NEW EXHIBITION CENTRE

PROPOSED BUILDING AT EARL'S COURT

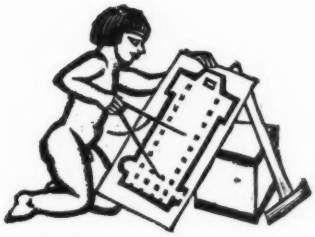
A NEW centre for exhibitions, large-scale sporting events and entertainments, is to be built upon the site of the Earl's Court Exhibition. The building will be of reinforced concrete, with external walls 80 ft. in height, and will contain twelve acres of floor space on two storeys. Of the ground floor space two and a half acres will be free of columns or other obstruction. The banked seating in the main hall will be in sections and mounted upon wheels. When the hall is required for other purposes, these sections will be towed by tractors to a specially designed store. The building has been designed by Mr. C. Howard Crane and Messrs. Gordon Jeeves, and it is expected to be completed by January, 1937, at a cost of £1,250,000.

The composite photograph above shows the general appearance of the completed building from the air, with the Empress Hall beyond it. The Earl's Court Underground Station will be reconstructed to give adequate passenger and goods service direct to the building.

HOUSING EXHIBITION

In connection with the fourteenth International Housing and Town Planning Congress held in London last week, an exhibition of photographs, plans and models of some of the most recent British housing schemes (including cottages, flat blocks, etc.), planning schemes and regional surveys, was held at the R.I.B.A.

This photograph of a portion of the section devoted to industrial estates shows plans and illustrations of Port Sunlight and Stewartby and, on the right, photographs from "The Face of Britain," a Paul Rother documentary film.



PRESERVATION: BEST AND SECOND BEST

THE inhabitants of Great Britain show at times, in the opinions they hold, a quite peculiar oddness. And this oddness is never more obvious than in their ability to maintain simultaneously two contradictory views upon a single subject; and this without any apparent sense of confusion or of a fussy Continental desire to resolve the incompatible.

By far the most common subject for this contradictory outlook is the land in which these inhabitants live—nearly everyone by turns is passionate in advocating one or other of two views; the view of business (or self-interest) and the view of the private citizen anxious to retain the beauties of his countryside.

As he promotes a new industry in the south, the business man, brushing aside the half-hearted beginnings of regional planning regulation, cries aloud of red tape and of the strangling of progress; but later, and by then a private citizen on holiday, he grieves as he escapes from the scenes of a past progress which he and his kind have made.

Once beyond their own immediate locality nearly all men and women become appreciative of their country in the best sense, and sincerely resent the destruction taking place of qualities which can be destroyed but never replaced.

But on their return to the district they know best—where their influence for good is most strong—a change takes place in their feelings towards these things. Some curious myopia, some distorted patriotism or mere familiarity, makes them proof against seeing in their own surroundings what they have so truly assessed in the surroundings of others. And for the next eleven months they all exist as though their daily surroundings were an unalterable purgatory, in which ugliness and the weariness of muddle only confer a higher merit on those who suffer them.

Small imagination is required to foresee what will be the results of this attitude. Throughout the civilized world there are few who are ignorant of Britain's achievements during the last hundred years; in Britain there are few who realize how heavy a price has been paid for this achievement in the abuse of all the surface of Britain—in town and country alike.

Today it might seem worth while, before it is too late, to begin the salvation of the countryside by so planning new development that each unit—for the future—may go to form a whole harmonious with all others and with the countryside.

We have said this many times. Now, not devoid of all hope, we say it again. But business instincts, of the most abjectly short-sighted kind, still prevent the great mass of a nation of shopkeepers from seeing more than a week ahead of them, and from determining that their holiday appreciation of their country shall be put to a real use.

Therefore, in place of the best safe-keeping which is proper use we must recommend the second best—that is preservation.

The object of the National Trust, pursued with energy despite an almost total lack of public support, is to preserve the natural beauty of Britain. This second best policy can never be put into action on a large enough scale to supplant the policy of regulated good use. Britain can never be a country of a hundred chaotic cities studded in some weird national park; and, if it ever were, it would stand self-confessed a country of failure, unable to use its environment properly.

Nevertheless, the policy of the National Trust deserves support. It is at least a policy of action, even though of restrictive action. It has seen the evil of the present state and, with the unselfish support of many landowners, has set out to ensure that as much of the countryside of Britain as it can acquire will be safeguarded from abuse in the future. So much—once more, at least—will be available when the inhabitants of Britain one day decide that their land should be properly used.

For the moment the isolated monuments of the country are cared for by the Government. Its countryside, however, is not. And it is to the filling of this somewhat large vacuum that the Trust has set itself.

By supporting the National Trust vigorously and financially those who dislike waste and destruction can take a first and large step in the escape from their own apathy and can also ensure the safety of some of the pleasant places of their countryside.

And if any hesitate, pondering the necessity either of this first objective of preservation or of the greater objective of a good use made pleasing which is still to be undertaken, let them get on a car and see what has happened, just since the war, in their own immediate neighbourhood.

It may help them to make up their minds.

The Architects' Journal
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NOTES & TOPICS

HERBERT MORRISON AND ARCHITECTS

MR. HERBERT MORRISON, Leader of the L.C.C., followed up his recent words in Liverpool by a fighting speech at the A.A. Annual Exhibition opening—and a very optimistic speech it was, for architects.

*

He refused to believe (as most architects appear to think) that all really good architects are long since dead. On the contrary, he expresses the firm belief that there are young architects today who not only can do, but will have the opportunity of doing, as great a work as any of their Renaissance forbears.

*

Well, Mr. Morrison ought to know, for he more than any other man is creating the need for building work—Waterloo Bridge, the South Bank, the new Chiswick road (which is to plough its way through the architectural indifference between Cromwell Road and the Great West Road), the extension of the County Hall, to say nothing of the acres of slums which are to come down and the town plan for London county which is being prepared.

*

And in this noble work there should, to use Mr. Morrison's own words, "be an inspiring partnership between the public administrator and the members of their (i.e., the architects') great profession."

*

Well, the architects are ready. It is up to you, Mr. Morrison, and to you, Major Barnes.

THE LIQUOR OF BRAY

There was a party last week at Bray-on-Thames, when a few well-known architects met a few equally well-known gas engineers, with Dr. Bernard Friedman as the genial host.

*

After a protracted and expanding meal they all fell to discussing the various methods of water heating. I noticed that the majority looked with disfavour at the more or less wasteful thermal-storage systems and lauded the efficiency of instantaneous gas heating for intermittent or continuous use.

*

But in the early morning hours, when brows themselves were heated and the river entrancing and alluring, it was regretted universally that a battery of gas heaters had not been installed to warm up the cold waters of the Thames.

THE THIRD REUNION

The British Committee of the 3rd International Reunion of Architects announce that this year the reunion will be held in the Prague-Vienna-Budapest area, from September 4 to 22.

*

The subject for discussion is, I notice, to be "The Evolution of National Architectures," which contrasts curiously with the subject, "The Conflict Between Formalism and Nationalism in Present-day Architecture," which was discussed at the Moscow reunion in 1931. At that reunion, if I remember rightly, no one raised the suggestion that a national formalism was possible, or even desirable. It all depends, of course, what one means by formalism, but I do not think that National Architectures can be discussed intelligently without reference to at least one of the word's many meanings.

*

Presumably it must raise the questions of Communism, Fascism and Hitlerism, and their influence on the architectural front.

A.T.O.

When they asked Mr. Coppock to give his address to their members last week on "Modern Building Methods and Their Effects on Architects, Technicians and Operatives" the A.T.O. initiated a new kind of occasion, the example of which many professional bodies can afford to follow.

*

Realistic attempts to encourage better co-operation between designer, operative and administrator, by comparing their various viewpoints, is exactly what architecture needs to resolve its present muddle.

*

And its appreciation that the major architectural problems of today are really sociological ones—all a part of the one problem of allowing architecture to take its place as a social service—makes the existence of the A.T.O. a most encouraging sign.

*

The A.T.O's memorandum on housing, issued on the occasion of the present international conference, is an admirable, clearly thought-out affair, of which any young organization could be proud.

*

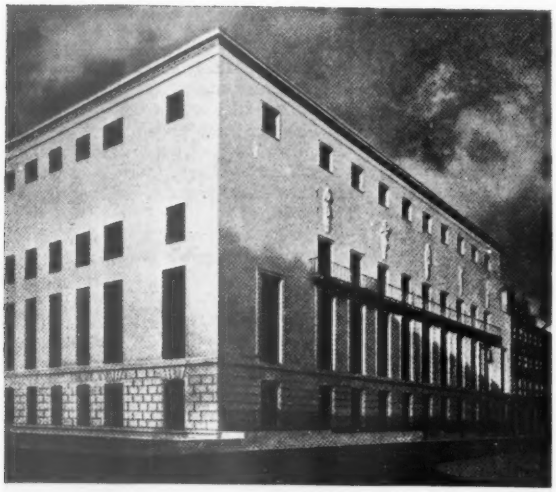
The R.I.B.A. junior members will have to look to their laurels.

