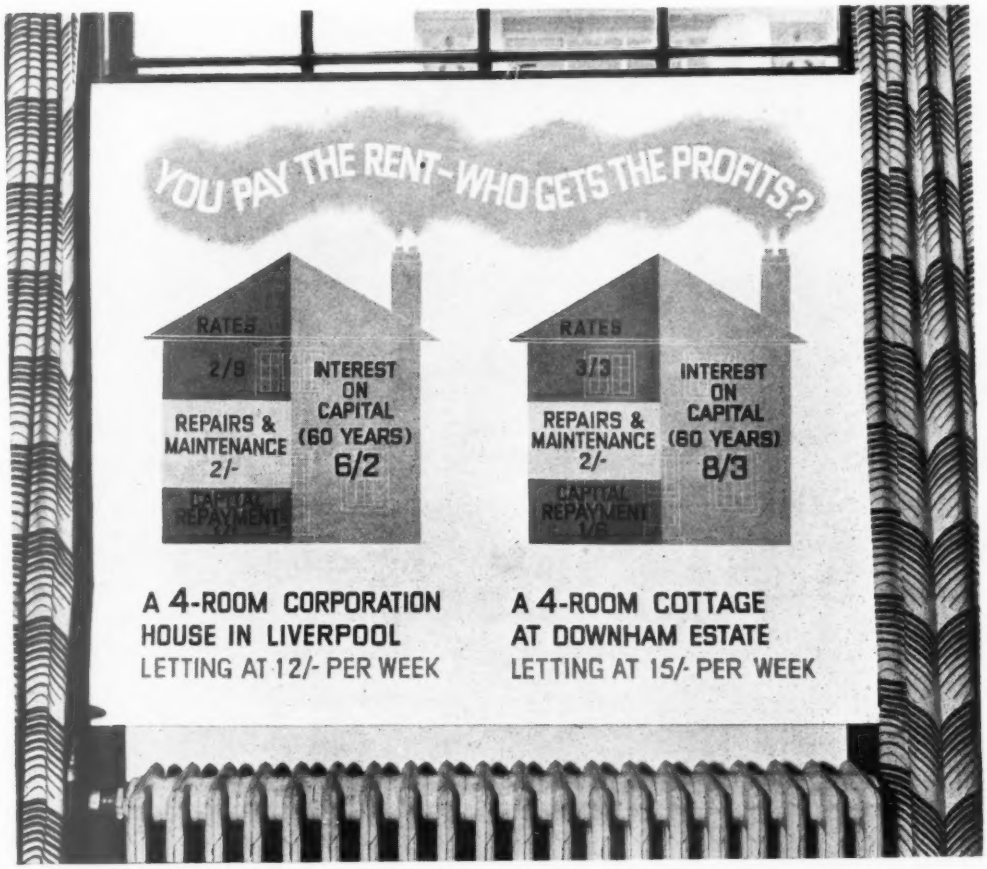
WORKING-CLASS HOUSING

EXHIBITION AT THE HOUSING CENTRE



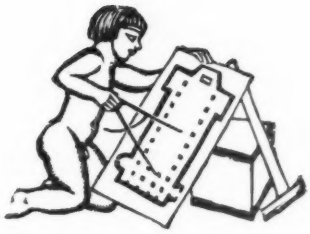
ON Thursday last Mr. Lewis Silkin, Chairman of the Housing Committee of the London County Council, opened, at the Housing Centre, Suffolk Street, S.W., an exhibition of working-class housing organized by the Architects' and Technicians' Organization. The object of the exhibition "is to draw attention to the disgraceful conditions of working-class housing to-day. It is not intended to appeal especially to architects or to any particular professional group, but to arouse all public opinion in support of demands for better, healthier, more conveniently situated houses and lower rents for the working-class."

The photographs show : top, a screen illustrating the proportion of weekly rent going to repairs, etc., and interest on capital on houses in Liverpool and Downham ; bottom, maps of England and Wales showing the density of population in towns in 1700, 1850 and 1936. Further illustrations are reproduced on page 615.

C

NEARING COMPLETION

The new headquarters of the Royal Empire Society, now in course of construction in Northumberland Avenue, London. Sir Herbert Baker, R.A., and Messrs. Hart and Waterhouse are the Associated Architects.



OVERCROWDING IN LONDON

PRIVATE enterprise, by means of the virtual monopoly of house-building (save in connection with slum clearance) conferred upon it by the Government under the 1933 Act, appears to have effected as a by-product of its sales activity some diminution of overcrowding in London. That it has done this by increasing the difficulty of another problem —by an unsightly and, from the community standpoint, unbusinesslike suburban "development"—is only too obvious. As in regard to wars, so in regard to unplanned "development," succeeding generations have to pay the price, often many times over.

The London County Council concluded its overcrowding survey under the 1935 Act nearly two months in advance of the date fixed by the Minister of Health, and the results are now available in the *County of London Overcrowding Survey* which receives further attention on page 617 of this week's JOURNAL.

Since the Census is taken only at decennial intervals these statistics will naturally be used as a means of comparing, so far as possible, the position now with that at the Census date in 1931. Unfortunately no *exact* comparisons can be made, for two reasons. In the first place the Census enquiry extends to all families, while the surveys made under the 1935 Act are intended to cover only dwellings inhabited by the working classes or suitable for such use. In the second place the overcrowding criteria are not the same. It appears fairly certain, however, that the overcrowding position in London is now less acute than it was five years ago. The number of overcrowded families recorded in the L.C.C. survey is nearly 20,000 less than the number living more than two persons per room at the last Census date. This difference is the resultant of three, or perhaps four, separate factors—a difference in the families covered, a difference in standards, a difference in the actual conditions existing at the two dates, and a possible difference in the efficiency with which the respective investigations were conducted.

The comparative position of the twenty-eight Metropolitan Boroughs remains much the same. In 1931 the worst Metropolitan Boroughs, either on the criterion of over-all average of persons overcrowded or on that of the proportion of persons living at more than two to a room, were the five East End Boroughs of Shoreditch, Bethnal Green, Stepney, Bermondsey and Poplar, together with Finsbury and Southwark, which may be regarded as the northern and southern tongues of the East End—stretching out westward. These seven Boroughs still occupy the leading positions in a comparative table.

The next three Boroughs, on either of the criteria, were in 1931 St. Pancras, Holborn and Islington. These three form another block, lying to the north-west of the first, and occupy, as in 1931, the eighth, ninth and tenth positions in a comparative table. In each of these ten Boroughs, as in all the others, the numbers of families recorded as overcrowded under the standard of the 1935 Act are less than the numbers overcrowded (using the two-per-room basis) in 1931. But these two blocks continue to present, in somewhat different ways, the main problem of London housing. While the first block is more overcrowded, and contains a larger proportion of unfit houses, the multiple occupation of houses originally constructed for the use of single families, and unadapted to their present function, remains the outstanding feature of the second.

It is to be emphasized that the L.C.C. has carried out its overcrowding survey simply for the purpose of ascertaining the numbers overcrowded under the terms of the 1935 Act. The impossibility of using this survey report, or any reports prepared in accordance with the Act and the Ministry's memorandum, as bases for preparing a proper plan of rehousing is the responsibility of Parliament, not of the local authorities.

The next duty of the local authorities is to prepare and submit proposals for the provision of houses required, "unless they are satisfied that the required number of new houses will be otherwise provided." It would seem necessary to point out that the solution of the overcrowding problem does not depend upon the provision of a *number* of new houses. If it were a mere question of number, the housing activity of the last few years would have well-nigh solved the problem already. The problems of slums, of overcrowding and of keeping up with the increasing number of families will not be solved until they are considered together with those of the incomes of the people and their places of work, and dynamically with the whole question of the location of industry.

The Architects' Journal
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NOTES & TOPICS

READERS *v.* BOOKS

THERE are thousands of libraries in the world, housing millions of books, yet there is scarcely any literature about library planning. Though it is a problem the architect meets quite often.

*

There are thousands of critical tomes giving opinions (and some very sound opinions, too) on books, but scarcely a leaflet giving opinions on ways of keeping collections of books and methods of lending them to the public.

*

We hear occasionally of a library in Sweden having horizontal stackrooms below the reading room, and of one in America having a vertical stack alongside, or one in Germany having a vertical stack above the reading room—but no deep and learned study of these confusing arrangements given to us in illustrated form and combined with authoritative opinion.

*

Mr. Harold Dod, at the R.I.B.A. on Monday, compressed within the limits of a learned paper an historical summary of the ebb and flow of library planning ideals, from Gloucester cloisters to Moscow and beyond—indicating to us all a wide and enormous field for research.

LONDON TRAFFIC

It is reassuring to read that the London and Home Counties Traffic Advisory Committee in its annual report states that it cannot feel that the results of its labours are wholly satisfactory ; for something much more comprehensive is needed to deal with London traffic than has been suggested, as the committee realises.

*

Amongst other matters it has been closely watching "Play Streets" for children, the extension of pedestrian guard rails is under consideration, and it is hoped to report on the question of waiting vehicles, which it considers one of the most serious causes of congestion.

*

Without doubt it is necessary to prevent vehicles standing in the main streets, and "play streets" are better than nothing, but they can only be temporary expedients. We want streets wide enough to stop in and proper playgrounds to play in, and sooner or later they will have to be provided.

ADVISORY COMMITTEES IN SCOTLAND

Sir Godfrey Collins, Secretary of State for Scotland, continues to set an admirable example. In a letter to the Lords Provost of the four cities of Scotland and the Provosts of the other large burghs, he says it is time the more important local authorities took advantage of the powers conferred by the Housing (Scotland) Act, 1935, to appoint local advisory committees, which are intended to include representatives of architectural and other interests, and to advise about the surroundings of new housing schemes.

*

If really good committees are got together they should be able to perform a most valuable service, for it is quite time that neighbourhoods had the same attention given to them as houses themselves.

ADVICE

If you ever build a block of flats, or a hotel or a similar building, please avoid putting habitable rooms on to an internal lighting area, no matter how large it may contrive to be.

*

This advice is sent me by an architect who tried to read at night in a room so planned. About midnight, he says, noise from a gramophone started its reflecting and inter-reflecting career from one of the two hundred or so windows opening on to an internal area of unusually large size.

*

So wholly and completely did the noise fill the area that the offending source could not externally be located—it took a corridor-and-staircase prowling porter over half an hour to find the culprit and to silence him (or her).

STANDARDIZED RURALITY

The extension of the telephone service in rural areas, and subsequent correspondence between the Postmaster General and the C.P.R.E. concerning the design of the necessary exchanges, has discovered some quite interesting details of the architectural procedure contemplated in their building.

*

Apparently each exchange represents a dead loss as a financial venture, anyway ; so the architects of H.M. Office of Works have had recourse to two standardized designs.

*

The various schemes are not individually considered by the P.O. architects, each building being erected by the Superintending Engineer for the district. The latter gentleman has, however, power to vary the finish of the

The Alpine Club, 23 Savile Row, W.1. An oil painting by Hesketh Hubbard which is to be exhibited, together with other works by the author, at the Connell Galleries in Conduit Street, W., from April 29 to May 23.

brick buildings by pebble-dashing, white cement rendering, or what not, " in order that harmony may be achieved."

*

He no doubt does it very well, and in addition, the P.M.G. is prepared to consider some additional experiments in selected villages—but why shouldn't we all see these standardized designs that are going to be so much with us?

ARCHITECTS' FURNITURE

If, as seems probable, architects are gradually becoming skilled assemblers of other people's work, then the show now on at Heal's provides plenty of useful stuff. Expensive, yes, but most of it very restrained in design: colour seems much less strident than it was only a few years ago.

*

Mention of individual exhibits is none too easy, but I particularly liked some garden chairs by Christopher Nicholson and Hugh Casson, while there were also some well-thought-out living-room cupboards by Breuer and Yorke.

*

And not until I was on my way down in the lift did I realise that I hadn't noticed Mr. Maxwell Fry's setting for the whole show. A pretty clear proof that it is exactly what a setting should be.

CORNISH GRANITE

Granite is one of the most durable building materials we have ready to hand, yet it is one of the most difficult in these modern times to use in an essentially durable way.

*

I look each year to the Cornish Granite competition in the A.A. to help clarify the position, and this year in the competition exhibition find something in the nature of a summary of achievement so far.

*

" A Tunnel Entrance " presents a problem demanding a solution of some permanence. First and second prizes go to the same men, the first employing a solid bonded granite facing and the second a thin slab facing, both with elevational treatments following naturally from the structural technique chosen.

*

Incidentally, I rather admire the sense of fitness which prompted these two men to use different lettering on each drawing, to type the reports on different typewriters, and even, I am told, to adopt different sizes and colours of envelopes to enclose their declarations.

" TREND "

My copy of the first number of *Trend*, through some unfortunate lapse in my subscription to the D.I.A., has only just been delivered.

*

But the copy is well worth having. Bright with new ideas over a wide range of contemporary design, it manages to present them without unnecessary stunting—and it is curiously gladdening to be presented in one volume with news and illustrations and articles covering subjects which hitherto have been scattered among a variety of publications.

BEDTIME STORY

Once upon a time there was a good Rector, who lived in a lovely rectory with a lovely garden of which he was very fond. But one day the Ecclesiastical Commissioners saw it and said it should be sold for the building of shops and flats, but the Rector thought that would spoil it, so he said No, he wouldn't do that; but the Ecclesiastical Commissioners kept pressing him, and he didn't know what to do.

*

So he went out and met the Fairy Godmother, who looked very like a well-known architect, and he said to her, " Can you design a scheme which won't spoil the place." The Fairy Godmother waved her magic pencil, and produced a plan for some flats, and a lovely eminent authority who was looking on said, " It will be one of the most beautiful things of its kind in London "; and every one was very happy.

*

Just then a rumbling noise was heard, and on looking out they saw it was an angry ratepayers' association protesting against the flats, and they went on protesting even when they were called " collegiate buildings." The rumbling increased, and in the midst of it an ogre called the Town Planning Committee appeared and said, " We can't have this there here (or words to that effect), the building covers too much of the site. It projects beyond the building line. There is no provision for fuel or refuse, the lighting and ventilation are not what they might be, there is no provision for motor cars, bicycles or prams," and lots and lots of other horrid things like that, and everything became very confused and everyone gave interviews to the newspapers.

*

The story isn't finished, but it may be that the ogre has a heart of gold after all, for he has suggested that the garden shouldn't be built on at all, but should be a public garden.

*

No, dear, I don't think there is a moral.

ASTRAGAL

NEWS

POINTS FROM THIS ISSUE

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND

At a recent meeting of the above Institute the President (Mr. H. Allberry, A.R.I.B.A.) stated that the following resolution drafted by the National Agricultural and Industrial Development Association had been approved by the Council, whose action was unanimously approved by the meeting :—

"That in the interest of Irish industry and in justice to those engaged in the building industry the Department for Industry and Commerce should insist on the appointment of an Irish architect and engineer in connection with all industrial projects receiving Government protection, involving factory construction, even if it may be found necessary to obtain advice from foreign experts acquainted with the particular industry, and further that the work should be done by Irish building contractors."

FURNITURE EXHIBITION

Yesterday (April 22) an exhibition of contemporary furniture designed by seven architects was opened in Heal's Mansard Gallery in Tottenham Court Road, W.C. The seven architects responsible for the design of the furniture are : Messrs. E. Maxwell Fry, Marcel Breuer, Christopher Heal, Jack Howe, Raymond McGrath, Christopher Nicholson and Brian O'Rorke.

NEW FLATS IN ST. PANCRAS

On Thursday, May 14, H.R.H. the Duchess of York is to open the new block of flats in Drummond Crescent and also the social and occupational centre which is to be a memorial to the life and work of the founder of the St. Pancras House Improvement Society — Father Basil Jellicoe. The opening ceremony will take place at 3 p.m.

THE ARCHITECTS' DIARY

Thursday, April 23

HOUSING CENTRE, 13 *Suffolk Street, S.W.1. Exhibition of Working-Class Housing (organized by the Architects' and Technicians' Organization).*

INCORPORATED ASSOCIATION OF ARCHITECTS AND SURVEYORS. *Visit to Watney's Brewery, Mortlake.*

INSTITUTION OF ELECTRICAL ENGINEERS, *Savoy Place, W.C.2.* "*The Transmutations of Matter by High-Energy Particles and Radiations.*" *By J. D. Cockcroft.* 6 *p.m.*

VICTORIA AND ALBERT MUSEUM, *South Kensington, S.W. Exhibition of the Eumorfopoulos Collection of Chinese Art.*

Friday, April 24

TOWN PLANNING INSTITUTE. *At Carton Hall, S.W.1.* "*Practical Planning Problems.*" *By T. F. Thomson.* 6 *p.m.*

Saturday, April 25

LONDON SOCIETY. *Visit to Hornsey Town Hall.* 2.45 *p.m.*

Tuesday, April 28

R.I.B.A., 66 *Portland Place, W.1. Exhibition of architects' working drawings. Until Tuesday, May 5, between the hours of* 10 *a.m. and* 8 *p.m. (Saturdays* 5 *p.m.). Also, a special students' evening at* 8 *p.m.*

SOUTH-EASTERN SOCIETY OF ARCHITECTS. *At* 1 *Edridge Road, Croydon.* "*Architectural Lighting.*" *By R. Waldo Maitland.* 8 *p.m.*

INSTITUTION OF CIVIL ENGINEERS, *Gt. George Street, S.W.1.* "*The Demolition of Waterloo Bridge.*" *By E. J. Buckton and H. J. Foreday.* 6 *p.m.*

Wednesday, April 29

CHARTERED SURVEYORS' INSTITUTION (*North West London Branch*). *At* 12 *Gt. George Street, S.W.1. Annual General Meeting.* 6.30 *p.m.*

Thursday, April 30

SOCIETY OF ANTIQUARIES, *Burlington House, Piccadilly, W.1.* "*Excavations in Pin Hole Cave, Creswell Crags, Derbyshire.*" *By A. L. Armstrong.* 8.30 *p.m.*

LONDON SOCIETY. *Visit to the Ever-Ready Razor Factory, Edgware Road, The Hyde, N.W.9.* 2.45 *p.m.*

CHARTERED SURVEYORS' INSTITUTION (*Middlesex and Urban Essex Branch*). *At* 12 *Gt. George Street, S.W.1. Annual General Meeting.* 6.30 *p.m.*

SOUTH YORKS ARCHITECTS

At the annual meeting of the Sheffield, South Yorkshire and District Society of Architects and Surveyors, Mr. J. Amory Teacher was elected president for the ensuing session. Mr. H. B. S. Gibbs was re-elected hon. secretary, and other appointments included those of Mr. W. G. Davies as vice-president, and Mr. C. M. Hadfield as hon. treasurer.

CHARING CROSS HOSPITAL

A firm of architects is to be appointed to advise the Governors of Charing Cross Hospital on the possibility and cost of reconstructing the hospital. This decision follows the abandonment of the scheme for moving the hospital to the Adelphi. Alternatively, a fresh site may be sought, and a committee has been appointed to consider the matter.

CITY POLICE STATIONS

We understand that work is shortly to commence on the construction of a new police station and hospital in Bishopsgate. When this work is completed the Police Committee of the City of London will reconsider plans for rebuilding the station at Moor Lane.

The architects for both schemes are Messrs. Vine and Vine.

APPOINTMENT

Mr. C. J. Parker has been appointed State Architect of Jaipur, Rajputana, and sails for India on May 29.

A.A. GRANITE COMPETITION

The result of the competition organized by the Architectural Association for the Cornish Quarry Masters' Association is as follows : Design placed first (£25) : Messrs. C. G. Keates and R. Leacroft, of 23, Devereux Court, Essex Street, W.C.

Design placed second (£16) : Messrs. C. G. Keates and R. Leacroft.

Design placed third (£10) : Mr. John D. Maidment, of 113, Holmhurst Road, Sheffield, 8.

The subject was "A Tunnel Entrance."

R.I.B.A.

LIBRARY PLANNING

A paper entitled "Library Planning" was read by Mr. Harold A. Dod, F.R.I.B.A., at a general meeting of the R.I.B.A., on Monday last. The lecturer divided his paper into three sections : 1, *early libraries ;* 2, *the growth of the modern library ;* 3, *the present day and the future. Extracts from section* 2 *are given below :—*

The Library of the British Museum, the first of the great circular reading rooms, which holds 450 readers, was planned in 1854 by Panizzi, who was a librarian first and an architect afterwards. The conception of the whole building was something new, and the type of construction most ingenious, being typical of the period which produced the Crystal Palace.

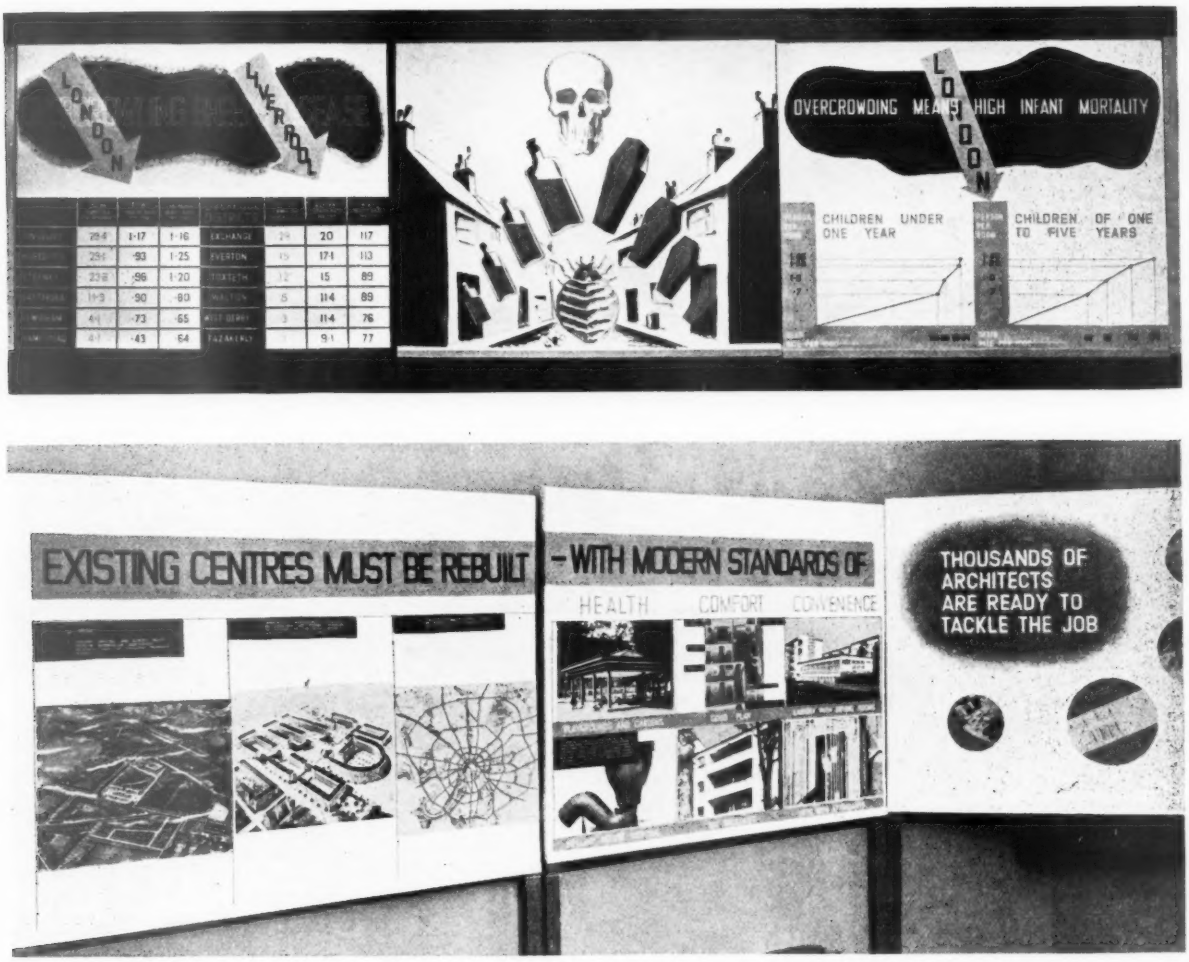
The building is a vast bookstack, for a million and a half volumes, in cast iron, the favourite material of the time, regarded then, no doubt, in the same way as we now regard reinforced concrete.

The dome over the reading room is supported for the most part by the surrounding structure of the multi-storey bookstack, and the whole is contained within brick enclosing walls. This building was a direct attempt by a man of an original cast of mind to tackle the growing library problem, and it is to be regarded, I think, as an outstanding architectural achievement. Of course, it is now to a great extent out of date, and much of the cast-iron shelving is being replaced with steel of lighter construction and permitting of closer spacing of shelves.

In 1888 the Library of Congress, Washington, followed the British Museum with an ambitious plan—again the circular, or rather, in this case, octagonal reading room as the central feature, but the stacks are not in such close contact with it. The monumental plan cast in the Beaux-Arts mould has begun to show itself with disastrous results from the viewpoint of the librarian and the reader—the vital lesson of Panizzi and the British Museum remained forgotten for a long time.

The process of filling in the light wells at Washington, to give additional book storage, has begun in the S.E. court. The total capacity is now about 2½ million volumes. There is, of course, no disadvantage in the books being without natural light, but unfortunately the rooms in the side blocks are seriously affected, and with this type of plan there does not appear to be any other practical solution of the problem of finding additional book-storage space.

The Prussian State Library in Berlin, completed about 1914, is really a composite library shared by the university and other bodies. There



Two photographs taken at the exhibition of working-class housing now being held at the Housing Centre: top, three screens in section three (the effects of bad housing on health); bottom, three screens in section four (ways and means to solve the housing problem). *See page 618.*

is no change in the general plan from what was then the established type. The reading room will hold 360 readers, and the stacks are on the upper floors of the surrounding buildings—the proposed method of extension here is by building upwards and arrangements have been made for doing this.

These three famous examples show the interest which was taken in providing a fine reading room as the central feature of the library, with the books rather scattered in two or more stack blocks disposed, with the exception of the British Museum, according to some general preconceived effect rather than with the idea of relating them as closely as possible to the issuing desk. At first sight it appears as if books can conveniently be brought in from all points of the compass, but the system has obvious disadvantages of access and control.

I venture to suggest that of far more interest than the foregoing is the plan of the Bibliothéque Nationale in Paris, by Labrouste, built in 1859. It followed close upon the Geneviéve Library, designed by the same architect, but it is a much more original scheme, being, I think, the prototype of what is to be regarded as the really successful library plan.

We can now leave the historical survey to consider a series of more modern solutions of our problem. It should be remembered that the main interest is now, of necessity, gradually changing from the reading room to the stack-room, for the librarian has found that it is much easier to provide accommodation for his readers than to house the volumes which are in increasing numbers committed to his care.

One of the first examples in which the stack block is brought proudly to the front is Carrére and Hasting's New York Public Library, completed in 1911. One can recall the somewhat startling impression of "functionalism," though we did not quite call it that, that this bold piece of planning and elevational treatment created at the time.

The reading room is really in a curious position on top of the stacks and seems to be somewhat inaccessible at that height. This arrangement has, however, without much reason, been repeated many times since in spite of its obvious disadvantages.

About this time the United States saw a feverish rush of library building, and although most of it showed little advance in planning over previous work there was in the mass a steady improvement.

If we turn now to our own country we find some remarkable developments taking place. About 1909 Mr. Sydney Greenslade produced his competent plan for the National Library of Wales. It is a big scheme and perhaps rather straggling in the light of to-day, but at the time it was undoubtedly far in advance of anything done previously.

Access to the reading room is unnecessarily lengthy, and the catalogue room, which one passes through on the way in, is very small and crowded. In the large reading room is that abomination the triple tier of bookshelves, here combined with alcoves to increase the periphery of the bookshelving. It is an arrangement which causes much distraction. When one is reading it is most unpleasant to have people walking about looking for books on light and airy balconies two storeys above one's head.

