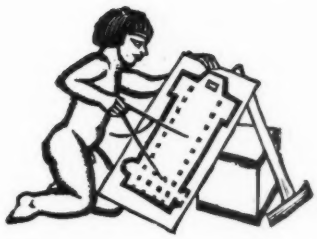


AN OPEN LETTER TO SIR KINGSLEY WOOD

SIR,—A reallotment of Ministerial posts announced during the relaxation of a Whitsun holiday has perhaps tended to leave a public once more settled down to business somewhat vague in its ideas as to who is what. But amongst this general vagueness one appointment needed no second reading to impress it sharply upon the country's mind ; we refer, Sir, to your appointment as Minister of Health.

In the general approval, in which we join, of the best reward for an administrator of great ability—the reward of being transferred from a responsible position to one of even greater difficulty—there is more than a recognition of outstanding work as Postmaster-General. For there is about your new appointment a touch of the revitalizing, of the dramatic, which has fired a public imagination not usually in any danger of combustion concerning affairs political. It is felt that a man who could make a people, and a British people at that, recognize and admit that it is possible for a Government department to be other than resolutely obstructive, and who could transform a monopolist recluse into a public-spirited progressive anxious to move with the times—could perhaps wave a fairy wand over the misery and complication of the slums.

To these hopes for the outcome of your new position we add our own with the added sincerity that comes from some knowledge of the difficulties which are before you in your new office. For the Post Office, regarded as an instrument for performing a set task, is possessed of advantages not found in your new department ; the former is an organization compact and self-contained, and it frowns severely upon those who try to do its work for it.

The position of your new Ministry is very different. The greatest of your tasks will be that of coaxing into the performance of their housing duties a great number of local authorities, which, in cases of unwillingness, are only too well armed with means of delay and evasion.

Let us shortly consider the position in Housing at the time of your taking office. First, what has been done ? Since the Armistice two and a half million houses have been provided for a population which was shown in 1931 to number ten and a quarter million families ; sufficient dwellings, in fact, to rehouse one-quarter of the country's inhabitants. This achievement in seventeen years would seem at first glance triumphant. And so it was acclaimed until two sinister facts concerning the allocation of the new houses could no longer be denied. For it was found that practically all who did not need a new house had got one, and causes too complex to be recited here had prevented those whose needs were greatest from moving into the accommodation thus rendered vacant.

At long last—and the archives of your Ministry, Sir, can more than fill the gap here left—something approaching a national determination to get rid of the slums had effect in a plan to accomplish this within five years. The programmes received as a result of your predecessor's Circular No. 1331 provided for the building of 285,189 dwellings and for the rehousing of 1,240,000 persons. These estimates are generally regarded as the lowest considered necessary. And, Sir, they are not being carried out.

During the year ending March 31, 1935, which we may very generously regard as the first of the five years, less than one-tenth of the plan was executed.

What, then, of the future ? Our hopes of greater progress during your tenure of office do not rely only upon your work at the Post Office. We remember that you are no stranger to the law and to its complex application to the problems of housing ; and we are sure that your study of the question during its period of greatest emergency will be of value in the present emergency of the slums.

But we desire to bring to your attention wider aspects of your new office. We urge, as we have urged before, that the entire housing of the country, and not its slums alone, should be covered by a national survey and plan and not left to be dealt with at the haphazard discretion of local authorities, whilst during each year of delay the chaos in building development becomes steadily more unmanagable. Such a survey could be only accomplished by a Minister possessing the continuous and effective support of public opinion. And we feel, Sir, that no one is so well equipped as yourself for the gaining, increasing and guiding of this support.

There are few persons in this country who, having seen and appreciated slum living conditions, do not sincerely desire to end them. But slum abolition has been shown to be slow at its fastest, and before the long complications of clearance orders and enquiries enthusiasm falters.

The safeguarding of this enthusiasm must be one of your chief concerns. And no more certain means of ensuring this could be devised than that you should be accompanied to Whitehall by those who have aided you in making a kindly and rejuvenated Post Office into the people's family friend.

Sir Stephen Tallents and Mr. Grierson have deserved a share in your new work, and the country would be the better for their having it. The mental picture of slum conditions should be fixed and kept in the public mind until the phrase lacks meaning for lack of an example.

The doing of this, Sir, is the opportunity of your new office, and we submit that it is a great work—greater even than the administration of a great Post Office.

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

NOTES & TOPICS

WINDOW BOXES

MR. GUY DAWBER has opened a campaign to encourage flowers in window boxes to enliven our streets, and, I might add, our architecture. Oxford Circus is enamoured of the idea, Regent Street and Kensington High Street each united in flowers at Jubilee time, and Bedford Square (or the more active half of it) showed us that geraniums are not as comic as they sound.

*

There are snags, of course. Lease clauses preclude such amenities in many flats in London—the careless pot may descend to balconies below, the dripping water-can may ruin the promenading frock; but these show that merely technical difficulties are to be overcome.

*

One could use well-secured Burma pyinkado in place of rotting deal. And then I know of several buildings where properly constructed and drained concrete or stone flower boxes have formed an essential part of the architectural whole. I remember, too, that even the B.B.C. have appreciated flowers as an added interest in Langham Place—but do not remember that Prospero (or for that matter Ariel himself) has received a mantle of lichen as a pretty consequence.

WORDS TO THE C.P.R.E.

It may seem a little late to mention the paper Geoffrey Boumphrey read to the C.P.R.E. at Ashridge nearly three weeks ago; but the full text of it has only just come into my hands, and on reading it through I am filled with respect for its author's constructive vision.

*

There is no more necessary body in this country than the C.P.R.E., or one whose endeavours deserve greater support, which makes it all the more sad when the Council's work tends too far in the direction of mere antiquarian preservation—as insufficiently clear thought often makes it do.

*

And I can think of no better influence than Geoffrey Boumphrey's to transform sentimental preservation into vital development. His paper was called "Building in Rural Areas with Special Reference to Appearance." I give a quotation from it to show his ability to present an idea by entertaining analogy with all the point and twice the persuasiveness a bald statement of policy would have.

*

You are walking through a meadow by a river, shall we say? On either hand the strong curves of the downs are outlined against the sky, in which float more softly-curving clouds. A mile ahead of you the roofs and chimneys of a little village are half hidden by the great elms which enfold it. A typical English scene. Suddenly to your consternation you catch sight of a square stone erection, twice the height of the houses, with knobbly spikes at each corner. Its square verticality is completely at variance with all the subtle curves about it. Your indignation knows no bounds. What was the local authority doing to allow such a building to be erected! Is there no branch of the C.P.R.E. to make its weight felt? Yet that is just a church tower. We are so *used* to it that we should feel something was missing if it were not there. Unfamiliarity is no reason for condemnation. Without novelty there can be no progress, and without progress there can only be a slipping backwards. To stand still is such matters is impossible.

*

And then he leads from that to appeal for clear thinking on the question of "local materials," condemning the unsoundness of the William Morris Arts and Crafts retrogressive philosophy, pointing out the traditional custom of importing the best materials when transport facilities allowed and concluding with the splendid maxim: "Suitability must be our criterion, not sentiment."

*

If that motto could be hung up over the bed of every C.P.R.E. member, how much more constructively effective that admirable body might become.

DEVELOPMENT FOR PRESERVATION

At this moment there is a first-class concrete example which has arisen to bear witness to the sense of Mr. Boumphrey's thesis.

*

To many people it will come as a surprise that the King has approved of the erection of a block of flats overlooking Windsor Castle and Eton College. But a study of the scheme prepared by Professor Walter Gropius and Mr. Maxwell Fry shows at once the wisdom of His Majesty's important decision. More than that, it indicates a perfectly sound scheme for the retention of the vital rural quality which almost every large private estate at present contributes to English landscape.

*

The scheme, I see, uses for building only one of the 33 acres of the historic St. Leonards Estate overlooking Windsor Forest. The remaining 32 acres, whose present arboreal splendour is the result of several centuries of care, are to remain as unspoiled open space.

*

This kind of intelligent development contrasts vividly with the criminal brutality of some speculators who buy a wooded estate, build a few houses and use the trees to attract buyers. These unfortunate and misguided people then witness the gradual destruction of the trees to make room for more houses, until eventually not a single natural

The architect and the countryside : a well-known architect watches village sports after the distribution of Jubilee mugs. It would hardly be fair to say who it is.

feature remains to attract them to the site. They are indeed left with an ordinary characterless suburban street, a few more pointless miles away from their centre of work.

*

I wish every single estate developer would take this decision of the King to heart and develop to preserve their estate's greatest asset.

THE ADELPHI AGAIN

Once again we are told that the Adelphi is to be rebuilt, that this oasis of romance off the Strand is once more preparing to depart.

*

Instead of the arches, we are told, there will be garages, ten stories of flats in place of the present four or five, wider John and Robert and Adam Streets than the present narrow defiles. Nothing is said about the Terrace, but there is no reason why a public terrace, even better elevated than the present roadway, should not form part of the proposed scheme.

*

A more difficult problem will be to replace the mellow charm of failing years by the more robust charm of imaginative youth—may the new scheme at least have imagination.

IN MEMORY . . .

During one of the recent moments of summer which have hardly begun to be properly abused before they meet with a violent end, I happened last week to be upon the Thames—more exactly, in the Thames and upon my back—near Medmenham. And there my attention was drawn by a structure upon the bank. In white stone and very red tiles a monument stood engagingly, half-draped in canvas and surmounted by a brazen cherub who was pointing in consequentially half to heaven and half across the river.

. . . OF VALOUR

I confess that curiosity conquered instantly. Emerging from my coolness, I lifted the canvas to see what great man was here commemorated.

*

The first words : " This monument . . . the successful action fought . . . 1899 " raised visions of martial heroism —of assegais, perhaps, and Gatlings jammed. But no ; the scene of battle was the High Court and the victory the preservation of public rights over the adjoining ferry.

*

A people which has suffered long from countless replicas of the questionably prominent has now an example for some fascinating alternatives. The man who first establishes the extent of the public interest in a piece of their countryside sold for up-to-date development should be on the short list for future immortalization.

COMPETITIONS . . .

I see that the last Informal General Meeting of the season is to be held at the R.I.B.A. at 6 p.m. on July 10. The Junior Members are going to discuss the question of Architectural Competitions, limited and otherwise. Mr. Goodhart-Rendel, one of the most popular competition assessors, I believe, of recent years, will take the chair, and six young competitors have promised to open the discussion.

*

The subject excites my curiosity and I anticipate hearing some pointed remarks about the merits of various types of competition, about conditions, about answers (or should I say replies?) to questions, and, of course, about assessors—yes, certainly about assessors.

. . . AND INCOME TAX

This reminds me that I have never heard any authorized opinion on the question of Income Tax in relation to competition premiums. From enquiries, I find that some assistants do not return as income their competition winnings, while some young architects offset their office expenes against the occasional return of a third or fourth premium. I do not know what our competition lions do.

*

No one dreams of balancing the losses of Ascot against the winnings of Epsom in the income account, nor, I suspect, does the cross word puzzler regard his prize guineas as taxable income.

*

An even greater degree of skill is required to gain the premiums of the architectural competition . . . but does that make them liable to Income Tax ?

FULL CIRCLE

Apparently the lime trees in the Mall are being devoured by caterpillars and nothing can be done about it, for the old departmental game of " passed to you for notice and action, please," is being played with the usual efficiency.

*

The Office of Works says it's a matter for the Ministry of Agriculture, the Ministry of Agriculture has passed it on to the Commissioner for Crown Lands, who has now gracefully retired in favour of the Office of Works again.

*

A pity that the game should have ended so soon, but even *I* don't see that the Fisheries could have been worked in anywhere.

*

Incidentally, I'd always thought that the old story of the P.L.A. being responsible for the river side of the Embankment lamp-posts, while the Borough Council had to paint the road side, was almost *too* good to be true. But I'm beginning to wonder. . . .

ASTRAGAL

NEWS

POINTS FROM THIS ISSUE

Real turf on a liner 1

Competitions and Income Tax 4

Unfamiliarity is no reason for condemnation 5

So little saved, so much inconvenience caused 16

Quite the most noticeable feature of the modern movement in design is the extent to which it is a paper one..... 21

MINISTER OF HEALTH ON RURAL HOUSING

The future of rural housing was discussed by the Minister of Health, Sir Kingsley Wood, in an address to the annual meeting at Guildhall last week of the Rural District Councils' Association. He said that while he did not want to see the sweeping away of many interesting and picturesque country cottages, there was nothing artistic in living in conditions which could no longer be tolerated in a civilized community.

Those who most appreciated their beautiful countryside would be first to desire to safeguard its amenities by replacing unfit cottages or by reconditioning them if there was beauty to be preserved. He urged upon rural authorities the great advantages of reconditioning as a useful complement to slum clearance procedure and its value in helping to remedy agricultural housing conditions. The grants for this purpose were increasing, and the number promised for 1934 was double that of 1933.

There were many old cottages which were satisfactory in some ways but too small for a family of average size. A grant could be made under the Rural Workers Act to enable such cottages to be enlarged and improved.

GARDEN CITY FOR CROYDON

Croydon Borough Council has approved a scheme to build at Addington, a rural parish recently absorbed, what is claimed will be the largest garden city in the country. The First National Housing Trust, in co-operation with the Council and the Ministry of Health, is to build on a site of 569 acres some 4,000 houses to let at 10s. and 11s. weekly. The scheme provides for two churches, three schools, a cinema and a hotel. Over 100 acres are to be reserved for open spaces, with a village green, a woodland, playgrounds and banks of trees. A parkway two miles long, with a minimum width of 200 feet, will run through the estate, which will increase the population of Croydon by 20,000.

THE ARCHITECTS' DIARY

Thursday, July 4

ROYAL ACADEMY, *Burlington House, Piccadilly, W.1. Summer Exhibition. Open until August 10. 9 a.m. to 7 p.m.*

SOCIETY OF CHEMICAL INDUSTRY. *Annual Meeting and Conference. At Central Station Hotel, Glasgow. Until July 6.*

ARMY VOCATIONAL TRAINING CENTRE. *Aldershot Show. At Rushmoor Arena. Until July 6.*

LANDOWNERS AND RIBBON DEVELOPMENT

"Strong objection" to two clauses of the Restriction of Ribbon Development Bill was taken at the annual meeting on Thursday of the Central Landowners' Association. Lord Strachie, who presided, said he thought most of them were quite ready to accept the greater part of the Bill; but there was strong objection to Clause 8, under which they were not treated properly with regard to compensation, and to Clause 10, the provisions of which were monstrous. Local authorities were to take 220 yards on either side of the road, and under certain conditions a great deal more. Why should local authorities be given this power to become large landowners? They might be able to develop building estates themselves.

Lord Strachie added that he was not sorry to see that it was unlikely that the Government would have time during the present session to pass the Bill.

REPORT ON CHARING CROSS BRIDGE

An immediate decision either to build a new Charing Cross Bridge forthwith or to abandon the idea finally is urged in a joint report to the Westminster City Council by the Improvements, Law and Parliamentary and the Traffic and Public Lighting Committees. The report, which the Council adopted on Thursday, says that although a new bridge may be "less necessary" for some time, it will have to be provided before many years to meet the unending growth of London.

"Any bridge scheme," the report adds, "should be accompanied by a major scheme of road improvements extending for a considerable distance north and south of the river. . . . The interests of traffic, commerce and railway passengers all demand that any bridge scheme should make provision for the retention of the railway station on the Westminster side of the river. . . . It is not practicable to reserve the site of the bridgeheads without causing the area to become a blot on the City. The state of affairs which has existed for some years in the Strand, over the L.C.C.'s policy of acquiring property and delaying demolition until the leases fall in, would be extended over a much wider area."

LONDON'S SHORTAGE OF PLAYING FIELDS

Notwithstanding all the efforts of local authorities, open-space societies and private benefactors, the deficiency of playing fields for the growing population of London was serious, said Major Raphael Jackson, at last week's annual meeting of the London and Greater London Playing Fields Association.

As traffic facilities improved, London was spreading at an almost incredible rate; and even if every acre of suitable undeveloped land within the 12-mile circle were today available for public use, there would still be a serious shortage of recreational facilities. For that reason London could not afford to allow any further large areas of accessible, level and well-drained land to be absorbed for building.

REHOUSING AT HACKNEY

The L.C.C. is to spend £100,000 on a clearance scheme at Hackney. Some 150 old cottages on the bank of the River Lea are to be replaced by six blocks of dwellings. About 600 inhabitants will be displaced.

LIVERPOOL SCHOOL OF ARCHITECTURE

The exhibition of the school was opened yesterday by Mr. Herbert Morrison, Chairman of the L.C.C., in the Leverhulme building. Dr. H. J. W. Hetherington, Vice-Chancellor of the University, presided. The exhibition will remain open to the public until July 27.

THE SOUTH-EASTERN SOCIETY OF ARCHITECTS

The following have been elected as officers for the ensuing year:—

President: R. Goulburn Lovell.

Vice-Presidents: C. R. B. Godman, Harold Anderson, F. W. Rees, A. J. Stedman, Stanley Philpot.

Hon. General Treasurer: Cecil Burns.

Hon. General Secretary: C. H. Murray.

Hon. General Auditor: John L. Denman.

OBITUARY

We regret to announce the death of Lieut-Commander Lionel Sheard Chappell, D.S.O. (Zeebrugge), D.S.C., joint managing director of the Westmorland Slate Quarries Co.

Commander Chappell was born in Pontefract and succeeded his father in large general building interests. After serving during the war with great distinction with the R.N.R., notably in the Dover Patrol, Commander Chappell was one of those who formed the company which nine years ago took over the Buttermere Green Slate Co. Keenly appreciative of the Lake District and of the natural beauty of its building

materials, Commander Chappell was principally instrumental in the acquiring of other local quarries and in making his firm one of the best organized and most progressive in the country.

PROFESSIONAL ANNOUNCEMENTS

As announced in a recent issue, Messrs. Leathart and Granger have dissolved partnership and are now in practice independently. Mr. Julian Leathart's offices are now at 39 Gordon Square, W.C.1 ; Telephone number, Museum 8884. Mr. W. F. Granger's address is 9 Savile Row, W.1 ; telephone, Regent 5539.

Mr. C. M. Bond, formerly of the city engineer's staff at Plymouth, has been appointed to the architectural staff of Mr. Percival T. Harrison, M.INST.C.E., borough engineer and surveyor of Finchley.

R. I. B. A.

COUNCIL

The list of elections to the Council, published on page 984 of our last issue, did not include the names of the members not requiring re-election. The full list is as follows :—

Members of Council.—Professor Patrick Abercrombie, M.A., Professor S. D. Adshead, M.A., W. H. Ansell, Henry V. Ashley Robert Atkinson, John Begg (Edinburgh) E. C. Bewlay (Birmingham), Herbert T. Buckland (Birmingham), Joseph Emberton, H. S. Goodhart-Rendel, W. Curtis Green, P. D. Hepworth, Professor C. H. Reilly, O.B.E., Professor A. E. Richardson, L. Sylvester Sullivan, Sydney Tatchell, Maurice E. Webb, G. Grey Wornum.

Associate Members of Council.—W. Naseby Adams, P. C. Blow, W. Austin Daft, Cyril A. Farey, E. Maxwell Fry, R. Norman Mackellar, Norval R. Paxton, Basil Ward, Charles Woodward.

Licentiate Members of Council.—H. L. Baker, S. A. Heaps, F. W. Rees, Francis R. Taylor, P. J. Waldram, S. L. Whitehouse.

ELECTIONS

At a council meeting held on Monday, June 24, 1935, the following members were elected :—

Fellows : S. S. Careless, A. D. Clare, M.C., J. J. Crowe, O.B.E., C. E. Howitt, A. J. May, C. W. C. Needham, M.T.P.I., N. F. Woodroffe, O.B.E., P.A.S.I., The Rev. G. F. George, Lt.-Col. G. Westcott, O.B.E., J.P.

Associates : J. J. Beaton, A. S. Brickell, R. Carter, C. H. Crawford, H. Dove, G. Flett, T. C. Page, R. K. Price, P.A.S.I., R. V. Smith, B.ARCH., G. Walkley, N. O. Wragge.

Licentiates.—S. E. Burrett, C. H. Crowther, F. Dark, B. B. Fairbank, F. S. Palling, E. A. Sykes, B. Wilson, P.A.S.I., K. G. Withers, J. W. Worricker.

JUNIOR MEMBERS

The following have been invited by the Council to become members of the first R.I.B.A. Junior Members' Committee :—

Chairman : L. W. Thornton White, Rutland, East Yorks and London.

Associate Members : Miss J. M. Albery, Essex and London ; H. Braddock, London ; W. Goodesmith, Australia and London ; W. G. Holford, South Africa and Liverpool ; R. F. Jordan, Birmingham and London ; J. E. Kean, Official (H.M.O.W.) ; W. H. McNichol, Manchester and London ; T. Mitchell, Scotland and London ; Mrs. Janet Pott, London ; J. N. Summerson, London ; Miss Blanco White, London.

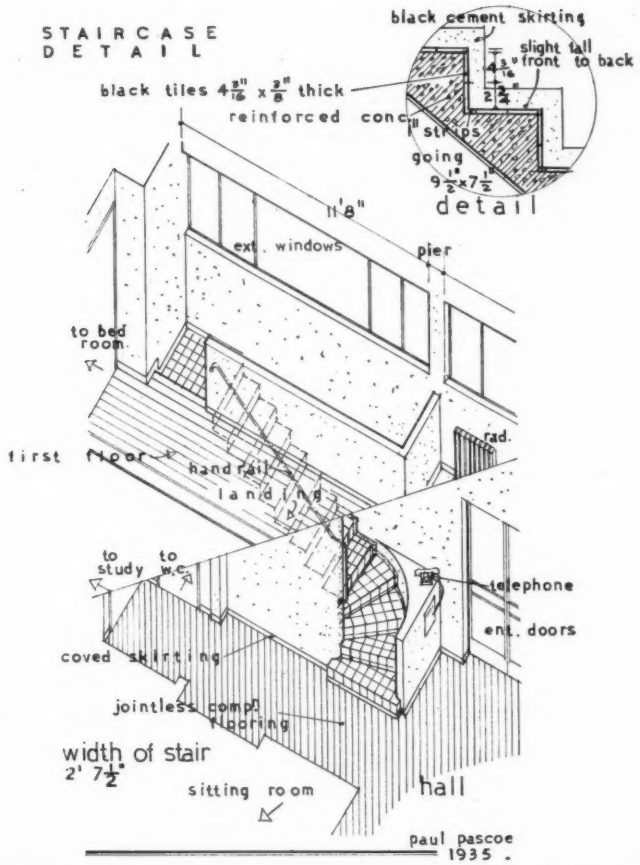
Student Members : N. E. Block, The Bartlett School ; Jack Howe, The Polytechnic ; G. E. Lewis, The A.A. School ; N. D. Eyres, The Northern Polytechnic.

With power to co-opt not more than three more members.

LONDON ARCHITECTURE MEDAL

The jury have given their award in favour of the Royal Masonic Hospital, Ravenscourt Park, W., designed by Sir John Burnet, Tait and Lorne, FF.R.I.B.A.

The medal is awarded annually for a building erected during the three preceding years within a radius of eight miles from Charing Cross.



Staircase detail from a house in Cambridge. Architect : George Checkley.

COMPETITION NEWS

COMPETITION RESULTS

The award of the Assessor (Mr. H. Austen Hall) in the competition for a new City Police Station and Hospital in Bishopsgate, is as follows :—

First Premium (£250), Messrs. Vine and Vine, AA.R.I.B.A., Tudor Chambers, Station Road, Wood Green, N.22.

Second Premium (£100) : Mr. E. Berry Webber, A.R.I.B.A., 42 Gordon Square, W.C.1.