A BURNING QUESTION

The burning down of Mr. Stanley Hamp's house during his absence upon holiday—always supposing that the report has not, like that of Mark Twain's death, "been greatly exaggerated"—may bring one more well-known architect face to face with a dreadful decision.

*

Whether or not an architect should design his own house is a question of terrifying gravity. If he does not—how



SEDE DEL « R. INSTITUTE OF BRITISH ARCHITECTS » (DA « THE ARCHITECTURAL REVIEW »).

The illustration from the EDILIZIA MODERNA *referred to on this page.*

great the confession of cowardice. If he does—whom can he blame in future?

*

Mr. Hamp has all my sympathy.

RIBA SENZA DECORAZIONI

The photograph on this page of a familiar building is taken from a recent issue of the Italian architectural quarterly *Edilizia Moderna*. (No, not Ediſizia, though why not?)

*

The building is described as " un moderato neoclassico nordico con scarse decorazioni."

*

But why has meticulous care been taken to reconstruct the photograph (originally from the *Architectural Review*), to obliterate the well-known entrance front and to substitute a continuation of the side elevation fenestration? Was the greater amount of " decorazioni " on Mr. Wornum's front elevation deemed likely to corrupt the architectura razionale now fashionable in Italy?

*

I notice that several other English buildings included in the same number have not undergone the indignity of retouched photographs — but, then, their only claim to mediterranean fame is merely that they have each used linoleum on their important floors.

NEW USES FOR AN OLD STONE

Last week-end I went to Bath after a long absence. On the way down I began to wonder how Bath stone firms were managing to keep their heads above water now that the rôle of stone has dwindled to a facing material for frame buildings.

*

I found the new buildings in Bath had been " brought into keeping with the old " by copying stereotyped Renaissance elevations displaying a far greater wealth of carved detail than their august local prototypes. There is, in fact, little discernible resemblance in manner (or manners) between copies and their nominal originals. So much for the operation of the much-trumpeted " Bath Clause " !

*

My first real shock, however, was on the Frome road. Here a ribbon of bungalows of the inverted funnel type winds up the hill to let the motorist know he is back in the open country. The astonishing thing is that these bungalows are built of dressed blocks of Bath stone, cut to a uniform rectangular shape the size of breeze slabs. They look none the better as a result.

*

My second shock was in front of the only quarry still worked on Combe Down (not far from that which supplied the stone for Prior Park), where a strip of field between it and the road served as a sort of impromptu monumental mason's yard. But the only objects exposed in this alfresco showroom were half a dozen models of what I believe are called " bird-tables." (Presumably the spread of suburban refinement has taught our feathered friends to sit up to table and eat their bird seed and drink their water like little ladies and gentlemen.) All these were of " modern rustic " design, and any of them might have been appropriately included in the Great Exhibition of 1851.

CHESS-BOARD ARCHITECTURE

In a recent letter to *The Times* Mr. Oswald P. Milne joins with Lady Oxford and Asquith in deploring the ugliness of the mass of speculative building throughout the country. But Mr. Milne is not content with regret alone ; he is constructive. He maintains that the effective and simple remedy would lie in a statutory requirement that all plans submitted for approval by local authorities should have been prepared by a registered architect.

*

The whole profession will admire Mr. Milne's courage. Whether it can fully subscribe to his optimism is more doubtful.

*

For a pattern totally wrong in proportion and arrangement cannot be rectified by the excellence of its individual units. And an architect, however well trained he may be, cannot achieve good effect in a countryside if his task begins and ends with doing the best he can on a strip measuring 30 ft. by 150 ft.

*

Perhaps the Restriction of Ribbon Development Bill will at last convince the public that a bigger job is necessary —and that architects are the people to do it.

SECONDHAND BOOKS

A great difficulty, if you wish to regain a lost book, is to find the right bookstall, as a young architect recently nearly did. Out of a library he had borrowed *Planning for Good Acoustics*, lost it while travelling with another architect in a taxi, and was subsequently given permission to replace the book by a second-hand copy . . . no, the bookseller did not sell him the lost copy, it was more touching than that. The book he *did* buy and return to Mr. Bagenal was marked inside " Author's Copy." By looking very carefully you could just see where the author's pencilled notes had been rubbed out.

ASTRAGAL

NEWS

POINTS FROM THIS ISSUE

MR. MORRISON ON ARCHITECTS

Mr. Herbert Morrison discussed the "severe things" said about architects by him and by architects about him in an address at the Architectural Association on Friday. He said he derived comfort from the fact that his critics had been led to attack as a consequence of action on his part and not inaction, and he thought that on the whole public opinion had been with him and not his architectural critics.

Discussing Waterloo Bridge, Mr. Morrison said: "There was the little controversy about Waterloo Bridge—well, that is now settled, except that the Government has unjustly refused to give us the appropriate grant out of the Road Fund, although it is our cheerful hope that that will be put right next year. But the controversy is finished; the bridge is coming down; the erection of a worthy successor will be supervised architecturally by Sir Giles Gilbert Scott, and public opinion is practically 100 per cent. behind the attitude of the London County Council. We have acted on the principle, not that all the great architects are dead, but that our age has evolved a fine generation of British architects. So, as I feel that I have had the best of the argument all along, I am not complaining of my architectural critics."

Mr. Morrison, in conclusion, said that intensive work awaited all in the substitution of ugliness and dreariness by beauty and dignity. In that noble work there would, he hoped, always be an inspiring partnership between the public administrator and the members of their great profession.

THE ARCHITECTS' DIARY

Thursday, July 25

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

LIVERPOOL SCHOOL OF ARCHITECTURE. *At the Leverhulme Building. Annual Exhibition of the Work of Students of the School. Until July 27.*

THE BUILDING CENTRE. *Silver Jubilee Theatre Model Exhibition. Theatre Model designed by George Tonge, F.R.I.B.A. Until July 26.*

ARCHITECTURAL ASSOCIATION, 36 *Bedford Square, W.C.1. Annual Exhibition of the Work of Students. Until July 31.* 10 *a.m. to 6 p.m.*

LONDON POLYTECHNIC, *Little Titchfield Street, W.1. Annual Exhibition of the Work of Students of the School of Architecture. Until August 2.* 2 *p.m. to 9 p.m.*

INTERNATIONAL HOUSING AND TOWN PLANNING CONGRESS. *Tour of Provincial Cities. Liverpool: Reception at the Walker Art Gallery; Exhibition of Models, Photographs and Plans of Liverpool Housing and Rehousing Schemes; Tour of the City.*

Friday, July 26

INTERNATIONAL HOUSING AND TOWN PLANNING CONGRESS. *Last day of the Tour of Provincial Cities. Birmingham: Reception by the Corporation; Visits to Rehousing and Town Planning Schemes.*

INTERNATIONAL HOUSING CONGRESS

On Friday last, at the final session of the fourteenth International Housing and Town Planning Congress, in the new R.I.B.A. building, Mr. G. L. Pepler, Chief Town Planning Inspector to the Ministry of Health, was elected President of the International Federation for Housing and Town Planning.

In connection with the Congress a memorandum was issued by the Architects' and Technicians' Organization: extracts from the memorandum are printed below:—

"The central subject for deliberation at the Congress is 'Rehousing the People.' If the British delegation are frank, they will have no progress to report since the last Congress as far as working-class housing is concerned. Housing conditions have, in fact, become worse since 1931 and the new houses built, mainly by private enterprise, have been for sale rather than to let, and even when to let the rents are beyond the means of the large mass of wage earners.

"The National Government's propaganda department boasts of '330,000 houses built,' while the speculative builders and building societies have been overwhelming us with panegyrics on the laudable, socially useful function which they are fulfilling. But one need not be very observant to know that for the main part these houses do not come within the reach of the great mass of the workers. Private builders do not let houses at less than 10s. per week, and very few immediately above that figure. Yet the most urgent need in the country today is the need for houses below, and well below, 10s. per week."

LIVERPOOL SCHOOL OF ARCHITECTURE

The first Summer School promoted by the Liverpool School of Architecture is now being held in the Leverhulme Building, Liverpool. The object of the School is "to afford an opportunity for the reunion of old Liverpool students, and to enable the staffs and graduates of other schools of architecture and architects and assistants in practice to exchange professional experiences and listen to, and discuss, the ideas that are influencing a new generation of architectural students."

The arrangements for the last three days of the School are as follows:

Thursday, July 25.—11 a.m., Lecture in the School of Architecture by Professor Patrick Abercrombie, M.A., F.R.I.B.A., on "Regional Planning in Execution." 12 noon, Discussion. 2.45 p.m., Lecture in the School of Architecture by Mr. E. R. F. Cole, B.ARCH., F.R.I.B.A., on "Colour in Architecture." 3.45 p.m., Discussion. 4.30 p.m., Tea. 5 p.m., Visit by motor-coach to the Liverpool Orphanage.