The suggested arrangement for extending the stack was a novel one. The first stack block was completed about 1920 by Mr. Holden, and is, as one would expect, most efficient, though I understand that full-size passenger lifts would have been preferred to the smaller book lifts which have been fitted.

Mr. Dunbar Smith, at Armstrong College, Newcastle-on-Tyne, built in 1924 a most successful library. The plan is excellent. Although the approach is somewhat circuitous, readers arrive at the right point in the scheme, between the reading room and the stack.

The stack is of the multi-storey type, extension being arranged for by adding further floors on the roof. Owing to the shortness of the stack the disadvantages of having its axis at right-angles to that of the reading room are not accentuated. This last plan should be compared with that of Tubingen University Library, which is highly thought of by the German experts. It is a well-planned library, with the public rooms to the front, the administrative offices, catalogue rooms, etc., in the centre, and the stacks at the back, but, of course, there is here no difficult problem of "open access" cutting across the simpler arrangement possible with the "closed" type.

The year 1933-34 saw many successful smaller libraries erected in this country, and I have selected two as typical examples—Mr. Verner Rees's Swansea University Library has the reading room on the top of the stacks, though here owing to the inequalities of levels on the site the disadvantage is not so important. Mr. Crossley's Birkenhead Public Library illustrates the waste necessitated by the "open access"

system, and the need it creates for supervision from the central issuing desk. Such a plan is, I think, unknown outside Great Britain.

The New Library of Cambridge University has undoubtedly been planned in a highly individual way to meet certain specific requirements. There are three main stack blocks grouped round three sides of a quadrangle, the fourth side being closed by the reading room. There is, as a central predominating feature, a stack tower of twelve storeys high.

The catalogues are arranged on either side of the inner hall which leads to the reading room, and here also are some of the important administrative rooms. Like the New York Public Library, the stack blocks have been given full prominence, but the reading room is better placed as a detached and readily accessible unit.

A prominent authority has laid down that "a large library must be planned from the stacks," and Cambridge would appear, judged by that standard, to be too scattered and lacking in cohesion as the bulk of the books is not collected in a centrally placed stack, as might have been the case.

Mr. Vincent Harris's Manchester Central Library is built on a well-tried plan, and one which gives the shortest possible connection between the stacks and reading room. With this type of plan, it is absolutely essential at the outset to place a limit to the number of books to be contained within the library as extension is scarcely possible afterwards. In this case, I believe, 50 years' expansion has been allowed for. It seems, however, a pity that the readers should have to climb to the top of the book stacks before reaching the reading room, although in this case there may be the excuse of a congested city site.

ELECTION OF MEMBERS

At a recent meeting of the Council of the Institute the following members were elected :—

As Hon. Corresponding Member (1) : A. Molokin (Kharkov).

As Fellows (7) : Messrs. K. S. Broad (London); P. J. Harland (London); A. B. Roberts (London); C. Whitby (Epsom); H. L. Allward (Toronto); F. Barber (Kingston-on-Thames); and R. Sharp (London).

As Associates (25) : Messrs. J. S. Baillie (East Lothian); B. D. Bloore (Birmingham); T. P. Bolton (Preston, Lancs.); (Miss) D. Bott (Oxford); A. K. Brown (Sunderland); (Mrs.) C. Bunney (London); T. J. Coton (Smethwick, Staffs.); G. Davy (Ilkley, Yorks); C. D. Edwards (Netherton, Worcestershire); E. A. Ferriby (Liverpool); J. Fish (Montreal, Canada); A. W. Hewitt (Swanley, Kent); H. A. Hill (Sunderland); A. H. Hodgson (London); D. Kaye (Coventry); E. V. Knott (Sheffield); R. F. Lomax (London); J. McKay (Causewayhead, Stirling); P. J. Penlington (Hemsworth, near Pontefract); G. D. Robinson (Stockport); E. H. Sadler (London); H. W. Scatchard (Leeds); G. F. Stegmann (Pretoria); I. G. Thomas (Abergavenny); and E. P. Warren (Bickley, Kent).

As Licentiates (6) : Messrs. R. T. Bailey (Aylesbury); F. Bain (Catterick Camp, Yorks); A. C. Garwood (London); T. S. Ralling (Exeter); C. H. Walker (Croydon); and H. G. White (Edinburgh).

FINAL AND SPECIAL FINAL EXAMINATIONS

The following are the dates on which the forthcoming examinations will be held :—

Final Examination : July 8, 9, 10, 11, 13, 14 and 16, 1936. (Last day for receiving applications : June 8, 1936.)

Special Final Examination : July 8, 9, 10, 11, 13 and 14, 1936. (Last day for receiving applications : June 8, 1936.)

LETTERS FROM READERS

Harpenden Public Hall Competition

H. J. D.

SIR,—I fully endorse Mr. Skues' letter respecting adherence to conditions.

As a competitor I must apologize for writing this letter, but I should like to make a few observations as to the conditions of the competition which are only apparent to those who have studied the problem in detail.

In the scheme placed second the back of the stage exceeds the boundary as defined in the Answers to Questions.

Owing to ambiguity in the Answers to Questions as to number and placing of dressing-rooms an enquiry was made and the following answer received, which presumably was circulated to all competitors :—

"Four dressing-rooms at rear of stage."

The second and third schemes have dressing-rooms at the sides of the stage, and scheme three has only two dressing-rooms.

Under the circumstances I cannot make any comment other than the actual facts.

H. J. D.
Kent.

Harpenden Public Hall Competition

EXPERIENTIA DOCET

SIR,—Apropos of Mr. Mackenzie Skues' letter of criticism of the winning design in your issue for April 2, it would also be pertinent to point out that the second prize winner's plan appears to contravene the instructions for this competition and seems to me to be, in fact, unworkable.

Competitors were aware that the site is bounded on the N.W. side by property over which the Council has no control. This point was made clear in the Answers to Questions, and competitors were advised to keep 20 feet away from the southern portion of this boundary. The second prize-winner's plan, which you reproduced on March 26, appeared to disregard this advice, and to clear the matter up I visited the exhibition of drawings at Harpenden Hall. I was astonished to find not only a confirmation of what had seemed to be apparent from the reproduction but also that the N.W. side of the building actually touched the boundary in part, and at no point along its length was it much more than a foot away from it. Further, there were nine windows, lighting the ladies' and gentlemen's cloaks and lavatories and the kitchenette, along this side. It seems to me that without control over adjoining property such planning is absurd, and doubly so in view of the existence of the outbuildings of the adjoining property, which would completely block out some of these windows.

I had hoped that some disinterested person would discover the fallacy in this plan. I was a competitor and quite naturally feel some diffidence in making an open criticism, but my diffidence is outweighed by a feeling of annoyance that I have been so naïve as to treat the problem as a serious one.

EXPERIENTIA DOCET
Hertfordshire.

The "Queen Mary"

SERGE CHERMAYEFF, F.R.I.B.A.

SIR,—The excerpts from Mr. de la Valette's remarks about the "Queen Mary" have left me, together with no doubt many other of your readers, wrapped in a kind of critical fog.

A comparison of Mr. de la Valette's latest public utterance with that of Mr. Clive Bell on the same subject in *The Listener* shows that Mr. de la Valette is once more in diametric opposition to the opinion of our leading art critics.

On the occasion of the Royal Academy Exhibition, for which Mr. de la Valette was largely responsible, the divergence was, as everyone will remember, enormous. Now, on the question of the decoration of the "Orion" his somewhat grudging and altogether patronising praise, has closed the gap but very little. On the question of the decoration in the "Queen Mary" the gap has been widened beyond all possible bridging, as the following extracts from Mr. Clive Bell's review clearly demonstrate :—

"*Inside the 'Queen Mary' : A Business Man's Dream.*

"The beauty of the ship, her gracile slenderness, as one looks along her tapering and swelling hull from some point exactly in front of the bows, or, as seen from the opposite bank, her precipitous side-on splendour, is so satisfying that the seeker after beauty, who has no intention of crossing the Atlantic, may be advised to go no further. Inside waits disappointment. And yet nine-tenths of the interior would have been well enough, and something more than well, if only the people who settle these things could have let it alone. The ship is lined in wood as a ship should be, lined with veneers of every texture and colour, ordered as often as not with considerable taste. But the good wood surface has been broken up and disfigured with what business men call 'art.'

"It was decided by those who decide these things that the 'Queen Mary' should be decorated. The experiment might have been interesting. There are plenty of serious artists in England, some of whom are not only serious but gifted. To what extent they are gifted for decoration on the grand scale we do not know. Here was a chance of

putting them to the test. Gifted and serious artists, however, do not commend themselves to a certain kind of business man, and assuredly the men who ordered and interfered with the decoration of the 'Queen Mary' are of that kind. So, any serious artist who has had the misfortune to be stumbled on by the management has, it seems, been diverted from his or her natural bent; has been hampered by stupid and ignorant instructions, and, when all else failed, has had his or her achievement stultified by a crushingly inappropriate setting. About the wholly or partially frustrated efforts of these artists I shall have a word to say presently; but neither they, nor the veneer-setters, set the tone of the boat. That is set by the 'management,' and what the management wants, and gets, is the humoristic-artistic. That is the prevailing note : the Teddy Bear style. Nothing is suffered to be merely good-looking, it must be funny as well; which means that hardly anything is good-looking, and that almost everything is vulgar. The managers, having voted recklessly for decoration, have been overtaken by terror lest they should be accused of a taste for art—'they will be calling us highbrows next.' To escape this deadly impeachment they have decided to make a joke of it. The decoration of the 'Queen Mary' is facetious.

"What I did see was all in the palace hotel style. In early days we were told that the artists were to be allowed to choose their own settings, but naturally this could not be allowed. They might have chosen beautiful stuffs which did not look expensive.

"To name the persons who have disfigured this beautiful ship with their titterings in paint, wood, glass, plaster and metal, would be invidious, and is, fortunately, unnecessary. Their doings may be compared with those of the mosaicists—almost all of them—who have defiled the glorious interior of Westminster Cathedral; happily these are not indestructible. The better of them—those that titter least—are merely feeble, the worse are quaintly vulgar. They do not matter; it is the prevailing mood that matters; and this, we may take it, was inspired by the management. The artistico-comical creeps all over the ship, and proclaims the frivolous and frightened attitude to art of rich people who are not sure of themselves. The whole boat giggles from stem to stern. Even the modest unpainted studio, a small room provided with a piano for practice, has not escaped the infection: the carpet, the very windows, are prettified with treble clefs, crotchets and quavers. In the gymnasium are comic boxers, in the cabin nursery . . . but the cabin nursery will not bear remembering. And, as the ladies and gentlemen who have been employed to hide the walls have not the remotest idea of decoration, all they have been able to do is to make funny drawings that would look mean in illustrated papers and aggrandise them. There is something peculiarly depressing about a comic strip raised to the power of a hundred.

"The answer to this criticism is, no doubt, that the company knows what its customers like. I wonder. It may be so, but, like Malvolio, I think more nobly of the soul. It is significant, perhaps, that the 'tourist' (second) class apartments are much to be preferred to the 'cabin' or first. Here both veneer and glass have been used with surer and more consistent taste and with better effect. You cannot expect much business man's art for a second-class fare. But, considering the interior as a whole, I do believe, if the business men could not leave the wood alone—which, being business men, they could not—they would have done better to hand the ship over to some large firm of upholsterers, who would have fitted it out in any style of period-plenishing from Middle Minoan to Art Nouveau."

Can it be that all our experienced and honoured art and architectural critics are all wrong? Or is it (No! No! banish the thought!) that Mr. de la Valette is not an art critic after all, but merely one of the very business men whom Mr. Clive Bell can recognise by their hand-writing in spite of the mask of *arbiter elegantarium*?

S. CHERMAYEFF

H O U S I N G

OVERCROWDING

[BY PHILIP H. MASSEY]

B.Sc. (Econ.), F.R. Econ. S.

THE overcrowding standard laid down in the Housing Act, 1935, consists of three parts. The criteria are :—

1. Sex separation for those over ten years of age other than persons living as husband and wife.

2. Counting children of one to ten years old as halves, taking no account of children of less than one year, and ignoring any rooms having a floor area less than 50 sq. ft. and any rooms of a type not normally used in the locality either as living rooms or bedrooms, the permitted number of persons is ascertained by reference to the following tables, whichever gives the lower figure :—

(*a*)

One room	2 persons
Two rooms	3 persons
Three rooms ..	5 persons
Four rooms	7½ persons
Five rooms	10 persons

and an additional 2 persons for each room over five.

(*b*) Rooms of floor-area :—

110 sq. ft. or more ..	2 persons
90–110 sq. ft.	1½ persons
70–90 sq. ft.	1 person
50–70 sq. ft.	½ person
Under 50 sq. ft. ..	Nil

This standard has not been used previously in any official or unofficial survey, and it is impossible to compare it with other standards except by application to a series of individual cases.

THE METHOD OF THE L.C.C. SURVEY

The survey was carried out in two stages. The first consisted of a preliminary enumeration of the number of persons in each family, the number of children under ten (*all* of which were counted as half-persons), and the number of rooms occupied. This enumeration was made in respect of 651,878 structurally-separate houses occupied by 1,014,633 families, and served to divide these into the definitely overcrowded, the definitely not overcrowded, and the doubtful, i.e. families which might be overcrowded on the third part of the standard. For selecting the doubtful cases, an arbitrary number below the maximum permitted number was fixed in respect of each size of dwelling, and it was assumed that if the "equivalent number" of persons (counting *each* child under ten as a half-person) occupying the dwelling was less than this number, the dwelling would not be overcrowded if the size of rooms were taken into account. The second stage consisted of measurement of floor areas for the determination of the doubtful cases — some 132,000 houses.

THE RESULTS OF THE SURVEY

Since the survey had to be carried out in terms of the complex standard laid down in the Act, a record of the number of persons overcrowded and of the number of rooms occupied, on census lines, is not available. The returns for the County of London as a whole and for the respective Metropolitan Boroughs show the distribution of working-class families in terms of the "equivalent number" of persons in the family and of the maximum "equivalent number" permitted to occupy the dwelling without causing it to be overcrowded, subject to what is said in the following paragraph.

In the large majority of cases the floor areas were not ascertained, since the family was taken, on the first enumeration, as being definitely allocated either to the "overcrowded" or to the "not overcrowded." In such cases the permitted number of persons cannot be determined from the survey records, and the "reduced permitted number," used for deciding which were the doubtful cases where floor measurement would be necessary, has been used in the statistical presentation of results. Moreover, in this preliminary enumeration, which was the only enumeration made in respect of nearly four-fifths of the houses, *all* children under ten years were counted as half-persons, while in the case of houses where floor measurements were taken the ages of children under ten years were recorded and those under one year of age would be ignored, following the terms of the Act.

These considerations should be borne in mind in considering the results of the survey which may be conveniently summarised as follows :—

		Families
Overcrowded		70,953
Occupying accommodation of minimum size required by the Act	57,389	
Occupying accommodation in excess of that required by the Act	886,291	
Not overcrowded	———	943,680
Total		1,014,633

About 7 per cent. of the families covered by the survey are therefore living in overcrowded conditions on the standard laid down in the Act.

The 1931 Census figures relating to families living at more than 2 persons per room and at 2 per room or less were :—

Private families living at more than 2 per room	89,524
Private families living at 2 per room or less	1,098,007
Total	1,187,531

These figures are not comparable, of course, since the standards are not the same and since not all families were covered by the L.C.C. survey. The survey was intended only to cover "any premises used as a separate dwelling by members of the working classes of a type suitable for such use" (Housing Act, 1935, section 12).

It seems probable that overcrowding has declined a good deal since the Census date

of 1931, but it is obvious that no proper comparisons can be made until 1941, in view of the refusal of the Government to institute quinquennial censuses.

SOME FURTHER COMPARISONS

In the *County of London Overcrowding Survey* it is stated that—

> "It would seem that some Metropolitan Borough Councils have included in their returns particulars of families living in dwelling houses which on a strict interpretation of section 12 of the Act . . . should not have been included. This factor must be borne in mind in any comparison of the proportions of overcrowding based on the returns relating to the several Metropolitan Boroughs."

The following table shows, for each Metropolitan Borough, the number of families living more than two persons per room in 1931 and the numbers overcrowded according to the L.C.C. survey.

	Number of families living more than 2 per room, 1931 Census	*Number of overcrowded families (1935 Act standard), 1935–36*
Battersea	3,023	1,968
Bermondsey	3,839	3,163
Bethnal Green	4,023	3,894
Camberwell	4,029	2,950
Chelsea	889	749
Deptford	1,862	1,317
Finsbury	3,313	2,458
Fulham	2,454	1,795
Greenwich	1,597	1,091
Hackney	3,264	2,651
Hammersmith	2,192	1,728
Hampstead	577	449
Holborn	837	700
Islington	8,587	6,757
Kensington	3,462	2,529
Lambeth	5,008	3,881
Lewisham	1,225	1,057
Paddington	2,743	1,998
Poplar	4,704	4,080
St. Marylebone	1,950	1,619
St. Pancras	5,521	4,464
Shoreditch	4,627	3,898
Southwark	5,903	4,096
Stepney	8,204	7,632
Stoke Newington	544	462
Wandsworth	2,670	1,801
Westminster	1,230	1,083
Woolwich	1,247	683
County of London	89,524	70,953

It will be noted that in no borough does the number of families recently recorded as overcrowded under the terms of the 1935 Act exceed the number living more than two persons per room in 1931.

As explained above, figures of overcrowding by persons and rooms are not available from the survey records. Table one shows the number and percentage of persons living more than two to a room in 1931 and the number and percentage of "equivalent persons" recorded as overcrowded by the survey. The remarks at the beginning of the section "Results of the Survey" are, of course, relevant also to the figures on the right-hand side of table one. The boroughs are arranged, in each half of the table, in order of percentages overcrowded.

	Number and percentage of persons living more than 2 per room, 1931 Census		*Number and percentage of "equivalent persons" overcrowded (1935 Act standard), 1935–36*	
	Number	*Per cent.*	*Number*	*Per cent.*
Finsbury	19,847	29·4	Shoreditch	19,353	23·6
Shoreditch	27,537	29·1	Bethnal Green	20,219	21·7
Bethnal Green	24,969	23·6	Finsbury	12,187	20·5
Stepney	50,420	23·6	Stepney	38,864	19·7
Bermondsey	23,671	21·8	Bermondsey	17,042	17·8
Southwark	35,517	21·6	Poplar	22,386	16·8
Poplar	30,102	20·1	Southwark	20,478	14·0
St. Pancras	31,402	17·6	St. Pancras	20,712	11·8
Holborn	4,718	17·1	Islington	31,941	11·2
Islington	49,449	16·0	Holborn	3,226	9·4
St. Marylebone	11,098	13·1	St. Marylebone	7,364	8·4
Kensington	19,985	12·6	Lambeth	19,798	7·5
Paddington	15,427	12·3	Battersea	10,371	7·4
Battersea	18,476	11·9	Camberwell	15,704	7·1
Greenwich	10,428	11·1	Deptford	6,604	7·1
Deptford	11,426	11·0	Greenwich	6,356	7·1
Lambeth	29,652	10·6	Kensington	11,786	7·0
Fulham	15,398	10·5	Fulham	9,323	6·9
Camberwell	25,331	10·4	Hackney	13,600	6·9
Chelsea	5,365	10·2	Hammersmith	8,182	6·8
Hammersmith	12,993	10·2	Paddington	8,879	6·7
Hackney	20,098	9·6	Chelsea	3,661	6·6
Westminster	7,223	7·1	Stoke Newington	2,193	4·6
Stoke Newington	3,242	6·6	Westminster	5,030	4·2
Woolwich	7,809	5·7	Lewisham	6,728	3·3
Wandsworth	17,336	5·2	Wandsworth	10,333	3·2
Hampstead	3,253	4·1	Woolwich	3,606	2·7
Lewisham	8,756	4·1	Hampstead	2,063	2·4
County of London	540,928	13·1	*County of London*	357,989	9·1

TABLE 1.

A.T.O. Exhibition

An exhibition of working-class housing is now being held at the Housing Centre in Suffolk Street, S.W.1, and will run until May 6. The exhibition, which has been carried out entirely by members and friends of the Architects' and Technicians' Organization, is divided into four sections, telling a story of working-class housing conditions to-day, of the effect of housing on health, of the causes making for bad housing and of the remedy.

Briefly, the story of section one is that the housing of the large majority of working-class families is as bad to-day as at any time since the War, and that the enormous spate of building in the last few years has helped the working-class little, if at all. It is shown that the houses built in the past few years have been, in the main, of cheap and bad construction, drastically developed generally in estates planned without any relation to the work places of the tenants and with hardly any of the social amenities that make life worth living to the town dweller. They have been mainly for sale, and their cost well above working-class incomes. Municipal housing has been cut down, by the abolition of the Wheatley subsidy, to the narrow limits set by the Five-Year Scheme for slum clearance.

In the second section, the exhibition presents the effect of bad housing and of high rents on health.

The third section deals with the causes of bad housing. First the growth of the slums during the last century. Then, to-day, the development of jerry-built speculative estates and the inadequate attempts at slum clearance.

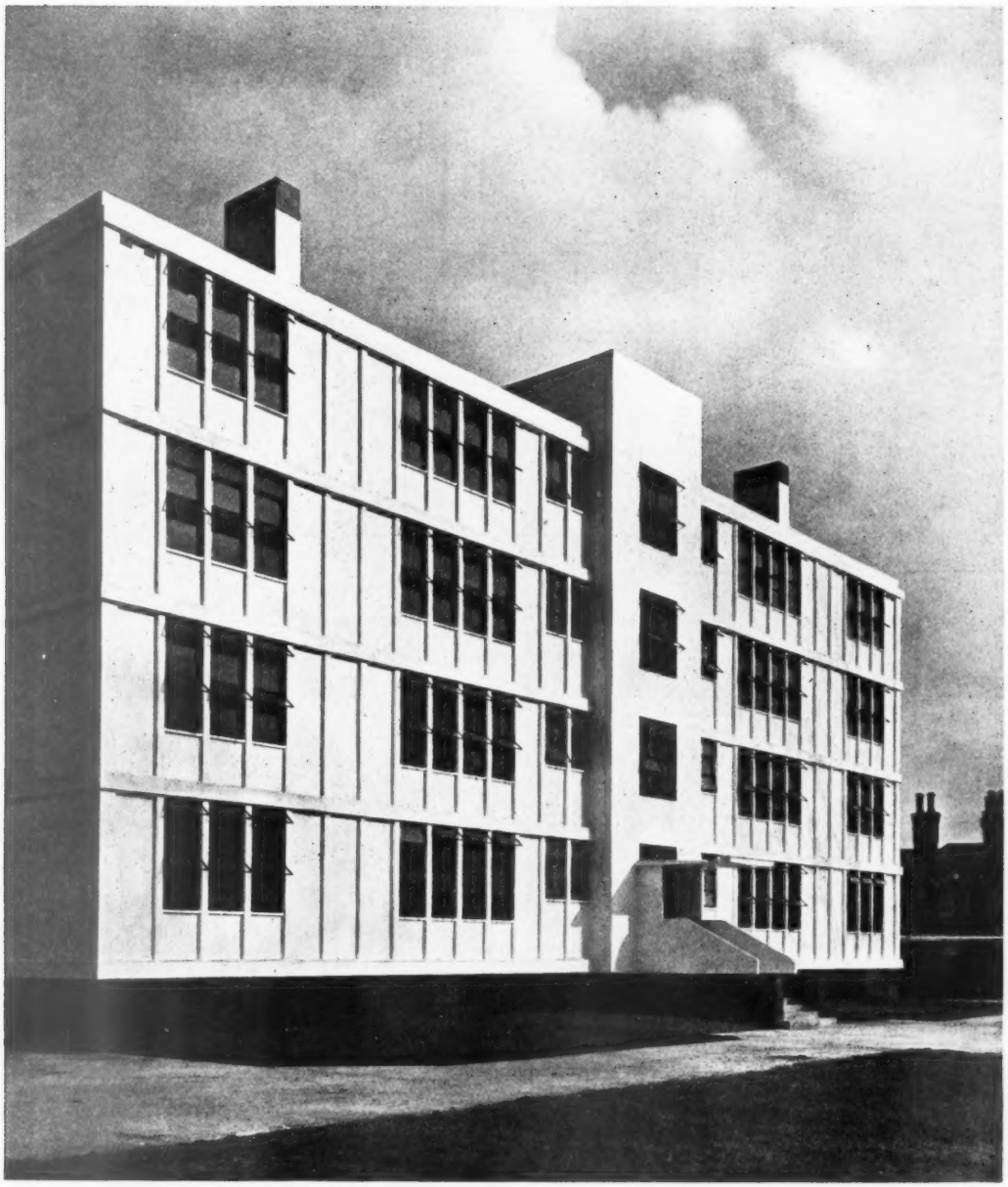
Finally, in the fourth section, a series of demands are put forward, which must be major considerations in the only logical and adequate solution of the housing problem — the making of housing, like health and education and the fighting services, a national service.

Amenity in Housing Schemes

Following are some extracts of a letter which Sir Godfrey Collins, Secretary of State for Scotland, has addressed to the Lords Provost of the four cities and to the provosts of other large burghs :—

> "You will probably recall that there was included in the Housing Bill of last year a provision which is now Section 75 (2) of the Housing (Scotland) Act, 1935, to enable local authorities to appoint local advisory committees to advise them with regard to the amenities of new housing schemes and the preservation of buildings of architectural, historic or artistic interest. This provision was made as part of the efforts which we have been making for some time to secure a high standard in the design and layout of housing schemes in Scotland.
>
> "I am glad to say that local authorities are giving increasing attention to the architectural quality of their schemes. Some of the plans which have been submitted recently to the Department of Health are admirable examples of the beauty, with convenience and real economy, that can be achieved by skilled architectural treatment. There is clear evidence also of growing public interest in the subject, which augurs well for the architectural success of the large-scale building operations that lie immediately ahead of us in Scotland.
>
> "To let this interest express itself in a way which will be of the greatest value to local authorities, I think the time has come when the more important local authorities should take advantage of the powers conferred by the Act of 1935 to appoint local advisory committees. I am, therefore, appealing to the Lords Provost of the four cities, and to the provosts of some of the larger burghs and of towns with historical associations, to give Scotland a lead in setting up committees for their respective districts. It is intended that these committees should include representatives of architectural and other artistic interests who would be in a position to give the local authority the benefit of specialized experience and training combined with knowledge of local needs and conditions. An advisory committee need not, however, be a large body."

FLATS AT STANMORE



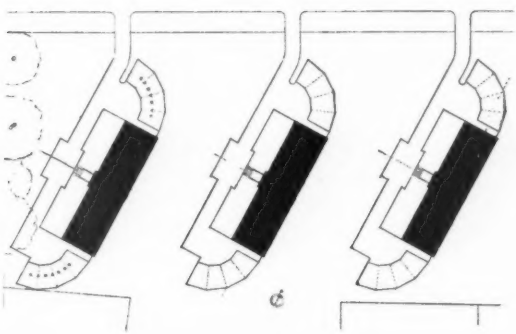
DESIGNED BY SIR E. OWEN WILLIAMS, K.B.E.