Third Premium (£50) : Mr. Maurice G. Wardley, A.R.I.B.A., 50 Grove Road, Sutton, Surrey.

The designs will be on exhibition at B.F.C. House, 81-87 Gresham Street, E.C.2, until 4 p.m. on Saturday, July 6.

•

The results of the competition open to Scottish architects for the design of a four-room cottage was announced last week.

The competition was promoted by the Corporation in connection with the Housing and Health Exhibition, which will be held in the Kelvin Hall in October next, and houses built to the winning designs will be erected at the exhibition. Eighty-eight designs were submitted.

The winners in order of merit were : (1) (prize of £100), Samuel M'Coll, Lochfield Drive, Paisley ; (2) (£75), James Hay and Steel, Prudential Chambers, Kilmarnock ;

(3) (£50), J. and J. A. Carrick, Wellington House, Ayr; (4) (£25), Alexander Cullen, Cadzow Street, Hamilton. Three designs which received honourable mention were submitted by Gavin A. Thomson, Bath Street, Glasgow; M. Cormie, Arbroath; and Robert H. Wallace, Craigpark Drive, Glasgow.

A condition of the competition was that the maximum cost of a cottage should not exceed £290.

The assessors were Mr. G. Gardner M'Lean, vice-president of the Glasgow Institute of Architects; Mr. W. B. M'Nab, Director of Housing in Glasgow; and Mr. J. H. Ferrie, principal architect of the Housing Department.

Competitions Open

August 31.—Sending-in Day. Municipal offices, Swindon, for the Swindon Corporation. (Open to architects of British nationality, practising in the British Isles.) Assessor: Professor A. B. Knapp-Fisher, F.R.I.B.A. Premiums: £350, £250, and £150. May 25 was the last day for questions, and August 31 is the closing date. Conditions of the competition are obtainable from the Town Clerk, Town Hall, Swindon (deposit £1 1s.)

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 not be submitted later than October 1. Particulars of the competition are obtainable from the Clerk of the County Council, Clerk of the Peace Office, Hertford. (Deposit £2 2s.)

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. 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. Applications for the conditions of the competition, etc., should be made on or before June 29 to Mr. Reginald Anderson, Town Clerk, Guildhall, York. The last date for receiving questions is July 29, 1935, and the last date for sending in designs is November 1.

LAW REPORT

THE INCORPORATED ASSOCIATION OF ARCHITECTS AND SURVEYORS

v.

ARCHITECTS' REGISTRATION COUNCIL OF THE UNITED KINGDOM

Qualifying Examinations under the Architects' Registration Act 1931

IN the Chancery Division on Wednesday, June 26, Mr. Justice Clauson had before him a summons by the Incorporated Association of Architects and Surveyors, of 45 Grosvenor Place, S.W., asking for the following relief:—

1. That it might be declared that according to the true construction of the Architects' Registration Act 1931, the defendants, the Architects' Registration Council of the United Kingdom, have power to recognize for purpose of qualification for registration of a person as a registered architect under the provisions of the Act, an examination in architecture, the recognition of which has not been recommended to the Council by the Board of Architectural Education, and

2. That the plaintiffs have a right to have the examinations in architecture conducted and held by them considered by the Council for such recognition.

Mr. H. O. Danckwerts appeared for the plaintiffs and Mr. Wilfred Hunt for the defendant Council.

At the conclusion of the arguments his lordship granted plaintiffs the first declaration for which they asked, but not the second.

His lordship, in giving judgment, said that the defendant Council was established under the Act and was instructed to set up a register. It was a duty of the Board of Architectural Education—which consisted to some extent as nominees of those engaged in teaching architecture, and the remainder of nominees of those engaged in other educational work—to recommend examinations which should be regarded as a qualification for inclusion in the Register. He held that according to the true construction of the Act the plaintiffs were entitled to their first declaration.

With regard to the second the plaintiffs were a body who thought the Board ought to recognise their examinations, and the Board had refused to recognize them. The plaintiffs had no power in the matter, and that declaration which they asked for could not be granted.

His lordship added that there was no evidence that the Council did not wish to adopt the recommendations of the Board, and if the Council did not desire to recommend the plaintiffs' examinations they had no need to do so. He could not see that the plaintiffs, having obtained the first declaration for which they asked, would derive any great benefit from it. In the circumstances there would be no order as to costs.

IN PARLIAMENT

During the Committee stage of the Housing Bill in the House of Lords Lord Dudley moved an amendment to provide that the Minister of Health should not approve flats unless each flat in a block exceeding three storeys in height was provided with a balcony. He emphasized the need for these balconies for small children; they were, he said, essential to health. The cost of providing them would be very small. For a block of 50 flats, costing £16,000, the extra cost of providing a nicely designed Regency type of balcony would be only £50, or £1 a balcony.

Lord Halifax, on behalf of the Government, expressed sympathy with the proposal, but urged that the amendment should not be pressed. To single out and give prominence to one desirable amenity and to include it in the Bill along with the provisions of bathrooms would by implication tend to diminish the importance that might be attached to other amenities that were equally desirable. The amendment would leave out the question of the general planning and equipment of blocks of flats. The one object of the Minister was to secure that these new blocks of flats should be properly planned, externally and internally.

Lord Balfour of Burleigh asked that in future circulars the proposal for balconies should be commended by the Minister to local authorities as a very desirable feature, and Lord Halifax promised to make that suggestion to the Minister.

The amendment was withdrawn.

Lord Gage, on behalf of the Government, moved the following new clause: "Any person who objects to a clearance order on the ground that a building included therein, being a building in which he is interested, is not unfit for human habitation, or who objects on the like ground to a compulsory purchase order made under Part I of the Act of 1930, or under Part I of this Act, and who appears at the public local inquiry in support of his objection, shall, if the building is included in the order as confirmed as being unfit for human habitation, be entitled on making a request in writing to be furnished by the Minister with a statement in writing of his reasons for deciding that the building is so unfit."

He explained that this would implement a promise given by the Minister of Health in the House of Commons.

The new clause was agreed to.

Lord Balfour of Burleigh moved a new clause to provide that if an owner who received notice under the Bill intended to submit an undertaking with regard to the carrying out of works he should, within 14 days, give notice to the local authority of his intention to do so, and should submit details of the undertaking within such time as the local authority might reasonably prescribe.

Lord Halifax accepted the new clause, but hinted that it might have to be amended on report.

The new clause was agreed to.

The Ribbon Development Bill, in spite of Labour opposition, has been read a second time in the House of Commons by 182 votes to 35.

At question-time in the House of Commons Major Carver asked the First Commissioner of Works, in view of the fact that £10,700 was originally voted for an equestrian statue of the late Field-Marshal Earl Haig, how soon it was the intention of the Government to erect a suitable memorial of this nature.

Mr. Ormsby-Gore said that a considerable amount of work still remained to be done before the bronze statue could be cast, and he did not expect that it would be possible to erect a memorial this year.

THIS ARSHETECTURE

HIS OWN ARCHITECT

Herr Hitler, I hear, plans to spend most of his summer at Haus Wachenfeld, his chalet near Berchtesgaden, in Southern Bavaria. It is now being greatly enlarged according to the Führer's own designs.

He has already shown considerable skill as an architect in some of the Munich buildings and is personally supervising the rebuilding of his chalet. —From the *Daily Telegraph*.

THE GUILDHALL

KINGSTON-UPON-THAMES

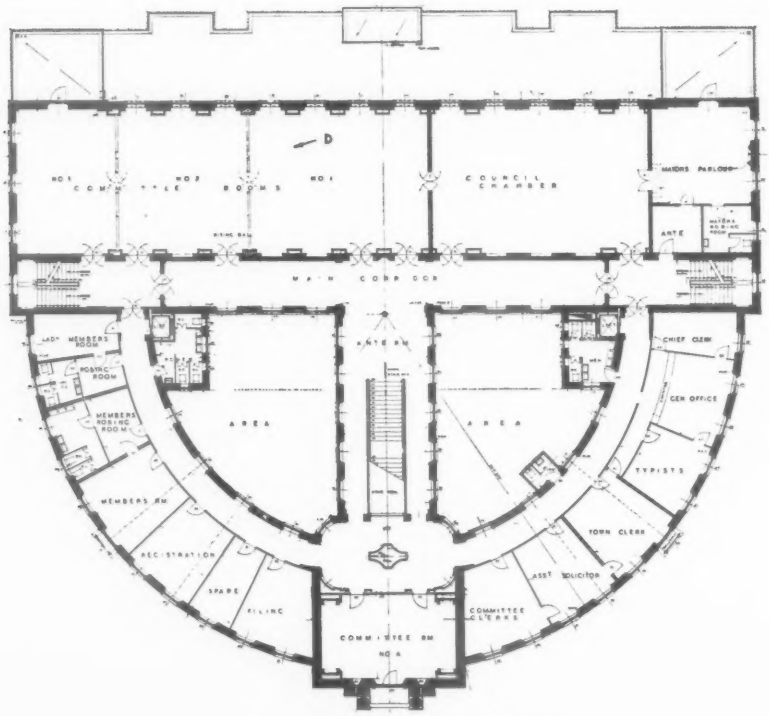
DESIGNED BY MAURICE WEBB

SITE

The Guildhall occupies the site of the old Municipal Offices and courts, built in 1811. After the consideration of several alternatives, the general plan form of the new building was arrived at as being that best suited to the site conditions.

In the photograph below are shown the principal streets in the vicinity of the site. In the foreground is the market-place from which the High Street first leads towards the main entrance of the Guildhall, and then turns in an S-bend, first to the right and later left. In the extreme left of the illustration is the road to Surbiton connecting with the market-place by a cross-street. These conditions of traffic and varying viewpoints determined the building's final semi-circular block form.

THE GUILDHALL, KINGSTON,



FIRST FLOOR PLAN

PLAN

The plan of the building is divisible into two main sections—the semi-circular block of office accommodation to the north and the rectangular block of courts, council chamber and committee rooms along the south front. The sharp fall in the site from north to south provided the greater floor-to-floor heights required in the latter block.

In the general plan disposition of these several units the lack of accentuation of the council chamber either on plan or elevation constitutes the major variation from the normal planning of municipal offices. The council chamber is placed en suite with the committee rooms and, save in internal finish, receives no special emphasis.

The lower ground floor of the building contains the courts and subsidiary accommodation in a self-contained unit, the magistrates' entrance being on the south front, and the public entrances to the east and west.

From the principal entrance hall the main staircase rises in two straight flights to the first and principal floor, containing the council suite and town clerk's department.

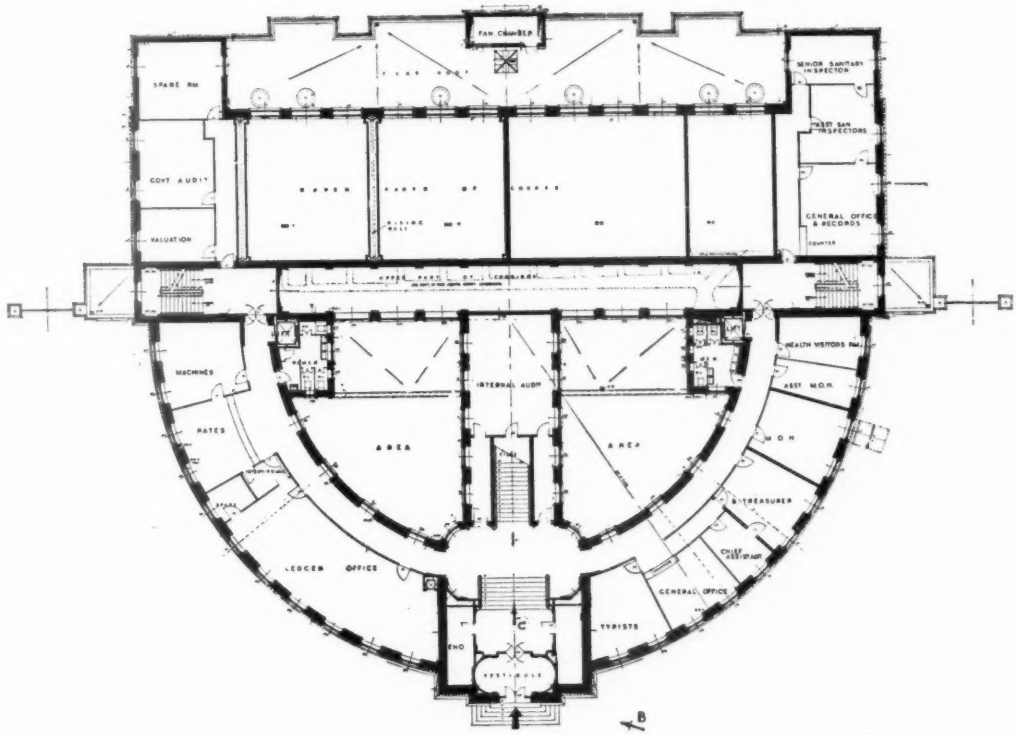
The council suite consists of the three committee rooms and the council chamber, all communicating, the seating of the latter being removable.

The provision of a fully-equipped assembly hall not being considered necessary, the council suite was designed for occasional use for receptions. The soundproofed walls between the committee rooms can be lowered for this purpose into spaces adjoining Courts 1 and 2, thus forming one room.

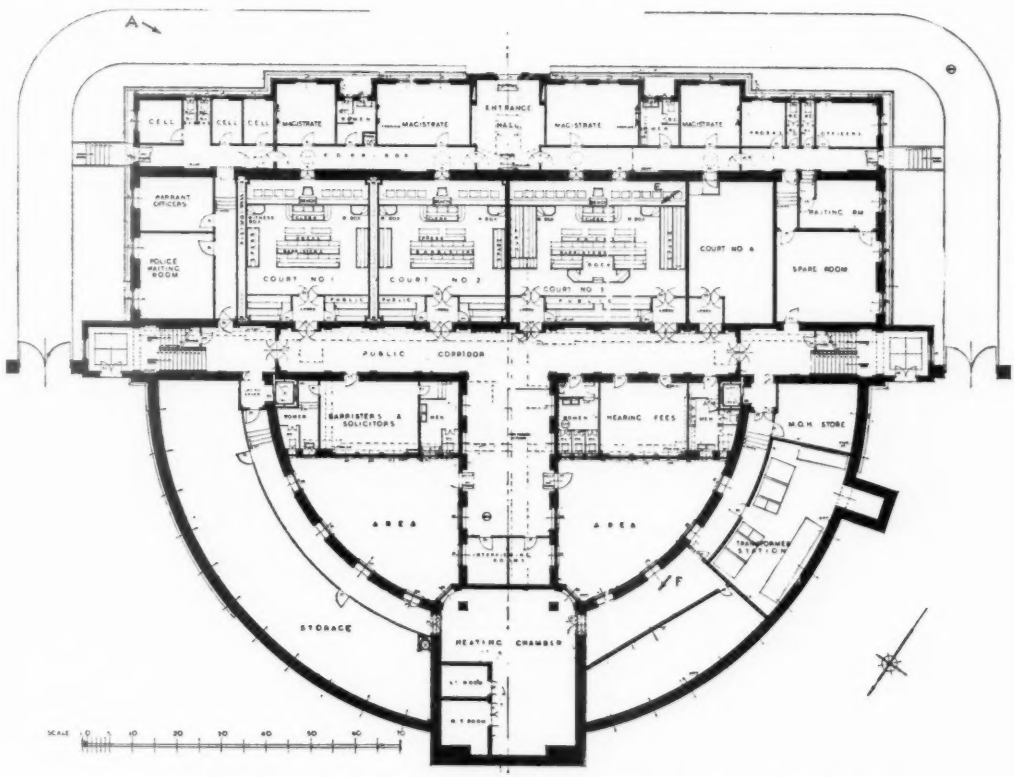
The second floor contains additional office accommodation, with a caretaker's flat above.

The main staircase from C.

DESIGNED BY MAURICE WEBB



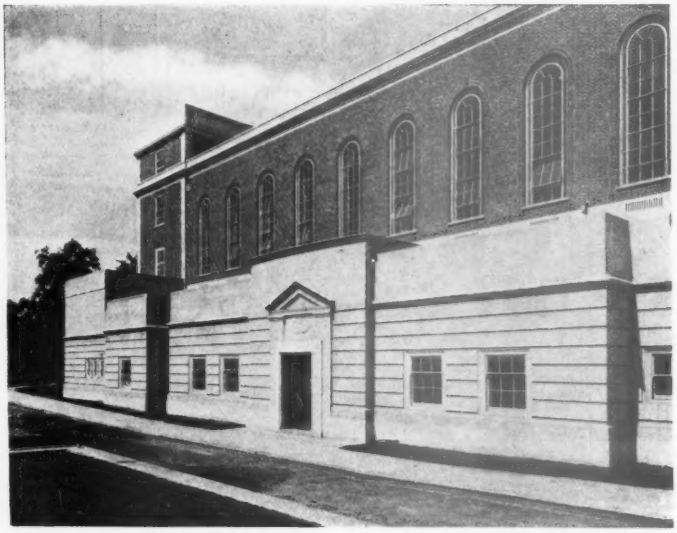
GROUND FLOOR PLAN



LOWER GROUND FLOOR PLAN

THE GUILDHALL, KINGSTON.

Above is a general view of the main (north) elevation; below, the south elevation from point **A**. *On the facing page is a detail of the main entrance from viewpoint* **B**: *the metalwork of the doors is in blue and silver gilt.*



ELEVATIONS

The principal emphasis in the elevational treatment is reserved for the tower over the main entrance. The walls are faced in sand-faced brick and Portland stone, with plain tile roofs, local materials being used wherever possible.

The stone carvings were executed by Mr. Walter Gilbert.

CONSTRUCTION, AND INTERNAL FINISHES

The work was divided into three sections: demolition of the old buildings, and the foundation and superstructure contracts. In the course of the work the Hoggsmill stream abutting on the site had partially to be covered in.

The quantity surveyor's estimate for the works, excluding the culverting of the Hoggsmill, was £124,700.

Structurally, the building consists of weight carrying brick walls with filler-joist floors and hollow tile roofs.

In the decorative scheme Empire materials were used wherever possible. The entrance hall columns and architraves to council suite doors are in Hornton stone. The floors of the hall and first floor main corridor are in travertine, and the stair and entrance door metalwork is in blue and silver-gilt.

Office corridor floors are in travertine with a slate margin, and dadoes to subsidiary stairs are of polished precast terrazzo.

The court corridors are finished with jarrah blocks. The timbers used in Courts 1 and 2 are Australian silky oak and Australian walnut, and in Court 3 Burma teak and Macassar ebony.

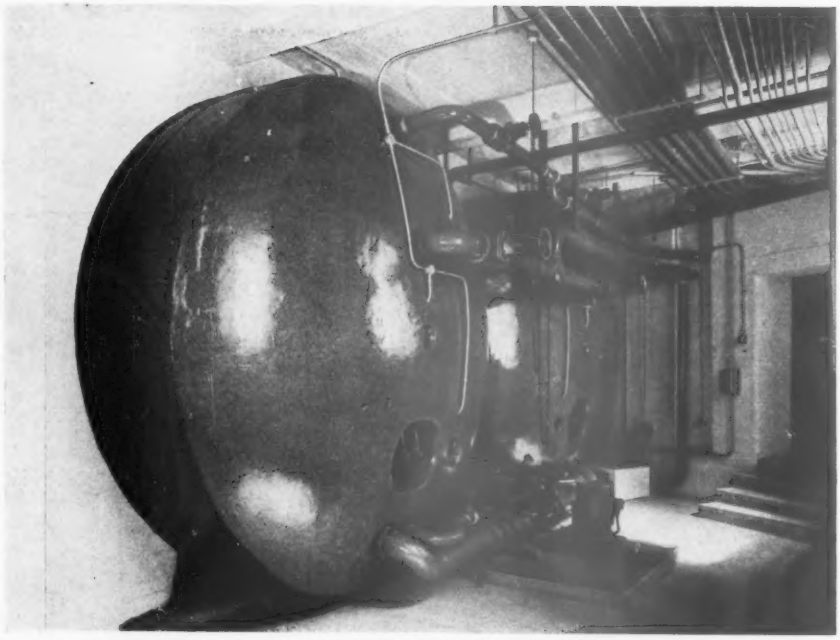
The fittings and panelling of the council chamber are in limed oak with upholstery in blue leather, and the flooring is in jarrah blocks. The committee rooms are floored with Tasmanian myrtle in narrow widths. The magistrates' rooms are panelled in Burma teak.

DESIGNED BY MAURICE WEBB

THE GUILDHALL, KINGSTON

DESIGNED BY

MAURICE WEBB



Left, the hot-water storage vessels from viewpoint F. *Below, left, Court 3 from* E, *showing the dock and one of the entrance lobbies; right, the committee rooms from* D. *In this photograph the rooms are shown thrown into one, the subdividing walls being lowered; removable panels in the pilasters conceal the wall guides. The gallery shown is over committee room No. 3.*

SERVICES

The principal interest of the service installation lies in the use of electricity for lighting, heating, cooking and domestic hot water.

The central heating plant is designed on the electric thermal storage principle. The water is heated by means of a 600 kW high-tension electrode boiler, which takes advantage of the cheap off-peak supply of electric current, this water being circulated between the boiler and two 10 ft. diameter by 14 ft. long storage vessels by means of suitable pumps. The oil-operated automatic control gear maintains the boiler load at any pre-determined figure. Safety devices cut out the boiler when the required storage temperature is reached, and are also arranged to operate should the current fail. During the day the water stored in the vessels is circulated through radiators and heating batteries via an automatic three-way valve, which mixes some of the return water from the radiators with this high-temperature water. The operation of this three-way valve is in turn controlled by apparatus which regulates the heat input to the building in accordance with the external air temperature, thus obviating waste of heat. A control panel 16 ft. long is provided, upon which are mounted all necessary instruments, so that the engineer can tell at a glance how the system is functioning. The heating of the offices is chiefly by means of flush-panel radiators, the courts being dealt with by means of a warm-air plant combined with direct radiators.

A FORGOTTEN ASPECT OF TRAFFIC PLANNING

[BY JOSEPH PETER THORP]

THE larger the library the more need for a careful catalogue. A catalogue in which some, even many, of the shelves and books are numbered would seem both to the orderly librarian and the intelligent user little better than no catalogue at all. If London be the library, the streets the shelves, the houses and shops the books, then the library catalogue of London is in a thoroughly parlous state and cannot be used effectively by those who want to use it—the citizens afoot or in fast-moving vehicles moving about on their lawful occasions.

There has admittedly been a considerable improvement in the planning of direction signs throughout the country. Standardization has been a great boon. The labelling of routes has been of great service. The height of labels has been or is being generally lowered—a recognition that drivers are not now perched upon the high seat of an eighteenth-century coach, but generally under the overhanging hood of a modern car.

There are still absurdities, like the A.A. black and yellow bridge sign, which shows a lack both of humour and of æsthetic sense in that energetic body. And there are still far too many private warning signs which are devised to make the *occasional* emergence from private drives easier for the owners at the cost of a continual hampering of the traffic. There are also, but decreasingly, warning notices of danger where there is no special danger, which tend to make motorists think less seriously of warning notices in general. And the problem of major and minor road indication is not yet solved.

CHAOTIC LONDON

But the most fantastic ignoring of the most elementary principles of order for despatch (and incidentally, safety) is shown in the labelling of streets and numbering of houses in London—the cataloguing of London.

Theoretically, the streets of London have name-labels at the corners and numbers on the houses. In practice there are thousands of missing name-labels and scores of thousands of missing or practically invisible numbers.