Friday, July 26.—11 a.m., Lecture in the School of Architecture by Mr. E. Maxwell Fry, B.ARCH., A.R.I.B.A., on "New Materials and Standardization." 12 noon, Discussion. 2.45 p.m., Lecture in the School of Architecture by Mr. L. H. Keay, O.B.E., M.ARCH., F.R.I.B.A., Director of Housing for the City of Liverpool, on "Housing and Rehousing." 3.45 p.m., Discussion. 4.30 p.m., Tea. 5 p.m., Visit by motor-coach to Housing Work on Liverpool Corporation Estates.

Saturday, July 27.—10.30 a.m., Lecture in the School of Architecture by Mr. W. G. Holford, B.ARCH., A.R.I.B.A., on "Group Practice." 11.30 a.m., Discussion.

IN PARLIAMENT

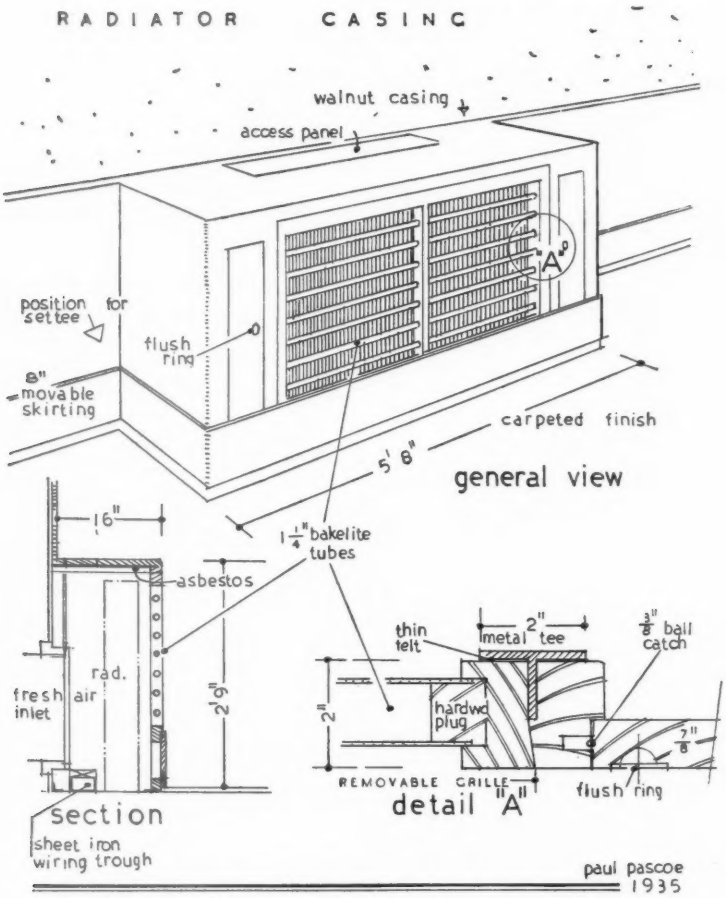
Ribbon Development

During further consideration in committee of the Restriction of Ribbon Development Bill:

On Clause 9 Mr. Hore-Belisha accepted an amendment to decrease from £100 to £50 the maximum fine for erecting buildings or making access to any road in contravention of the restrictions imposed by the Bill. He explained that, in addition to paying the fine, a convicted person had also to demolish the building and reinstate the ground at his own expense. The amendment was agreed to.

Clause 11 extends the power of local authorities to provide parking places, and Mr. Hore-Belisha explained that, together with Clause 12, this clause was intended to meet the case of traffic congestion. Although local authorities were vested with power to provide parking places they had no power to build them, and thus had to have recourse only to open spaces or streets. That omission, which could never have been intended, would be repaired by enabling local authorities to put a roof over the open spaces. The clause further enabled them to build garages underground. These clauses were a constructive attempt to deal with the problem before it became insuperable.

On Clause 12, which empowers a local authority to require that such means of entrance and egress as will prevent interference with traffic shall be provided in the erection or alteration of buildings of not less than 250,000 cubic feet, places of public resort, stations for public service vehicles,



From the B.B.C. Studios, Manchester. Designer : Raymond McGrath.

petrol filling stations and garages used in connection with any business,

Mr. Mabane moved an amendment to exempt from the provision such new buildings as were not likely to increase vehicular traffic along adjacent roads, and buildings in connection with which satisfactory arrangements had been made for limiting interference with traffic.

Mr. Hore-Belisha accepted the amendment. He agreed that the alterations to buildings should be of a substantial nature before the clause applied. He also agreed that if a person preferred to erect a garage he should be allowed to do so.

The amendment was agreed to.

COMPETITION NEWS

COUNTY OFFICES, WESTMORLAND

Mr. G. H. Foggitt, F.R.I.B.A., the assessor in the competition for county offices, Kendal, for the Westmorland County Council, has made his award as follows :—

Design placed first (£200) : Mr. Verner O. Rees, F.R.I.B.A., of 33 Bedford Place, London, W.C.1.

Design placed second (£125) : Messrs. H. C. Hughes, M.A., F.R.I.B.A., and Peter Bicknell, A.R.I.B.A., of Trumpington Street, Cambridge.

Design placed third (£75) : Bradshaw Gass and Hope, FF.R.I.B.A., of Silverwell Street, Bolton.

MUNICIPAL OFFICES, BIRMINGHAM

In connection with the recent competition for a block of municipal offices, as the first part of the Birmingham Civic Centre Scheme, the General Purposes Committee of the Birmingham City Council presented an interim report to the Council on Tuesday recommending that, in accordance with the award and the conditions of the competition, Mr. T. Cecil Howitt (whose design was placed first) be instructed to proceed with the preparation of a scheme on which tenders will be obtained for submission to the Council.

NEW PARLIAMENT HOUSE, SOUTHERN RHODESIA

We understand that the Government of the Colony of Southern Rhodesia is inviting architects of British nationality to submit designs in competition for a proposed new Parliament House, Salisbury, South Rhodesia. Conditions may be obtained in England after Monday, July 29, from the High Commissioner for Southern Rhodesia, Crown House, Aldwych, W.C.2. Premiums of £300, £200, and £100 are offered for the designs placed first, second and third, respectively, and Mr. James R. Adamson, F.R.I.B.A., of Messrs. Bradshaw Gass and Hope, is the assessor.

Competitions Open

August 1.—Sending-in Day. Two schools, junior and senior, at Boldmere, for Sutton Coldfield T.C. Limited to members of the Birmingham and Five Counties A.A. Premiums : £100, £50, £30 each school. Assessor : A. C. Bunch, F.R.I.B.A. Conditions are obtainable from the Clerk to E.C. (Deposit £2 2s. for both or either.)

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

September 2.—Sending-in Day. The Liverpool Building Trades Exhibition, in conjunction with the Liverpool Architectural Society, has organized a competition to improve the amenities of suburban building estates, and is offering eight prizes of £10 for drawings of the lay-out or planning of 20 pairs of semi-detached villas at a "T" junction of two roads. Assessors : Lt.-Col. Ernest Gee, F.R.I.B.A., Professor L. P. Abercrombie, F.R.I.B.A., Leonard Barnish, F.R.I.B.A. Premiums : eight awards of £10 each and £30 to be distributed at the discretion of the assessors. Conditions from the Competition Manager, Provincial Exhibitions Ltd , Renshaw Hall, Liverpool, 1. No deposit. The latest date for the submission of designs is September 2 at 12 noon.

October 1.—Sending-in Day. Central county buildings, Hertford, for the Hertfordshire County Council. Assessor: Robert Atkinson, F.R.I.B.A. Premiums : £350, £250 and £150. Designs must not be submitted later than October 1. Particulars of the competition are obtainable from the Clerk of the County Council, Clerk of the Peace Office, Hertford. (Deposit £2 2s.)

October 5.—Sending-in Day New Fire Station, Brighton, for the County Borough of Brighton. (Open to architects of British nationality resident in the British Isles.) Assessor : Stanley O. Livock, F.R.I.B.A. Premiums of £200, £125 and £75. Conditions of the competition may be obtained from J. G. Drew. Clerk, Town Hall, Brighton. (Deposit, £1 1s.)

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

October 31.—Sending-in Day. New technical college, Manchester Road, Bolton,

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

November 1.—Sending-in Day. Municipal offices, clinics, etc., proposed to be erected in the grounds of York Castle, for the Corporation of York. (Open to architects of British nationality domiciled in the United Kingdom.) Assessor: Henry V. Ashley, F.R.I.B.A. Premiums: £250, £150, £100 and £50. Applications for the conditions of the competition, etc., should be made on or before June 29 to Mr. Reginald Anderson, Town Clerk, Guildhall, York. The last date for receiving questions is July 29, 1935, and the last date for sending in designs is November 1.

R. I. B. A.

TECHNICAL INFORMATION IN THE BUILDING INDUSTRY

The R.I.B.A. has issued the following notice:—

"During recent years there has been a rapid development of new knowledge, new materials and new methods of construction; following these developments the number of organizations supplying information to the building industry has grown enormously, so that now there are more sources in existence than anyone can be expected to keep in touch with; and probably none of them is fully or properly used.