GENERAL PROBLEM. — *Three blocks of family flats. Each block contains eight flats, two on each floor, and, at both ends of each block are four lock-up garages. Total accommodation: 24 flats and 24 garages.*

SITE.—*At the junction of Dennis Lane and Valencia Road, Stanmore, Middlesex.*

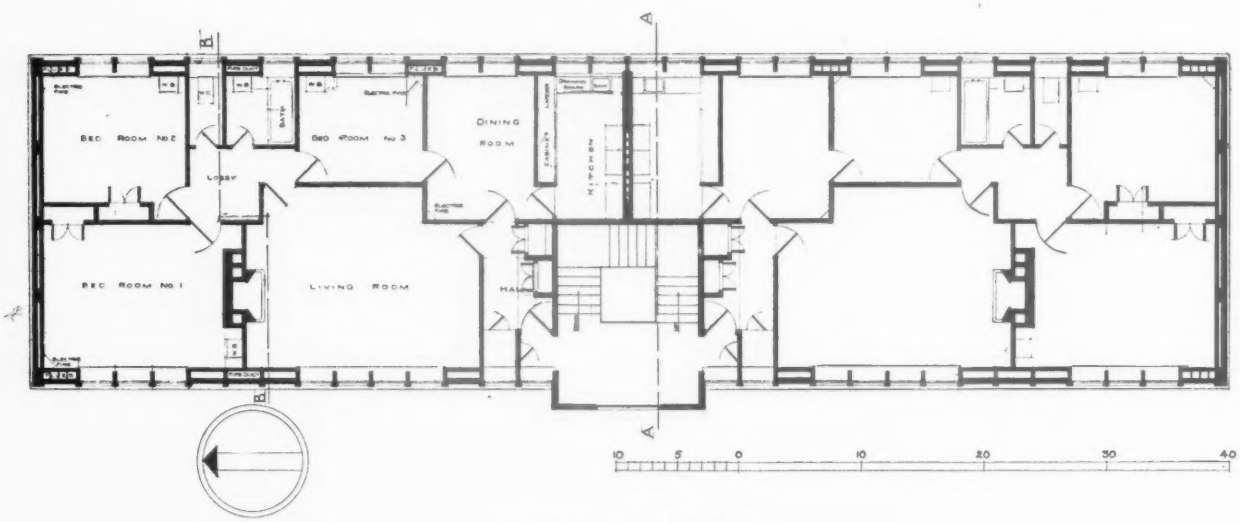
CONSTRUCTION.—*Reinforced concrete frame, with brick cavity panel walls, rendered. Internal walls are brick, plastered. Floors are polished pine, laid on timber bearers, resting on felt pads. In the kitchen, bathroom and w.c.'s the floors are polished composition.*

The photograph is of the entrance front of one of the blocks of eight flats.

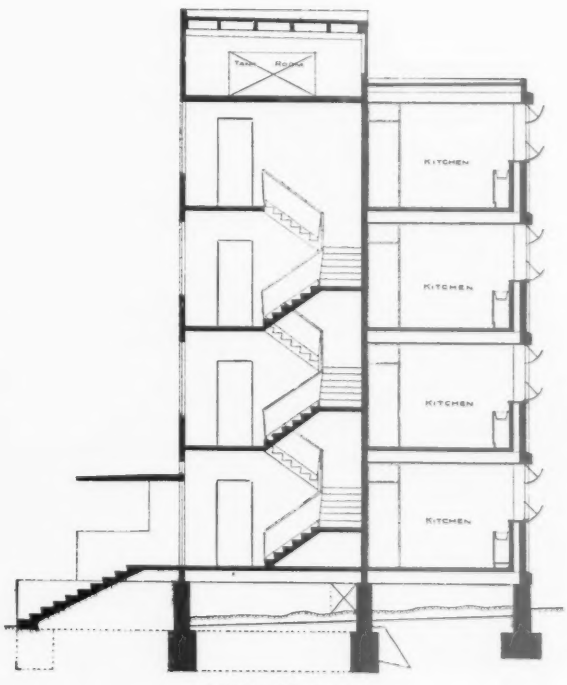


SITE PLAN

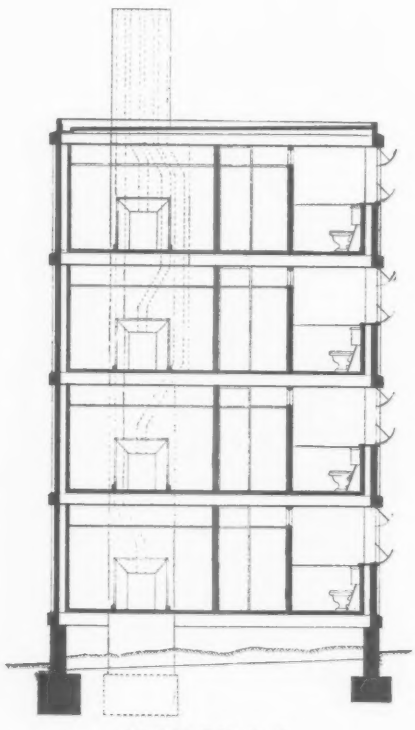
FLATS AT STANMORE: DESIGNED BY



TYPICAL FLOOR PLAN



SECTION A-A



SECTION B-B

ELEVATIONAL TREATMENT.—*The walls and chimneys are white; the plinth, chimney tops, wood entrance doors, and metal windows being picked out in black.*

SERVICES.—*Electric fires are provided in all rooms, except in the living room, where the tenant has the choice of a coal, electric or gas fire. Hot water is obtained by electric immersion heaters. In each hall is a service locker for the use of tradesmen; in the bedrooms are lavatory basins and built-in wardrobes; and in the kitchen are cabinets, a stainless steel sink unit, gas or electric cooker, and a refrigerator.*

RENTS.—*Including rates and taxes:—*

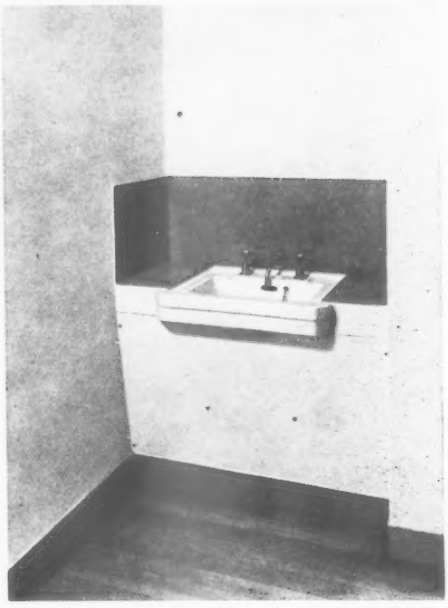
Ground floor, £150 per annum.
First floor, £155 per annum.
Second floor, £150 per annum.
Third floor, £145 per annum.
Plus in all cases £15 per annum for garage.

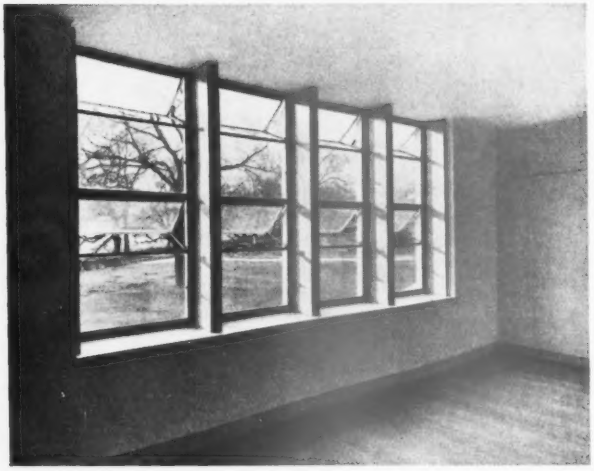
All the flats are identical in size and arrangement.

On the facing page is a photograph of one of the main entrance doorways.

SIR E. OWEN WILLIAMS, K.B.E.

FLATS AT STANMORE





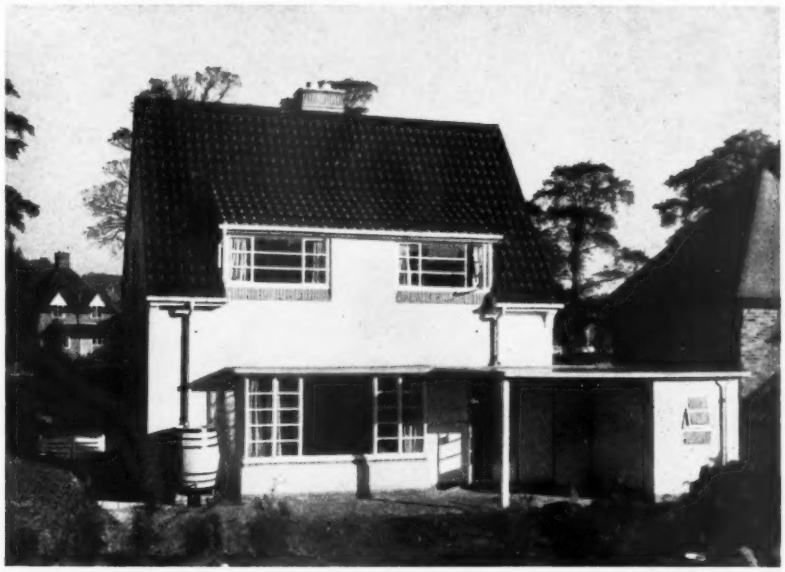
BY SIR E. OWEN WILLIAMS, K.B.E.

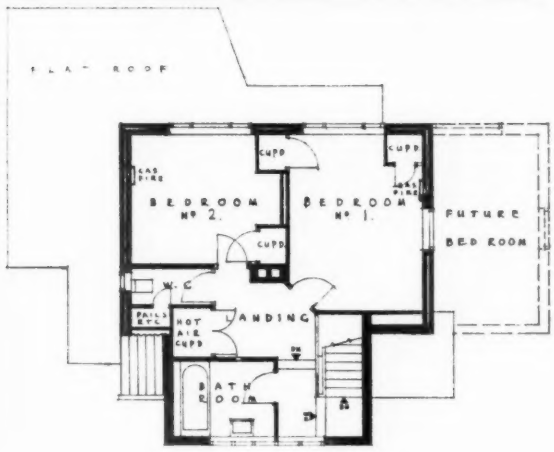
The photographs show : above, left, the service locker in the hall for the use of tradesmen ; left, the windows of the lounge ; top, a corner of the bathroom and, below, a lavatory basin in one of the bedrooms.

For list of general and sub-contractors, see page 640

HOUSE AT BARNT GREEN, WORCESTERSHIRE

DESIGNED BY F. E. BROMILOW





FIRST FLOOR PLAN

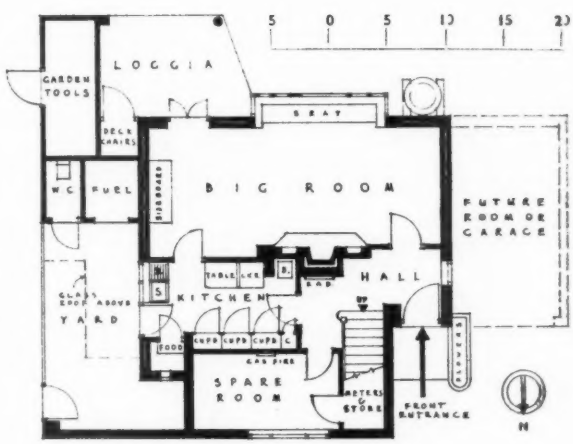
GENERAL PROBLEM.—*A house for a man and his wife, to be managed without a servant. Further accommodation is provided for one, two or even three extra persons.*

CONSTRUCTION.—*The external walls are brick, 11 ins. cavity on the prevailing wet sides of the house and 9 ins. solid on the other sides; all the walls being plastered, wood float finished and tinted pale green. The facing bricks are a golden brown colour, with cream joints. Steel casement windows are fitted. The plaque on the north front was carved by Oliver O'Conner Barrett.*

Inside the house are 4½ ins. brick walls and 3 ins. stud partitions. The pitched roofs are covered with black glazed interlocking pantiles, the flat roofs with 3½ ins. reinforced concrete, waterproofed. The floors of the big room are finished with narrow width oak boards, the hall and kitchen in 9 in. by 9 in. brown quarry tiles, and the remaining rooms in stained red deal boards. For sound-proofing, double partitions are provided between the bedrooms and independent systems of floor joists on the first floor.

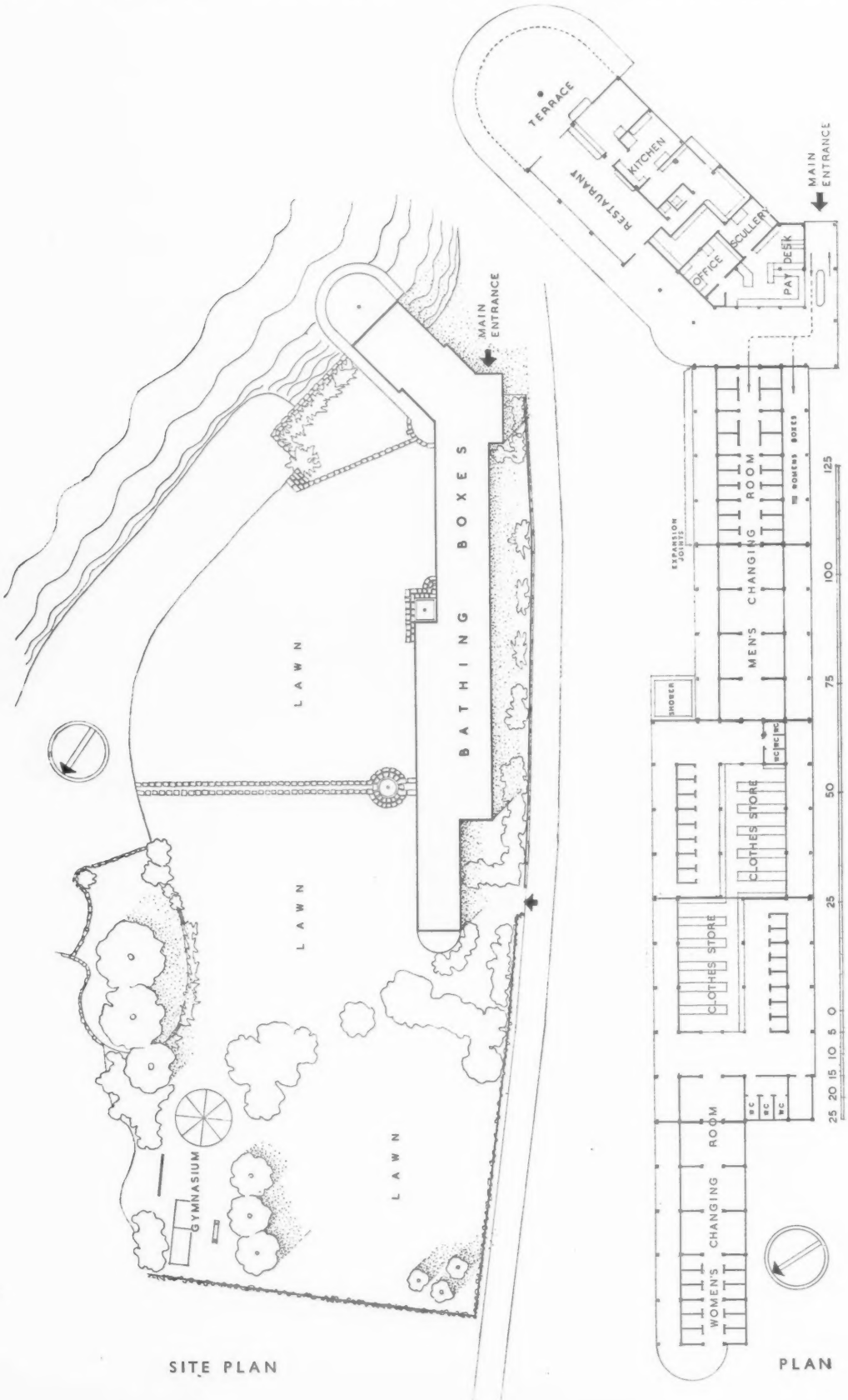
The photographs show: above, the south front; below, the north, entrance, front.

For list of general and sub-contractors, see page 640.



GROUND FLOOR PLAN

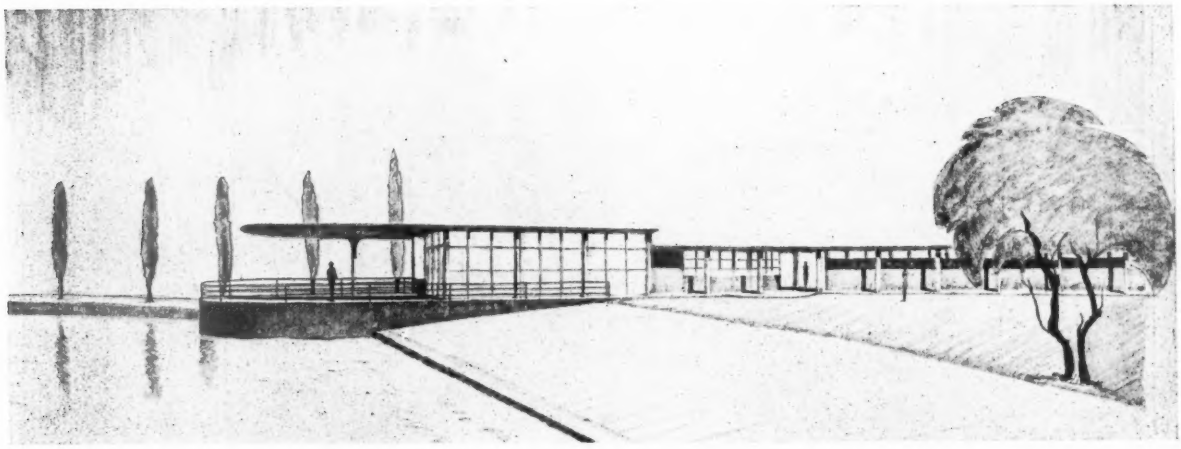
BATHING BEACH AT WÄDENSWIL,



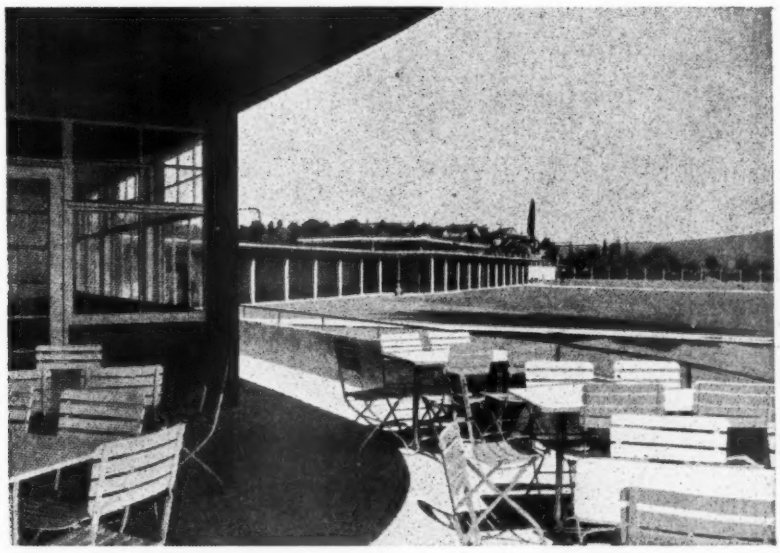
SITE PLAN

PLAN

ON THE LAKE OF ZURICH



DESIGNED BY HANS STREULI

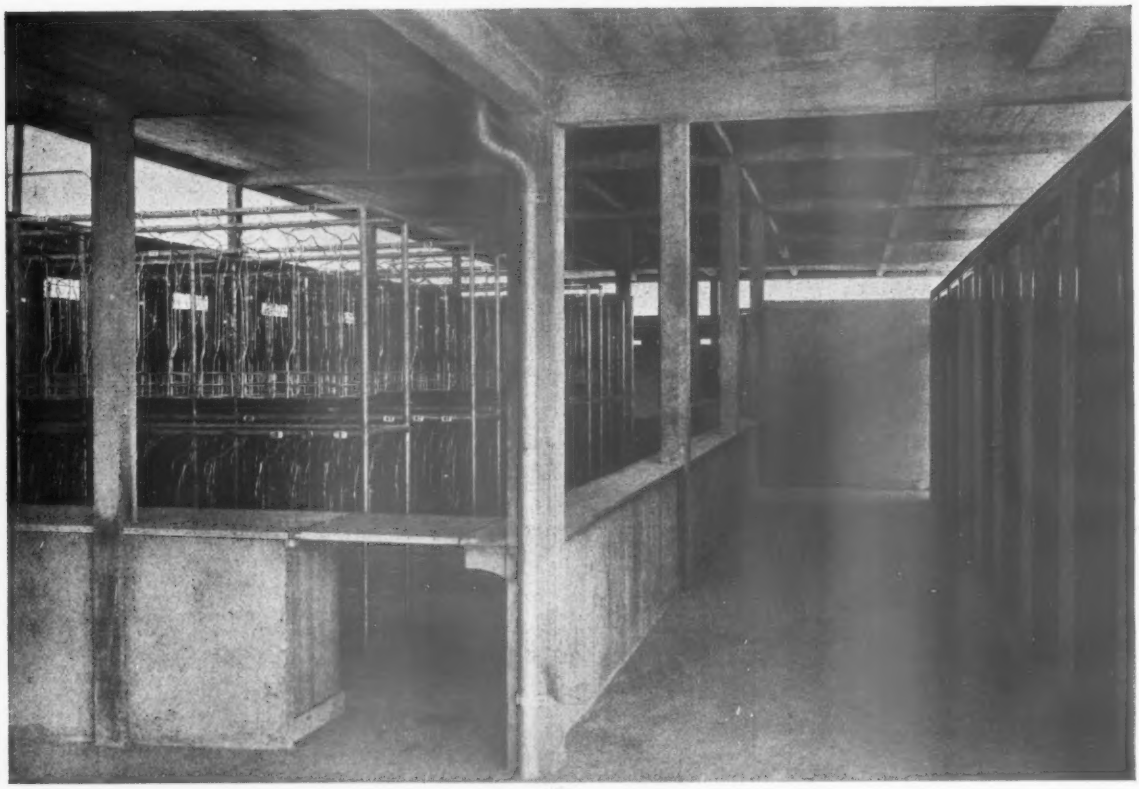


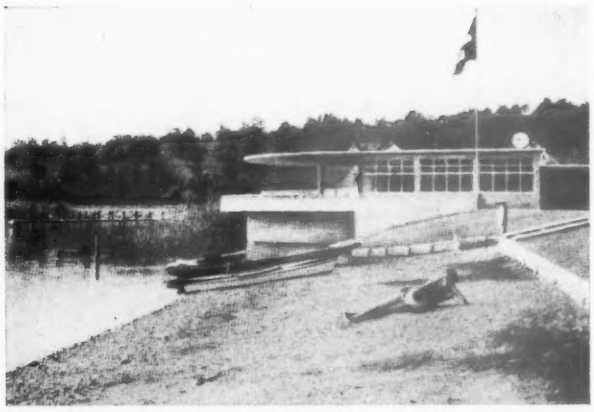
LAYOUT.—*The buildings consist of a block of dressing cubicles, 100 ft. long, set well back from the shore behind a well-timbered sun-bathing lawn, with a circular restaurant wing projecting into the lake at an obtuse angle from it.*

CONSTRUCTION.—*For each unit a different method of construction was employed. The main building was carried out by the cement gun method in its entirety. The columns supporting the veranda running along it (which were precast), are of 4 in. section, the outer walls and partitions being only 2 ins., and the roof 2½ ins. thick. Numerous expansion-joints were introduced with the object of dividing the structure into a sequence of rigid monolithic blocks as a precaution against anything more than partial subsidence. In spite of the foreshore being an old glacial moraine it was possible to avoid the use of piles; precast slabs buried at the depth of 3 ft. were used instead, supporting precast columns of 4 ins. by 4 ins., and 6 ins. by 6 ins., which in turn carry the roofing slabs, the doors and partitions being fixed in place afterwards.*

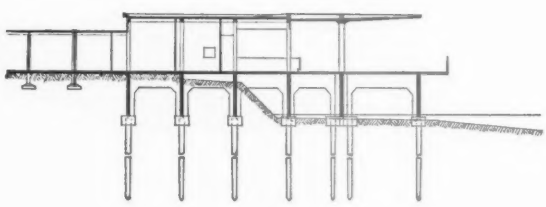
For the restaurant wing, however, piling had naturally to be resorted to; twenty-three concrete piles in all were used of 10 in. cross-section and an average length of 37 ft. These were cut off 10 ins. below low-water level, and were then sheathed in lead. The superstructure built up on this foundation has thin concrete walls, strengthened over the pile-heads, and the mushroom-headed columns support the curved roof canopy, which is cantilevered out 5 ft. over the terrace. The 2 in. upstand was carried out by cement-gun, and has a metal hand rail. The restaurant proper has a 5 in. thick floor, and forms a light concrete-framed structure, the walls and roof being cement-gunned slabs.

BATHING BEACH, ZURICH





DESIGNED BY HANS STREULI



Section

Above is a detail of the clothes storage area, with the dressing cubicles on the right. Left, a general view from the north.

The Assembly Hall *(continued)*

EQUIPMENT

THE main floor of the hall is generally flat and is sprung for dancing.

A space of 6 or 7 ft. around the walls is left solid for tables. Floor springs which have a simple locking device to make the floor rigid are very useful in certain cases.

Carpets are necessary for covering and protecting the floor when it is not used for dancing. There seems to be great difference of opinion as to what size these carpets shall be. Some authorities say that they should be in squares not larger than 15 ft., as that is the size capable of being handled; while others say that much larger pieces can be used. These carpets must be good material and are consequently bulky, so care should be taken to see that there is easily-accessible storage space for them when they are not in use.

Tubular steel chairs have been used at Swansea, Bexhill and Hornsey for the seating in the auditoria. This furniture has the advantage of being stacked away in a comparatively small space. Approximately 40 chairs can be stacked in a space 6 ft. × 2 ft. 8 ins. × 4 ft. high. Ample and easily-accessible accommodation must be provided for storing the chairs. In small halls, below the platform is sometimes used as a store; but on large schemes it is essential to provide a carefully-planned store and not a makeshift measure.

Twelve to 16 sq. ft. per couple should be allowed for dancing.

Natural Lighting

The hall is required by L.C.C. regulations to have natural lighting by means of windows or rooflights, to which suitable curtains or shutters have to be provided in order that they may be covered if desired.

Clerestory lighting is preferable, as it is easier to keep clean and curtain. This lighting should, if possible, be arranged so that direct rays of strong light do not enter the hall and distract the attention of the audience from the stage.

The Stage

Stage requirements vary according to the wishes of the promoters, and accommodation may be required for an orchestra and choir of several hundreds, a fully-equipped theatre stage, or merely a small platform.

The stage required for a choir needs a proscenium opening as large as the height and width of the hall will allow, so that the voices may be produced as efficiently as possible.

The theatre stage must necessarily be smaller, because space must be allowed for the wings, scene docks, lighting, etc.

A stage which is to be used for both dramatic and orchestral purposes should be designed primarily for orchestral work with a proscenium opening of maximum width and height; this opening can be reduced by curtains and screens for dramatic performances; the stage would, of course, be flat, with movable tiers of seats arranged upon it to accommodate orchestra and choirs.

Most assembly halls are designed with level auditorium floors, and it is very difficult to give every member of the audience a good view of the stage without slightly sloping the stage. The length of the hall should be kept at a minimum.

The "all purpose" stage, with which the majority of the assembly halls are provided, should have access to the platform from the hall and ample access from the dressing rooms and green room for the choir and orchestra.

Sizes of Stage

An orchestra requires 10 sq. ft. per performer, and each performer must have a clear view of the conductor. Each member of a choir should be allowed 7 sq. ft.

Platforms should not be less than 15 ft. deep. Platforms used for dramatic performances should be 20 to 25 ft. deep. Platforms are usually 4 ft. to 4 ft. 6 ins. above the general floor level. The sides of the proscenium opening should be splayed, if possible, for acoustic purposes. An orchestra pit sunk in front of the stage and covered with a movable floor when not in use should be provided for operatic performances.

The construction of the stage and proscenium opening should be fireproof.

If a fully-equipped theatre stage is used, as at the De La Warr Pavilion at Bexhill, the local authorities will require certain regulations fulfilled.

