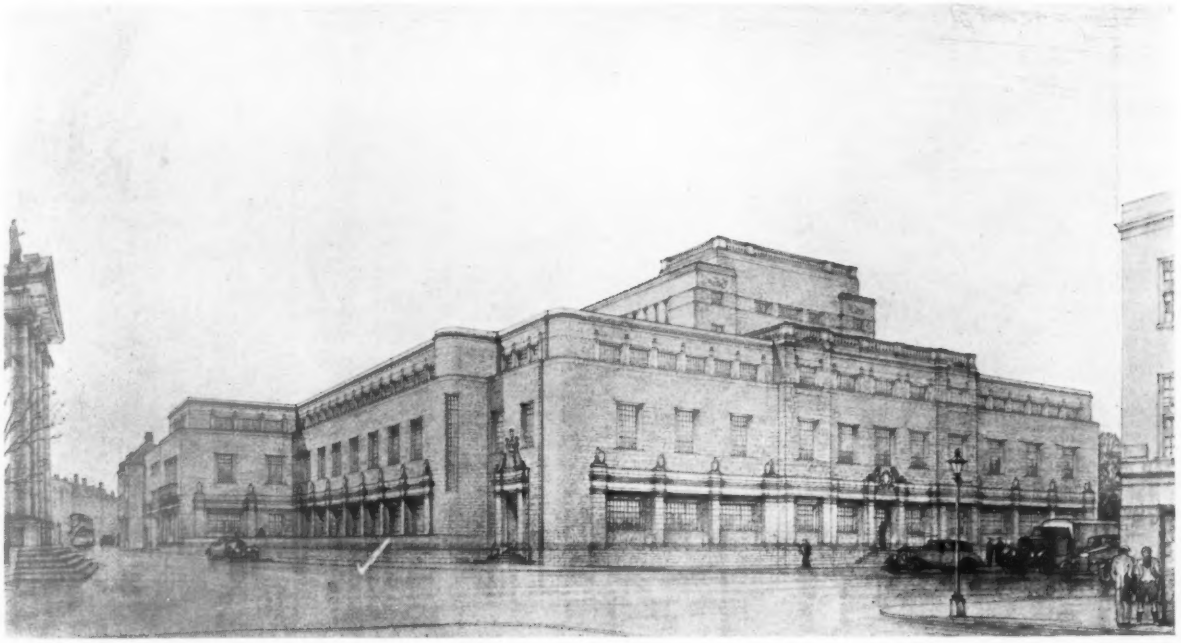
BODLEIAN LIBRARY, OXFORD

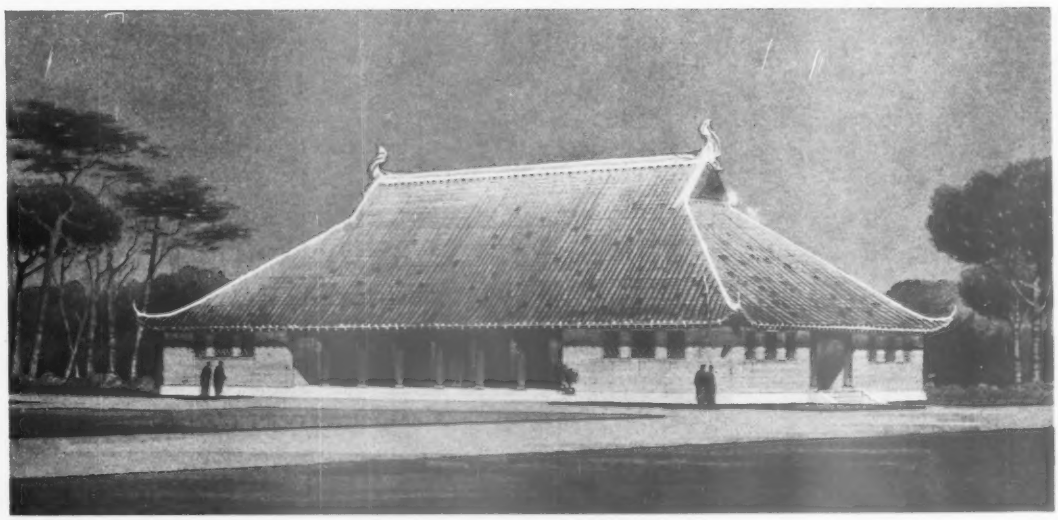
TO BE COMPLETED IN 1939



A PERSPECTIVE drawing of the new Broad Street building of the Bodleian Library at Oxford. The architect of the scheme is Sir Giles Gilbert Scott.

The new building will be the predominant feature of the library extension scheme, and its cost is estimated at £400,000. The perspective is the work of Mr. Jasper Salwey.

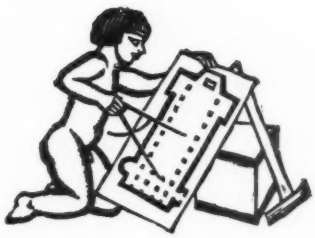
Arrangements are being made for the acceptance of tenders in the autumn, so that the clearing of the site may be begun in December. It is calculated that the building will take three years to erect and will be completed by the end of 1939.



ROYAL ACADEMY EXHIBITION

Top: New Guinness Brewery, Park Royal, N.W. By Sir Giles Gilbert Scott, R.A. Perspective by Jasper Salwey. (R.A. No. 1386.)

Bottom: Assembly Hall and Gymnasium, Women's College, Union University, Chengtu, West China. By Arnold Silcock. (R.A. No. 1380.)



BRITISH SCHOOLS

TWO recent leading articles in the JOURNAL have reviewed some of the complications of national education policy today and some of the difficulties which press upon the architects of the buildings in which that policy is carried on. And the picture resulting from this survey, necessarily a very brief one, is both crowded and confused.

On the side of policy, schools are being re-grouped, the question of the raising of the school-leaving age is still being debated, and belief in the necessity for a national system of nursery schools is spreading quickly. As regards school buildings, educational committees and their architects are struggling to achieve a masterly succession of compromises—compromises between new policies and old policies, between the indoor classroom and the centre for both sheltered and outdoor activities, between the compactness and impressiveness of a heavy permanent building and the low-lying and loose grouping of lightly-built units.

To resolve all these components of an intricate situation will take a long time, just as it will take time for the most determined education architect to convince an average committee that an informal grouping of low buildings can possibly be a better school than a solid two-floored oblong of neo-Georgian brickwork.

But unless a national expenditure on what, for education, is on a considerable scale is to have its potential benefits almost completely forfeited some form of synthesis must take place, and take place quickly, of old habits and new policies, between a mere listing of additional "accommodation" which would now be welcomed and the nature and kinds of accommodation which will be the best for the educational methods in use in five years' time.

The present specification of such a best compromise is one of the greatest necessities, if not by far the most essential work, which now needs doing in the world of education. And difficulties in the way of its successful achievement only enhance its urgency.

Within a very short time it is expected that the Board of Education will publish new regulations and recommendations for elementary school buildings. That these will contain much good advice, many details of good building practice, and will set a sensible minimum standard for such buildings, may be taken for granted. But to expect more of them, to expect the Board to emphasize the need for an entirely new attitude of mind towards the planning of school buildings, is an optimism which conflicts with this country's system of government.

In British education, as in other public responsibilities, the central authorities advise, local authorities and private individuals originate and execute. The Board of Education sets minimum standards as high as it feels local authorities will and can observe, it encourages progress wherever opportunity arises; but it does not dictate. And when an educational authority can show that its schools are no more uninspiring or badly planned than fifty other authorities' schools, it is difficult for the Board to do anything save leave it to local public spirit to decide whether those schools are to be any better.

Such is the general position today. With a dozen or so splendidly struggling exceptions in isolated schools, ideas of school design have stagnated in Britain for thirty years. Educational policy is now changing very rapidly—ideas of nursery schools, open-air garden schools, of indoor and outdoor mental and physical work being closely correlated, have now adherents in every school in Britain. There is now a chance for stagnation to cease. There is now a special need for an inspired specification of what accommodation is needed in a school building; a specification working outwards from the child to the building and not from a Georgian front down to the child. This is a big change.

It is a change which has already taken place abroad, but has been prevented in Britain by peculiar conditions, of which the greatest has been the plea of "No money." No money has restricted the Board's grants, has gradually depressed the more energetic members of education committees, and, with its still more depressing accompaniment of niggling over half-pennies, has reacted crushingly on education architects. Whenever these underpaid and underestimated men have advocated progress or any more reasoned development, have suggested that study should be made of schools abroad, a plea of no money, often a plea not so much justified as habitual, has effectually frustrated their efforts.

In the hope that it may make a small contribution towards a different attitude to schools and the enormous responsibilities of school architects, this JOURNAL will publish next week a special issue on Schools. In that issue well-known educational authorities will describe the various aspects of the new educational outlook, and State school buildings from most of the larger countries will be illustrated. It is intended that this special issue will do something towards showing those interested that Britain's expenditure on, and public attitude towards, school buildings should be reconsidered.

The Architects' Journal
Westminster, S.W.1
Telephones: Whitehall
9213-7
Telegrams
Buildable
Parl
London

NOTES & TOPICS

CAMBRIDGE AGAIN

EXACTLY a year ago Cambridge announced the formation of a strong investigating syndicate to report on the future of the University's School of Architecture.

*

Not a few architects who had at one time attended the school prophesied that it would be closed down, that the difficulties of running a five-year course for a degree in architecture were too great for the University machinery.

*

The investigators, after, we may hope, taking wide and authoritative advice, have now decided that the school has a useful future life and should therefore be continued. A director of the school is to be appointed.

*

To obtain only a pass degree after three years of architectural study, and exemption from the R.I.B.A. Inter. Examination alone, has always been the Cambridge man's unhappy lot. The new director has a tough task before him if the Cambridge School is to rise from the ashes of its past and take its place with the other recognized schools in the country.

*

Cambridge, with its unique architectural resources, ought to occupy a special position in architectural education. Besides providing a hard-working three-year course for its students, it should be a famous centre for the study of architectural history and architectural æsthetics.

*

The vices of its past have been amateurish dabbling—on all sides. The new Director should be whole time, energetic and should summarily eject any student who does not get a "second" in the annual examinations. *Then* results might be seen worthy of Cambridge.

LUMPS AND BITS

Portsmouth has just published the plan of the Lumps Fort site development which it instructed its officials to prepare from the several competitive schemes submitted last year—"incorporate the best features of each" was, so far as I remember, the actual phrase used.

*

The general traffic lines of the first premiated scheme have certainly been retained, but the character and quality of the plan seems to have suffered a sea-change. Instead of a scheme unified about a working centre, we have the usual seaside habit of a site in bits—a bit here for that game, a bit there for that pastime, a further bit for tea, another bit for shelters, and so on.

*

There seems to have been very little point in holding a competition at all, for anyone can string together little self-contained "developments"—we have precedent for it all round the coasts, from Southport to Skegness, from Blackpool to Brighton.

*

But there is more excuse for it in these other places, for they at any rate had not the advantage of having a really big site ready to develop as a unit.

COST OF BUILDING

If the facts are correct, and the state of affairs revealed in the discussion at the meeting of the Cambridge County Council a few days ago is general, it is really rather a serious matter.

*

The cost of building is said to have risen so much recently that even when the Council had to borrow money at 5 and 6 per cent. they got cheaper buildings than recent tenders indicate are possible to-day with money at about 3 per cent.

*

The only reason suggested for this serious increase in cost was the decision of the Government to increase armaments; in connection with which it was stated that 4d. and 5d. an hour in excess of the local rate of wages was being offered to contractors and builders on Government work at the present time.

*

I should be very interested to know whether local authorities or, for that matter, individual clients in other areas have experienced the same increase.

GOOD ADVICE

Sir Percy Hurd made some sensible remarks in his presidential address to the Rural District Council's Association at Bournemouth. 85 per cent. of building now going on, he said, was done without expert advice, and he went on to suggest that there was a real cash value in the good layout and design which experts could provide if only they were consulted soon enough.

*

He concluded by suggesting that if the dignity of the country were to be maintained amenity was becoming as much a necessity as sanitation. Obvious perhaps, but still not enough people take the trouble to say it.

Swindon's new municipal bandstand in the Town Gardens, which was opened recently. According to an architectural correspondent, the building is of a unique design "and the colours have to be seen to be appreciated." The design at least appears both sensible and interesting.

OXFORD LIBRARY

Oxford usually stands serenely aloof from matters of architecture, though it has a distinguished architect as its Slade Professor. But it is never backward in criticizing works of architecture when the amenities of the Broad or the High are in any way to be modified—and quite right too.

*

A vigorous public architectural criticism, even if it is occasionally ill-informed and unjust, is one of our greatest needs if architecture is ever to get its right place in public estimation.

*

Oxford criticisms of Sir Giles Gilbert Scott's new Bodleian extension play second fiddle to the excellently outspoken opinions of the *Evening Standard* last week, which said :—

> Whatever one may think of his detail, Sir Giles has shown that he can treat large wall spaces with a certain boldness, showing up the masonry to advantage. But the elevations of his Bodleian seem to me a tame compromise, a sort of apology all round to the various Oxford buildings. In fact, his design has the irritating diffidence of a don's preface to a publication.
>
> The worst external mannerisms are two rounded corners at the junction of Broad Street and Parks Road. . . .

*

No mention is made here of the astounding difficulties of Sir Giles's problem—of getting space for 5,000,000 books on a confined site where elevations must not exceed "about fifty feet" in height, or of placating anti-modernist dons. The rights or wrongs of the *Evening Standard's* attitude are trivial beside the splendour of a daily paper saying what it thinks, and, even more, of its rating its readers high enough to assume that they are bound to be interested in an architectural question.

*

After the complacent, repetitive "creditable to all concerned" paragraphs in *The Times*, the *Evening Standard's* paragraphs come as one of the most cheering architectural events of the year. Let's have a lot more of this sort of thing.

A SEARCH FOR IDEAS

Two M.P.s, the County Architect and seven others left Blackpool last week on an aerial tour of Europe to study architectural and other developments in Continental cities with a view to picking up ideas which might be useful in the future development of Blackpool.

*

As the expenses are being borne by the party themselves, this appears to be a very public-spirited and commendable effort, though it is rather surprising to find that in the list of towns to be visited there is not a single seaside one.

SOUTHEND

Hope is not yet dead that Southend will have one of the best yachting basins of any sailing centre. The Royal Corinthian Yacht Club's offer of £250,000 for the work having been unaccountably rejected by the Southend General Purposes Committee (but not by the Council), there is now to be a combined effort by lesser, but no less energetic, clubs to revive it.

*

I suspect that the real reason for the Committee's rejection of this fine scheme is its dislike that even a small part of the foreshore should be withdrawn from its control. But there are members on the Council with wider views than this—members with imagination—and therefore all is not yet lost.

PROFITS

A conversation between a doctor, a dentist, a solicitor and an architect recently revealed a disturbing discrepancy between the percentage of profits earned by various professional men.

*

The doctor admitted that he felt nervous if his profits did not reach 80 per cent. of his gross takings. The dentist said that 50 per cent. of the turnover of his fairly considerable practice was all he could reasonably expect. The solicitor had no idea what his nett earnings were, if any.

*

The architect, having recently checked his income tax form, made the disturbing statement that as his practice grew, so his percentage of nett profits was reduced, though his income increased.

*

There are all sorts of architects, of course, and I should imagine that the sort who gathers in the jobs, cares not a jot about architecture, even relies upon specialists to supply all details, can make a pretty high percentage of profit on turnover. But the man who is in every real sense of the word an architect probably cares very little about this percentage business—and probably therefore does not realize that beyond a certain saturation point of commissions his income will reduce itself.

*

The difficulty is to find accurately that saturation point. Does anybody else know? ASTRAGAL

Next week's issue of the JOURNAL *will be a Double Number devoted to Schools, in the special sense of State-aided Schools in this country and abroad.*

NEWS

POINTS FROM THIS ISSUE

KING GEORGE MEMORIAL

The General Committee of the King George National Memorial Fund last week accepted proposals to clear the Abingdon Street site and erect a statue thereon, as the London memorial to King George, and to appeal for funds to provide "King George's National Playing Fields" all over the country. The sub-committee appointed to make suggestions as to the design and the sculptor to be entrusted with the work, has not yet met. The members of the sub-committee are: Sir William Lewellyn, President of the Royal Academy; Mr. Percy E. Thomas, President of the R.I.B.A.; Mr. George Pirie, President of the Royal Scottish Academy; Mr. W. Ormsby-Gore, M.P., First Commissioner of Works; and Sir Goscombe John.

NO SEVERN BRIDGE

A Select Committee of the House of Commons last week rejected the plan for a new bridge across the Severn at English Stones. The bridge would have cost, with the approach roads, about £3,000,000, and would have shortened, by 50 miles, the distance between Bristol and Cardiff.

SOUTH WALES ARCHITECTURE MEDAL

The R.I.B.A. South Wales Architecture Medal for the three years ended December, 1935, has been awarded to Mr. Percy Thomas, P.R.I.B.A., of Ivor Jones and Percy Thomas, Cardiff, for the Swansea Guildhall, which was opened by the Duke of Kent in 1934.

MANCHESTER UNIVERSITY: HONORARY DEGREES

Yesterday, Lord Crawford and Balcarres, Chancellor of Manchester University, conferred the honorary degree of Doctor of Letters on Mr. Charles Holden, F.R.I.B.A., and the honorary degree of Doctor of Science on Mr. H. N. Gresley, C.B.E., M.INST.C.E.

THE ARCHITECTS' DIARY

Thursday, May 21

ROYAL ACADEMY EXHIBITION, *Burlington House, Piccadilly, W.1. Until August 3.*

Friday, May 22

TOWN PLANNING INSTITUTE. *At Caxton Hall, Caxton Street, S.W.1. "Norwich: Town and Country Planning." By W. J. Taylor. 6 p.m.*

ROYAL SANITARY INSTITUTE. *At Worcester. 2.30 p.m.—Visit to Besford Court Mental Deficiency Colony. At the Guildhall, 5.30 p.m.—"The Housing Act, 1935." By Dr. A. J. B. Griffin.*

Monday, May 25

LONDON SOCIETY. *Visit to works of Macleans, Ltd., Gt. West Road, Brentford. 2.45 p.m.*

Tuesday, May 26

INSTITUTE OF CIVIL ENGINEERS. *Gt. George Street, S.W.1. "Recent Developments in Metallurgy, and their Influence on Engineering." By Charles E. Schneider. 6 p.m.*

ARCHITECTURAL ASSOCIATION, 36 *Bedford Square, W.C.1. "Two Heresies: Abstract Painting and Pictorial Architecture." By Charles Marriott. 8 p.m.*

HACKNEY MARSH

The case against the L.C.C. scheme for building working-class flats on part of Hackney Marsh is the subject of a letter which has been sent to all Government supporters in Parliament by the Borough of Hackney Ex-Mayors' and Deputy Mayors' Open Spaces Preservation Council.

The letter states that slum clearance can be accomplished and overcrowding relieved without building on Hackney Marsh. It is claimed that sites now covered by old and dilapidated houses, factories and warehouses could be acquired for working-class flats. Such sites have been offered to the L.C.C. and refused. "Our long experience on the Housing Committee of the Hackney Borough Council, and in connection with a housing trust, enables us to state that you can, without overcrowding, re-house from two to three times as many people on a cleared slum site as were housed there before the clearance. You pull down a dwelling of one or two storeys, and erect in its place a building of four or five storeys. But the L.C.C. would have to buy such sites as have been indicated, whereas they hope to get the Hackney Marsh site free. We suspect that this is one of the prime considerations in its proposal."

HOUSING

Sir Kingsley Wood, the Minister of Health, speaking last week at the annual conference of the Rural District Councils' Association at Bournemouth, said that details of the overcrowding survey had already been received from 99 district councils, which covered over 300,000 houses of which 3.3 per cent. were found to be overcrowded. Rural district councils would have no difficulty in dealing with the problem within a limited time.

He urged the importance in all their new housing work of doing nothing to despoil the beauty of the English countryside and the desirability of employing expert advisers wherever possible in their housing work. The houses to be erected under slum clearance would in many districts have an appreciable effect on the architectural character of the district. When new cottages were to be erected in an existing village of a well-defined architectural character or in rural surroundings, it was particularly important that every endeavour should be made to ensure that they harmonised with their surroundings, and he was advised that this could usually be done without increasing the cost of the cottages.

COMMONWEALTH FELLOWSHIPS FOR ARCHITECTS

Two Commonwealth Fund Fellowships have this year been awarded for architectural research, both being gained by graduates of the Liverpool School of Architecture—Mr. Gordon Stephenson, B.Arch., A.R.I.B.A., and Mr. H. S. Robson, B.Arch., A.R.I.B.A. The Commonwealth Fellowships were founded in 1925 by the directors of the Commonwealth Fund of New York.

Mr. Stephenson, who holds the position of lecturer and studio instructor in the Liverpool School of Architecture, will be attached to Columbia University and to the Massachusetts Institute of Technology.

Mr. H. S. Robson will be working chiefly at Columbia University. Since leaving the school he has been working first in the office of Professor R. M. Butler, of Dublin, and later as senior assistant to Mr. J. V. Downes, also of Dublin.

D.I.A.

A discussion entitled "The Design and Making of Pottery" is to be held at the Building Centre, London, on Thursday next at 8.15 p.m., under the auspices of the Design and Industries Association and the Society of Industrial Artists. The speakers will include Messrs. Josiah Wedgwood, Gordon M. Forsyth, T. A. Fennemore and J. F. Price, and the chair will be taken by Mr. E. Maxwell Fry.

GUILDFORD CATHEDRAL

The contract is to be entered into shortly for the first part of the structure of Guildford Cathedral, comprising the choir, central crossing, central transept and the foundations of the whole building. The cost will be £94,000.

UNIVERSITY SCHOLARSHIPS

The Manchester Education Committee offers a limited number of scholarships and exhibitions tenable in any one of the three years' Full-time Day Courses leading to the degree of Bachelor of Technical Science (B.Sc.Tech.) at the Municipal College of Technology (Faculty of Technology in the University of Manchester).

