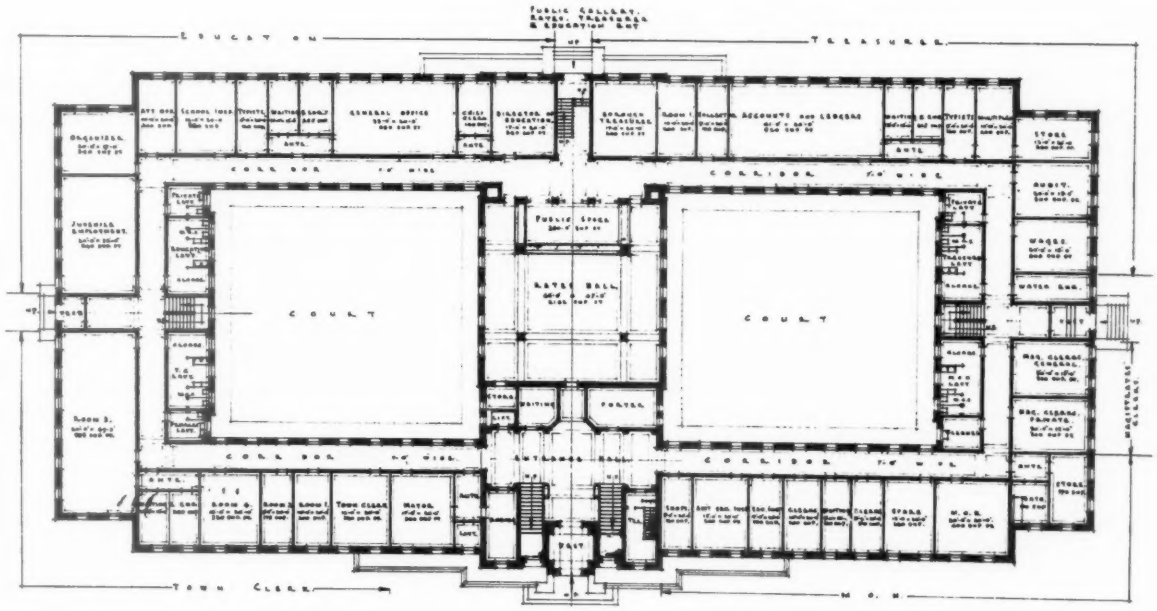
The design I have placed second also provides an efficient, straightforward plan. The approach to the rates office is, however, not quite so convenient and its position tends to block the centre of the plan, impending circulation. The price per cube foot allowed is, in my opinion, too low.

The design placed third shows elevations of real character and interest. The plan, however, does not meet the requirements of site and building in the same way as the other two.

OFFICES, SWINDON : DESIGN PLACED SECOND



First floor plan.



Ground floor plan.

Committee Rooms. Walls and ceilings plastered with dado of fumed oak.

Entrance Hall. Walls and ceiling of plaster with dado of terrazzo.

Floors. Entrance hall, corridors, and stairs to have terrazzo finish and skirting. Rooms generally to have cement screed, with cork lino finish. The council chamber and council suite to have wood block floors.

Doors. Generally : Flush doors with painted plywood finish. Council suite : Flush doors with ebonized mahogany finish.

FURNISHINGS :

Suitable carpets and hangings will be provided in the council chamber and committee rooms in order to comply with acoustic requirements necessary for the respective rooms.

Furniture to be of fumed oak and the chairs to have corded upholstery.

The tops to all enquiry counters, and to the counter in the rates office to be of mahogany.

Radiator grilles to be provided in the council suite, and entrance hall, and to be of bronze.

HEATING :

To be effected by means of two oil-fired, automatic feed boilers, which will supply ceiling panels as required by various departmental units.

In addition to the ceiling panels small wall panels will be provided under windows and other suitable points, the whole system to be accelerated by means of a booster pump.

Suitable pipe ducts will be formed above the false ceilings to the corridors.

The hot water supply is to be provided by a separate boiler.

AIR CONDITIONING :

Council chamber to be supplied by the ordinary plenum system.

COST :

Total at 1s. 8d. per foot cube (525,993)	£43,833
Council chamber and anterooms at 2s. per foot cube (70,278)	7,028
Total cost	£50,861

MIDLAND BANK, KING

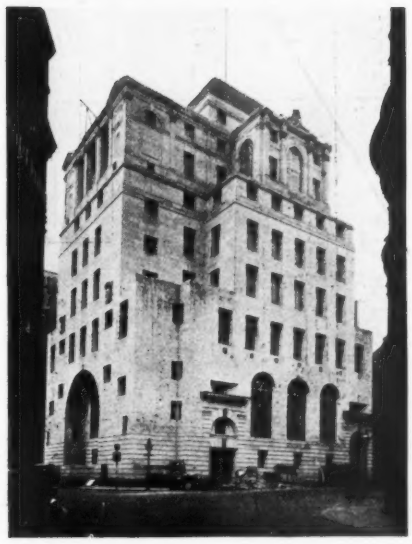
The building is situated on an important island site in the centre of Manchester: the elevations and main banking hall are the work of Sir Edwin Lutyens, R.A., while Messrs. Whinney, Son and Austen Hall have been responsible for the remainder of the building.

PLAN.—*The lay-out of the ground floor is dependent on the large main banking hall, which occupies the greater part of the available floor area and determines the position of the entrances both to the bank itself and the upper storeys. The bank occupies the basements, ground floor and mezzanine gallery, while six upper floors are available for letting as offices, with accommodation for a caretaker on the seventh floor. Access to the gallery, which houses the Manchester branch of the Midland Bank Executor and Trustee Company, is gained by a marble staircase adjoining that leading to the safe deposit. Entrances to the banking hall are provided by large stone lobbies situated at each corner of the main front to King Street. The entrance to the offices on the upper floors is situated in Spring Gardens, and a marble-lined hall gives access to two lifts serving those floors.*

Above is a general view from point A *on the ground floor plan (reproduced on page 446), showing the elevations to King Street (left) and Brown Street.*

STREET, MANCHESTER

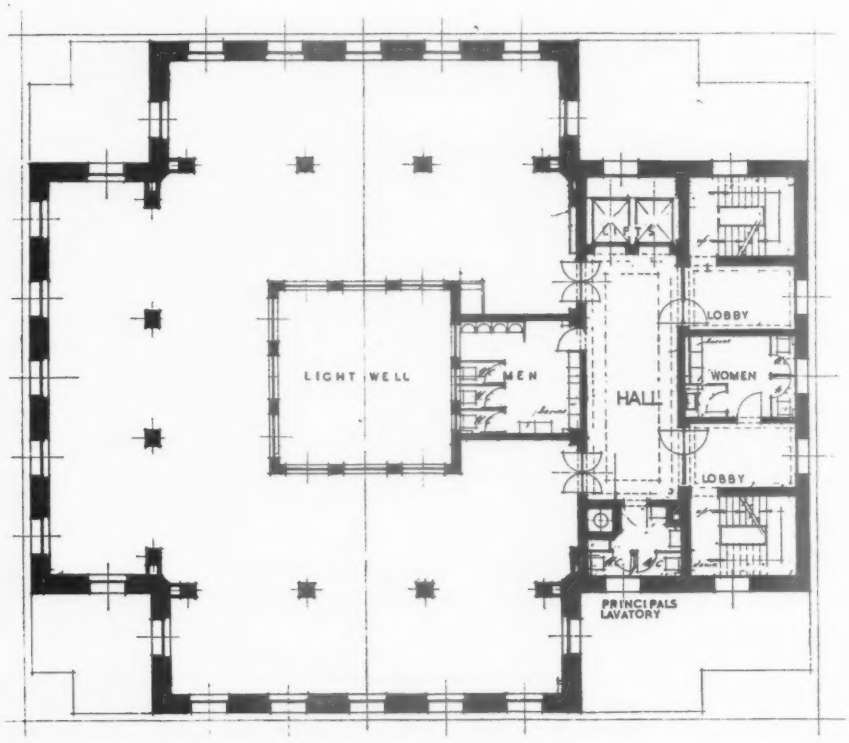
DESIGNED BY SIR EDWIN LUTYENS, R.A., IN ASSOCIATION WITH WHINNEY, SON AND AUSTEN HALL



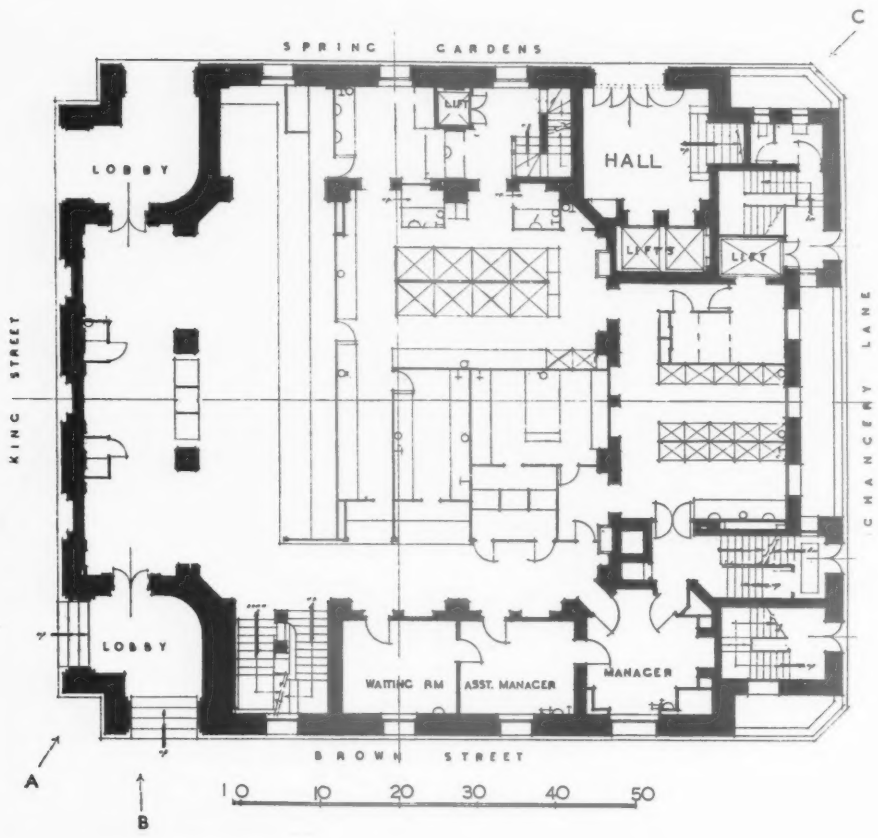
CONSTRUCTION AND EQUIPMENT.—*The building is a steel-framed structure, faced with Portland stone, and has two basement floors, the lower containing the bank's strong-rooms, switch-room, ventilating and air-conditioning plant, and the automatic coal-fired boilers; the upper basement is reserved for the safe deposit vaults, and is reached by a staircase from the main banking hall. Four different sizes of safe, all 20 ins. deep, have been provided to meet the varying needs of renters, and are available at fees of from 15s. per annum upwards. A suite of inspection rooms is available in which renters may examine the contents of their safes, attend to correspondence, conduct interviews, and deal with any other business in privacy; each room is furnished and is equipped with writing materials, stationery and a telephone.*

The photographs on this page show: above, a detail of one of the main entrance lobbies from point **B**; *right, the elevation to Spring Gardens from point* **C**.

MIDLAND BANK, KING S



TYPICAL UPPER FLOOR PLAN



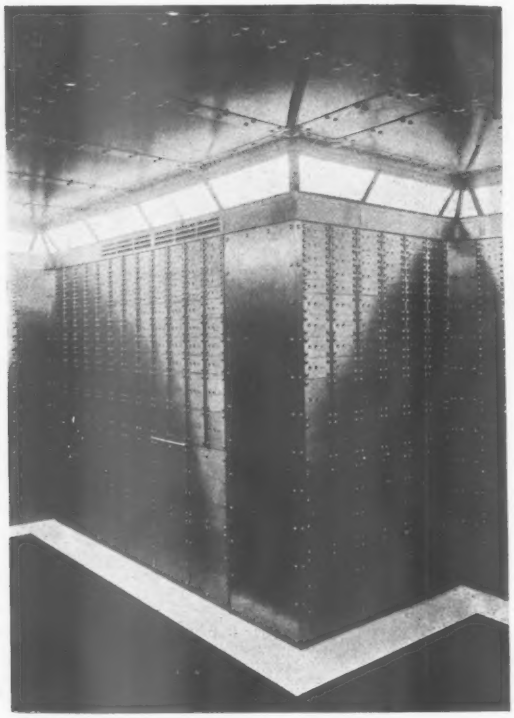
GROUND FLOOR PLAN

STREET, MANCHESTER

DESIGNED BY SIR EDWIN LUTYENS, R.A., IN ASSOCIATION WITH WHINNEY, SON AND AUSTEN HALL

The central space of the main banking hall is 50 feet square, unimpeded by columns; galleries have been formed on three sides of the hall between the outer walls and the white marble columns surrounding the central area. The floor is of black rubber, relieved with borders and bands of white marble, and all joinery is in Australian walnut. The view is taken from the centre of the public space. *(For list of general and sub-contractors, see page 464.)*

MIDLAND BANK, MANCHESTER

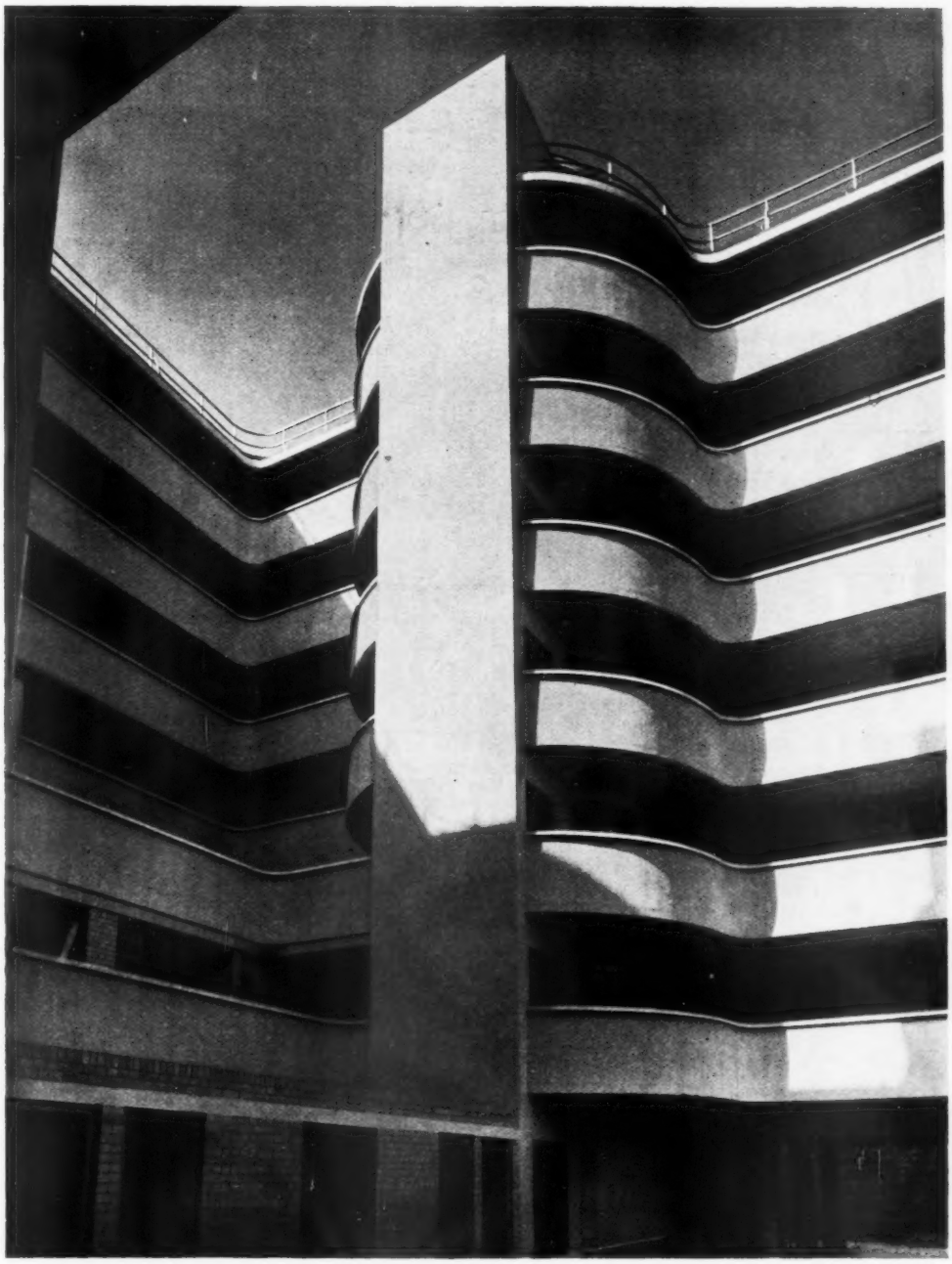


Above, one of the secondary staircases; below, a part of the staff area of the main banking hall; right, top, a corner of the basement safe deposit, showing batteries of small individual safes, and below, the access corridor to the safe deposit.