The stage must be separated from the auditorium by the proscenium wall, which must be at least 13½ ins. thick and, excluding the proscenium opening itself, not more than three openings may be made through the wall. These openings must be closed with double self-closing fire-resisting doors.

The fire-proof curtain must overlap the proscenium opening by 12 ins. on either side and by 18 ins. at the top. There must be a 13½ ins. brick or concrete wall under the fire-proof curtain to take the shock of its descent. The stage side of the fireproof curtain must be capable of being drenched by an approved method.

A sprinkler system is usually required to cover the stage, scene dock, etc.

The stage roof should be fire resisting; its height above the grid need not be more than 4 ft. 6 ins.

There should be a lantern light at the back of the stage with an area at its base equal to one-sixth the area of the stage. The sides of the lantern should be bottom hung to open outwards. The lights should be capable of being opened by the cutting of a cord or the fusing of a link in case of fire.

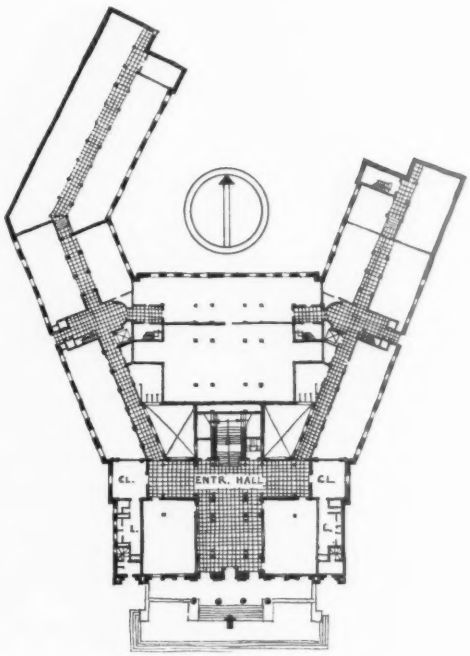
The scene dock or store should be separated from the stage by fire-resisting doors or shutters; these are generally 18 ft. 6 ins. high by 8 ft. wide, and there should be doors of similar size opening onto the street.

The properties should be cut off from the stage by fire-resisting doors about 8 ft. square in size.

The orchestra and conductor's rooms and music library are usually below the stage level with the electricians', firemen's and stage carpenters' rooms. All these rooms, including the stage cellar, must be ventilated to the open air.

Dressing Rooms

It is very necessary to provide ample dressing rooms for male and female artists, each equipped



Leeds

with a dressing table and basin with hot and cold water; and there must be rooms for the stage staff and chorus. Sufficient w.c.'s and urinals must be provided for both artists and staff.

A green room should be provided immediately at the back of the stage; this room is particularly useful where the stage is used for amateur theatricals and choral work. The green room should be large enough for rehearsals. Hornsey, which has a stage approximately 23 ft. by 36 ft., has a green room 18 ft. by 30 ft.

All rooms in connection with the stage, including the flies and grids, require secondary escape.

Organs

Types of organs vary, but either the Cathedral or the Concert type are generally used in assembly halls.

In the straight or Cathedral type every individual pipe is represented by an individual knob or stop to control it on the console. In the Cinema type the ranks of pipes are used over and over again at different pitches, so that ten pipes may have fifty stops on the console.

For the Cathedral type a rough guide is to allow a space of about a tenth of the cubic capacity of the hall for the organ, with a minimum height for the pipes of approximately 30 ft.

It is advisable to arrange the console on an electrically-operated platform, so that it can be lowered out of the way when the hall is used for other purposes.

In a hall where seating is provided for a choir, the best position for the console of a Cathedral-type organ is in the centre of the platform at the foot of the choir steps, where the full effect of the organ can be heard.

Cinema Projection

Projection rooms are usually placed at the rear of assembly halls behind and above the balcony. The room should be located as near the screen as possible, since very long projection distances makes it almost impossible for the projection operator to fix the beam in the centre of the screen.

The projection angle should not be greater than 12° to the horizontal.

The projection room should be completely cut off from the hall and should have two separate means of escape, one of which should be directly into the external air. The rewinding room should have separate escape without re-entering the projection room. Direct ventilation by means of a window or top light is desirable.

A room 10 ft. by 8 ft. is sufficient to house a single projector. Two projectors can be used in a room 15 ft. by 8 ft. A rewinding room about 5 ft. by 5 ft. should adjoin the projection room.

Projector ports are usually 12 ins. square and at a height of 4 ft. from floor to centre line of the port. Observation ports are usually 15 ins. square, with a height of 5 ft. from floor to centre line. Spot light ports are 2 ft. long by 18 ins. high, with a height of 4 ft. 6 ins. from floor to centre line. Projection rooms are usually 8 ft. high.

The room should be placed so that the centre line of the screen will come midway between two projectors. No obstructions must be in the path of the light beam. It is highly important to provide a firm vibrationless foundation for the entire projection rooms.

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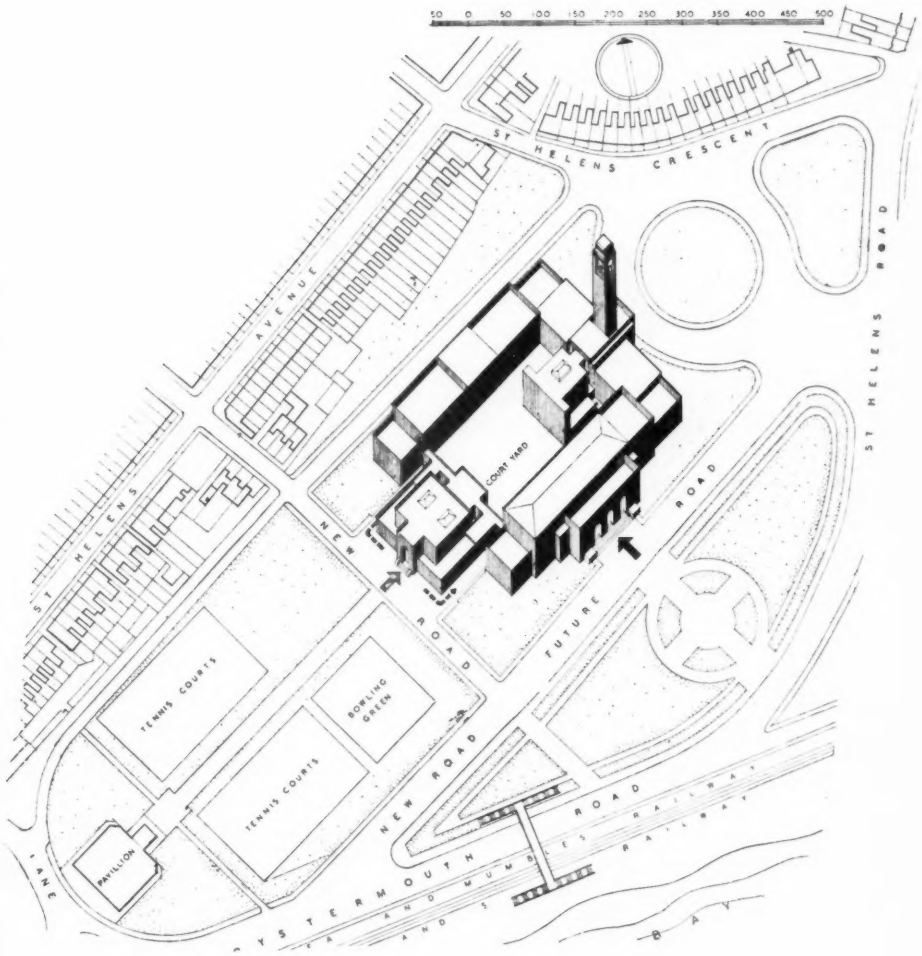
TOWN HALLS

The Architects' Journal Library of Planning

SWANSEA • By Ivor Jones and Percy Thomas



SWANSEA

County Borough

POPULATION

1921 Census	*157,554*
1931 Census	*164,797*
1934 (estimated resident population)	*165,550*

RATEABLE VALUE AND RATES

Rateable value (April 1934) ... *£1,038,479*
Local rates (1934–35) 15s. 6d. in the £

SIZE OF HOUSES

Average size of occupied dwelling (1931)	*5.07 rooms*

PRINCIPAL OCCUPATIONS

N.B.—Persons "Out of work" are included in the occupied.

"Unoccupied and Retired" are shown separately.

Figures are from 1931 Census returns and relate to males and females aged fourteen years and over.

Only those occupation-orders in which more than a thousand males or more than a thousand females were placed are shown separately below, and the order "Other and Undefined Workers" has been ignored.

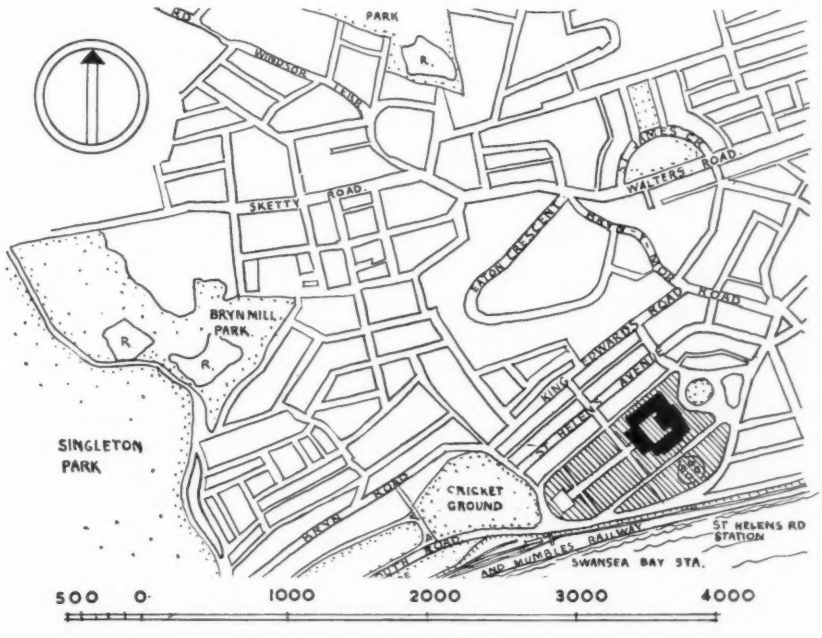
The total of occupied persons of each sex is, however, indicated above the figure for "Unoccupied and Retired."

MALES

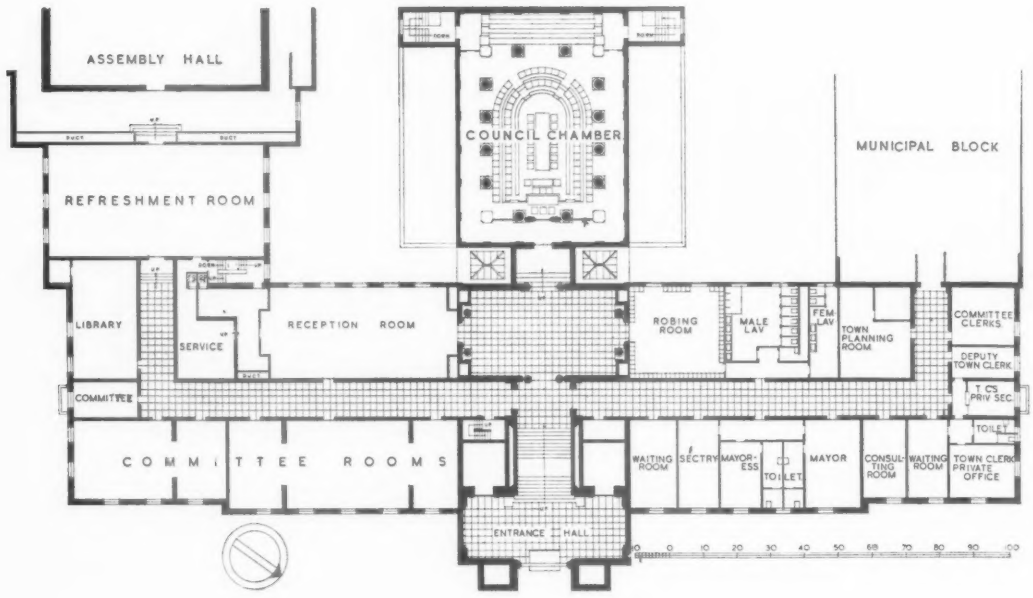
Mining and quarrying	*2,423*
Metal workers	*9,895*
Workers in wood and furniture ...	*1,510*
Builders, etc.	*2,810*
Transport and communication ...	*10,215*
Commercial, etc. (excl. clerks) ...	*6,126*
Professional (excl. clerical staff)	*1,656*
Personal service	*1,138*
Clerks, draughtsmen, typists ...	*2,946*
Stationary engine drivers, etc. ...	*1,304*
Occupied	*55,195*
Unoccupied and retired ...	*5,620*

FEMALES

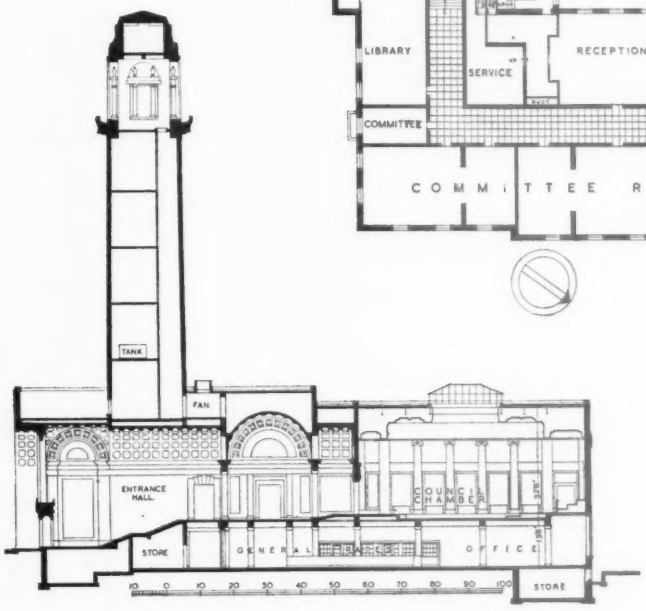
Commercial, etc. (excl. clerks) ...	*3,207*
Professional (excl. clerical staff)	*1,420*
Personal service	*6,519*
Clerks, draughtsmen, typists ...	*1,281*
Occupied	*15,103*
Unoccupied and retired ...	*49,295*



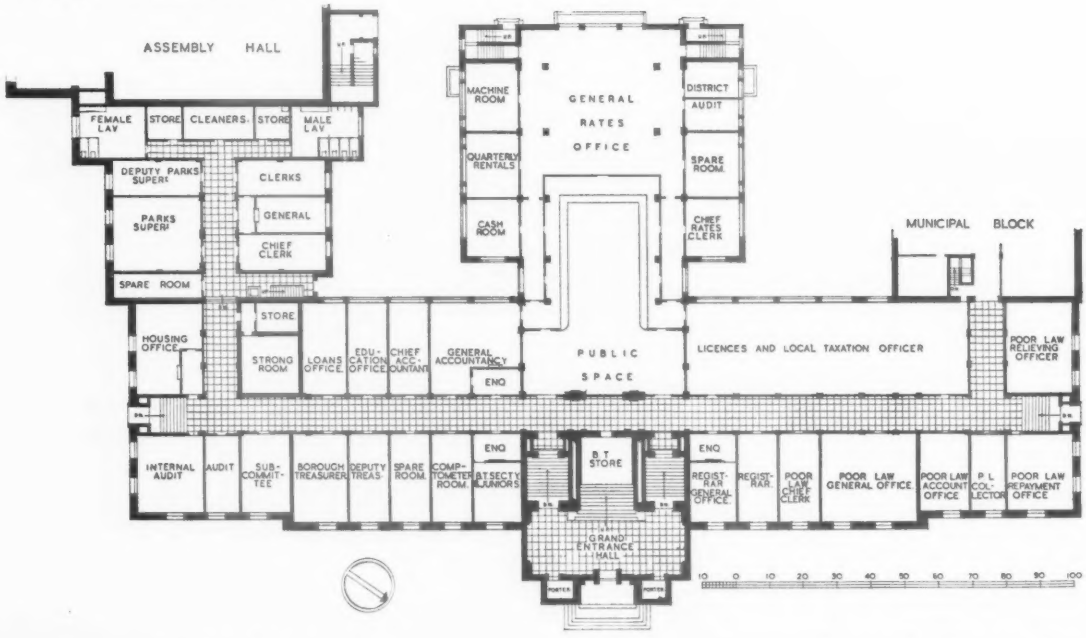
SWANSEA • *By Ivor Jones and Percy Thomas*



Council Block: Upper Ground Floor Plan



Section Through Entrance Hall



Council Block: Lower Ground Floor Plan

49 TOWN HALLS

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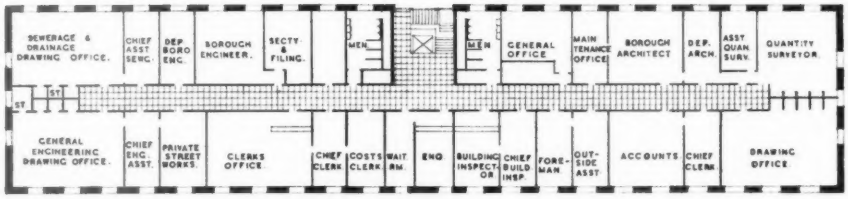
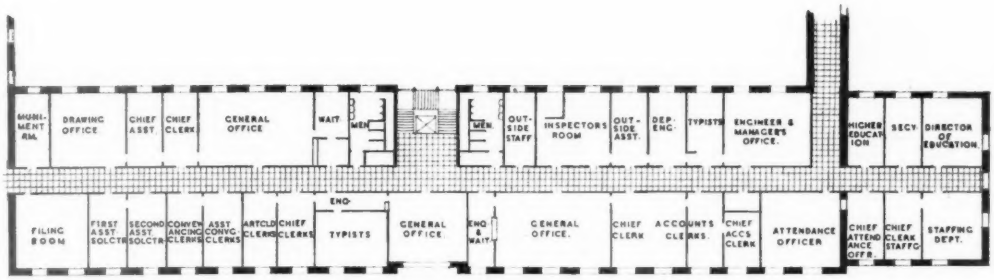
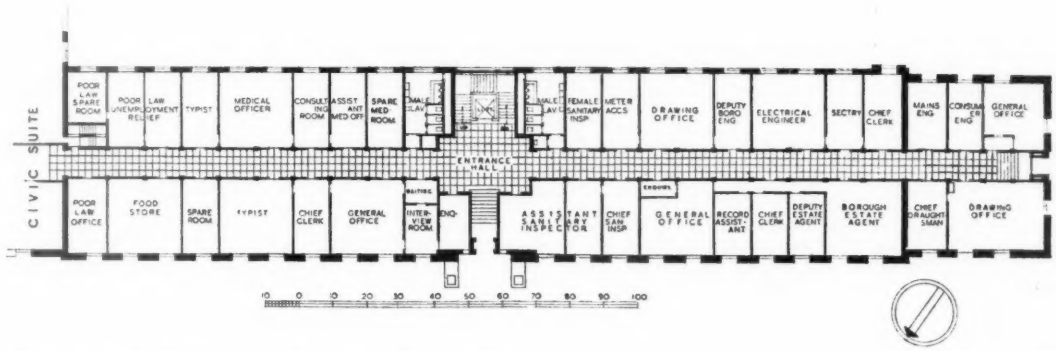
SWANSEA • *By Ivor Jones and Percy Thomas*



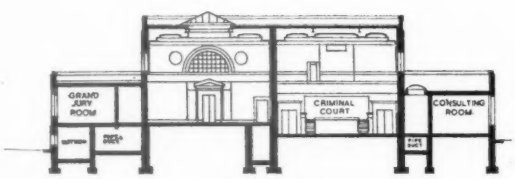
Second Floor Plan



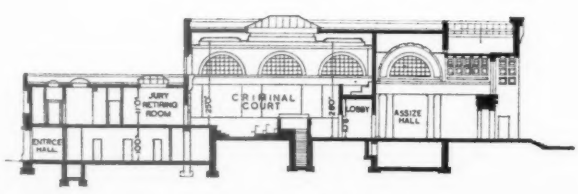
First Floor Plan



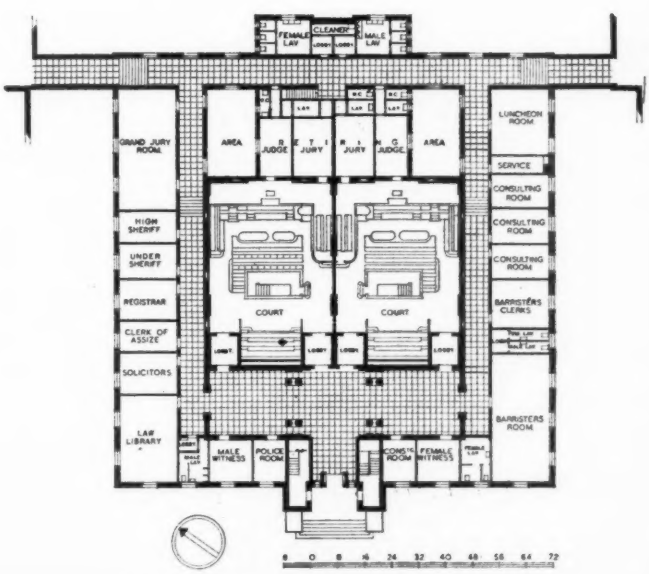
Municipal Offices: Ground Floor Plan



Cross-Section



Longitudinal Section



Upper Ground Floor Plan of Courts

50 TOWN HALLS

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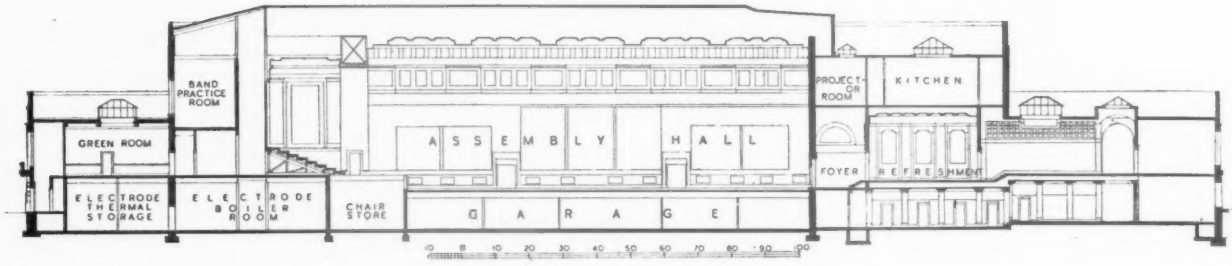
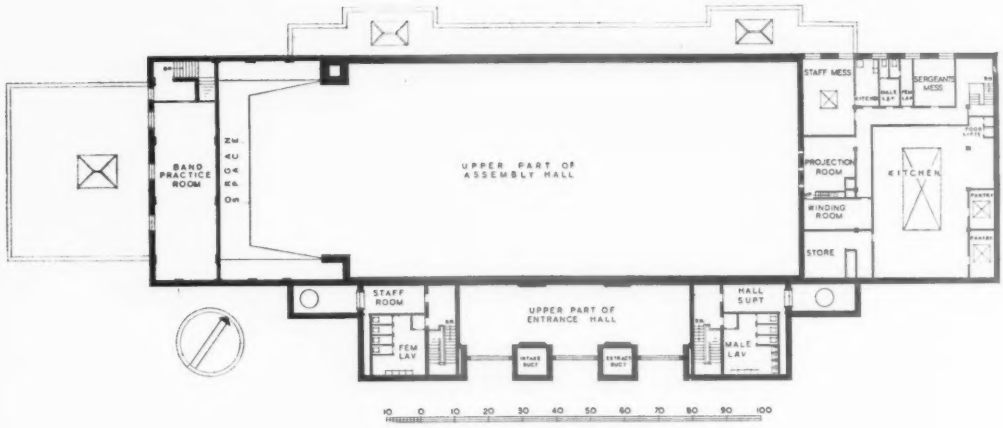
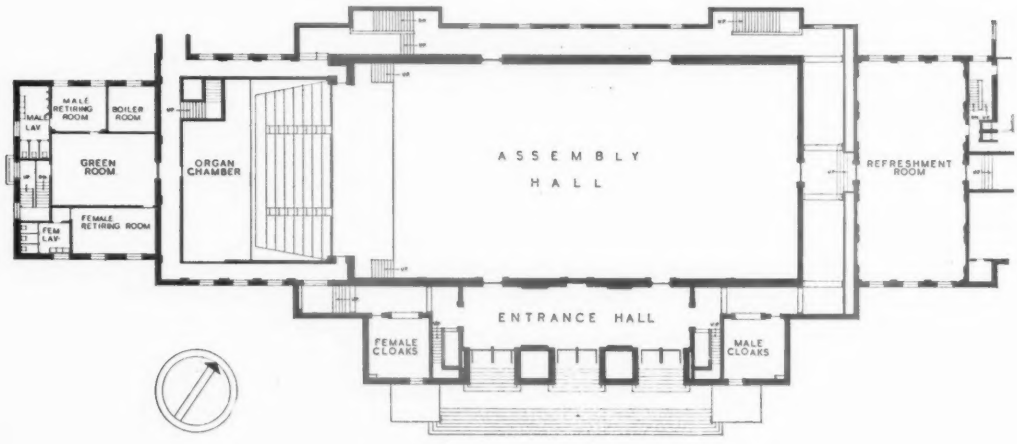
SWANSEA • By Ivor Jones and Percy Thomas



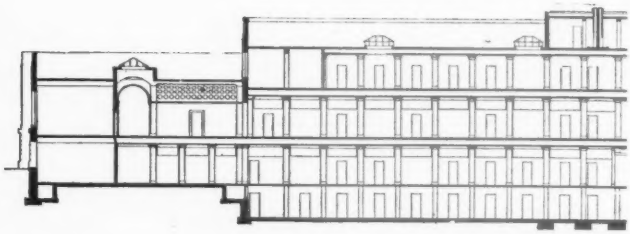
Longitudinal Section



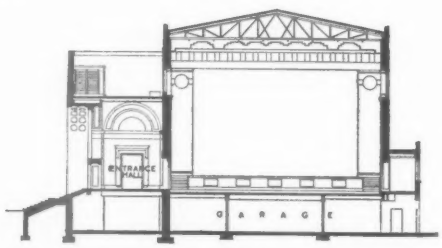
First Floor Plan



Assembly Hall: Ground Floor Plan



Half Longitudinal Section of Municipal Offices



Cross Section of Assembly Hall

An aerial view of Eastbourne and Beachy Head taken by means of the Ilford infra-red process. From "Aircraft".

LITERATURE

SENTIMENTAL CALVIN

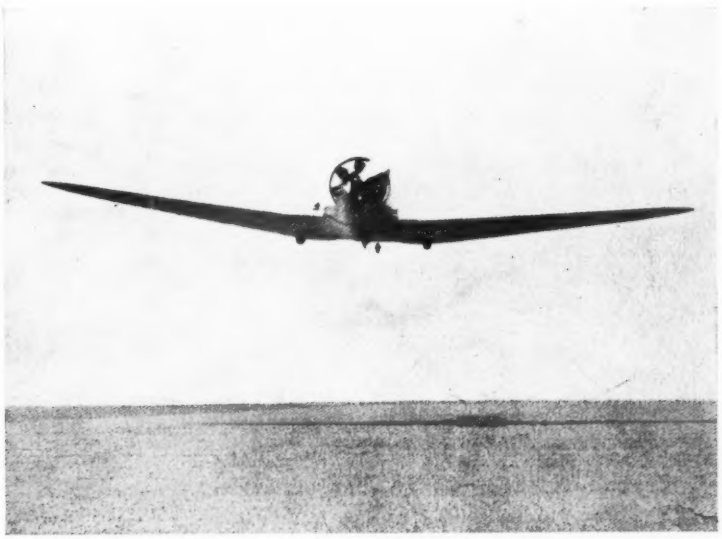
BY PHILIP SCHOLBERG

Aircraft. By Le Corbusier. The New Vision Series—No. 1. Published by the Studio. Price 5s.