"An enquirer, whether designer, constructor, producer, distributor or consumer, frequently has great difficulty in obtaining special information for the solution of a particular problem. Even experts in the art of giving and seeking information are bewildered by the complexity of the present situation, which involves a deplorable waste of time, money and man power.

"In order to explore the problem and to discover whether machinery could not be set up to solve it the president of the R.I.B.A., after consultation with the Building Research Station and the Building Centre, convened a small committee early this year of persons who could represent broadly the points of view of all sides of the industry.

"The committee, which is sitting under Sir Raymond Unwin's chairmanship, has decided that as a first step a full enquiry should be made into all existing sources of information, of which there are several hundreds. A sub-committee, also under Sir Raymond Unwin's chairmanship, was appointed to report on this and is sitting at present. Its report is likely to be ready for presentation to the main committee towards the end of the year. It is impossible to forecast the conclusions of the committee at this stage: they must be dependent on the facts revealed by the report. Nevertheless, it can be said with some certainty that it is no part of the committee's intention to add to the growing number of organizations already in existence, but rather to see what can be done by co-ordination and the stimulation of co-operation to assure that all existing organizations shall be used to the full for the benefit of the industry and community.

"The constitution of the committee is quite informal though its membership is, it is hoped, generally representative of opinion in the industry. No action to give effect to any of its recommendations could or would be taken without proper reference to the competent authorities."

COUNCIL MEETING

Following are some notes from a recent meeting of the Council of the R.I.B.A.

The Honorary Associateship: The following candidates were nominated for election as Hon. Associates: Viscount Charlemont, Minister of Education for Northern Ireland; Mr. A. N. C. Shelley (Ministry of Health); and Mr. Eric Gill.

The Constitution of the Council, Standing Committees, Executive Committee and the Allied Societies' Conference: It was decided to appoint a Committee consisting of ten members of the Council, half of them being members of the Allied Societies' Conference, to consider and report upon the constitution of the Council, Standing Committees, Executive Committee and the Allied Societies' Conference. The following members were appointed to serve on this Committee: Mr. W. H. Ansell, Col. J. Maurice Arthur, Mr. H. Stratton Davis, Mr. Henry M. Fletcher, Lt.-Col. Ernest Gee, Lt.-Col. R. F. Gutteridge, Mr. E. Stanley Hall, the Hon. Humphrey Pakington, Mr. Eric W. B. Scott, and Mr. Charles Woodward.

R.I.B.A. Architecture Medals: Mr. H. S. Goodhart-Rendel was appointed to serve as the representative of the Council on the jury set up to make the award for the three years ending December 31, 1934, in the area of the Essex, Cambridge and Hertfordshire Society of Architects. The award of the Medal for the area of the Birmingham and Five Counties Architectural Association in favour of the Town Hall, Dudley, designed by Messrs. Harvey and Wicks (F. and A.), was formerly approved.

Examiners for the R.I.B.A. Statutory Examination for District Surveyors and the R.I.B.A. Examination for Building Surveyors: The Board of Architectural Education reported that Mr. Charles Woodward and Mr. P. M. Fraser had been appointed to serve on the Statutory Board of Examiners in place of Mr. W. R. Davidge and Mr. Baxter Greig, who were unable to accept appointment.

R.I.B.A. Thesis Examiners: The Board reported that Professor Patrick Abercrombie had been appointed to serve as a Thesis Examiner in place of Mr. W. Harding Thompson, who was unable to accept appointment.

R.I.B.A. Intermediate Examination: Examiner in Design: The Board reported that Mr. L. H. Bucknell had been appointed to act as an Examiner in Design for the Intermediate Examination in place of Mr. E. B. O'Rorke, who was unable to accept appointment.

R.I.B.A. Representative on the Town Planning Joint Examination Board: The Board reported that Mr. W. A. Eden had been appointed to serve on the Joint Examination Board in place of Mr. Edward Maufe, who was unable to continue to serve as one of the R.I.B.A. representatives. The other representative is Sir Raymond Unwin.

Reports of Prize Winners: The Board reported that they had approved the reports of the following prize winners: Mr. W. B. Edwards (Athens Bursar 1934), Mr. E. E. Davis (Henry Saxon Snell Prizeman 1933), Mr. Basil Spence (Pugin Student 1933), Mr. W. A. Eden (Hunt Bursar 1934), and Miss Sadie Speight (Neale Bursar 1933).

Council of the British School at Rome: Mr. T. A. Darcy Braddell [*F.*] (Chairman of the Board of Architectural Education), was appointed as one of the two R.I.B.A. representatives on the Council of the British School at Rome in place of Mr. L. Sylvester Sullivan, whose term of service had expired.

The Architects' Registration Council: Mr. John Dower [*A.*] was appointed as one of the R.I.B.A. representatives on the Architects' Registration Council in place of Mr. Percy Thomas, President-Elect.

The Building Industries National Council: Mr. Kenneth M. B. Cross [*F.*] and Mr. Charles Woodward [*A.*] were appointed as additional representatives on the Building Industries National Council.

The General Council for the National Registration of Plumbers: Mr. Clement Stretton [*F.*], (President of the Leicester and Leicestershire Society of Architects), was appointed as the R.I.B.A. delegate at the Annual Meeting of the General Council for the National Registration of Plumbers to be held at Leicester on July 24, 1935.

Proposed Removal of Epstein Sculptures from Building in the Strand: On the recommendation of the Art Standing Committee it was decided to approach the Government of Southern Rhodesia urging reconsideration of the proposal to remove the Epstein sculptures from the building in the Strand designed by Mr. Charles Holden and recently acquired by the Government of Southern Rhodesia.

Revision of the Scale of Charges: On the recommendation of the Practice Standing Committee it was decided to amend Clause 1 (*h*) of the Scale of Charges. A note of the proposed amendment was published in the *R.I.B.A. Journal* for June 29 in accordance with the terms of Bye-law 38.

Reinstatements: The following ex-members were reinstated: As Fellows: Mr. B. W. Fitch-Jones (Retired Fellow). As Associates: Messrs. A. V. Booker and W. C. Walker. As Licentiates: A. C. Geen and J. P. Lewis.

Resignations: The following resignations were accepted with regret: Messrs. L. H. Collier [*L.*], F. A. Konig (Subscriber).

Transfer to the Retired Members Class: The following member was transferred to the Retired Members Class: Mr. William Woodeson [*L.*].

OFFICE BUILDING, CORNHILL, E.C.

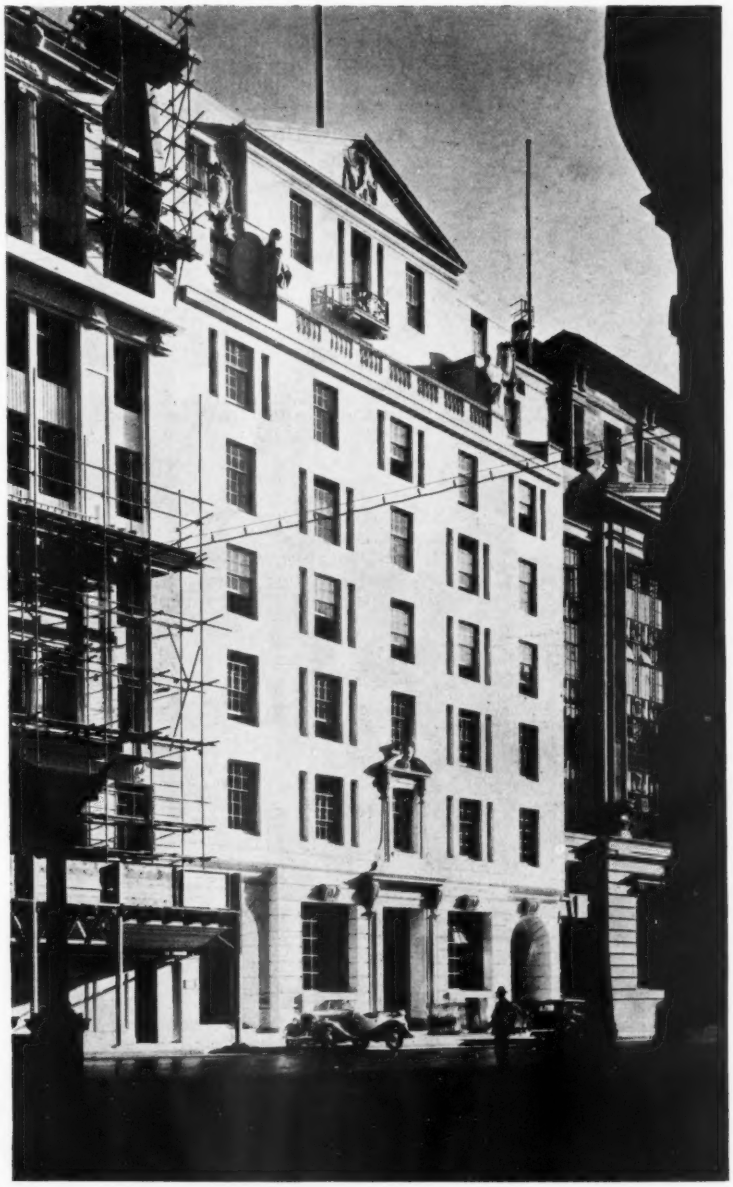
The site of this office building for the Scottish Widows' Fund, possesses a short front to Cornhill, and is flanked by Change Alley upon one side and governed to the rear by rights of light. The entrance to Change Alley also cuts away and passes beneath one wing of the building. These conditions, combined with the necessity for two entrances upon the Cornhill front, largely controlled the plan form of the building.