DESIGNED BY SIR EDWIN LUTYENS, R.A., IN ASSOCIATION WITH WHINNEY, SON AND AUSTEN HALL

WORKING DETAILS : 331

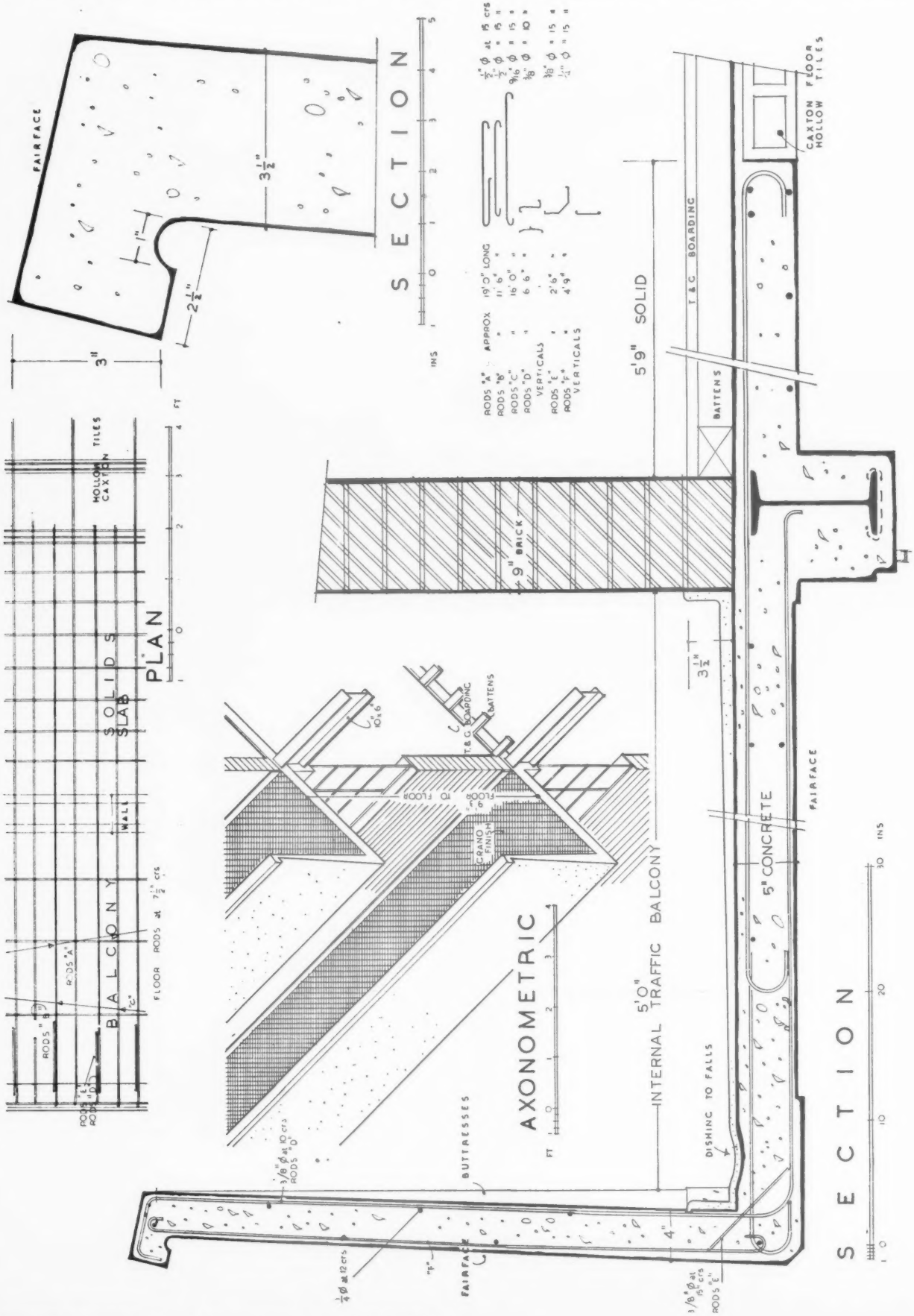
BALCONIES • LICHFIELD COURT, RICHMOND • BERTRAM CARTER AND SLOOT



The reinforced concrete access balconies illustrated above are cantilevered through from the hollow tile floor slab. Externally the balconies are painted direct on the concrete. An axonometric and details are shown overleaf.

WORKING DETAILS : 332

BALCONIES • LICHFIELD COURT, RICHMOND • BERTRAM CARTER AND SLOOT



Axonometric and details of the balconies illustrated overleaf.

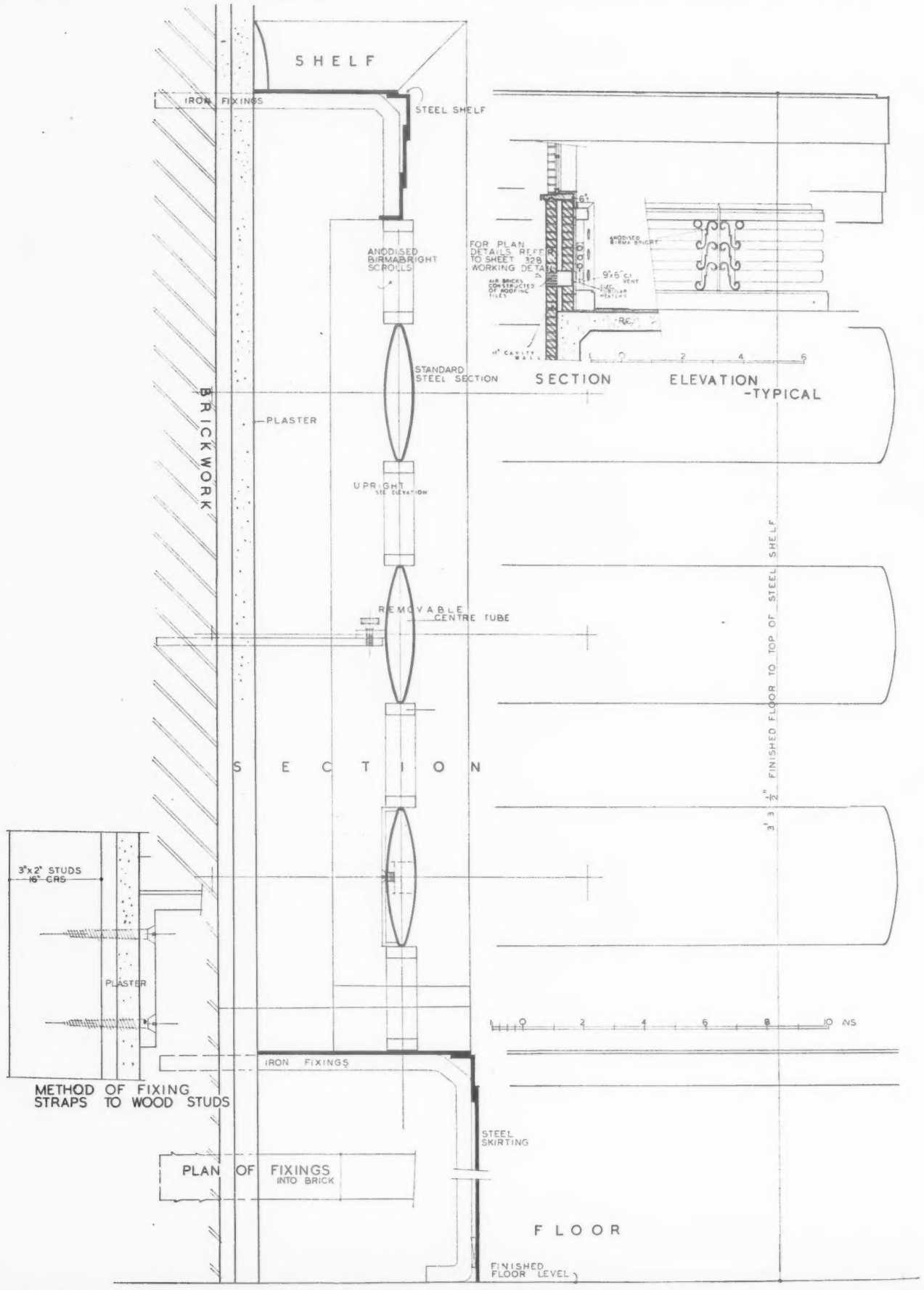
WORKING DETAILS : 333

BOARD-ROOM ● FACTORY ADMINISTRATION BLOCK, BIRMINGHAM ● BYE, SIMMS AND GIFFORD, AND S. T. WALKER

The heating of this board-room is carried out by tubular electric heaters concealed behind three oval section steel tubes running round the room, relieved at intervals by an anodized grille. The centre tube is removable for access to the heaters, behind which there is a series of vents. Detail drawings are shown overleaf.

WORKING DETAILS : 334

BOARD-ROOM ● FACTORY ADMINISTRATION BLOCK, BIRMINGHAM ● BYE, SIMMS AND GIFFORD, AND S. T. WALKER



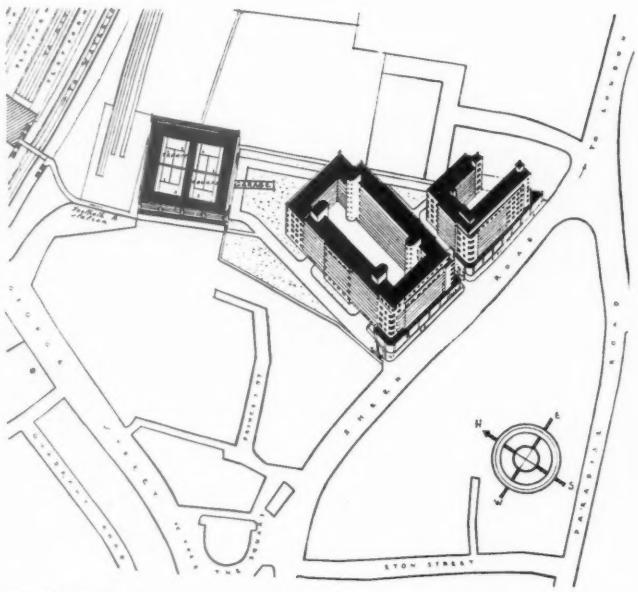
Sections of the board-room illustrated overleaf.

LICHFIELD COURT, RICHMOND

GENERAL PROBLEM AND PLAN. — *The principal object was to provide flats of a large floor area with big rooms and every appliance and convenience at the lowest possible rental. Shops were to be provided on the main Richmond-London Road (Sheen Road), and it was therefore desirable to give full development to frontage, whilst retaining the full value of the site. This influenced the two-block form and two roads (east and west) were therefore driven at 90 degrees to Sheen Road, thus opening up the site; these roads are controlled by wrought-iron gates across the entrances.*

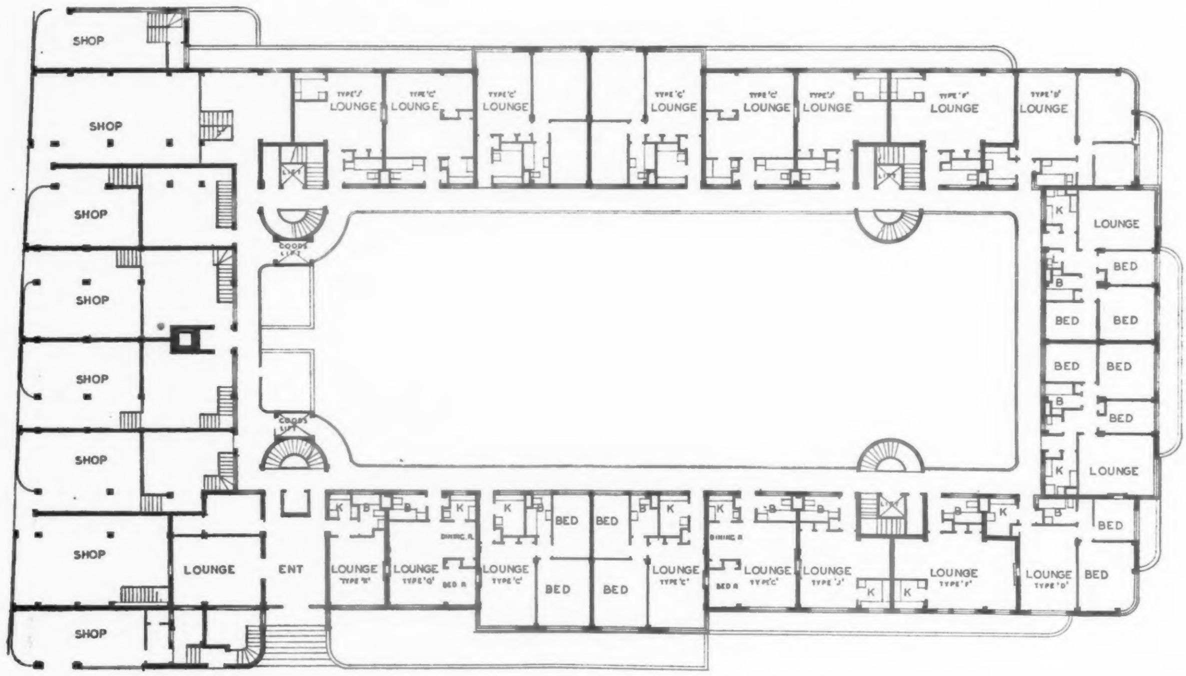
Lateral development, if adopted, would have given certain flats all the advantages to the detriment of others, viz., that they would enjoy elevations to the south and view of the road. Blocks were, therefore, plotted with a maximum number of flats to east and west with as near equality of rental value as possible. Very few flats face north. Both blocks are rectangular in form, permitting grid planned steelwork, concentric loads, and no stanchions bearing on beams. Plumbing is also arranged vertically and all work is at true right angles. It is the principle of the architects, whether by bye-law or not, to insist upon every flat having at least two ways of escape in case of fire. The rectangular continuous balconies of the inner courts with four stairways and lifts connected up assure this, and in the Minor Block the stair wells are at opposite ends, which have the same effect and stiffen up the narrow ends of the buildings. Every help was given by the Borough Engineer of Richmond, but the height was reduced from ten storeys to seven, as it was desired not to offend local susceptibilities.