. . . "TO explore the marvels of the age subject by subject; to assemble together illustrations which demonstrate what has already been achieved and the new beauties which are being created or revealed; to outline the progress which has been made and the lines upon which further development is being sought." A truly admirable programme for a publisher to embark upon, more especially when the result is a decently printed and sturdily bound book of 120 odd photographs available at the astonishingly low price of five shillings.

That the first book in the series should be devoted to aircraft is sensible enough, for no other form of human activity has grown in such a short space of time to such a high state of efficiency. Hence it is possible without laborious historical research to present a logical conspectus of the aeroplane's development in the form of a few carefully chosen photographs, and without an excess of explanatory text. Aeroplanes have grown, from the primitive stage of design by faith and execution by piano wire and seccotine, to the era of slide rules and high tensile alloys where a designer can produce a machine to a given specification of pay load, speed and range with the reasonable certainty that the result will do what it is supposed to do without substantial modification. To a stage, in fact, where a clearly stated problem can be successfully solved.

Who better, then, than Le Corbusier to write an appreciation of a branch of design in which efficiency is the



Airspeed "Courier" type A.S.5. Commercial single-engined, low wing, cantilever monoplane with retractable undercarriage. Seat for one passenger alongside pilot and four seats behind. From "Aircraft."

controlling factor, in which all nonsense and trimmings find no admirers? Who should be better able to appreciate the clear-cut solutions of the problems involved, the clean, swift lines of the machines whose whole surfaces are such a perfect reply to the flows of the medium in which they work?

Alas the first few words of the Preface dispel all such hopes. "Being neither technician nor historian of this amazing adventure I could only apply myself to it by reason of the ecstasy which I feel when I think about it." Then follow a hundred odd photographs, many of them amazingly beautiful, strung together with an "ecstatic" running commentary, full of the high emotional content of Miss Wilhelmina Stitch. For instance, "And Neptune rises from the sea, crowned with strange garlands, the weapons of Mars." It is almost with relief that one turns to the details of the illustrations (somewhat inaccurate by the way, and hardly as full as they should be) and finds "No. 18, American aircraft carrier *Lexington*." M. Le Corbusier appears to suffer from an evening paper "Lone flyer dices with death" mentality, and although his pilots are not referred to as "hawk-eyed birdmen," they are none the less made to "stoop like falcons" over the towns and villages they visit.

When, however, he finally reaches the twenty or so aerial photographs (as opposed to photographs of aeroplanes) which show so well the indescribable tangle of our present-day towns he really seems to believe what he says, and sentimentality gives way to the urgent fire of the good Lutheran reformer. But are not our towns depressing enough to those who actually have to live in them? Admittedly the aeroplane heightens the contrast by stressing its own complete freedom to travel straight from place to place at the expense of the squalor below it, but surely the need to re-plan is obvious enough without this additional stimulus? But perhaps a map and a pair of legs makes the task seem too colossal; in the air everything seems far simpler.

This review may seem to cavil unduly at the less important details. Let us lay the blame for the sentiment at the door of M. Le Corbusier's translator (and incidentally a literal translation into French with a free re-rendering into English considerably improves many of the worst pages), and look on *Aircraft* as a peculiarly good picture book, which it is. Remembering that the ordinary rather uninspired aeroplane postcard costs 2d., one can only snatch eagerly at 120 magnificent photographs at the price of ½d. apiece.

SLUM - LONDON

[BY W. P. KEEN]

I Lived in a Slum. By Mrs. Cecil Chesterton. London: Victor Gollancz Ltd. Price 6/- net.

"MRS. CECIL CHESTERTON'S latest volume abounds in vivid pictures of struggling families, small homes, women whose quiet unflinching heroism keeps together a household whose only certainty is the dole . . . The author has not been content with hearsay evidence, statistics or experimental visits. She has shared the dirt, the squalor and the overcrowding that is the daily lot of thousands . . ." These remarks are lifted from the publishers' blurb. And, oddly enough, they are true. Mrs. Chesterton has given us a really first-class insight into the slum quarters of London—an insight born of actual experience of the slums. As she says in her foreword: "To sit at home comfortably indignant and bemoan the slums seemed so obviously futile that I decided to taste them. Only by sharing the smells, the inevitable dirt of disintegrating walls and leaky roofs, suffering the essential lack of privacy, mental and bodily, could I hope to learn what life with such accompaniment becomes and, at the same time, discover the fundamental housing needs of the slum dweller."

The four boroughs dealt with by the author are: Kensington, Southwark, Westminster and Shoreditch. The first three chapters are devoted to the first-named borough, "one of the capital's richest districts, where huge mansions, big rooms, and luxurious gardens exist cheek by jowl with the densest human rabbit-warrens." Conversations the author had with the various families in the district are recorded; and the houses in which they live are described in a vivid manner. "It is, I think, that the rich people of the Royal Borough do not see the slums at their gates with living eyes," says the author. "The filth and degradation have faded from their actual consciousness and, though individuals and associations are wide awake to the insistent horrors, and are pouring out energy and money in a crusade against them, the general mind has lost its sensitiveness, and remains objectively ignorant as to the rat-infested, bug-ridden dens lying within touch."

Housing conditions in North Kensington, we are told, used to be far worse than they are today and, during recent years, several new blocks of flats have been built, mainly due to that admirable Association — the Kensington Housing Trust—which has gingered up the Council to some kind of recognition of its housing responsibilities. The erection of modern dwellings, however, will not solve the slum problem unless the rents charged are reduced to a standard within the reach of the tenants. For instance, it is hard for a man on the dole drawing, say, thirty-six shillings a week for himself and wife and five children, to pay 12s. 6d. for housing accommodation. It means that only 23s. 6d. is left for actual necessities, which include light, heat and food. What is the solution? According to Mrs. Chesterton the remedy is to set the rent figure at a feasible proportion of the family's total income—say one-fifth. Seven shillings from the dole of 36s., already quoted, would leave 29s. for food, etc., and make all the difference in the household exchequer. Further, such a rent standard would allow of a sliding-scale in regard to the actual amount paid by tenants drawing steady wages. A family with an income of £2 a week upward would pay more in actual cash, but the ratio in regard to their incomings would remain the same—one-fifth.

From Kensington Mrs. Chesterton crosses the river to Southwark, which has a population of approximately 160,000, mainly working-class. This district is the subject of four chapters. The slum conditions are, perhaps, much worse here than in Kensington and the local Council is faced with a gigantic task in obtaining suitable housing sites.

The L.C.C., over a period of twenty years, has done much to assist the people of this district, several new blocks of flats having been erected. There are also other blocks, much older than those of the L.C.C., dotted about Southwark, which have been built by such bodies as the Peabody Trust, Lewis Trust and the Church Army. Mrs. Chesterton makes a slight error in her remarks on the Peabody flats in North Southwark, which she describes as "old-fashioned and high-rented." The rents are, I am told, approximately 4s. for one room to 10s. for four-room flats. These figures include rates and the use of communal bathrooms and wash houses and two large playgrounds for children. Old fashioned, perhaps, but not high-rented.

The next three chapters are devoted to Westminster, "one of the richest boroughs in the whole of England; a city of spires and palaces, foul basements and dilapidated hovels, luxury flats and teeming alleys." It includes the wealthy districts of Mayfair and Belgravia and the densely crowded working-class areas of Pimlico and Soho. In these chapters we read the same old story of the slum dweller—poverty and lack of decent housing accommodation. The Council has, it is true, erected several blocks of flats within its boundaries, but the demand far exceeds the supply. Two of the

most important of the Council's schemes are the Grosvenor Estate, Millbank, and the Ebury Bridge Council Estate. Rents on the latter estate are pretty reasonable—5s. 7d. for a one-room flat with scullery to 16s. for four—a little under the L.C.C. and other estates.

Shoreditch is the fourth and last borough dealt with by the author—a borough situated in the East End, where overcrowding is rampant. It is, like Southwark, definitely a working-class borough containing 14,000 houses, 13,000 of which are inhabited by the working class. It is, however, refreshing to learn that the "latest Borough Council buildings—the Dunston Estate—form one of the brightest chapters of housing history."

In the final chapter of the book the author reviews the housing conditions of London and suggests means to better the accommodation necessary for the working classes :—

"But, differences of procedure apart, the wealthy Trusts and municipalities concerned with working-class estates all seem to have missed one of the most essential things in housing—beauty. English architecture has its testament of dignity in most departments of life; factories, churches, country mansions, offices, and luxury flats all bear some evidence of spiritual quickening; graceful spires, impressive entrances, wide spaces, and sudden unexpected curves testify to that hunger for loveliness which is the artist's heritage. But when we come to the workers' homes this quality is almost completely lacking. Indeed, those long tiers of flats, devoid of imagination and reminiscent of the bandbox type of dwelling—four walls and a roof—that defame the Midland counties, have a saddening significance. It is as though the poor were unworthy of any but material consideration, definitely segregated from fine lines and noble elevations.

"I shall be told that this is all a matter of money, but with this I most profoundly disagree. It is the ground, not the elevation that sends up the cost. With the possible exception of the L.C.C. Ossulston Estate, St. Pancras, I cannot recall a block that suggests the dignity of outline implicit in the splendid structures of Vienna, which provide perhaps the finest examples of working-class housing in Europe. These flats were erected by the municipality out of the rates, and surely what an impoverished city like Vienna can accomplish, the wealthiest capital in the world can also achieve. There is a feeling of sweetness and light about these flats that even the best London examples do not approach.

"Why should we not reach out to similar achievement? Why should working-class accommodation be branded with ignoble design, mean perspective, and lack of dignity?"

A plea is also made for the appointment of women housing managers, and the reasons for this are given below :

"An important point for future consideration is estate management. Local housing associations employ women, who are in full supervision. Some of the Borough Councils also employ women, but the Trusts in all cases plump for men, as do the L.C.C. with the exception of one estate—the Tabard, in Southwark.

"Women housing managers are trained in surveying, accountancy, construction, and all the departments essential to their work on the lines marked out by Octavia Hill, the pioneer of decent working-class accommodation. Their engagement has proved extremely advantageous, both in regard to the smooth running of the estates as a whole, and to the individual tenant. Women will always talk freely to women in regard to domestic affairs, and, although she will not always complain of dripping taps, defective lavatories, to a man, she will readily expound to one of her own sex on similar details. For psychological reasons also women managers are preferable."

I commend everyone to read *I Lived in a Slum*—even those who realize what the word "slum" really means.

LAW REPORT

FALL OF CEILING—CLAIM FOR DAMAGES

Otto and another v. *Bolton and Norris—King's Bench Division. Before Mr. Justice Atkinson*

IN this court plaintiff, Miss Matilda Otto, and her mother, Mrs. Esther Otto, of Tillingbourne Gardens, Finchley, sought to recover damages from the defendants, Bolton and Norris, of Regent's Park Road, builders.

Miss Otto based her claim on breach of contract, negligence and breach of duty, and Mrs. Otto claimed for personal injuries sustained by her through the defendants' alleged negligence.

Miss Otto's case was that in 1933 the defendants were engaged in developing a building estate they owned at Tillingbourne Gardens and were erecting and offering houses for sale. At an interview between Miss Otto and Mr. Norris, who represented the defendant firm, in September, 1933, Miss Otto told Mr. Norris that she required a house for the occupation of herself and her mother. Mr. Norris showed her No. 8 Tillingbourne Gardens, which was then in course of being erected by defendants. On October 3, 1933, defendants entered into an agreement to sell the house to Miss Otto for £2,552. The agreement provided that the defendants should complete the house and the decorations to the reasonable approval of the purchaser by the completion of the purchase. Miss Otto alleged that Mr. Norris had previously, in September, 1933, represented to her that the house was and would be well built and free from defects. Further, Miss Otto said it was an implied term and warranty of the agreement that the house should be built and completed in an efficient and workmanlike manner of proper materials and should be fit for habitation.

Miss Otto and her mother went into occupation of the house in November, 1933, when it was found that the house was not free from defects and in particular the ceilings of the first floor were so badly constructed and, or had been, so damaged and so badly and inadequately repaired, that the same were defective and unsafe. In this respect Miss Otto alleged that the lathes were unevenly spaced and in places insufficient coarse stuff had been forced up to form a good key, that there was an excessive thickness below the lathes and insufficient hair in the coarse stuff, and that the work had not been properly done.

On May 11, 1934, a portion of the ceiling in the large back bedroom fell, and on May 22 a further fall took place over the first-floor landing. Miss Otto said in these circumstances the whole of the first-floor ceilings would have to be reconstructed and that she had been put to the expense of repairing the damage to her furniture, done by the falls. She therefore claimed damages.

With regard to the claim by Mrs. Otto, she alleged that on May 11, 1934, when she was in bed in the large back bedroom, the ceiling fell on her, and she received serious cuts and bruises, and suffered from severe shock. For medical and other expenses she claimed from the defendants £66.

The defendants, in regard to the claim by Miss Otto, denied that the house was in course of erection at the date of the interview between her and Mr. Norris, and alleged that, save for the final decorations, the house had then been already completed and was surveyed and passed for habitation by the Surveyor to the Finchley Urban District Council on July 8, 1933. Defendants further said that the house was well built, but denied that there was any warranty as alleged by Miss Otto. In the alternative they said that if there was a warranty it extended only to the work required to complete the house (the final decorations), of which no complaint was made in the action. Defendants also denied that they had been guilty of any breach of duty or negligence, and with regard to the claim of Mrs. Otto for damages, they alleged that they were not recoverable in law and that her statement of claim disclosed no cause of action.

His lordship, in giving judgment, said he had come to the conclusion that the defendants had warranted to the first plaintiff that the house was well built and that, in fact, it was not well built, in that the ceiling was defective and dangerous, and that the plaster of which it was made was badly mixed, was thicker than normal and was not properly keyed. It was the duty of the defendants to supervise the work of the plasterers and they had discharged that duty negligently. The defendants were therefore liable to Miss Otto for the damages she had sustained, which he assessed at £340.

Now he came to the claim by Mrs. Otto, and that raised a question whether the builder of a house was under any obligation towards persons who came to live there. If a manufacturer packed his goods in such a way as to exclude the possibility of examination by consumption, he was liable for concealed defects, but not otherwise. Applying that test to Mrs. Otto's case, it was plain that there was no proximate relationship between defendants and Mrs. Otto. There was nothing to prevent an examination of the ceiling before the occurrence complained of. The defects were not hidden or lateral. Therefore his lordship felt himself bound to hold, though with some regret, that Mrs. Otto's claim failed and he dismissed it.

BRIARCROFT HALL, ATHERTON

GENERAL PROBLEM.—*The hall is an addition to the existing premises of a social club provided by the Manchester collieries for young people of both sexes. It is the principal hall in the village and is arranged so that it can be let off separately from the remainder of the building without interfering with the activities of the club. It is also planned so that the dressing-rooms under the stage can serve as dressing-rooms for the lawn tennis club. The stage overlooks the principal court and can be used as a tea room for the tennis players. The hall is used mainly for dramatic performances, as a gymnasium and for dancing. The stage is equipped with a fireproof curtain and drop scenery. The windows and the balcony at the back of the stage overlook the tennis courts.*

ELEVATIONAL TREATMENT.—*The walls are in rustic bricks, with concrete dressings; the metal casements are fixed in wood frames.*

The photographs are: above, the east side, showing from left to right, the cloaks, the hall and the stage end; centre, the north end, showing the windows and balcony at the back of the stage which overlook the tennis courts; below, the main entrance to the hall at the south end.

LANCS.: BY TAYLOR AND YOUNG

CONSTRUCTION.—*The simple construction was dictated by the cost. The walls are of brick 14 ins. thick. The roof is carried by steel girders, which span the building from the side walls and by wood joists which run from girder to girder. The joists are covered with boarding and cork insulation and finished with rock asphalt. The floors are hollow and are constructed of boards and joists, supported on concrete columns. The boards are double thickness, the upper thickness being of bruce oak.*

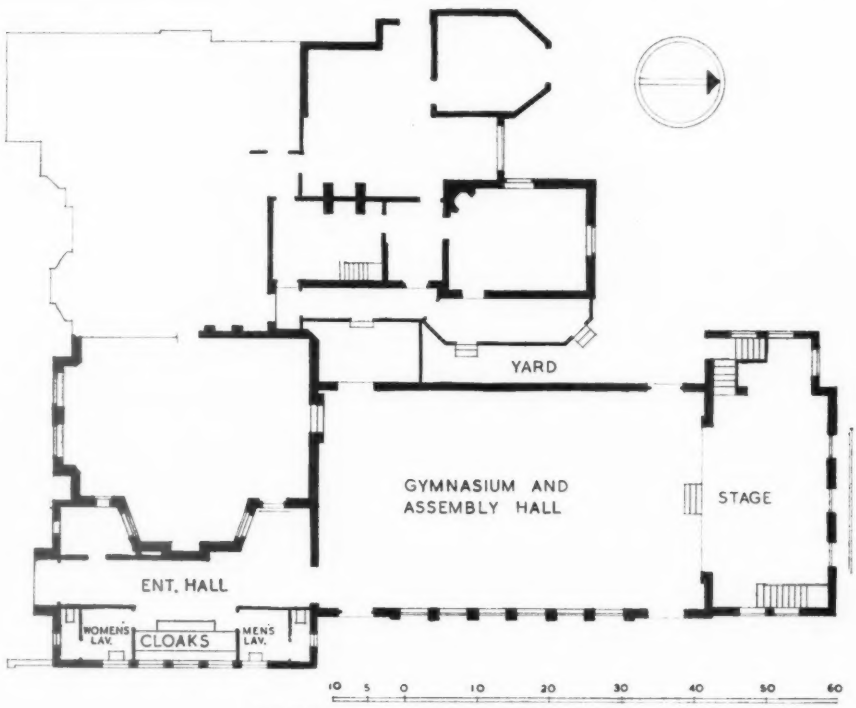
INTERNAL FINISHES.—*The walls of the hall are pale buff, with a dado of light green with black capping. The ceiling is painted in reds and yellows.*

SERVICES.—*Heating is by low-pressure hot water from the existing boiler.*

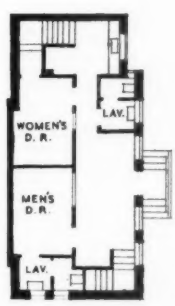
COST.—*£2,000. 7d. per cube ft.*

The photograph is of the hall looking towards the stage.

For list of general and sub-contractors, see page 640.



GROUND FLOOR PLAN



BASEMENT PLAN

IN THAT CONTINGENCY

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

Penetration of Moisture through Solid Brickwork

THE winter 1935–36 has been remarkable for its heavy rainfall, and it is therefore not surprising that a large proportion of the enquiries received at the Building Research Station have related to the penetration of moisture through roofs and walls. Two such enquiries appear of special interest, and both related to defects in blocks of flats recently erected. Both were built in solid 9-in. brickwork; both stood in fairly exposed positions and had flat roofs and parapets; and in both cases moisture penetration was marked. In one case the penetration at the window head was such that the ceilings were wet in some rooms for a distance of eighteen inches.

It is so expensive to remedy deficient weather resistance of external walls that every endeavour should be made to avoid this defect by proper construction in the first place. Colourless waterproofers have been tried, but, although they may afford a useful temporary remedy in cases of slight penetration, they cannot be relied upon to cure severe penetration.

It is often held in the building industry that walls which are initially somewhat permeable will become more waterproof in course of years, as a result of the processes of natural weathering. So far as the Station is aware, the correctness of this view has not definitely been established, but it has no doubt some basis of fact. Colourless waterproofers may tide over the initial stage of high absorption, but they cannot be expected to correct gross defects in construction and they may require renewal after a few years.

Other more permanent forms of protection, such as renderings, stone paints and bituminous paints, change the appearance of the building, and even with these it is not possible to guarantee success. A permanent cure can be afforded by the application of a bituminous coating, followed by rendering on expanded metal, but the cost of this treatment and the difficulties involved in working round openings will often preclude its adoption. Even "colourless" waterproofers often cause a distinct change in appearance.

In the Home Counties the use of 9-in. solid walls for houses and buildings of the smaller kind is extremely common. Where the situation is fairly sheltered and there are buildings to act as wind-breaks such construction is generally adequate. The design of the building, however, has an important influence on the behaviour of the brickwork. Where there is a pitched roof, with reasonable eaves-overhang, this shelters the wall below for a considerable depth. Throated cills, which throw the water falling on the glazing clear of the wall, are also beneficial.

It appears that the methods which have been found adequate in small sheltered dwellings are being applied in conditions where they are almost bound to fail. In large blocks of flats the greater height introduces a serious hazard. The exposure to wind increases the amount of rain water which falls on the wall surface, and it only requires a storm of sufficient duration for moisture to pass right through the headers or through the joints. The absence of eaves, the omission of cills and window hoods, also increase the risk of penetration.

The conclusion appears to be that for brick buildings exceeding two storeys in height, designed in the style which is becoming so popular today, without the traditional features which protected the wall from rainfall, the use of cavity brickwork in the external walls or the use of a greater thickness of brickwork than 9 in. should be regarded as essential.

Use of Hair in Plaster

¶ *A FIRM of plasterers desired information upon the advisability of incorporating hair in lime mixes used for ceiling work. The enquirer referred to a previous note from the Information Bureau of the Building Research Station in which it was stated that hair in plaster serves no useful purpose after the plaster is set. The enquirer also made reference to the Annual Report of the Building Research Board for the years 1929–31, where it was stated that experimental work was being carried out to provide further information on this particular point, and wished to have any information that had been obtained.*

In the tests referred to, mixes in which carefully weighed quantities of hair had been incorporated were applied by experienced plasterers. It was found that if the proportion of hair which is usually specified (*i.e.* 1 lb. to 2 or 3 cubic feet of coarse stuff, or 9 to 13 lb. of hair to a cubic yard) was actually used, the plasterers complained that the amount was too great and the material showed poor workability.

In some of the experiments the mixes were made up with hair to suit the plasterer; the weight of hair used was subsequently determined and was found to be roughly half the quantity mentioned above, *i.e.* 1 lb. to 6 cubic feet of coarse stuff.

Experiments were also made to determine the actual strength of the hair as a reinforcement to the plaster. Lime coarse-stuff mixes were made up with the usually specified amounts of hair, and larger amounts, and small briquettes were made and allowed to set and harden. They were then very carefully broken across, so as to break the plaster but not the hairs. The tensile strength of the hairs in the briquettes was then determined. The results indicated that even with the full amount specified and with uniform distribution of good, long hairs, the mechanical strength was only just sufficient to bear the weight of an average coat of lime plaster, supposing the keys to have broken. It is apparent that, even in this ideal case, the hair cannot be considered an adequate mechanical reinforcement.

Cases have been observed in ancient buildings, however, where the hair has provided good reinforcement, but in these the amount of hair was much in excess even of the amounts specified above. In respect of these high proportions it must be noted that the workability of such mixes will be poor, and their use under normal conditions of building would be quite impracticable.

In general, under modern conditions—and much evidence is provided by the many samples of plaster submitted to this Station—it is found that the hair is never well distributed but occurs in tufts. The labour and time involved in obtaining uniform distribution is such that this is rarely carried out and the hair is of no use. It is agreed that the *thorough* incorporation of hair may improve key formation and reduce droppings.

On the other hand, as has already been noted, the reinforcing effect of hair is inadequate and in view of the ready availability of materials such as Portland cement and gypsum plaster which have a definite chemical set, it is always desirable, particularly for ceiling work, to use such an admixture with lime whether hair is used or not. The addition of Portland cement or a gypsum plaster imparts the necessary strength, and will then provide a plaster whose strength is much in excess of a well-haired lime plaster.

The addition of hair to a gauged mix is unnecessary except perhaps that it reduces droppings; even so, with suitably proportioned mixes and a good sand, a manageable mix can be obtained. Under modern conditions it is likely that the expenditure on hair and on the labour for incorporating it thoroughly in the mix may, in fact, be more profitably used in improving the quality of the mix in other respects.

Discoloration of Mortar Joints

¶ *IT was reported that lime mortar, which had been used for pointing brickwork in a new building had become much whiter in certain areas than in others. It was found that although the bricks in most parts of the building had been bedded in lime mortar, in places, for certain reasons cement mortar had been used: here the pointing had dried to a lighter colour. The architect desired to know how to colour the mortar in these areas to match the rest of the work. A dark cream colour was required.*

It is suggested that the pointing which is too light in colour should be given a wash with a solution of iron chloride in water. It will be necessary to experiment with the solution on a small area, until the correct strength is arrived at.

On application, the solution will produce a bluish-green colour, which in the course of a few hours will change to brown or cream, depending on the strength used. The first test could be made with 1 per cent. solution, then with stronger or weaker

solutions as required. This solution should not discolour the bricks which are of a deep red colour.

Mould Growth and Insects on Internal Wall

¶ *An architect required information as to the cause of mould growth and the presence of insects on the internal walls of a house, and means whereby the trouble could be remedied. The trouble had occurred in a new building, constructed with 9-in. and 14-in. solid brick walls, cement-rendered externally and plastered on the inside, finished with a size followed by distemper. The ground floor, which was below the external ground level, was of solid concrete, and an external vertical slate damp-proof course extended from above the ground level down to the horizontal slate damp-proof course, which passed through the wall at a level below the surface of the floor. Internally, the ground floor room was tiled to a height of about 4 ft. The building had a flat leaded roof, the skirting being tucked about 1 in. into the parapet wall. A horizontal damp-proof course had been inserted in the parapet below the coping, but this damp-proof course was above the lead skirting, and was not connected to it.*

During the first winter after the completion of the building, a green mould growth appeared in the house on certain areas of the internal walls. In addition, a large number of small insects were seen on the walls. The mould disappeared during the summer, but returned again in the winter, the insects being present also.

It was stated that the walls appeared to be very slightly clammy, but were not actually damp. Some of the insects were submitted for examination.

The appearance of mould, fungus or similar growths on walls, is usually an indication of damp conditions.

An examination of the drawings of the building revealed several possible sources of damp.

(*a*) The damp-proof course at the base of the wall lies below the level of the top of the floor concrete. Passage of moisture from the sub-soil into the wall can easily occur through the concrete and since the wall is tiled internally and slated externally, the moisture absorbed will tend to travel above the level of the tiles and slates.

(*b*) No damp-proof course appeared to be provided between the base concrete and sub-soil. Even dense concrete is not proof against slow penetration of water under such conditions, and whilst evaporation may often be sufficient to remove the moisture as fast as it passes through the concrete, the floor will tend to be cooler than the air and, generally speaking, will "feel damp."

(*c*) The damp-proof course in the parapet wall might, with advantage, have been inserted at the level of the "tuck in" of the lead flat. Parapet walls are commonly a source of weakness as regards damp penetration, and where there is any suspicion of dampness a careful inspection of a parapet wall is warranted.

If small amounts of moisture entered the wall by way of the parapet, or from the floor, the dense waterproofed external rendering would reduce evaporation on the external face to small amounts and any moisture in the brickwork would tend to pass to the interior and evaporate from the distempered surface.

It is, however, not possible to state, with perhaps the exception of (*a*), to what extent each contributes to the trouble.

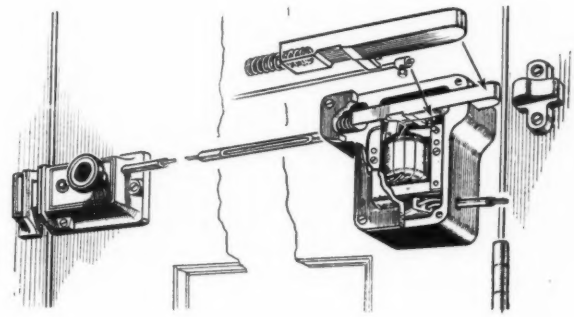
A careful examination should be made in the first case with the object of improving the conditions in respect of the dampness, for although there are certain treatments available for the eradication of mould growth, which have proved useful in some cases, it is not certain that they will be effective unless the predisposing conditions are also dealt with. It is therefore desirable to attack the trouble at its source.