Candidates for scholarships must have passed, or hold exemption from, the Matriculation Examination of the Joint Matriculation Board of the Northern Universities and must also be qualified to enter upon a Higher Course. The scholarship will be open to part-time day or evening students in the College and others whose parents are ratepayers of the City. In the event of there not being sufficient Manchester students qualified to enter upon a Higher Course, and only in that case, the Committee may offer the scholarships to

suitably qualified students who have no ratepayer qualification.

Candidates for exhibitions must have passed, or hold exemption from, the Matriculation Examination of the Joint Matriculation Board of the Northern Universities and be qualified to enter upon an Ordinary Course. Candidates for these exhibitions must be ratepayers, or children or wards of ratepayers of the City of Manchester.

Forms of application and all information may be obtained by written application to the Registrar, College of Technology, Manchester, 1. Completed forms of application must be received on or before June 20, 1936.

COMPETITION NEWS

LAY-OUT OF AN ESTATE

A special Committee of the Aberdeen Town Council has had a preliminary meeting, and has adjourned in order to get further information prior to inviting competitive plans from British architects as to the best lay-out of the 632 acres of the Corporation's estate of Kincorth, on the south side of the River Dee. The plans are to include arrangements for the building of dwelling-houses, halls, schools, churches, cinemas, and other concomitants of an up-to-date township on a communal basis for a population of at least 5,000 to 6,000.

NEW PARLIAMENT BUILDING, SOUTHERN RHODESIA

Extracts from the report of the assessor (Mr. J. R. Adamson, F.R.I.B.A.), in the competition for new Parliament Buildings at Salisbury, Southern Rhodesia, are printed below. The winning design, by Mr. E. Berry Webber, was reproduced on pages 724–725 of last week's issue.

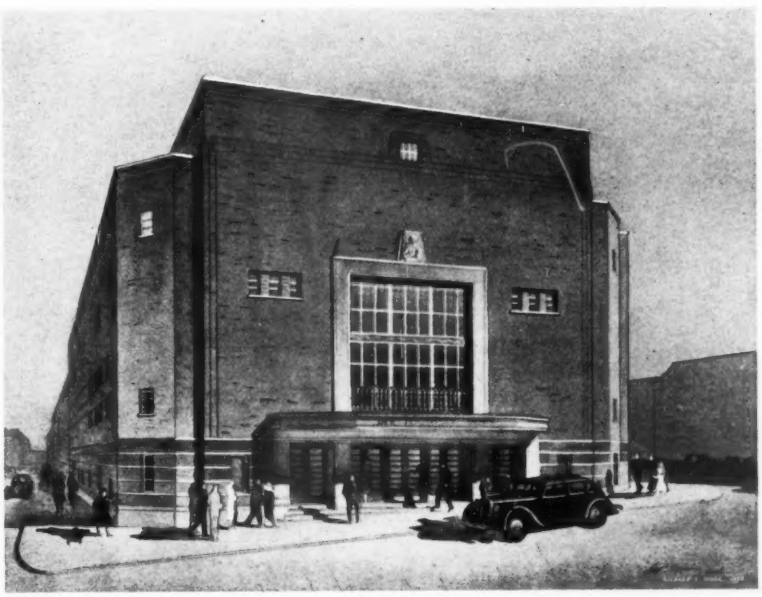
"Fifty-five designs were submitted in the Competition for the Proposed Parliament House at Salisbury. The designs received represent much thought, and many interesting and varied solutions of the problem are presented. The schemes in many instances are very well illustrated, the draughtsmanship being of a high order.

"None of the schemes submitted would be entirely satisfactory without some modification, but I am of opinion that the design placed first is outstanding and that it will most suitably meet your requirements. It has a symmetrical, simple, well-balanced and open plan, the House of Assembly and Senate Chamber being conveniently placed in relation to the remainder of the building and to each other on the Imperial Parliament Model. The main entrance, the public spaces, grand staircase, concourse and members' foyer are dignified in scale and treatment, and the whole plan is marked by a flexibility of arrangements which will permit of such variations in the relation of rooms to each other as may be required to meet your wishes. The elevations and sections have been carefully considered and provide a dignified expression of the pian suited to the character and purpose of the buildings and to their surroundings.

"The scheme as set out in the conditions of competition represented, as will be remembered, the full requirements of a two-chambered Parliament House, part of which may be omitted for the present. The scheme also includes a provision of office

R. A. EXHIBITION

The People's Palace, Mile End Road, London, E. By Campbell Jones, Sons and Smithers. Perspective by Cyril A. Farey (No. 1435).



The "Ritz" Cinema, George Street, Oxford. By Robert Cromie. Perspective by Gilbert L. Monk (No. 1415).

Lock-up Garages at Musselburgh, Scotland. By Philip D. Hepworth. Perspective by the architect (No. 1366).

Municipal Buildings, Oxford. By C. Cowles-Voysey. Perspective by Cyril A. Farey (R. A. Ex. No. 1373).

accommodation which need not be fully finished internally."

"The estimate of cost of the winning design—£255,375—is based upon a price throughout of 2s. per foot; it also includes the cost of the Senate Chamber and of the full finish of the office accommodation on the second floor. In addition to the deductions to be made from it for the omission in the first instance of the Senate Chamber and for the value of the finish of the second floor offices, having in mind the simple finish required in most parts of the building and of the fact that it provides a sum of £43,000 for heating and lighting, I consider this estimated cost could be substantially reduced without prejudice to the Cabinet's requirements or to the character of the buildings. It should also be noted that there is space on the ground floor in which the garage might be accommodated, thus further reducing the estimated cost."

EXHIBITION STAND

A competition for an Exhibition Stand at the Building Trades' Exhibition to be held at Olympia in September next, has been arranged by Ascot Gas Water Heaters, Ltd. Premiums of £100, £25 and £5 are offered, and the assessors are Messrs. Keith D. P. Murray, A.R.I.B.A., G. Grey Wornum, F.R.I.B.A., and F. R. Yerbury. The latest date for submission of designs is July 6, 1936. Full particulars are obtainable from Ascot Gas Water Heaters, Ltd., 244 High Holborn, London, W.C.1.

LAY-OUT OF PIER GARDENS, CLEETHORPES

We are informed by the Competitions Committee of the R.I.B.A., that the conditions of the competition for the scheme for improving the lay-out of the Pier Gardens, etc., Cleethorpes, are not in accordance with the regulations of the Town Planning Institute, which also govern all members of the R.I.B.A. and its Allied Societies.

The Town Planning Institute is in negotiation with the promoters in the hope of securing an amendment. In the meantime, members should not take part in the competition.

R.I.B.A.

ELECTION OF MEMBERS

At a recent meeting of the Council of the R.I.B.A., the following members were elected :—

As Hon. Associate (1) : Mr. W. C. Eaton (London).

As Hon. Corresponding Members (4) : Messrs. K. S. Alabian (Moscow); A. S. Nikolsky (Leningrad); G. Simonov (Leningrad), and N. A. Trotzky (Leningrad).

As Fellows (4) : Messrs. H. O. Corfiato (London); J. L. Redfern (Gillingham, Kent); C. S. White (London), and P. W. Adams (London).

As Associates (13) : Messrs. M. L. Bryer (Oxford); C. N. Byrom (Preston); C. D. Davison (London); J. Forbes (Edinburgh); H. I. Gordon (Leeds); G. E. Goulding (Liverpool); L. M. Griffiths (Ilford, Essex); P. E. Head (Ruislip, Middlesex); C. L. Matthew (Fraserburgh, Aberdeenshire); (Miss) F. J. Mercer (Banchory, Kincardineshire); J. L. Milburn (Cardiff); C. R. Penny (Wakefield), and C. G. Percy (Dudley).

As Licentiates (6) : Messrs. A. G. Black (Isleworth, Middlesex); J. E. Gregory (London); H. Jackman (Leeds); A. V. Kirkham (Hampstead); S. S. Walton (Huddersfield), and F. G. Wischhusen (London).

COMPETITION RESULT

Mr. E. Vincent Harris, F.R.I.B.A., the assessor of the competition for civic buildings on the "Woodlands" site, Southport, has made his award as follows :

Design placed first (£300) : Messrs. Cooke, Thomas and Dickinson, of Sun Building, Bennett's Hill, Birmingham, 2.

Design placed second (£200) : Messrs. Barnish, Silcock and Thearle, of 58 Rodney Street, Liverpool, 1.

Design placed third (£100) : Messrs. E. H. Cornes and G. A. Coutts, of 21 Cambridge Road, Southport.

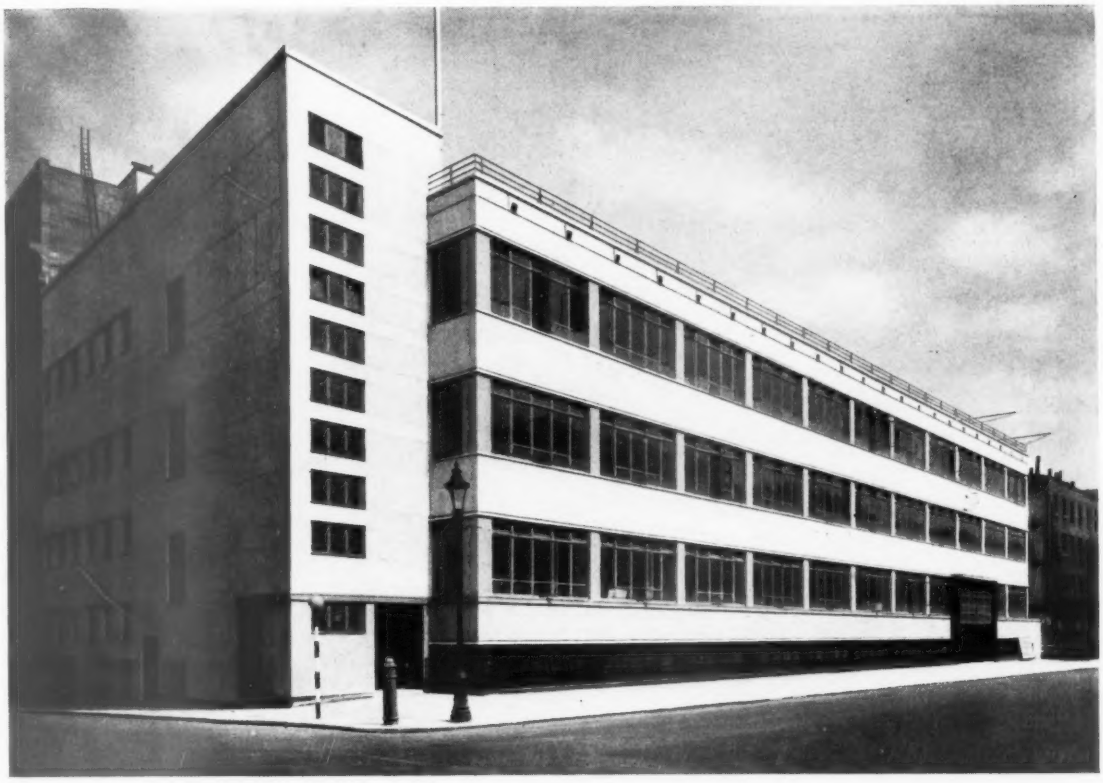
HOUSING: SCOTLAND

The outstanding feature connected with the progress in the erection of houses by local authorities in Scotland during March was the rise from 1,091 to 2,337 in the number of houses contracted for. The number of houses under construction at the end of the month shows an increase from 16,705 at the end of February to 17,044. The number of houses completed by local authorities during March was 1,186, as compared with 1,218 in February. This brings the total number of houses built by local authorities since 1919 to 162,942.

The quarterly returns of houses reconditioned under the Housing (Rural Workers) Acts show that these Acts are losing none of their popularity with Scottish local authorities. At March 31 last, 20,897 houses in all had been reconditioned, of which 3,135 were completed during the previous twelve months. The houses so improved are for agricultural workers or persons whose economic condition is substantially the same as that of such workers.

A meeting of the Scottish Housing Advisory Committee was held recently at the Department of Health, Edinburgh, under the chairmanship of Mr. Alexander. The Committee considered a remit from Sir Godfrey Collins, the Secretary of State for Scotland, in the following terms : "To consider and advise on the general question of the management of dwelling-houses provided by local authorities, with special reference to the employment of trained managers." The Committee agreed to refer the remit in the first instance to the Urban Sub-committee, which proposes to begin its consideration of the remit at a meeting to be held on June 12.

OFFICE BUILDING, STAMFORD STREET, S.E.

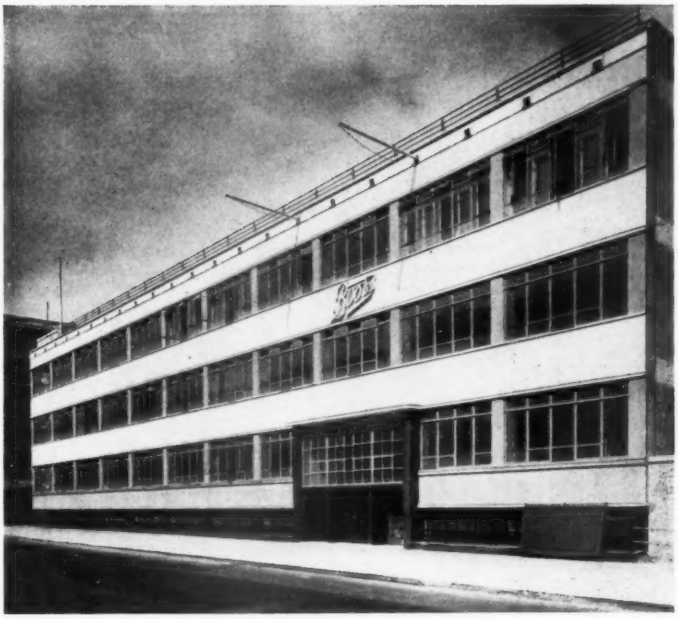


GENERAL PROBLEM. — *Office building for Messrs. Boots Pure Drug Co. The accommodation includes board room, offices for directors, general offices, canteen and recreation rooms for the staff and a conference room, which can be used for cinema lectures for staff instructional purposes, with a film projection room at one end. The new building adjoins the London warehouse of the company.*

SITE.—*In Stamford Street, S.E.1, on the Duchy of Cornwall estate. To comply with a street-widening scheme for Stamford Street, the main façade is set back 1 ft. 6 ins. from the old general building line. To improve the angle of vision for traffic at the corner of Cornwall Road, the end bay containing the staff staircase is set back, instead of being splayed or rounded.*

CONSTRUCTION.—*The building is steel framed, with reinforced concrete hollow tile floors. The walls to the streets are faced with 2-in. polished artificial stone slabs cramped to brickwork with copper cramps. The back walls are faced with sand lime bricks. Office subdivision on two floors is by glazed steel partitions. Other partitions are of hollow blocks plastered.*

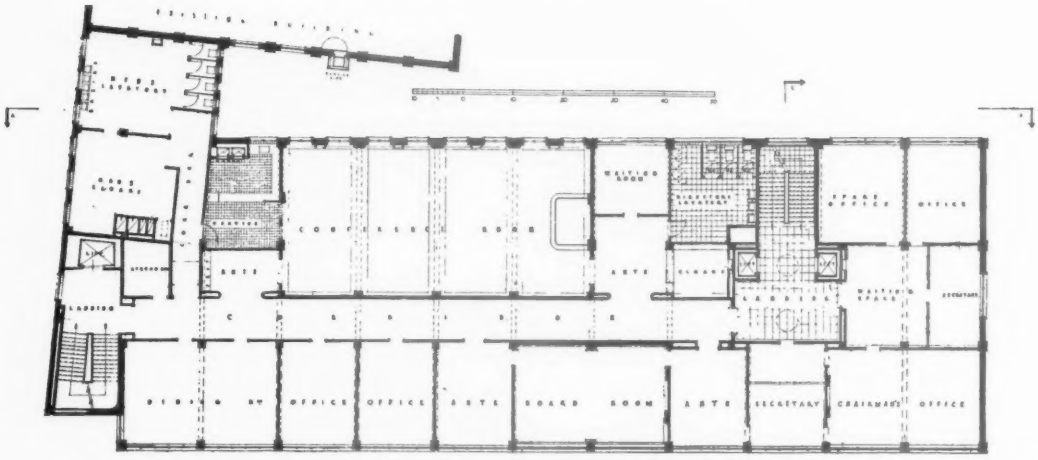
The photographs show: above, a view of the main front taken from the west end of the building; right, a view from the east end.



DESIGNED BY

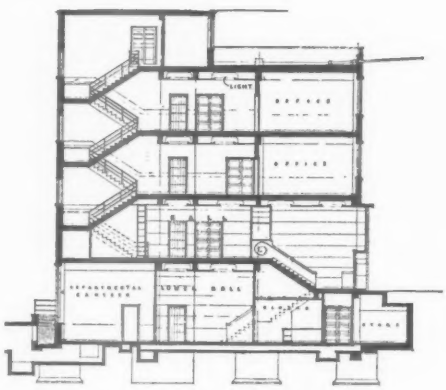
MESSRS. HENRY TANNER

OFFICE BUILDING, STAMFORD STREET, S.E.:

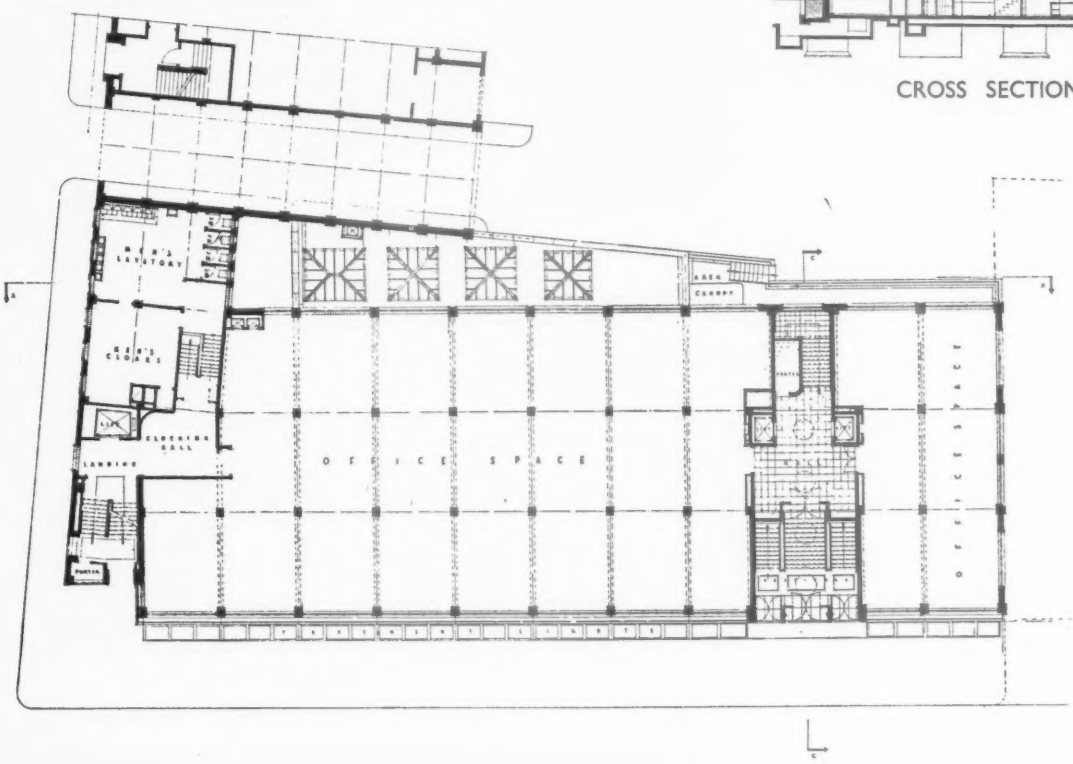


SECOND FLOOR PLAN

PLAN. — *There is no special planning apart from the central staircase and the main entrance. This is planned in the centre of the Stamford Street frontage between Cornwall Road and Coin Street, as the present building is only a portion of the whole scheme, which will extend eventually up to the corner of the latter street. The staff lavatories and cloak rooms are at the Cornwall Road end of the building, and are connected by the staff staircase. Maximum light is obtained by the use of continuous windows. The heights of all floors are greater than those in general use, and an air-conditioning plant keeps the air fresh in all rooms when windows must be closed. The chairman's office, board room and conference room are specially soundproofed, and have double windows and acoustically treated ceilings. Teas can be served on all floors, and two service lifts connect with the kitchen in the basement. Meals are served to the directors from the servery on the second floor.*



CROSS SECTION



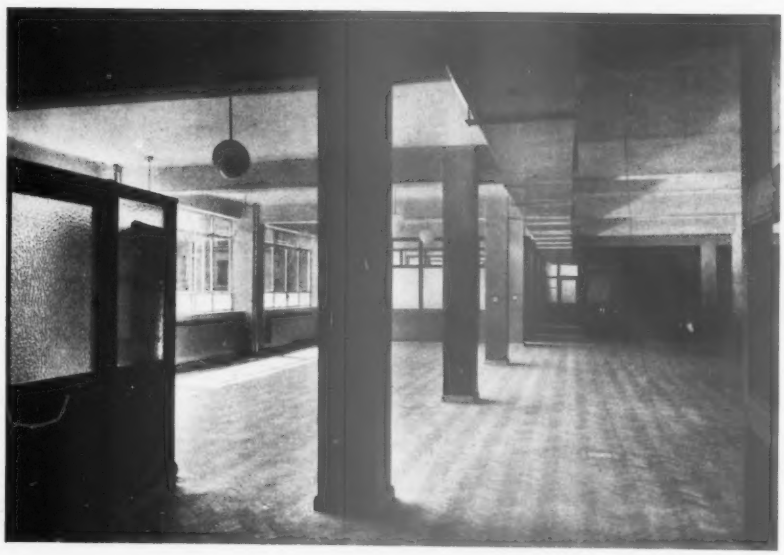
GROUND FLOOR PLAN

DESIGNED BY MESSRS. HENRY TANNER

A detail of the principal entrance on the main front.