THE PARAMOUNT NEED OF THINKING IN AGGREGATES

It is important in viewing this apparently simple and, at first glance only, trivial failure of intelligent organization, to accept the principle that in a large congested city the key problem is to maintain the evenness of the traffic flow. The second important consideration is that we must think in aggregates, and the third that we must compare the relatively small cost of setting the matter right with the advantage to be gained. The fourth is that there is nothing solid to be said on the other side of this controversy—a rare thing, indeed, in questions of reform.

Of course there are very sound reasons for the complete labelling and numbering of London from the point of view of the convenience of its citizens and visitors and the relief of its traffic officers from the burden of unnecessary enquiries, and it is a serious reproach to London that, needing orderly labelling so much more than other great cities, she is so conspicuously behind them in her practice. But here we are confining ourselves to the effects which this stupid and mean dereliction of duty has on the *traffic*.

MISSING LABELS

The Figure A indicates the minimum number of street names that should appear on the walls of the blocks of buildings in this conventionalized layout of a section of a city. We shall be lucky in London if we get as many as are indicated in B. While in many streets, whether of private houses which do not matter so much, or of crowded shopping streets which do, we shall be lucky if there are, or we are able to see, three in ten of the numbers. Well, and what of it?

This of it—that *every* car or taxicab, crawling to find a number, slows down the traffic: that *every* driver twisting his neck round and his head forward to see a street label behind him is driving to that extent dangerously; that *every* driver wishing to turn to the right into Small Street from High Street (Fig. C), makes a direct turn, if the Small Street label is on the side facing him, but if the label is missing, he has to make a complicated and obviously traffic-delaying turn (as in D). And this may well happen twenty times a day in *every* improperly labelled street!

Hansom-cab drivers plying for hire in a more restricted area, and in a less complicated city, knew their part of London much more accurately than the contemporary taxi-driver can hope to know his much extended territory covered at so much faster a pace. And there are the private car and lorry-drivers to be reckoned with. The aggregate waste and confusion of all this is incalculable. It is quite monstrous when contrasted with the relatively small expenditure of sense and money necessary to prevent it.

But here's the rub. The cost, relatively small (say 10s. a label) in each case is, because of the extent of the deficiency, considerable. It would fall, of course, upon the city authorities. Now frankly, the borough councils don't, as such, care how seriously their omissions interrupt the even flow or safety of traffic, how much time or temper and petrol they waste in the aggregate, or, indeed, how many people are killed. They have an eye to their rates.

It would seem that any system that leaves them free to obstruct in this quiet and stupid, but effective and expensive way, obviously needs altering.

Clearly there are many further causes of delay and exasperation. If a motorist at the T junction in Fig. B finds opposite to him (as most frequently he will find) no street name-plate, he will be delayed, and if the numbers of the shops or houses are not visible, it is fifty-fifty whether he takes the right turn to the house he wants, or the wrong turn, with an unnecessary extra turn to correct the error.

THE MARTIAN IN KINGSWAY

And would it be believed by a visitor from Mars (or Berlin) that in Kingsway, which must have been a thoroughfare for now something like thirty years, there are practically no numbers at all; and to suggest that taxi-drivers know by now the position of every house—Imperial, Empire, India, East India, Kingsway, etc., etc.—is to suggest that which is not, as daily experience proves.

Why is it that Woburn Square (which is not strictly a square, by the way) is the only one, if we mistake not, where a sensible sign tells the traveller on which side which numbers are. In any other London square you are quite as likely to go round three sides of it to get to a number which is, in fact, on the nearest or fourth side.

MINIMUM INFORMATION ON NAME PLATES

Surely it is obvious that the minimum of information on a street-label duly placed where it can be seen, should be the name and an indication of the numbers to be found in the block. If the driver sees a label such as E he will conclude that in the block he is passing the odd numbers 9 to 21 occur, and he needn't be bothering and delaying looking for 31. If he sees the label as Figure F,

he will conclude that the houses are numbered odd and even from 9 to 31.

IF WE BEGAN FROM ZERO

Perhaps it would bring home this whole matter, which receives a good deal less attention than it deserves, to suppose that we were designing a system of labelling streets for a new city of the size and complexity of London and with London's increasing problem of safe and even traffic flow. Would any committee in its senses pass a scheme which was in detail any less complete than that we have outlined? That is, on every building a number large enough to be seen by drivers driving at thirty miles per hour; a street name-plate at every corner of every block and at every T junction—with indication of the numbers of the houses or shops in each block. Rational labelling indeed for the convenience of citizens and visitors would go much further than this, but we here confine ourselves rigidly to details that serve the interests of smoother and safer traffic.

We see no reason to suppose that the attitude, discipline and co-operation of the various parties which are necessary for the successful solution of the traffic problem in the elaborate plans now before the country, can be brought about if so elementary a contributing factor as this, and one so easy to secure, continues to be neglected. It is so obviously a sign of fundamental slackness and unreason.

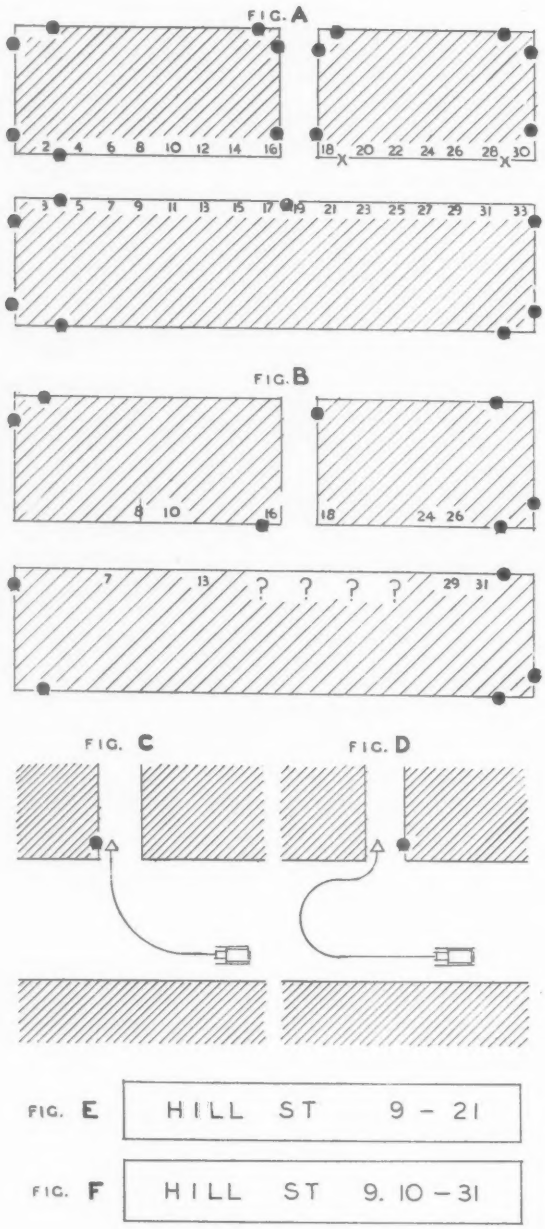
Perhaps a grant from the Road Fund might ease the burden of cost of bringing the street name-plates up to the required standard. As to the numbers on houses, each local authority could not only insist on every house bearing a number, but might in the circumstances be temporarily authorized to insist that each householder should buy a standard number plate, or one of a few standard types, which could be obtained only from the authority in question.

THE "SANS SOUCI" PRECEDENT

The exasperation of postmen and delivery vanmen and questing citizens over the problem of long rows of houses with pet names and no numbers has induced many local authorities to make ordinances dealing with this matter. It is only the scale, not the common sense of the matter, that leaves the London problem unsolved. And it is just the scale that causes the problem!

"SO LITTLE SAVED, SO MUCH INCONVENIENCE CAUSED"

And it is the ludicrous disproportion between the cost of the remedy and the advantages and savings of it at each source of mistake which makes this so peculiarly stupid a piece of mal-organization—not easily to be thought about by the orderly mind without indignation.



ADVERTISERS' RESTRICTIONS

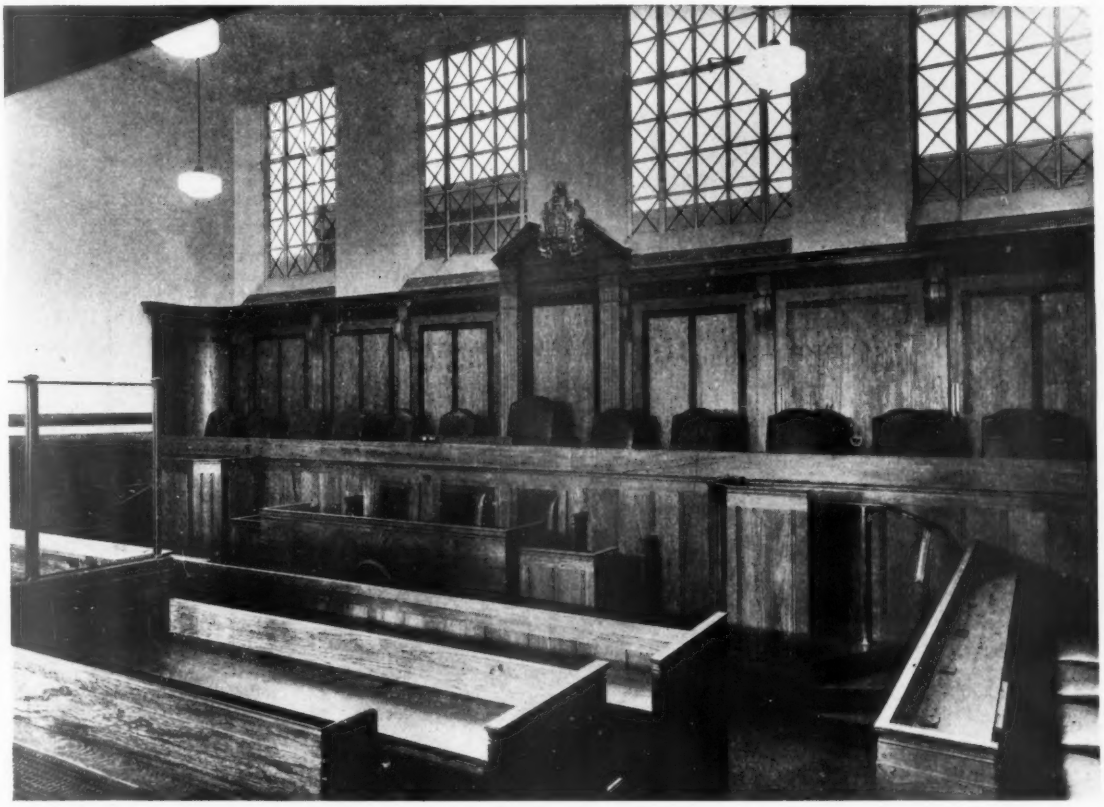
A correlative problem is the confusion caused by the multiplication of trade and advertising signs. Again, if we were re-designing London for safe and smooth transport it would be preposterous to suppose that we should not rigidly limit these; and in particular that, in view of the distracting and dangerous confusion of advertising lighting with signal lighting, especially when reflected on wet roads, we should not strictly rule out any competing lights. Are we never to be able to solve any problem in these islands because every solution demands, as it does, some sacrifice from somebody?

AMENITIES A SIDE ISSUE

We need not at this point, as we are addressing architects, stress the amenities question and the quite ludicrous result of this riot of uncontrolled advertising. We build fine, or less fine buildings, to make our city beautiful, and then permit or encourage a process which allows trading signs to accumulate till every one counteracts every other and nobody of the competing tradesmen is in the end a penny the better for a heavy expenditure when congestion and futility finally call a halt.

WORKING DETAILS : 283

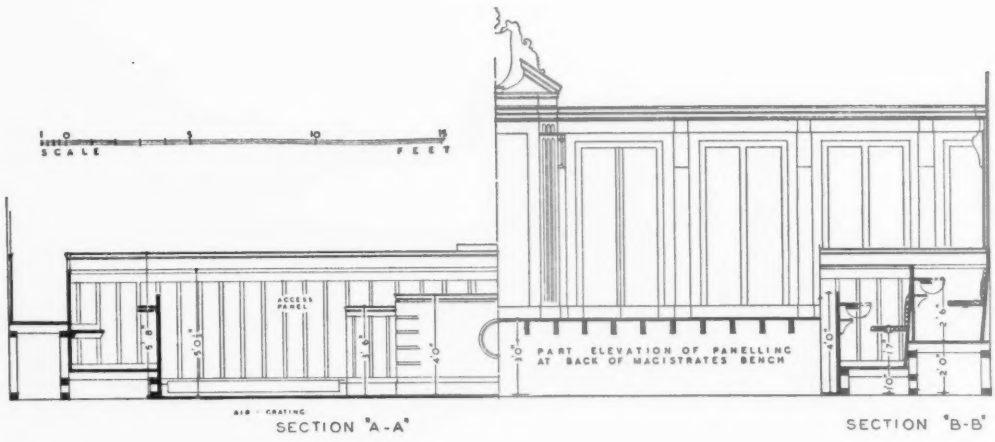
POLICE COURT • GUILDHALL, KINGSTON • MAURICE WEBB

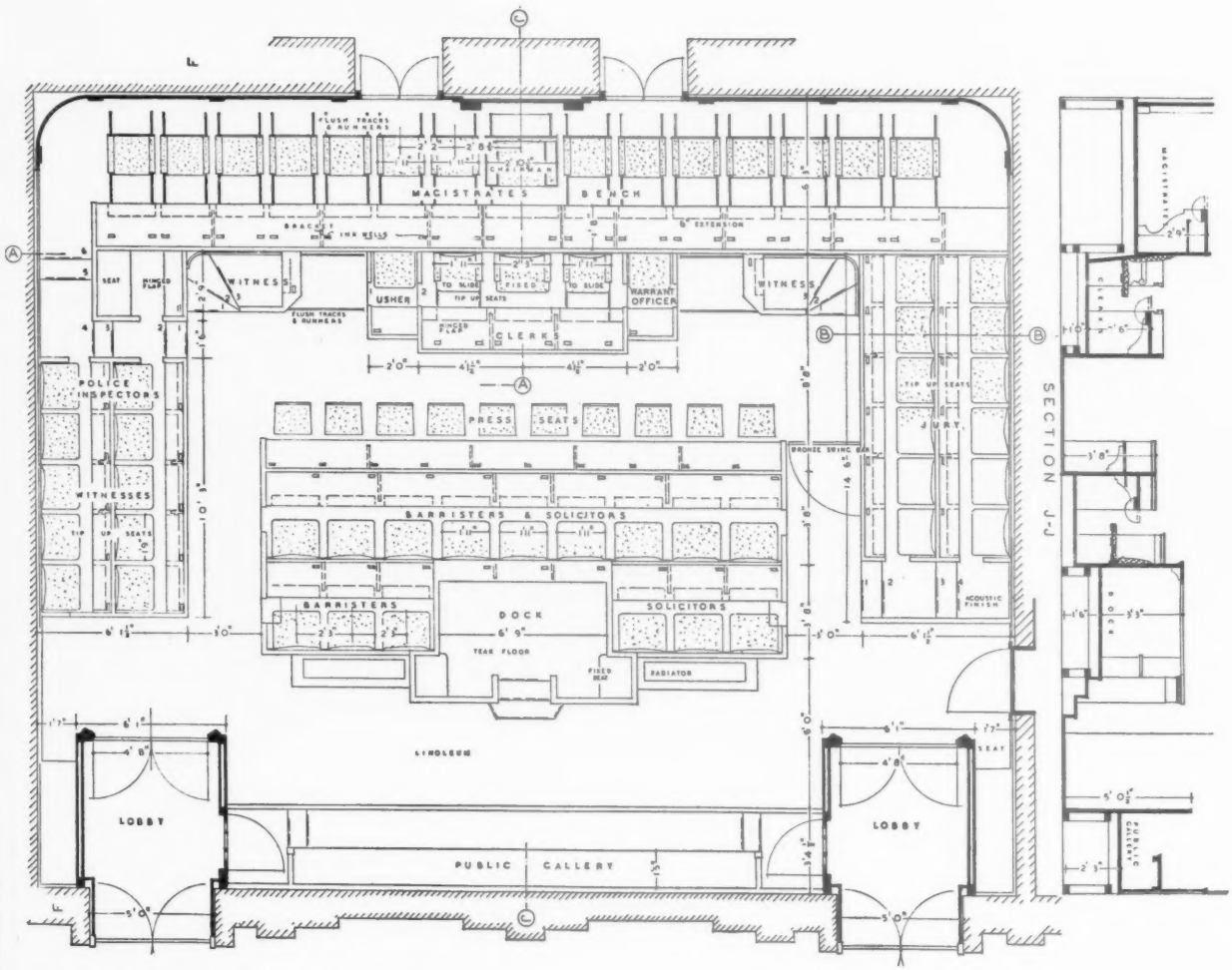


A detail of Court No. 3, in Burma teak and Macassar ebony. The relationship of the seating in this court has been based upon that of the Central Criminal Court, as being generally considered the most satisfactory in the country. The public gallery is entered direct from the lobbies and not from the body of the court. The Magistrates' seats are set upon flush tracks and runners, as also are the witness stands, which may be moved towards the centre of the bench for purposes of increased audibility.

WORKING DETAILS : 284

POLICE COURT • GUILDHALL, KINGSTON • MAURICE WEBB

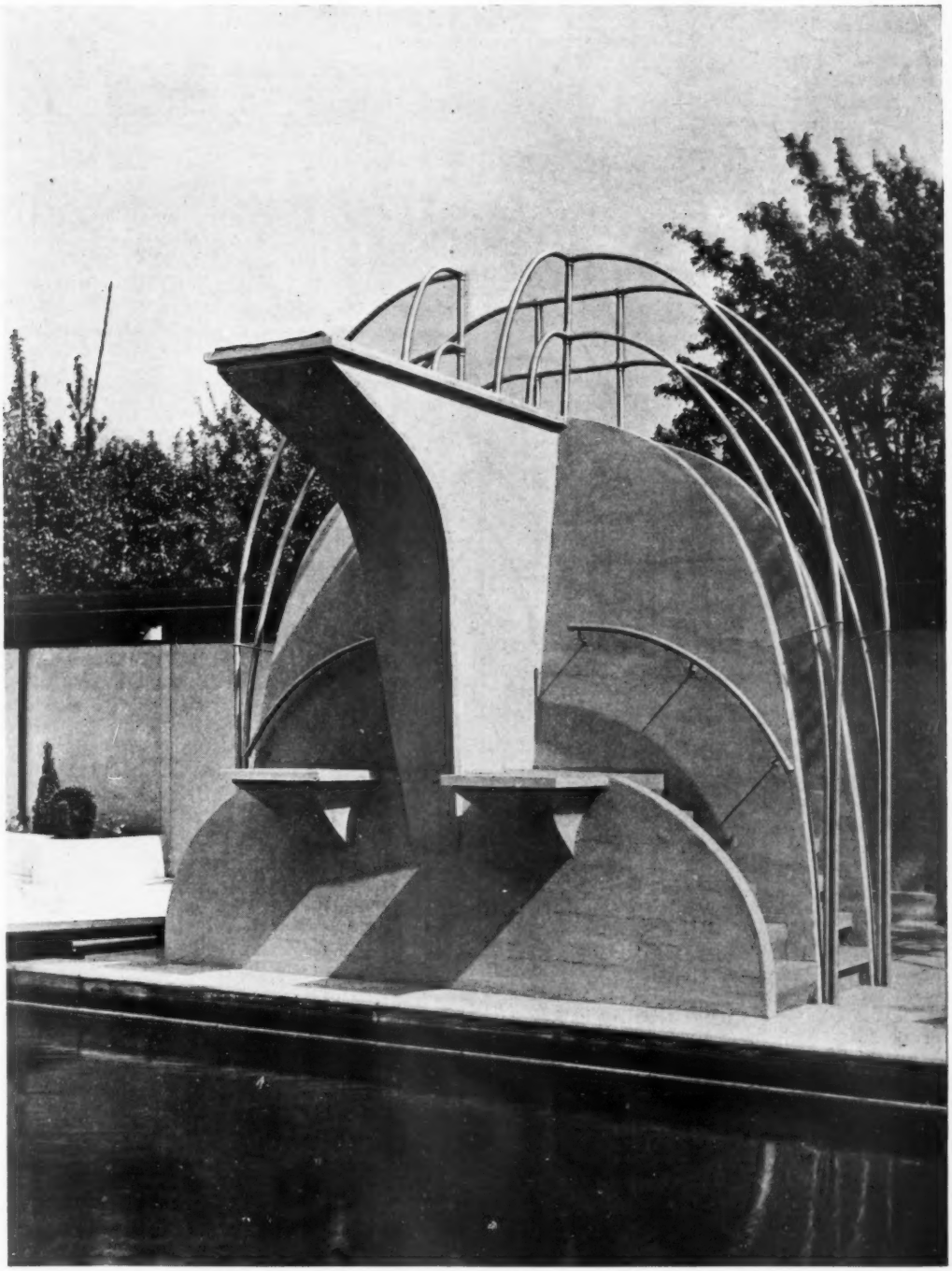




Plan and sections of the police court illustrated overleaf.

WORKING DETAILS : 285

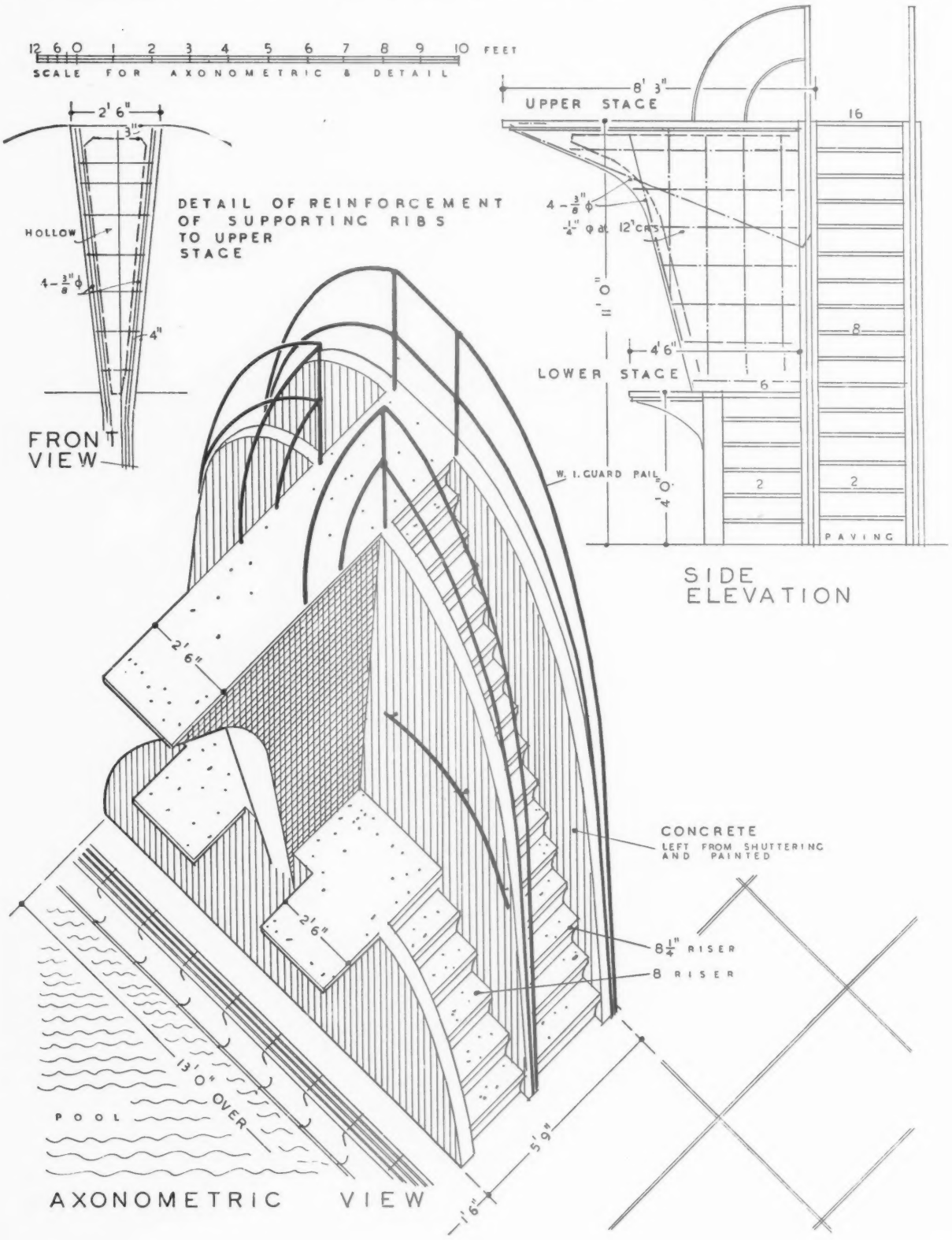
DIVING STAGE • POOL AT WOODSIDE GREEN • REGINALD J. DUKE



This diving stage consists essentially of three walls tied together by the steps, which are cast in situ. In the back wall is a door which gives access to a small store-room. An axonometric and a reinforcement detail are shown overleaf.