The photographs show: right, a detail of one of the entrances; below, a general view from Sheen Road.

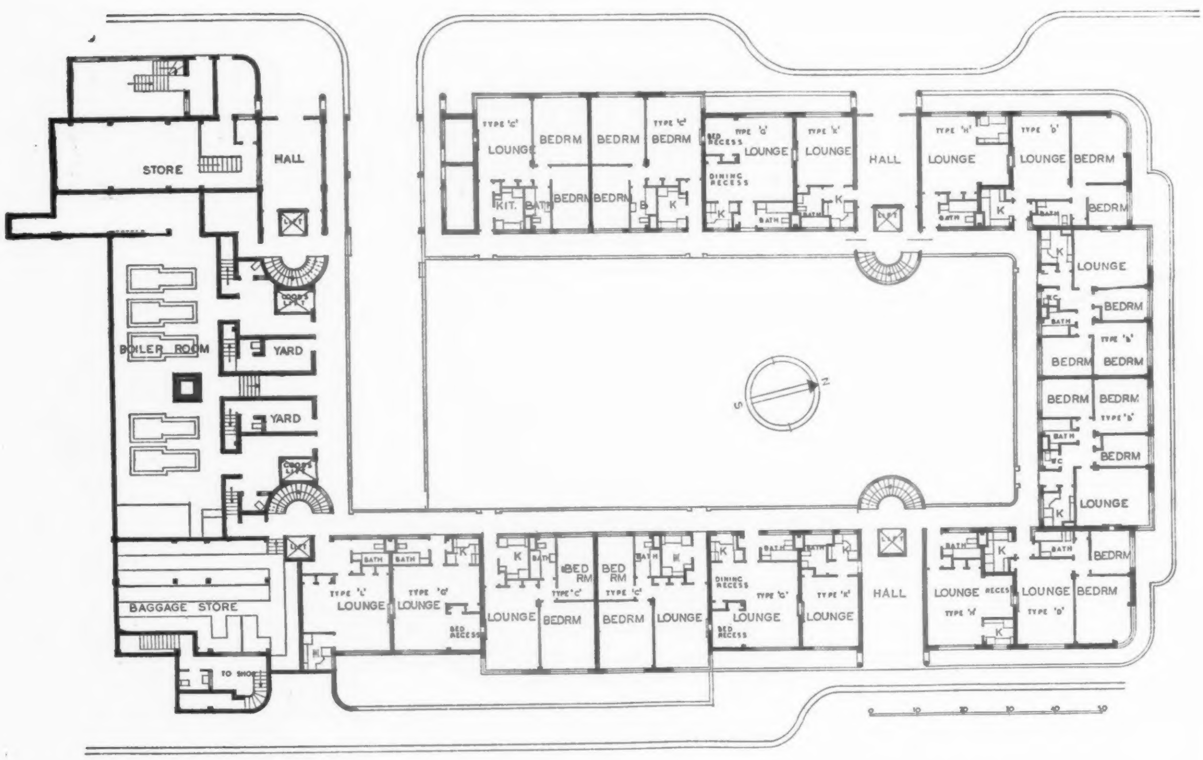


DESIGNED BY BERTRAM CARTER AND SLOOT

LICHFIELD COURT, RICHMOND: BY

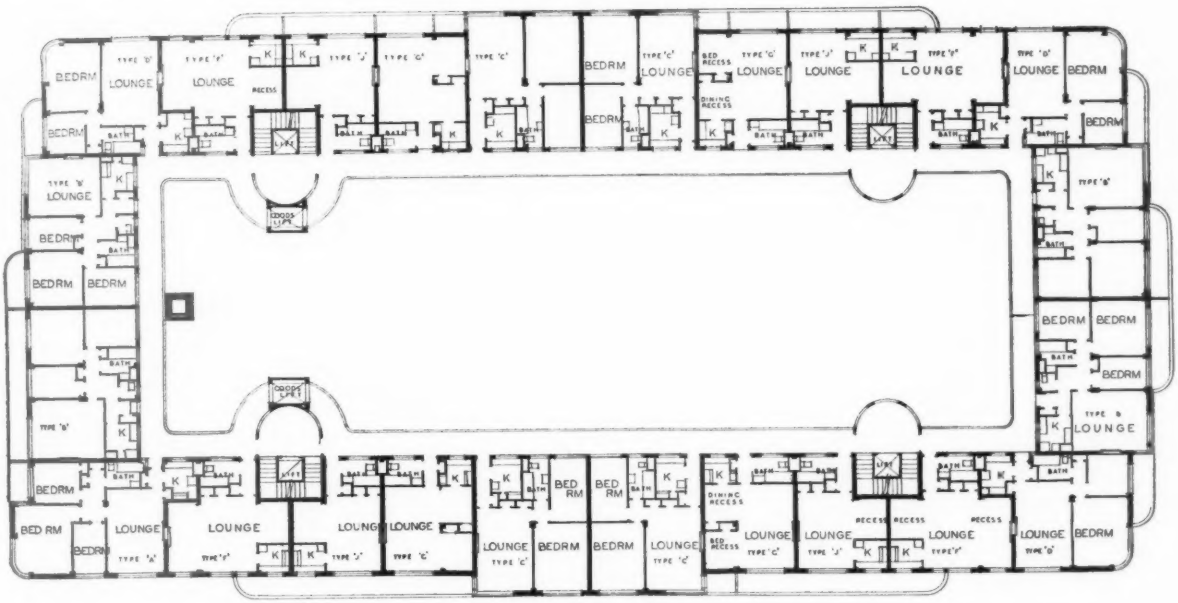


MAJOR BLOCK: UPPER GROUND FLOOR PLAN

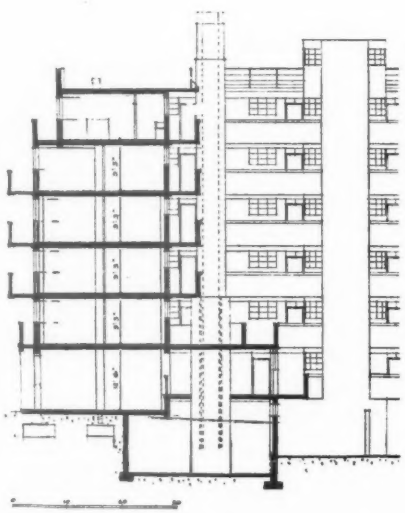


MAJOR BLOCK: LOWER GROUND FLOOR PLAN

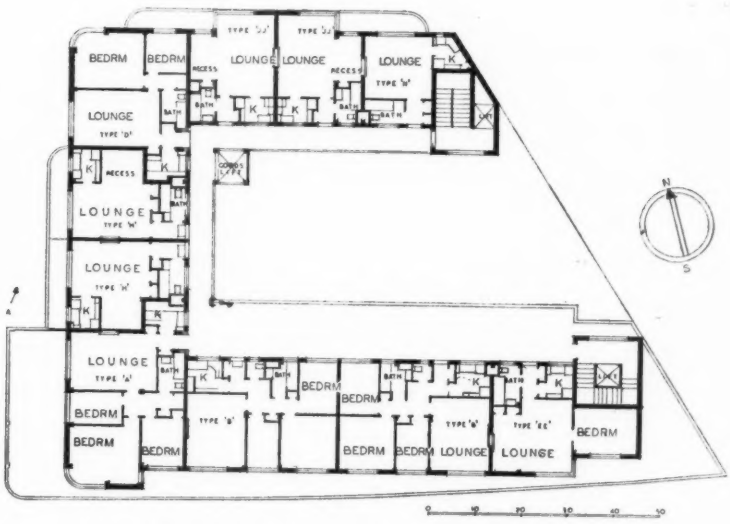
BERTRAM CARTER AND SLOOT



MAJOR BLOCK: TYPICAL UPPER FLOOR PLAN



MAJOR BLOCK: SECTION THROUGH SOUTH END



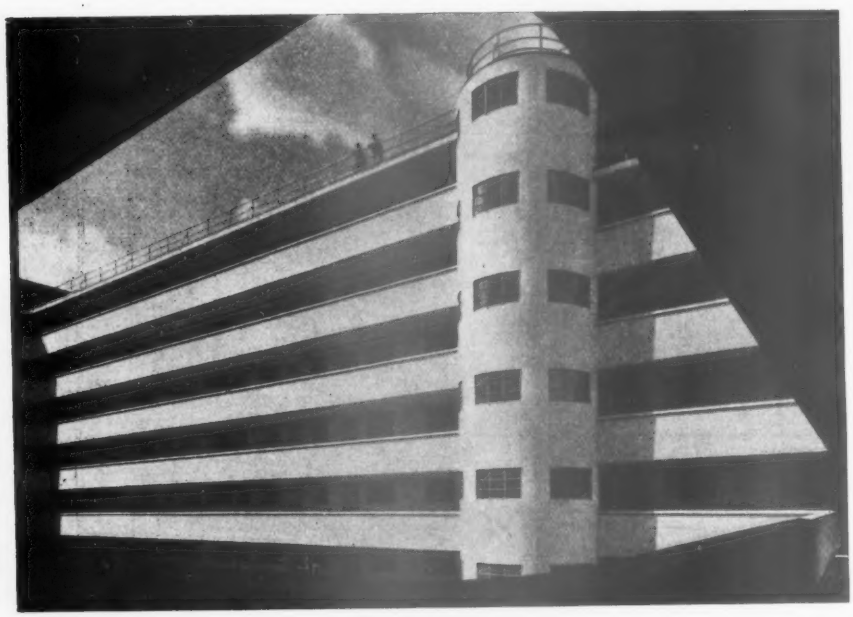
MINOR BLOCK: TYPICAL UPPER FLOOR PLAN

ACCESS.—*On the ground floor of the major block there are four entrance halls, the principal one with a large furnished lounge and public telephones for visitors, and in the minor block two entrance halls, each leading to the lifts. In addition, the major block has two, and the minor block one, service lifts fitted with full length stretcher and first-aid equipment and capable of carrying up the largest furniture. To both blocks the access arch to the inner court is large enough to permit the passage of the Corporation's fire engines.*

CIRCULATION.—*The circulation from flat to flat is by means of continuous cantilevered balconies which, as stated previously, afford at least two-way means of escape in case of fire. It is possible to pass completely round the blocks without interference on one floor. This contingency was particularly planned for the convenience of tradesmen, postal services and the collection of garbage containers. Each kitchen has a specially designed external steel door discharging to the balcony with a master key held by the porter, who can collect the containers from outside, place them on a rubber-tyred trolley, take them down the service lift into a special enclosure housing fourteen garbage containers of a pattern adopted by the Local Council, and which fit into their collecting lorries. All these works were designed in collaboration with the different services of the Richmond Council.*

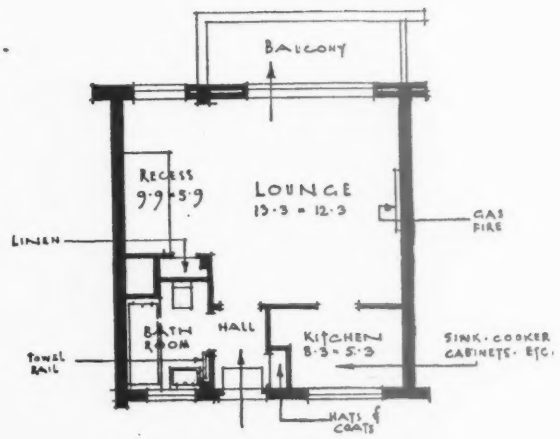
For list of general and sub-contractors see page 465.

LICHFIELD COURT, RICHMOND: BY

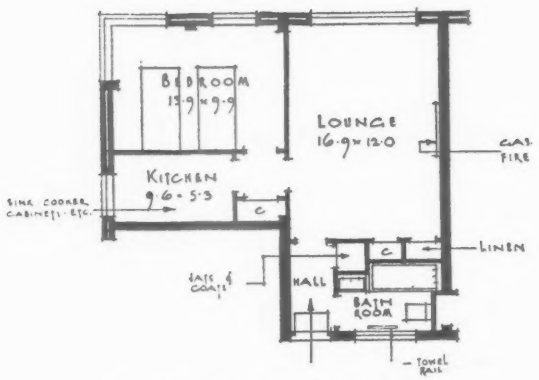


EQUIPMENT.—*Each kitchen is completely fitted from floor to ceiling and supplied with a five cubic foot refrigerator; tenants can select either a gas or electric cooker. The chimney pieces in the living-rooms also present the same opportunity, having an opening into which standard gas or electric fires can be fitted. Party walls are of cellular flettons to prevent, as much as possible, sound conduction and reverberation. Practically every flat has its own private balcony with the exception, of course, of the ground floor and a few on the top floor; these balconies are subdivided by opaque wired glass screens; thus, whilst they are continuous, each flat enjoys its own privacy, and the windows discharging thereto continue to the floor so that the widest area of floor possible can enjoy the sunlight.*

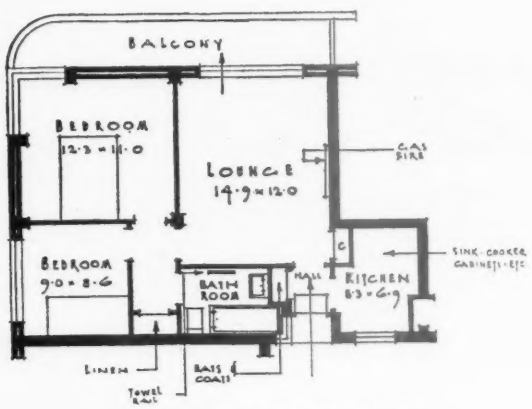
CONSTRUCTION.—*The steel frame (designed by Mr. E. W. Cook) is very light owing to the rectangular continuous grid form of design, which, rising uninterrupted, proved very economical.*



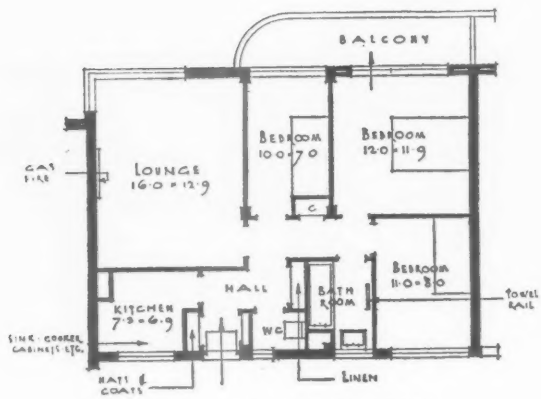
TYPE A—FROM £70 PER ANNUM.