LONGITUDINAL SECTION

OFFICE BUILDING, STAMFORD STREET, S.E.



INTERNAL FINISHES — *The walls and piers in the canteen are finished in stipple paint, brown at the base and fading to cream at the ceiling; those in the general offices are coloured green, dark to skirting and dado height, fading to cream tinted with green at the ceiling. The steel partitions up to glass level are painted green in semi-gloss finish.*

The board room and ante room are panelled in figured teak, and the spare offices and dining room in walnut. The conference room is panelled in English brown oak, the chairman's office in black bean, and the second floor corridor in Indian silver grey wood.

In the kitchen the walls are tiled in 12 in. by 8 in. oatmeal-coloured tiles, the floor being finished in buff-coloured 6 in. by 6 in. tiles with coved skirtings. All exposed fittings and counter tops are stainless steel. In the lavatories for the staff the walls are tiled in 12 in. by 8 in. oatmeal-coloured tiles; w.c. divisions and showers are travertine of the same colour.

The walls of the entrance hall, the landing floors, stair treads and dado are in terrazzo, laid in rectangles, with expansion joints in anodized aluminium. Staircase handrails are of plastic composition, jade green on the main staircase and post office red on the staff staircase. The glazed screens in the entrance hall are anodized aluminium.

SERVICES — *There are two passenger lifts, one goods-passenger lift and three food lifts. All have metal cars, and the gates are concertina type, finished with chromium-plated cover strips over the joints. The heating is an extension of the present system, the services being carried in a tunnel from the warehouse under the goods yard. Flush panel radiators are used generally. Air conditioning is provided to all floors by plant on the roof of the warehouse. There are communicating telephones and electric clocks on all floors.*

The canteen occupies the major portion of the basement. It is lighted by windows at street level and by pavement lights over the alcoves under the pavement. Seating accommodation is for 550 persons, and meals are served at a long counter, having sliding hatches in anodized aluminium, opening to the kitchen. The kitchen has opening top-lights, artificial ventilation, and extract ducts and canopies to carry off all the fumes from the cooking appliances.

The photographs show: above, looking from the hall towards the main entrance from Stamford Street; left, a typical general office.

DESIGNED BY MESSRS. HENRY TANNER

The photographs show : top, left, the staircase leading from the entrance vestibule up to the hall ; right, the hall, showing a lift with concertina-type gate, the porter's box, and the main staircase to the upper floors ; bottom, left, a detail of the service counter and sliding hatches in the canteen ; right, the canteen.

For list of general and sub-contractors, see page 785.

LETTERS FROM READERS

R.A. Exhibition

SIR, — While agreeing with Mr. Myerscough-Walker to a certain extent, I do feel that he is being unreasonable and not a little absurd.

Unreasonable because he slangs the Academy for housing tradition. Has anybody, except newspaper men, ever entered Burlington House honestly hoping to see anything "modern"? I, for one, would be horrified, not because I dislike the "modern" but because I have great respect for traditional work. Art as a whole would suffer a great loss if the Academy went "modern."

Absurd, because he suggests an exhibition of Academy "rejects." If an exhibition is to be held let it represent the modern feeling in both Art and Architecture.

Finally, may I refer Mr. Myerscough-Walker to the letters on the recent Harpenden Competition, a little matter of competitors' criticisms of winning designs?

P. RUSSELL-WALKER

"You Pay the Rent—Who Gets the Profits?"

SIR,—Your correspondent, "Estate Manager," in your issue for May 7th seems to have missed the point of the screen, "You Pay the Rent—Who Gets the Profits?" which was reproduced in your previous issue.

The screen was an attempt to show very simply to the ordinary workingman what in the main are the four chief items which his weekly rent for a Corporation house at Liverpool or at Downham goes to pay. We did not intend to imply that the figures on the left-hand side should be read as the total expenditure and the figures on the right-hand side as the total profit on the house, as your correspondent seems to have read it. What we intended to show in simple form was this :—

The gross annual cost of the Downham Estate to the L.C.C. is approximately as follows :—

1. Maintenance and repairs (including common heating, lighting, etc., collection of rents, supervision, clipping of hedges, insurance, empties, etc.)	£46,000
2. Repayment of capital raised to cover cost of land, roads, building, etc.	£30,000
3. Interest on capital (for 60 years—average) ..	£174,000
Total	£250,000

This is met by the following income :—

1. Rents	£182,000
2. Government subsidy ..	£ 54,000
3. L.C.C. rates	£ 14,000
Total	£250,000

These figures are extracted from the published Annual Financial Abstracts of the L.C.C. accounts.

Now, on the Downham Estate a four-roomed cottage lets at about 15s. a week rent, some slightly more, some less. But this is, of course, after the deduction of the subsidy and the rates contribution. Dividing up the weekly rent of such a cottage, on the basis of the above figures, adding in the local rates, one obtains the following statement :—

	s.	d.
Local rates	3	3
Maintenance and repairs (as above)	2	11
Capital repayment	1	11
Interest charges	11	4
Total	19	5
the inclusive economic rent.		
Less Government subsidy ..	3	6
„ L.C.C. rates grant ..	0	11
Weekly rent charged	15	0

In the screen illustrated in your JOURNAL we have shown, keeping the local rates as a separate item of 3s. 3d., only the remainder of the 15s. that the tenant has to pay divided up roughly into the proportions of the total rent which go to meet maintenance and repairs, capital repayment, and interest charges respectively. The figures thus are :—

	s.	d.
Local rates	3	3
Maintenance, repairs, etc. ..	2	0
Capital repayment	1	6
Interest charges	8	3
Weekly rent paid	15	0

Of course, we could not set out all this on the screen, but the main idea of the basis for the figures was given in the programme-pamphlet on sale at the Exhibition, but this I suppose your correspondent did not read, as he seems to have seen the screen only in the illustration in your JOURNAL.

We are far from thinking, as your correspondent seems to think we do, that the ratepayer makes any profit out of the house. He contributes, of course, with the taxpayer jointly towards part of the cost of a Council house. We do not even suggest that he should contribute more. On the contrary, if, as we suggest, housing were made a national service by a Government determined to put the interest of tenants before the interests of landowners and of the money market, the cost would fall, not on the small ratepayers, who have already been sacrificed by the Derating Acts to the big industrialists, but on those who can afford it, on large landlords, and on all recipients of unearned incomes.

Yours faithfully,

P. RUSSELL-WALKER

A. W. BARR (*Honorary Secretary, Housing Group, Architects' and Technicians' Organization*)

A. BERNARD S. FRYER, L.R.I.B.A.

Appointments Vacant

SIR,—On reviewing the recent advertisements for architectural assistants under municipal authorities, one notices how prevalent is the statement that applicants *must* be Associates of the Royal Institute of British Architects.

Do I take it that only Associates of the R.I.B.A. can be considered competent and capable of carrying out the duties of an architect?

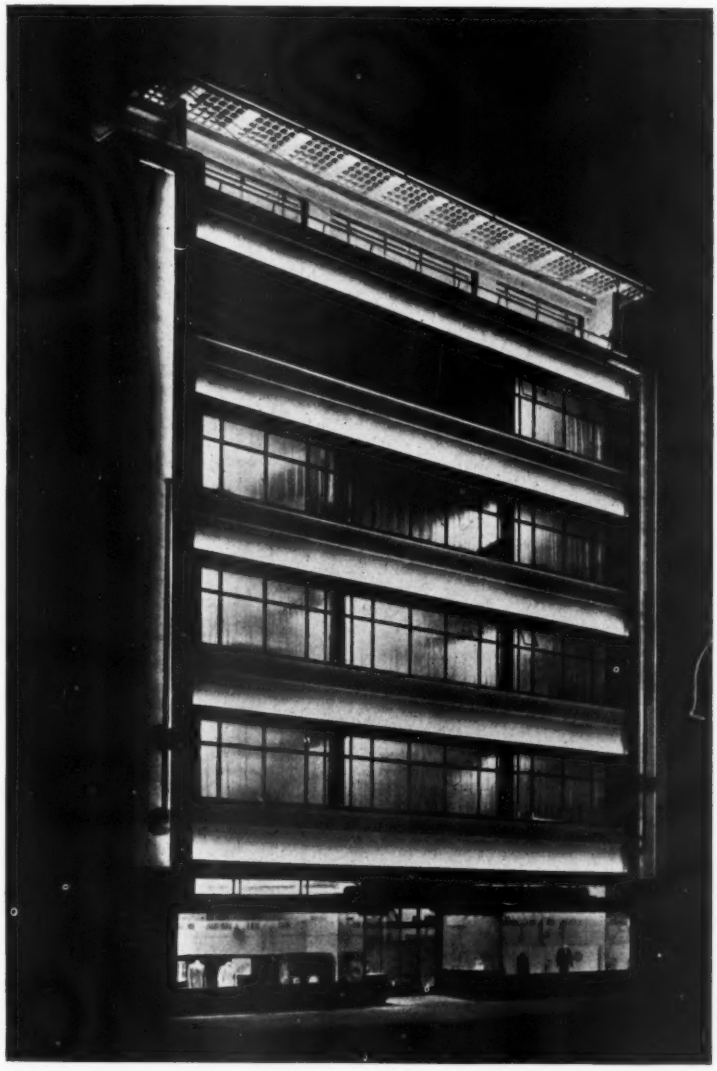
It is to be appreciated that an academical career such as that necessary for the approval of the R.I.B.A. and recognition as an Associate is undoubtedly an asset, but is it not a fact that such offices as have been announced vacant call for years of practical experience, which in the present era are definitely not guaranteed by Associates of the Royal Institute?

A 'Varsity man at the completion of his course or on attaining the age of 21 is awarded his Associateship and is in a position to apply for these positions; on the other hand, a Licentiate or Fellow of the Royal Institute with 15 years' experience in a municipal office is barred from applying for same.

A. BERNARD S. FRYER

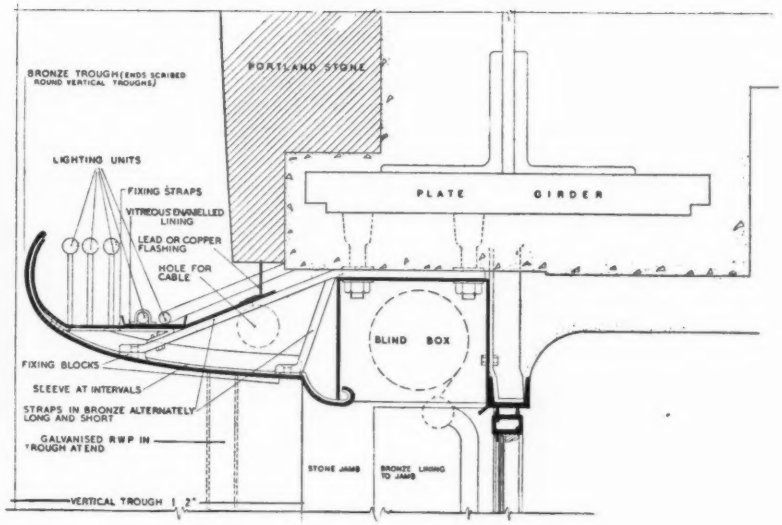
MEN'S OUTFITTERS, No. 26 PICCADILLY, W.1.

DESIGNED BY JOSEPH EMBERTON

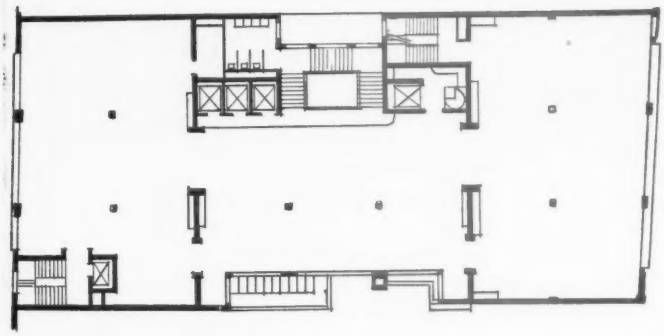


SITE.—*The site which is long and narrow, and measures approximately 70 ft. by 156 ft., lies between Piccadilly and Jermyn Street. It was previously occupied by John Pennethorne's Geological Museum.*

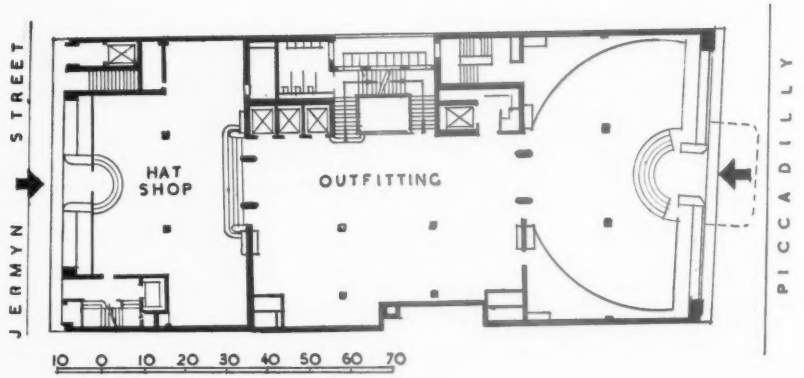
The photographs show the Piccadilly front. The building is finished in Portland stone applied frankly as a facing material only, and floodlighting has been incorporated in the design by the use of bronze lighting troughs. The lighting system consists of several neon tubes, each one being a primary colour. A white light is obtained by using them all simultaneously, and by altering the combination other colours can be produced. A section through the lighting trough is shown below. The ground floor shop windows and canopy are carried out in black marble and metal.



MEN'S OUTFITTERS, PICCADILLY, W.1.



FIRST FLOOR PLAN



GROUND FLOOR PLAN

PLAN.—*The building has been planned as far as possible to secure an uninterrupted open space for display purposes. The main staircase, serving all floors, is in the centre of the shop, with passenger and goods lifts on either side of it, and the lavatories, one to each floor, grouped vertically and entered off the half landings. These services together form a compact block, apart from which the building is almost entirely without internal walls, the different departments being divided off from each other by low shop fittings.*

FIRE REGULATIONS.—*To comply with fire regulations the site has been divided vertically into three units, each with a separate staircase, the main staircase acting as escape staircase to the central block. These units are divided from each other by 13½-in. brick walls and by double fireproof shutters in the openings. The divisions, however, are scarcely noticeable owing to the size of the openings, which permit an uninterrupted view from the Piccadilly to the Jermyn Street front on each floor.*

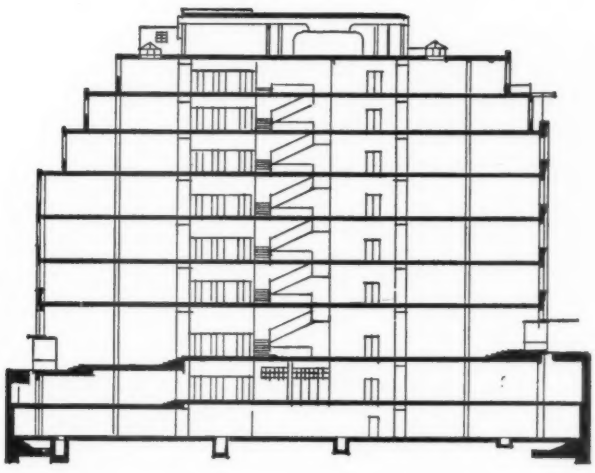
The lower ground floor and the basement are treated as horizontal fire units and are cut off from the staircase by glazed fireproof doors.

The lift enclosures are provided with fire shutters at each floor.

A special system of calling the staff has been installed in all departments. It consists of a series of coloured lights which can be used to give an infinite variety of prearranged signals and a warning buzzer.

The photographs show: above (left), the display department; right, the restaurant.

DESIGNED BY JOSEPH EMBERTON

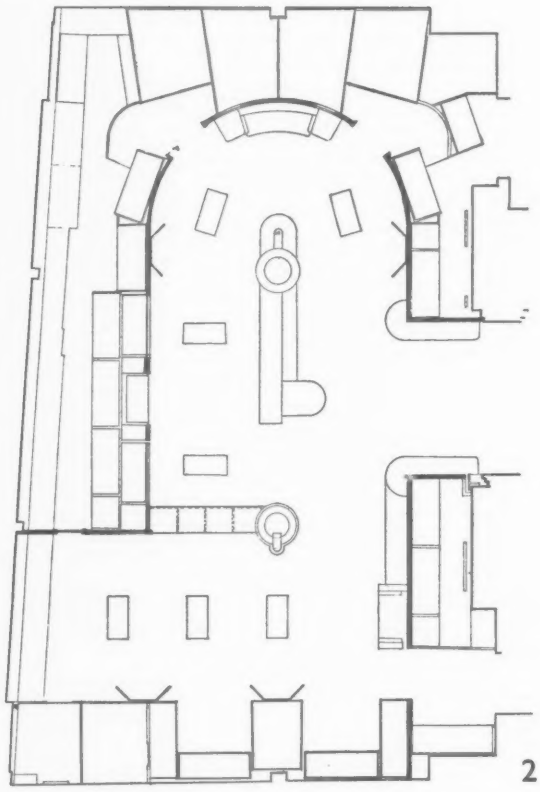


SECTION

STAIRCASE.—*The staircase, which adjoins an area, is lit by a continuous window running through seven floors. The window is constructed in precast reinforced concrete, glazed with corrugated glass tiles 9 ins. high. The wall lining is of travertine fully polished, treads and risers being of the same material dull polished. The strings are in terrazzo. The balustrade is of anodised aluminium and double rolled rough cast glass, and has a steel handrail with a red synthetic covering. The staircase has been designed to secure ease in use, the treads and risers being 13 ins. and 5½ ins. respectively.*

MEN'S OUTFITTERS, PICCADILLY, W. 1.

1



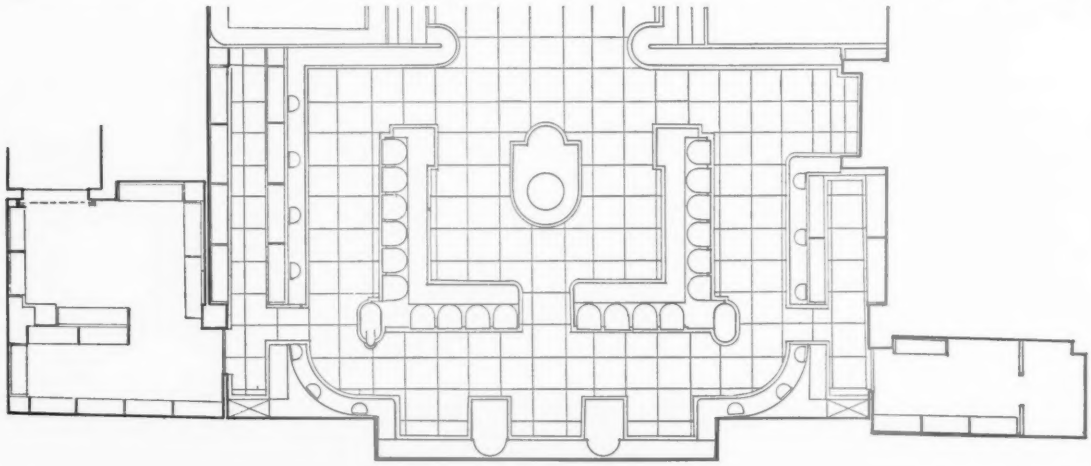
2

3

ROOM FOR SELLING EVENING WEAR (*1 and 2*).—*This department, which is screened from the window by the clothes store, seen on the left of the plan, is permanently lit by artificial light so that the clothes may be displayed under the same conditions as those under which they will be worn. The room is lined with Finland brick to a height of 7 feet. The display platform in the middle of the room is faced with black, white and vermilion sheets of a synthetic resinous material, while the floor is close-carpeted.*

SHOE DEPT. (*3 and 4*).—*Fittings in the shoe department are in natural colour Honduras mahogany, dull polished. The seats are of hide. The floor is cork. The plan shows the arrangement of the fittings. To the right and left of the show room is storage space.*

BESPOKE TAILORING (*5 and 6*).—*This department includes not only fitting rooms but also the necessary workrooms, so that the customer ordering his suit can see the cutters and the seamstresses and the pressers at work. The public space is separated from the working space by a glass screen and counter shown in the photograph. The counters and display fittings throughout this department are in figured ash except for the tops of the counters, which are finished with a black synthetic resinous material. The metal is dull chromium-plated steel. Quick service fixtures are in oak.*



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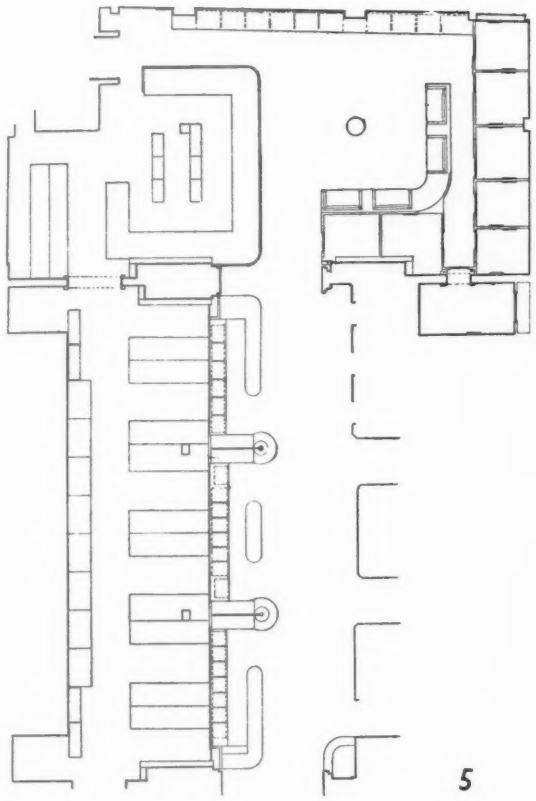
DESIGNED BY JOSEPH EMBERTON