It is probable that the mould finds nutrient matter in the distemper and size. Fungicidal paints are available for re-decoration, but if the wall remains damp, it would be undesirable to seal the inner face with an impervious coating. Blistering of the paint would be quite likely to occur. Of the treatments which have in some cases been found useful for removing mould growth, magnesium-zinc silicofluoride and formalin solutions may be mentioned. The former should be dissolved in water in the proportion of a quarter of a pound to a gallon of water and brushed onto the distemper. The normal commercial formalin which is 40 per cent. strength should be diluted with seven times its volume of water.

The sample of insects was submitted to the British Museum (Natural History) for a report. It was stated that the insects were of three species.

1. The common booklice, or Psocidæ.
2. One of the beetle family, Cryptophogidæ.
3. One of the beetle family, Lathridiidæ.

It was stated that there is a definite connection between the greenish mould growth and the presence of these insects, which depend upon the mould for food. It was considered that if the conditions giving rise to the mould were rectified, the trouble from the insects would cease.



TRADE NOTES

[*EDITED BY PHILIP SCHOLBERG*]

Remote Door Control

THE electrical opening of a door from any remote point in a building may savour somewhat of sinister financiers and the villains of the late Mr. Edgar Wallace, but there are occasions when such a device may satisfy a very real need.

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The most obvious case which occurs to me is the ordinary conversion job—house into four or more flats with the old staircase serving as a public access to all flats, but where the front door is normally kept closed. Tenants on the top floor then have to go down three flights to let in a visitor, or, as an alternative, drop from the window keys which will invariably bounce into the area.

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Messrs. Constable Hart's "Parlee" lock, illustrated in the headpiece to these notes, should therefore be an adequate reply to these difficulties. The device is, in itself, simple enough, and consists essentially of an electro-magnet which draws the latch by means of a wire, and does not interfere with the ordinary use of the lock. Control of the electro-magnet is by push-button or buttons, all of which can naturally be placed anywhere in the building.

•

The magnet is re-set by the projecting plunger, which bears against a cam fixed to the door frame. The door itself may be fitted with a light spring so that it swings open a few inches when the latch is drawn. The price, including lock, is £3 10s.

Bricks

For many more years than I can remember the Accrington Brick & Tile Co. have been known for smooth-pressed bricks of a uniform red colour. And now the latest edition of their catalogue shows that they are producing, presumably to meet a fairly considerable demand, a full range of multi-coloured and rustic facings.

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The catalogue is very well produced: the illustration of bricks in colour is by no means easy, but the results here are remarkably good, particularly as the sample

panels do not seem to have been built up with the ultra-deliberate carelessness which so often gives them a look of unreality.

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Apart from the illustrations, the rest of the catalogue is severely practical, and consists of porosity and crushing test results with a useful schedule of standard specials.

—and Forders

So Forders, in the interests of simplicity, is to be dropped from the official title, and "five million bricks a day" is to be known ("as from April 1") as the London Brick Company, Ltd. All to the good, I suppose, though the old name, if rather cumbersome, had a pleasantly rhythmical sound about it.

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But at least it should be good for the paint industry: I don't know how many square miles of property the Company possesses, but at Peterborough alone, from what I remember in passing trains, there are innumerable chimneys with huge L.B.F.'s on them, not to mention acres of roofs and railway wagons which will all need attention.

Coal Burning

The annual report of the Coal-Burning Appliance Makers' Association reveals the fact that a research department is to be established largely as a result of a £1,500 grant from the coal industry.

•

Excellent. The building industry has been content for far too long with the good old hit and miss methods. A good deal of the apparatus for burning solid fuel, whether in an open grate or a boiler, has in the past been designed by rule of thumb and subsequently modified. The results are often remarkably efficient, but it seems to me that it must be a help to know *why* as well as how.

Manufacturers' Items

The open-air swimming pool at Westcliff-on-Sea is to be brought up-to-date by the fitting of a filtration plant and electric boiler for heating. The contract for the complete equipment, including circulating, filtration, aeration, sterilization and electrical heating plant has been placed with Messrs. Bell Bros. (Manchester, 1927), Ltd., of Denton, Manchester. The electric boiler and equipment will be supplied by Messrs. Bastian & Allen, Ltd., London, and the electric supply will be taken from the Southend Corporation Electricity Department.

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A brochure describing the exhibition facilities existing at Dorland Hall, Lower Regent Street, S.W.1, has just been issued. Copies and further details are obtainable on application to the Estate Office, Dorland House, S.W.1.

Dorland Hall, which recently housed the *Sunday Times* Book Exhibition, has three floors, and space is available from 250 to 25,000 sq. ft.

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The Trussed Concrete Steel Co., Ltd., Reinforced Concrete Engineers, have removed their offices to Horseferry House, Westminster, S.W.1. Telephone number (as before): Victoria 9387. The telegraphic address has been changed to Truscon Sowest, London. This firm have also issued a folder showing the various uses to which reinforced concrete can be put in the construction of municipal buildings—schools, airports, swimming baths, power stations, town halls, etc. The buildings illustrated are of recent construction, and the Company were in every case responsible for the reinforced concrete design; in many of them they supervised the erection. Copies of the pamphlet are obtainable from The Trussed Concrete Steel Co., Ltd., at the address given above.

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We are informed by Messrs. Banister, Walton & Co., Ltd., Constructional Engineers, that, owing to the expansion of business in the Birmingham district they are removing their district drawing and general offices to more commodious premises. The new address will be: 192 Broad Street, Birmingham, 15. (Telephone number: Midland 3328.)

•

We are informed by Messrs. Callender's Cable and Construction Co., Ltd., that they supplied the whole of the electric cables employed in the "Stirling Castle," the new 25,500 ton motorship.

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The Riley Stoker Company, Ltd., have recently installed an additional telephone line—Whitehall 4031. Their numbers now are Whitehall 3085 and 4031.

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We have received from Messrs. Rhodes, Brydon and Youatt, Ltd., a four-page leaflet devoted to their small vertical mopump units (sump drainage type). Copies of the leaflet (publication 338) are obtainable from the firm at Waterloo Engineering Works, Gorsey Mount Street, Liverpool.

•

Messrs. W. H. Colt (London), Ltd., of Bush House, Strand, W.C.2, have just issued a brochure containing some twenty-five photographs of buildings on which their Colt tiles have been used. The buildings include: Bathing Pool, Llandudno (G. E. Marshall, F.I.A.A.); "House Boat" Roadhouse, Radlett (W. R. Davidge, F.R.I.B.A.); Village Institute, Birchanger (Alec Smithers, F.R.I.B.A.); Tennis Pavilion, Craigmyle, Glebe, Surrey (Fisher and Trubshawe, AA.R.I.B.A.); Bowling Green Clubhouse, Woldingham (Fisher and Trubshawe, AA.R.I.B.A.); and houses at Denmead, Hampshire (W. G. Rapson), Pevensey Bay (T. Cecil Howitt, F.R.I.B.A.), and East Molesey (E. B. Wheatley).

The brochure also contains a full description of Cedar tiles.

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Mr. C. F. Bishop has been appointed a director of Messrs. Thos. W. Ward, Ltd., of Sheffield. He has long been connected with the coke and mineral side of the business and is in charge of the road material activities. In order to cope with their increasing ramifications and responsibilities, the Company have also appointed Messrs. J. Bussey, M.I.STRUCT.E., Arnold Carr, H. W. Secker, and H. Vernon to be local directors.

The British Oxygen Co., Ltd., have removed their offices to Thames House, Millbank, S.W.1. Telephone number (as before): Victoria 9225 (12 lines).

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The annual general meeting of Redfern's Rubber Works, Ltd., of Hyde, was recently held at the head office at Hyde, when Mr. Thomas H. Redfern presided.

In moving the adoption of the report and accounts the chairman said that the year under review had been one of steady progress. The upward trend of sales of Redfern goods which marked the latter part of 1933, and was well maintained in 1934, continued throughout 1935, with the result that the profit on trading had increased from £8,191 in 1933 and £18,612 in 1924 to £24,855 in 1935. Mr. Arnold H. Redfern was re-elected a director and Mr. Arthur Scott, chartered accountant, of Hyde, was re-elected auditor.

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In the advertisement of Messrs. Hawkes and Snow, published on page xxxi of our issue for April 16, a slight error was made in the description of their "Eclair" doors. This last paragraph should have read as follows: ". . . mounted as a separate unit on *self*-supporting steel pylons in concrete foundations. This means a big saving in building costs, as no allowance has to be made for wind pressure other than on the building itself."

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We regret that the names of the architects for Gatwick Airport were wrongly given in the advertisement of Messrs. Pharaohs (Wallboards), Ltd., and the editorial pages of last week's issue. The architects are Messrs. Hoar, Marlow and Lovett.

THE BUILDINGS ILLUSTRATED

FLATS AT STANMORE (pages 619-622). The general contractors were Basic Buildings, Ltd., and the principal sub-contractors and suppliers included :—Permanite, Ltd., special roofings; Gas Light and Coke Co., Ltd., gasfitting; North Metropolitan Electric Power Supply Co., electric wiring; Richard Whittington & Co., Ltd., plumbing; John Bolding and Sons, Ltd., sanitary fittings; Nettlefold and Sons, Ltd., door furniture; Crittall Manufacturing Co., Ltd., casements; Plastering, Ltd., plaster; Duncan Tucker (Tottenham), Ltd., joinery; Colne Valley Water Supply Co., water supply.

HOUSE AT BARNT GREEN (page 623). The general contractor was H. H. Sanders and E. H. Smith (Birmingham), Ltd., supplied the tiles.

BRIARCROFT HALL, ATHERTON, LANCS. (pages 636-637). The general contractors were George Moss and Sons, Ltd., and the principal sub-contractors and suppliers included :—J. T. Smith, Ltd., rustic bricks; Limmer and Trinidad Lake Asphalt Co., special roofings and Colorphalt patent flooring; Robert Walsh, central heating; S. H. Heywood, Ltd., electric wiring; Morrison Ingram & Co., Ltd., and Benham and Sons, Ltd., sanitary fittings; Laidlaw and Thompson, Ltd., door furniture; Henry Hope and Sons, Ltd., window furniture and casements; John Hall and Sons (Oldham), Ltd., iron staircases.

THE WEEK'S BUILDING NEWS

LONDON & DISTRICTS (15 MILES RADIUS)

COULSDON. *Houses, etc.* Plans passed by the U.D.C.: Four houses, Westwood Road, for E. B. Clarke; hotel, Placehouse Lane, for Messrs. Hayward and Maynard; six houses, The Glade, for Firmus Constructions, Ltd.; two houses, Placehouse Lane, for Heritage Homes, Ltd.; two houses, Coulsdon Road, for Mr. J. Piggott; two houses, Coulsdon Road, for Mr. R. R. Turner; five houses, Godstone Road, for Messrs. E. T. Brown and Son; church hall, Marlpit Lane, for Mr. R. Gardner-Medwin.

EDGWARE. *Shops.* The London Co-operative Society has secured the site of "Oak Lodge," Stag Lane, for future development.

HACKNEY. *Shops.* A site has been secured by the London Co-operative Society at 197 Mare Street, where a number of shops are to be erected.

MITCHAM. *Shops.* The Royal Arsenal Co-operative Society has secured a block of premises in Streatham Road and Mitcham Lane, which are to be converted into up-to-date shops. Plans are also in course of preparation for the erection of the proposed laundry.

WOOLWICH. *Stores.* The Royal Arsenal Co-operative Society is to modernize its central stores at Powis Street. The Society are also to acquire property opposite the central stores for the erection of further stores.

SOUTHERN COUNTIES

WORTHING. *Houses, etc.* Plans passed by the Corporation: 69 houses, Mansfield Close, for Mr. H. M. Potter; 24 flats, Winchelsea Gardens, for Onslow Estates (Worthing), Ltd.; two blocks of flats, Limbrick Lane, for Hesketh Estates, Ltd.; hall, two shops and showroom, Tarring Road, for Mr. F. J. Clements; four houses, Castle Road, for Mr. J. Warren; 52 houses, Slindon Road, for Mr. E. J. Woodward; development, Sompting estate, for Messrs. Adams, Thompson and Fry; children's ward, Worthing Hospital, Lyndhurst Road, for Mr. J. S. Snell; reconstruction, 22-6 South Street, for Messrs. Kinch and Lack; alterations, Bull's Head Inn, Goring Road, for Tamplins Brewery, Ltd.; six houses, Churchway, for Mr. E. G. West; five houses, Trent Road, for West Park Estates, Ltd.; stores, site of 51-3 Montague Street and 2-6 Portland Road, for Messrs. Marks and Spencer, Ltd.; four houses, Pendine Avenue, for Worthing Estates Building Co., Ltd.; alterations and additions, Beach Hotel, Marine Parade, for Beach Hotel, Ltd.; 10 houses, Sompting Road, for Messrs. A. Clare, Ltd.; 10 houses, Rectory Gardens, for Brick Houses, Ltd.; 28 houses, Brougham Road, for Pearsons Retreat trustees; 16 houses, Beechwood Avenue, for Mr. G. C. Smith; two houses, Arlington Avenue, for Mr. W. Le Maitre; two houses, Woodlea Road, for Mr. D. C. Payne; nine houses, Maytree Avenue, for Mr. F. W. Beach; additions, 35 South Street, for Messrs. Jordan and Cook, Ltd.; two houses, off St. Lawrence Avenue, for Gladeside Estates, Ltd.; seven shops and houses, Goring Road, for Jeffery Houses, Ltd.; two houses, Sea Lane, for Novean Houses, Ltd.

WORTHING. *Conversion.* The Corporation Town Planning Committee has approved plans submitted by Mr. A. T. W. Goldsmith, on behalf of Mr. C. A. Seebold, for the conversion of the Old Connaught Theatre, Chapel Road, into a news cinema.

WORTHING. *Houses.* Messrs. Wignall and Ainsworth have prepared plans for the Chatsmore Estates, Ltd., for the erection of 128 houses in Jupps Lane, Worthing.

WORTHING. *Flats.* Messrs. Williams, Pettitt and Gardner, architects, have prepared plans, on behalf of Mr. Sam Nove, for the erection of 85 flats in Bath Road, Worthing.

WORTHING. *Cinema.* Mr. A. T. W. Goldsmith, architect, has prepared plans for the erection of a cinema in Findon Road, Worthing.

SOUTH WESTERN COUNTIES

TORQUAY. *School.* The Torquay Education Committee has approved plans for the erection of an elementary school at Audley Park at a cost of £55,074.

TORQUAY. *School.* The Devon Education Committee has purchased a site in Shiphay Lane, Torquay, for the erection of a girls secondary school.

TORQUAY. *Extensions, etc.* Plans passed by the Corporation: Extensions, Gibbons Hotel, Torwood Street, for Gibbons Hotel Co., Ltd.; four houses, Sherwell Valley Road, for Chelston Building Co.; 72 houses, Old Woods estate, for Western Counties Brick Co., Ltd.; two houses, Old Park Avenue, for Mr. E. G. Milford; eight flats, Barton Hill Road, for Mrs. Suttill.

TORQUAY. *Band Stand.* The Corporation is to prepare a scheme for the erection of a band stand at Torre Abbey, at a cost of £10,000.

TORQUAY. *Extension.* The Corporation is considering a scheme for the extension of Haldon Pier, the cost being estimated at £70,000.

TORQUAY. *Concert Hall.* The Corporation has asked the borough engineer to prepare an alternative scheme for the proposed new concert hall at Babbacombe in the Court Grounds.

TORQUAY. *Bus Depot.* The Corporation is considering a scheme, to cost £40,000, for the provision of a bus station in the Strand, and a smaller scheme to cost £10,000.

MIDLAND COUNTIES

BIRMINGHAM. *Houses.* The Corporation is to erect 109 houses on the Weoley Castle estate at a cost of £46,500.

BIRMINGHAM. *Tenements.* The Corporation has acquired a site in Henrietta Street for the erection of tenements.

BIRMINGHAM. *Baths.* The Corporation has approved a scheme for the erection of baths in Bristol Road, Northfield, at a cost of £33,500.

BIRMINGHAM. *Extensions.* The Corporation is to enlarge the Little Bromwich Hospital, at a cost of £97,790.

BIRMINGHAM. *Nurses' Home.* The Corporation is to erect a nurses' home at the Yardley sanatorium at a cost of £26,273.

BIRMINGHAM. *Maternity Block.* The Corporation is to erect a maternity block at the Dudley Road Hospital at a cost of £11,833.

BIRMINGHAM. *Branch Bank.* The Corporation is to erect a branch bank in College Road, Quinton.

BIRMINGHAM. *Schools.* The Birmingham Education Committee has acquired sites in the Sheldon district for the erection of three elementary schools.

BIRMINGHAM. *School.* The Birmingham Education Committee has purchased land in Aldridge Road, Perry Bar, for the erection of a school and playing fields.

DUDLEY. *Church.* The Corporation has sold a site in Limepit Lane to the Methodist trustees for the erection of a church.

DUDLEY. *Houses.* The Corporation has approved plans by the borough engineer for the erection of 68 houses on the Baptist End estate.

DUDLEY. *Houses.* The Corporation has asked the borough engineer to prepare a scheme for the erection of houses for the aged.

NOTTINGHAM. *Baths.* The Corporation is to construct open-air baths at Bulwell and Sherwood, at a cost of £39,000.

NORTHERN COUNTIES

BRADFORD. *Houses.* The Corporation is to erect 548 houses on the Canterbury estate at a cost of £172,500.

BRADFORD. *Flats.* The Corporation has approved plans by the city architect for the erection of 36 three-storey flats and 28 single-room dwellings on the White Abbey area.

CARLISLE. *Church.* Plans passed by the Corporation: Methodist Church, Currock Road, for Mr. J. S. Stout; two shops and houses, Durranhill Road, for Mr. H. Carlton; two houses, Knowlefield Avenue, for Messrs. Blakeley and Sons; houses, Marton Park estate, for Messrs. J. Laing and Son, Ltd.; six houses, Roseberry Road, for Mr. R. I. Hoodless; three shops, Victoria Road, for Mr. F. Martindale.

CARLISLE. *Houses.* The Corporation has approved plans for the erection of 126 houses at Petteril Bank and 62 at Fusehill.

OLDBURY. *Houses.* The Corporation is to erect 212 houses on the Holt Farm estate, and tenders are to be obtained in three sections.

OLDBURY. *Houses, etc.* Plans passed by the Corporation: Eight houses, George Road, for Messrs. Taylor; school, Wolverhampton Road, for Rev. David Ford; eight houses, Hurst Green, for Mr. N. Windsor; two houses, Titford Road, for Mr. W. Seaton; five police houses, Wesley Street, for Mr. A. V. Rowe; seven houses, Pound Road, for Mr. William Silt; works extensions, Popes Lane, for Tube Products, Ltd.

ROTHERHAM. *Extensions, etc.* Plans passed by the Corporation: Extensions, Moorgate House, Moorgate Street, for Mr. F. C. Cowlishaw; works extensions, Grange Mill Lane, for Messrs. A. Shardlow & Co., Ltd.; six houses, Wickersley Road, for Mr. M. F. Moncaster; 16 houses, Blackburn Lane, for Mr. J. R. Jubb; two houses, Ramsden Road, for Messrs. L. Fraser & Co.

ROTHERHAM. *Fire Station.* The Corporation has approved revised plans by the borough engineer for the erection of the new fire station and firemen's dwellings at a cost of £37,050.

SCARBOROUGH. *Houses, etc.* Plans passed by the Corporation: Two houses, Lowdale Avenue, for Mr. R. A. Wright; reconstruction, White Horse Inn, St. Thomas Street, for Moors and Robsons Breweries, Ltd.; pavilion, etc., North Marine Road, for Cricket Club; alterations, 2-3 St. Nicholas Street, for Messrs. Watson and Ritson; two houses, Mount Park Avenue, for Modern Developments, Ltd.; two houses, Devonshire Drive, for Mr. F. Baker; brewery extensions, Aberdeen Terrace, and public house, North Street, for Scarborough and Whitby Breweries, Ltd.

SCARBOROUGH. *Houses.* The Corporation has obtained sanction to borrow £33,533 for the erection of 92 houses and four shops on the Northstead estate.

SCARBOROUGH. *Flats.* Mr. Wallace J. Gregory, architect, has prepared plans for the erection of flats adjoining The Esplanade and Victoria Avenue, Scarborough.

SCARBOROUGH. *Extensions.* The Corporation has sold land in Scalby Road to the governors of the Scarborough Hospital for extensions.

SCARBOROUGH. *Development.* Messrs. Rennard and Marsden are to develop the Wheatcroft estate, Scarborough.

STRETFORD. *Baths.* The Corporation has appointed a sub-committee to consider the provision of baths at Lostock.

WAKEFIELD. *Houses.* Plans passed by the Corporation: Two houses, College Grove Road, for Messrs. Kay and Lunan; shops and offices, Kirkgate, for Prices Tailors, Ltd.; works extensions, Southgate, for Messrs. Simpson and Moxon; two houses, Farne Ace, for Mr. H. Walton; three houses, Bramley Mount, for Mr. W. Harold Watson; extensions, Albion Mills, Ings Road, for Mr. F. W. Moore; alterations, Kirkgate, for Messrs. Drake and Warters.

YORK. *Nursery School.* The York Education Committee is to lease a site to Mr. Arnold Rowntree for the erection, by a voluntary committee, of a nursery school.

SCOTLAND

GLASGOW. *Clinic.* The Corporation is to erect a clinic in Crail Street, Parkhead.

GLASGOW. *Extensions.* The Corporation is to prepare plans for the provision of accommodation for an additional 200 patients at the Stoneyetts institution.