TYPE C—FROM £110 PER ANNUM.

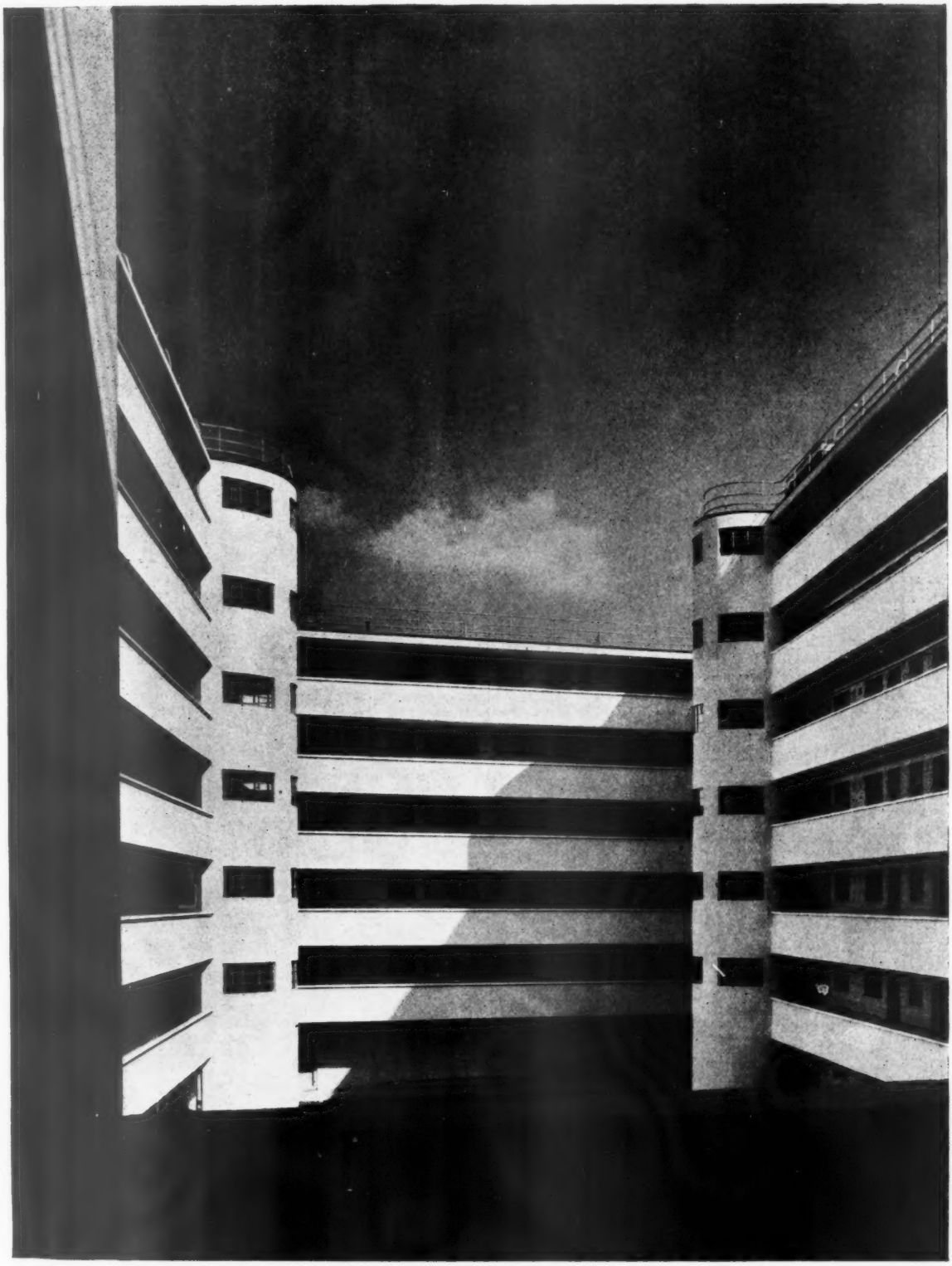


TYPE D—FROM £130 PER ANNUM.



TYPE E—FROM £150 PER ANNUM.

BERTRAM CARTER AND SLOOT



A view in the internal court of the major block, showing the approach balconies and the staircase towers.

IN THAT CONTINGENCY

The following abstracts of inquiries represent a number of those recently submitted to the Building Research Station. The information given in the replies quoted is based on available knowledge. It has to be borne in mind that further scientific investigations may in the course of time indicate directions in which the replies might be supplemented or modified. Moreover, the replies relate to the specific subject of each inquiry, and are not necessarily suitable for application to all similar problems. [Crown Copyright is Reserved.]

Moisture Penetration in a Basement

¶ *AN architect desired information regarding the cause of damp in the casement of a new building situated near the foot of a hill. It was stated by the architect that the subsoil was clay, and that, when the excavations were carried out in the summer, there was no sign of moisture or flooding.*

An examination of the drawings showed that the basement in question was of brick construction, with an external, asphalt, vertical damp-proof course round the walls. This damp-proof course was continued horizontally through the walls, stopping below the concrete floor slab. The concrete floor was made with a waterproof cement, and finished with a granite concrete finish. A skirting, about 6 in. deep by ¾ in. thick, composed of cement and sand, extended round the basement. Provision had been made for ventilation through a 9 in. by 9 in. ventilating duct, but this had been reduced in size owing to alterations by the client after completion of the building. The accompanying detail "A" shows the construction described above.

The trouble about which information was required was experienced during recent bad weather, when pools of moisture collected on the floor adjacent to the skirting.

When the building was inspected, there was only one shallow pool of water adjoining the wall. Damp patches were visible on the floor in several corners and in one or two isolated positions adjoining the skirting. The upper edge of the skirting had come away from the wall, but the lower edge still held except at those places where moisture was visible on the floor. In several places damp was visible on the brickwork above the skirting to a height of two or three courses. A green discoloration, probably of organic origin, had developed on one door.

The architect wished to know whether the moisture was the result of condensation or was entering the basement from outside, As the basement was to be used as a box-room it was important that it should be dry, and whatever the cause of the trouble, the architect desired recommendations for remedial treatment.

It is evident from the type of construction that slow penetration of moisture might be expected to occur through the junction between the concrete floor slab and the brickwork. The possibility of slow penetration through the waterproofed concrete and granite concrete floor finish is always present, and an additional path for moisture will be provided if structural or shrinkage cracking of the slab should develop. The curvature of the skirting is probably the result of an expansion of the cement in the back of the skirting, due to contact with the moist brick backing ; this supports the suggestion that moisture is finding its way into the brickwork in the manner indicated above.

The fact that moisture is present on the floor at those points where the skirting has come away from the floor would seem to dismiss any possibility of condensation being the major cause of trouble. The danger of condensation, however, is also present, but this would be primarily dependent upon the damp, cool condition of the floor and walls.

It is thought that the dampness is due to external water which is under a certain pressure, and that it may cease in long spells of dry weather. It is evident, however, that the trouble may become more serious than at present and that some form of protection will be necessary.

The only treatment which can be recommended with confidence is to complete the asphalt membrane across the floor slab, so that the basement becomes a watertight "tank." This can be done most economically by cutting away the concrete floor slab around the edge of the floor until the asphalt is exposed. New asphalt should then be laid over the whole floor slab and joined to the existing asphalt, the whole being covered with a new floor slab of concrete, in the manner shown in detail "B." It is very important in this connection that the new upper floor slab should be strong enough to withstand the pressure of any water which might penetrate the lower original concrete slab. [Mention is made of this since a case is known where a similar treatment was carried out with only a thin, granite-concrete surface over the asphalt. In this case the water percolating through the concrete below the asphalt lifted the new floor finish. It is considered that in such conditions some form of construction similar to the one described above should be adopted, and watertight lining of the walls and floor should be provided.]

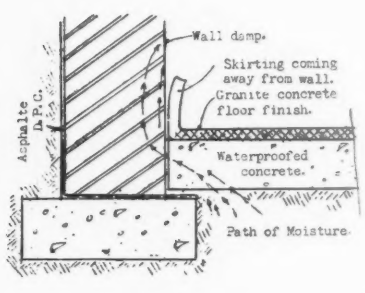


Figure A

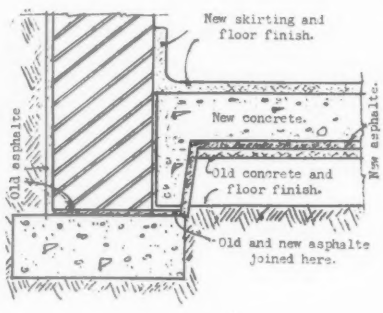


Figure B

Lifting of Rubber Floor Finish

¶ *AN architect wrote that considerable trouble was being experienced in a new house through the lifting of the rubber floor finish. It was stated that the sub-floor was composed of 1:8 Portland cement concrete laid on hard core. It was intended that a waterproofer should be used in the concrete but the excavations at the time of building appeared dry, and the waterproofer was omitted.*

When the rubber finish lifted it was found that moisture was present on the top of the concrete. The rubber was then removed, and a layer of bitumen ¼ in. thick was put down on the defective floor, the rubber being relaid on the new bitumen. The rubber had again lifted along a seam, and here the bitumen was found to be quite sound. In another place, an area of about 12 sq. ft. had lifted and the bitumen over this area had come away from the concrete, which appeared to be damp.

Information concerning the cause of the trouble and suggestions for a remedy were desired.

It would appear that the original trouble was due to the presence of moisture between the concrete and the rubber, giving a poor adhesion of the rubber to the concrete backing. In this connection it may be mentioned that the apparent dryness of the concrete floor before it was covered was probably quite illusory. If the rate of evaporation were greater than the rate at which the water was absorbed from the soil and transmitted through the concrete the surface would appear dry, although actually considerable moisture was present.

When an impermeable covering such as rubber was applied, the moisture would be unable to evaporate and would tend to collect between the concrete and the bitumen.

In placing a substantial layer of bitumen over the floor the proper course was adopted. It would appear that the problem is now one of obtaining a suitable adhesive for use between the rubber and the bitumen, and information on this matter can probably be best obtained from the manufacturers of the rubber floor finish. The local loosening of the bitumen is due to the moisture in the concrete. It is difficult to secure good adhesion of bitumen to damp concrete, and before relaying bitumen on the area where it has loosened, it would be advisable to prime with a bitumen emulsion. The emulsion should be allowed to dry out before the bitumen is relaid.

TECHNICAL SECTION: 32

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.

HEATING BY ELECTRICITY
(Continued)

ELECTRODE water heaters are suitable for installations up to 5,000 kW, or more if need be, and one type is shown in Fig. 185. They are all vertical (with one exception) and the chief difference in the various designs is in the method adopted for load regulation. Current passes from electrode to electrode, using the resistance of the water itself as the heating element, and the load is varied by increasing or decreasing the length of path which the current has to take by the interposition of non-conducting shields between or around the electrodes. The conductivity of the water has to be adjusted by the addition of soda, or other salts if need be, to render it suitable for the purpose. This type of heater is kept separate from the main storage because means of load regulation involving raising and lowering or rotating gear to the sheaths complicates a direct application; and, further, one heater may be connected to a series of storage vessels to provide the capacity required. Renewal of the electrodes from time to time is also simplified where they are in a separate vessel.

Fig. 186 shows plan of typical high voltage plant.

Points of detail in connection with thermal storage systems may be briefly referred to as follows:

(1) The expansion of the large volumes of water in the storage vessels raised to high temperature is considerable, and expansion tanks on the roof are for this reason of much greater size than usual, and because the volume of water stored is enormously greater than the volume of a boiler. When raised from 50 deg. to 250 deg. F. the increase in volume is about 5½ per cent., and to 300 deg. F. 8 per cent.

(2) If the water of expansion is allowed to pass heated from the water heater, and then is allowed to cool off in the expansion pipe and tank before returning gradually during the day, a constant loss of heat is incurred. For this reason a sufficient space at the bottom of the cylinders is arranged below the level of the return connection to contain the water of expansion. From the bottom of this space the feed and expansion pipe is connected. When the water is heated it depresses the cold at the bottom up into the tank. If the provision is adequate hot water never reaches the exit, and wastage of heat from this source is avoided.

(3) Loss of heat from the cylinders and heater is reduced as far as possible by efficient insulation. 3-in. cork is frequently used for this purpose, having an efficiency of about 93 per cent. Higher efficiencies are possible with 3 in. or 4 in. of glass silk, the latter having an efficiency of about 97 per cent. The economic limit must be assessed before the best thickness is determined, but electricity being an expensive fuel a high efficiency of insulation is generally justified. Cradles are also insulated with hard material, such as compressed cork or hard wood to minimize heat loss by conduction.

(4) The electrical protective and control gear for thermal storage systems is perhaps outside the scope of the present articles, and each make of plant employs different methods for achieving the same purpose. It is a great advantage to have all the control instruments, relays, contactors and switchgear mounted on a common switchboard so that faults can be more easily located and proper supervision given.

(5) Protective gear is necessary in the case of electrode water heaters to prevent operation on two out of the three phases, or with out-of-balance currents. Such faults might cause heavy earth leakage currents since the latter are only avoided when the current from all three phases is equal.

(6) The mixing valve, which is an essential part of every thermal storage plant, consists of three ports. One is the high-temperature water inlet, one the cool return water inlet, and one the mixed water outlet. The proportions of the two former are controlled by a valve or valves operated by means of water pressure, electrical solenoids, or motor, from a thermostat in the mixed outlet pipe.

(7) As the temperature in an electrode heater rises the resistance of the water becomes less and the load correspondingly goes up. Thus a 100 kW heater at 100 deg. F. would at 300 deg. F. have an output of about 220 kW. Means to provide a constant outlet temperature, and hence constant load, are included by some installers making use of a further thermostatically controlled mixing valve in the boiler-cylinder circulation shown in Fig. 187.

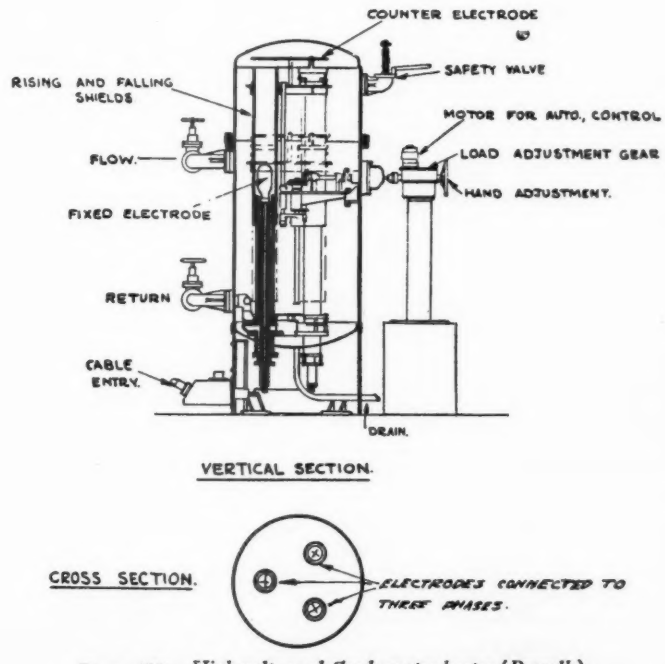


Figure 185. *High voltage electrode water heater (Reyrolle).*

HOT WATER SUPPLY BY ELECTRICITY

As in the case of gas, hot water supply may be provided electrically by local heaters or by a central plant, and the same advantages and disadvantages apply with either type, as was previously discussed.