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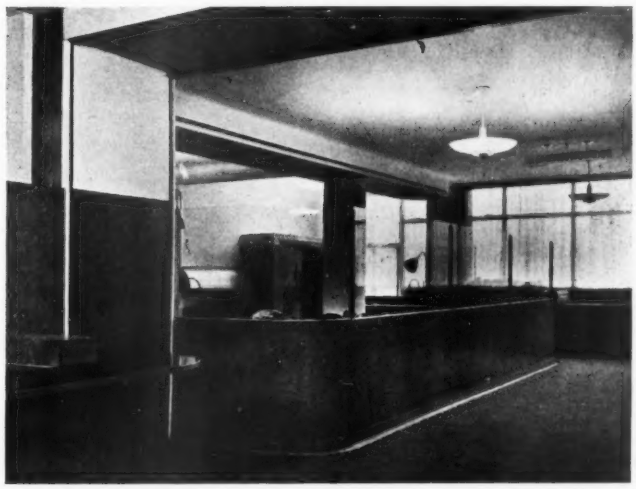
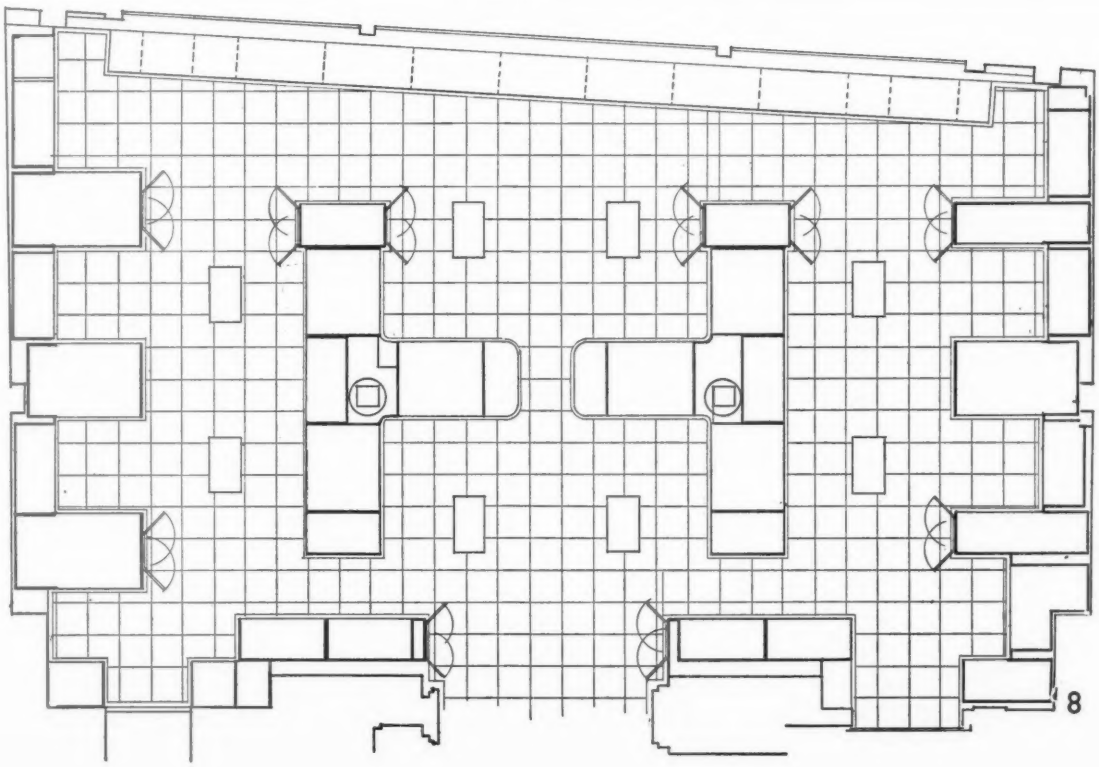


6

7

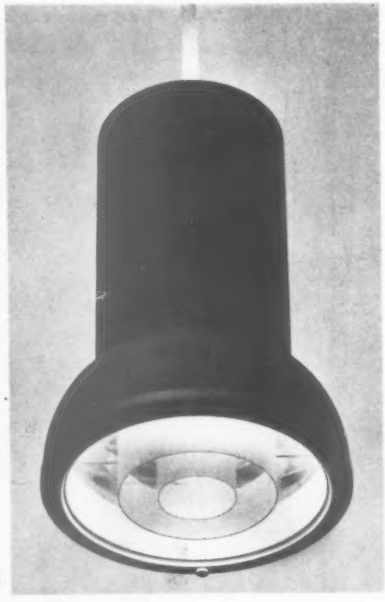
OVERCOATS — (7 and 8).—*Fittings are carried out in oak, with the inside of the cupboard doors finished in cream, red and black cellulose. A detail of the cupboard fittings employed is shown on the next page.*



8

MEN'S OUTFITTERS, PICCADILLY, W. 1.

1



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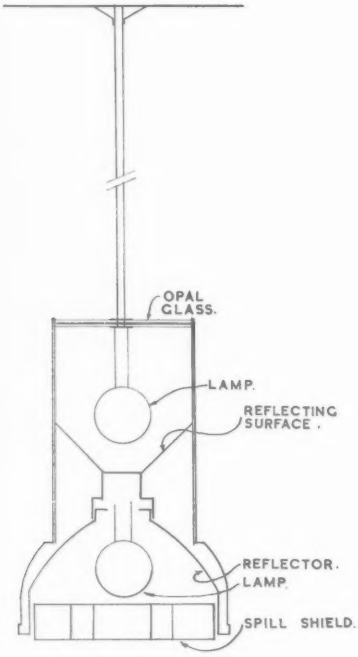
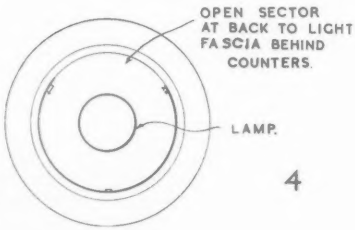


2

(1) Light fitting in the gift department. The department is small, and this fitting occupies the centre of the ceiling.

(2, 3 and 4) Light fitting used throughout the ground floor. This fitting was specially designed to combine the advantages of direct and indirect lighting. As can be seen from the photograph, the lamps cast practically no shadow. This is because there is a 100-watt bulb in the upper part of the lamp which reflects upwards and backwards onto the ceiling and walls through two concealed glass panels.



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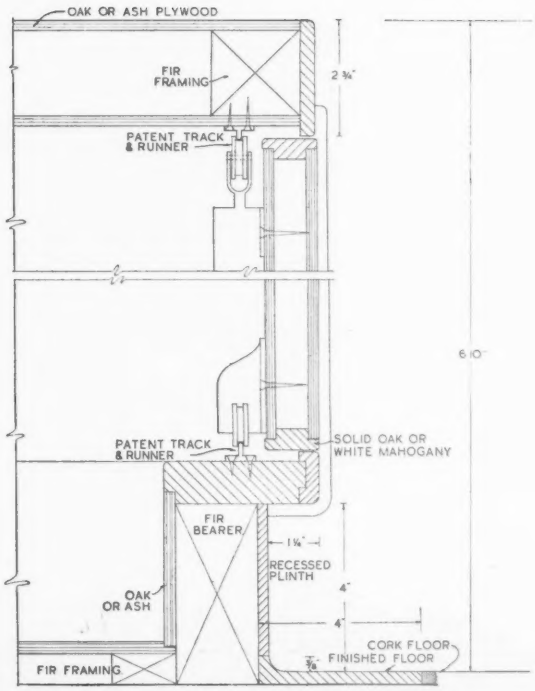


5

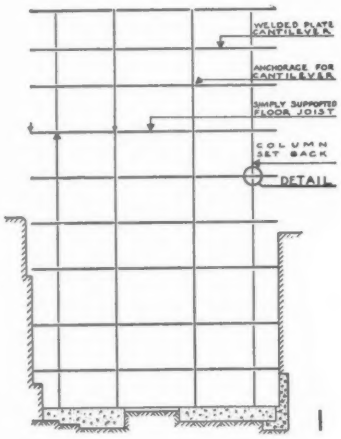
6

(5 and 6) Detail of the cupboard fittings used throughout the shop. The doors slide round and back inside the cupboard, and are more convenient than either the ordinary type of door, or a roll shutter.

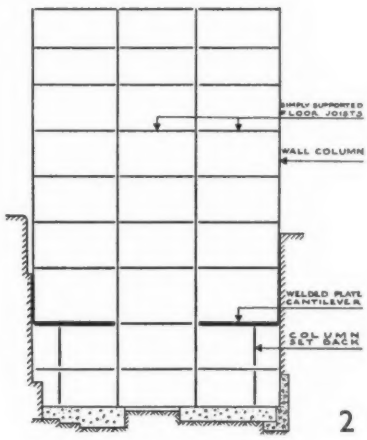
DESIGNED BY JOSEPH EMBERTON

STRUCTURAL ANALYSIS: No. 26, PICCADILLY, W.

This analysis is based upon notes supplied by Messrs. Helsby, Hamann and Samuely, the structural engineers concerned



1



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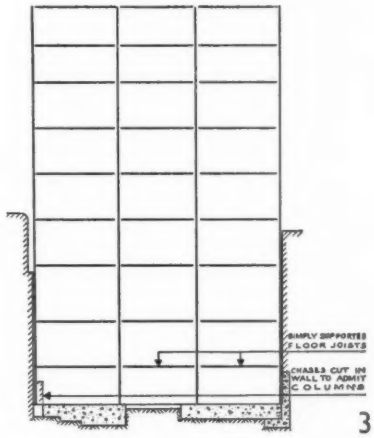


3

GENERAL STRUCTURAL PLAN

There are four rows of columns from Piccadilly to Jermyn Street, and the distance between columns in the same row is generally equal to the distance between the rows, about 22 ft. Variations of this system occur round lift and stair wells, and areas. Services are arranged in the side bays, and the central bay is thus left on a uniform arrangement. See Fig. 4.

CROSS SECTIONS

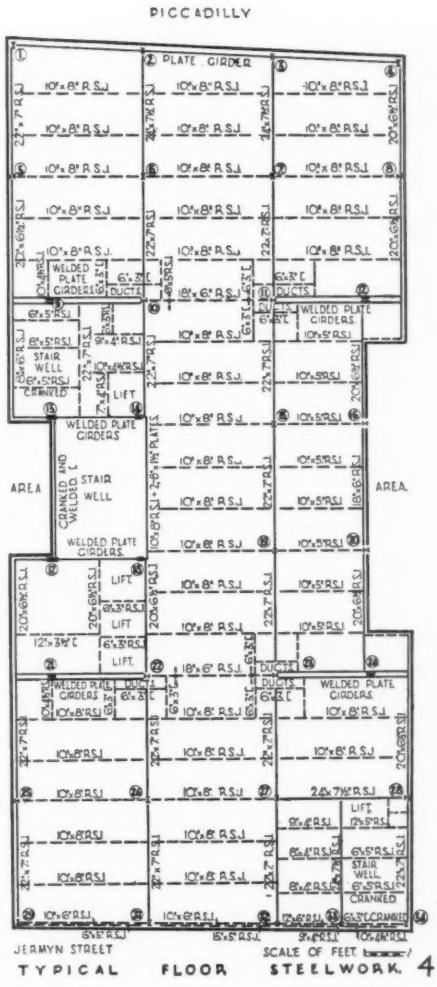
On account of the difficulties which adjoining buildings made for the foundations, the general aim was to bring the loads of the side walls in from the building line.

This could be done in two ways :

1. By introducing cantilevers at each floor. See Fig. 1. *Advantages :* (a) reduction of bending moment by the balancing moment of the cantilever (the required steel section is proportionate to the imposed bending moment). (b) Reduction in gross weight of steel.

2. By introducing a plate girder cantilever at one of the lower floors (ground or lower ground). See Fig. 2. *Advantage :* the load could be brought in from the building line, thus providing cheaper foundations. *Disadvantages :* (a) heavy long span beams on simple supports without any end restraint to reduce the section. (b) The cantilever itself became very heavy, since the head room required below would not permit the use of the most economical depth.

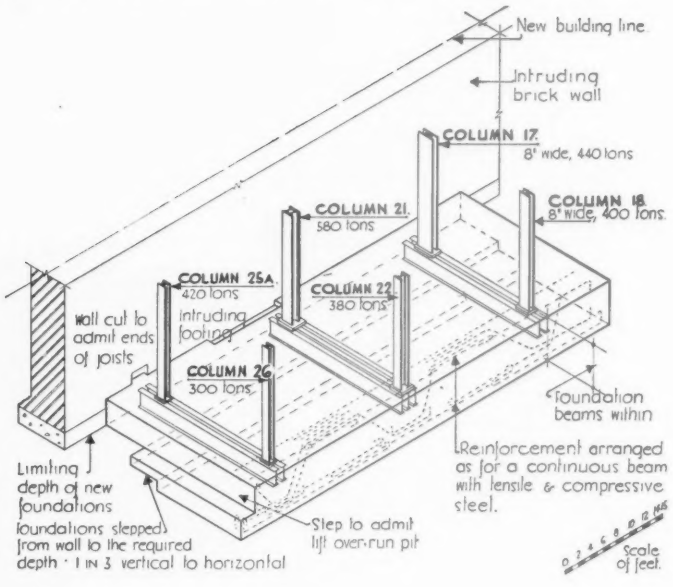
When the setting back of columns was not possible the foundations themselves had to be cantilevered. *Disadvantages :* (a) all beams simply supported and heavy. (b) Expensive constructions to get columns through intruding walls, etc. (c) Heavy foundations. All three types of construction were used.



TYPICAL FLOOR STEELWORK. 4

D

STRUCTURAL ANALYSIS:



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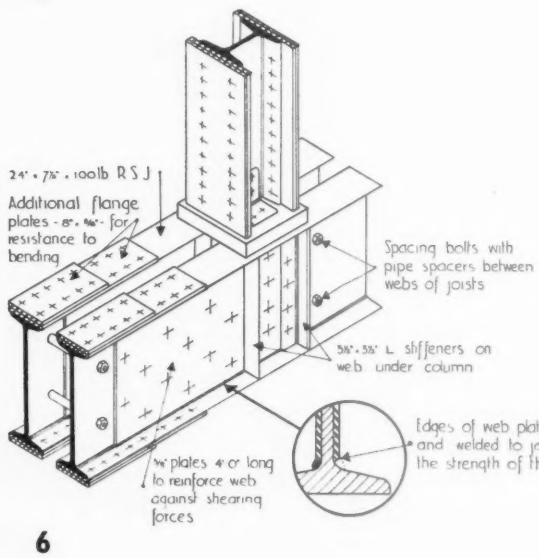

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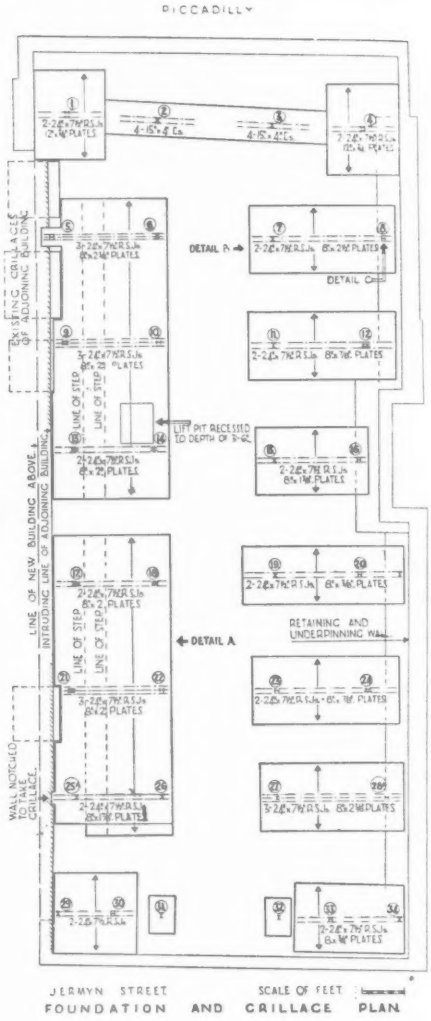

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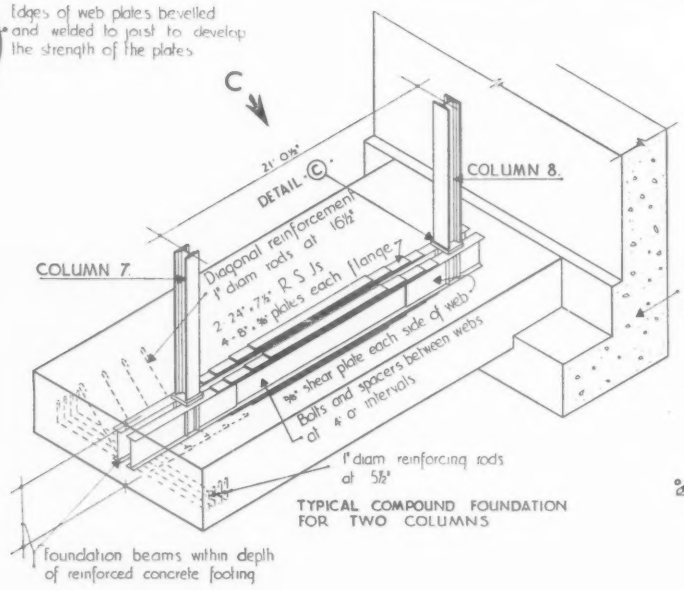


7

5 : *Multiple column foundation.* The joists distributing the loads of the columns were housed within the depth of the concrete base.

6 : *Foundation detail.* Additional web plates were welded to the joists to resist the high sheer loads. Bolts with pipe spacers between the webs separated the joists.

7 : *Typical two-column foundation.*

8 : *Foundation and grillage plan.*

NO. 26 PICCADILLY, W.

FOUNDATIONS

Foundations were arranged for columns in groups of two (see Fig. 7 and Fig. 8). The bearing area required for the gross load of all columns was about 60 per cent. of the site area.

PROBLEM 1

On the west side of the building the bearing level of the footing to the wall of the adjoining building was found to be only 3 ft. below the new basement floor. Depths of from 4 to 6 ft. were required for the new foundations. Underpinning was to be avoided if possible.

Solution

Where possible, the loads were brought away from this wall by the setting back of the columns, and the foundation was stepped up from the full depth to 3 ft. depth at a grade of one in three.

PROBLEM 2

On the west side, the adjacent wall was found to project 3 ft. into the site of the new building. Column footings also projected several feet. The area of each two-column foundation was reduced to such an extent that it became totally inadequate.

Solution

The foundations (see Figs. 5 and 8) were arranged for groups of six columns, and the ground area between each of the two-column foundations was utilized by reinforcing the new multiple column foundation to act as a continuous beam.

On the east side, a retaining wall which served also to underpin the adjacent building was introduced.

Retaining walls were also used under the Jermyn Street and Piccadilly pavements. Mr. B. L. Hurst, M.Inst.C.E., was the consultant for this work.

FLOOR CONSTRUCTION

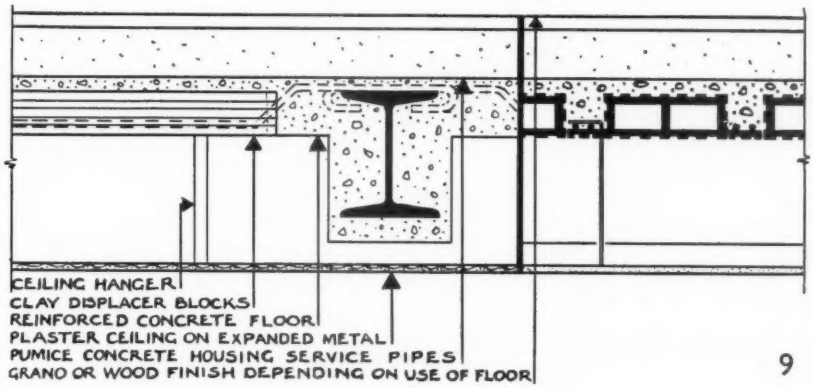
It was necessary to arrange the floor construction to conform to the 22-ft. column spacing, so that the central bay should be left with maximum head room, and free of cross beams except between columns 10-11 and 22-13. Three constructions were considered (see Fig. 10).

(**A**) Reinforced concrete hollow tile slab spanning 22 ft. between floor beams arranged between the columns.

Advantage : Reduction on floor beams.

Disadvantages : (a) heavy dead load ; (b) heavy slab reinforcements ; (c) deep beams across the building.

(**B**) Intermediate transverse floor beams.



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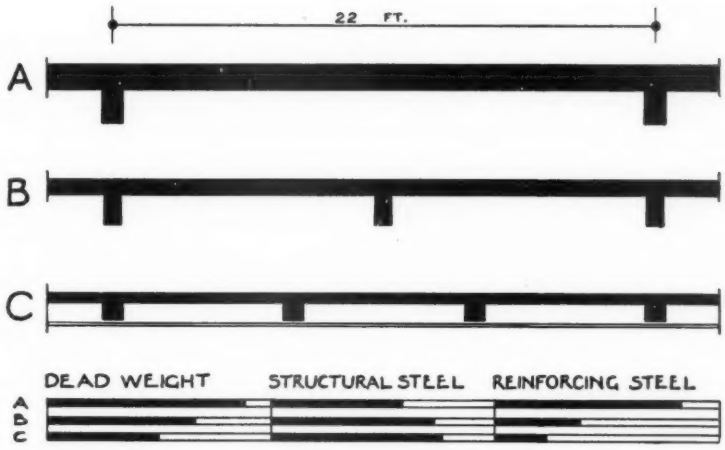

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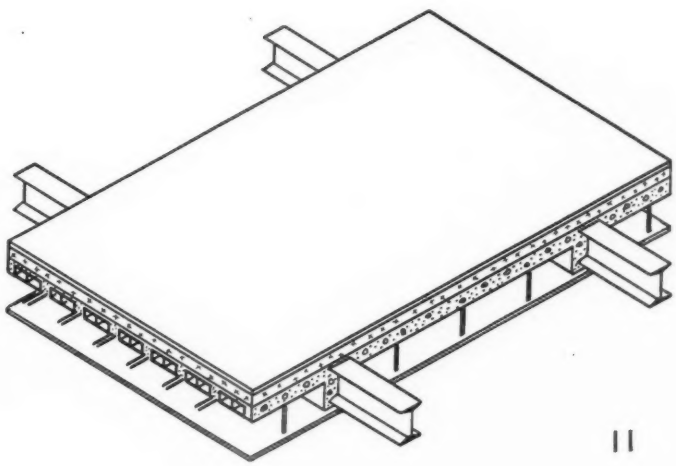

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Advantages : (a) reduced dead load ; (b) reduced slab reinforcement.