ELEVATIONS

The elevation to Cornhill is in Portland stone and those elsewhere in glazed brick. Projections have been kept to a minimum both to avoid encroachment upon floor space and to assist in the cleaning of all surfaces by the weather. The handrails are of wrot iron. Windows are in bronze and steel.

CONSTRUCTION

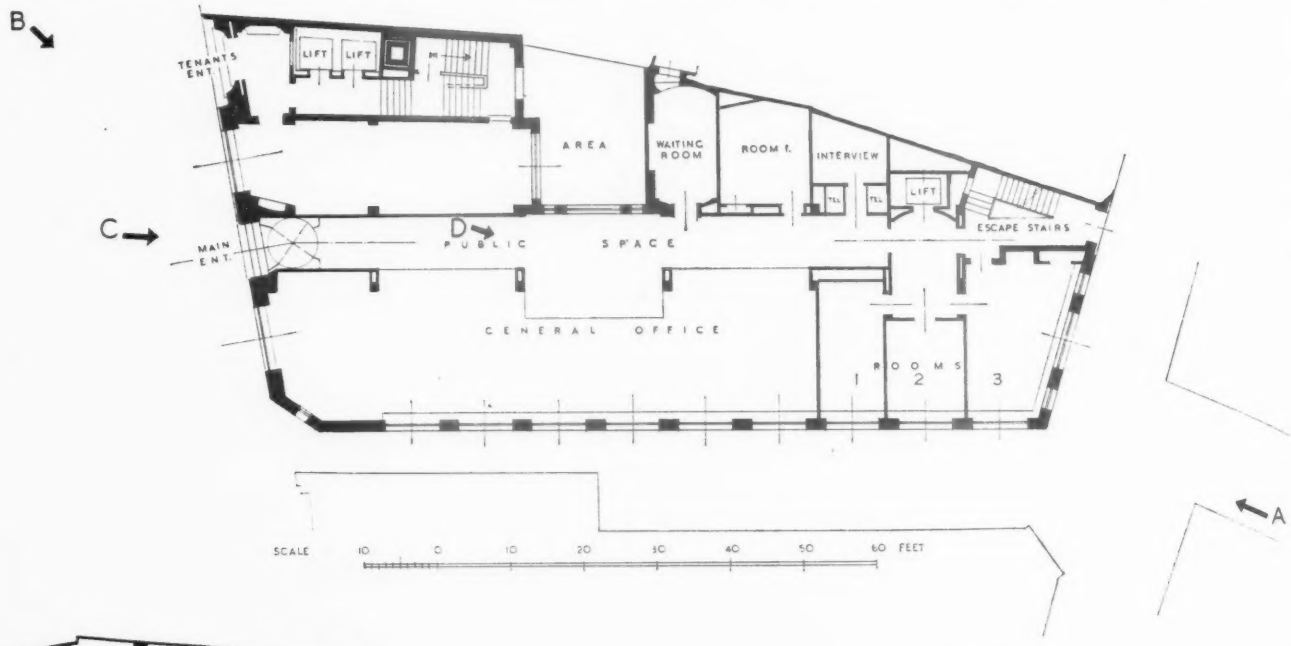
The building is steel-framed with filler-joist and precast R.C. floors. Roofs are finished with bituminous sheeting and concrete slabs.



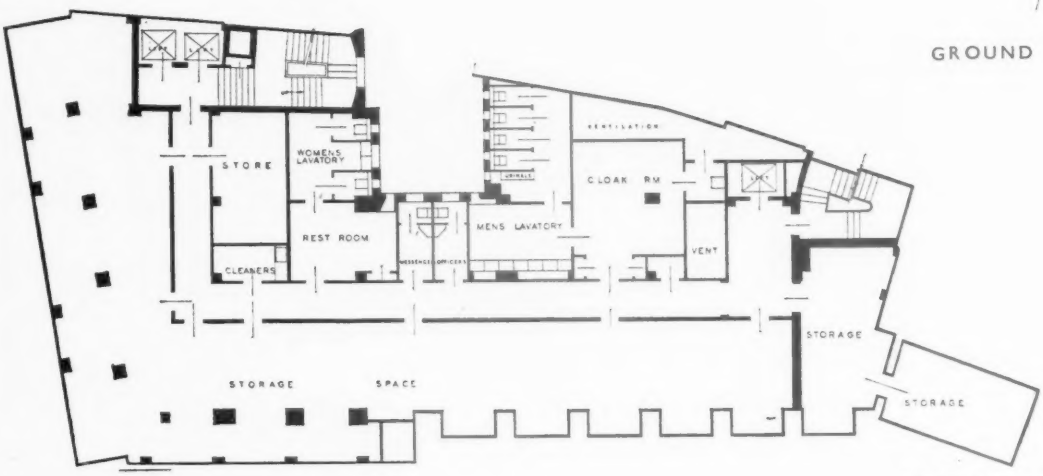
Above, the elevation to Cornhill from B. *Left, the rear elevation from* A (*see ground floor plan overleaf*).