LOCAL HOT WATER HEATERS

Instantaneous heaters are out of the question owing to the heavy loads required and storage type of low electrical input is the only one that need be considered.

These store the water at about 190 deg. to 195 deg. F., are thermostatically controlled, and are a very convenient method for domestic use where low rates for current are available, particularly in summer, when a boiler kept alight in the kitchen is a disadvantage. They are also very suitable for isolated basins and baths in buildings where a centralized supply is not necessary, and in such case may give greater economy than is possible with the latter.

Three types are available as shown in Figs. 188, 189 and 190. Fig. 188 has a small open feed tank with ball-cock at the top and the cylinder is not under pressure. It is only suitable for taps at a level below the heater. Fig. 189 is closed, but again of non-pressure type, water only being passed through when the inlet cock is opened. It is suitable only for a single point supply. Fig. 190 is a pressure type which may be treated as a cylinder in a boiler system, pipes being run from it to the various taps, and the supply is derived from a feed tank in the roof.

Loadings usually range from 500 to 3,000 watts, and capacities from 1½ to about 30 gallons cover the range of most domestic applications.

Sizes of less than 12 gallons are not adequate where a bath is to be supplied. Twelve gallons is stated to be adequate for one bath, 20 gallons for two baths in succession, 30 gallons for two baths plus other normal demands for kitchen, washing, etc.

Heaters of the above types, all of necessity efficiently insulated, incorporate thermostatic control and require no attention other than periodic descaling of the elements where the water is hard. Any circulating pipes from such heaters should be avoided as the consumption is increased considerably thereby. Towel airers and linen cupboards are best warmed by direct electric heaters.

CENTRAL SYSTEMS

Where heating is accomplished by thermal storage in a large building hot water supply requires similarly to be provided electrically from a central point.

Two methods are possible :—

(*a*) By separate storage vessels heated by immersion heaters during the day-time, in which case a higher charge for current has to be faced.

(*b*) By using the high temperature water from the thermal storage system through calorifiers as shown in Fig. 191 just as water from an ordinary heating system is sometimes used for providing hot water supply on the "indirect" method.

The disadvantage of the latter method is that in the summer, when no heating is required, the heat losses of the large storage have to be maintained for what is, perhaps, quite a small hot-water load. Thus connections are sometimes so arranged that the electrode boiler may be used direct in circuit with the calorifiers, this again being with "on-peak" current, but during summer only.

Whichever method is adopted, valves should be provided on the secondary

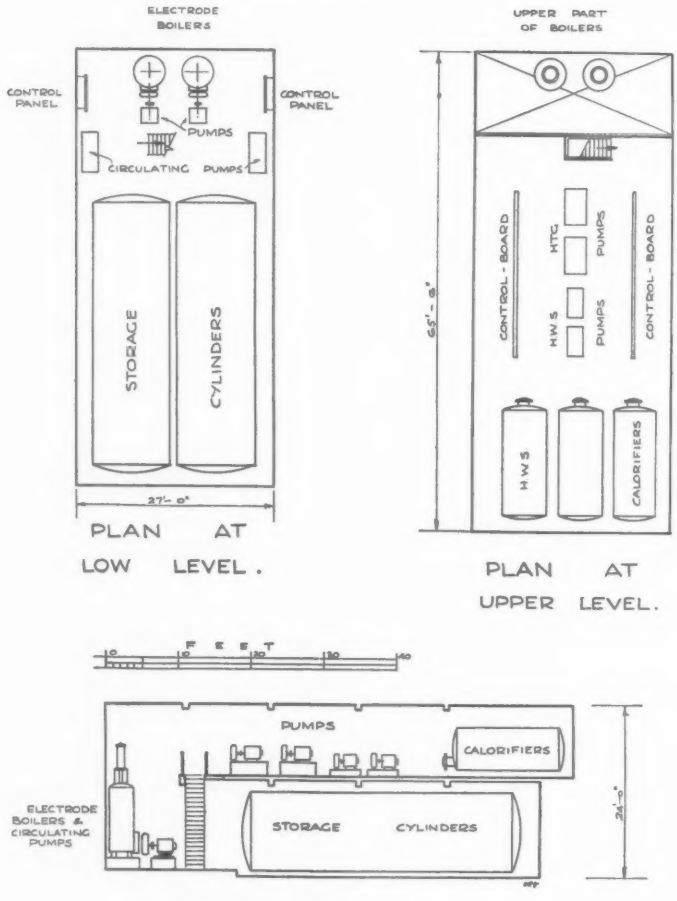


Figure 186. *Lay-out of high tension thermal storage plant. Total capacity, 3,200 kW.*

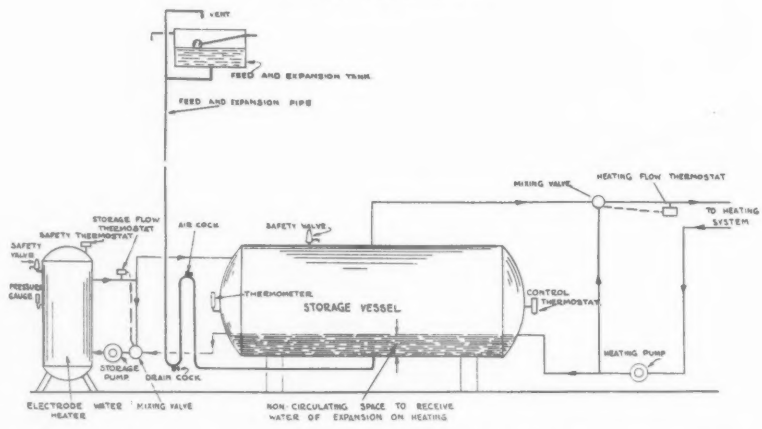


Figure 187. *Diagram showing connection of expansion pipe and mixing arrangements of electrode heater.*

circulations to be shut off at night, so as to save part of the constant heat loss due to radiation. In certain types of building, such as hospitals and hotels, where hot water may be required all night, this economy cannot be effected.

Initial Cost of Electrical Systems.

Nothing has been said so far on the question of initial cost.

It may be generally assumed that direct heating by electricity is about the same in cost of installation as an ordinary hot-water system when wiring, etc., is taken into account. There may, however, be some saving in builders' work on the electrical scheme.

A thermal storage system is invariably higher in cost than even an oil-fired boiler system, the disparity being greatest on the smaller installations. A system costing £500 with coke will probably cost about £1,000 with electrical thermal storage. If, however, the system is larger, costing, say, £5,000 with coke, the thermal storage would probably increase it to about £8,000.

These figures must be treated as a general indication only, as so much depends on the hours of off-peak current and other factors.

Hot water supply from local electric heaters will be more economical than a central system for small systems where one, two or three heaters suffice. Above this, the first cost of a central system will generally be cheaper.

Electrical Notes and Calculations

1. Current is measured in *amperes*, pressure, or potential difference in *volts*, resistance in *ohms*.

2. The current I passed through any resistance R when the potential difference is E, is given by Ohm's Law—

$$I = \frac{E}{R}$$

$$\text{thus } E = IR \text{ and } R = \frac{E}{I}$$

3. Power supply P is measured in watts—

1 watt = 1 volt × 1 amp.

or $P = EI$

Thus power P, which is equivalent to the heating effect, is given by substitution—

$$P = I^2R.$$

4. As stated in article I, page 96, the heat equivalent of 1 unit of electricity is 3,415 B.T.U.'s

1,000 watts = 1 kilowatt.

1 kilowatt hour = 1 unit of electricity equivalent to 3,415 B.T.U. per hour.

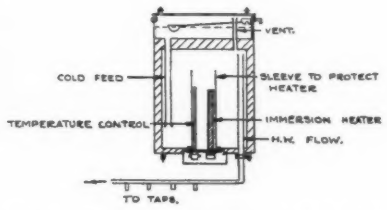
Thus, to supply, for instance, 1,000,000 B.T.U.'s per hour an input of—

$$\frac{1{,}000{,}000}{3{,}415} = 290 \text{ kW. (approx.) is required.}$$

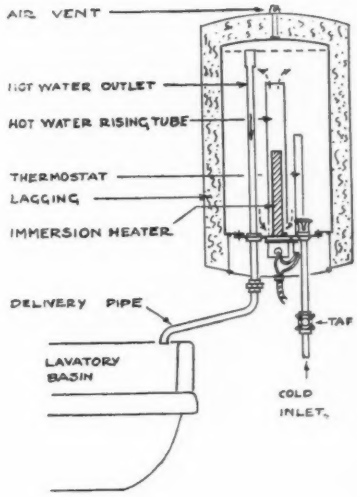
5. Electricity is supplied direct and alternating.

With direct current one pole is maintained constantly at positive and the other at negative potential.

In a three-wire d.c. system the neutral



Above: **Figure 188.** *Open tank electric hot water heater.*



Right: **Figure 189.** *Electric hot water storage heater, closed; non-pressure type.*

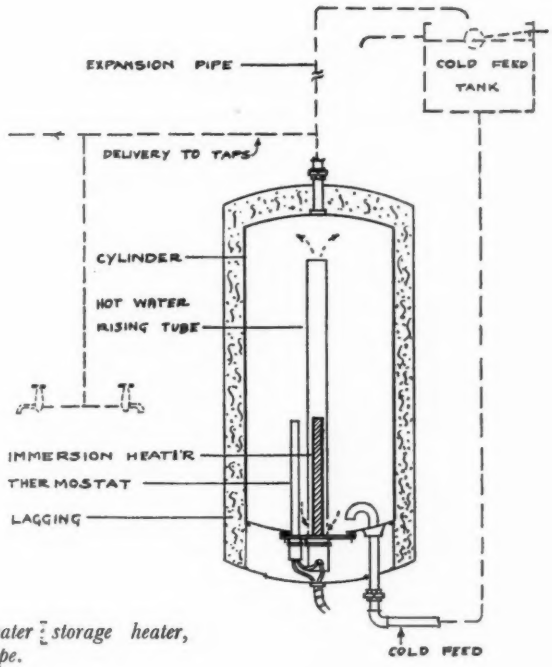


Figure 190. *Electric hot water storage heater, pressure type.*

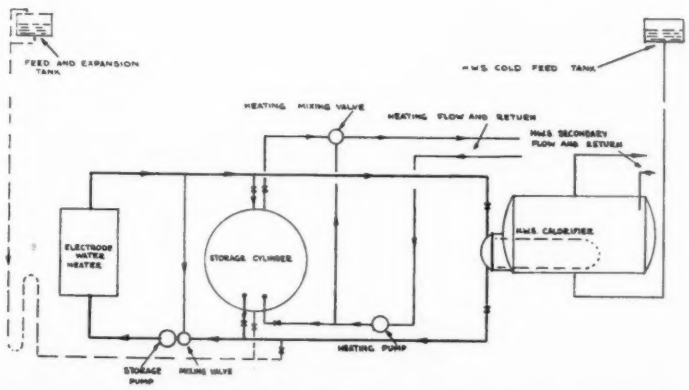
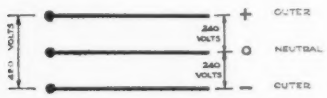


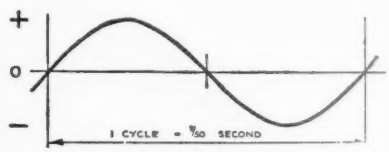
Figure 191. *Diagram of connection of hot water system from thermal storage plant.*

or middle wire is generally at earth potential, one "outer" is maintained positive to this and the other negative. The difference of pressure between the neutral and each outer is half that between the outers. Thus with a 480-volt d.c. three-wire supply the connection to the mid-wire would give 240 volts, thus :—



When a three-wire d.c. system is said to be balanced, the current taken by the positive to neutral exactly equals that from neutral to negative, and no current flows in the neutral. As soon as the load on either side is altered with respect to the other, the system becomes out of balance and current flows in the neutral either in one direction or the other.

6. With alternating current the polarity of the supply is reversed in regular cycles. Thus in a 50-cycle supply (standard in this country) the reversal takes place 50 times per second, and is said to be 50 cycle (~) current. The cycle is of sine wave form, thus :—



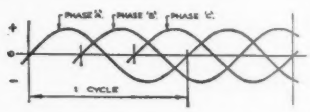
7. A.C. is usually either single-phase, two-phase or three-phase.

Single-phase current may be treated as d.c. supply for the purpose of heating loads which are all non-inductive and for which Ohm's law still holds good.

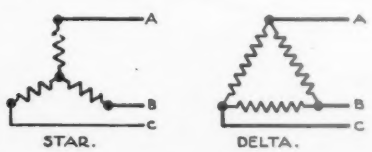
8. Two-phase three-wire supply is uncommon. Here the voltage between each of the outers and neutral is that across the outers divided by $\sqrt{2}$.

9. Two-phase four-wire supply, also uncommon, is virtually two single-phase supplies having the waves 180° out of phase.

10. Three-phase three-wire may be visualised as three single-phase supplies 120° out of phase, represented thus :—

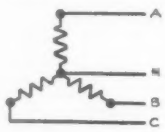


The three wires may be connected to apparatus in star or delta formation :



The voltage between points A and B, B and C, C and A is the declared voltage. 400 volts is now standardized, but many others are in use.

11. Three-phase four-wire is the same as the three-wire, but a neutral line is introduced at the centre of the star formation, and this is earthed. Thus :—



The voltage between A and N, B and N, C and N, is then the declared three-phase voltage divided by $\sqrt{3}$. With the standard voltage of 400, it is $\frac{400}{\sqrt{3}} = 230$ volts. Thus this current is often referred to as 400/230 v. 50-cycle.

Each of the phases A, B and C then give a single-phase supply, and a two-wire system is possible for each phase, using the neutral for the return of each.

When a three-phase four-wire system is balanced the load on each phase is the same and no current flows in the neutral. If any one or two of the loads are varied, current flows in the neutral wire.

This system is by far the most common and will become increasingly so.

12. For direct electric heating a two-wire system is essential. D.c. or a.c. single-phase at pressures under 250 volt are therefore alone used. As stated above, the d.c. may be obtained at this voltage from a three-wire system, and the a.c. from single-phase or a two or three-phase system with a neutral return. The load necessary in any room is arrived at by dividing the heat loss in B.T.U. by 3,415, thus :—

$$\text{kW to be installed} = \frac{\text{Heat loss B.T.U.}}{3{,}415}$$

To this should be added about 20 per cent. for quick warming up and for overload in severe weather. For intermittent heating as much as 50 per cent. margin may in some cases be desirable.

13. For thermal storage with immersion heaters any of the above low voltage supplies may be used, but the usual arrangement is with them balanced on a three-phase three or four wire supply.