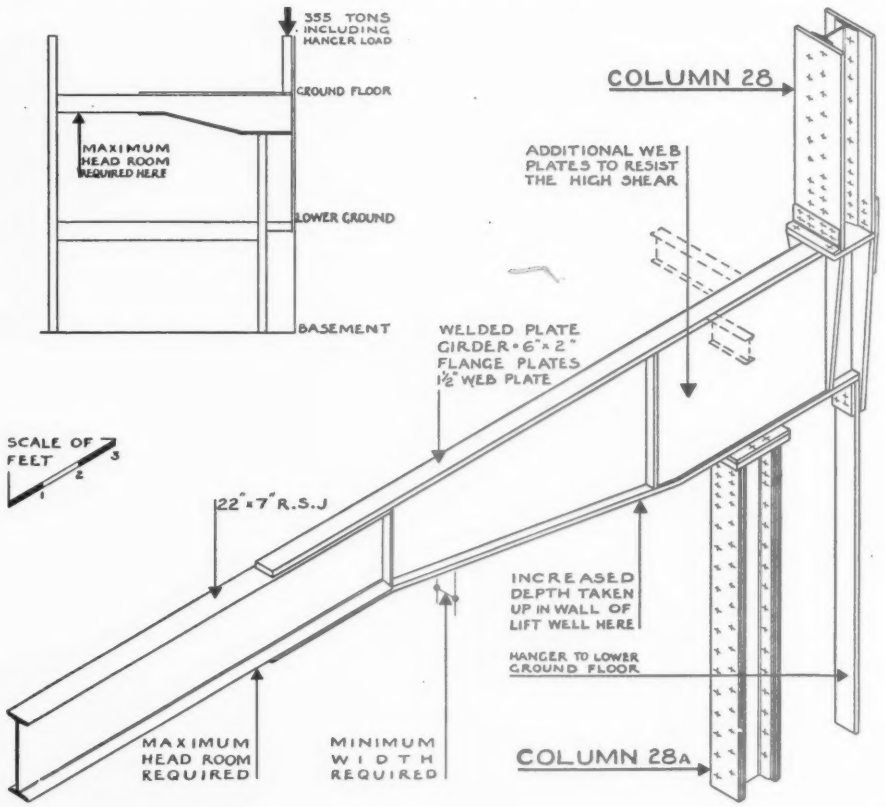
Disadvantages : (a) transverse beams still of considerable depth ; (b) increased structural steel floor beams.

(**C**) Transverse beams at third points.

Advantages : (a) shallow cross beams permitting a flat suspended ceiling without loss of headroom (see Fig. 9) ; (b) further reduction of dead weight ; (c) further reduction of slab reinforcement.

Disadvantage : Slight increase in structural steelwork.

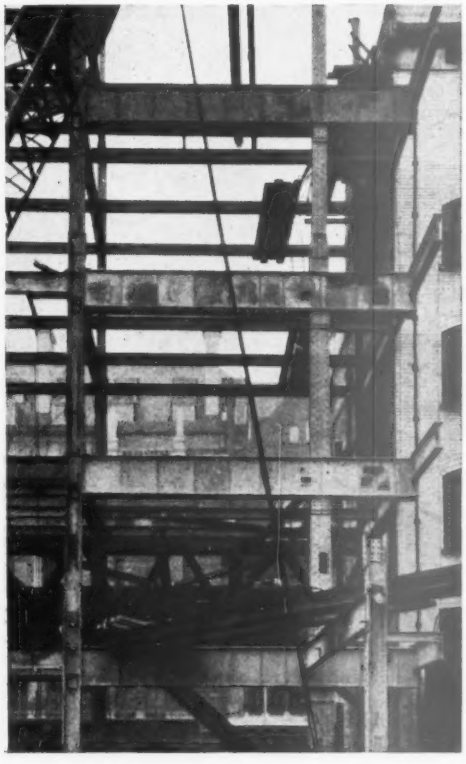
STRUCTURAL ANALYSIS:

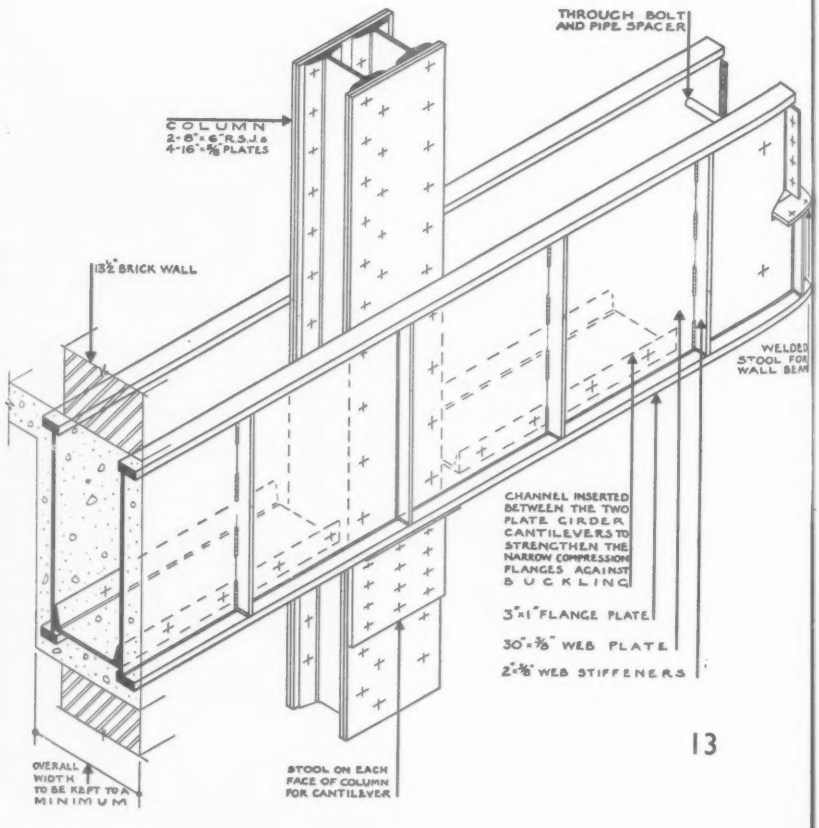


EXAMPLES OF WELDED CONSTRUCTION

12. Welded ground floor cantilever (see Fig. 2 on page 773).

13. Detail and photograph of cantilever (see Fig. 1 on page 773).





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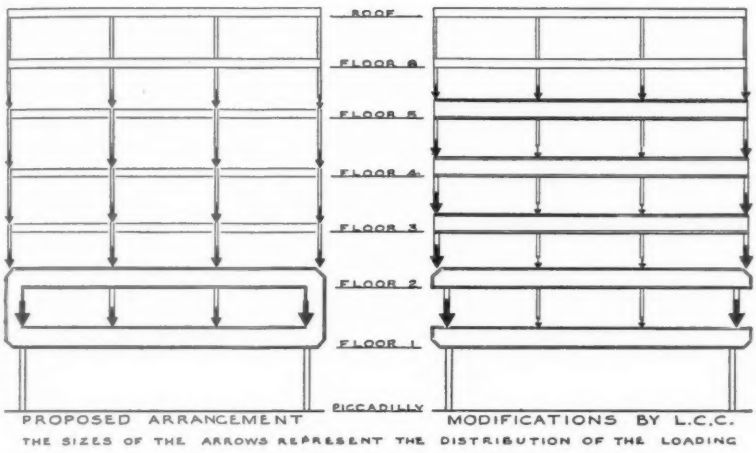
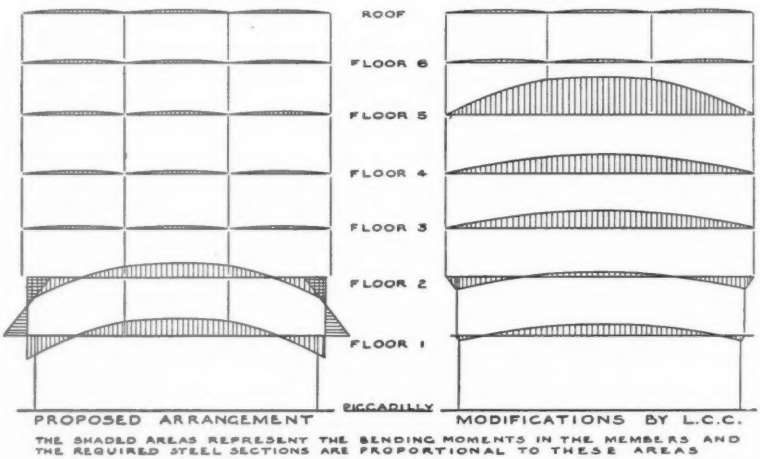
No. 26 PICCADILLY, W.



14 COMPARISON OF LOADING SYSTEMS



15 COMPARISON OF BENDING SYSTEMS

PROPOSED ARRANGEMENT OF PICCADILLY FRONT (Fig. 17)

It was intended to use two welded plate girders, one at the first, and one at the second floor, to carry the whole of the wall on the Piccadilly front, together with the adjacent portions of the floors. In order to reduce the deflections, it was proposed to give them restraint at the supports. The required section of a beam fully continuous or " built-in " is only 66⅔ per cent. of that of a beam on two simple supports and the deflection is only 20 per cent. of the " simply supported " deflection.

PRINCIPLE OF THE PROPOSED FRAME (Fig. 18)

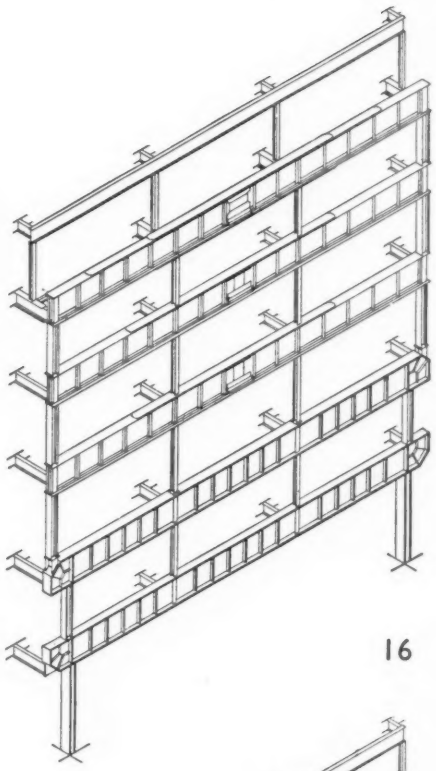
The central arrows represent vertical loading on the plate girders.

The corners are rigid.

The side arrows represent the shear due to the tendencies of the top half of the vertical legs to deflect outwards and of the bottom half to deflect inwards. These forces act in opposite directions, and therefore provide for each other, automatically, the reaction necessary to transmit to the plate girders the end restraint which is essential for economy and reduced deflection.

MODIFICATIONS REQUIRED BY L.C.C. (Fig. 16)

The L.C.C. requested that the two plate girders, which had been fabricated, should be freed of end restraint, i.e. be simply supported. As such, they were incapable of carrying the load, and additional simply-supported plate girders were required, one at each floor, to span the full width of the building. These were carried out in riveted construction because the steel contractors had already full commitments for their welding plant, and the contract time for the steelwork was very short. Actually, the whole of the steelwork was completed in eleven weeks.



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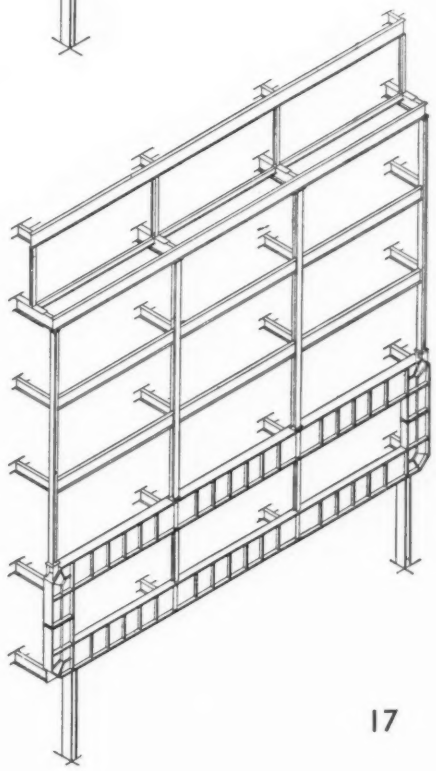

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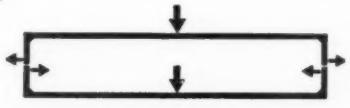

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IN THAT CONTINGENCY

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.

Mortar for Brickwork

An architect asked for information on the best type of mortar for brickwork and in particular referred to the use of lime in cement mortars.

The use of lime in cement mortar has been referred to in several of the Notes from the Information Bureau of the Building Research Station. The following is a summary of our present views on the question of mortars for brickwork.

The first point which should be made is that the choice of mortar should be guided by the characteristics of the brick. It is not possible to prescribe the composition of mortar to suit individual makes of brick, but broad principles can be stated which can be applied to suit particular cases.

With strong dense bricks, it is appropriate to use a strong and dense mortar, in which the cementing medium consists largely of cement. This applies particularly in the case of engineering bricks. There is no objection to the use of a proportion of lime : in fact, there will be a distinct benefit, for the mortar will be more workable, and it will thus be easier to bed the bricks and to fill the vertical joints solidly with mortar. This is most important if weather-proof walls are to be secured with this class of brick. Taking the average cement mortar as having a composition of 1 : 3 or 4 : 12, the proportions could with advantage be varied to 3 cement : 1 lime : 12 sand. It is not likely that the strength of the work would be impaired by such a change.

With open-textured, absorptive bricks, a mortar consisting essentially of cement and sand is not advisable, because such a mortar is "short" in working and gives up its moisture so readily to an absorptive brick that its adhesion to the brick is impaired. It appears that the surface of the mortar in contact with the brick dries out before proper contact has developed. Of course, this difficulty can be overcome to a large extent by dipping the bricks. The ease of working is improved if a mortar of better water-retaining capacity is used, but dipping is still necessary with the more absorptive bricks.

A suitable mortar for London stocks, for example, would be 1 cement : 3 lime : 10-12 sand (depending on the general characteristics of the sand). Such a mortar combines good workability with a moderate but adequate strength and gives good adhesion. A mortar of this kind can be prepared either from (*a*) hydrated lime, mixing the dry hydrate with the required proportion of Portland cement and using the mixture as if it were Portland cement, or (*b*) from plasterers' coarse stuff : if eight or ten parts of plasterers' coarse stuff are mixed with one part of cement a composition roughly similar to the above is obtained.

Only a non-hydraulic lime or Greystone lime should be used with Portland cement. An eminently hydraulic (Blue Lias) lime or a magnesian lime is not suitable. The hydraulic (Blue Lias) limes can yield excellent mortars, but the various types require individual treatment to secure optimum strength combined with soundness. It is therefore desirable that work with such limes should be entrusted to operatives who have some experience with the particular type. Ready hydrated hydraulic lime can now be obtained. This is used in exactly the same manner as cement and gives a workable mortar of good strength, resembling in its general properties the lime : cement mixes referred to above. The Greystone lime exhibits lower hydraulic strength, but adequate for brickwork only moderately loaded. They are obtainable in pre-hydrated form. When weather conditions are severe (danger of frost or heavy rainfall) Greystone limes can with advantage be gauged with a small proportion of Portland cement. The more hydraulic Blue Lias type does not require such gauging and it is definitely not to be recommended with this lime.

A plain non-hydraulic lime mortar is not suitable under many modern conditions where a rapid development of strength is demanded, since its ultimate strength is mainly due to a slow process of carbonation. The use of such limes, however, with additions such as ground brick, ashes, etc., which increase the rate and degree of hardening, is general in some parts of the country and such mixtures (pan mortars) are frequently very satisfactory. It is not possible, however, to deal with them here since their quality depends very largely on the particular properties of the mixed aggregates added.

An objection to the use of a dense mortar with facing bricks other than the very dense engineering bricks is that all bricks are liable to contain small proportions of efflorescent salts and if the mortar is dense, crystallization is forced to take place at the brick surface and may cause decay. It is preferable that the efflorescence should take place at the mortar surface. This may necessitate re-pointing in course of time, but this is less serious than injury to the bricks themselves.

Very strong mortars, such as rich cement mortars, are sometimes used with the hope of increasing the strength of the brickwork as a whole. It is perhaps not realised that with a brick of average strength, the full strength of the brickwork will be attained with a mortar of quite low compressive strength. Some experiments with Fletton bricks may be referred to in this connection. The bricks were used to build small piers 9 in. square and 3 ft. high. Mortars of varying richness and with different ratios of dry hydrated lime and cement were used. The piers were tested in compression when three months old. The results of these tests led to the following conclusions :—

1. That no advantage from the point of view of strength is to be gained by using, with the class of brick tested, a mortar richer than 1 : 3 by volume, and, in fact, lower results are to be expected.

2. That lime up to 50 to 60 per cent. of the volume of the total cementitious material (i.e. lime + cement) can be used in a 1 : 3 mix without any appreciable fall in the strength of the brickwork.

3. That there is little increase in the strength of the brickwork when mortar having a crushing strength higher than 1,000 lb. per sq. in. is used.

One of the batches of bricks used had a strength (compressive) of 3,030 lb. per sq. in., the other 2,685 lb. per sq. in.

Substitution of lime for cement to the extent of 75 per cent. of the total cementitious material only reduced the strength of the piers by about 25 per cent.

Recently tests have been made with Buxton lime putty and a sharper sand. Generally, higher pier strengths were obtained, but the conclusions as to the effect of substituting lime for a proportion of cement in the mortar were confirmed.

As regards impermeability, it is considered that the application of the principles stated above will be favourable to the weather-proofness of brickwork, though test data, showing exact comparisons of the various combinations of bricks and mortar, are not available.

Corrosion of Steel Wire by Plaster

¶ *A firm of manufacturers submitted a form of lathing consisting of reeds bound with wire. They desired to know whether the wire might be unfavourably affected by "acids" in plaster.*

During the course of the past few years several isolated observations have been made on the effects of various plasters on metals.

It appears that there is very little risk of the corrosion of iron wire embedded in plasters which consist of or contain a proportion of lime or cement. The undercoat plasters commonly used in ceiling work, e.g. lime gauged with plaster, lime gauged with Portland cement, will therefore not be injurious, and it is important to note that special plasters containing some added lime are marketed for application on metal lathing.

The position is very different with certain types of plaster, e.g. Keene's cement, which may contain acidic elements. These may be definitely corrosive to steel, especially if the conditions are at all damp. As, however, these types of plaster are not used for undercoats on lathing, this is a point rather of theoretical than practical importance. Difficulty could arise with iron wire embedded in plaster if this contained a sand contaminated with chlorides, as might be the case if a sea-shore or estuarine sand were used, since chlorides are highly corrosive to iron and steel.

65 TOWN HALLS

Services

Air Conditioning

THE assembly hall, council chamber, courts and similar large rooms require ventilation with three to four changes of air per hour. To obtain these conditions a central plant is generally used, with air conditioning if cost permits.

The plenum apparatus consists of a battery of copper-gilled pipes through which hot water is circulated from the boilers by an electrically-driven centrifugal pump. This battery is placed in front of a multivane cased fan, which in turn is connected to a system of air-tight ducts taken to suitable outlets formed in the various halls and rooms.

Means of obtaining fresh air from an unpolluted source must be provided, and this air is drawn over the coils of the heating battery by the fan and forced along the ducts into the rooms. The speed of the air in the ducts should not exceed about 800 feet per minute, and the discharge from the room outlets must be kept at about 200 feet per minute, otherwise draughts will be caused.

Many large halls are provided with warm air intakes at each side of the stage or platform end, at least 10 feet up from the floor, with extraction openings formed in the ceiling towards the back of the hall and, where there is a balcony, extract openings must be provided underneath, to deal with the vitiated air from the occupants of the space under the balcony.

The extract openings can be connected by suitably sized ducting to a multivane fan placed in a convenient position (perhaps in the roof), or propeller type fans can be used to deal with individual extract outlets. In either case, the discharging air must not be allowed to become a source of annoyance to surrounding buildings. Propeller fans should only be used when the distance from the outlets to the open air is comparatively short, as they are only capable of dealing with volume, and cannot overcome the frictional resistance set up by air moving through a long duct.

In small halls, a system of air inlets in the ceiling and extract outlets beneath the seats or in the floor is often adopted, but great care must be exercised in the design if local draughts are to be avoided.

In towns where the air is smoke-laden or dirty, it is usual to place an air filter or washer between the fresh air intake and the heating battery, the commonest types being the water spray and the viscous oil filter. The term "air-conditioning" should only be used when a special plant is installed, which comprises a washer, pre-heater, cooling coils fed from a refrigeration plant, and a final heater. Such a plant ensures a supply of clean air, of the correct humidity, warm in winter and cool in summer.

Office Heating

Offices and other rooms are best heated by some form of radiation, with local control for the benefit of the individual. Thermostatic room control is desirable, but adds to first cost, as it entails special motorised valves on each radiator, with room thermostats and electric wiring to each thermostat.

Main entrances often have decorative treatment which needs invisible heating. Radiators behind grilles, wall panels, floor heating, or warm air from the plenum plant are suitable methods.

Corridors should be heated by radiators, flushed in walls where possible.

Heating Systems

The method of heat generation must be decided and should be governed by local conditions. If electricity is obtainable on a cheap night tariff, electrode boilers with thermal storage may be considered, and the reduction in labour charges in the boiler house can be offset against probable higher capital outlay. These remarks apply also to gas and oil-fired boilers.

Coke or coal, either hand fed or used in the various automatic stoking devices, in most cases works out cheapest.