WORKING DETAILS : 286

DIVING STAGE • POOL AT WOODSIDE GREEN • REGINALD J. DUKE



Axonometric and reinforcement detail of the diving stage illustrated overleaf.

LITERATURE

AMERICAN PRECEPT

[*BY B. S. TOWNROE*]

Outline of Town and City Planning. By Thomas Adams. London : J. and A. Churchill. Price 18s. net.

DR. ADAMS'S latest book deals with both the practical and æsthetic aspects of town planning. It is based to a large extent on a course of lectures on City and Town Planning delivered to students of the Department of Architecture of the Massachusetts Institute of Technology over a period of eleven years. It is, however, well worth study by English students, for more than half the text and the larger proportion of the 126 illustrations relate to European conditions and examples.

Part I of the book reviews in broad outline the character of early efforts in town and country planning, from the City of Kahun in 3,000 B.C. to Karlsruhe in Germany, founded in 1715. Part II describes developments in the United States and other countries since about 1830. It concludes with a discussion on modern aims and methods dealing with such questions as regional and civic surveys, zoning, open spaces, aerodromes, and the remodelling of blighted areas. The final chapter considers the future of city planning and the measures to be taken by public leaders to solve fundamental problems.

A speaker in the House of Commons recently suggested that Town Planning was simply good estate management on a large scale. Dr. Adams regards planning as a major issue in public policy. In order to be successful Dr. Adams insists that there should be close co-operation between leaders in public affairs, owners of property, the general body of citizens and all those who practise the town planning profession. In order to obtain this co-operation he considers that there must be something equivalent to an agreement as to the meaning, scope and purpose of the movement, an understanding of what it involves in connection with public policy, and finally as to the best methods of controlling developments.

The illustrations and the line drawings and plans of towns are particularly helpful, and the Russell Sage Foundation in New York and the Massachusetts Institute of Technology have been fully justified in the generous aid which they have given to its preparation.

Dr. Adams insists that Great Britain ranks first among European nations in making provision under its Town Planning laws for securing spaciousness in residential developments. "Although Germany has led the way in scientific zoning, the public acquisition of land and the embellishment of city thoroughfares, Great Britain," writes Dr. Adams, "continues to hold the place of pre-eminence for high standard of sanitation and for the simple beauty of much of its domestic architecture."

One weakness in the technical approach to civic design has been one-sidedness, due, in the author's opinion, to lack of funds to enable the engineer, the architect and the landscape architect to co-operate in the preparation of comprehensive plans. "Adequate improvement of technique will be possible only after long continued accumulation of experience by experts in different aspects, including those relating to sociology and economics. . . . Increase of opportunities is necessary both to encourage men to enter the profession and to enable them to obtain the practical experience."

DESIGN AND LIFE

[*BY JOHN MADGE*]

Design. By Noel Carrington. London : The Bodley Head. Price 3s. 6d. net.

QUITE the most noticeable feature of the modern movement in design is the extent to which it is a paper one. The result of this is that writings on art have an unusual significance ; of great interest, too, are the conditions which produce this disproportion between the functions of creation and analysis.

The functions of the mind can be usefully divided into three categories—reproductive, analytical, and creative. The third of these is obviously of basic importance to the artist, but there are times (such as the present) when the conditions under which he works either atrophy his creativeness or, by refusing support, prevent him from putting it into practice. There are two types of people whose writings on æsthetic subjects are of value—precluded artists and sensitive observers.

It would not be difficult to discover to which of these types the author of *Design* belongs. Mr. Noel Carrington has been outstanding as a critic and especially as a supporter and expounder of contemporary design ; but his latest work is concerned mainly with showing the social causes of design. The section of the book devoted to explaining the principles which govern design is noticeably weak. Comparison with Herbert Read's *Art and Industry* is inevitable ; it is in fact invited. Here at once the value of practice is emphasized ; Mr. Read, although in some directions painfully prone to inconsistencies and illogicalities, has been able to approach the problem of design in each material as an actuality and not merely as a principle.

But this is probably judging Mr. Carrington by the wrong standard. This book, like many of the others in the "XXth Century Library" series to which it belongs, is not meant as an exhaustive analysis of the subject, but as an introduction.

The historical section, which chooses representative periods in the past—Middle Ages, Early Renaissance, Eighteenth Century, and Nineteenth Century—and shows how their designs and products were determined by the material conditions of the time is the basis of the whole argument. Fortunately this is excellently done, and is easily the best and most interesting part of the book ; one naturally feels faint disappointment at the inadequacy of the attempt to portray similarly the fundamentals of the contemporary situation. This would not be of such importance if the present social disturbances were not one of the major factors which influence design. It is easy to sympathize with the author's attempt to represent the world devitalized by the elimination of anything which might be construed as political, but the result gives inevitably an unreal picture of the situation. The one conclusion of a political nature that he admits is summed up in these words :—

> "The employer therefore finds himself in a dilemma of his own creation : on the one side the sacred tradition that high wages will eat up all his profits : on the other hand workers with a bare subsistence cannot afford all the little luxuries for which engineers and scientists have devised the new machines. The whole world is in the throes of this dilemma now, America most of all, where the art of machine-production had been first perfected. One deduction is at least obvious—that the machine binds all classes together in self-interest. Civilization becomes year by year more inevitably co-operative."

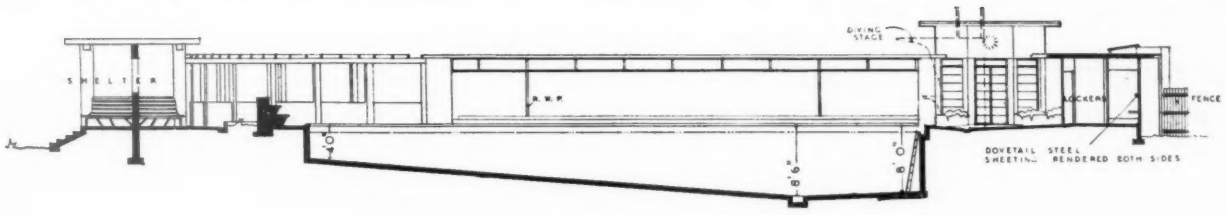
The book closes with a consideration of the position of the artist in society. On the one side is it frequent for talent to be suppressed by an enforced choice of one of the "good, the safe, or the pensionable professions—Army, Navy, Law, Church, Banking, Insurance, Broking, etc., professions which are ruled by long-established conventions, and where the artist has the least possible scope." On the other the artist, equipped with sensibility and training, is thrown against an often insensitive and commercial world, and has to remodel his alien values on the sounder business standards around him. If it is when he is in sympathy with his material surroundings that the artist can do his best work the world has much to answer for today.

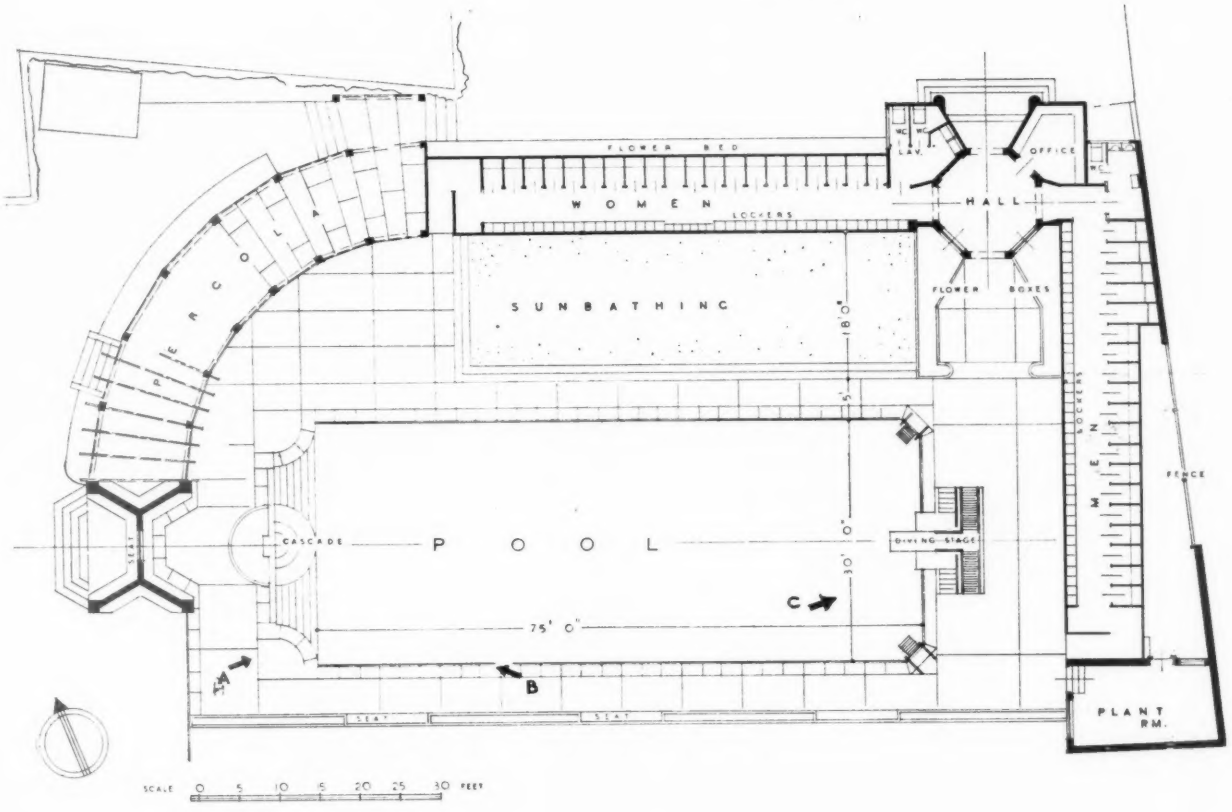
SWIMMING POOL AT

Above, from point A, *a general view of the pool: to the left are the dressing boxes with the sun-bathing area immediately in front of them; in the far corner is the main entrance hall, balancing the plant room on the right. Left, a detail of the precast concrete aerating cascade, with the covered shelter and pergola for spectators; the view is taken from point* B.

DESIGNED BY REGINALD J. DUKE

WOODSIDE GREEN, S.E.25



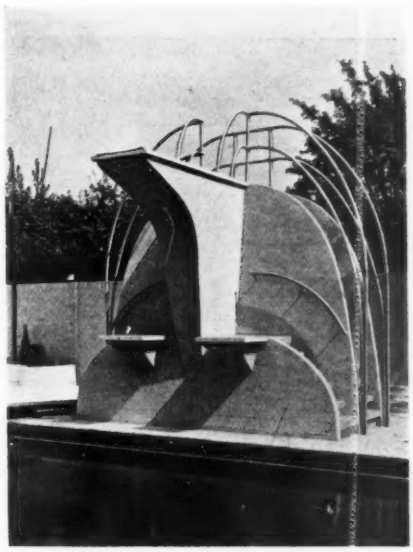


The swimming pool forms a part of a social and sports club and is situated in the large grounds of a former private house. The main plan form was evolved to protect the pool from north and east winds. The dressing cubicles are planned on the separate clothes-locker system, the steel lockers being immediately opposite the cubicles and backed against walls of dovetailed sheet steel rendered both sides. At the exits to the pool are two sprays and the floor is sunk to form a compulsory footbath for bathers. The pergola is to accommodate spectators in a position withdrawn from the pool.

The pool is of reinforced concrete with precast stone sides, the finished colours being blue floor, white walls, green scum channel and surrounding paving buff. The reinforced concrete diving stage is hollow and is used as a store. The pool is electrically heated and is said to be the first of its kind in England.

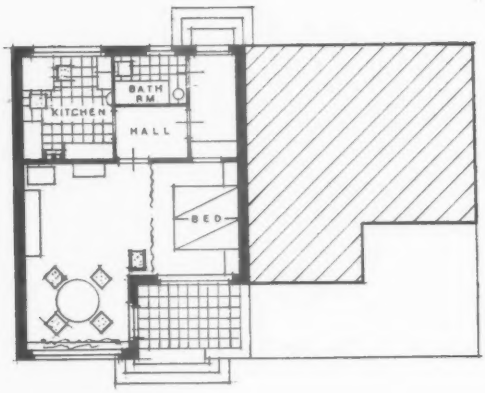
The buildings are in concrete with joisted roofs. The diving stage is further illustrated on pages 19 and 20 of this issue.

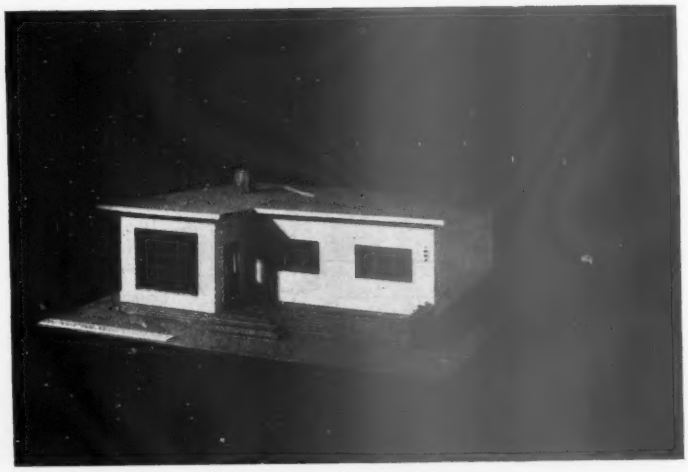
Right, the diving stage from C.



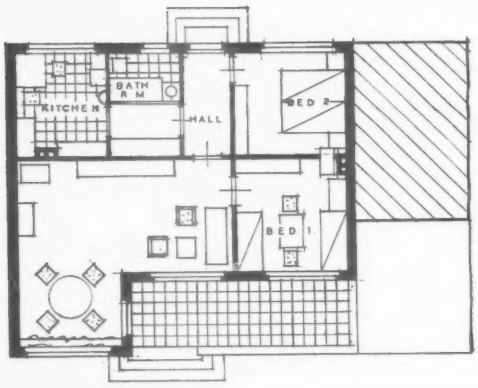
COTTAGE TO COUNTRY HOUSE:

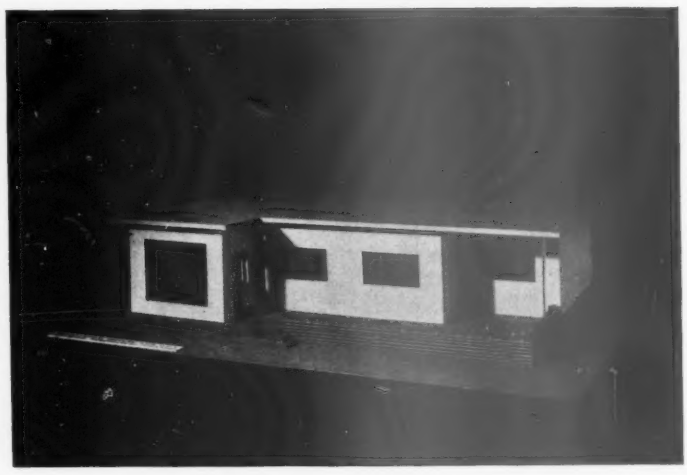
1



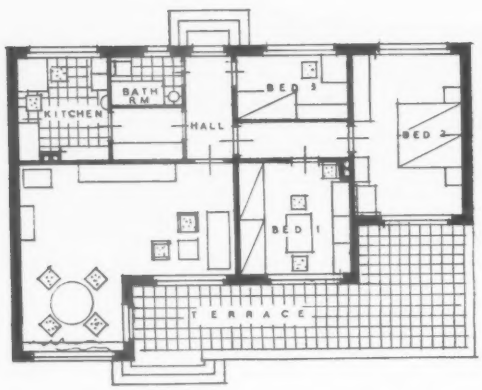


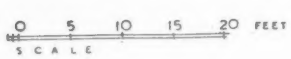
2



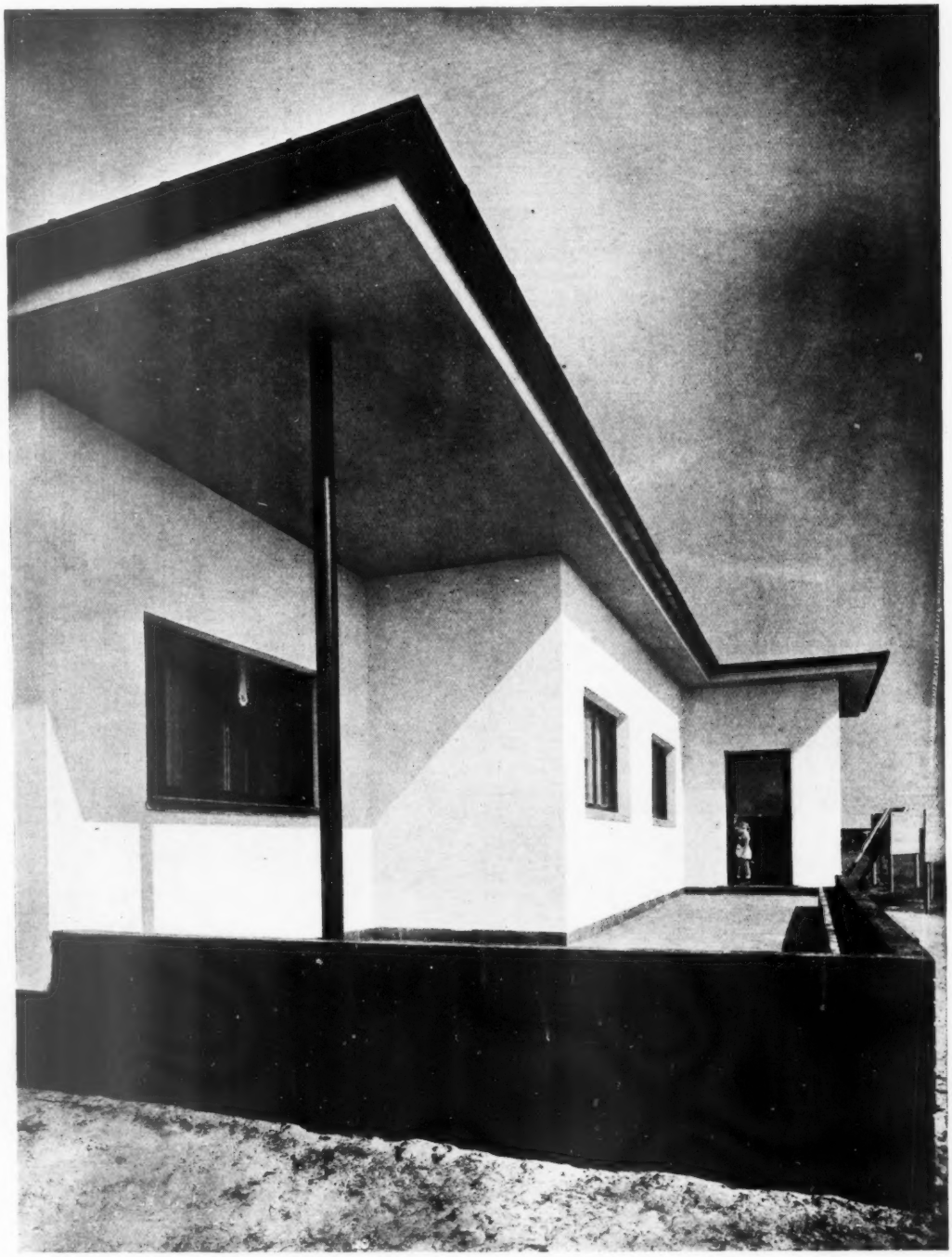


3





A DESIGN BY RUDOLF FRÄNKEL

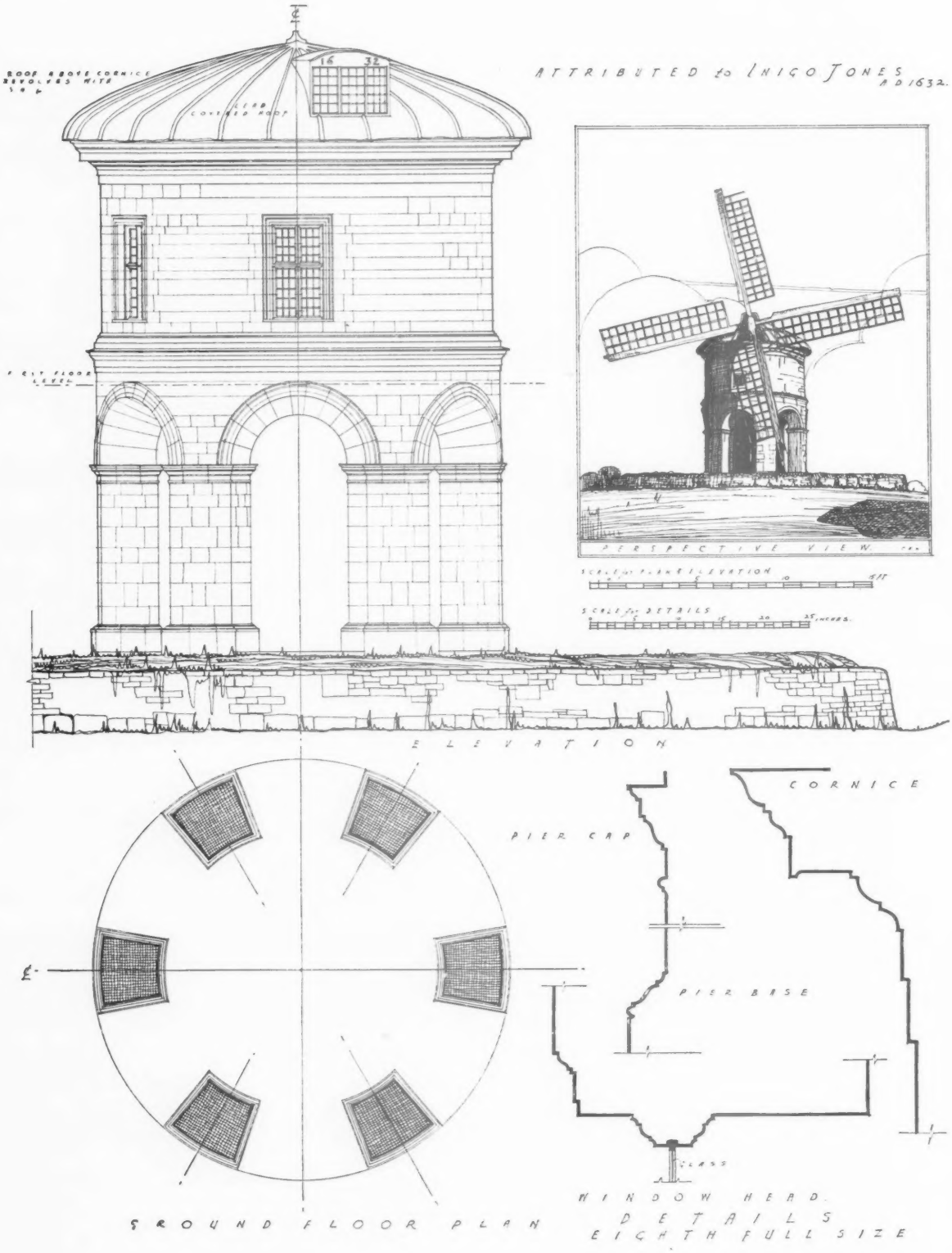


This design is an attempt to solve the problem of accommodation for a growing family, while retaining the original plan as the kernel of the complete building.