14. Thermal storage with electrode heaters is invariably served from three-phase three-wire supply at medium or high voltage, i.e., 400 to 11,000 volts. A common voltage is 6,600. As foreshadowed above, voltages for this purpose will probably rise as loads increase in the future.

15. Thermal storage electrical load per 24 hours

$$= \frac{\text{Total heat required per day}}{3{,}415}$$

The total heat requirements must include all radiation and other losses over the period.

16. The hourly load in kW depends on the duration of the off-peak supply This may be anything from eight to 18 hours, i.e., hourly kW of plant

$$= \frac{\text{load per 24 hours}}{\text{duration of supply in hours.}}$$

17. The storage capacity depends on the total heat requirements when current is not being supplied and on the temperature range.

$$\text{Storage capacity (lbs.)} = \frac{\text{Total heat requirements per day when current not supplied}}{\text{(Storage temp. − minimum heating flow temp.).}}$$

The capacity in gallons may be arrived at by dividing the lbs. by the weight per gallon at the storage temperature, and to this should be added the extra capacity to contain the expansion of the water in the heating system alone (excluding the storage expansion).

Table LVI gives weight of water per cubic foot at the higher temperatures.

TABLE LVI.

Temperature ° F.	Weight per gallon, lbs.	Head required on Cylinder ft.*
200	9·62	—
220	9·56	25
240	9·47	50
260	9·38	80
280	9·28	120
300	9·18	175

Table LVII gives the capacity in gallons per foot of length for different diameters.

TABLE LVII.

Diameter of cylinders.	Gals. per foot of length.
4′ 0″	79
4′ 6″	99
5′ 0″	122
5′ 6″	148
6′ 0″	176
6′ 6″	207
7′ 0″	241
7′ 6″	278
8′ 0″	315
8′ 6″	348
9′ 0″	398
9′ 6″	443
10′ 0″	490
10′ 6″	540

Storage vessels are most conveniently and cheaply made cylindrical and preferably horizontal, the size and shape being largely determined by space conditions. Diameters up to 10 ft. 6 in. are possible and lengths up to 30 ft.

18. The height of the return pipe from the bottom of a horizontal cylinder to leave sufficient dead water below to receive the expansion may be determined from what has already been done.

$$\text{Storage capacity lbs} = \frac{\text{Total heat per day}}{\text{temp. diff.}} \text{ (as above, 17).}$$

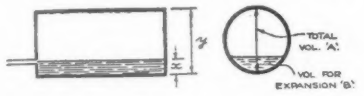
This divided, by the weight of water per gallon at the filling temperature, say, 10 lbs. per gallon, will give the net volume required. This deducted from the gross volume (including the heating system expansion) as determined before, will give the total space required for expansion.

* These are on basis of boiling points 20° F. in excess of the temperatures given.

The proportion of this space to the total volume may then be arrived at. The height of the return pipe from the bottom of the cylinder may then be obtained from Table LVIII.

TABLE LVIII.

Proportion of volume in segment of cylinder to total volume for various ratios of height.



Ratio $\frac{\text{Volume B}}{\text{Volume A}}$	Ratio $\frac{\text{Height x}}{\text{Height y}}$
·025	·06
·05	·10
·10	·16
·15	·22
·20	·25
·25	·29
·30	·33

•

National Association of Local Government Officers

A hundred years ago, in September, 1835, the Municipal Corporations Act received Royal Assent. To mark this centenary in local government in this country, the above Association is offering prizes for an essay of not more than 1,500 words on "What we owe to Local Government." It is a wide subject, but any aspect of local government may be singled out as the real theme to be dealt with according to the choice of the writer. The first prize is £26 5s., the second prize £10 10s. and the third prize £5 5s. The following simple conditions govern the competition :—

1 : Write on one side of the paper only, either in typescript or in manuscript.

2 : Length not more than 1,500 words.

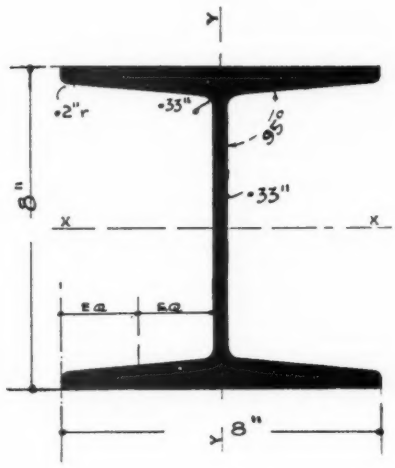
3 : Essays must be addressed to L. Hill, General Secretary, the National Association of Local Government Officers, 24 Abingdon Street, Westminster, London, S.W.1, so as to reach him not later than November 30.

4 : Each essay must be headed with a *nom de plume* and a sealed envelope containing the name and address and bearing on the outside the *nom de plume* must accompany the essay. Indication of the author's identity must not appear on the essay.

5 : The envelope containing the essay must be marked "Essay Competition" in the top left-hand corner.

6 : The copyright in each winning essay will belong to the National Association of Local Government Officers.

7 : The decision of the judges shall be final and no correspondence will be entered into on the subject.



TRADE NOTES

[*EDITED BY PHILIP SCHOLBERG*]

A Useful Rolled Steel Stanchion Section

THE South Durham Iron and Steel Co., Ltd., have issued a pamphlet giving details of an 8 in. by 8 in. section which they roll. This section is not included in the lists of sections in the usual handbooks and is therefore not nearly so well known as its usefulness merits that it should be. The dimensions of the section are as shown in the headpiece to these notes, and its main properties are as follows:

Weight in lb. per ft. run	Area in sq. in.	Moment of Inertia		Section Modulus		Eccentricity Coefficients	
		XX	YY	XX	YY	XX	YY
38	11·128	131	39·7	33	9·9	·34ex	1·12ey

•

Apart from the convenience of having equal dimensions in both directions the property which renders the section particularly useful as a stanchion is its high minimum radius of gyration. This is higher than that of any other section rolled in this country, and therefore the allowable working stress on any height is greater than for any other unplated section. The safe concentric loads on the section in accordance with B.S.S. 449 for various floor heights are as follows :

Floor Height in Feet								
6	8	10	12	14	16	18	20	22
Safe Concentric Load in Tons								
75	70	64	57	49	42	36	30	24

•

These figures do not agree with those given in the pamphlet, which are unfortunately based on a column formula which is little used nowadays.

•

The section can be obtained in mild steel (for which the foregoing safe loads apply) or in Atlantes high tensile steel, and stocks are held in London.

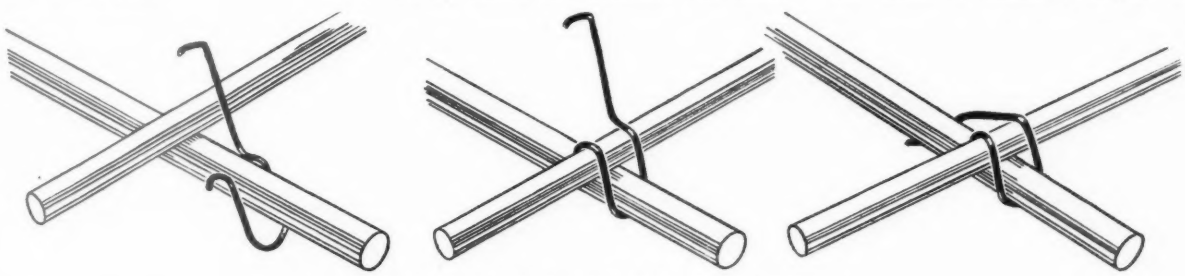
W. E. J. B.

Binders for Reinforcing Rods

An improvement in the normal method of binding reinforcing rods with wire has recently been introduced by Messrs. Huntley and Sparks, Ltd., who have acquired the British rights of a Swiss patent, and are now manufacturing in this country.

•

The device is essentially simple, and



Binders for reinforcing rods. See note on this page.

consists of a short length of spring steel wire (see sketches at the foot of page 463). The loop is passed round the first bar, over the second, and is finally clipped under the first bar again, the whole process being carried out at the rate of about 10 to 20 binds a minute, and giving a true and rigid bind.

•

The cost is reasonable, and varies from 4s. 6d. to 10s. 6d. a thousand, according to the size of the bars to be clipped. Fifteen different sizes cover the usual bar sizes from $\frac{1}{8}$ in. to $1\frac{1}{8}$ in.

•

The saving over normal wiring methods carried out by unskilled labour should be considerable, and the final result should be far better.

Publications Received

The Expamet Handbook (*pamphlet No. 5*). Issued by the Expanded Metal Co., Ltd., of Burwood House, Caxton Street, Westminster, S.W.1. Notes on production, properties and applications.

General Heating Catalogue (*No. 31*). Issued by Crane, Ltd., of 45 Leman Street, E.1. Illustrations and description of the firm's radiators, boilers and radiator accessories.

Modern Buildings: the Financial Aspect. Issued by the British Steelwork Association, Artillery House, Artillery Row, Victoria Street, S.W. Notes on steel frame buildings as the economical solution to the contemporary building problem.

LAW REPORTS

JUDGE ACTS AS ARBITRATOR

Mansford v. *Shawyer—Chancery Division. Before Mr. Justice Farwell*

THIS interesting action resulted in the parties agreeing to His Lordship dealing with the matter as an arbitrator, and thus arriving at a final settlement of the dispute, there being no appeal from his decision.

Mrs. E. G. Shawyer, of Alfred Place, Kensington, was the defendant in the action brought by Mrs. E. M. Mansford, of Parkstone, Dorset, who claimed half the premium received by Mrs. Shawyer from a third party to whom she had assigned the lease of 4 Kensington Court, London, which had been granted her by Mrs. Mansford.

Mr. Charles Harman, K.C., appeared for the plaintiff, and said his client was the owner of a large house known as 4 Kensington Court. In 1933 she granted to the defendant a 14-years' lease of the premises at a rental of £350 a year. Defendant effected certain alterations and turned the premises into flatlets. In the following year defendant sold the lease and furniture to a third party for £2,500, of which £1,500 represented the value of furniture. There was a clause in the lease providing that if defendant assigned the premises the plaintiff would be entitled to half the premium received, after making allowance for the cost of improvements carried out by the defendant. Counsel said his client took the view that the remaining £1,000, which the defendant received, was in respect of premium upon the lease, and she claimed that she was entitled to half that sum. The defendant, however, contended that the £1,000 in question included £800 which she said represented the value of the goodwill of the house now let in flatlets.

Evidence was called on behalf of the plaintiff to the effect that there was no goodwill in a house let in flatlets.

Mr. Archer, K.C., who appeared for the defendant, contended that there was such a thing as goodwill in a house let in flatlets, and stated that in the terms of sale £800 was included as the selling price of the goodwill. His client had no idea that any part of the sale price was for premium on the lease.

After hearing evidence for the defence there was an agreement that His Lordship should deal with the matter as an arbitrator. His Lordship then awarded the plaintiff £250, to include her costs, and added that there would be no appeal from this.

•

WATER SUPPLY—ACTION AGAINST A COUNCIL

Stephens v. *Ashburton Urban District Council—Chancery Division. Before Mr. Justice Bennett*

IN this case the plaintiffs, Mr. J. Stephens and others, the owners of Town Mills, North Street, Ashburton, and Mrs. A. V. Tuxworth, also a mill owner, sued the Ashburton Urban District Council for a declaration and injunction in regard to the alleged wrongful abstraction of water from the River Yeo.

The plaintiffs are millowners, and they alleged that the defendants had so affected the water supply that they had decreased the working of the mills. In 1933 the defendants had carried out a scheme to improve the water supply in the district and laid a pipe line near the river at Halsanger Common, Dartmoor, which at certain points crossed the river lower down. Plaintiffs' case was that some of the pipes, which were open jointed collecting pipes, were laid under the river bed, and also that a trench had been formed which took the water from the river for the defendants' pipes.

The Council denied the plaintiffs' allegations, and said the trench was not dug to take the water from the river, and that the water could not percolate through.

His Lordship, after hearing the evidence, gave judgment for the plaintiffs, and granted a declaration that the defendants had wrongfully abstracted water from the river and an injunction restraining defendants from so acting. He suspended the operation of the injunction for three months, to give the Council an opportunity of remedying matters. His Lordship said he formed the opinion that the defendants had, in fact, laid the pipe line in such a way that it abstracted water from the river. The defendants must pay the costs of the action.

THE BUILDINGS ILLUSTRATED

Following are the names of the general contractors and some of the sub-contractors for the buildings illustrated in this issue :—

Midland Bank, Manchester (pages 444–448). General contractors, Tinker and Young, Ltd. Sub-contractors : Celotex Co. of Great Britain, Ltd., acoustic ceilings ; Northern Asphalt and Roofing Works, Ltd., asphalt ; Bradford Colliery Co., Ltd., bricks ; J. Ashton Floyd, carving ; Thomas W. Ward, Ltd., Aberthaw and Bristol Channel Portland Cement Co., Ltd., and G. and T. Earle, Ltd., cement ; Excellence Reinforced Concrete Co. and Fram Reinforced Concrete Co., Ltd., concrete floors and staircases ; Thomas Maiden, demolition ; Dictograph Telephones, Ltd., Dictograph installation ; Burn Brothers, Ltd., drainage work ; Heywood & Co., Ltd., electrical installation ; W. T. Glover & Co., Ltd., General Electric Co., Ltd., Greengate and Irwell Rubber Co., Ltd., electric cables ; Walsall Conduits, Ltd., and General Electric Co., Ltd., electric conduits and accessories ; General Electric Co., Ltd., Metropolitan-Vickers Electrical Co., Ltd., Best and Lloyd, Ltd., Charles Smith & Co., Ltd., T. B. Morley & Co., Ltd., W. E. Beardsall & Co., Ltd., Wholesale Fittings Co., Ltd., and Marley Bros., Ltd., electric fittings ; General Electric Co., Ltd., electric switchgear ; Nettlefold and Sons, Ltd., fire grate ; Independent Sprinklers, Ltd., fire hydrants ; J. W. Gray and Son, Ltd., flagstaff and lightning conductors ; Ioco Rubber and Waterproofing Co., Ltd., rubber flooring ; Excellence Reinforced Concrete Co., Horsley Smith & Co. (London), Ltd., R. W. Brooke & Co., Ltd., Acme Flooring and Paving Co., Ltd., and Hollis Bros. & Co., Ltd., wood block flooring ; Eaton, Parr and Gibson, Ltd., James Clark and Son, Ltd., T. and W. Ide, George Farmiloe and Sons, Ltd., and T. and W. Farmiloe, Ltd., glass ; Fenning & Co., Ltd., granite ; Charles Smith & Co., Ltd., grilles ; Marley Bros., Ltd., hardware ; Brightside Foundry and Engineering Co., Ltd., heating apparatus and hot water service ; Matthew Keenan & Co., Ltd., insulating material ; Doodson and Bain, Ltd., letter boxes ; Roneo, Ltd., lift doors and safe deposit trolleys ; J. and E. Hall, Ltd., and Express Lift Co., Ltd., lifts ; J. and H. Patterson and John Stubbs and Sons, marble ; D. McCarthy, mats ; Roneo, Ltd., metal fittings ; Humphries, Jackson and Ambler, Ltd., metal windows ; Doodson and Bain, Ltd., and Humphries, Jackson and Ambler, Ltd., metal work ; John Morgan and Sons, Ltd., name plates ; Lewis Berger and Sons, Ltd., Docker Bros., Goodlass Wall & Co., Ltd., Jenson and Nicholson, Ltd., and Hoyle, Robson, Barnett & Co., Ltd., paint, etc. ; Moler Products, Ltd., partition blocks ; F. A. Norris & Co., Ltd., pavement lights ; Casebourne & Co. (1926), Ltd., Pioneer plaster ; G. Jackson and Sons, Ltd., fibrous plaster ; Longworth and Sons Ltd., plumbing ; Chatwood Safe Co. Ltd., safe deposit ; Adamsez, Ltd. George Farmiloe and Sons, Ltd. and Parker, Winder and Achurch, Ltd. sanitary fittings ; Wormells, slating

Brightside Foundry and Engineering Co., Ltd., steel flues; Rubery Owen & Co., manufactured and erected the structural steelwork and steel shelving and cupboards, etc.; International Combustion, Ltd., automatic stokers; F. J. Barnes, Ltd., and R. Carlyle & Co., Ltd., stone; Chatwood Safe Co., Ltd., strongroom doors and strongrooms; G. Jackson and Sons, Ltd., stucwork; Diespeker & Co., Ltd., and Brookes, Ltd., terrazzo wall linings and pavings; Middleton Fireclay Works, Ltd., Decorative Tiling Co. and Salmon and Son, tiling; Brightside Foundry and Engineering Co., Ltd., ventilating plant; William Nicholson and Son (Leeds), Ltd., walnut woodwork and wood fittings; William Moss and Sons, Ltd., wood partitions (first floor); Wm. Tomkinson and Sons, Ltd., wood partitions (third floor).