The use of steam or low pressure hot water boilers must be governed by requirements. Low pressure hot water for heating appears to be the general practice in England, and has the advantage of being easily handled. Steam boilers should only be installed where there are special circumstances, such as adjacent public baths and washhouses.

The Boiler House

The boiler house need not be below ground level. Centrifugal pumps can deal with dips; there are cases where the boiler house has been built on the roof. The size of the boiler house should not be cramped and space should be left for extensions.

When non-sectional boilers are installed, they should be able to be removed from the boiler house without pulling the building down.

A building of 800,000 cube will require a boiler house approximately 30 ft. by 25 ft.; for one of 300,000 cube (say) 20 ft. by 18 ft., exclusive of fuel storage.

Ventilation of the boiler house is important, and where solid fuel is used a shaft incorporated in the main stack will ensure fumes being taken above the roof level.

Fuel

The chimney stack should be of ample size, and be taken well above the roof. It should be as near the boilers as possible.

Fuel storage needs careful planning. If oil fuel is used, provision must be made against fire and leakage of fuel and gases.

Coal and coke should be stored under cover, at least six weeks' supply being provided. Approximately 100 cu. ft. of space is required per ton of coke.

If a basement is not available, in which pipes can be slung from the ceiling, adequately sized ducts should be provided for all piped services and electrical mains. The ducts should be suitable for a man to work in, be waterproof, and have access openings large enough to take lengths of pipe in and out.

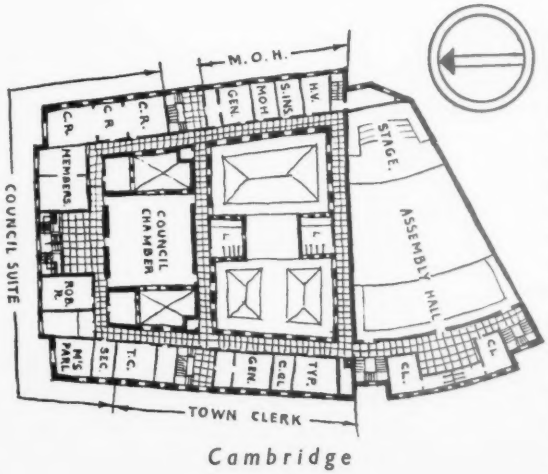
The planning of all services, including plumbing and sanitary services to the various floors, should be carefully considered, so that chases and cutting away and making good are reduced to the minimum. Adequate provision for future access to all these services is essential. The planning of sanitary fittings should be studied with a view to minimising long runs of pipes.

Hot Water

It is usual to have separate boilers for domestic hot water supplies, coupled to storage cylinders provided close by. When steam boilers are available for other services, cylinders fitted with steam coils can be installed. Where runs are long, a centrifugal pump is advisable.

Many of the water supply companies have special regulations governing heating and hot and cold water supplies, and these should be studied carefully before layouts are prepared.

The cost of installing heating, ventilation and hot water apparatus depends largely on the system adopted; but for a straightforward scheme with coke-fired boilers the approximate cost would be 7 per cent. of the total estimated cost of the whole building. This figure does not include the cost of pipe ducts, chases, cutting away, making good and painting.



Cambridge

ACOUSTICS

Assembly Halls and Offices

1. Noise and the Site

WHATEVER the position of a site a certain amount of planning against local noise will be unavoidable, and the difficulty of planning against neighbouring noise should therefore be avoided as far as possible. This can only be done by choosing a quiet site, and it must be assumed that this duty, in which the architect usually plays no part, has been performed.

In placing the different sections, library, assembly hall, council offices and so on, each must be considered in relation to its need for quiet, and within each section the separate departments and offices must be similarly disposed. Thus in detail, car parks should be separate from, say, committee rooms, and machinery rooms from offices. "Noisy" rooms may be sandwiched between lavatories or store rooms, but they should not face "quiet" rooms across a small court, for windows will not admit air without noise and the noise will be accentuated by the walls of the court.

2. Materials and Equipment

All corridors should have cork or rubber flooring, and rooms such as typists', rates and reading-rooms, where noise would always be present, should be silenced with cork or rubber floors and absorbent ceilings. Doors in frequent use can be fitted with automatic closing springs. Quiet mechanical equipment must be insisted upon even at extra cost, because it is also more efficient. Lift motors are better at the bottom of the well, where they can be set on separate foundations, but if it is preferred to build them at the top, the well should be covered over except for the cable holes, and the motor set upon anti-vibration beds. Ventilator fans should be of large diameter and slow revolution, while a further reduction of noise can be had by lining ducts with absorbent material.

3. Particular Rooms

Definitions: If a source of sound in a room is suddenly stopped the sound will continue to be audible for a short time. The sound waves are inter-reflected between walls, floor and ceiling until their energy is absorbed. Normally successive wave fronts or impulses will reach a listener in the room at such short intervals as to appear continuous, in the same way as an impression of continuity is given by the rapidly exposed images of a cinematograph. If the interval between two successive impulses is as great as about 1/15 sec. two separate sounds can be distinguished, i.e. an echo is heard. This means that the second sound has travelled about 70 ft. since the hearing of the first and this fact is important in limiting the size and shape of rooms.

The time which the sound takes to die away to inaudibility after the source is stopped is called the Reverberation Time (t). For all

TOWN HALLS

auditoria there is both a natural and a desirable value for t. The first of these will *increase* with the volume (V) of the room and with the degree of reflection of its bounding surfaces. It will *decrease* with the degree of absorption (A) of these surfaces. It can therefore be controlled and can be calculated from Sabine's formula—

$$t = \frac{0.05V}{A}$$

The desirable time of reverberation increases with the volume, but varies with the nature (speech or music) of the source (Fig. 1).

For the purpose of designing reflecting surfaces, sound beams, or rays, may be assumed to behave as those of light.

Council Chambers

Here the requirements are a short reverberation and a certain level of loudness. Therefore the volume should be small and the reflecting and absorbing surfaces carefully arranged.

The only source to be considered is the speaking voice, but its position may be almost anywhere on the floor and it must be heard equally well at any other point on the floor as well as in the public gallery. These requirements are best served by the semi-circular arrangement of seating (whereby the nearest approach to direct view and hearing is reached) and by the use of the whole ceiling as a reflector (Fig. 2).

The plan should be built round the seating, avoiding side aisles which add to the volume and curved surfaces which give uneven distribution of sound as in Fig. 3 (a). Large chambers may be planned as in Fig. 3 (b), where splays serve the double purpose of reducing volume and throwing sound towards the centre of the room.

The entire floor must be carpeted and the seating upholstered on seats and backs, so that for a full and partly full chamber the amount of absorption remains nearly constant.

Walls are useful reflectors up to about 6 ft. but the upper parts must be absorbent. Wood panelling may be carried up to 7 or 8 ft. above the floor, but potential echoes must be avoided. A speaker and those in his immediate neighbourhood will hear an echo from a reflecting surface more than 35 ft. away and in front, for then the reflected sound will travel more than 70 ft. in all. This can be avoided by tilting the surface so that the sound is directed towards the floor—Fig. 3 (c). The ideal absorbent for walls would have a low co-efficient of absorption at high frequencies and *vice versa*, so that consonant sounds, which are of high frequency and low power and on which articulation mainly depends, would be reflected. Materials, amongst others, which may be used are absorbent tiles or plaster, fabric stretched over absorbent boards or sheeting and leather panels mounted in the same way. These surfaces may not be painted, though some of the rougher materials may be sprayed with distemper.

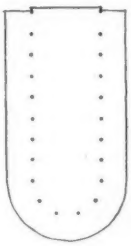


Fig. 3 (a)

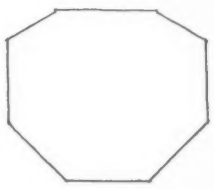


Fig. 3 (b)

Fig. 3 (c)

The ceiling must be kept low, firstly to avoid excessive volume, and secondly to prevent long reflected paths of sound. Long paths mean unnecessary loss of energy, as well as confusion from overlapping of syllables. For chambers seating about 60 members, 25 ft. from floor to ceiling should be ample, while for very large chambers 35 ft. should be considered as a maximum.

In Fig. 2, if S represents the most remote speaker, it can be seen that only a certain portion of the horizontal ceiling reflects his speech (as shown by the beam from I_1) on to the other members. Beyond this portion the edges of the ceiling should be splayed so as to throw a second

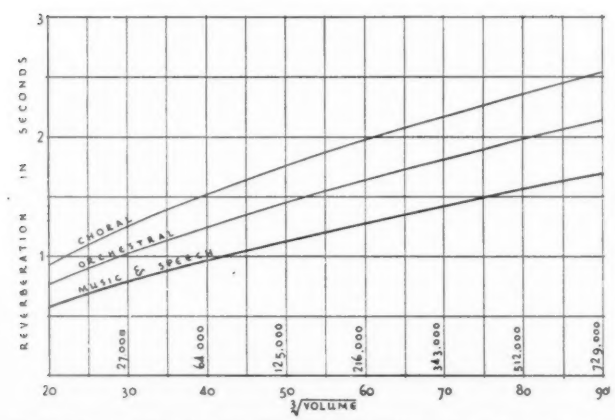


Fig. 1. From "Planning for Good Acoustics," by Hope Bagenal and Alex Wood

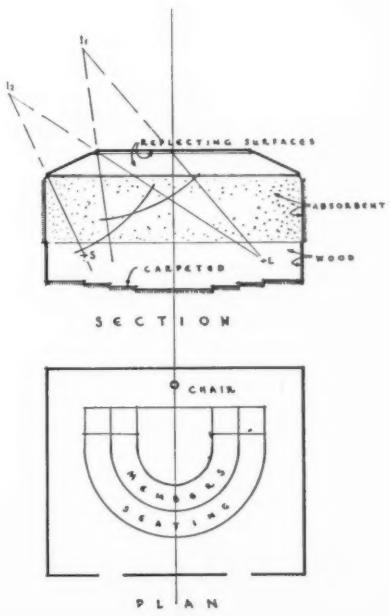


Fig. 2

beam (from I_2) as far as L, the most remote listener.

The most suitable material for the ceiling is plaster, with a hard, smooth finish. No beams should project below it, and flush lay lights with heavy plate glass must be used for any natural lighting therein.

The public gallery should be entered through lobbies, and should have a carpeted floor, absorbent walls and reflecting ceiling.

Committee Rooms

Small committee rooms should not cause trouble, provided they have carpeted floors and that their walls are not finished entirely in a material as hard as gypsum plaster. Large committee rooms must be acoustically designed. They must have carpet on a felt under-mat over the whole floor area. Walls should be panelled up to dado height or higher with absorbent finish above this, up to the ceiling. The ceiling should be treated as a reflector, with a hard, smooth surface. It is a good idea to have a curved ceiling whose radius is *at least* twice the height of the room.

Assembly Halls

The acoustic design of an assembly hall is one of compromise, for conflicting conditions are required. The first is a short reverberation for speech, and the second a long reverberation for choral and orchestral music. The third is a level floor for dancing, which makes stage performances difficult to hear (and see), and the fourth is movable seating, which must therefore be light and of little use as a " permanent " absorbent.

General Principles

In spite of these varying requirements, however, certain principles may be taken as fundamental to the design of all " multiple " halls.

1. Short and broad plans are better than long and narrow.

2. The air volume of the hall should range from 180 to 200 cubic ft. per person for audiences of 1,000 to 2,000.

3. The reverberation time, calculated from Sabine's formula, should approximate to that given by the lowest curve of Fig. 1, since choral or orchestral conditions will render speech unintelligible.

4. Large areas of wood panelling must be introduced, so that during musical performances " brightness " of tone shall compensate in some measure for lack of " volume."

5. The ceiling must be an efficient reflector, and at a height of not more than 35 ft. above the floor.

6. Galleries which, by their overhang, prevent lower seats from receiving reflected sound from the main ceiling, must be avoided.

Most of these points are illustrated in Fig. 4, which also shows the disposition of the different materials, resonators, reflectors and absorbents. Thus, the back and side walls of the platform recess are of wood panelling framed to a boarded floor, and the side walls of the main hall are panelled up to about 10 ft. or gallery level. The panels should be of varying sizes and/or thicknesses so as to respond to a wider range of frequencies. The ceilings, of the hall and platform, are finished in hard, smooth plaster or its equivalent as a reflector, and the main ceiling should be either flat, with marginal splays as in Fig. 2, or curved, with a radius equal to at least twice the height of the room. Top lighting should take the form of rigid lay lights of heavy plate glass as nearly flush with the ceiling as possible. Side walls and the wall opposite the platform must be absorbent, carpet or matting must be provided as a temporary covering at least to all gangways, and the gallery should have permanent absorption in the form of a carpeted floor and upholstered seats.

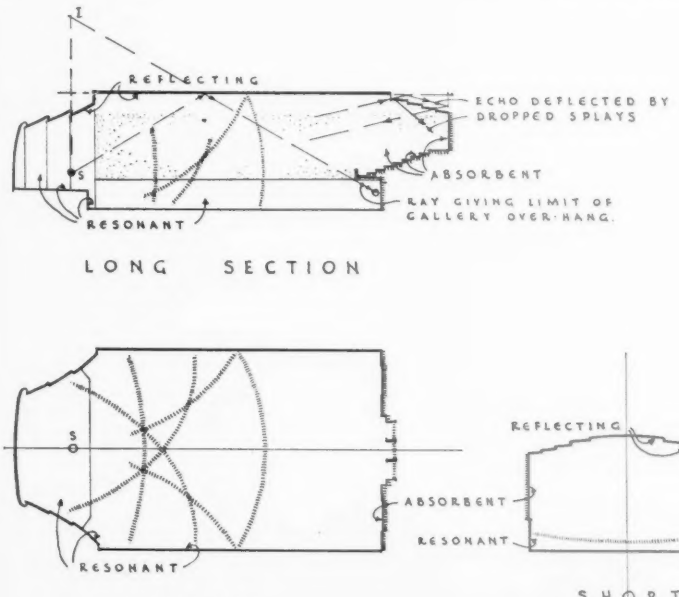
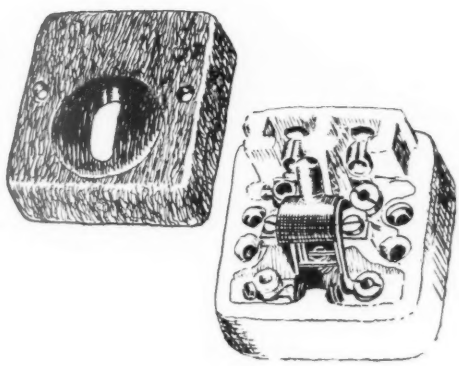


Fig. 4

Law Courts

Court plans, with the relative positions of judge, jury, witnesses, etc., have been discussed earlier in this series. As in Council Chambers, a number of positions for both speaker and listener must be provided and the former should at no time present less than a profile view to the latter. The arrangement and choice of reflectors and absorbents should be the same as for Council Chambers, for here also a short reverberation, reinforced loudness and general quiet are essential.



TRADE NOTES

[*EDITED BY PHILIP SCHOLBERG*]

Magazine Boilers

LAST week I distributed a certain amount of offensiveness to the designers of boilers, accusing them of producing hardly anything that was fit to be seen, particularly for domestic work in the small and medium-size house, where the boiler is either in the kitchen or scullery and not tucked away in a hole of its own.

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And now Mr. Paul Stables of Cérac has put me firmly in my place by producing a range of small automatic magazine boilers, one of which is illustrated below. The usual Cérac stoker is a separate unit which can be applied to virtually any standard boiler, but which is intended mainly for larger jobs. The boiler illustrated here has been designed for the smaller type of job : and it has been designed *as a unit* ; which means that there are no oddments and afterthoughts making a mess of the result.

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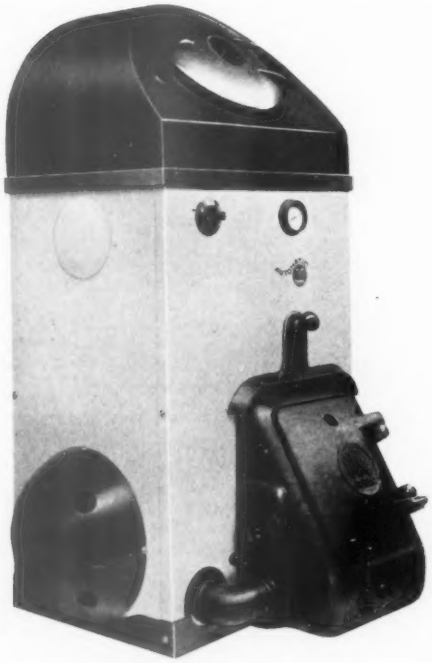
Apart from the domed fan intake on the left and the fire door in front, there are no projections, and the whole assembly is lagged and covered with a vitreous-enamelled sheet metal casing which should be easy enough to keep clean.



The Cérac automatic magazine boiler (see note on this page).

Two sizes are available, 90,000 and 150,000 B.T.U., and the prices are £60 and £75. Control is by thermostats, and, apart from keeping the hopper filled, only a few minutes a week are necessary for removing clinker.

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Noise is very slight : no actual decibel figures are available, but I have listened to one of these boilers in operation and the noise is definitely a great deal less than several refrigerators I have heard. Less than that one cannot expect.

Switchgear

J. H. Tucker & Co. have just sent a new folder dealing with their New Titan switches and switchplugs (see headpiece to these notes).

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The complete range includes surface and semi-recessed small base switches, flush switches up to four sections square (in 2 and 3 section, vertical, in addition to horizontal mounting), and 2 and 3 pin top-entry surface switch sockets. Flush switch sockets will be available in the near future.

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Several excellent features are provided in the design, including a metal reinforcement in the dolly which is entirely isolated from all other live metal parts. A tripping arrangement in the base returns the mechanism to the off position should the switch be mishandled by placing the dolly and contact on a dead centre and rotating them bodily in an attempt to make contact with the blades resting lightly against the clips.

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The plates of the flush patterns give an extra wide overlap of a quarter of an inch beyond the box at each side, double that of most flush type switches. In addition to the usual brown walnut and white finishes, mottled green, blue, orange and ivory are also available.

Addresses

Cérac, Ltd., 41 Lower Kennington Lane, London, S.E.11.

J. H. Tucker & Co., Ltd., Kings Road, Tyseley, Birmingham 11.

Royal Institute of the Architects of Ireland

At a recent meeting of the Council of the above Institute, the hon. secretary of the Board of Architectural Education reported that no award had been made in connection with the Travelling Scholarship for 1936, but, on the assessors' recommendation, exemption from submitting testimonies of study for the final examination was granted to Messrs. Brendan Ellis, D. J. Maguire, Dermod B. O'Rourke and Miss E. F. Sides.

IN PARLIAMENT

[BY OUR SPECIAL REPRESENTATIVE]

Rural Areas

Mr. Drewe asked the Minister of Health if he could state the present shortage of houses in rural areas, apart from overcrowding; and what steps were being taken to provide more houses for rural workers.

Sir Kingsley Wood said that under the slum clearance programmes submitted by local authorities it was estimated that 32,096 new houses would be required in rural districts to replace houses unfit for habitation. 11,702 houses had so far been approved for erection with Exchequer assistance under the Housing Act, 1930, which provided a special subsidy for houses required for persons displaced from houses in agricultural parishes, and 5,876 were completed. The attention of local authorities was at present concentrated on the most urgent problems of dealing with unfit houses and overcrowding, and he had no information as to the total number of additional houses which might be required in rural districts to meet other needs. Since April 1, 1933, 5,990 houses had, however, been approved for erection without Exchequer assistance by rural district councils to meet other needs, and of this number 3,136 were completed.

Overcrowding

Mr. Joel asked the Minister of Health whether any complaints had been received from local authorities that the standard of overcrowding under the Housing Act of 1935 was too low; and, if so, would he state the towns from which these complaints came.

Mr. Shakespeare said that the Minister was aware that in some quarters the standard was regarded as low, but the standard was a penal one and was therefore of necessity lower than, for example, the standard of accommodation adopted by local authorities for rehousing purposes. The Minister was unable to trace any official representations from local authorities on the subject.

Housing Act, 1935: Subsidy

Mr. Joel asked the Minister of Health if he would state, in relation to the financial provisions of the Housing Act, 1935, for the relief of overcrowding, which towns in this country had obtained, or were obtaining, a subsidy by reason of flat construction, and which towns had received, or were receiving, a subsidy by reason of the heavy rating burdens they were already carrying.

Sir K. Wood said that the only flats approved under the Housing Act, 1935, were those which are being erected by the London County Council. A subsidy in respect of houses had been approved under Section 32 of that Act in the case of five local authorities, Norwich and West Hartlepool County Boroughs, Thurnscoe and Royston Urban Districts and Sedgefield Rural District.

OVERCROWDING

The Minister of Health, Sir Kingsley Wood, issued, recently, an important circular to all housing authorities on the further steps needed to bring into operation the whole of the overcrowding provisions of the Housing Act, 1935.

The Act of 1935 contemplates dealing with overcrowding in each area by fixed stages, marked by dates to be prescribed by the Minister. The first stage is the carrying out and completion of the local surveys of overcrowding; the second is the submission to the Minister by the housing authorities of reports on the extent of overcrowding in each district revealed by the survey. The date prescribed for submitting these reports is June 1, 1936, but many reports have already been received, so that the Minister is now able to prescribe the next steps towards bringing the Act into full force.

The most important date still to be fixed was that from which new overcrowding will be illegal. Those already living under overcrowded conditions at the prescribed date are protected until other suitable accommodation is available, but it is clearly desirable that the fixed date should not apply in an area unless and until adequate arrangements are in sight, not merely for making fresh overcrowding unnecessary, but for providing sufficient accommodation to "decrowd" within a reasonable time those who are at present overcrowded. On the other hand, the reports of surveys already received show that in many districts overcrowding is not so extensive as to prevent a full application of the Act at a reasonably early date.

The circular points out that after consulting the associations of local authorities and subject to the consideration of any representations from individual local authorities, the Minister has now prescribed a date from which overcrowding will be an offence in all areas where the number of overcrowded families is less than one hundred or is less than 2 per cent. of the number of working-class houses; the date fixed is January 1, 1937.