DESIGNED BY W. CURTIS GREEN, R.A., AND PARTNERS

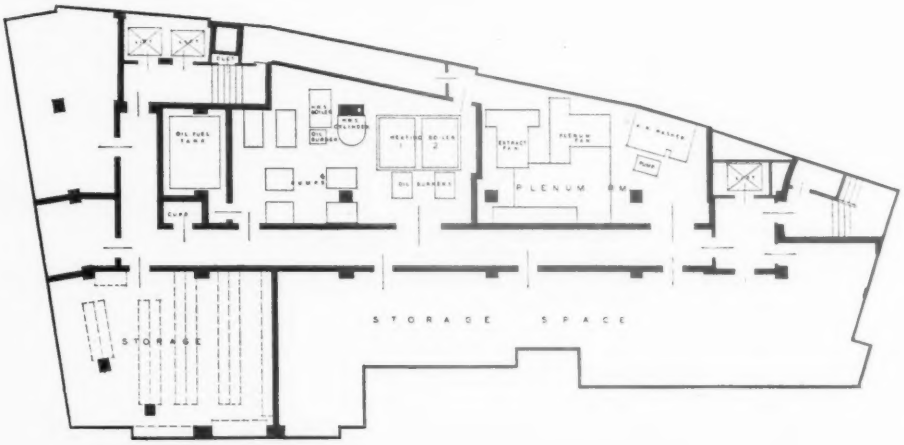
OFFICE BUILDING, CORNHILL, E.C.: BY



GROUND FLOOR PLAN

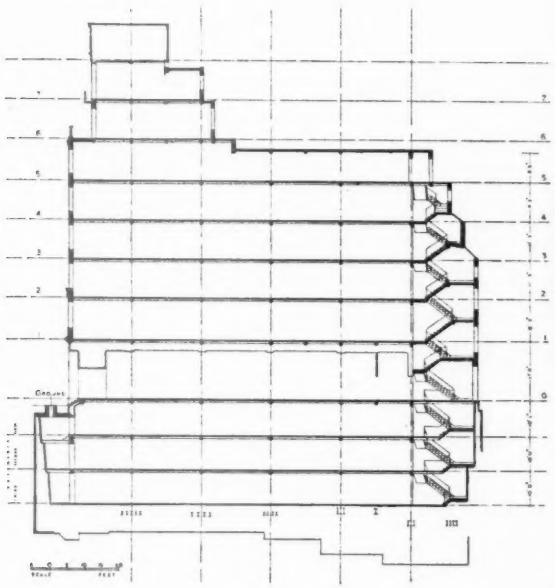


SECOND BASEMENT PLAN



THIRD BASEMENT PLAN

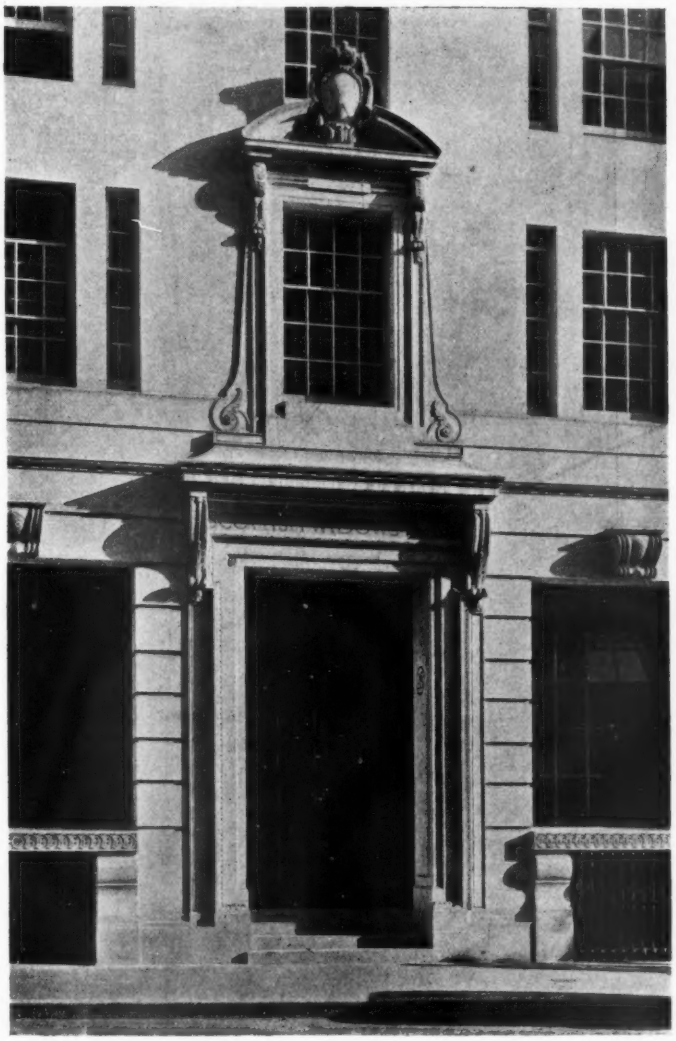
W. CURTIS GREEN, R.A., AND PARTNERS

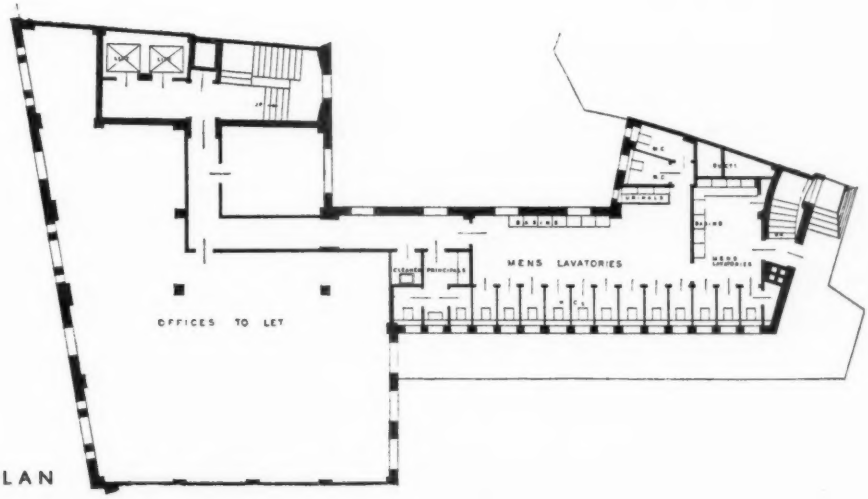


SECTION

The building has been designed to house the offices of the Fund, and also to provide as large an area as possible of office space for letting to private tenants. The Society's offices occupy the ground and first floors almost entirely, in addition to storage rooms in the lower two basements. The upper basement and the second to sixth floors inclusive contain offices for letting. The Society's lavatories are in the second basement; office chiefs' lavatories are on all lower floors, men's lavatories on the fifth floor and women's lavatories and caretaker's quarters on the seventh. The pediment contains the lift machinery and tanks. The total number of floors is eleven in 130 feet, and the building has been designed to make the fullest use of a valuable site.

Right, the main entrance from C.





TYPICAL UPPER FLOOR PLAN

OFFICE BUILDING, CORNHILL, E.C.

The Society's general office is lined with polished Portland stone, and joinery is in English walnut. The committee and board rooms on the first floor are panelled in English brown oak.

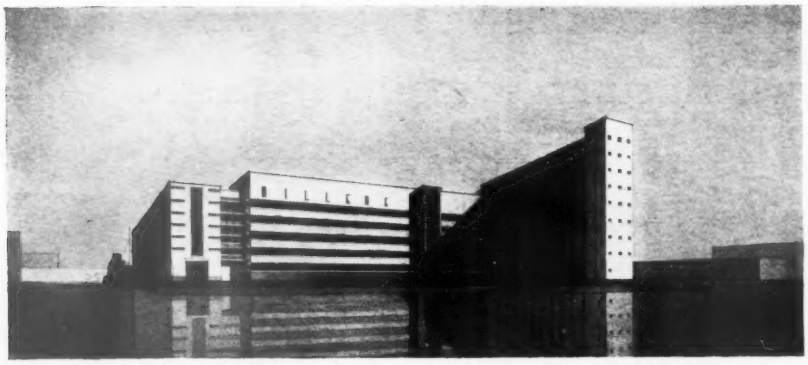
The tenants' stair is executed in Hoptonwood stone, and lavatories, escape stairs and basement floor corridors are finished in terrazzo.

The services include lifts running at 400 ft. per minute, and provision has been made for a very large telephone installation to serve the private offices, which are largely let to stockbrokers. Heating is on the low-pressure accelerated system, served by oil-fired boilers, thermostatically controlled.

Above, the Society's general office from D. *Below, a detail of the board room on the first floor.*

DESIGNED BY

W. CURTIS GREEN, R.A., AND PARTNERS



A Flour Mill, by A. Green, 4th year student, Liverpool School.

SCHOOL EXHIBITIONS

[The following reviews of the annual exhibitions of representative schools of architecture are each by a student of another school, and must be taken only as expressing the opinions of their authors. —ED., *A.J.]*

I: THE LIVERPOOL SCHOOL OF ARCHITECTURE

Reviewed by

RICHARD DAVIES

(Student: The Architectural Association)

THE old annual exhibitions of architectural schools were exhibitions of rendering, rather than of architecture. The walls were covered with colossal perspectives of AN ITALIAN EMBASSY ON A PROMONTORY OVERLOOKING A LAKE; and plans so rendered up with shadows and axes that the planning was quite undecipherable. The Liverpool Exhibition is an advance on this sort of thing; and does give some idea of the work that goes on in the school.

The object of this review is not merely to criticize the actual drawings shown; but also to describe and to criticize from the point of view of an architectural student the school system which produces the drawings.

The exhibition is a very large one, filling the whole school. One room is given up to the work of each year. Unfortunately, the drawings in each room are not arranged in chronological order; and various alternative solutions to one problem are not placed together. This rather suggests that the view of the exhibition as a show of pretty pictures has not been entirely stamped out.

It would make these exhibitions much more real if one or two of the chief programmes of each year were exhibited, together with several of the best solutions received. It is quite impossible to judge the value of a plan unless you know the conditions it is meant to satisfy. Further, it is possible, if you know the programme, to assess the praise or blame for a particular drawing as between the staff who set the programme and the students who answer it.

In the first year the good old Belvedere (evens Doric, three to one Ionic, 10 to 1 the field) duly crops up; but a pale pencil version of its former rendered glory. Last year the Orders were cut out altogether; but this year they were revived. The wretched things die hard; but, judging from the work of the later years, in Liverpool they have been sterilized; and prevented from cross-breeding with steel and concrete to produce the bastard architecture beloved of business men.

The principal subject for the first year is a crêche; and an excellent design by W. McIver is exhibited. An isometric drawing of one of the studio desks is also shown; and this is an excellent scheme. The importance of furniture as the core around which architecture is built up could well be stressed in the first year of most schools. It is lack of this outlook, "The plan proceeds from within to without," which helps to produce the out-of-date planning for which English architecture is justly famous.

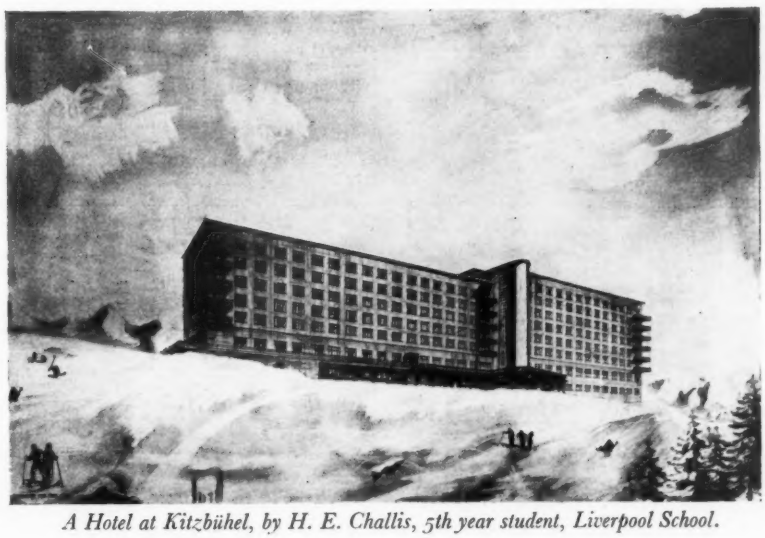
Design in reinforced concrete is allowed in the second year; and elementary lectures on the principles of concrete construction are given. This follows logically from the cellular approach to architecture; that is, considering first the simple cells for living, meeting, etc.; and then aggregates of cells. On this basis there is no reason why the simple cell should only be constructed in one material. It is high time that the prejudice against concrete should be broken down in other schools as well. The argument that one cannot design in concrete until one knows how to calculate the stresses is open to the reply: Could Sir Edwin Lutyens calculate the stresses in brickwork? The answer, of course, is that sketch designs in both materials are done by rule of thumb methods which can be taught in three lectures quite easily.