Lichfield Court, Richmond (pages 453–457). General contractors, Bovis, Ltd. Sub-contractors: Archibald D. Dawnay and Sons, steelwork engineers; Cement Marketing Co., Ltd., bricks; Edward Deane and Beale, Ltd., heating; Matthew Hall & Co., Ltd., plumbing; Electrical Installations, Ltd., electrical; Crittall, Ltd., steel windows; Compactum, Ltd., kitchen fitments; John Bolding and Sons, Ltd., sanitary fittings; Patent Impervious Stone Co., Ltd., artificial stone; Nettlefold & Co., door furniture; Arthur R. H. Maxted, Ltd., balustrade and general ironwork; Keighley Lifts, Ltd., lifts; J. and W. Henderson, Ltd., fireplace surrounds (large); George Wright, Ltd., fireplace surrounds (panel); Falk, Stadelmann & Co., Ltd., fires; Caxton Floors, Ltd., fireproof floors; H.M.V. Household Appliances, Ltd., refrigerators; Trent Concrete, Ltd., precast stone stairs; Crane, Ltd., roof railings; Ramsden & Co., tiling to bathrooms, kitchens, etc.; London and Provincial Resurfacing Co., terrazzo work; Cork Manufacturing Co., cork for lift bases; Ragusa Asphalt Co., asphalt work; Pinchin Johnson & Co., Ltd., paintwork (internal); Unistuc, Ltd., paintwork to balconies; Trussed Concrete Steel Co., Reinforced Concrete Engineers, reinforced concrete work; En-Tout-Cas, Ltd., tennis courts; Luxfer, Ltd., roof lights, etc., and covered way; Plastona, Ltd., dustproof surfacing to garage floor; J. E. Grant, landscape gardener; K. McCutcheon, modeller; John Booth and Sons Ltd., rolling shutters; British Reinforced Concrete Engineering Co., Ltd., reinforced concrete work to garage.

THE WEEK'S BUILDING NEWS

LONDON & DISTRICTS (15-MILES RADIUS)

BARNES. *Slum Clearance.* The B.C. has approved a recommendation that the Chertsey Arterial Road site slum clearance proposal for the erection of 75 houses be submitted to the Ministry of Health for approval.

CAMBERWELL. *Slum Clearance.* The B.C. is to prepare a clearance scheme for the Cobourg Road area.

LONDON, E.1. *Nurses' Home.* The governors of the London Hospital propose to extend the nurses' home and provide a hostel for resident domestics, etc. Estimated cost, £35,000.

STOKE NEWINGTON. *Flats.* Messrs. Francis, Dod & Co. are to erect blocks of flats on the site of 9 Woodberry Down and adjoining land in Seven Sisters Road, Stoke Newington.

STOKE NEWINGTON. *Flats.* Stoke Newington B.C. has approved plans by Messrs. Howes and Jackman for the erection of 96 flats at Queen Elizabeth's Walk and appointed Mr. E. C. Harris as quantity surveyor for the scheme.

TWICKENHAM. *Houses.* The Ministry of Health has agreed to the erection of 138 houses by the T.C. on the Forty-acre Field site.

SOUTHERN COUNTIES

BEXLEY VILLAGE. *School.* Kent Education Committee is to purchase a site for the erection of a central school in Bexley Village.

BROMLEY. *School.* Kent Education Committee is to adapt Egerton Lodge, Bromley, as a school of art.

ERITH. *School.* Kent Education Committee is to adapt an old elementary school in University Place, Erith, as a junior instruction centre.

HERSHAM. *Station.* The Walton and Weybridge U.D.C. has approved plans submitted by the Southern Railway for a proposed new station at Hersham.

LITTLEHAMPTON. *Amusement Park.* Messrs. Butlins, Ltd., have submitted plans for the Littlehampton U.D.C. for the erection of permanent buildings at the Windmill amusement park.

MAIDSTONE. *School.* Kent Education Committee is to erect new buildings for the Girls' Grammar School on the Little Buckland site, Maidstone.

RAMSGATE. *Instruction Centre.* Kent Education Committee is to erect a junior instruction centre on the Townley Castle site, Ramsgate.

SOUTHAMPTON. *Offices.* The Public Assistance Committee has under consideration the provision of new relief offices. Rough plans have been prepared, and have now been referred to the administration and Finance Sub-committee.

SOUTHAMPTON. *Institution.* The Public Assistance Committee has brought forward a proposal for the closing down of St. Mary's Street Institution and to provide a new institution with administrative offices and nurses' homes at Westend. Draft plans have been prepared and referred to the Administration and Finance Sub-committee.

TUNBRIDGE WELLS. *Laboratory.* The governors of Skinners School, Tunbridge Wells, are to adapt premises as a biological laboratory.

WINDSOR. *Extensions.* Plans have been approved for proposed extensions to the County Girls' Schools by the Berks County Council.

WINDSOR. *Licensed Premises.* Messrs. Courage & Co., Ltd., are to reconstruct the "Royal Oak" in Datchet Road, and additions are also to be made to the "Prince Albert" in Clewer Hill Road.

SOUTH-WESTERN COUNTIES

BARNSTAPLE. *Chapel.* The R.D.C. has approved plans for a new Methodist Chapel proposed to be erected at Hele Manor.

PAIGNTON. *Housing Estate.* Mr. C. C. Rees, architect, has prepared plans for the development of the Ringlee estate, Primley Park, Paignton.

PENZANCE. *Railway Station.* The G.W.R. Co. contemplates the reconstruction of Penzance Station.

EASTERN COUNTIES

LUTON. *Club House.* A club house is to be provided on Dunstable Downs by the Dunstable Downs Golf Club. Plans have been approved.

NORWICH. *Houses.* The Corporation is to erect 200 houses either by contract or direct labour for rehousing tenants being displaced from slums.

NORWICH. *Market Place and Car Park.* The Corporation has arranged for Mr. Robert Atkinson, F.R.I.B.A., who acted as assessor in the new municipal offices scheme, to prepare a scheme for the lay-out of the market place area and the provision of an underground car park.

NORWICH. *Generating Station.* The Corporation is to extend buildings at the generating station at a cost of £13,800.

NORWICH. *Flats.* The Corporation has decided upon the erection of three-storey flats on the cleared site on the Cowgate area.

ST. ALBANS. *School Additions.* The Herts County Council is to make additions to the Bernards Heath School, Garden Fields School, and the Priory Park Schools, plans for which have been prepared.

YARMOUTH. *Fire Station.* The Corporation is negotiating for a site at Gorleston for the erection of a police and fire brigade station.

YARMOUTH. *Municipal Offices.* The Corporation is to seek powers to close Hall Plain in connection with the scheme for the provision of additional municipal offices.

MIDLAND COUNTIES

KIDDERMINSTER. *Housing Estate.* Messrs. Talbot and Painter are to develop the Greatfield Hall estate, Kidderminster.

NETHERFIELD. *School.* Notts Education Committee is to provide a senior boys' school at Chandos Street, Netherfield.

SELSTON. *School.* Notts Education Committee is to erect a senior school for 400 at Selston.

SUTTON-CUM-LOUND. *Church Hall.* The church authorities are to erect a church hall on the Barnby main road at Sutton-cum-Lound, Notts.

NORTHERN COUNTIES

BRADFORD. *Houses.* Mr. T. Obank is to erect 330 houses in Apperley Road and Mitchell Lane, Bradford.

BRADFORD. *School.* The Education Committee has selected a site at Leaventhorpe for the erection of the new Thornton grammar school.

CURROCK. *Community Hall.* Carlisle Corporation has instructed the city engineer to prepare plans for the erection of a community hall at Currock.

DOUGLAS, I.O.M. *Social Hall.*—The Corporation has approved the plans of the borough engineer for the proposed social hall on the Pulrose housing estate, and is now to obtain tenders for its erection.

DOUGLAS, I.O.M. *Tramways Depot.* The Corporation Tramways Committee is to prepare a scheme for the reconstruction of the tramways depot in Tramway Terrace.

HEWORTH. *School.* Felling U.D.C. is to submit a scheme for the erection of a senior school.

LEEDS AND BRADFORD. *Aerodrome.* The Leeds and Bradford Corporations are acquiring 75 acres at Easterley for the extension of the joint aerodrome.

PRESCOT. *Houses.* Plans have been submitted to the U.D.C. for 500 houses in Shaw Lane, by Mr. Armstrong and a Manchester firm of architects.

SPRINGHEAD. *Houses.* Mr. F. B. Waterhouse is to erect 30 houses at Wolverhampton Road, Springhead, in the Coseley urban district.

SUNDERLAND. *Concert Hall.* The T.C. Seaside Development Committee has under consideration a revised scheme for the provision of a concert hall at Seaburn. Approximate cost £10,000.

SCOTLAND

BELLSHILL. *Library.* Lanark C.C. has passed plans for a library. Estimated cost £11,200.

GLASGOW. *Houses.* Mr. Robert Shaw is seeking sanction from the Glasgow Corporation for a scheme for the erection of houses in Wykeham Road, Scotstounhill.

GLASGOW. *Housing Estate.* Messrs. Cayzer, Irvine & Co., Ltd., are to develop the Ralston estate, Hillington, Glasgow.

GLASGOW. *Housing Estate.* The Bargray estate, Kelvinside, Glasgow, is to be developed by Messrs. Henry Boot (Garden Estates), Ltd.

KIRKCALDY. *Fire Station.* The T.C. has approved plans by the Burgh Surveyor for the proposed erection of a fire station at an estimated cost of £12,038.

WALES

SWANSEA. *School.* The Education Committee is to proceed with the erection of the second block of the Gors school at a cost of £17,000.

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
F_1	Aylesbury ..	S. Counties	1 3	11½
B_1	BANBURY ..	S. Counties	1 3	11½
B_1	Bangor ..	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_1	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_1	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	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	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_1	Gravesend ..	S. Counties	1 5	1 0½
A	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. Wales & M.	1 2½	11
	& S. and E. Glamorganshire			
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_1	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_1	Solihull ..	Mid. Counties	1 5	1 0½
A_2	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_1	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	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,	Sq.	18	6
,,	1"	1	1	6
,,	1"	1	2	0
,,	1¼"	1	5	0
,,	1½"	1	10	0
Deal matchings	¾"		14	0
,,	1"		15	6
,,	1"	1	4	0
Rough boarding	¾"		16	0
,,	1"		18	0
,,	1¼"	1	6	0

Plywood, per ft. sup. Thickness	¼"			½"			¾"			1"		
Qualities	A d.	B d.	BB d.	A d.	B d.	BB d.	A d.	B d.	BB d.	A d.	B d.	BB 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.			
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, ¼"	,,	10	6
,, ,, ⅜"	,,	10	3
,, ,, ½"	,,	10	0
,, ,, ⅝"	,,	9	6
,, ,, ¾"	,,	9	6
,, ,, 1"	,,	9	6
,, ,, 1¼"	,,	9	6
,, ,, 1½"	,,	9	6

Cast-iron rain-water pipes of ordinary thickness metal	F.R.	4" s. 8	4" d. 10	6" s. 8	6" d. 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.	22	0
,, drawn pipes	,,	21	6
,, soil pipe	,,	24	6
,, scrap	,,	13	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	,,	1	10	0
,, fine	,,	4	15	0
Hydrated lime	,,	3	0	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.	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. rough cast ¼" and ¼"	,,	2	6 and	3	6
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″ deep 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
1″ × 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
2″ 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
1½″ 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, 1½″ pulley stiles, 1¼″ heads, 1″ inside and outside linings, ½″ 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.	1 15 6
Do. in flashings	"	1 19 0
Do. in covering to turrets	"	2 6 6
Do. in soakers	"	1 11 0
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	—	—	—

		s. d.
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

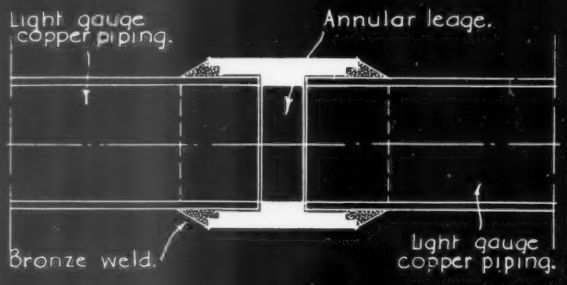
		s. d.
21 oz. sheet glass and glazing with putty	F.S.	6½
26 oz. do. and do.	"	7½
Flemish, Arctic Figured (white) and glazing with putty	"	1 1
Cathedral glass and do.	"	1 2
Glazing only, British polished plate	"	7
Extra, only if in beads	"	2
Washleather	F.R.	4

PAINTER

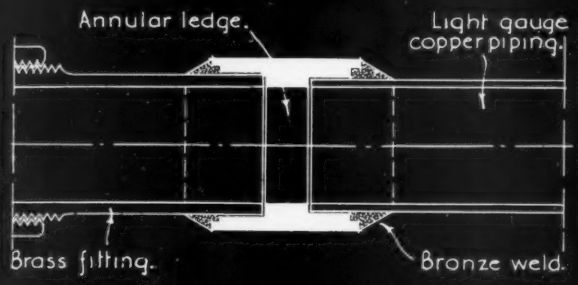
		s. d
Clearcolle and whiten ceilings	Y.S.	0
Do. and distemper walls	"	9
Do. with washable distemper	"	1 1
Knot, stop, prime and paint four coats of oil colour on plain surfaces	"	3 3
Do. on woodwork	"	3 6
Do. on steelwork	"	3 0
Do. and brush grain and twice varnish	"	5 6
Stain and twice varnish woodwork	"	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	trom "	2

TYPES OF WELDABLE FITTINGS WHICH FACILITATE THE WELDING OF LIGHT GAUGE COPPER TUBING.