The first stage provides a hall, bed-sitting room, kitchen, bathroom and terrace; the first enlargement gives two additional bedrooms, the first bedroom being absorbed into the larger living room; the second enlargement gives an extra bedroom and a small loggia at the end of the terrace. It may be noticed that all additions are made in one direction only, and that internal alterations are confined to door openings.

It is suggested that the house would be suitable for construction in brick or in precast concrete slabs. The roof may be boarded with a final finish of thin sheet copper or bituminous felt.

CHESTERTON MILL, WARWICKSHIRE



MEASURED AND DRAWN BY PHILIP B. HERBERT

TECHNICAL SECTION: 21

HEATING, AIR CONDITIONING AND MECHANICAL EQUIPMENT

BY OSCAR FABER

O.B.E., 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.

WATER CIRCULATION (*Continued*)

GRAVITY CIRCULATION is suitable for houses and the heating of small buildings generally, or even for larger buildings where the ratio of height to horizontal run is high. It is unsuitable for extensive buildings where considerable horizontal runs are necessary with little or no radiation above the boiler level.

Pump or accelerated circulation is suitable for all types of building except possibly residences where the running of a pump might be considered inadvisable or unnecessary. It has already been pointed out that extensive ranges of buildings may be served from one set of heaters with pump circulation, as also may buildings having all the radiating surface at or below the level of the boiler. (This sometimes occurs in the case of theatres where basement space is valuable and the boiler-house is therefore placed on the roof.)

The advantages of pump circulation may be summarized as follows :—

(*a*) Smaller pipes, valves, and radiator connections may be used, giving reduced cost, neat appearance, and low heat loss from mains.

(*b*) Rapid heating up from cold due to high velocity of water through pipes.

(*c*) Quicker cooling down since less heat is stored in the mains.

(*d*) As a result of the above a saving in fuel consumption should be made as compared with gravity circulation, especially in buildings intermittently heated. As against this the cost of electricity for operating the pump has to be allowed for.

The exact line of demarcation between systems in which gravity circulation is sufficient, and those in which a pump is desirable, is difficult to define, but the tendency now is towards the increased use of artificial circulation, even on the smaller installations.

Self accelerated systems.—Mention should, perhaps, here be made of accelerated systems of the past in which a pump was not employed. Most of these depended for their operation on steam generated by the heating boiler, or independently, and have fallen into disuse, partly because of their complication and uncertain results, and partly because of the simplicity and cheapness of the centrifugal pump and ease of obtaining electric power supply even in country districts.

Systems of Piping.—Systems of piping may be classified as follows :—

(*a*) One pipe ring main (Fig. 112).
(*b*) One pipe drop (Fig. 113).
(*c*) Two-pipe rising (Figs. 114 and 115).
(*d*) Two-pipe drop (Fig. 116).
(*e*) Irregular (Fig. 117).

Comments on the use and application of each system appear adjacent to each illustration. For clarity feed pipes and vent pipes common to all systems are omitted from the diagrams except those dealing with panel heating. The term radiator may be taken to include any type of heat emitter except low temperature embedded panels, which will be dealt with separately later.

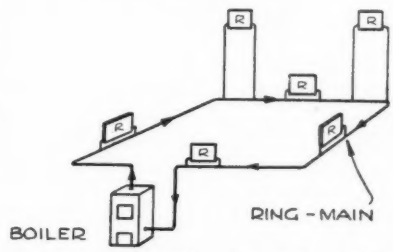


Figure 112. *One-pipe ring main system, primarily for gravity circulation.*

(*a*) Suitable for small installations only, otherwise the main becomes unduly large. Tends to be sluggish, particularly at the last radiators, as these are receiving water cooled by all those nearer the boiler.

With a pump this system is uneconomical as it does not make full use of the advantages of accelerated flow, for the radiator connections are not assisted and still have to be sized on a gravity basis (see Fig. 113).

(*b*) Generally the most economical arrangement for a multi-storey building with gravity circulation. Advantage is taken of the increased circulation

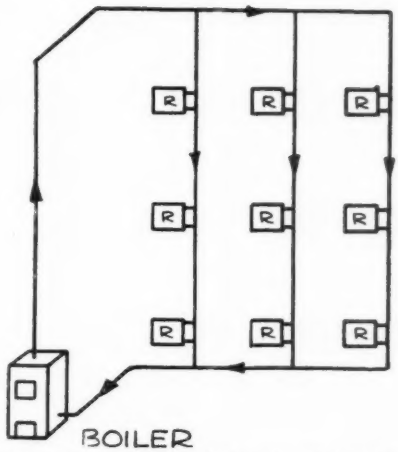


Figure 113. *One-pipe drop system, primarily for gravity circulation.*

produced with the radiation at high level so enabling smaller pipes to be used than with (*a*). The bottom radiators are necessarily cooler than the top, and this is sometimes a disadvantage.

May be used with a pump, but as with (*a*) the local radiator circulations are not assisted thereby.

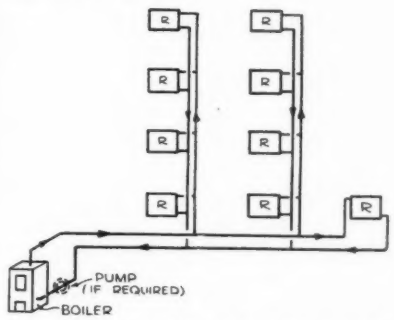


Figure 114. *Two-pipe rising system, gravity or pump circulation.*

(*c*) Possesses the great advantage that each radiator receives water at the same temperature (except for the slight loss in mains). Thus it is very responsive to boiler control. Pipe sizes are generally smaller than with the previous systems except near the boiler, but due to the double run of vertical pipes the system is not always so economical as (*b*) though the better operation is well worth its extra cost.

With a pump, this is the most satisfactory system, as each radiator circulation is accelerated thereby and smaller pipes are possible throughout ; radiators may also be served below the level of the boiler.

An incidental advantage is that all large mains are kept in the basement or at ground floor where their heat loss may be useful, as distinct from system (*b*) which has large mains in the roof where their emission may be a complete waste.

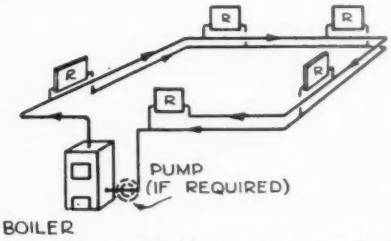


Figure 115. *Two-pipe system, equalised flow. Gravity or pump circulation.*

(c_1) This shows the same system arranged so that the distance from the boiler to every radiator and back is the same in all cases. Often applicable to a building arranged round a quadrangle or similar case. Gives very even flow but not generally so economical as a branched system.

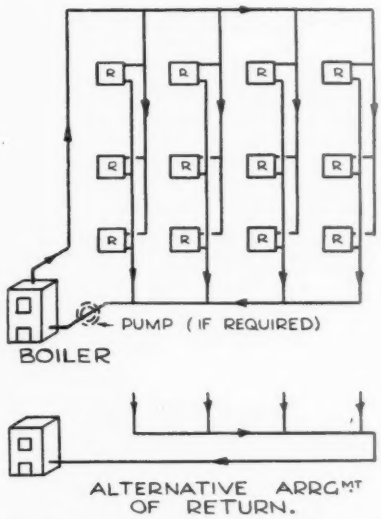


Figure 116. *Two-pipe main drop system. Gravity or pump circulation.*

(d) This is a mixture of systems (b) and (c) and has the advantage of equalizing the flow to all the radiators on each drop. If the return main is carried back as shown in the alternative arrangement beneath, equalized flow is given throughout the system as with (c_1). Is generally neither so economical nor convenient in arrangement as with (c) and has the disadvantage of large mains in or near the roof as with (b). Is equally suitable with pump or gravity circulation.

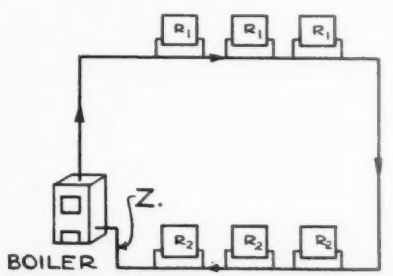


Figure 117. *Irregular system. Gravity circulation.*

(e) Any gravity system having radiation at or below boiler level comes under the category of "irregular." The system here shown is in effect a version of (a), but (b) might equally be arranged with the lowest radiators at the level of the boiler and would then be irregular. The circulation here depends on the loss of heat at the higher level causing sufficient difference in weight of the falling and rising columns to lift the cool return "Z" back to the boiler. This is the only method by which gravity circulation may be made to operate, for example, in a private house with no basement. It is equally inadvisable with a pump as system (a). Circulation is generally poor if radiators R_1 are off and R_2 left on.

PIPE SIZING

GRAVITY CIRCULATION

Fig. 118 shows a gravity circulation in its simplest form. Boiler A supplies heated water to radiator B at a higher level through pipes C and D which are here assumed to have no heat loss. The circulating motive force is due to the difference in weight of column H at temperature t_2 and column H at temperature t_1.

If D_1 and D_2 are the density of water at temperatures t_1 and t_2 respectively, then the difference of weight of the two columns is :

$$H(D_2 - D_1)$$

which is called the circulating pressure (CP).

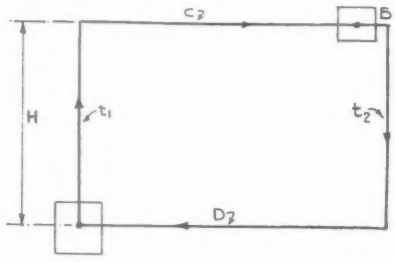


Figure 118. *Simple gravity circulation.*

Obviously the greater H is, the more circulating pressure will be available and for unit height

$$CP = D_2 - D_1$$

If D_1 and D_2 are in lbs. per cu. ft. then the above expression gives the circulating pressure per foot of height in lbs. per sq. ft. For purposes of pipe sizing we require this expressed in inches of water column.

Since 1 in. water column $= \frac{D}{12}$, and D at about 160 deg. F. (mean water temperature)

$= 60{\cdot}998$ lb. per cu. ft.

TABLE XXXVII.

TEMP. °F	DENSITY lbs/cu ft	TEMP. °F	DENSITY lbs/cu ft	TEMP °F	DENSITY lbs/cu ft	TEMP °F	DENSITY lbs/cu ft	TEMP °F	DENSITY lbs/cu ft	TEMP °F	DENSITY lbs/cu ft
32	62·418	109	61·903	132	61·535	155	61·097	178	60·606	201	60·055
35	62·422	110	61·890	133	61·517	156	61·077	179	60·583	202	60·030
40	62·425	111	61·874	134	61·499	157	61·057	180	60·560	203	60·003
45	62·422	112	61·860	135	61·481	158	61·038	181	60·535	204	59·978
50	62·409	113	61·844	136	61·462	159	61·018	182	60·511	205	59·950
55	62·394	114	61·829	137	61·444	160	60·998	183	60·487	206	59·925
60	62·372	115	61·813	138	61·426	161	60·978	184	60·464	207	59·900
65	62·344	116	61·798	139	61·407	162	60·955	185	60·441	208	59·873
70	62·313	117	61·781	140	61·388	163	60·935	186	60·416	209	59·847
75	62·275	118	61·766	141	61·370	164	60·914	187	60·393	210	59·820
80	62·232	119	61·750	142	61·351	165	60·893	188	60·370	211	59·792
85	62·182	120	61·734	143	61·331	166	60·871	189	60·347	212	59·769
90	62·133	121	61·717	144	61·312	167	60·850	190	60·324	230	59·36
95	62·084	122	61·701	145	61·291	168	60·827	191	60·300	250	58·75
100	62·031	123	61·685	146	61·274	169	60·805	192	60·276	270	58·18
101	62·017	124	61·670	147	61·254	170	60·783	193	60·251	290	57·69
102	62·002	125	61·655	148	61·237	171	60·762	194	60·228	298	57·27
103	61·989	126	61·639	149	61·218	172	60·741	195	60·203	338	56·14
104	61·975	127	61·622	150	61·201	173	60·720	196	60·180	366	55·29
105	61·960	128	61·605	151	61·180	174	60·698	197	60·154	390	54·54
106	61·946	129	61·588	152	61·159	175	60·673	198	60·130		
107	61·932	130	61·571	153	61·138	176	60·652	199	60·105		
108	61·918	131	61·552	154	61·118	177	60·630	200	60·081		

TABLE XXXIX

Friction Loss in Inches per 100 Feet	QUANTITY OF WATER IN LBS. PER HOUR FOR VARIOUS PIPE SIZES																	
	½"	¾"	1"	1¼"	1½"	2"	2½"	3"	3½"	4"	5"	6"	7"	8"	9"	10"	11"	12"
·0005	—	—	—	—	270	590	1,083	1,767	2,700	3,833	6,567	10,767	16,500	24,170	33,300	44,000	56,700	72,000
·0006	—	—	—	—	300	650	1,190	1,960	2,970	4,230	7,230	11,930	18,270	26,670	35,700	48,700	62,700	78,300
·0007	—	—	—	200	323	703	1,300	2,130	3,227	4,600	7,870	12,970	19,830	29,000	39,300	52,700	67,700	86,300
·0008	—	—	—	217	337	757	1,390	2,283	3,433	4,930	8,430	13,930	21,330	31,200	42,300	56,700	73,000	92,700
·0009	—	—	126	230	377	807	1,490	2,433	3,670	5,270	9,000	14,900	22,670	33,200	45,300	60,700	77,700	99,000
·0010	—	—	135	243	399	860	1,583	2,583	3,900	5,570	9,530	15,730	24,000	34,700	47,700	64,000	82,300	104,000
·0012	—	—	147	270	433	940	1,740	2,850	4,267	6,170	10,430	17,300	26,500	38,330	52,700	70,700	90,700	116,000
·0014	—	79	160	293	473	1,033	1,830	3,100	4,667	6,670	11,400	18,900	28,830	41,670	57,300	76,700	99,000	126,000
·0016	—	80	172	317	510	1,107	2,033	3,330	5,000	7,167	12,330	20,330	31,000	45,000	62,000	82,300	106,000	135,000
·0018	—	85	183	333	543	1,183	2,167	3,500	5,330	7,670	13,030	21,600	33,000	47,700	65,900	87,700	113,300	144,000
·0020	—	89	193	357	570	1,253	2,300	3,680	5,667	8,070	13,870	22,800	34,670	50,700	70,000	93,000	120,000	152,700
·0023	—	97	210	383	617	1,343	2,483	4,000	6,130	8,700	14,930	24,700	37,900	54,700	75,700	100,000	129,000	165,000
·0026	—	103	223	410	667	1,440	2,650	4,300	6,500	9,330	16,000	26,400	40,000	58,700	80,700	107,300	138,300	176,700
·0030	—	112	243	443	723	1,567	2,867	4,670	7,070	10,100	17,330	28,700	43,300	63,400	87,300	116,700	150,000	190,000
·0035	35	122	263	483	777	1,700	3,100	5,070	7,670	11,000	18,730	31,000	47,000	69,000	94,700	126,000	162,300	206,700
·0040	40	131	283	520	837	1,833	3,330	5,430	8,270	11,870	20,170	33,300	50,700	74,000	102,300	135,300	175,000	222,300
·0045	45	140	303	553	893	1,950	3,530	5,830	8,800	12,670	21,500	35,300	54,000	79,000	109,300	146,000	186,000	236,700
·0050	49	147	320	583	950	2,067	3,750	6,167	9,330	13,380	22,670	37,300	57,300	83,300	115,700	153,300	196,700	250,700
·0060	54	163	350	647	1,033	2,273	4,100	6,800	10,300	14,670	25,070	41,000	63,300	92,700	127,700	169,000	216,700	275,700
·0070	59	177	383	703	1,133	2,473	4,500	7,370	11,170	16,000	27,230	44,700	68,700	100,000	139,000	183,300	235,700	300,000
·0080	63	190	417	753	1,230	2,670	4,830	8,000	12,000	17,330	29,330	48,300	73,700	108,300	150,000	196,700	253,300	323,300
·0090	67	203	437	807	1,300	2,830	5,170	8,500	12,830	18,330	31,170	51,300	79,000	115,700	160,000	210,000	270,000	340,000
·010	71	216	467	850	1,389	3,000	5,500	9,000	13,630	19,500	32,830	54,300	83,300	122,300	169,000	221,700	286,700	360,000
·012	78	238	513	940	1,530	3,317	6,000	9,870	15,000	21,500	36,000	59,700	91,000	132,700	182,700	246,700	316,700	400,000
·014	85	260	557	1,017	1,660	3,570	6,530	10,730	16,330	23,360	39,300	65,000	99,300	143,300	198,300	266,700	340,000	428,300
·016	92	277	600	1,100	1783	3,830	7,000	11,670	17,500	25,000	42,330	69,700	106,000	154,000	213,300	286,700	360,000	466,700
·018	97	297	637	1,167	1,900	4,080	7,500	12,330	18,670	26,700	45,000	74,000	113,300	165,000	226,700	306,700	390,000	493,300
·020	103	314	673	1,243	2,000	4,330	8,000	13,000	19,670	28,300	47,670	78,300	120,000	175,000	240,300	323,300	410,000	525,000
·023	112	337	730	1,333	2,167	4,670	8,530	14,000	21,270	30,670	52,000	84,000	129,300	186,300	260,000	343,300	443,000	567,000
·026	120	358	780	1,430	2,300	5,000	9,070	15,000	22,670	32,000	55,700	90,000	138,300	200,000	276,700	366,700	473,000	607,000
·030	129	390	843	1,550	2,550	5,417	9,870	16,330	24,630	34,300	60,000	97,700	150,000	216,700	300,000	393,000	510,000	650,000
·035	140	423	917	1,677	2,673	5,830	10,730	17,670	26,300	37,300	64,700	106,700	163,300	236,700	325,000	426,700	557,000	707,000
·040	150	453	987	1,807	2,930	6,330	11,570	18,670	28,300	40,300	69,700	115,000	175,000	255,000	334,300	460,000	597,000	760,000
·045	161	483	1,050	1,930	3,100	6,670	12,330	20,000	30,000	42,780	73,300	121,700	186,700	270,300	370,000	493,000	633,000	810,000
·050	170	513	1,116	2,033	3,270	7,100	12,830	21,000	31,700	45,300	78,300	128,300	196,700	286,700	392,000	523,000	673,000	857,000
·060	187	567	1,233	2,210	3,600	7,770	14,170	23,330	35,000	50,000	86,700	141,700	216,700	316,700	427,000	573,000	740,000	940,000
·070	203	617	1,333	2,407	3,920	8,500	15,530	25,330	38,000	55,700	93,300	154,000	235,700	350,000	468,000	627,000	807,000	1,029,000
·080	220	667	1,433	2,600	4,200	9,070	16,670	27,170	40,700	58,700	100,700	166,000	253,300	366,700	503,000	667,000	867,000	1,100,000
·090	233	703	1,533	2750	4,500	9,700	17,670	29,000	43,700	62,300	108,300	176,700	270,000	390,000	540,000	717,000	927,000	1,170,000
·10	247	740	1,633	2,930	4,750	10,300	18,830	30,670	46,000	66,700	114,000	186,700	286,700	416,700	567,000	757,000	977,000	1,250,000
·12	277	827	1,767	3,230	5,250	11,330	20,730	34,000	51,000	73,300	126,700	206,700	316,700	456,700	626,000	833,000	1,083,300	1,367,000
·14	300	893	1,927	3,500	5,700	12,330	22,500	36,700	55,700	80,000	136,700	223,300	350,000	493,300	677,000	903,000	1,177,000	1,500,000
·16	323	967	2,070	3,770	6,170	13,270	24,330	39,300	60,000	85,000	146,700	240,000	366,700	533,300	738,000	983,000	1,267,000	1,603,000
·18	343	1,020	2,200	4,000	6,570	14,100	25,930	42,300	64,000	90,700	156,700	256,700	390,000	566,700	790,000	1,039,000	1,347,000	1,707,000
·20	363	1,077	2,330	4,230	6,930	15,000	27,330	44,300	67,300	96,700	165,000	272,700	413,300	600,000	827,000	1,100,000	1,420,000	
·23	393	1,167	2,530	4,570	7,500	16,070	29,670	48,000	73,300	103,300	178,300	292,300	443,300	650,000	883,000	1,183,000		
·26	420	1,250	2,700	4,900	8,000	17,330	31,670	52,500	79,300	111,000	190,000	313,300	476,700	693,300	950,000			
·30	453	1,350	2,920	5,270	8,670	18,670	34,000	56,700	84,000	120,000	206,700	333,300	516,700	750,000				
·35	490	1,467	3,170	5,750	9,330	20,330	37,000	60,300	90,700	130,000	223,300	366,700	556,700					
·40	527	1,573	3,400	6,170	10,000	21,670	40,000	65,000	98,000	140,000	240,000	391,700	600,000					
·45	560	1,683	3,600	6,600	10,670	23,170	42,300	69,000	104,000	150,000	256,700	416,700						
·50	600	1,773	3,830	7,000	11,330	24,530	45,000	73,300	110,700	159,300	270,000	441,700						
·60	657	1,967	4,200	7,670	12,570	27,000	49,300	80,700	122,700	175,000	300,000							
·70	713	2,133	4,570	8,330	13,670	29,500	54,000	87,300	132,700	190,000								
·80	767	2,283	4,900	9,000	14,670	31,700	57,700	93,300	142,300									
·90	813	2,433	5,230	9,530	15,670	33,300	61,700	100,000										
1·00	870	2,600	5,570	10,030	16,670	35,800	65,000	106,700										
1·20	967	2,870	6,170	11,270	18,330	39,300	72,700											
1·40	1,037	3,127	6,670	12,230	20,000	42,700	78,700											
1·60	1,100	3,330	7,200	13,170	21,400	46,000												
1·80	1,177	3,570	7,670	14,100	22,830	49,200												
2·00	1267	3,770	8,130	14,800	24,330													
2·30	1361	4,070	8,730	16,030	26,330													
2·60	1467	4,330	9,330	17,170														
3·00	1577	4,670	10,070	18,670														
3·50	1717	5,100	11,000															
4·00	1846	5,400	11,830															

V = 6·0"/sec.

V = 12·0"/sec.

V = 36·0"/sec.

V = 72·0"/sec.

V = 120·0"/sec.

V = 24·0"/sec.

V = 60"/sec.

V = 120"/sec.

V = 72·0"/sec. — V = 120·0"/sec.