Authorities whose areas have more overcrowding than this standard can apply to the Minister before June 1 next to have the same date fixed for their areas, and this will be considered on its merits.

The fixing of January 1 next will give authorities time to put in hand rehousing before then and to give publicity to the provisions applicable before they come into operation. In those districts where overcrowding is acute and the whole problem consequently more difficult, a later date than January 1 may be necessary, and the Minister invites individual authorities to make, not later than July 1, suggestions in the light of their knowledge of their own local difficulties.

A further stage under the Act is the entry in rent books of a summary of the new provisions about overcrowding and a statement of the permitted number of occupants for the house in question. A date has to be prescribed, six months after which notice in the prescribed form must be inserted in every rent book. These entries should clearly be made as from the date when new overcrowding becomes illegal, and the Minister, therefore, proposes to fix the appointed day six months before the day from which offences can occur; where the latter is January 1, 1937, the former will, therefore, be July 1, 1936.

The new circular also deals with the methods which local authorities should adopt to inform owners and occupiers of the permitted number of occupants for their house under the Act and points out that it would be desirable and helpful for authorities to give publicity to the prescribed dates and to the new overcrowding provisions generally.

As already mentioned those already living under overcrowded conditions at the prescribed date are protected until other suitable accommodation is available. The circular, therefore, deals with the steps to be taken by local authorities to secure the rapid provision of necessary re-accommodation, and the considerations to be borne in mind in assessing the need. Local authorities must submit a general rehousing proposal by August 1, 1936, based on a rough estimate of need derived from their surveys. Specific building proposals will need to be based on a closer scrutiny of the ascertained need in terms of type and size, as well as numbers, of houses required and of the possibilities of re-allocating existing houses or abating overcrowding by removal of sub-tenants or lodgers.

The circular then deals with suggested sizes of houses and the number and size of rooms which can be regarded as adequate for working-class families of various sizes.

The circular (Circular 1539) has been placed on sale and copies may be obtained (price 2d.), direct from the Stationery Office or through any bookseller.

SLUM CLEARANCE

The latest figures showing the position of slum clearance and rehousing are summarized below :—

Clearance Areas and Orders

During March the local authorities declared areas covering 5,707 houses, as compared with 4,001 houses in the previous month. During April a further 6,244 houses were included in areas declared. These figures represent the proposed displacement of 20,442 and 29,916 persons respectively.

During March, orders submitted by local authorities to the Minister covered 4,463 houses and proposed the displacement of 18,450 persons; this compared with 4,253 houses and 17,412 persons in the previous month. The number of orders submitted dropped during April to 2,997 houses effecting the displacement of 13,088 persons. This drop is no doubt accounted for by the effect of the Easter recess upon local authorities' business.

During March, orders confirmed by the Minister covered 3,524 houses and, during April, a further 3,079 houses. These orders involved the displacement of 14,595 and 12,523 persons respectively.

These figures show that the good rate of progress during the last few months is being generally well maintained.

Rehousing Progress

The latest figures of rehousing progress available are those for February and March. At the end of February 53,387 houses were under construction by local authorities as compared with 51,804 at the end of January; 41,655 of these had been definitely allocated to the purposes of the Act of 1930, and a considerable proportion of the remainder are likely to be so allocated. At the end of March 53,929 houses were under construction, including 41,309 already allocated to the 1930 Act.

THE WEEK'S BUILDING NEWS

LONDON & DISTRICTS (15 MILES RADIUS)

SOUTH HARROW. *Church.* A site has been secured by the Methodist Union between Tregenna Avenue and King's Road for the erection of a new church. Plans are in course of preparation.

SOUTHERN COUNTIES

GRAVESEND. *Flats.* The Corporation has approved plans by the borough architect for the erection of flats in West Street.

HASTINGS. *Flats, etc.* Plans passed by the Corporation: Two flats, Greville Road, for Messrs. Ward, Son and Wray; three shops and flats, Sedlescombe Road, for Mr. P. Stubberfield; 50 houses, Parker Road, for Mr. T. E. Relfe; alterations, 4 Bank Buildings, for Messrs. Jeffery and Wyatt; additions, Dorset Laundry, Hoads Wood Road, for Mr. C. Payne; 14 houses, Mildenhall Drive, for Mr. J. S. D. Hicks; alterations, old police station, Norman Road, for Messrs. Callow and Callow; four houses, Priory Close, for Mr. R. H. Robinson; alterations, Central Hall, Bank Buildings, for Mr. J. B. Ward; two houses, Parker Road, for Mr. C. Winter.

PORTSMOUTH. *School.* The Education Committee has purchased a site at East Cosham for the erection of a senior school.

PORTSMOUTH. *Rebuilding, etc.* Plans passed by the Corporation: Rebuilding club house, Northern Parade, for Alexandra Bowling and Social Club; motor station, Clarendon Avenue, for Messrs. Wadham Bros.; two houses, Second Avenue, for Mr. A. Clarke; cinema, Commercial Road, for Associated British Cinemas, Ltd.; showroom extension, 50 London Road, for Mr. J. V. Forman; showrooms, 208-210 Commercial Road, for Phillips Furnishing Stores, Ltd.; alterations, Esplanade Assembly Rooms, for Messrs. Brickwood & Co., Ltd.; cafe alterations, 54-6 Commercial Road, for Mr. R. Carminati.

PORTSMOUTH. *Houses.* The Corporation has approved plans for the development of the Drayton Manor estate, provision being made for the erection of 429 houses and six shops.

PORTSMOUTH. *Development.* The Corporation has approved a scheme for the development of the Lump Fort site, provision being made for a café and dance hall, bathing pool, sports centre and an underground car park.

MIDLAND COUNTIES

BLACKMINSTER. *School.* The Worcestershire Education Committee has purchased a site at Blackminster for the erection of a senior school.

CATSHILL. *School.* The Worcestershire Education Committee is to erect a senior school for 480 at Catshill.

WOLVERHAMPTON. *School.* The Wolverhampton Education Committee has purchased a site at Coalway Farm, Penn, for the erection of an elementary school.

WOLVERHAMPTON. *Shops, etc.* Plans passed by the Corporation: Shops, Stafford Road, for Co-operative Society, Ltd.; 12 houses, Bhylls Lane, for Mr. D. Henshaw; 12 houses, Warstones Road, for Mr. J. R. Wooddisse; two houses, Holly Bush Lane, for Mr. C. M. Jones; eight houses, Warstones Road, for Mr. A. L. Davies; warehouse extensions, Napier Road, for Messrs. J. Baker and Sons; public house, Penn Road, for Wolverhampton and Dudley Breweries, Ltd.; two houses, Rupert Street, for Messrs. Janks, Ltd.; additions, Three Tuns Hotel, Stafford Road, for Atkinsons Brewery Co., Ltd.; four houses, Ribbesford Avenue, for Messrs. Batho and Pritchard; three shops and six houses, Green Lane, for Messrs. Tate & Co.; eight houses, Oxley Moor estate, for Messrs. Pidgeon Bros.; warehouse, Crown Street, for Messrs. R. A. Walley, Ltd.; six houses, Kingsway Road, for Messrs. A. M. Griffiths and Son, Ltd.; two houses, Westlands Road, for Mr. W. Howell; 16 houses, Stafford Road, for Bushbury Estate Co.; two houses, York Gardens, for Mr. P. Blundell; two houses, Crathorne Avenue, for Mr. W. Sharratt; 26 houses, Pinfold Lane, for Mr. L. T. Taylor; two houses, off Pinfold Lane, for Mr. A. B. Tomlinson; 10 houses, Cadman Crescent, for Mr. H. C. Sargeant; nine houses, Uplands Avenue, for Mr. J. R. Wooddisse; two houses, Bradmore Road, for Mr. R. Carpenter; reconstruction, St. George's Church Hall, Bilston Street, for Rev. S. L. Purches; 10 houses and two shops, Finchfield Lane, for Mr. S. E. Loud; four houses, Warstones Road, for Mr. W. Beard.

NORTHERN COUNTIES

MANCHESTER. *Extensions.* The Corporation has approved plans for extensions at the Victoria University of Manchester in Burlington Street, Chorlton.

MANCHESTER. *School.* The Board of Education has approved the plans of the Manchester Education Committee for the erection of an elementary school at Abbey Hey.

SHEFFIELD. *Houses.* Plans passed by the Corporation: 40 houses, Swanbourne Road, for Messrs. M. J. Gleeson, Ltd.; 10 houses, Rex Avenue, for Mr. F. Robson; 12 houses, Sandford Grove Road, and four, Burngreave Road, for Mr. C. W. Alflat; eight houses, Toftwood Avenue, for Messrs. Watson, Lewis & Co.; 14 houses, Glen View Road, for Messrs. Wright and Walton; four houses, Crowland Road, for Messrs. Oxspring Bros.; three houses, Park Road, for Mr. W. Patchett; 10 shops and eight houses, Richmond Road, for Messrs. E. and H. Oliver; 148 houses, Arbourthorne estate, for Corporation Estates Committee; 18 houses, Totley Lane, for Mr. T. Osborne; two houses, Heath Road, for Mr. E. Thompson; two houses, Warwick Road, for Mr. G. Oxley.

THE BUILDINGS ILLUSTRATED

BOOTS' BUILDING, STAMFORD STREET (pages 761-766). The general contractors were Messrs. Holloway Brothers (London), Ltd. The principal sub-contractors and suppliers included :—

H. J. Moyes, demolition; The Sevenoaks Brick Co., Ltd., bricks; Patent Impervious Stone and Construction Co., Ltd., artificial stone; Dorman Long & Co., Ltd., structural steel; Kleine Co., Ltd., fireproof construction, floors; Rigby (London), Ltd., Rebax special roofings; The Roneo Co., Ltd., partitions; Joseph F. Ebner, Ltd. wood-block flooring; Limmer and Trinidad Lake Asphalt Co., Ltd., Trinnazzo patent flooring; Young, Austen and Young, Ltd., central heating and ventilation; Boots Pure Drug Co., Ltd., electric wiring, electric light fixtures, bells, joinery, office fittings; Joseph Chater and Son, Ltd., sanitary fittings; J. Whitehead and Sons, Ltd., stair-treads; Carter and Aynsley, Ltd., door furniture; W. H. Henley & Co., Ltd., casements and window furniture; Ericsson Telephones, Ltd., telephones; Eric Munday, Ltd., folding gates, metalwork and signs; Comyn Ching & Co., Ltd., metalwork; William Mallinson and Sons, Ltd., timber for panelling; Carter & Co., Ltd., tiling; Maple & Co., Ltd., textiles and furniture; Express Lift Co., Ltd., lifts; Synchromatic Time Recording Co., Ltd., clocks.

SIMPSONS STORE, PICCADILLY (pages 767-777). The general contractors were : John Mowlem & Sons. The principal sub-contractors and suppliers included :—

Goodman Price, Ltd., demolition; Dorman Long & Co., Ltd., steelwork; Mather and Platt, shutters and sprinklers, cold-water storage tank; Carrier-Ross Engineering Co., Ltd., heating and hot-water services, ventilation; Sturtevant Engineering Co. Ltd., vacuum cleaning plant; Lamson Pneumatic Tube Co., Ltd., cash tube installation; Le Grand Sutcliffe and Gell, Ltd., artesian well; Express Lift Co., Ltd., lift installations; Art Pavements and Decorations, Ltd., terrazzo paving; Fenning & Co., Ltd., travertine and marble; Carter & Co., Ltd., tiles; W. H. Froy and Sons, Ltd., sanitary ware; Jas. Gibbons & Co., Ltd., ironmongery; James Clark and Son, Ltd., vitrolite, mirrors; Crittall Manufacturing Co., Ltd., metal windows, laylight over main stair; J. A. King & Co., Ltd., glascrete window to main stair and canopies at first- and fifth-floor levels; Haywards Ltd., roof lights; W. T. Allen & Co., Ltd., escape stair railing, roof railing; Matthew Hall & Co., Ltd., plumbing; J. Starkie Gardner, Ltd., main stair balustrade; Kleine Co., Ltd., hollow tile floors; H. H. Martyn & Co., Ltd., ventilation louvres, lift trims; Armstrong Cork Co., Ltd., cork floors; Webber and Corben, Ltd., stonework; Benham and Sons, Ltd., kitchen equipment; Lumley & Co., soda fountain unit, snack bar; Inlaid Ruboleum Tile Co., Lintile; Electrical Installations, Ltd., electrical wiring; Joseph Avery, Ltd., curtains; Claude-General Neon Lights, Ltd., flood-lighting; Becco Engineering Co., Ltd., water-treating plant; Fredk. Braby & Co., Ltd., 500-gallon break tank; Dictograph Telephones, Ltd., dictacall installation; Synchronome Co., Ltd., synchronized clocks; F. Sage & Co., Ltd., sports, shoe, cigar and gift shops and ground floor; Bath Cabinet Makers, Ltd., first and second floors, clubroom and board rooms; D. Burkle and Son, Ltd., third floor; George Parnall & Co., fourth floor; Halse and Sons, Ltd., office partitions, etc., sixth floor; Pel, Ltd., furniture; James Templeton & Co., carpets; G. H. Morton and Sons, snack bar, telephone boxes; E. Pollard & Co., show windows; Thos. Cook, Keith Prowse, information bureau; Daymonds, Ltd., lettering; Eric Munday and Pickfords, Ltd., directional indicators; J. S. Lyon, Ltd., office furniture; C. Harvey & Co., Ltd., special light fittings; Best and Lloyd, Ltd., office light fittings; R. Hovenden and Sons, barber's shop fittings; W. C. Pantin, Ltd., conveyer chute; Trussed Concrete Steel Co., Ltd., hy-rib key mesh reinforcement for suspended ceilings.

Highways Construction, Ltd. ; Town Gas Boilers (Bonecourt), Ltd., gas-fired boilers ; Connally Bros. (Curriers), Ltd., Vaumol leather ; Marston Valley Brick Co., Ltd., bricks; Cement Marketing Co., Ltd., cement ; Plastering Ltd., plastering ; G. K. Jensen & Co., Ltd., kitchen lifts ; S.G.B. (Dudley), Ltd., glazed tiles ; Cope & Co., Ltd., tiling ; Venesta, Ltd., galvanized steel doors ; Francois Cementation Co., Ltd., waterproofing ; T. and W. Ide, Ltd., glass (non-reflecting).

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_2	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_2	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_2	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_2	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	Glamorgan-shire, 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_2	FELIXSTOWE	E. Counties	1 5	1 0½
A	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 ...	Mid. Counties	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_2	Kendal ...	N.W. Counties	1 5	1 0½
A_2	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.	4" d.	6" s.	6" d.
Straight Pipes	per F.R.	0	9	1	1
Bends	each	1	9	2	6
Taper Bends	"	3	6	5	3
Rest Bends	"	4	3	6	3
Single Junctions	"	3	6	5	3
Double "	"	4	9	6	6
Straight channels	per F.R.	1	6	2	6
¾" Channel bends	each	2	9	4	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

		s.	d.
The following d/d F.O.R. at Nine Elms:			
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, ¾"	Sq.		18	6
" 1"	"		1	6
" 1¼"	"		1	2
" 1½"	"		1	5
" 2"	"		1	10
Deal matchings, ¾"	"		14	0
" 1"	"		15	6
Rough boarding, ¾"	"		1	4
" 1"	"		16	0
" 1½"	"		18	0
Plywood, per ft. sup.	"		1	6

Thickness	¼" A	¼" B	¼" BB	⅜" A	⅜" B	⅜" BB	½" A	½" B	½" BB	⅝" A	⅝" B	⅝" BB
Qualities	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Birch 60 × 48	4	2½	2	5	3	2¾	7	5	4	8	6	5
Cheap Alder	–	2	1½	–	3½	2	–	–	–	–	–	–
Oregon Pine	–	2½	–	3	2¾	–	4	3½	–	5	4½	–
Gaboon Mahogany	4	3¼	–	5	4½	–	7	6½	–	8	7	–
Figured Oak	6½	5	–	7½	5¾	–	10	8	–	1/–	9	–

		£	s.	d.
Scotch glue	lb.			8

SMITH AND FOUNDER

Tubes and Fittings

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

		¼"	⅜"	½"	¾"	1"
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	Per cent.		Per cent.
	TUBES.		
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, ¾"	"	10	6
" " ½"	"	10	0

SMITH AND FOUNDER—*continued*

		s.	d.
Mild steel reinforcing rods, ⅜"	cwt.	9	6
" " ½"	"	9	6
" " ¾"	"	9	6
" " 1"	"	9	6
" " 1½"	"	9	6

		¾" s.	¾" d.	4" s.	4" 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	0	5	0
Swan-necks up to 9" offsets	"	3	9	6	0
Plinth bends, 4½" to 6"	"	3	9	5	3
Half-round rain-water gutters of ordinary thickness metal	F.R.		5		6
Stop ends	each		6		6
Angles	"	1	7	1	11
Obtuse angles	"	2	0	2	6
Outlets	"	1	9	2	3

PLUMBER

		s.	d.
Lead, milled sheets	cwt.	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	2 6
Coated	"	1 1	1 3	2 8
Galvanized	"	2 0	2 6	4 6
Holderbats	each	3 10	4 0	4 9
Bends	"	3 9	5 3	10 3
Shoes	"	2 10	4 4	9 6
Heads	"	4 8	8 5	12 9

PLASTERER

		£	s.	d.
Lime, chalk	per ton	2	5	0
Plaster, Coarse	"	2	10	0
" fine	"	4	15	0
Hydrated lime	"	3	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.	s. F.S.				2½
" " 26 oz.	" "	"			3
Flemish, Arctic, Figures (white)*	"				7
Blazoned glasses	"			2	6
Reeded: Cross Reeded	"				11
Cathedral glass, white, double-rolled, plain, hammered, rimpled, waterwite	"				6
Crown sheet glass (n/e 12" × 10")	"			2	0
Flashed opals (white and coloured)	"	1	0 and	2	0
¼" rough cast; rolled plate	"				5½
¼" wired cast; wired rolled	"				9½
¼" Georgian wired cast	"				11
¼" Polished plate, n/e 1 ft.	"	†10 to		‡1	1
" " 2	"	†1 2	"	‡1	4
" " 4	"	†2 3	"	‡2	6
" " 8	"	†2 9	"	‡3	2
" " 20	"	†3 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
" " " 5 ft.	"				4 0
" " " 7 ft.	"				5 0
" " " 15 ft.	"				6 0
" " " over 15 ft.	"				7 6
"Calorex" sheet 21 oz., and 32 oz.	"	2	6 and	3	6
" rough cast ¼" and ½"	"			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
Whitening	"			4
Size, double	firkin		3	0
Copal varnish	gall.		13	0
Flat varnish	"		14	0
Outside varnish	"		16	0
White enamel	"	1	15	0
Ready mixed paint	"		13	6
Brunswick black	"		7	6

CURRENT PRICES FOR MEASURED WORK

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

EXCAVATOR AND CONCRETOR

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

DRAINLAYER

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

BRICKLAYER

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

ASPHALTER

		s. d.
½″ Horizontal dampcourse	Y.S.	4 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
¾″ deal sawn boarding and fixing to joists	Sqr.	1 14 6
1″ ,, ,, ,, ,, ,,	,,	1 17 6
1½″ ,, ,, ,, ,,	,,	2 3 0
2″ × 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, 1½″ heads, 1″ inside and outside linings, ⅜″ parting beads, and with brass faced axle pulleys, etc., fixed complete	,,	3 7
2″ ,, ,, ,, ,,	,,	3 10
Extra only for moulded horns	Each	6
1½″ deal four-panel square, both sides, door	F.S.	2 0
2″ ,, ,, ,, ,,	,,	2 8
1½″ ,, but moulded both sides	,,	2 4
2″ ,, ,, ,, ,,	,,	3 0
4″ × 3″ deal, rebated and moulded frames	F.R.	1 0
4½″ × 3½″ ,, ,, ,,	,,	1 4
1½″ deal tongued and moulded window board, on and including deal bearers	F.S.	1 9
1½″ deal treads, 1″ risers in staircases, and tongued and grooved together on and including strong fir carriages	,,	2 6
1½″ deal moulded wall strings	,,	2 1
1½″ ,, outer strings	,,	2 4
Ends of treads and risers housed to string	Each	1 9
3″ × 2″ deal moulded handrail	F.R.	1 3
1″ × 1″ deal balusters and housing each end	Each	2 0
1½″ × 1½″ ,, ,,	,,	2 9
3″ × 3″ deal wrought framed newels	F.R.	1 3
Extra only for newel caps	Each	6 0
Do., pendants	,,	6 0

SMITH AND FOUNDER

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

PLUMBER

		£ s. d.
Milled lead and labour in flats	cwt.	1 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