RATES OF WAGES

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

			I s. d.	II s. d.
A_1	ABERDARE ...	S. Wales & M.	1 5½	1 1½
A	Aberdeen ...	Scotland	1 6½	1 2
A_1	Abergavenny ...	S. Wales & M.	1 6	1 1½
A_2	Abingdon ...	S. Counties	1 5	1 0½
A	Accrington ...	N.W. Counties	1 6½	1 2
A_2	Addlestone ...	S. Counties	1 5	1 0½
A	Adlington ...	N.W. Counties	1 6½	1 2
A	Airdrie ...	Scotland	*1 6½	1 2
C	Aldeburgh ...	E. Counties	1 2½	11
A	Altrincham ...	N.W. Counties	1 6½	1 2
B_3	Appleby ...	N.W. Counties	1 3	11½
A	Ashton-under-Lyne	N.W. Counties	1 6½	1 2
B_1	Aylesbury ...	S. Counties	1 4	1 0
B_1	BANBURY ...	S. Counties	1 4	1 0
B_1	Bangor ...	N.W. Counties	1 4	1 0
A_3	Barnard Castle	N.E. Coast	1 5	1 0½
A	Barnsley ...	Yorkshire	1 6½	1 2
B	Barnstaple ...	S.W. Counties	1 4½	1 0½
A	Barrow ...	N.W. Counties	1 6½	1 2
A	Barry	S. Wales & M.	1 6½	1 2
B_1	Basingstoke ...	S.W. Counties	1 4	1 0
A_2	Bath	S.W. Counties	1 5½	1 1½
A	Batley ...	Yorkshire	1 6½	1 2
A_2	Bedford ...	E. Counties	1 5½	1 1½
A_2	Berwick-on-Tweed	N.E. Coast	1 5½	1 1½
A_2	Bewdley ...	Mid. Counties	1 5½	1 1½
B_3	Bicester ...	S. Counties	1 3	11½
	Birkenhead ...	N.W. Counties	*1 7½	1 2½
A	Birmingham ...	Mid. Counties	1 6½	1 2
A_1	Bishop Auckland	N.E. Coast	1 6	1 1½
A	Blackburn ...	N.W. Counties	1 6½	1 2
A	Blackpool ...	N.W. Counties	1 6½	1 2
A	Blyth	N.E. Coast	1 6½	1 2
B_1	Bognor ...	S. Counties	1 4	1 0
A	Bolton ...	N.W. Counties	1 6½	1 2
A_2	Boston ...	Mid. Counties	1 5	1 0½
A_2	Bournemouth...	S. Counties	1 5½	1 1½
B_2	Bovey Tracey	S.W. Counties	1 3½	11½
A	Bradford ...	Yorkshire	1 6½	1 2
A_1	Brentwood ...	E. Counties	1 6	1 1½
A	Bridgend ...	S. Wales & M.	1 6½	1 2
B	Bridgwater ...	S.W. Counties	1 4½	1 0½
A_1	Bridlington ...	Yorkshire	1 6	1 1½
A	Brighouse ...	Yorkshire	1 6½	1 2
A_2	Brighton ...	S. Counties	1 5½	1 1½
A	Bristol ...	S.W. Counties	1 6½	1 2
B	Brixham ...	S.W. Counties	1 3½	11½
A	Bromsgrove ...	Mid. Counties	1 5½	1 1½
B	Bromyard ...	Mid. Counties	1 3	11½
A	Burnley ...	N.W. Counties	1 6½	1 2
A	Burslem ...	Mid. Counties	1 6½	1 2
A	Burton-on-Trent	Mid. Counties	1 6½	1 2
A	Bury	N.W. Counties	1 6½	1 2
A	Buxton ...	N.W. Counties	1 6	1 1½
A_1	CAMBRIDGE	E. Counties	1 6	1 1½
B_1	Canterbury ...	S. Counties	1 4	1 0
A	Cardiff ...	S. Wales & M.	1 6½	1 2
A	Carlisle ...	N.W. Counties	1 6½	1 2
B	Carmarthen ...	S. Wales & M.	1 4½	1 0½
B	Carnarvon ...	N.W. Counties	1 4½	1 0½
A	Carnforth ...	N.W. Counties	1 6½	1 2
A	Castleford ...	Yorkshire	1 6½	1 2
A_2	Chatham ...	S. Counties	1 5	1 0½
A	Chelmsford ...	E. Counties	1 5	1 0½
A	Cheltenham ...	S.W. Counties	1 5	1 0½
A	Chester ...	N.W. Counties	1 6½	1 2
A	Chesterfield ...	Mid. Counties	1 6½	1 2
B_1	Chichester ...	S. Counties	1 4	1 0
A	Chorley ...	N.W. Counties	1 6½	1 2
B_1	Cirencester ...	S. Counties	1 4	1 0
A	Clitheroe ...	N.W. Counties	1 6½	1 2
A	Clydebank ...	Scotland	1 6½	1 2
A	Coalville ...	Mid. Counties	1 6½	1 2
A_2	Colchester ...	E. Counties	1 5½	1 1½
A	Colne	N.W. Counties	1 6	1 1½
A_2	Colwyn Bay ...	N.W. Counties	1 5½	1 1½
A_1	Consett ...	N.E. Coast	1 6	1 1½
A_2	Conway ...	N.W. Counties	1 5½	1 1½
A	Coventry ...	Mid. Counties	1 6½	1 2
A_2	Crewe	N.W. Counties	1 5½	1 1½
A	Cumberland ...	N.W. Counties	1 5	1 0½
A	DARLINGTON ...	N.E. Coast	1 6½	1 2
A	Darwen ...	N.W. Counties	1 6½	1 2
B	Deal	S. Counties	1 4	1 0
A_3	Denbigh ...	N.W. Counties	1 5	1 0½
A	Derby	Mid. Counties	1 6½	1 2
A	Dewsbury ...	Yorkshire	1 6½	1 2
B	Didcot ...	S. Counties	1 4½	1 0½
A	Doncaster ...	Yorkshire	1 6½	1 2
B_1	Dorchester ...	S.W. Counties	1 4	1 0
A	Driffield ...	Yorkshire	1 5	1 0½
A_2	Droitwich ...	Mid. Counties	1 5½	1 1½
A	Dudley ...	Mid. Counties	1 6½	1 2
A_2	Dumfries ...	Scotland	1 6	1 1½
A	Dundee ...	Scotland	1 6½	1 2
A	Durham ...	N.E. Coast	1 6½	1 2
A_2	EASTBOURNE ...	S. Counties	1 5½	1 1½
A_1	Ebbw Vale ...	S. Wales & M.	1 6	1 1½
A	Edinburgh ...	Scotland	1 6½	1 2
A_1	Glamorganshire, Rhondda Valley District ...	S. Wales & M.	1 6	1 1½
A_2	Exeter ...	S.W. Counties	*1 5½	1 1½
B	Exmouth ...	S.W. Counties	1 4½	1 0½
A_3	FELIXSTOWE ...	E. Counties	1 5	1 0½
A_3	Filey	Yorkshire	1 5	1 0½
A	Fleetwood ...	N.W. Counties	1 6½	1 2
B_1	Folkestone ...	S. Counties	1 4	1 0
A	Frodsham ...	N.W. Counties	1 6½	1 2
B_2	Frome ...	S.W. Counties	1 3½	11½
A	GATESHEAD ...	N.E. Coast	1 6½	1 2
B	Gillingham ...	S. Counties	1 4½	1 0½
A	Glasgow ...	Scotland	1 7	1 2½
A_2	Gloucester ...	S.W. Counties	1 5½	1 1½
A_2	Goole ...	Yorkshire	1 5½	1 1½
A_2	Gosport ...	S. Counties	1 5½	1 1½
A_3	Grantham ...	Mid. Counties	1 5	1 0½
A_1	Gravesend ...	S. Counties	1 6	1 1½
A	Greenock ...	Scotland	*1 6½	1 2
A	Grimsby ...	Yorkshire	1 6½	1 2
B	Guildford ...	S. Counties	1 4½	1 0½
A	HALIFAX ...	Yorkshire	1 6½	1 2
A	Hanley ...	Mid. Counties	1 6½	1 2
A	Harrogate ...	Yorkshire	1 6½	1 2
A	Hartlepools ...	N.E. Coast	1 6½	1 2
B	Harwich ...	E. Counties	1 4½	1 0½
B_1	Hastings ...	S. Counties	1 4	1 0
A_2	Hatfield ...	S. Counties	1 5½	1 1½
B	Hereford ...	S.W. Counties	1 4½	1 0½
A_2	Hertford ...	E. Counties	1 5½	1 1½
A	Heysham ...	N.W. Counties	1 6½	1 2
A	Howden ...	N.E. Coast	1 6½	1 2
A	Huddersfield ...	Yorkshire	1 6½	1 2
A	Hull	Yorkshire	1 6½	1 2
A	ILKLEY ...	Yorkshire	1 6½	1 2
A	Immingham ...	Mid. Counties	1 6½	1 2
A_2	Ipswich ...	E. Counties	1 5½	1 1½
B_2	Isle of Wight ...	S. Counties	1 4½	1 0½
A	JARROW ...	N.E. Coast	1 6½	1 2
A	KEIGHLEY ...	Yorkshire	1 6½	1 2
A_3	Kendal ...	N.W. Counties	1 5	1 0½
A_3	Keswick ...	N.W. Counties	1 5	1 0½
A_1	Kettering ...	Mid. Counties	1 6	1 1½
A_2	Kidderminster	Mid. Counties	1 5½	1 1½
B_1	King's Lynn ...	E. Counties	1 4	1 0
A	LANCASTER ...	N.W. Counties	1 6½	1 2
A_1	Leamington ...	Mid. Counties	1 6	1 1½
A	Leeds	Yorkshire	1 6½	1 2
A	Leek	Mid. Counties	1 6½	1 2
A	Leicester ...	Mid. Counties	1 6½	1 2
A	Leigh	N.W. Counties	1 6½	1 2
B	Lewes	S. Counties	1 3	11½
A_2	Lichfield ...	Mid. Counties	1 5½	1 1½
A	Lincoln ...	Mid. Counties	1 6½	1 2
	Liverpool ...	N.W. Counties	*1 8	1 3
A_2	Llandudno ...	N.W. Counties	1 5½	1 1½
A	Llanelly ...	S. Wales & M.	1 6½	1 2
	London (12-miles radius)		1 8	1 3
	Do. (12-15 miles radius)		1 7½	1 2½
A	Long Eaton ...	Mid. Counties	1 6½	1 2
A	Loughborough	Mid. Counties	1 6½	1 2
A_1	Luton	E. Counties	1 6	1 1½
A	Lytham ...	N.W. Counties	1 6½	1 2
A_1	MACCLESFIELD	N.W. Counties	1 6	1 1½
A_3	Maidstone ...	S. Counties	1 5	1 0½
A_3	Malvern ...	Mid. Counties	1 5	1 0½
A	Manchester ...	N.W. Counties	1 6½	1 2
A	Mansfield ...	Mid. Counties	1 6½	1 2
B_1	Margate ...	S. Counties	1 4	1 0
A	Matlock ...	Mid. Counties	1 5	1 0½
A_1	Merthyr ...	S. Wales & M.	1 6	1 1½
A	Middlesbrough	N.E. Coast	1 6½	1 2
A_2	Middlewich ...	N.W. Counties	1 5½	1 1½
B_2	Minehead ...	S.W. Counties	1 3½	11½
B_2	Monmouth ... & S. and E. Glamorganshire	S. Wales & M.	1 3½	11½
A	Morecambe ...	N.W. Counties	1 6½	1 2
A_2	NANTWICH ...	N.W. Counties	1 5½	1 1½
A	Neath	S. Wales & M.	1 6½	1 2
A	Nelson ...	N.W. Counties	1 6½	1 2
A	Newcastle ...	N.E. Coast	1 6½	1 2
A	Newport ...	S. Wales & M.	1 6½	1 2
A	Normanton ...	Yorkshire	1 6½	1 2
A	Northampton ...	Mid. Counties	1 6½	1 2
A	North Shields...	N.E. Coast	1 6½	1 2
A	North Staffs ...	Mid. Counties	1 6½	1 2
A_1	Norwich ...	E. Counties	1 6	1 1½
A	Nottingham ...	Mid. Counties	1 6½	1 2
A	Nuneaton ...	Mid. Counties	1 6½	1 2
A	OAKHAM ...	Mid. Counties	1 5	1 0½
A	Oldham ...	N.W. Counties	1 6½	1 2
A_3	Oswestry ...	N.W. Counties	1 5	1 0½
A_1	Oxford ...	S. Counties	1 6	1 1½
A	PAISLEY ...	Scotland	*1 6½	1 2
B_3	Pembroke ...	S. Wales & M.	1 3	11½
A	Perth	Scotland	*1 6½	1 2
A_1	Peterborough	E. Counties	1 6	1 1½
A	Plymouth ...	S.W. Counties	*1 6½	1 2
A	Pontefract ...	Yorkshire	1 6½	1 2
A_1	Pontypridd ...	S. Wales & M.	1 6	1 1½
A_2	Portsmouth ...	S. Counties	1 5½	1 1½
A	Preston ...	N.W. Counties	1 6½	1 2
A	QUEENSFERRY ...	N.W. Counties	1 6½	1 2
A_2	READING ...	S. Counties	1 5½	1 1½
B	Reigate ...	S. Counties	1 4½	1 0½
A	Retford ...	Mid. Counties	1 5	1 0½
A_1	Rhondda Valley	S. Wales & M.	1 6	1 1½
A	Ripon	Yorkshire	1 5	1 0½
A	Rochdale ...	N.W. Counties	1 6½	1 2
B	Rochester ...	S. Counties	1 4½	1 0½
A_1	Ruabon ...	N.W. Counties	1 6	1 1½
A	Rugby ...	Mid. Counties	1 6½	1 2
A_2	Rugeley ...	Mid. Counties	1 5½	1 1½
A	Runcorn ...	N.W. Counties	1 6½	1 2
A_1	ST. ALBANS ...	E. Counties	1 6	1 1½
A	St. Helens ...	N.W. Counties	1 6½	1 2
B_3	Salisbury ...	S.W. Counties	1 3½	11½
A_1	Scarborough ...	Yorkshire	1 6	1 1½
A	Scunthorpe ...	Mid. Counties	1 6½	1 2
A	Sheffield ...	Yorkshire	1 6½	1 2
A	Shipley ...	Yorkshire	1 6½	1 2
A_2	Shrewsbury ...	Mid. Counties	1 5½	1 1½
A_2	Skipton ...	Yorkshire	1 5½	1 1½
A_2	Slough ...	S. Counties	1 5½	1 1½
A_1	Solihull ...	Mid. Counties	1 6	1 1½
A_2	Southampton	S. Counties	1 5½	1 1½
A_1	Southend-on-Sea	E. Counties	1 6	1 1½
A	Southport ...	N.W. Counties	1 6½	1 2
A	S. Shields ...	N.E. Coast	1 6½	1 2
A_1	Stafford ...	Mid. Counties	1 6	1 1½
A	Stirling ...	Scotland	1 7	1 2½
A	Stockport ...	N.W. Counties	1 6½	1 2
A	Stockton-on-Tees	N.E. Coast	1 6½	1 2
A	Stoke-on-Trent	Mid. Counties	1 6½	1 2
B	Stroud ...	S.W. Counties	1 4½	1 0½
A	Sunderland ...	N.E. Coast	1 6½	1 2
A	Swansea ...	S. Wales & M.	1 6½	1 2
A	Swindon ...	S.W. Counties	1 5	1 0½
A_1	TAMWORTH ...	N.W. Counties	1 6	1 1½
B	Taunton ...	S.W. Counties	1 4½	1 0½
A	Teesside Dist....	N.E. Counties	1 6½	1 2
A_2	Teignmouth ...	S.W. Coast	1 5½	1 1½
A	Todmorden ...	Yorkshire	1 6½	1 2
A_1	Torquay ...	S.W. Counties	1 6	1 1½
B_2	Truro	S.W. Counties	1 3½	11½
A_3	Tunbridge Wells	S. Counties	1 5	1 0½
A	Tunstall ...	Mid. Counties	1 6½	1 2
A	Tyne District	N.E. Coast	1 6½	1 2
A	WAKEFIELD ...	Yorkshire	1 6½	1 2
A	Walsall ...	Mid. Counties	1 6½	1 2
A	Warrington ...	N.W. Counties	1 6½	1 2
A_1	Warwick ...	Mid. Counties	1 6	1 1½
A_1	Wellingborough	Mid. Counties	1 6	1 1½
A	West Bromwich	Mid. Counties	1 6½	1 2
A_2	Weston-s.-Mare	W. Counties	1 5½	1 1½
A_2	Whitby ...	Yorkshire	1 5½	1 1½
A	Widnes ...	N.W. Counties	1 6½	1 2
A	Wigan ...	N.W. Counties	1 6½	1 2
B	Winchester ...	S. Counties	1 4½	1 0½
A_2	Windsor ...	S. Counties	1 5½	1 0½
A	Wolverhampton	Mid. Counties	1 6½	1 2
A_2	Worcester ...	Mid. Counties	1 5½	1 1½
A_3	Worksop ...	Yorkshire	1 5	1 0½
A_1	Wrexham ...	N.W. Counties	1 6	1 1½
A	Wycombe ...	S. Counties	1 5	1 0½
B	YARMOUTH ...	E. Counties	1 4½	1 0½
B	Yeovil ...	S.W. Counties	1 4½	1 0½
A	York	Yorkshire	1 6½	1 2

* 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	8
Carpenter	,,	1	8
Joiner	,,	1	8
Machinist	,,	1	8
Mason (Banker)	,,	1	8
,, (Fixer)	,,	1	9
Plumber	,,	1	8
Painter	,,	1	7
Paperhanger	,,	1	7
Glazier	,,	1	7
Slater	,,	1	8
Scaffolder	,,	1	4
Timberman	,,	1	4
Navvy	,,	1	3
General Labourer	,,	1	3
Lorryman	,,	1	5½
Crane Driver	,,	1	7
Watchman	per week	2	10

MATERIALS

EXCAVATOR AND CONCRETOR

		£	s.	d.
Grey Stone Lime	per ton	2	2	0
Blue Lias Lime	,,	1	16	6
Hydrated Lime	,,	3	0	9
Portland Cement, in 4 ton lots (d/d site, including Paper Bags)	,,	1	19	0
Rapid Hardening Cement, in 4-ton lots (d/d site, including Paper Bags)	,,	2	5	0
White Portland Cement, in 1-ton lots	,,	8	15	0
Thames Ballast	per Y.C.		6	6
¾" Crushed Ballast	,,		7	0
Building Sand	,,		7	6
Washed Sand	,,		8	6
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.	d.	6" s.	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	0
Channel junctions	,,	4	6	6	6
Channel tapers	,,	2	9	4	0
Yard gullies	,,	6	9	8	9
Interceptors	,,	16	0	19	6
IRON DRAINS :					
Iron drain pipe	per F.R.	1	6	2	6
Bends	each	5	0	10	6
Inspection bends	,,	9	0	15	0
Single junctions	,,	8	9	18	0
Double junctions	,,	13	6	30	0
Lead Wool	lb.		6		—
Gaskin	,,		5		—

BRICKLAYER

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

MASON

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

SLATER AND TILER

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

		£	s.	d.
24" × 12" Duchesses	per M.	28	17	6
22" × 12" Marchionesses	,,	24	10	0
20" × 10" Countesses	,,	19	5	0
18" × 10" Viscountesses	,,	15	10	0
18" × 9" Ladies	,,	13	17	6
Westmorland green (random sizes)	per ton	8	10	0
Old Delabole slates d/d in full truck loads to Nine Elms Station :				
20" × 10" medium grey per 1,000 (actual)		21	11	6
,, ,, green ,, ,,		24	7	4
Best machine roofing tiles ,,		4	5	0
Best hand-made do. ,,		4	17	6
Hips and valleys	each			9
,, hand-made	,,			9½
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, ⅜"	Sq.	18	6
,, 7/8"	,,	1	1	6
,, 1"	,,	1	2	0
,, 1¼"	,,	1	5	0
,, 1½"	,,	1	10	0
Deal matchings, ⅜"	,,		14	0
,, ½"	,,		15	6
,, 1"	,,	1	4	0
Rough boarding, ¾"	,,		16	0
,, 1"	,,		18	0
,, 1½"	,,	1	6	0
Plywood, per ft. sup.				d.
Scotch glue	lb.			8

Thickness	⅛" A	B	BB	¼" A	B	BB	⅜" A	B	BB	½" A	B	BB
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Qualities												
Birch 60 × 48	4	2½	2	5	3	2½	7	5	4	8	6	5
Cheap Alder	–	2	1½	–	3½	2	–	–	–	–	–	–
Oregon Pine	–	2½	–	3	2½	–	4	3½	–	5	4½	–
Gaboon												
Mahogany	4	3¼	–	5	4½	–	7	6¼	–	8	7	–
Figured Oak	6½	5	–	7½	5¾	–	10	8	–	11	9	–

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.)

		¼"	½"	1"	1¼"	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

		s.	d.
Rolled steel joists cut to length	cwt.	12	9
Mild steel reinforcing rods, ⅜"	,,	10	6
,, ,, ½"	,,	10	3
,, ,, ⅝"	,,	10	0

SMITH AND FOUNDER—*continued*

		s.	d.
Mild steel reinforcing rods, ¾"	cwt.	9	6
,, ,, ⅞"	,,	9	6
,, ,, 1"	,,	9	6
,, ,, 1¼"	,,	9	6
,, ,, 1½"	,,	9	6

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

PLUMBER

		s.	d.
Lead, milled sheets	cwt.	24	6
,, drawn pipes	,,	24	6
,, soil pipe	,,	30	0
,, scrap	,,	16	0
Solder, plumbers'	lb.		9½
,, fine do.	,,	1	0
Copper, sheet	,,		8½
,, tubes	,,		11

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

PLASTERER

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

GLAZIER

		s.	d.	s.	d.
Sheet glass, 21 oz., squares n/e 2 ft.	F.S.			2	7½
,, ,, 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" × 10")	,,			2	0
Flashed opals (white and coloured)	,,	1	0 and	2	0
¼" rough cast ; rolled plate	,,				5½
¼" wired cast ; wired rolled	,,				9¾
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	1 ,,	‡3	9
,, ,, 45	,,	†3	3 ,,	‡4	0
,, ,, 100	,,	†4	0 ,,	‡4	10
Vita glass, sheet, n/e 1 ft.	,,			1	0
,, ,, ,, 2 ft.	,,			1	3
,, ,, ,, over 2 ft.	,,			1	9
,, ,, plate, n/e 1 ft.	,,			1	6
,, ,, ,, 2 ft.	,,			3	0
,, ,, ,, 3 ft.	,,			4	0
,, ,, ,, 5 ft.	,,			5	0
,, ,, ,, 15 ft.	,,			6	0
,, ,, ,, over 15 ft.	,,			7	6
"Calorex" sheet 21 oz., and 32 oz.	,,	2	6 and	3	6
,, rough cast ⅛" and ¼"	,,			8¾ ,, 1	0
Putty, linseed oil	lb.				3

* *Colours, 1d. F.S. extra.*

† *Ordinary glazing quality.* ‡ *Selected glazing quality.*

PAINTER

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

CURRENT PRICES FOR MEASURED WORK

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

EXCAVATOR AND CONCRETOR

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

DRAINLAYER

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

BRICKLAYER

		£ s. d.
Brickwork, Flettons in lime mortar	Per Rod	26 10 0
,, ,, in cement	,,	27 12 6
,, Stocks in cement	,,	34 0 0
,, Blues in cement	,,	50 0 0
Extra only for circular on plan	,,	2 0 0
,, backing to masonry	,,	1 10 0
,, raising on old walls	,,	2 0 0
,, underpinning	,,	5 10 0
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 9
½″ Vertical dampcourse	,,	7 9
½″ paving or flat	,,	6 3
1″ paving or flat	,,	7 6
1″ × 6″ skirting	F.R.	1 0
Angle fillet	,,	2½
Rounded angle	,,	2½
Cesspools	Each	5 6

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

CARPENTER AND JOINER

		£ s. d.
Flat boarded centering to concrete floors, including all strutting	Sqr.	2 2 6
Shuttering to sides and soffits of beams	F.S.	7
,, to stanchions	,,	7
,, to staircases	,,	1 6
Fir and fixing in wall plates, lintols, etc.	F.C.	3 9
Fir framed in floors	,,	4 6
,, ,, roofs	,,	6 6
,, ,, trusses	,,	7 6
,, ,, partitions	,,	8 6
⅞″ deal sawn boarding and fixing to joists	Sqr.	1 14 6
1″ ,, ,, ,, ,,	,,	1 17 6
1½″ ,, ,, ,, ,,	,,	2 3 0
4″ × 2″ fir battening for Countess slating	,,	9 6
Do., for 4″ gauge tiling	,,	12 0
Stout feather-edged tilting fillet	F.R.	4½
Patent inodorous felt, 1 ply	Y.S.	2 3
,, ,, ,, 2 ,,	,,	2 9
,, ,, ,, 3 ,,	,,	3 3
Stout herringbone strutting to 9″ joists	F.R.	10½
1″ deal gutter boards and bearers	F.S.	1 2
1½″ ,, ,, ,,	,,	1 6
2″ deal wrought rounded roll	F.R.	8
1″ deal grooved and tongued flooring, laid complete, including cleaning off	Sqr.	2 1 0
1¼″ do.	,,	2 10 0
1½″ do.	,,	2 17 0
1″ deal moulded skirting, fixed on, and including grounds plugged to wall	F.S.	1 6
1½″ do.	,,	1 9

CARPENTER AND JOINER—*continued*

		s. d.
1½″ deal moulded sashes of average size	F.S.	1 9½
2″ ,, ,, ,, ,, ,,	,,	1 11½
1½″ deal cased frames double hung, of 6″ × 3″ oak sills, 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
1¼″ deal tongued and moulded window board, on and including deal bearers	F.S.	1 9
1¼″ deal treads, 1″ risers in staircases, and tongued and grooved together on and including strong fir carriages	,,	2 6
1½″ deal moulded wall strings	,,	2 1
1½″ ,, outer strings	,,	2 4
Ends of treads and risers housed to string	Each	1 9
3″ × 2″ deal moulded handrail	F.R.	1 3
1″ × 1″ deal balusters and housing each end	Each	2 0
1½″ × 1½″ ,, ,, ,,	,,	2 9
3″ × 3″ deal wrought framed newels	F.R.	1 3
Extra only for newel caps	Each	6 0
Do., pendants	,,	6 0

SMITH AND FOUNDER

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

PLUMBER

		£ s. d.
Milled lead and labour in flats	cwt.	1 18 6
Do. in flashings	,,	2 2 0
Do. in covering to turrets	,,	2 7 6
Do. in soakers	,,	1 13 3
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	,,	1½
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 beds	,,	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

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CALCULATIONS FOR RETAINING WALLS FOR WATER AND HORIZONTAL OR SURCHARGED EARTH :

NOTE • For Theory of Pressures, Moments of Resistance, Sliding etc., see material on the reverse side hereof.

NOTATION • t.= Average thickness of wall. h.= Vertical height of wall. Ø.= Angle of repose of earth. W.= Weight of wall per foot cube. w.= Weight of ground per foot cube.

FACTOR OF SAFETY. • These walls have a factor of safety of 3 against overturning. If a factor of 1·5 against overturning is adopted the thickness of wall may be reduced to ·71 of those values given.

TYPE A. : HORIZONTAL BACKING, LEVEL WITH TOP OF WALL.

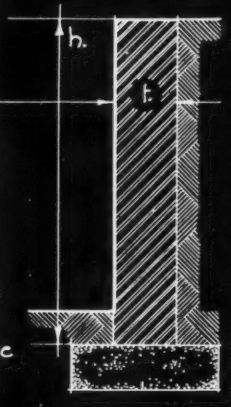
CASE (1.)

Vertical face and back.

$$t = h\sqrt{\frac{w}{W} C_1}.$$

NOTE • In cases 1 to 4, C_1 has the values given in the table on the back of this sheet.

USES : Simple rectangular walls are suitable for heights up to 5! 0!. There is considerable waste of material in this method.

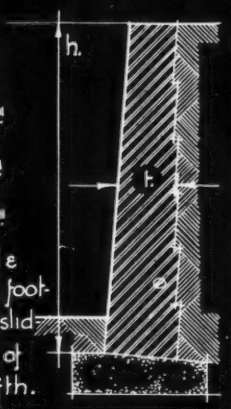


CASE (2.)

Battered face and vertical back, inclined footings.

	Batter.
$t=\frac{h}{12}\sqrt{1+144\ C_1\frac{w}{W}}-\frac{h}{12}$:	1! to 1! 0!
$t=\frac{h}{8}\sqrt{1+64\ C_1\frac{w}{W}}-\frac{h}{8}$:	1½! to 1! 0!
$t=\frac{h}{6}\sqrt{1+36\ C_1\frac{w}{W}}-\frac{h}{6}$:	2! to 1! 0!

USES : This type of wall is economical e suitable for general use. The inclined foot- -ing gives greater resistance against slid- -ing forward. To prevent lodgement of water batter should not exceed one fifth.



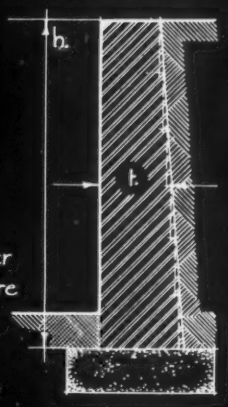
CASE (3.)

Vertical face and sloping back.

$$t=\frac{h}{12}\sqrt{1+144\ C_1\frac{w}{W}}+\frac{h}{12}$$

Batter = 2! to 1! 0!

USES : Walls having plain sloping backs are suitable for retaining water in preference to earth. Water pressure is directly proportional to the depth below the surface and normal to surface exposed to the pressure.



CASE (4.)

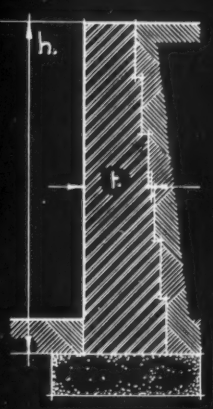
Vertical face and stepped back.

$$t=\frac{3h}{32}\sqrt{1+114\ C_1\frac{w}{W}}+\frac{3h}{32}$$

Steppings : 2¼! to 1! 0!

USES : An economical wall for retain- -ing earth against habitable rooms, etc.

Unsuitable for retaining water.



TYPE B. : SURCHARGED BACKING.

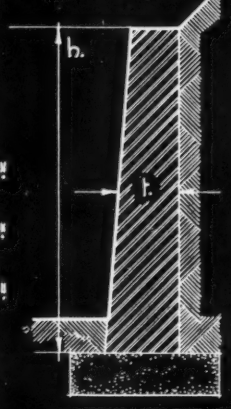
(For angles of repose see back hereof.)

CASE (5.)

Earth with maximum surcharge. Wall with sloping front and vertical back.

	Batter.
$t=\frac{h}{12}\sqrt{1+144\ C_2\frac{w}{W}}-\frac{h}{12}$:	1! to 1! 0!
$t=\frac{h}{8}\sqrt{1+64\ C_2\frac{w}{W}}-\frac{h}{8}$:	1½! to 1! 0!
$t=\frac{h}{6}\sqrt{1+36\ C_2\frac{w}{W}}-\frac{h}{6}$:	2! to 1! 0!

Where C_2 has the values given in the table on the back of this sheet.



INCLINED FOOTINGS.

When c = coefficient of friction between wall & footing, then force required to move wall up footing = $w_1 \times c$.

Where w_1 = Resultant of weight of wall on angle of footing. The angle of slope of footing must never approach the angle of friction between wall and footing.

COEFFICIENTS OF FRICTION BETWEEN MASONRY & EARTH & EARTH & MASONRY.

Coefficient of friction = c.		Angle.
Masonry & Brickwork dry mortar:	0·65.	33°
" " " wet " :	0·47.	25°
" " " damp " :	0·74.	36°
" on dry clay. :	0·51.	27°
" on moist clay. :	0·33.	18°

By multiplying these values by the weight of brick- work w. the horizon- tal force necess- ary to slide the wall laterally may be obtained.

Information from Clay Products Technical Bureau of Great Britain.

INFORMATION SHEET : TYPES OF BRICK RETAINING WALLS • RANKINE'S THEORY

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INFORMATION SHEET

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BRICK RETAINING WALLS

On this Sheet are set out various types of retaining walls, to suit differing conditions and uses and the method of calculating the thickness of each is based on Rankine's theory of earth pressures.

RANKINE'S THEORY.—Retaining Walls :

Rankine's theory of earth pressures is based upon a theory of principal stresses, in which all the stresses acting upon a material may be reduced to two principal stresses acting at right angles to each other.

If a quantity of earth be heaped up as in the form of an embankment, it will take up a certain slope depending upon the kind of earth and its condition, wetness, looseness, etc. The angle of inclination which the sloping face makes with the horizontal is known as the natural angle of repose of the material and is usually denoted by the sign ø.

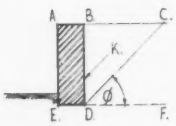


Diagram 1.

Assume that the retaining wall ABDE is to support loose earth, the surface of which BC is horizontal and flush with the top of the wall, then the angle of repose ø is shown as CDF. Thus it will be seen that the earth below CD can exert no pressure while the mass BCD would tend to slide down CD unless supported ; that is, a pressure is produced upon the wall both vertically and horizontally, the resultant of which is K, and its magnitude, inclination and point of application must be found before the stability of the wall can be tested.

If the friction between the face of the vertical wall and the retained material be neglected, then the general expression for the horizontal force K acting at a point one third of the height from the bottom of the wall becomes :

$$K = \frac{Wh^2}{2} \cdot \frac{\cos^2 ø}{(n+1)^2}$$

in which $n = \sqrt{\sin^2 ø - \frac{1}{2} \tan \alpha \sin 2ø}$

K = force per foot run of wall.