LOCAL RESISTANCES

GATE VALVE	R = 0·5	BOILER	R = 2·5
GLOBE VALVE	R = 2·0	RADIATOR	R = 3·0
BEND, SHORT RADIUS	R = 2·0	TEE, STRAIGHTWAY	R = 1·0
BEND, LONG RADIUS	R = 1·0	TEE, BRANCH	R = 1·5
ANGLE VALVE	R = 4·0	ENLARGEMENT	R = 1·0

Circulating Velocity in Ft. per Second	NOMINAL BORE OF PIPE IN INCHES																	
	½"	¾"	1"	1¼"	1½"	2"	2½"	3"	3½"	4"	5"	6"	7"	8"	9"	10"	11"	12"
24"	10	15	25	3·0	4·0	6·0	8·0	10	12	14	18	23	—	—	—	—	—	—
6·0"	12	20	3·0	4·0	4·5	7·0	9·0	11	14	16	20	26	30	37	41	53	60	68
12·0"	13	20	3·0	4·0	5·0	7·5	10	13	15	18	22	30	34	41	47	57	66	71
36·0"	16	23	4·0	5·0	6·0	8·0	11	14	17	20	23	32	38	46	55	63	72	80
72·0"	1·5	3·0	4·0	5·5	7·0	9·5	13	16	19	25	28	36	43	54	65	72	81	93
120·0"	2·0	4·0	4·5	6·0	8·0	10·0	14	18	22	26	30	39	45	60	70	80	90	100

EQUIVALENT RESISTANCE OF R·1 IN FEET OF PIPE OF VARIOUS SIZES.

Then $\frac{D}{12} = \frac{60{\cdot}998}{12} = 5{\cdot}083$

and CP per ft. $= \frac{D_2 - D_1}{5{\cdot}083}$

This is only correct at one temperature (160 deg. mean). The general expression for any temperature range is

$$CP \text{ per ft.} = (D_2 - D_1) \times \frac{12}{\frac{D_1 + D_2}{2}}$$

$$= 24\left(\frac{D_2 - D_1}{D_1 + D_2}\right)$$

Table XXXVII gives the density of water at various temperatures, from which these values may be calculated for any particular case, but for convenience a further table, No. XXXVIII, based on this formula is given, from which the circulating pressure may be read direct for the range of temperatures normally encountered in practice.

An example will illustrate its use.

In Fig. 118 height from centre of boiler to centre of radiator = 10 ft.

Assume flow 180 deg. F. Return 140 deg. F.

From Table XXXVIII CP per ft. = ·163 in. water column.

$CP = 10 \times {\cdot}163 = 1{\cdot}63$ in. water column.

RESISTANCE TO FLOW

The circulating pressure assessed in the manner described is the means of creating and maintaining a circulation through the system, and if this is a closed circuit, as in Fig. 118, it will cause just such a velocity that its force is balanced by the resistance or friction encountered in the pipes, boiler and radiator.

For a given quantity of heat to be transmitted from boiler A to radiator B, water must flow through the system, the weight depending on the temperature drop. For a high temperature drop t_1 to t_2 each pound of water will carry more heat and, therefore, less water will be required than at a lower temperature. At the same time, the greater the difference between t_1 and t_2 the greater will be the circulating pressure, and obviously the greater the flow of water.

With a constant heat output from the boiler these effects strike a balance in such a way that the temperatures t_1 and t_2 adjust themselves to produce just that circulating pressure which will be absorbed in impelling the water through the circuit to an extent determined by the temperature difference $t_2 - t_1$.

Thus the circulating pressure balances the sum of the resistances, or in other words :—

$$CP = \Sigma R$$

where ΣR is the sum of all the resistances to flow of water throughout the circuit.

Of these, the most important is the resistance of the piping, bends, tees, and valves. The lesser resistances are those in the boiler and radiator.

TABLE XXXVIII. CIRCULATING PRESSURE PER FOOT OF HEIGHT FOR VARIOUS TEMPERATURES.

Temperature Drop Flow-Return in °F.	Flow Temperature in °F.													
	200°	195°	190°	185°	180°	175°	170°	165°	160°	155°	150°	145°	140°	135°
10°	·048	·047	·046	·046	·044	·042	·041	·040	·040	·039	·037	·036	·035	·034
15°	·072	·070	·069	·068	·065	·062	·061	·060	·059	·057	·055	·054	·052	·050
20°	·096	·094	·091	·090	·086	·083	·081	·079	·077	·074	·072	·070	·068	·066
25°	·118	·115	·112	·110	·106	·103	·100	·097	·094	·092	·089	·087	·084	·079
30°	·140	·136	·133	·130	·126	·122	·118	·115	·111	·108	·104	·102	·099	·093
35°	·161	·157	·152	·149	·145	·140	·136	·132	·128	·124	·120	·116	·112	·103
40°	·181	·176	·172	·168	·163	·158	·153	·149	·145	·140	·135	·130	·125	·116
45°	·201	·197	·191	·186	·180	·175	·170	·165	·160	·155	·148	·144	·135	·126
50°	·221	·216	·210	·204	·198	·192	·187	·180	·175	·169	·162	·154	·145	·136
55°	·240	·234	·228	·222	·215	·208	·202	·195	·188	·182	·172	·164	·154	·145
60°	·258	·251	·244	·238	·230	·224	·217	·208	·200	·192	·181	·173	·164	·154

The study of the flow of water in pipes is a subject in itself, and it is not possible here to do more than give a table from which the resistance for various sizes and flows may be read direct. (See Table XXXIX, based mainly on Rietschel.)

The range of friction loss per foot therein given will be found to cover both gravity and pump circulation, the latter being dealt with separately later.

Local resistances, such as bends, boiler, etc., are given a factor R, according to their type, and the smaller table gives the equivalent feet run of pipe at different velocities for each resistance $R = 1$. This method is convenient in practice.

Available CP per ft. run. In the first approximation of pipe sizing it is necessary to determine the total feet run or travel " T " of the circulation, including an allowance for the single resistances, which must therefore be guessed at beforehand, both for size and velocity. In the case of a branched system we take the travel, for which $\frac{CP}{T}$ is the least, and this is called the index circulation.

Examples follow to show how pipe sizes may be determined with gravity circulation, making use of the foregoing data.

Flow and Return Temperatures with Gravity Circulation. It is first necessary to establish the flow and return temperatures, and these, in turn, depend on the mean temperature assumed in calculating the area of radiation.

With a typical radiator system this might be 160 deg. F.

The temperature drop through the system, as already explained, determines the amount of water flowing. If the drop is too great, the last radiators will be too cool with a single pipe system, and regulation of valves will be critical and troublesome with a two-pipe system. On the other hand, too low a drop will call for inconveniently large piping and high mains losses.

A compromise is therefore generally struck at about 40 deg. drop for gravity operation ; 50 deg. is definitely too great ; 30 deg. tends to be extravagant. Some designers take 35 deg. as a base.

Taking 40 deg. drop and 160 deg. mean, the flow will be 180 deg. and return 140 deg. These are common temperatures for a radiator system. It is unusual to start with a temperature higher than 180 deg. (though 200 deg. would be more economical), because it would approach uncomfortably near the temperature at which the water would be converted into steam at the top of the circulating system and would also involve a risk of burns.

Centre of Boiler and Radiator.—In measuring the height of the column producing circulation it is convenient to assume the boiler to be concentrated at one central point. This is the mid-point between flow and return connections.

Similarly, the centre of a radiator should be taken at the mid-point between flow and return.

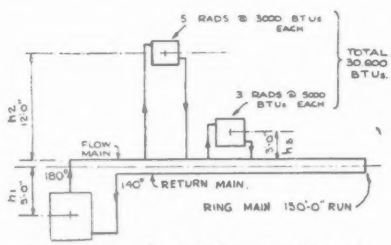


Figure 119. *Pipe-sizing example : (a)*

Example (a). One Pipe Ring Main. (See Fig. 119.)

The radiators are considered as one, but, as the local circuits from flow main to radiator and back to flow main do not assist the main circulation, their height need not be taken into account in arriving at the head, which is thus the height from centre of boiler to centre of ring main.

Thus, for a temperature drop of $180° - 140° = 40°$, we have (from Table XXXVIII)

$$CP = h_1 \times {\cdot}163$$

or, in our case, where $h_1 = 5$ ft.

$$CP = 5 \times {\cdot}163 = {\cdot}815 \text{ in.} \quad . \quad (1)$$

The travel T is made up of an actual pipe length of 150 ft., plus some bend and boiler resistances which may be estimated provisionally (and subject to subsequent correction) as follows : From table at bottom of Table XXXIX boiler resistance $R = 2{\cdot}5$.

Let us assume provisionally $1\frac{1}{2}$ in. pipes and that there are in the main circulation 11 long radius bends, for which Table XXXIX gives us

$R = 1$ each or (for 11 bends)

$R = 11$

or with boiler, $R = 11 + 2\frac{1}{2} = 13\frac{1}{2}$, say 14.

Now assume a velocity of 1 ft. a sec. ($V=12$ in. Table XXXIX) when the equivalent resistance of $R=1$ can be read from Table XXXIX (bottom) to be 5 ft. of pipe.

Hence the equivalent travel of the complete circulation is

$$T = T_1 + R \times E$$

where T_1 = actual travel

R = sum of resistances

and E = equivalent resistance for $R = 1$ at appropriate velocity.

In our case

$$T = 150 + 14 \times 5 = 220 \text{ ft.} \quad . \quad (2)$$

Whence from equations (1) and (2)

$$\frac{CP}{T} = \frac{\cdot 815}{220} = \cdot 0037 \text{ in. per ft.} \quad . \quad (3)$$

The heat loss from the ring main must be allowed for, but this can only be estimated by guessing its size in advance. Assuming it again to be 1½ in. unlagged at 100 deg. difference (i.e., between water temperature and room temperature, Table XXXIX) its transmission is 110 B.T.U. per ft. × 150 ft. = 16,500 B.T.U. This, added to the radiator transmission, gives the total heat to be transmitted through the ring main thus :—

Heat losses = radiator losses + main losses. (In our case)

= 30,000 B.T.U. + 16,500 B.T.U.

= 46,500 B.T.U. per hour.

If the temperature drop is 40 deg., it is clear that each lb. of water transmits 40 B.T.U. Hence water required to transmit 46,500 B.T.U. is clearly

$$\frac{46{,}500}{40} = 1{,}162 \text{ lb. per hour.}$$

(or, in general, water circulated

$$= \frac{\text{heat losses}}{\text{temperature drop}} \text{)}$$

From Table XXXIX, taking resistance at ·0037 in. per ft. [see equation (3)] a 1½ in. pipe passes 800 lb. of water per hour, a 2 in. pipe 1,750 lb.

The least commercial pipe size to pass 1,162 lb. per hour is therefore clearly 2 in.

Our previous calculations, based on an assumed 1½ in. pipe, therefore need correction as follows :

The pipe emission is (for 2 in. pipe) 150½ ft. × 129 B.T.U. per ft. (from Table XXXIV)

= 19,350 B.T.U.

Radiators as before = 30,000 ,,

49,350 ,,

Water to be circulated

$$= \frac{\text{Heat losses}}{\text{Temperature drop}} = \frac{49{,}350}{40^\circ}$$

= 1,234 lb. per hour.

We can now check our assumed velocity of 12 in. per sec. 1,234 lb. per hour through a 2 in. pipe produce a velocity of, say, 3 in. per sec. (by interpolation on Table XXXIX).

This is (as might be expected) rather different from the 12 in. we arbitrarily assumed, and we could correct our calculations by assuming something intermediate, such as a velocity of 6 in. per sec. It is, however, now possible to arrive at the following more directly.

A 2 in. pipe passing 1,234 lb. an hour has a resistance (interpolating on Table XXXIX) of approximately ·002 in. per ft. With 2 in. pipe, the equivalent resistance of bends + boiler (from Table XXXIX, bottom, remembering that velocity is 3 in. per sec.) is about $6{\cdot}1 \times R$.

So that the total resistance is

$$R = 150 + 14 \times 6{\cdot}1 = 235{\cdot}4 \text{ ft.}$$

Hence resistance of circuit is :

Equivalent travel × resistance per ft.

= 235·4 × ·002

= ·47 in.

This is less than the ·815 in. CP available, and would therefore be satisfactory. Actually the velocity will increase slightly, and the temperature drop will decrease a little, until the reduced CP available exactly balances the increased resistance.

In theory, a part of the circuit could be reduced to 1½ in. pipe, but in practice the increased circulation is more valuable than the insignificant saving which could thus be effected.

The radiator connections are sized separately, as if they had a boiler at the centre of the pipe to which they are connected. A drop of 20 deg. maximum may be assumed for these and the sizes should be generous, as far as practical radiator connections permit. It is clear that the last radiators will receive water at a temperature not much above the 140 deg. return temperature (actually 147 deg., see later), and will thus return water to the return main at a temperature less than 140 deg. But mixing with water slightly above 140 deg. it will give 140 deg. in the return.

For the sake of this example assume that all radiators come under two cases —those on first floor height h_2 and those on ground floor h_3.

	First Floor Rads.	Ground Floor Rads.
Height	$h_2 = 12$ ft.	$h_3 = 3$ ft.
CP/ft. (160—140)	= ·077 in.	= ·077 in.
Available CP	= 12 × ·077 in. = ·924 in.	= 3 × ·077 in. = ·231 in.
T (taking R at 1½)	= 24 + 8R* = 36	= 6 + 7R† = 16
$\frac{CP}{T}$	= $\frac{\cdot 924}{36}$ = ·026 in.	= $\frac{\cdot 231}{16}$ = ·014 in.
Rad. and connections, emission at 20° drop	= 3,000 B.T.U. = 150 lb.	= 5,000 B.T.U. = 250 lb.
Size required (Table XXXIX)	= 1 in.	= 1¼ in.

* Assuming one radiator valve, four bends.

† Assuming one radiator valve, three bends.

In the above example the temperatures of 160 deg. and 140 deg. taken for flow and return will apply to those beyond the half-way point on the ring. Those nearer the boiler should be sized for higher temperatures, and the corresponding sizes would then be ¾ in. for first floor and 1 in. for ground floor. Generally, it will be found that those nearer the boiler with short runs will suffice with a ¾ in. or 1 in. connection, according to the heating surface, and those towards the end 1 in. or 1¼ in. With modern radiators, 1¼ in. is the maximum tapping possible. The ½ in. size does not appear to meet the case of even the smallest radiator with gravity circulation from a single pipe.

It should be noted that with the one-pipe system, where the return water from the radiators is returned into the main pipe, the temperature is reduced after each connection. When the pipe sizes have been established, therefore, it is necessary to adjust the areas of the radiators accordingly. Taking the 40 deg. total drop and assuming the emission (pipes + rads.) to each of six radiators to be equal, this may be apportioned thus :—

Rad.	Flow	Return	Mean
1	180	160	170
2	173	153	163
3	166	146	156
4	160	140	150
5	154	134	144
6	147	127	137

Instead of the 160 deg. mean at first assumed, radiators 1 and 2 having a higher mean should be reduced and 3 to 6 with lower should be increased.

Connections from a single pipe ring are usually taken from the top and side of the pipe for flow and return respectively ; this prevents a reversed circulation taking place, sometimes leading to erratic operation.

●

Manufacturers' Items

We have received from Messrs. Best and Lloyd, Ltd., a booklet containing a short list of their standard lighting fittings and lamps.

The seventeen fittings which are illustrated, both by photographs and dimensioned diagrams, include examples covering most of the needs of the small house.

The majority of the ceiling fittings, being both unobtrusive and dustproof, are particularly suited to present-day low-ceilinged dwellings, and a useful range of standard wall-bracket lamps is also given.

The recommended lamp sizes are given with each fitting, and retail prices are attached.

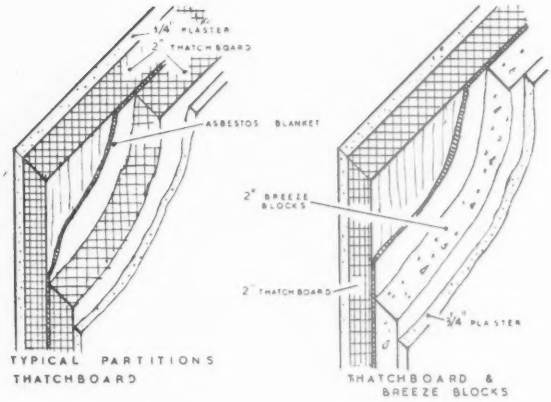
*

A booklet, entitled "Red Lead Paint, its Uses and Advantages," has recently been published by the United Kingdom Lead Oxide Convention.

This publication includes a wide range of data upon this type of paint. Its history, chemical composition, specification, and the correct manner of its use upon various surfaces are fully dealt with.

A list of examples of structures on which it has been used from Sydney Harbour Bridge to stands at Twickenham, leave no doubt that red lead has been found one of the best of preservatives for all types of metal surfaces.

At the end of the booklet are shown eleven colour shades which can be produced in red lead paint by the addition of tinting materials. The small quantity of pigment required allows the use of these more decorative finishes without appreciably reducing the protective qualities of the paint.



TRADE NOTES

[*BY F. R. S. YORKE, A.R.I.B.A.*]

Sound Proof Partition

MESSRS. Newall's Insulation Company draw my attention to partitions that were shown at the Noise Abatement Exhibition at the Science Museum, South Kensington, but not described in the article concerning the Exhibition that appeared in THE ARCHITECTS' JOURNAL on June 6.

•

The partitions are illustrated by diagrams at the head of these notes. The more effective is that in which two layers of Thatchboard enclose a layer of asbestos blanket. In the other breeze blocks are substituted for the second layer of Thatchboard.

•

The latter method is used where a brick or breeze partition is already in position and it is desired to add sound insulation. The Thatchboard presents a good key and can be plastered direct. The Thatchboard slabs are supplied in standard 5 ft. widths, varying from 6 ft. to 12 ft. in length. The average decibel reduction of the double Thatchboard partition, with asbestos blanket interlining, is shown in the following table :

Not exceeding 300 cycles.	Exceeding 300 but not exceeding 1,200 cycles	Exceeding 1,200 cycles.
40	58	75

Flush Door

I have received from the Anglo-Norwegian Door Company drawings showing a flush door that is about to be marketed in England. The door has several interesting features that are, I believe, new to standard doors in this country.

•

The door is supplied complete with frame and hinges, ready for building in, with or without oak cill member. I understand the incorporation of the cill is standard practice in Norway. It appears it must be used if the oak "flange" provided all round the door is to be effective in excluding draught at the bottom.

•

The built-up core at the door, indicated in the diagram, should make the door relatively soundproof.

•

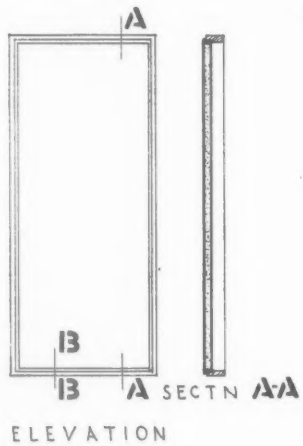
Doors and frames are fixed when plastering is finished. They are nailed to coke breeze or similar grounds or plugs ; plaster is made good round the frame, and the joint covered by a 1¼ in. by ¼ in. fillet.

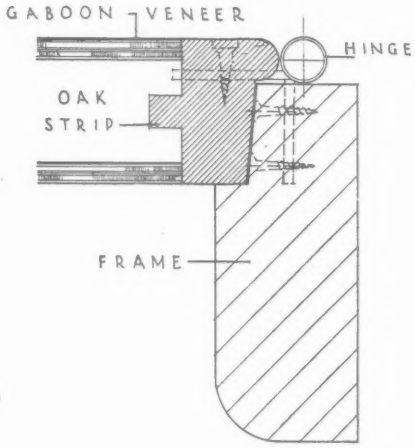
•

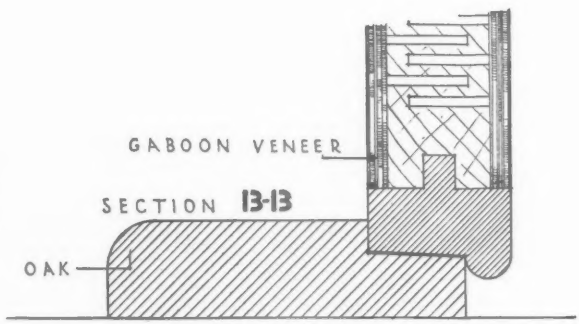
The door is finished with gaboon mahogany veneer, and solid oak rebated edges, and is ready for wax polishing.

•

The cost, in London, of door, frame and hinges, in best star star S. gaboon is about 36s.







Elevation, plan and sections of the flush doors manufactured by the Anglo-Norwegian Door Co. (see accompanying note).

THE BUILDINGS ILLUSTRATED

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

Guildhall, Kingston (pages 9–14). F. and H. F. Higgs, contractors for demolition and foundations ; Gee, Walker and Slater, Ltd., general contractors for superstructure ; Holloway Brothers (London), Ltd., contractors for piling and reinforced concrete work ; A. D. Dawnay and Sons, Ltd., constructional steelwork ; The Bath and Portland Stone Firms, Ltd., stonework ; The Oxshott Brick Company, facing bricks ; C. E. Welstead, Ltd., metal windows ; Sulzer Brothers (London), Ltd., heating ; Electric Installations, Ltd., electrical work ; Shanks & Co., Ltd., sanitary fittings ; W. A. Telling, Ltd., plastering ; Carter & Co. (London), Ltd., wall tiling ; The Art Marble, Stone and Mosaic Co., Ltd., marble pavings and wall linings ; The Acme Flooring and Paving Co., Ltd., hardwood flooring ; Stevens and Adams, Ltd., hardwood flooring ; The

Leyland and Birmingham Rubber Co., Ltd., rubber flooring; Goldstein & Co., glazing; Paripan, Ltd., paintwork; Marryat and Scott, Ltd., lifts; Merryweather and Sons, Ltd., mechanical partitions; James Gibbon, Ltd., locks and door furniture; Frazzi, Ltd., flat roof covering; Sika François, Ltd., damp proofing; May Acoustics, Ltd., acoustic treatment; H. H. Martyn & Co., Ltd., ornamental metalwork; J. W. Gray and Son, Ltd., flagstaffs and lightning conductors; The Birmingham Guild, Ltd., metalwork; The Chatwood Safe Co., Ltd., strongroom doors; F. Braby & Co., Ltd., metal radiator casings; Smith's English Clocks, Ltd., electric clocks; The General Electric Co., Ltd., electric light fittings; Heal and Son, Ltd., electric fires; Bentalls, Ltd., court panelling, council and committee room furniture, linoleum, etc.; Hide & Co., Ltd., office furniture and carpets; Roneo, Ltd., metal furniture; Gordon Russell, Ltd., curtains.

Swimming Pool, Woodside Green, S.E.25 (pages 22–23). General contractors, Girlings Ferro-Concrete Co., Ltd.; Johnson's Reinforced Concrete Engineering Co., Ltd., reinforcement for diving stage; Bell Brothers, Ltd., purification plant; Siemens-Schuckert (Great Britain), Ltd., electric heating apparatus; Milner Safe Co., Ltd., steel lockers.

THE WEEK'S BUILDING NEWS

LONDON & DISTRICTS (15-MILES RADIUS)

BATTERSEA. *Dwellings.* The Borough Council is to erect further blocks of tenements at Stewart's Lane, as an estimated cost of £26,270.

CARMELITE STREET. Messrs. Trollope and Colls, Ltd., are to construct a new building for Associated Newspapers, Ltd., at Carmelite Street and Victoria Embankment.

CROYDON. *School.* The Corporation is to erect a school for 850 children on the South Norwood site. The architect is Mr. A. Sunderland.

CROYDON. *Houses.* The Council recommends the purchase of a site at Crown Hill, Upper Norwood, for the erection of 83 houses.