The second year students do not seem to have availed themselves of the possibilities as much as one might have expected. Even in a programme for four flats in a block all the designs submitted were in brick and lintol construction; resulting in the traditional paralyzed planning. A chapel subject set in this year reveals, as usual, the confusion resulting from trying to express a more or less dead idea in architectural form.

"A Country House and Studio for a Sculptor," by J. Manby, and an alternative solution by Tomlinson, are very good, and show real understanding of the general approach to design.

A large number of the esquisses set in this and later years are designs for mass production; such as lamp standards, telephone boxes, bus shelters. This is far more interesting and useful work than the traditional esquisse for a monumental Garden Gateway; and it is a pity that none of these esquisses are on view. Instead, about four sad-looking piles of brick, "In memory of the Horses who died for King and Country, 1914–1918," are to be seen.

The most interesting piece of work in the third year is a programme for a block of six £500 houses in a row for reproduction. Here, again, the use of reinforced concrete is avoided, which seems odd. Within



A Hotel at Kitzbühel, by H. E. Challis, 5th year student, Liverpool School.

the framework of brick, R. V. Ward has produced a delightful piece of planning and very pleasant elevations. Most of the other solutions, however, are a bit poky and bricked up.

The fourth year work contains an object lesson; the Town Hall subject. No doubt in real life the assessors would award the job to a scheme of this kind, with the forced symmetry distorting the plan and "restrained modernism" destroying the elevation. But the object of the school training should not be to produce architects who accept a state of things already years out of date but men who know the enormous possibilities of modern technique and who will struggle to have them recognized and used.

The fifth year work consists mostly of theses; and several of these are extremely interesting. First praise goes to the "Flour Mill," by A. Green. The whole design of this building is dictated by the milling process, which the designer has studied very closely. The result is really inspiring, and helps one to realize the enormous scope open to architects in the future, if they can fit themselves to be of real use to society, and not merely parasites on a few rich clients.

Other excellent theses are "Hotel in Kitzbühel," by H. E. Challis, and the "Seadrome," by B. L. Moir.

The two Rome Scholarship drawings look rather sad among the more practical subjects around them; and the Liverpool School has decided not to allow Rome drawings as equivalent to a thesis in future.

In general, the standard of work in Liverpool is very high. Planning is sane and practical, and elevations are simple and direct expressions of the plan. There is a certain timidity and lack of excitement, however. There is very little really modern planning of the Corbusier type. Though this is largely experimental, it is the business of a school to be experimental and ahead of its time rather than behind it. Liverpool School is more nearly abreast of the time than most schools in England.

SCHOOL EXHIBITIONS: 2

THE BARTLETT SCHOOL OF ARCHITECTURE UNIVERSITY OF LONDON

Reviewed by

A. W. COX

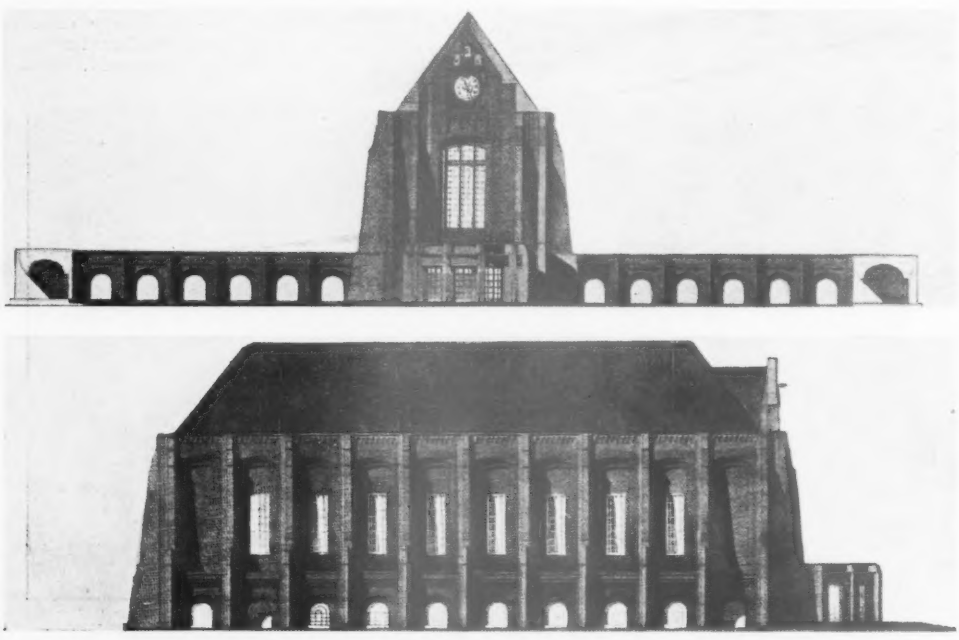
(Student: The Architectural Association)

THERE is a tendency in some architectural schools today to approach architecture from a decorative, stylized standpoint, cramping the full expression of a problem into a mannerism alien to it. Our ways of life change, they demand an honest expression, and building forms evolved by other ages for a different type of life cannot adequately be adapted to fit contemporary conditions. Only from a scientific approach to our conditions today can the bones of a significant architecture arise, and only by constant reflection of the changing conditions of society can architecture grow healthily and avoid the inverted growth of stylism.

The designs exhibited at the Bartlett School of Architecture are not buildings: they are a preparation for building, and it is as such that they must be considered. The idea of living in imitation seventeenth-century palaces may seem ridiculous to us, but if by constant designing of them on paper we find that we can eventually design, for instance, better working-class tenements, then that particular type of training has been justified. The antiquarian nature of the Bartlett designs must not be attributed to an æsthetic preference on the part of the students, but to a deliberate system of teaching which aims at a comprehensive knowledge of the best forms of the past acquired by the application of those forms to problems that have little relation to our own times. The object of such a system is, one must suppose, to give students a sense of form and proportion which will help them when they turn to a practical contemporary problem. Unfortunately little opportunity is given us of judging how such a training in the accepted architectural styles of the past affects the solution of a contemporary problem. Little opportunity of tackling such a problem is given to the students. But what examples there are seem to indicate that such a system of teaching does not lead to a frank expression of living conditions, nor to a skilful planning for those conditions. Rather it gives students a muddled method of approach to their problems.

The majority of first-year exhibits are exercises in the orders and compositions of Classic elements, immaculately rendered. These provide the ground work for the stylistic subjects which are to follow in the later years; they give the student an architectural vocabulary. The only design subjects in this year are a Classical doorway and window, and a garden pavilion. Surely some simple planning subjects could be set?

In the second year there is little but the application of historic architectural forms. "A Ballroom" and two purely elevational subjects, "A Classical Façade" and "A Monumental Courtyard," carry the first-



A College Hall, by D. W. Aberdeen, 4th year Student, Bartlett School of Architecture.

year exercises a stage further. There are five designs of a chapel, four of them pastiches, one Byzantine, one Russian, and two Spanish, and even in a domestic subject —"A Rectory"—the atmosphere of remoteness and unreality is maintained. How many rectories are being built today? One would have thought that in the working drawings prepared for this subject more attempts would have been made to follow office practice, but the sheets are incomplete and presented like book-plates. The measured drawings in this year are extremely competent—throughout the school the draughtsmanship and rendering are excellent of their kind. One wishes that the time and energy spent on presentation had been given to fundamental matters.

The third year sees little change, except that the subjects are more extravagant. "A Mansion House." "A Royal Retreat" and "A Country House for an Art Collector" are the main designs—and significant ones. The contemporary building problem rarely appears, and when it does it is as "A Week-end Cottage." As a planning subject it might well have been given to the first year.

In the fourth year the frankly archæological approach to design disappears in all but two subjects—a design for a Gothic tower and spire, and a dome in the Renaissance manner—and the influence of the three preceding years is clearly seen. Conscious effect precedes logical orderliness, and many designers still adopt a superficial style. "A Railway Station" is particularly recognizable. A design for a medical centre and one of four designs for a sculptor's studio are notable exceptions, but neither in this year nor in the post-graduate atelier does the rest of the work show much appreciation of contemporary conditions and their significant architectural expression. The exhibits are subjects with which, as fourth-year designs, it is difficult to have any sympathy. "A Town Church," "A College Hall" and "A Provincial Market Hall" are petty compared with the problems that fourth-year students should be capable of tackling.