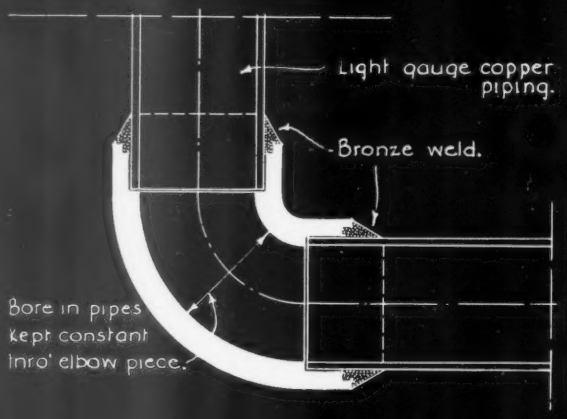
Fittings are obtainable in the following standard sizes: ½", ¾", 1", 1¼", 1½", 2", 2½", 3", 3½" & 4"



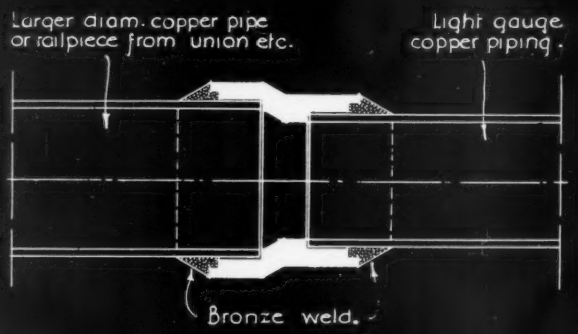
WELDABLE SOCKET:
For connecting two lengths of l.g. copper piping.



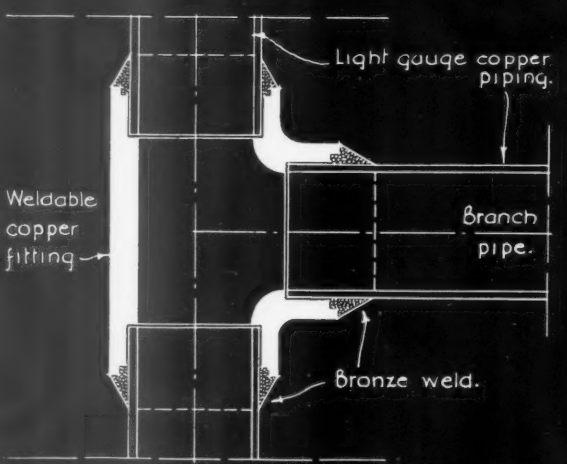
SOCKET PIECE FITTING:
For connecting l.g. copper piping to brass fittings.



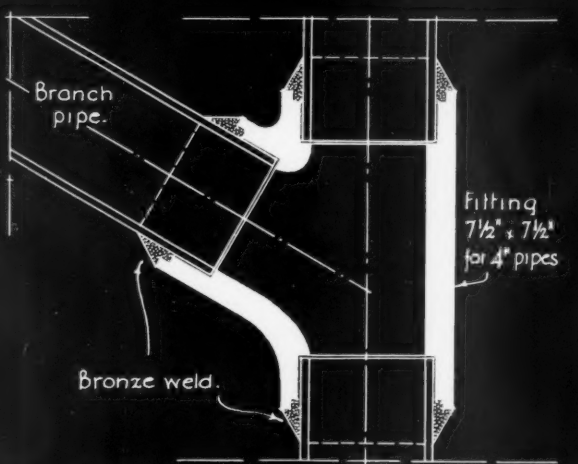
SEAMLESS COPPER ELBOW:
For connection l.g. copper piping at angles.



DIMINISHING SOCKET:
For change in pipe bores or connection to unions, taps etc.



SQUARE TEE PIECE • EQUAL OR UNEQUAL BRANCHES:
For connecting 3 metal pipes in true alignment



ANGLE TEE PIECE • EQUAL OR UNEQUAL BRANCHES:
For soil, waste, and vent inlets and connections.

Information from W. L. Kilburn, R. P.

Issued by British Oxygen Co. Ltd

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

THE ARCHITECTS' JOURNAL
LIBRARY OF PLANNED INFORMATION

INFORMATION SHEET

• 259 •

PLUMBING IN WELDED COPPER PIPING

This Sheet gives in detail the methods of jointing with weldable fittings.

Weldable Fittings :

Weldable fittings have been introduced for two main reasons : *a*, to simplify the work required in jointing on the site ; *b*, to ensure that a perfectly flush interior surface is automatically obtained.

Material of Fittings :

The fittings are made of the same grade of copper as is recommended for the pipe, i.e., deoxidised copper. The system is therefore an all-copper installation. Commercial copper may be used for bronze welding.

Sizes of Fittings :

Fittings are made for each standard size of copper pipe, i.e., for—

½	in.	diam. pipe.
¾	in.	,, ,,
1	in.	,, ,,
1¼	in.	,, ,,
2	in.	,, ,,
2½	in.	,, ,,
3	in.	,, ,,
3½	in.	,, ,,
4	in.	,, ,,

Variety of Fittings :

Fittings are made for every purpose which may be required in plumbing work. Those shown on this Sheet are typical examples, and have been selected to illustrate in detail the general use of the fittings.

The complete range of fittings will be set out diagrammatically in future Sheets.

The Fitting :

Each fitting is made as a close fit to the pipe for which it is designed, and is provided with an annular ring or stop in the interior. The projection of this ring is equal to the thickness of the pipe, thus ensuring a flush surface in the interior when the pipe is fitted.

The Joint :

When making the joint the end of the pipe is put into the fitting and pressed home, so that it butts against the annular ring or stop. The weld is then made so that the welding material fills the annular ring at the free end of the fitting. (See details.)

This weld is usually made by the bronze weld method, but where appearance is of primary importance, the copper weld may be used to obtain continuity in the colour of the pipe, fitting and weld material.

This Information Sheet is the fifth of a series showing methods of jointing light-gauge copper pipes.

The first Sheet (No. 225) gave a summary of the various methods ; the second and third Sheets (Nos. 234 and 243) were devoted to the details of jointing by the Bronze weld method, and the fourth (No. 251) to the details of the copper weld method.

Issued by : The British Oxygen Co., Ltd.

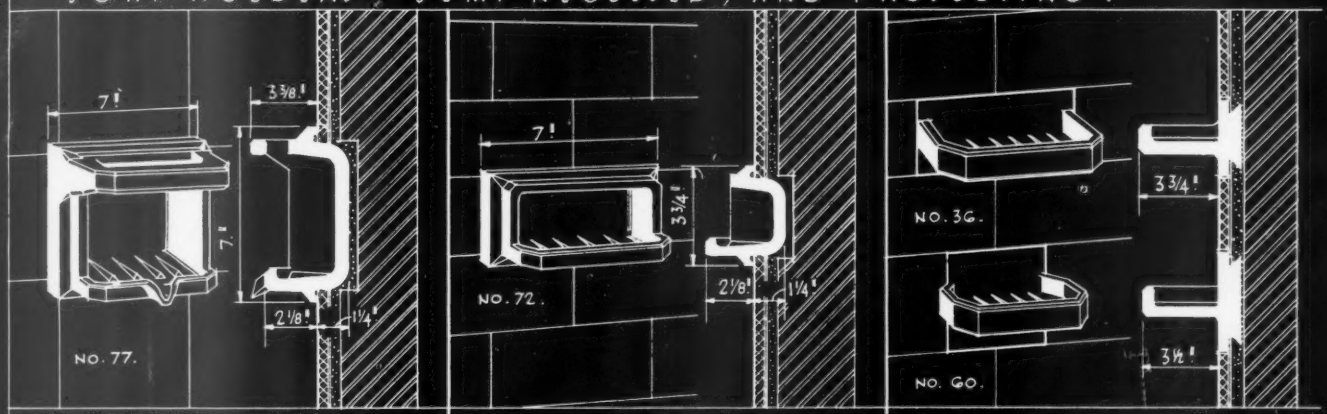
Address : Victoria Station House, S.W.1

Telephone : Victoria 9225

THE ARCHITECTS' JOURNAL LIBRARY OF PLANNED INFORMATION.

BUILT-IN BATHROOM FITTINGS IN GLAZED EARTHENWARE.

SOAP HOLDERS, SEMI-RECESSED, AND PROJECTING.

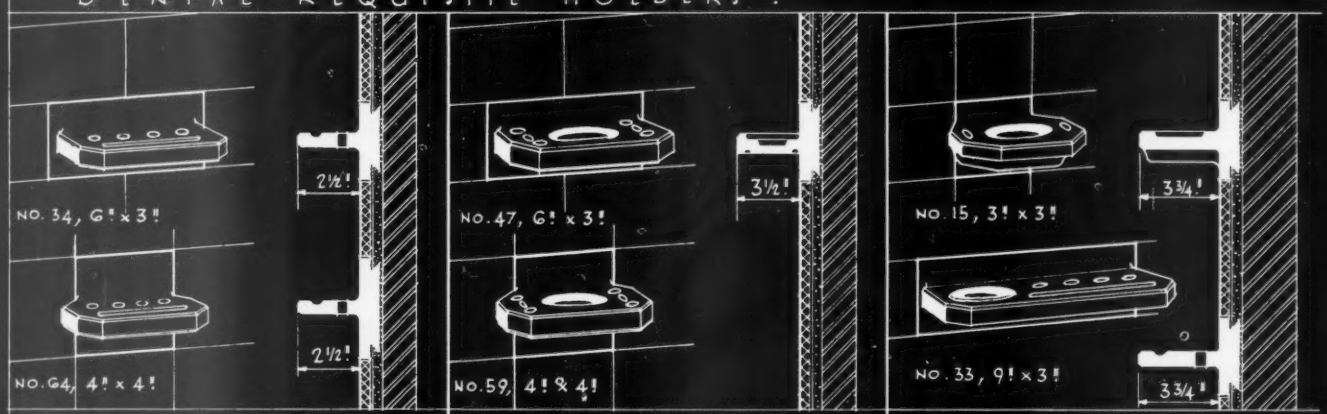


SEMI-RECESSED: 6" x 6" (Nominal.)
No. 76. Plain-lipped Grip Soap Holder.
No. 77. Tonque-lipped " " " .

SEMI-RECESSED: 6" x 3" (Nominal.)
No. 72. Plain-lipped, Soap Holder.
No. 73. Tonque-lipped, " " .

PROJECTING: 6" x 3", 4" x 4"
No. 36. Plain Soap Dish. 6" x 3"
No. 83. Tonqued " " . 6" x 3"
No. 60. Soap Dish. 4" x 4"

DENTAL REQUISITE HOLDERS.

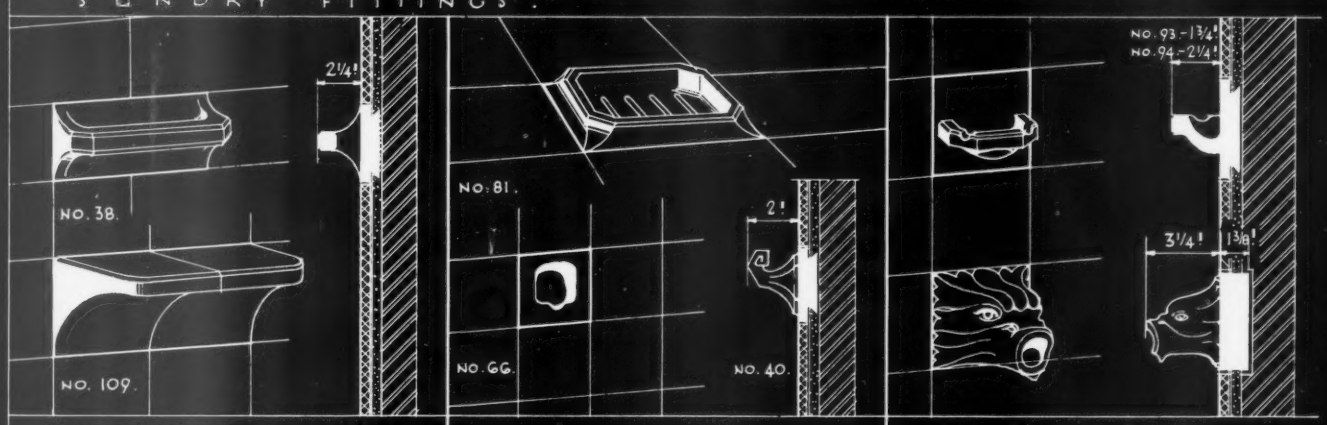


PROJECTING: 6" x 3", 4" x 4"
No. 10. Toothbrush rack, 6" x 3"
No. 34. Toothbrush & Toothpaste rack.
No. 64. " " "

PROJECTING: 6" x 3", 4" x 4"
No. 47. Tumbler & Toothbrush rack.
No. 59. " " " .

PROJECTING: 3" x 3", 9" x 3"
No. 15. Tumbler & Toothbrush rack.
No. 33. Tumbler, Toothbrush and Toothpaste rack.

SUNDRY FITTINGS.



PROJECTING: 6" x 3", 8" x 4"
No. 38. Grip, 6" x 3"
No. 109. Footrest for Shower Bath Recess (in 2 pieces - 4" x 4")

No. 40. Razor Strop Hook. 3" x 3"
No. 66. Used Razor Blade Receptacle. 3", 3"
No. 81. Sill Soap Dish. 6" x 4½"

PROJECTING:
No. 82. Gargoyle. 4" x 4" Base.
No. 93. Ash Tray. 4" x 4" " .
No. 94 Ash Tray. 6" x 6" " .

NOMINAL SIZE: The 'nominal' sizes given for semi-recessed fittings are the sizes of the wall tiles displaced; the flanges of the fittings overlap the adjoining tiles.

Information from Richards Tiles Limited.

INFORMATION SHEET: BATHROOM EQUIPMENT: RECESSO FITTINGS. 3.

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

THE ARCHITECTS' JOURNAL
LIBRARY OF PLANNED INFORMATION

INFORMATION SHEET

• 260 •

BATHROOM EQUIPMENT

OF GLAZED EARTHENWARE

Name of Product : Recesso Fittings

Types Illustrated : Soap, Sponge and Tumbler Holders and Cigarette Receptacles

Description :

Recesso Fittings are a range of receptacles of glazed earthenware, for soap, sponges, 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.

Previous Sheets :

This is the third of 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 ,, ,,
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 ,, ,, ,,
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 ,, ,, ,, ,,
27	,,	Tongue-lipped ,, ,, ,, ,,
28	,,	Lipless grip ,, ,, ,, ,,
29	,,	Plain-lipped grip Sponge and Soap Holder
30	,,	Tongue-lipped grip ,, ,, ,, ,,
32	12×6″	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	,,	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 ,, ,,
74	6×6″	,, ,, Plain-lipped ,, ,,
75	,,	,, ,, Tongue-lipped ,, ,,
76	,,	,, ,, Plain-lipped grip ,, ,,
77	,,	,, ,, Tongue-lipped,, ,, ,,
78	,,	,, ,, Tumbler ,,
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