CROYDON. *Nurses' Home.* The tender, £21,664, of Messrs. Crosby & Co., Ltd., for extensions at the Mayday Hospital Nurses' Home has been recommended by the Council.

CROYDON. *Flats.* Mr. E. A. Stone, 20 Berkeley Street, W.1, has prepared plans for the erection of 40 flats at Woodside Green; and Messrs. De Moleyns and Groves, Lansdowne Court, Brighton Road, have prepared plans for 30 flats at Montpelier Road, Brighton Road.

CROYDON. *School.* The Education Committee proposes to erect a new school at South Norwood to accommodate 850 scholars, for which tenders are to be invited. Mr. A. Sunderland, F.R.I.B.A., has been appointed as architect for the preparation of plans.

DEPTFORD. *Dwellings.* The L.C.C. has accepted the tender, £41,183, of Messrs. A. T. Rowley (London), Ltd., for the erection of 130 tenements at Bronze Street, Deptford.

EALING. *Health Centre.* A site has been purchased at Perivale for the erection of a Health Centre.

EALING AND BRENTFORD. *Swimming Pool.* The Gunnersbury Park Joint Committee has instructed the engineer to prepare a scheme for the construction of a swimming pool.

EALING. *Flats.* A block of 32 flats and 18 garages are to be erected on the site of Nos. 43 and 45 Mount Avenue, for Mr. A. F. A. Trehearne. Plans prepared by Messrs. Trehearne and Norman, Preston & Co.

EALING. *Hall and Shops.* Messrs. Howis and Belcham, 9 and 10 Fenchurch Street, E.C.3, have submitted lay-out plans for a dance hall and 10 shops proposed to be erected at Uxbridge Road, W.5.

EAST BEDFONT. *Children's Home.* The Middlesex County Council has proposed the erection of a children's home on a site at Staines Road and Hatton Road. Plans have been prepared by Mr. W. F. Curtis, and it is estimated the building will cost £36,500.

FINCHLEY. *Library.* The Council is to erect a library on the Ravensdale Avenue site at an estimated cost of £9,500.

FINCHLEY. *Flats.* Plans passed by the Corporation: 102 flats, Great North Road, for Messrs. A. and E. Foux; three houses, Chalgrove Gardens, for Mr. P. J. Preston; 10 flats, Cornwall Close, for Messrs. Payne & Co.; three shops and flats, Lyttleton Road, for Messrs. Cozens; two houses, Deansway, for Mr. J. Ballaster; six houses, Conisbee Road, for Mr. W. S. Cook.

GREAT BOOKHAM. *Church, etc.* It is proposed to erect a Catholic Church, parochial hall and priest's house on a site in Keswick Road, Great Bookham. The Rev. Frank E. Bird has been notified by the local Council that they were prepared to favourably consider such a scheme upon the submission of plans.

GREENFORD. *Shops and Flats.* Mr. L. Catsell is to erect 10 shops with flats over at Ruislip Road, Greenford, to plans by Mr. E. Cavanagh, First Avenue House, High Holborn, W.C.1.

HACKNEY. *Clearance.* The L.C.C. is to clear and reconstruct the High Hill Ferry area of Hackney, at an estimated cost of £100,000.

HESTON-ISLEWORTH. *Health Centre.* The Borough Surveyor has been instructed to prepare plans and estimates for a combined health centre and administrative centre for the Medical Officer of Health's Department.

KENNINGTON. *Dwellings.* The L.C.C. has accepted the tender, £16,943, of Messrs. W. H. Gaze and Sons, Ltd., for the erection of 171 tenements at the Kennington Park estate.

LEATHERHEAD. *Estate Developments.* Messrs. Braddy, Randall and Lowman have prepared plans on behalf of Mr. C. H. Runnells, for the development of the Fortyfoot Road, by the erection of 182 houses. Plans have also been prepared by Messrs. Osenton & Co., of Cobham, for the development of the Yarm Court Estate, where it is proposed to erect 192 houses at five to the acre, and 36 houses at seven to the acre. Plans have been approved upon conditions.

LEWISHAM. *Gymnasium.* The governors of St. Dunstan's College, Lewisham, are to erect a gymnasium, etc., at an estimated cost of £5,700.

NORTHOLT. *Shops.* Mr. Bryant Hobbs, 7 Park Lane, W.1, is the architect for the proposed erection of 10 shops and flats over at North Circular Road and Hanger Lane.

PADDINGTON. *Welfare Centre.* The Council has prepared plans for the erection of a maternity and child welfare clinic on the parsonage site in Harrow Road.

POPLAR. *Dwellings.* The L.C.C. has accepted the tender, £42,030, of Messrs. A. T. Rowley (London), Ltd., for the erection of 103 tenements on the Ranwell Street area.

SHENLEY. *Building, etc., at Mental Colony.* The Middlesex County Council is recommended to accept a tender, £22,792, of John Laing and Sons, Ltd., for further works at the Shenley Mental Colony.

ST. PANCRAS. *Dwellings.* A further block of 36 flats and an occupational centre is to be erected on the Drummond Crescent estate of the St. Pancras House Improvement Society. The architect is Mr. Ian B. M. Hamilton, and the contract has been placed with Messrs. Wheeler Bros.

STEPNEY. *Dwellings.* The L.C.C. has accepted the tender, £23,678, of Messrs. A. E. Symes, Ltd., for the erection of 68 tenements at the Ellen Street area of Stepney.

STOKE NEWINGTON. *Flats, etc.* Plans passed by Stoke Newington B.C.: Flats, Clissold Court, Green Lanes, for Mr. J. Hodges; shops and flats, Green Lanes and Woodberry Down, for Mr. W. J. Gregory; block of flats, 9 Woodberry Down, for Messrs. Francis Dod & Co.

SLOUGH. *Houses.* Plans passed by the U.D.C.: Mr. W. Herbert, 84, Western Road, Southall, 21 houses and garage, on Croft Hill Estate; Mr. E. McAll, 29 houses off Cippenham Lane; and Mr. F. G. Smart, 13 at Farraday Road.

TWICKENHAM. *Flats.* Plans passed by T.C.: Mr. G. Morgan, block of 60 flats, caretaker's flat and 16 garages, south side of Chertsey Road; Messrs. A. W. Amos and Son, 54 flats, Duck's Walk; Mr. H. S. Scott, 24 flats, The Barons; and 18 flats, Kelvin Drive; Mr. G. Whittaker, block of 36 flats and nine garages, south side of Chertsey Road; Mr. G. McLean, 15 flats, Crown Road.

TWICKENHAM. *Houses.* The T.C. has approved the erection of 58 houses on the north-east side of Nelson Road, by the D.S.M. Estates, Ltd., subject to the submission of plans.

TWICKENHAM. *Hall, etc.* Messrs. G. M. Viner and Son has received the consent of the T.C. to the erection of a Salvation Army hall and classrooms, on a site on the north side of Powder Mill Lane. Plans are to be submitted for approval.

TWICKENHAM. *Licensed Premises.* Messrs. Watney Combe Reid & Co., Ltd., are to erect new premises in Chertsey Road, to plans prepared by Messrs. F. J. Fisher and Son.

TWICKENHAM. *Licensed Premises.* Mr. T. J. Ingram, F.R.I.B.A., has prepared plans for the erection of new premises at the junction of Staines and Sixth Cross Roads, for Messrs. Whitbread.

WOKING. *Cinema.* The Allied Kinemas, Ltd., have secured a site in Chobham Road, for the purposes of a cinema to accommodate 2,000 persons, and will incorporate a café and car park.

SOUTHERN COUNTIES

BEXHILL. *Colonnade.* The Corporation proposes to proceed with the scheme for linking up the new entertainment hall with the Colonnade and utilizing the Colonnade site for a bathing pool, at an estimated cost of £18,500.

BRIGHTON. *New Market.* The Corporation has approved plans for the erection of a new market in Circus Street, at an estimated cost of £45,000.

HERNE BAY. *Hospital.* The governors of the Memorial Cottage Hospital have submitted plans to the Herne Bay U.D.C. for the erection of a new hospital.

NEWBURY. *Houses.* Messrs. Houghton and Palmer are to erect 22 houses on an estate off Bath Road, Thatham, near Newbury.

West and East Sussex County Councils and Brighton, Eastbourne and Hastings Corporations have approved revised plans for the erection of a mental colony at Laughton, at an estimated cost of £223,118.

WORTHING. *Extensions to Hospital.* The Corporation has approved plans for the erection of isolation accommodation and alterations at Swandean Hospital, at a cost of £24,790.

MIDLAND COUNTIES

KIDDERMINSTER. *Baths.* The Corporation has prepared a scheme for extensions at the Castle Road Baths, at a cost of £5,000.

LEICESTER. *Baths.* A site in St. Nicholas Street has been chosen for the construction of new indoor swimming baths for Leicester City Council, at a cost of £18,000.

SUTTON COLDFIELD. *Houses, etc.* Plans passed by the Corporation: 31 houses in Eachelhurst Road for Mr. D. A. Fleming; 10 houses in Eachelhurst Road for Mr. A. P. Johnson; 10 houses in Rough Road for Mr. G. E. Clarke; two shops and houses in Boldmere Road for Mr. H. Gray.

SUTTON COLDFIELD. *Houses.* The Corporation is to obtain tenders for the erection of a further 52 houses on the council estate.

NORTHAMPTON. *Houses.* Plans passed by the Corporation: Four houses, Bush Hill, for Messrs. A. Glenn and Sons, Ltd.; 16 houses, Covington Street, for Messrs. W. J. Richardson and Son; 68 houses, Duston Road, etc., for Messrs. Chowns, Ltd.; eight houses, Towcester Road, for Messrs. Wareing and Hewins; stores, 35-9 Abington Street, for Great Universal Stores, Ltd.; six houses, Hillcrest Avenue, for Mr. A. Atkins; six houses, off Welford Road, for Midland Dwellings, Ltd.; alterations and additions, Swan and Helmet Inn, Grove Road, for Messrs. P. Phipps & Co., Ltd.; 10 houses, White Hills estate, for Messrs. Wilson and Son, Ltd.; reconstruction, Bold Dragon Inn, High Street, Weston Favell, for Northampton and Towcester Breweries, Ltd.

WOLVERHAMPTON. *Houses, etc.* Plans passed by the Corporation: 22 houses, Newbolds

(*Continued on page xxxvi*)

RATES OF WAGES

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

			I	II
			s. d.	s. d.
A_1	Aberdare ..	S. Wales & M.	1 5	1 0½
A	Aberdeen ..	Scotland	1 6	1 1½
A_1	Abergavenny ..	S. Wales & M.	1 5	1 0½
A	Abingdon ..	S. Counties	1 4	1 0
A	Accrington ..	N.W. Counties	1 5½	1 1½
A	Addlestone ..	S. Counties	1 4	1 0
A	Adlington ..	N.W. Counties	1 5½	1 1½
A	Airdrie	Scotland	*1 5½	1 1½
C	Aldeburgh ..	E. Counties	1 1½	10½
A	Altrincham ..	N.W. Counties	1 5½	1 1½
B	Appleby ..	N.W. Counties	1 2	10½
A	Ashton-under Lyne	N.W. Counties	1 5½	1 1½
B_1	Aylesbury ..	S. Counties	1 3	11½
B_1	Banbury ..	S. Counties	1 3	11½
B_1	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_2	Bovey Tracey	S.W. Counties	1 2½	11
A	Bradford ..	Yorkshire	1 5½	1 1½
A_1	Brentwood ..	E. Counties	1 5	1 0½
A	Bridgend ..	S. Wales & M.	1 5½	1 1½
B	Bridgwater ..	S.W. Counties	1 3½	11½
A_1	Bridlington ..	Yorkshire	1 5	1 0½
A	Brighouse ..	Yorkshire	1 5½	1 1½
A_2	Brighton ..	S. Counties	1 4½	1 0½
A	Bristol	S.W. Counties	1 5½	1 1½
B	Brixham ..	S.W. Counties	1 2½	11
A	Bromsgrove ..	Mid. Counties	1 4½	1 0½
B	Bromyard ..	Mid. Counties	1 2	10½
A	Burnley ..	N.W. Counties	1 5½	1 1½
A	Bursiem ..	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
	Llandudno ..	N.W. Counties	1 4½	1 0½
A	Llanelly ..	S. Wales & M.	1 5½	1 1½
	London (12-miles radius)		1 7	1 2½
	Do. (12-15 miles radius)		1 6½	1 2
A	Long Eaton ..	Mid. Counties	1 5½	1 1½
A	Loughborough	Mid. Counties	1 5½	1 1½
A_1	Luton	E. Counties	1 5	1 0½
A	Lytham ..	N.W. Counties	1 5½	1 1½
A_1	Macclesfield	N.W. Counties	1 5	1 0½
A_2	Maidstone ..	S. Counties	1 4	1 0
A_2	Malvern ..	Mid. Counties	1 4	1 0
A	Manchester ..	N.W. Counties	1 5½	1 1½
A	Mansfield ..	Mid. Counties	1 5½	1 1½
B_1	Margate ..	S. Counties	1 3	11½
A	Matlock ..	Mid. Counties	1 4	1 0
A_1	Merthyr ..	S. Wales & M.	1 5	1 0½
A	Middlesbrough	N. E. Coast	1 5½	1 1½
A_2	Middlewich ..	N. W. Counties	1 4½	1 0½
B_2	Minehead ..	S.W. Counties	1 2½	11
B_2	Monmouth & S. and E. Glamorganshire	S. Wales & M.	1 2½	11
A	Morecambe ..	N.W. Counties	1 5½	1 1½
A_2	Nantwich ..	N.W. Counties	1 4½	1 0½
A	Neath	S. Wales & M.	1 5½	1 1½
A	Nelson ..	N.W. Counties	1 5½	1 1½
A	Newcastle ..	N.E. Coast	1 5½	1 1½
A	Newport ..	S. Wales & M.	1 5½	1 1½
A	Normanton ..	Yorkshire	1 5½	1 1½
A	Northampton	Mid. Counties	1 5½	1 1½
A	North Staffs ..	Mid. Counties	1 5½	1 1½
A	North Shields ..	N.E. Coast	1 5½	1 1½
A_1	Norwich ..	E. Counties	1 5	1 0½
A	Nottingham ..	Mid. Counties	1 5½	1 1½
A	Nuneaton ..	Mid. Counties	1 5½	1 1½
A	Oakham ..	Mid. Counties	1 4	1 0
A	Oldham ..	N.W. Counties	1 5½	1 1½
A_2	Oswestry ..	N.W. Counties	1 4	1 0
A_1	Oxford ..	S. Counties	1 5	1 0½
A	Paisley ..	Scotland	*1 5½	1 1½
B_2	Pembroke ..	S. Wales & M.	1 2	10½
A	Perth	Scotland	*1 5½	1 1½
A_1	Peterborough ..	E. Counties	1 5	1 0½
A	Plymouth ..	S.W. Counties	*1 5½	1 1½
A	Pontefract ..	Yorkshire	1 5½	1 1½
A_1	Pontypridd ..	S. Wales & M.	1 5	1 0½
A_2	Portsmouth ..	S. Counties	1 4½	1 0½
A	Preston ..	N.W. Counties	1 5½	1 1½
A	Queensferry	N.W. Counties	1 5½	1 1½
A_2	Reading ..	S. Counties	1 4½	1 0½
B	Reigate ..	S. Counties	1 3½	11½
A	Retford ..	Mid. Counties	1 4	1 0
A_1	Rhondda Valley	S. Wales & M.	1 5	1 0½
A	Ripon	Yorkshire	1 4	1 0
A	Rochdale ..	N.W. Counties	1 5½	1 1½
B	Rochester ..	S. Counties	1 3½	11½
A_1	Ruabon ..	N.W. Counties	1 5	1 0½
A	Rugby	Mid. Counties	1 5½	1 1½
A_2	Rugeley ..	Mid. Counties	1 4½	1 0½
A	Runcorn ..	N.W. Counties	1 5½	1 1½
A_1	St. Albans ..	E. Counties	1 5	1 0½
A	St. Helens ..	N.W. Counties	1 5½	1 1½
B_2	Salisbury ..	S.W. Counties	1 2½	11
A_1	Scarborough ..	Yorkshire	1 5	1 0½
A	Scunthorpe ..	Mid. Counties	1 5½	1 1½
A	Sheffield ..	Yorkshire	1 5½	1 1½
A	Shipley	Yorkshire	1 5½	1 1½
A_2	Shrewsbury ..	Mid. Counties	1 4½	1 0½
A_2	Skipton ..	Yorkshire	1 4½	1 0½
A_2	Slough	S. Counties	1 4½	1 0½
A_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_2	Truro	S.W. Counties	1 2½	11
A_2	Tunbridge Wells	S. Counties	1 4	1 0
A	Tunstall ..	Mid. Counties	1 5½	1 1½
A	Tyne District ..	N.E. Coast	1 5½	1 1½
A	Wakefield	Yorkshire	1 5½	1 1½
A	Walsall	Mid. Counties	1 5½	1 1½
A	Warrington ..	N.W. Counties	1 5½	1 1½
A_1	Warwick	Mid. Counties	1 5	1 0½
A_1	Wellingborough	Mid. Counties	1 5	1 0½
A	West Bromwich	Mid. Counties	1 5½	1 1½
A_2	Weston-s.-Mare	W. Counties	1 4½	1 0½
A_2	Whitby	Yorkshire	1 4½	1 0½
A	Widnes	N.W. Counties	1 5½	1 1½
A	Wigan	N.W. Counties	1 5½	1 1½
B	Winchester ..	S. Counties	1 3½	11½
A_2	Windsor ..	S. Counties	1 4½	1 0½
A	Wolverhampton	Mid. Counties	1 5½	1 1½
A_2	Worcester ..	Mid. Counties	1 4½	1 0½
A_2	Worksop ..	Yorkshire	1 4	1 0
A_1	Wrexham ..	N.W. Counties	1 5	1 0½
A	Wycombe ..	S. Counties	1 4	1 0
B	Yarmouth ..	E. Counties	1 3½	11½
B	Yeovil	S.W. Counties	1 3½	11½
A	York	Yorkshire	1 5½	1 1½

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

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

CURRENT PRICES

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

WAGES

		s.	d.
Bricklayer	per hour	1	7
Carpenter	"	1	7
Joiner	"	1	7
Machinist	"	1	8
Mason (Banker)	"	1	7
" (Fixer)	"	1	8
Plumber	"	1	7
Painter	"	1	6
Paperhanger	"	1	6
Glazier	"	1	7
Slater	"	1	7
Scaffolder	"	1	3
Timberman	"	1	3
Navvy	"	1	2½
General Labourer	"	1	2½
Lorryman	"	1	5
Crane Driver	"	1	6
Watchman	per week	2	10	0

MATERIALS

EXCAVATOR AND CONCRETOR

		£	s.	d.
Grey Stone Lime	per ton	2	2	●
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
¾" Channel bends	each	2	9	4	●
Channel junctions	"	4	6	6	6
Channel tapers	"	2	9	4	●
Yard gullies	"	6	9	8	9
Interceptors	"	16	●	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	●
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	●
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
"	¾"	"	"	1	5
"	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	AA. A. B.	AA. A. B.	AA. A. B.	AA. A. B.
	d. d. d.	d. d. d.	d. d. d.	d. d. d.
Birch	4 3 2	5 4 3	7½ 6 4½	8½ 7 6
Alder	3½ 3 2	5 4 3	6½ 5½ 4½	8 7 6
Gaboon Mahogany	4 3 3	6½ 5½ 4½	9½ 7½ –	1/0½ 10 –
Figured Oak 1 side	8½ 7 –	10 8 –	11½ – –	1/6 – –
Plain Oak 1 side	6½ 6 –	7½ 7 –	9½ – –	1/– – –
Oregon Pine	5 4 –	5½ 5 –	6 – –	– – –

		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, ¾"	"	9	6
" " ⅝"	"	9	3
" " ½"	"	9	0
" " ⅜"	"	8	6
" " ¼"	"	8	6
" " 1"	"	8	6
" " 1¼"	"	8	6
" " 1½"	"	8	6

Cast-iron rain-water pipes of ordinary thickness metal	F.R.	4" s.	4" d.	6" s.	6" d.
		8		10	
Shoes	each	2	0	3	0
Anti-splash shoes	"	4	6	8	0
Boots	"	3	0	4	0
Bends	"	2	7	3	9
" with access door	"		—	6	3
Heads	"	4	0	5	●
Swan-necks up to 9" offsets	"	3	9	6	●
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	●	2	6
Outlets	"	1	9	2	3

PLUMBER

		s	d.
Lead, milled sheets	cwt.	19	6
" drawn pipes	"	19	0
" soil pipe	"	19	6
" scrap	"	11	6
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	3 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	●
Plaster, coarse	"	2	10	0
" fine	"	4	15	●
Hydrated lime	"	3	0	9
Sirapite	"	3	6	●
Keene's cement	"	5	0	●
Gothite Plaster	"	3	6	●
Pioneer Plaster	"	3	3	●
Thistle plaster	"	3	6	0
Sand, washed	Y.C.		11	6
Hair	lb.			6
Laths, sawn	bundle		2	4
" rent	"		3	9
Lath nails	lb.			3

GLAZIER

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

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

PAINTER

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

CURRENT PRICES FOR MEASURED WORK

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

EXCAVATOR AND CONCRETOR

		£ s. d.
Digging over surface n/e 12″ deep and cart away	Y.S.	2 9
,, to reduce levels n/e 5′ 0″ deep and cart away	Y.C.	8 6
,, to form basement n/e 5′ 0″ and cart away	,,	9 0
,, ,, 10′ 0″ deep and cart away	,,	9 6
,, ,, 15′ 0″ deep and cart away	,,	10 0
If in stiff clay	add ,,	6
If in underpinning	,, ,,	4 0
Planking and strutting to sides of excavation	F.S.	1 0
,, ,, to pier holes	,,	5
,, ,, to trenches	,,	5
,, ,, extra, only if left in	,,	3
Hardcore, filled in and rammed	Y.C.	10 0
Portland cement concrete in foundations (6-1)	,,	1 6 0
,, ,, (4-2-1)	,,	1 11 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 la,id 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
2½″ × 2″ fir battening for Countess slating	,, 9 9
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
1½″ do.	,, 2 10 0
1¼″ 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, 1¼″ pulley stiles, 1¼″ heads, 1″ inside and outside linings, ⅞″ 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
12″ 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, ¼″ 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 0
Do. in flashings	,, 1 16 6
Do. in covering to turrets	,, 2 4 0
Do. in soakers	,, 1 8 6
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. 6
Do. and distemper walls	,, 9
Do. with washable distemper	,, 1 1
Knot, stop, prime and paint four coats of oil colour on plain surfaces	,, 3 3
Do. on woodwork	,, 3 6
Do. on steelwork	,, 3 0
Do. and brush grain and twice varnish	,, 5 6
Stain and twice varnish woodwork	,, 1 11
Stain and wax-polish woodwork	,, 4 6
French polishing	F.S. 1 2
Stripping off old paper	Piece 2 0
Hanging ordinary paper	from ,, 2 9

Make ceilings safe

Every ceiling is subjected to stresses and strains. Settlement of buildings, vibration, heat, moisture, shrinkage of wood—all have their effect. "ESSEX" BOARD, however, resists conditions which cause plaster to crack and fall, making ceilings safe and sound. It is strong and highly compressed; light and easily fixed; ready at once for decoration. "ESSEX" BOARD is not only an effective alternative to plaster, but a most useful building material for many kinds of jobs.