W = weight of material per cubic foot.

h = height of wall.

ø = angle of repose of material.

α = angle which surface of material makes with the horizontal.

The maximum value of α is ø, the angle of repose.

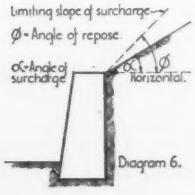


Diagram 6.

This equation may be written :—

$$K = \frac{Wh^2}{2} C \quad \text{where} \quad C = \frac{\cos^2 ø}{(n+1)^2}$$

The factor C has the values given for the following limiting conditions :

(1) Level fill.

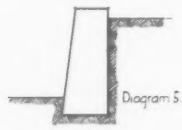


Diagram 5.

$$\alpha = 0$$

$$C = \frac{1 - \sin ø}{1 + \sin ø}$$

Derivation.

$$n = \sqrt{\sin^2 ø} = \sin ø$$

$$C = \frac{\cos^2 ø}{(\sin ø + 1)^2}$$

$$= \frac{1 - \sin^2 ø}{(1 + \sin ø)^2}$$

$$= \frac{(1 - \sin ø)(1 + \sin ø)}{(1 + \sin ø)^2}$$

$$= \frac{1 - \sin ø}{1 + \sin ø}$$

(2) Maximum surcharge.

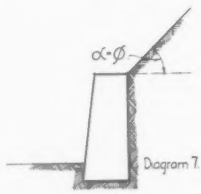


Diagram 7.

Derivation

$$n = \sqrt{\sin^2 ø - \frac{\sin ø \, 2 \sin ø \cos ø}{2 \cos ø}}$$

$$= 0$$

$$C = \frac{\cos^2 ø}{1^2}$$

(3) Minimum or negative surcharge.

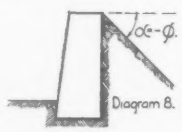


Diagram 8.

$$\alpha = -ø$$

Derivation

$$n = \sqrt{\sin^2 ø - \tfrac{1}{2} \tan -ø \sin 2ø}$$

$$= \sqrt{2 \sin^2 ø}$$

$$C = \frac{\cos^2 ø}{\left(\sqrt{2 \sin^2 ø} + 1\right)^2}$$

$$= \left(\frac{\cos ø}{\sqrt{2} \sin ø + 1}\right)^2$$

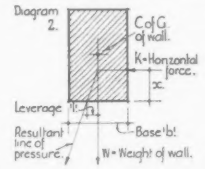
TABLE FOR ø, W AND "C" IN CASES (1), (2) AND (3) ABOVE.

(Averages from 3 sources.)

Material :	ø	W	C (1)	C (2)	C (3)
Fine dry sand ...	34°	100	·284	·685	·215
Wet sand ...	26°	120	·394	·807	·307
Dry veg. earth ...	29°	90	·347	·765	·270
Moist veg. earth	45°	110	·172	·500	·125
Consolidated loamy earth	40°	100	·217	·588	·162
Dry clay ...	29°	110	·347	·765	·270
Damp clay well drained	45°	115	·172	·500	·125
Sandy gravel ...	27°	115	·376	·793	·294

RESISTANCE OF WALL TO OVERTURNING.

The moment of resistance of a wall is the product of its weight and leverage, the leverage being measured along the base between the line of pressure and the vertical line pressing through the centre of gravity of the wall.



The leverage varies with the position at which the line of pressure intersects the base and this in turn is dependent on the relative values of K and W. The maximum value of "*l*" in order that the entire width of the base shall be under compression is 1/6b where the weight of the wall passes centrally through the base.

The maximum compression then occurs at the outer edge of the base and it reduces to zero at the inner edge. In this limiting case the resistance moment Wl can be made equal to the overturning moment Kx ; or

$$W\frac{b}{6} = Kx = K\frac{h}{3}$$

W and b must be chosen to satisfy this condition. Whilst this just ensures that there shall be compression all over the base it gives a factor of safety of three against actual overturning

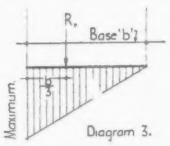


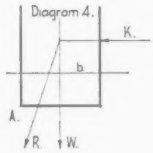
Diagram 3.

Diagram for intensity of compression under base with resultant load at middle third.

since if $W\frac{b}{6} = Kx$, by taking moments about the overturning point A

$$W\frac{b}{2} = 3\frac{Wb}{6} = 3Kx$$

= 3 times the overturning moment.



SLIDING.

The stability of walls with respect to sliding must not be overlooked. If a rough plane with a mass upon it be gradually tilted there is a certain angle to the horizontal when sliding is about to take place. This angle is the angle of friction and the tangent of this angle is known as the coefficient of friction.

In order to determine whether a particular wall is safe against sliding, the line of resultant pressure due to the weight of the wall and the external forces is drawn. A line normal to the bed joint is drawn to cut this line and the tangent of the angle between these two is found. Then if the coefficient of friction between the materials is divided by the tangent of the angle found, the quotient is the factor of safety against sliding. It is not usual to let this factor be *less* than 1·25.

FORMULAE AND CALCULATIONS :

The formulae and calculations given on this sheet have been prepared for the Clay Products Technical Bureau of Great Britain by Messrs. Helsby, Hamann and Samuely, Consulting Engineers.

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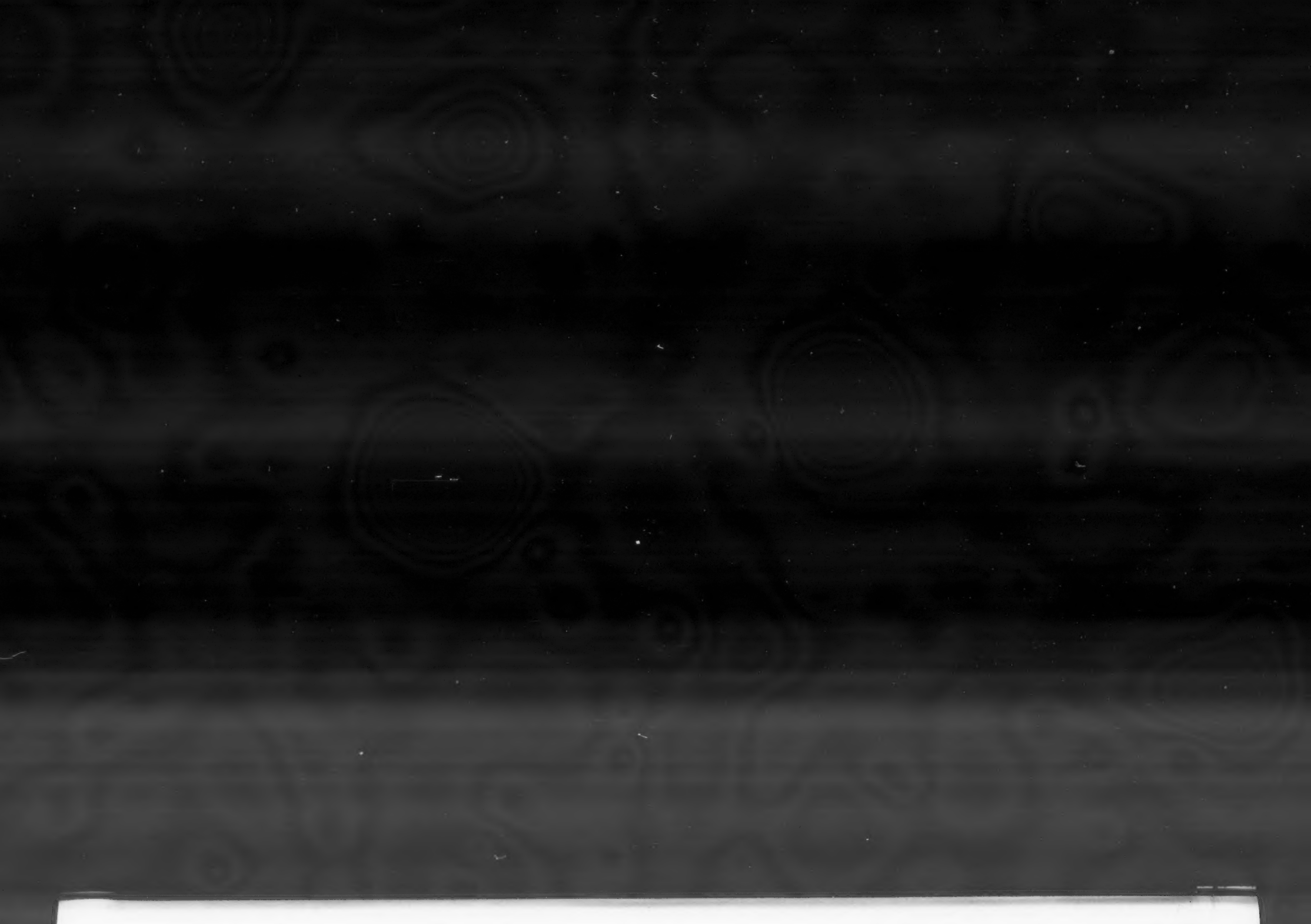

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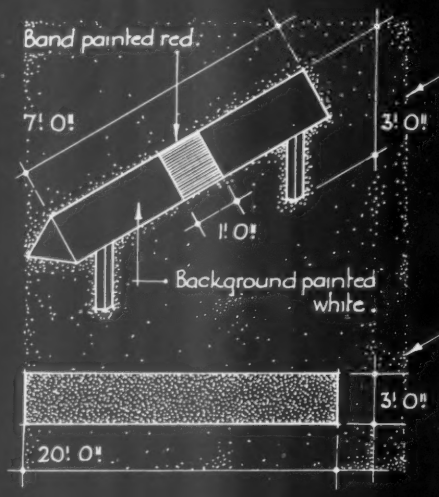
STANDARD METHOD OF AERODROME MARKINGS :

BOUNDARY MARKS :

To be placed not more than 300 ft. apart.

Ground marks are constructed in lump chalk, in the same manner as lettering, for details see future Information Sheet.



TYPE • A • Elevated marker.

This type is used when the boundaries are not clearly visible from the air, or when taxying on the ground. Constructed in wood.

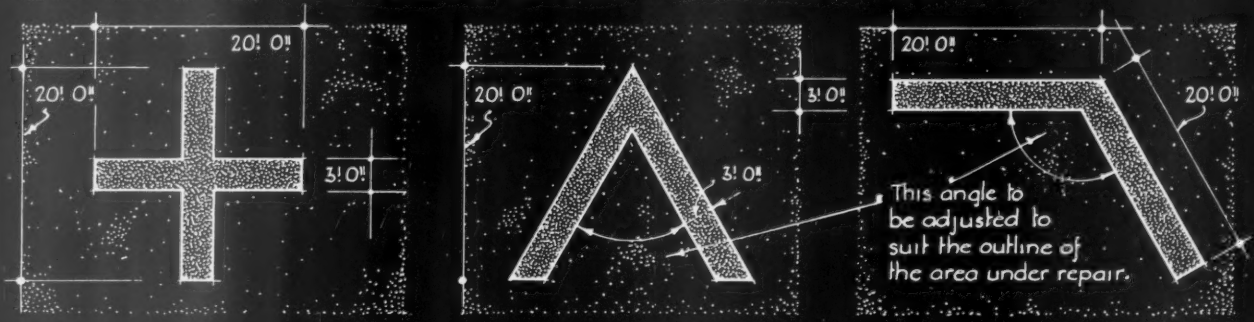
TYPE • B • Ground marker.

This type is used when the boundaries are clearly visible from the air. Formed as lettering.

LANDING CIRCLE :

Approximately in the centre of the field. The name lettering runs from east to west.

BAD GROUND, OR GROUND UNDER TEMPORARY REPAIR :



PLAN OF A FLYING FIELD SHOWING USE OF STANDARD MARKINGS :

(Construction of the markings to be as shown on future Information Sheet.)

D • Stone wall boundary running into an angle. B • type marker used flush with the ground.

B • Boundary in solid line indicates hedges or stone walls etc, clearly visible from the air.

E • Ground outside landing area.

C • No natural boundary here, A • type marker used with B • type marker inter-spaced.

This plan is not to scale & is purely a diagrammatic layout of an immaginary flying field.

H • Name of Aerodrome is about 100 ft. south of the circle. The lettering runs from east to west.

F • Corner temporarily in a bad state and dangerous, temporary markings used.

A • Boundary in broken line indicates a wire fence almost invisible from the air.

G • Bad subsidence here, Repairs in progress. Ground temporarily out of action, temporary marks used.

Information from Air Ministry Pamphlet No.55, August 1935. Licensing & Classification of Civil Aerodromes.

INFORMATION SHEET : AERODROMES • STANDARD MARKINGS •

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INFORMATION SHEET

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AERODROMES—2

Subject : Standard Markings

This is the second of a series of sheets dealing with the recommendations of various authorities and with the general planning of aerodromes.

The material given on this sheet has been extracted from The Air Ministry Pamphlet No. 55, August, 1935, "Licensing and Classification of Civil Aerodromes."

Other points from this publication are :—

(*a*) A circle of the dimensions given in the sketch should be located approximately in the centre of the landing area. Should the licensee desire to display the name of the aerodrome, it should be shown due south of the circle and 100 feet distant from it. The line of the lettering should run from West to East, so that the letters may be read by an observer looking northwards.

The circle and letters should be of chalk, concrete or other substance, which will show up well against the natural colouring of the aerodrome surface.

The markings must not protrude above ground level or offer any impediment to the free passage of aircraft over it. Further, it is to be firm and capable of taking the weight of any aircraft either in motion or stationary.

(*b*) Two types of marker are recommended for use on aerodromes: type A, which stands up to 3 feet above ground (see illustration), and type B, which is flush with ground level.

Type A can be made of wood or any other convenient material. It should be painted in such contrasting colours as local conditions may render most suitable. In most cases, however, white with a broad red band will be most conspicuous.

Type B is constructed in a similar manner to that explained for the circle and lettering.

When the boundaries of the landing area consist of hedges or fences clearly visible from an aircraft, either in the air or on the ground, corner markers may be dispensed with or, if desired, a type B marker may be used. When, however, a boundary cannot be clearly discerned by the pilot of an aircraft taxying on the ground, type A markers should be employed. It may be necessary to supplement this type of marker by a type B marker, in order to render it more visible from the air.

(*c*) When boundaries are of such a nature as cannot be easily seen from the air, e.g. wire fences, markers of type B should be placed along them at convenient intervals. If necessary, markers of type A may be placed at intervals along the boundary in order to render it more conspicuous to the pilots of machines landing or taxying on the ground.

(*d*) The marking of ground under repair or otherwise unsuitable for the safe passage of aircraft is an important obligation upon the licensee of an aerodrome. The system of marking recommended is illustrated.

(*e*) Any lettering or sign which may be mistaken for a recognised marking or signal or which in anywise confuse a pilot, may not be displayed within the landing area.

(*f*) Grass bordering on any type of marking should be kept well mown, as this renders the marking much more visible from the air.

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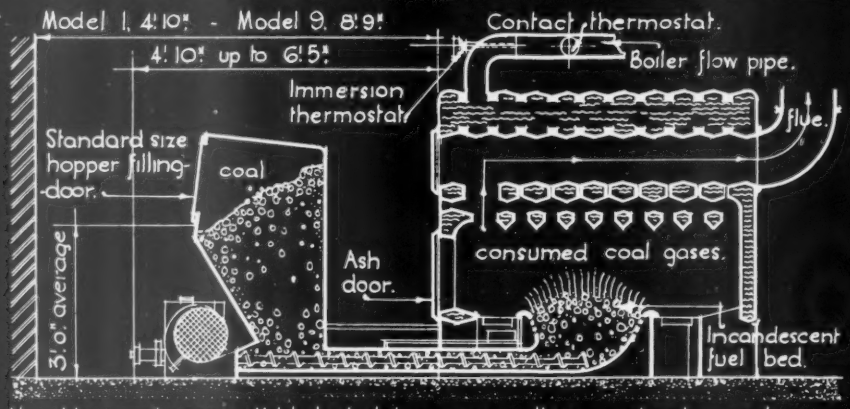
1. GENERAL ARRANGEMENT OF THE ROBOT AUTOMATIC UNDERFEED STOKER FITTED TO A SECTIONAL BOILER:



Variable speed gear box, forced draught fan, electric motor, etc.

Mild steel stoker worm conveyor, with separate air duct from fan.

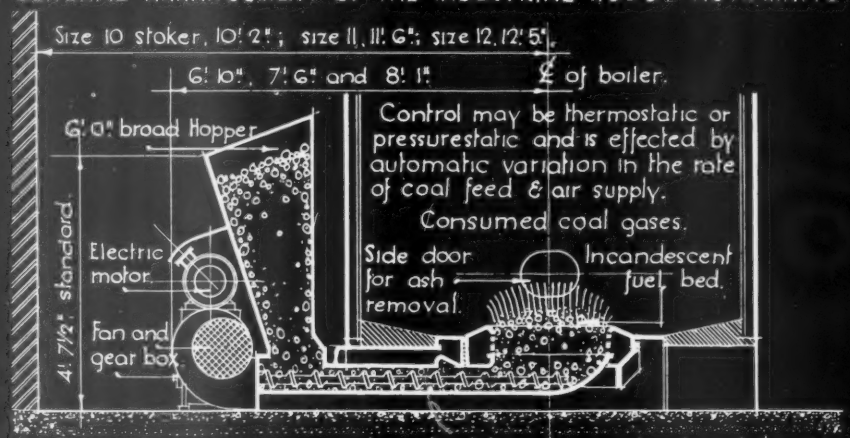
Main air chamber and cast iron firepot in segments in a grooved holder casting.

ROBOT STOKERS are designed for central heating, hot water or industrial boilers of sectional or vertical type and burn cheap bituminous or steam coal without smoke.

REFILLING & REMOVAL of CLINKER. Under normal conditions hopper should be refilled and clinker and ash removed twice in 24 hours.

RATINGS: Model 1 stoker has a capacity of 200,000 B.T.U.s per hour with a max. fuel consumption of 28 lbs. and other models are obtainable up to No. 9 which has a capacity of 2,700,000 B.T.U's with a fuel consumption of 340 lbs per hour. Hopper capacity in all cases is sufficient for 12 hr. run.

2. GENERAL ARRANGEMENT OF THE INDUSTRIAL ROBOT AUTOMATIC UNDERFEED STOKER:



Geared motor drive incorporates a shearing pin to prevent damage if foreign matter jams the worm.

Duct from fan supplies forced draught to main air chambers surrounding the cast iron segmental firepot.

INDUSTRIAL ROBOT STOKERS. are similar in design and principle to the smaller Robots shown above and are suitable for large hot water and steam boilers of vertical cross tube locomotive, water tube or sectional type.

ASH & CLINKER REMOVAL: The firepot is arranged with a surrounding grate of ordinary firebars and fine ash etc. is thereby easily removed through side ash doors

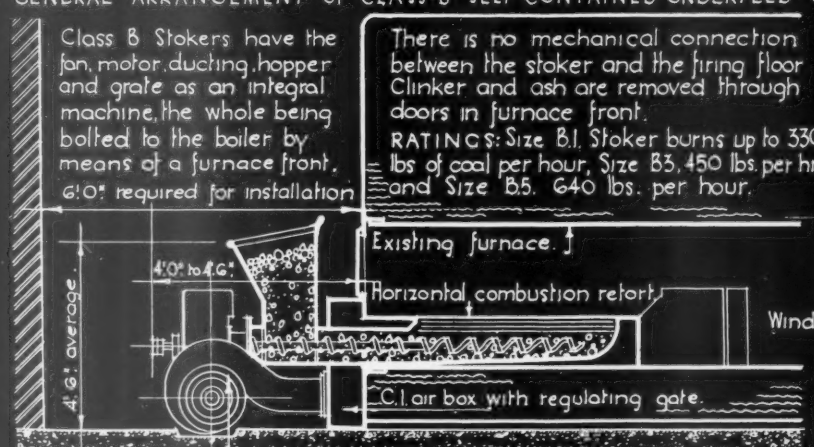
RATINGS: No 10, 3½ million B.T.U.'s. No. 11, 5 million, No. 12, 7½ million B.T.U.'s per hour with fuel consumption of 500 to 1,000 lbs. hourly.

3. GENERAL ARRANGEMENT OF CLASS·B· SELF CONTAINED UNDERFEED STOKER, FOR ALL FLUE TYPE BOILERS:

Class B Stokers have the fan, motor, ducting, hopper and grate as an integral machine, the whole being bolted to the boiler by means of a furnace front. 6'0" required for installation

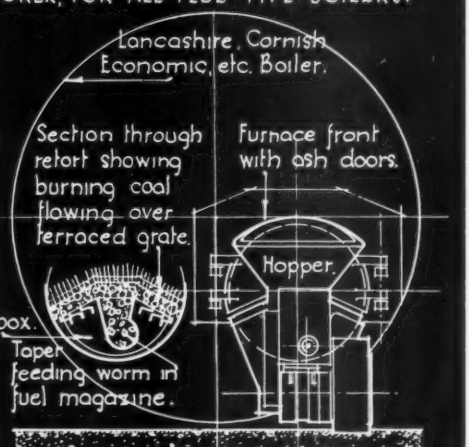
There is no mechanical connection between the stoker and the firing floor Clinker and ash are removed through doors in furnace front.

RATINGS: Size B.1. Stoker burns up to 330 lbs of coal per hour, Size B3, 450 lbs. per hr. and Size B5. 640 lbs. per hour.



Fan, electric motor, gear box and ducting.

The fuel and air supply may be automatically controlled by pressure stat or thermostat.



FRONT VIEW OF STOKER. and section through grate bars.

Information from the Riley Stoker Co. Ltd.

INFORMATION SHEET : TYPES OF UNDERFEED MECHANICAL STOKERS.

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

THE ARCHITECTS' JOURNAL
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INFORMATION SHEET

• 345 •

AUTOMATIC STOKING OF BOILERS

Subject : Types of Underfeed Mechanical Stokers

General :

On the front of this sheet are shown details and clearance dimensions of three types of Riley Automatic Underfeed Stokers.

Operation :

These automatic stokers are designed to burn a low-priced grade of bituminous or steam coal which contains a minimum percentage of fines and ash and is low-priced only because of its small size.

The fuel is forced to enter the fire from below by a stoker worm, which consists of a solid mild steel shaft with a mild steel flight welded on. This shaft is fed from the hopper, which is designed to give a positive feed without the aid of a mechanical agitator.

By the underfeed system the carbons are distilled below the hot incandescent zone, and are efficiently consumed when reaching the combustion chamber. By this method the fire is quite smokeless.

Controls :

Heat control can be effected by immersion thermostat inserted in a boss on the boiler flow pipe and/or a contact thermostat clipped to the boiler flow pipe. A room thermostat can be used in place of or in conjunction with an immersion thermostat. Operation by time switch can be embodied to place the stoker on a low feed at any predetermined time and to bring it back to normal at another given time.

For steam boilers pressure stats are provided in place of thermostats, and these can be supplemented with high and low-water cut-out switches or alarm bells.

Capacities :

Robot stokers are supplied in the sizes shown overleaf to fire effectively any sectional or vertical type boiler burning from a few pounds of fuel to 1,000 lbs. of fuel per hour.

Safety Device :

To avoid injury to mechanism in the event of accidental entrance into the hopper of hard foreign substances which might jam the worm, a safety clutch or a small shearing pin, which shears under a certain strain, is incorporated.

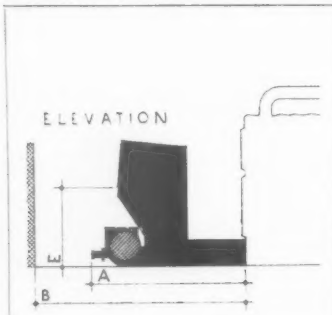
Attention :

No attention is required except to fill the hopper with fuel and remove the clinker and ashes from firepot at intervals of approximately twelve hours.

Robot Automatic Underfeed Stoker (1):

This is the smaller type of stoker, and is made in nine sizes. Fuel consumption is from about 28 lbs. to 340 lbs. hourly, giving from 200,000 to 2,700,000 B.T.U.'s per hour. It is suitable for central heating, hot water and industrial boilers of vertical and sectional type. A Baby Robot stoker is also available, burning up to 12 lbs. per hour.

Dimensions of Robot Automatic Underfeed Stoker (1) :

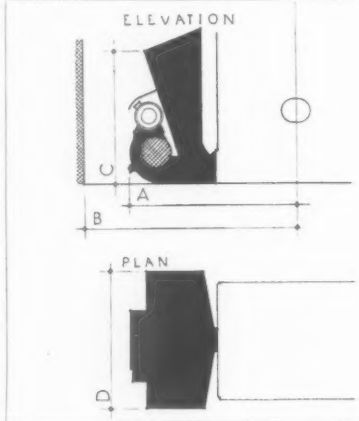


Size	A	B	C	D	E
1	4′ 10″	4′ 10″	2′ 4″	1′ 6″	3′ 1½″
2	5′ 0″	5′ 7″	2′ 4″	1′ 6″	2′ 6⅛″
3	5′ 4″	6′ 5½″	2′ 4″	1′ 6″	2′ 10″
4	5′ 8½″	6′ 7½″	2′ 4″	1′ 6″	2′ 10″
5	5′ 11″	7′ 6″	2′ 5″	1′ 7″	3′ 0″
6	5′ 11″	8′ 0″	2′ 5″	1′ 7″	3′ 0″
7	6′ 5″	8′ 6″	2′ 5″	1′ 9½″	3′ 1″
8	6′ 5″	8′ 6″	2′ 5″	1′ 9½″	3′ 1″
9	6′ 5″	8′ 9″	2′ 5″	1′ 9½″	3′ 1″

Industrial Robot Automatic Stoker (2) :

This stoker follows the same principle as the smaller Robot Automatic Stoker, and has been developed specially for the larger types of hot-water boilers and for industrial steam boilers having ratings up to 7½ million B.T.U.'s per hour. It is suitable for vertical cross tube boilers, locomotive type boilers, water tube boilers and sectional boilers. The tuyere or firepot is placed inside the furnace, and is arranged with a surrounding grate of ordinary firebars.

Dimensions of Industrial Robot Automatic Stoker (2) :



Size	A	B	C	D
10	6′ 10″	10′ 2″	4′ 7½″	6′ 0″
11	7′ 6″	11′ 6″	4′ 7½″	6′ 0″
12	8′ 1″	12′ 5″	4′ 7½″	6′ 0″

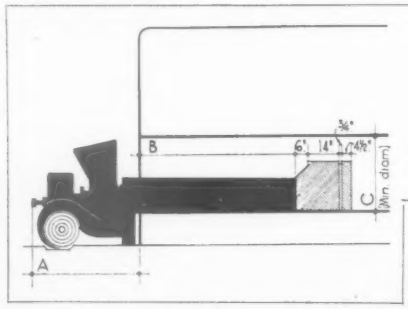
Class "B" Self-Contained Underfeed Stoker (3):

This is very similar to the Robot Stoker except that it is designed specially for flue-type boilers of the Economic, Lancashire or Cornish type.

It is a self-contained machine, the fan, motor and ducting all forming an integral part of the grate, thus eliminating any independent driving gear, shafting, or ducting.

The grate is formed of terraced grate bars. These overlap so that air, from the air chamber below the grate, is discharged horizontally into the fire. This arrangement also prevents ash falling into the air chamber.

Dimensions of Class "B" Self-contained Underfeed Stoker (3) :



Size	A	B	C
B1	4′ 0″	4′ 9½″	2′ 4″
B3	4′ 0″	6′ 3¼″	2′ 4″
B5	4′ 6½″	7′ 4⅛″	2′ 9″

Manufacturers : The Riley Stoker Co., Ltd.
Works Address : Derby
London Office : Palace Chambers, Bridge Street, Westminster, S.W.1.
Telephone : Whitehall 3085
Whitehall 4031