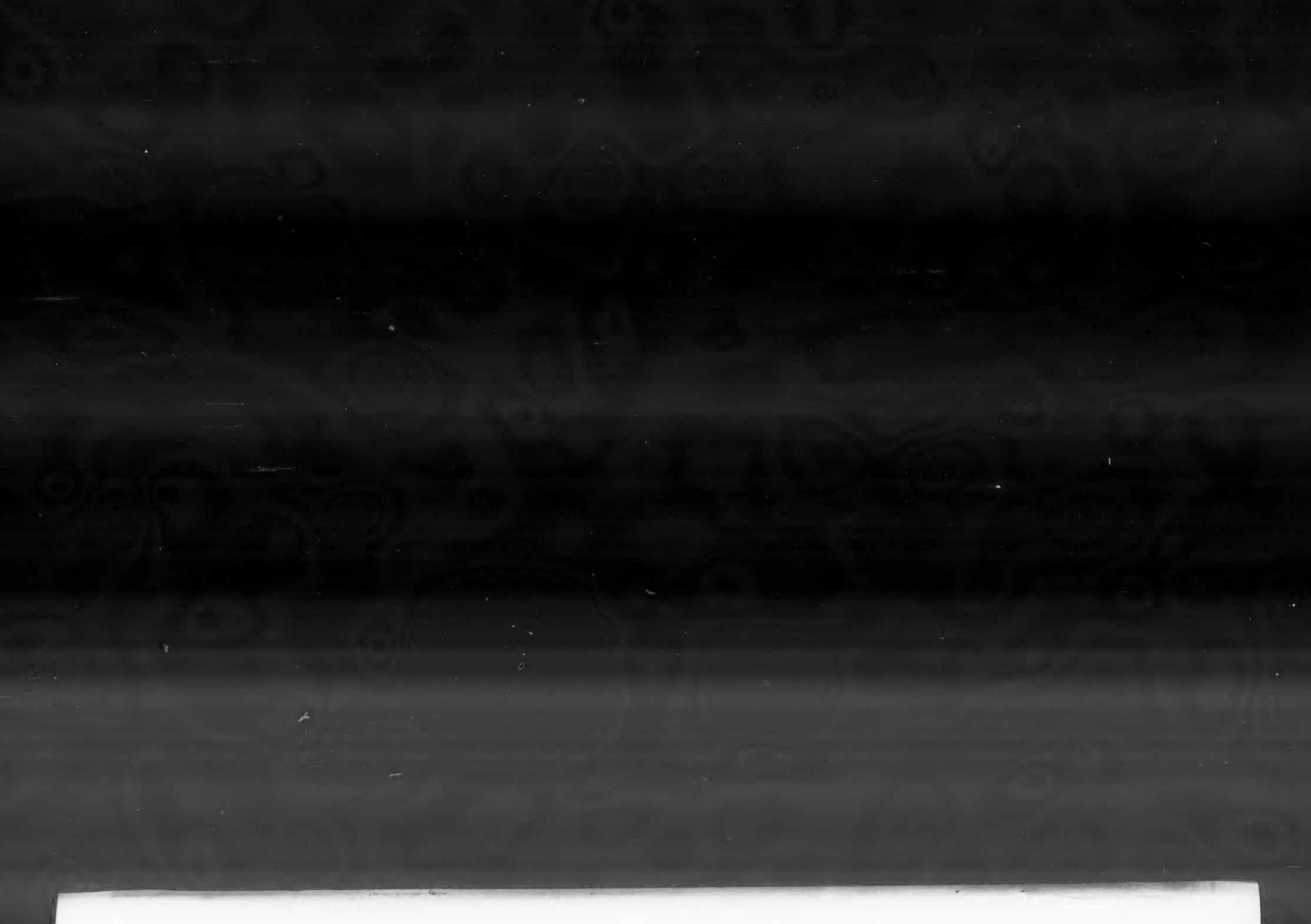
		s. d.
Expanded metal lathing, small mesh	Y.S.	2 0
Do. in n/w to beams, stanchions, etc.	,,	2 9
Lathing with sawn laths to ceilings	,,	1 3
½″ screeding in Portland cement and sand or tiling, wood block floor, etc.	,,	1 5
Do. vertical	,,	1 7
Rough render on walls	,,	1 2½
Render, float and set in lime and 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

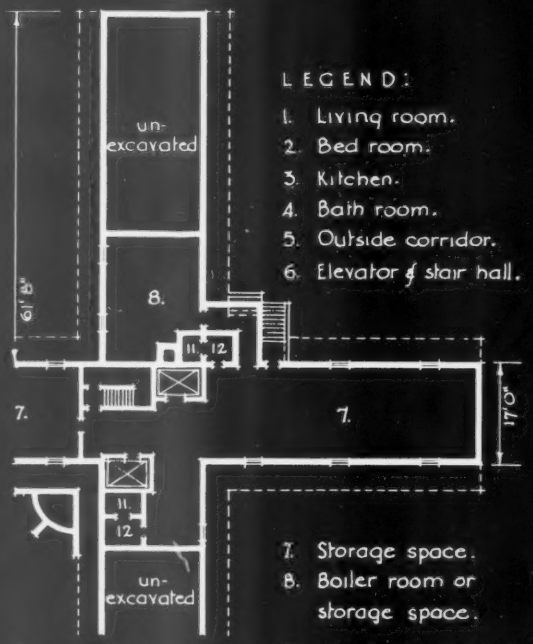
PAINTER

		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



50

TYPE : TWELVE STOREY BLOCKS



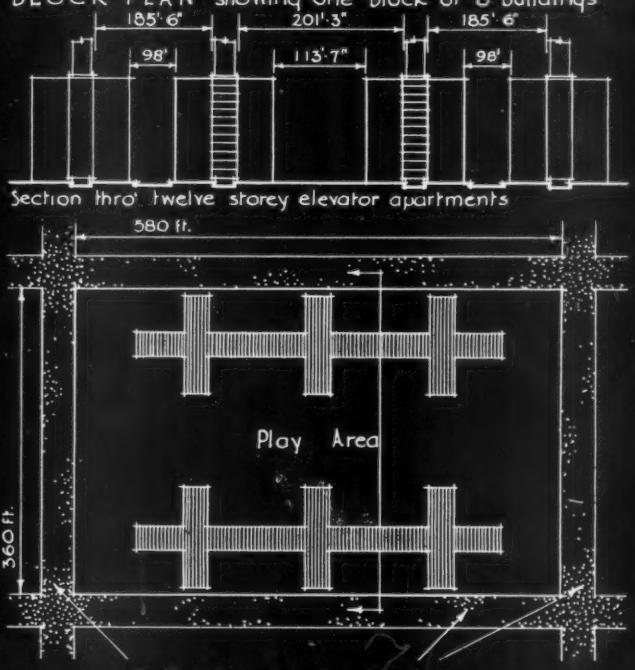
LEGEND:

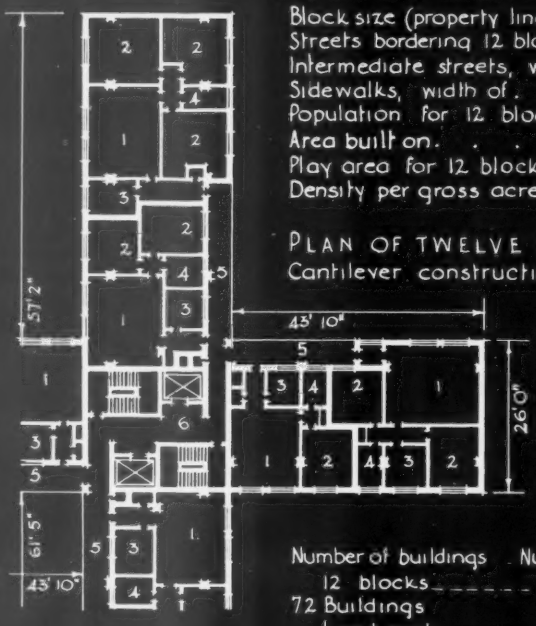
1. Living room.
2. Bed room.
3. Kitchen.
4. Bath room.
5. Outside corridor.
6. Elevator & stair hall.

7. Storage space.
8. Boiler room or storage space.

Basement floor plan. For site plan see sheet (2).

BLOCK PLAN showing one block of 6 buildings





Typical floor plan

Block size (property line to property line)	360 x 580	ft
Streets bordering 12 block area, width of	80	"
Intermediate streets, width of	80	"
Sidewalks, width of	10	"
Population for 12 blocks	27,648	People
Area built on	17·3	%
Play area for 12 blocks	115,450	sq. ft.
Density per gross acre	346	People

PLAN OF TWELVE STOREY ELEVATOR APARTMENTS : ONE UNIT

Cantilever construction, partial basement.

FOR SECTION SEE SHEET (6.)

Legend continued

11. Incinerator
12. Incinerator room

Scale for plans 0 10 20 30 40 50

Number of buildings	Number of units in 12 blocks	Number of rooms per unit	Total no. of rooms 12 blocks
72 Buildings 1 unit each	72	384	27,648
Grand total	72		27,648

Factual data of one complete unit — Ten storey buildings

Number of rooms per floor. (Including kitchen.)	32
" " 3 room apartments per floor	2
" " 4 " " " "	4
" " 5 " " " "	2
Total number of " " "	8
" " " " " unit	96
Total " " rooms " unit	384

Information from The Housing Study Guild, New York. (9)

INFORMATION SHEET : ANALYSIS OF VARIOUS TYPES OF HOUSING SCHEME

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

Supplement to THE ARCHITECTS' JOURNAL for May 21, 1936

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INFORMATION SHEET

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AMERICAN HOUSING

(ix)

This sheet gives the site lay-out, plans, sections and general data for the twelve-storey flat block with basement. See also Sheets 292, 297, 301, 305, 329, 335, 338 and 353.

COSTS	Cost per 384-room unit	Cost per room including kitchen
Foundations and Basement :—	$	$
Excavation and disposal by steam shovel	577·05	
By hand	740·90	
Backfill	146·60	
Rough grading	64·35	
Concrete footings and basement walls, including forms and reinforcement	5,583·60	
Steel columns	791·00	
Floor screed	478·80	
Concrete waterproofing	188·20	
Total	8,570·50	22·30
Basement Finish :—	$	$
Stairs, forms and reinforcement	187·55	
6 in. hollow tile walls	242·90	
Column fireproofing and partitions	197·20	
Handrails to stairs	51·45	
Steel sashes and glazing	39·80	
5 fireproof doors and hardware	93·50	
Whitewashing and painting	85·80	
22 electrical outlets and fittings	103·40	
Slop sink	44·00	
Total	1,045·60	2·70
Structure and Enclosure :—	$	$
Steel columns	12,369·00	
Setting-out anchor bolts	39·50	
Grouting column bases	19·75	
Floor slabs, forms and reinforcement	27,442·00	
Roof slab, forms and reinforcement	2,286·85	
Hollow-tile walls	4,364·50	
Curtain walls with external stucco and internal plaster	15,518·00	
Steel sashes and glazing	9,988·00	
Insulation	1,064·05	
Total	73,091·65	190·35
Stairs, Halls, Corridors, Lift Shafts, etc. :—	$	$
Structural steel	1,085·00	
Floor slabs	4,111·00	
Roof slab	487·00	
Hollow-tile walls	7,772·95	
Steel stairs, balcony railings, etc.	10,864·85	
Main entrance steps	63·45	
Floor finish (cement)	559·00	
Roofing of corridors, penthouse, etc.	399·20	
Fireproof doors and furniture	2,106·80	
Painting	673·20	
151 electrical outlets	865·25	
Bellwork and mailboxes	1,025·20	
6 slop sinks	705·00	
Total	30,737·90	£0·05
Roof :—	$	$
Copper flashings, etc.	365·80	
3-ply roofing	367·00	
Insulation and screeded fill	920·00	
Parapet, hollow tile, glazed inside, rendered outside	1,095·20	
Parapet, glazed tile coping	262·35	
Total	3,010·35	7·85
Finishes and Equipment :—	$	$
Column fireproofing (2 in. hollow tile and plaster)	2,332·00	
2 in. plaster partitions	7,178·00	
Plastering of internal walls	2,086·00	
96 fireproof entrance doors and furniture	2,251·20	
600 internal doors and furniture	6,267·60	
$\frac{7}{8}$ in. hardwood floors	8,530·00	
Skirtings and picture mouldings	1,807·40	
Tile floor for bathrooms	2,214·00	
Painting : walls, ceilings, doors, etc.	6,292·80	
264 metal wardrobes and equipment	3,660·00	
96 kitchen cabinets	4,320·00	
96 medicine cabinets	624·00	
588 window blinds	588·00	
96 gas cookers	2,400·00	
96 refrigerators	7,680·00	
Total	58,231·00	151·65
Lifts :—	$	$
Cost of two lifts	13,728·00	
26 metal lift doors and furniture	2,298·00	
Wiring	393·10	
Total	16,419·10	42·75
Incinerators :—	$	$
Total cost	4,601·45	12·00
Plumbing :—	$	$
Cost per unit, not including gas lines	39,244·80	102·20
Heating :—See Sheet 297	$	$
Total cost	14,979·84	39·01
Gas and Electrical :—	$	$
Initial cost of gas carcasing	2,688·00	
Electric meter connections	337·92	
1,152 outlets and fittings	6,508·80	
Total	9,534·72	24·83
Total cost per room, including kitchen		$675·69

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BEAMS UNDER VARIOUS LOADING CONDITIONS.

BENDING MOMENTS AND DEFLECTIONS.

9. BEAMS SUPPORTED AT ENDS: Uniformly distributed load.

R. (max. shear) = R1. = $\frac{W}{2}$

M, distance X. = $\frac{Wx}{2}\left(1-\frac{X}{l}\right)$

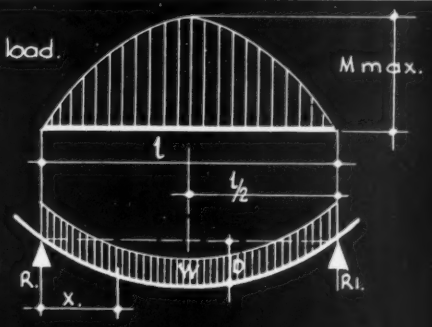
M max. at centre = $\frac{Wl}{8}$

W max. = $\frac{8fz}{l}$

D max. = $\frac{5Wl^3}{384EI}$

BENDING MOMENT &

LOADING DIAGRAMS:



10. BEAMS SUPPORTED AT ENDS: Load increasing uniformly to one end.

R. = $\frac{W}{3}$

R1. (max. shear). = $\frac{2W}{3}$

M, distance x. = $\frac{Wx}{3}\left(1-\frac{x^2}{l^2}\right)$

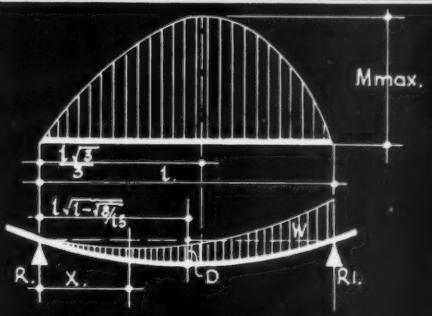
M max., distance $\left(\frac{l\sqrt{3}}{3}=.577l\right)$ = $\frac{2Wl}{9\sqrt{3}}=\frac{Wl}{7{\cdot}8}$

W max. = $\frac{27fz}{21\sqrt{3}}$

D max. = $\frac{.013044Wl^3}{EI}$

BENDING MOMENT &

LOADING DIAGRAMS



11. BEAMS SUPPORTED AT ENDS: Load decreasing uniformly to the centre.

R (max. shear) = R.1. = $\frac{W}{2}$

M, distance X. = $Wx\left(\frac{1}{2}-\frac{x}{l}+\frac{2x^2}{3l^2}\right)$

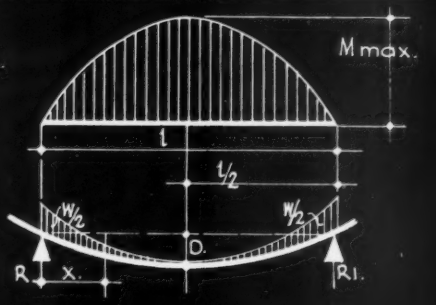
M max., distance $\frac{l}{2}$ = $\frac{Wl}{12}$

W max. = $\frac{12fz}{l}$

D max. = $\frac{3Wl^3}{320EI}$

BENDING MOMENT &

LOADING DIAGRAMS.



12. BEAMS SUPPORTED AT ENDS: Load increasing uniformly to the centre.

R (max. shear) = R1. = $\frac{W}{2}$

M, distance x. = $W\left(\frac{1}{2}-\frac{2x^2}{3l^2}\right)x.$

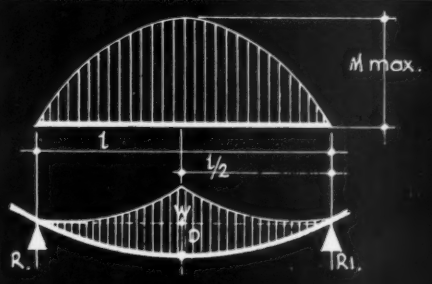
M max. distance $\frac{l}{2}$ = $\frac{Wl}{6}$

W max. = $\frac{6fz}{l}$

D. max. = $\frac{Wl^3}{60EI}$

BENDING MOMENT &

LOADING DIAGRAMS.



INFORMATION SHEET: CALCULATIONS FOR BEAMS: 3.

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

Supplement to THE ARCHITECTS' JOURNAL for May 21, 1936

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INFORMATION SHEET

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BEAM CALCULATIONS

(iii)

THIS Sheet gives various formulæ for safe load, shear stress, bending moments and deflections. The notation used is as follows :—

$W^{max.}$ = Maximum safe load in tons.

W = Total load in tons.

l = Span in inches.

E = Modulus of elasticity (assumed at 12,000 lbs. per sq. in. for steel).

I = Moment of Inertia in inch units, assumed constant throughout the length of the beam.

Z = Section modulus in inch units $= \frac{I}{y}$.

y = Half the depth of section in inches.

f = Safe stress (tons per sq. in.) in extreme fibres of beam.

x = Distance in inches.

a = Distance in inches.

b = Distance in inches.

Deflection.. In the case of beams intended to carry plastered ceilings, experience shows that, to avoid cracking of plaster, the vertical deflection should be limited to not more than $\frac{1}{360}$ of the total span. For steel beams this span limit (in feet) is approximately twice the depth in inches.

See also sheets 173 and 176.

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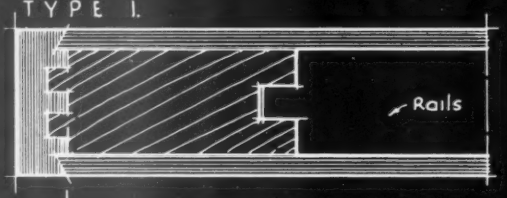
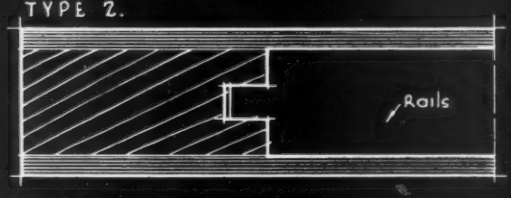
TYPE 1.

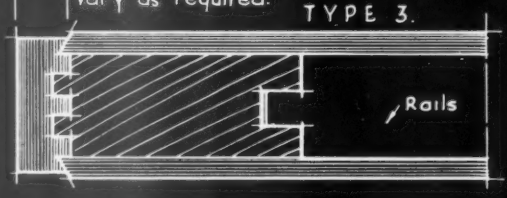


TYPE 2.

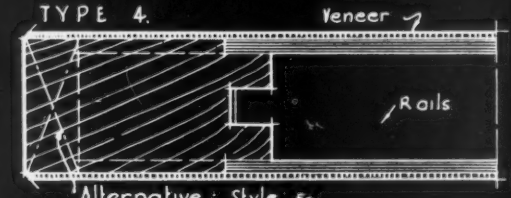


This dimension may vary as required.

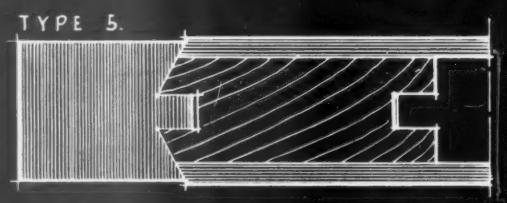
TYPE 3.



TYPE 4.



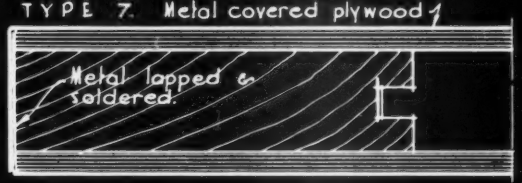
TYPE 5.



TYPE 6. (Secondary fire resisting.)

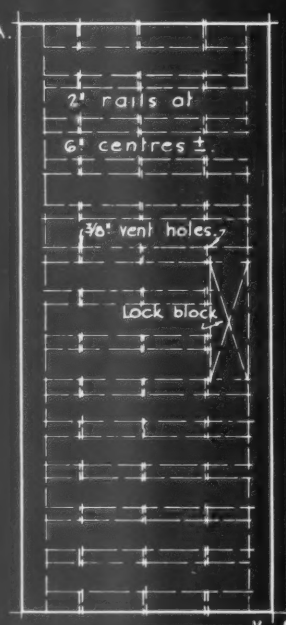
Top & bottom rails are morticed to styles, other rails are tongued into grooves run on the styles.

TYPE 7. Metal covered plywood

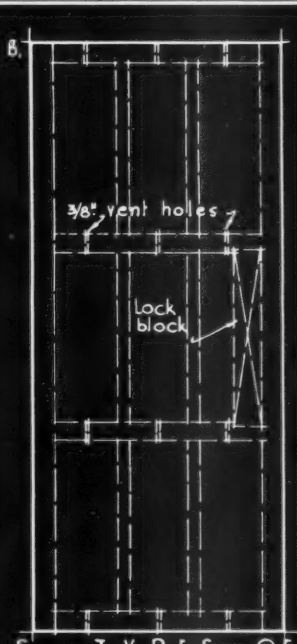


SCALE OF DETAILS: HALF FULL SIZE.

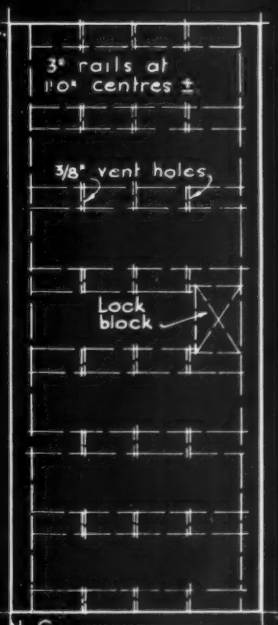
TYPE A.



TYPE B.



TYPE C.



VARIOUS TYPES OF FRAMING.

INFORMATION SHEET : DETAILS OF VARIOUS TYPES OF FLUSH DOOR

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

Supplement to THE ARCHITECTS' JOURNAL for May 21, 1936

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INFORMATION SHEET

• 357 •

FLUSH DOORS

This sheet shows various methods of building up in plywood, doors with (a) entirely flush faces—(b) flush faces with a small marginal break. The ventilation holes shown are necessary to avoid dead-air pockets in the door.