MADE IN BRITAIN

"ESSEX" BOARD

Manufacturers: THAMES BOARD MILLS LTD., PURFLEET, ESSEX S.B.373

Building News—(*Continued from page 33*)

estate. Kingsway Road, for Mr. T. Mucklow ; two houses, Pinfold Lane, for Mr. G. H. Wain ; additions, Golden Lion P.H. Cannock Road ; rebuilding Summer House P.H., St. Marks Street, and new hotel, Church Road, Penn, for Messrs. W. Butler & Co., Ltd. ; 22 houses, Green Lane, for Messrs. B. D. N. Tate & Co. ; eight houses, Pinfold Lane, for Messrs. Hayward & Co. ; three houses, Willenhall Road, for Mr. B. Green ; 12 houses, Beech Road, for Messrs. A. H. and H. S. Pidgeon ; warehouse, Salop Street, for Mr. J. C. Harris ; six houses, Wimborne Road, for Mr. S. V. Mercer ; 12 houses off Birches Barn Road, for Mr. R. Carpenter ; factory extensions, Lower Walsall Street, for British Oxygen Co., Ltd. ; four houses, Wychbury Hill, for Mr. H. Hewitt ; development, Uplands Farm estate, for Uplands Estate Co. ; 36 houses, Elm Farm estate and 214 houses, Low Hill estate, for the Corporation ; 10 houses, Coalway Road, for Mr. H. Webberley ; two houses, Star Street, for Mr. H. Wright ; shops and warehouses, Salop Street, for Holtons Estate, Ltd.

NORTHERN COUNTIES

CHESTER. *Church.* The First Church of Christ. Science is to erect a church in Liverpool Road, Chester.

CHESTER. *Aerodrome.* The Corporation has had a report by Sir Alan Cobham regarding a municipal aerodrome and arranged to negotiate for a site.

CHESTER. *Technical College.* The Corporation is acquiring a site in Queen's Park Road for the erection of a technical college.

CHESTER. *Barracks.* The Corporation is to offer a site of three acres at Queen's Park to the War Office for the erection of headquarters for the Western Command.

WARRINGTON. *Cinema.* The Watch Committee has agreed to grant a cinema licence in respect to a new picture house to be erected in Buttermarket Street by Odeon Theatres, Ltd., Birmingham.

BUILDING CONTRACTS OPEN

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

LLANGEFNI

July 6.—Erection of 30 houses at Lon Newydd, Llangefni, as follows : Tenders (1) 10 houses on Field No. 730 ; (2) 20 houses on Field No. 732 ; (3) for all the 30 houses. W. F. Brindle, Architect, Nythfa, Beullech Bay. Deposit £2 2s.

NEWCASTLE-UPON-TYNE : HOSPITAL WORK

July 8.—Erection of new children's wards and X-ray block at the General Hospital. Housing Architect, 18 Cloth Market, Newcastle-upon-Tyne. Deposit £2 2s.

PEMBROKESHIRE : REDECORATIONS

July 9.—Painting and other works at seventeen schools. Forms of tender, etc., from O. T. Thomas, County Architect, County Offices, Haverfordwest.

WIMBLEDON : OFFICES

July 10.—New offices and stores adjoining the generating station, Durnsford Road, S.W.19. Forms of tender from Chief Engineer and Manager, Electricity Works, Durnsford Road, S.W.19. Tenders to Chairman, Electricity Committee, Town Clerk's Office, Town Hall, S.W.19.

EDINBURGH : TENEMENTS

July 13.—Tenders for separate undertakings for the following works (1) Demolition, excavator, mason, brick and concrete ; (2) carpenter and joiner ; (3) plumber ; (4) plaster and cement ; (5) slate and roughcast ; (6) glazier ; (7) paint—for proposed new tenements to be erected at Gifford Park. Forms of tender from E. J. MacRae, City Architect, City Chambers. Tenders to D. Robertson, town clerk, City Chambers, Edinburgh.

HEMEL HEMPSTEAD : COTTAGES

July 15.—Erection of 10 cottages, six at Flamstead and four at Markyate. Forms of tender from the architect, T. H. Lightbody, Broadway Offices, Hemel Hempstead, Herts. Tenders to L. F. Smeathman, clerk, Broadway Offices, Hemel Hempstead, Herts. Deposit £3 3s.

SUNDERLAND : FLOORS

July 15.—Supply and erection of reinforced concrete floors for offices of Electricity Undertaking. Forms of tender from Electrical Engineer and General Manager, Electricity Offices, Running Street, Sunderland. Tenders to the Town Clerk, Town Hall, Sunderland. Deposit £1.

DORCHESTER : CHILDREN'S HOME

July 16.—Erection of a children's home for the Dorset C.C. B. C. Roe, Deputy Clerk, County Offices, Dorchester. Deposit £2 2s.

RICHMOND : REDECORATIONS

July 16.—Redecorations and minor repairs to seven schools for the E.C. Forms of tender, etc., from Borough Engineer, Hotham House, Heron Court, Richmond. Tenders to G. Cowell, education secretary, Education Offices, Parkshot, Richmond, Surrey. Deposit £1.

NORTHFLEET : HOUSES

July 17.—Erection of 28 houses, for the U.D.C. J. A. Mitchell, Surveyor, Council Offices, Northfleet. Deposit £5.

LONDON (WILLESDEN) : ALTERATIONS

July 18.—Alterations and additions to the Salusbury Road Council School, for the T.C. F. Wilkinson, Town Hall, Dyne Road, Kilburn, N.W.6. Deposit £10 10s.

NEATH : HOSPITAL

July 18.—Erection of Isolation Hospital at Tonna-Uchat, Neath. Forms of tender from H. A. Clarke, Gwyn Hall, Neath. Tenders, with priced-out bill of quantities, to A. E. I. Curtis and T. D. Windsor Williams, joint clerks, 28 Queen Street, Neath. Deposit £5 5s.

DEVIZES : HOUSES

July 20.—Erection of 20 houses on the 40 acre site. A. W. Jakeway, Borough Surveyor, Town Hall, Devizes. Deposit £2 2s.

EALING : HOUSES

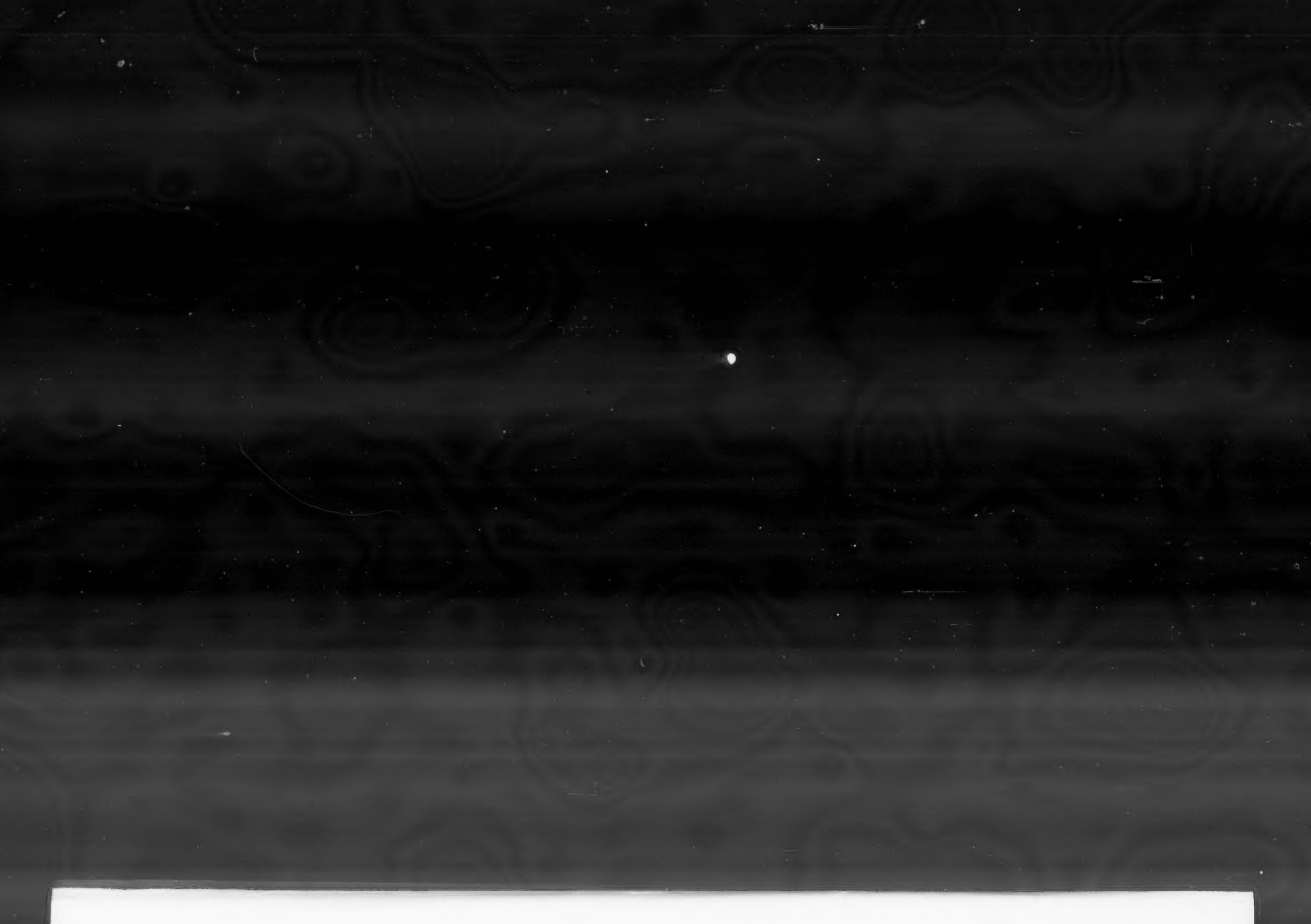
July 22.—Erection of 24 houses in connection with the Greenford Road housing scheme. Forms of tender from F. J. Forty, Borough Engineer, Town Hall, Ealing, W.5. Tenders to R. H. Wanklyn, Town Clerk, Town Hall, Ealing, W.5. Deposit £1.

DORCHESTER : LIBRARY

July 22.—Erection of library and clinics at Colliton Park. B. C. Roe, Deputy Clerk, County Offices, Dorchester. Deposit £2 2s.

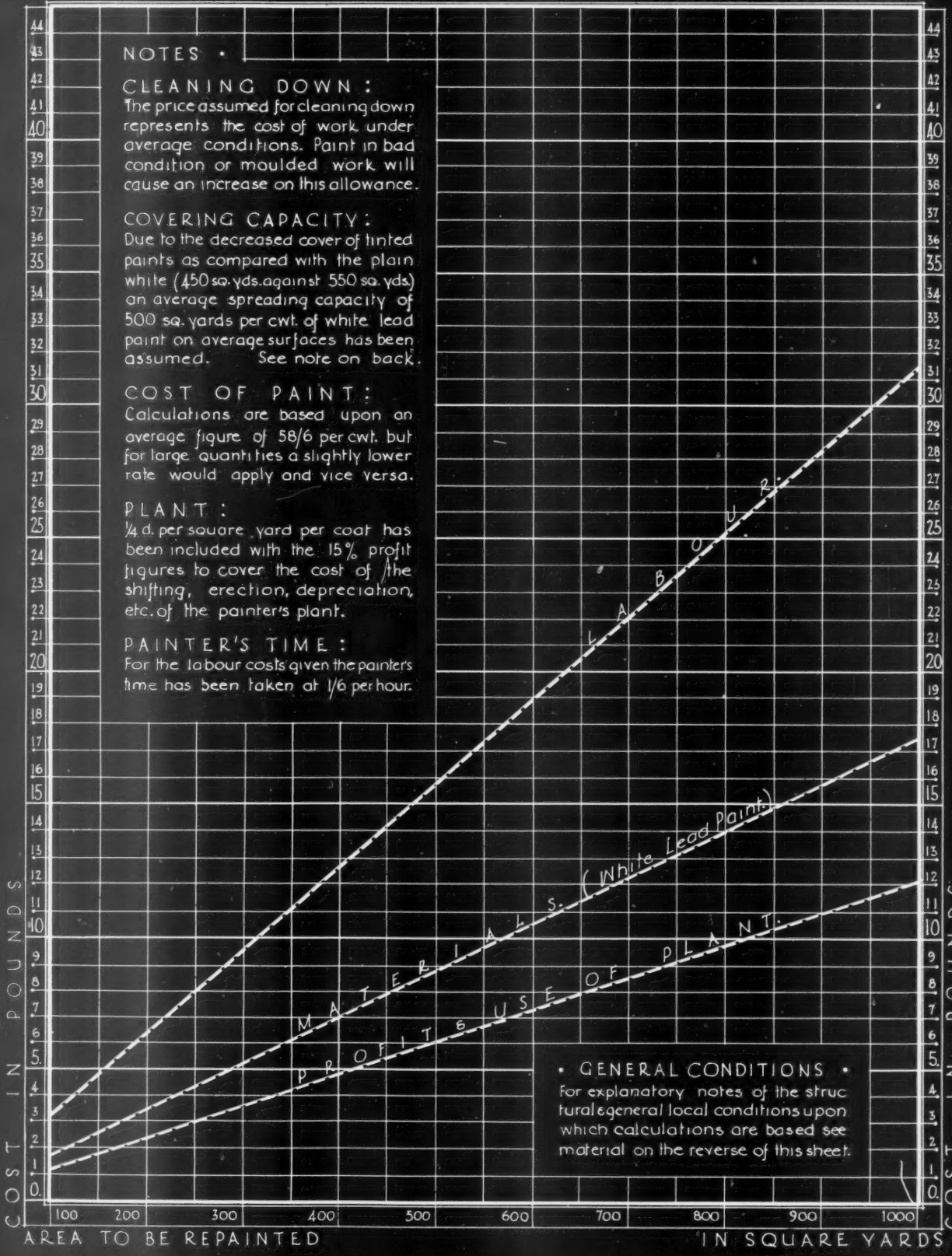
DURHAM : SCHOOL

July 31.—Erection of the proposed new Council School of Billingham-on-Tees. Forms of tender from F. Willey, architect to the Education Committee, 34 Old Elvet, Durham. Tenders to The Clerk of the County Council, Shire Hall, Durham.



270. THE ARCHITECT'S JOURNAL LIBRARY OF PLANNED INFORMATION

GRAPH SHOWING ANALYSIS OF COSTS OF REPAINTING OLD PREVIOUSLY PAINTED WORK-THREE COATS



Information from The White Lead Publicity Bureau.

INFORMATION SHEET • COST ANALYSIS OF PAINTING • NO. 4 • OLD WORK

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

THE ARCHITECTS' JOURNAL
LIBRARY OF PLANNED INFORMATION

INFORMATION SHEET

• 233 •

PAINTING COSTS

Product : White Lead Paints

General :

The graph given on this Sheet is the fourth of the series showing the cost analysis of painting work.

The first two graphs (Information Sheets Nos. 211 and 219) dealt with new small scale work and repainting old small scale work respectively. The third graph (Information Sheet No. 227) analysed the cost of painting large scale *new* work ; the present analysis is of large scale work to be *repainted*.

Extent of Works :

The extent of the work to be painted, both as regards area, height above ground, etc., and relative labour and plant cost, has been estimated upon competitive tendering for painting large scale work only.

The covering capacities given on this Sheet are average for general painting on plain surfaces, e.g., plaster, woodwork, ironwork, etc. Where paint is applied to more porous surfaces these capacities will be reduced.

Plant :

The use of step ladders, trestles and boards only has been assumed, for which ¼d. per sq. yd. per coat has been allowed to cover getting the plant to the job, shifting it into the various required positions, depreciation, etc.

Progress of Work :

The time required for cleaning down the existing paintwork (100 sq. yds.) has been assumed as four hours, the time required for painting 100 sq. yds. has been taken as 14 hours for the first coat, and 12 hours each for the second and third coats.

Cost of White Lead Paint :

First coat at 58s. 6d. a cwt. covering an average of 500 sq. yds. Second and third coats at 58s. 6d. a cwt. each covering 10 per cent. more area than the first coat. (58s. 6d. a cwt. is approximately 14s. 7d. a gallon.)

Rubbing Down :

Labour and materials costs have been included for general damp rubbing down, as is usually required under average conditions when the old surface is not in very bad condition.

If the old surfaces were in very bad condition the cost of complete burning off, etc., would have to be allowed for.

Builders' and Decorators' Profits :

A combined profit of 15 per cent. has been allocated to the builder and decorator (not including any cash discounts they may obtain by payments to builders' merchants) made up as follows :—

(*a*) Ten per cent. profit on net cost of materials and labour. This figure would also include profit on water, cartage, fire and workmen's insurance; district surveyor's and quantity surveyor's fee, scaffolding on hire, etc.

(*b*) Five per cent. for establishment charges, which include expenses in connection with builders' offices and workshops.

Source of Information : The White Lead Publicity Bureau

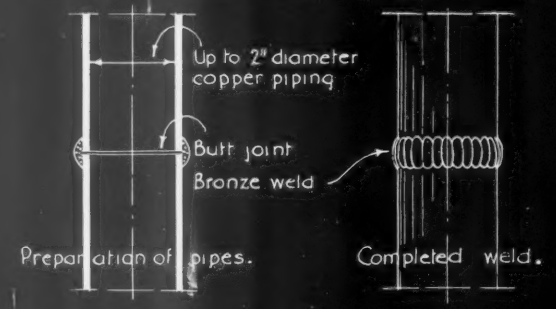
Address : Rex House, 38 King William Street, London, E.C.4

Telephone : Mansion House 2856, 2857

233.

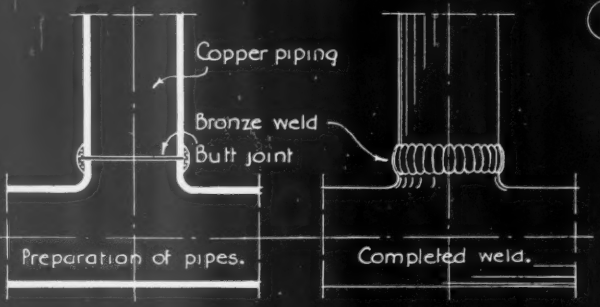
THE ARCHITECTS' JOURNAL LIBRARY OF PLANNED INFORMATION

TYPES OF BRONZE WELDED JOINTS:



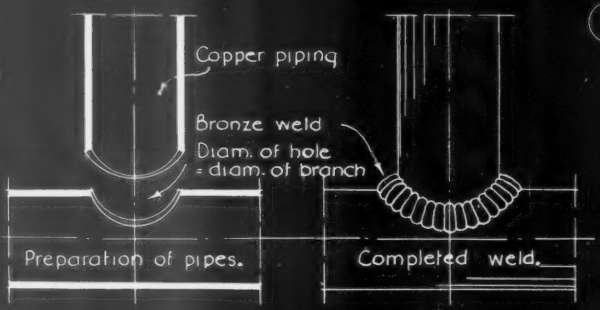
1. PLAIN BUTT JOINT:

A slight preheating with the blowpipe is necessary in the vicinity of the weld till the copper is of a dull red colour, the flame is then concentrated where the joint is to be welded. A spot of bronze is melted off the filler rod & deposited on the joint & the flame allowed to remain till amalgamation takes place between the copper & bronze. This operation is repeated till the joint is completed.



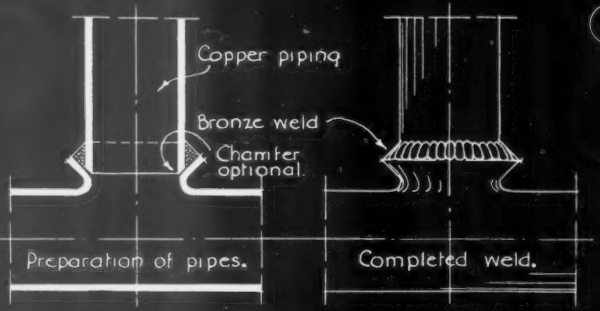
2. PLAIN BUTT TEE JOINT:

A hole is bored in the body of the pipe where the Tee connection is to be made and the edges are worked out to correspond with the pipe to be jointed. The ends are then butted together and the joint is welded by feeding a bronze filler rod around the junction.



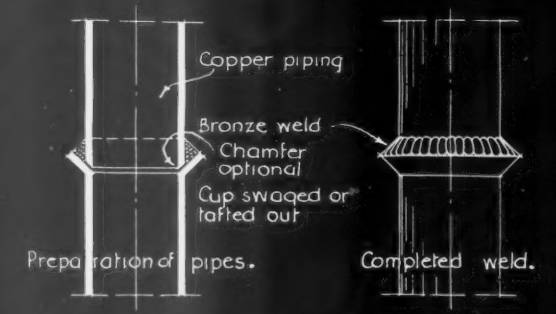
3. BUTT TEE JOINT:

A hole corresponding to the diameter of the abutting pipe is bored in the body of the pipe and the end of the branch to be fitted is then shaped to fit. The branch is placed in position and the joint is welded by feeding a bronze filler rod around the junction.



4. CUP TEE JOINT:

A small hole is bored in the body of the pipe which is then swaged or tafted out to form a cup of the same diameter as the end of the pipe to be connected, this is then inserted into the cup and the welded joint made by feeding on a bronze filler rod.



5. SHORT BELL OR SWAGED BUTT JOINT:

One end of the pipe is swaged or tafted out to form a shallow cup for receiving the filler rod, to a depth of approximately 1½ times the pipe gauge The weld is started with a little bronze and additional rod fed onto this and not on to the copper The angle of the cup is 45°

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

Issued by British Oxygen Co. Ltd.

INFORMATION SHEET: PLUMBING IN WELDED COPPER·2·

11. 5. 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

• 234 •

PLUMBING IN WELDED COPPER PIPING

This is the second of a series of Information Sheets dealing comprehensively with the use of light-gauge copper piping for plumbing work, and sets out some of the more common bronze welded joints.

Bronze welding, when applied to the jointing of pipes, is especially well adapted to copper containing the impurities of commercial coppers generally. The bronze weld adheres to the surface of the material with a bond even stronger than the base metal, and has the advantage over copper fusion welds (see future Information Sheets), in that the weld metal solidifies less rapidly, thereby avoiding porosity by making the jointing easier to control. Moreover, joints made with bronze rod are stronger than those made with copper rod, and can be made in any position *in situ*, whereas with copper fusion welds this is often found difficult, and sections must be welded together and fitted.

Generally, bronze welding, where permissible, is to be preferred to copper welding, and it is the usual practice where the colour of the weld metal is of no importance.

Many types of joint of varying design can be devised, but experience has shown the short bell type joint to be the easiest to make and by far the strongest, both in upright and horizontal positions ; this type is shown in detail No. 5.

It is not essential to use deoxidised copper when making welded joints with bronze rods. Any type of manufactured copper or copper alloy may be used with success, owing to the fact that it is not necessary to bring the parent metal to fusion state when making the joint. A slight pre-heating with the blowpipe flame is necessary in the vicinity of the weld and is continued until the copper around this portion begins to take on a dull red colour. Then the flame is concentrated, and although the heated portion may lose its colour, it still retains sufficient heat to allow the joint to be correctly bronze welded at the proper temperature.

Having thus prepared the pipe to take the bronze, the actual welding commences by applying the bronze rod to the copper pipe in the line of weld. In the case of the bell joint, a spot of bronze is melted off the filler rod and deposited in the cup of the joint, the flame of the blowpipe being allowed to remain on the spot of bronze until amalgamation takes place between the bronze and the copper, the blowpipe being then lifted. The operation is repeated by melting a further spot of bronze from the rod on to the bronze already laid down and amalgamated, and so on, until the joint is completed. It is necessary, when bronze welding, to use correct filler rods, and flux, so as to leave around the finished welds a surface easy to brush off with a wire brush and water.

The previous Sheet in this series was No. 225.

Information from : The British Oxygen Co., Ltd.
Address : Victoria Station House, London, S.W.1
Telephone : Victoria 9225