Regarded from the standpoint from which they were set, most of the archæological designs of the first three years are extremely accomplished. They show a thorough knowledge of Greek, Roman, Mediæval and Renaissance detail, and considerable skill in their application. But as a preparation for designing today they cannot be said to be successful. The fourth and post-graduate years demonstrate this clearly. Only by the study of contemporary conditions can students realize the responsibilities of the architect today, and it seems absolutely necessary that they should be brought into close contact with these conditions as soon as they enter the school. If their architectural training has little contact with the social, economical and technical conditions of the age their designs become meaningless. Today, one cannot build in a style in the sense that a style seems to be understood at the Bartlett. One can build for this age, aware of new needs, and new effective ways of satisfying them, and a style is in the process of growing. But it is not a style to be applied; it is dynamic, changing as new needs and new means arise. It is no use tinkering with the fag-end of Gothic or Renaissance.

SCHOOL EXHIBITIONS: 3

THE ARCHITECTURAL ASSOCIATION SCHOOL OF ARCHITECTURE

Reviewed by

JOHN MADGE

(Student; Cambridge University School of Architecture)

AT the present time standards of value are commonly chaotic. The muddle in architectural "style" is one of the most visible reminders that this is so. When there is so much indecision in the profession as a whole it is inevitably even more marked among students whose ideas on the subject are still being formed. This lack of uniformity in approach is certainly the most noticeable characteristic of the exhibition at the Architectural Association. (It is unfortunate that the "style" concept receives such general attention; style is, after all, merely the attempted general application of the crystallized solution of one problem.) It is true that, apart from one or two sketch designs, there are very few representatives of the traditional manner, even in first-year work; but there are still many different approaches to design today which are all known as "modern" by their exponents.

It is impossible to "modernize" a design by adding a flat roof or by using horizontal glazing-bars in the windows. The true modern contribution to the science of building is the habit of considering first the maximum convenience of arrangement, and then the external appearance. This is historically an almost unique approach for the architect to adopt, although not so, of course, for the vernacular builder. When the Renaissance made the architect an artist separated from and superior to the builder-craftsman it also began a long tradition of façade architecture.

It is this separateness and superiority of the architect from actual building processes and actual housing problems that it is more necessary than ever now to remove. Modern building technique can only be completely exploited if the architect knows and uses contemporary materials. Modern social needs can only be satisfied if the architect has a grasp of the sociological significance of what he is doing. Neither of these must be allowed too much prominence, but they are equally of prime importance in the training of an architect.

There is another question which closely affects students, and that is the uses to which their architectural training is likely

A Renaissance Dome, by A. E. Roger, 4th year student, Bartlett School of Architecture.

to be put. It is improbable, for instance, that present architectural students will have to contend with a sudden boom in gazebos. It is sometimes argued that the mastery of mausoleum-building has a good effect on the student's sense of proportion. Proportion can never be an abstract, remote from the actual conditions of the design. Common sense suggests that the best training in good proportions would be practice in the design of objects which are likely to be encountered in practice.

This exhibition demonstrates the answer of the A.A. to all these questions which affect the student. One refreshing point is that there is obviously little compulsion used to persuade members of the school to adopt preconceived solutions of problems set; there also seems to be little dictation of the way of representing the finished design. The age when architectural students were expected to spend most of their time rendering a necessarily hasty design is fortunately past. It leads straight back to the conception of architecture as the treatment of two-dimensional faces.

The choice of subjects at the A.A. is much better than it might have been. One particularly good feature is the fact that full conditions seem to have been given in each case. There is nothing so degrading as the building of ideal homes on ideal sites.

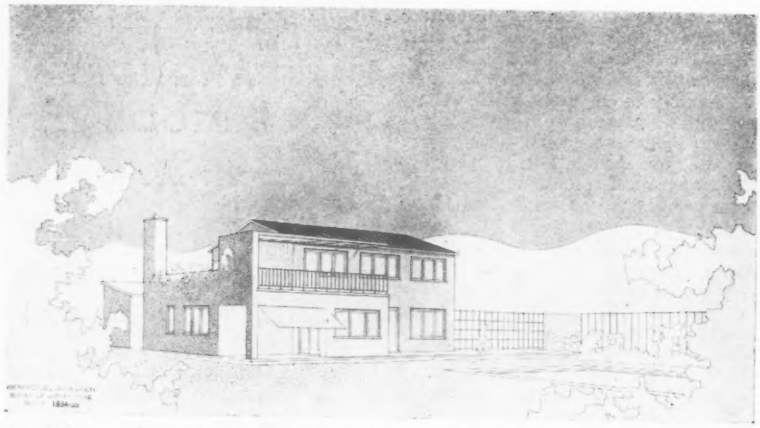
The first year spent nearly half their time designing two simple bungalows—a clerk of works office and a sculptor's studio. There was more uniformity of design during this year than in later work. The Second Year started off with a fortnight's "Font" design. Then followed an equal time devoted in turn to a tennis club lay-out (including a pavilion), a library, a private chapel, and a lakeside restaurant. The perspective view of the small-house design by F. Sturrock illustrated hardly does justice to the conciseness of the plan; the low-pitched roof gives an effect of stylisation which is certainly not a fault of the design as a whole.

The Third Year naturally includes more ambitious subjects than the previous years. At this stage large buildings—as seem likely to predominate in the architecture of the future—begin to come into their own. Outstanding among the exhibits in this year was the "Academy for Colonial and Dominion Scholars in London," by Denys Lasdun. This is a very mature piece of work, and an excellent solution of the problem. The planning economies of standardization are clearly displayed in this building which consists largely of uniform bed-sitting rooms.

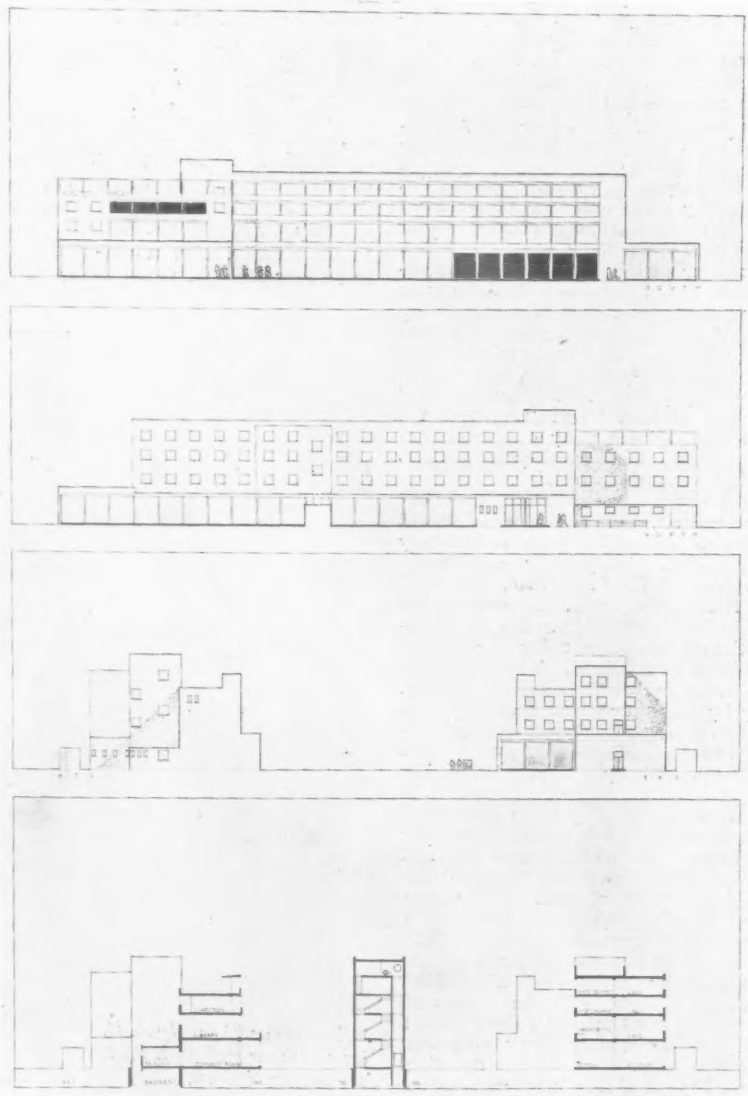
The Fourth Year curriculum concentrates on the preparation of working drawings and of research. There were also a number of sketch-design subjects.

It is by the results obtained in the Fifth Year of study that the value of the previous training must be assessed. The effect of the whole course is in a sense summed up in the Diploma Thesis which occupies the last term of the year. Here there is at last real evidence of a thoroughly broad approach to the subject. Several theses were devoted to town-planning.

It seems likely that the stage is being set for a struggle between the Bauhaus type of training and that represented by the A.A.; but there is as yet no Bauhaus in England, and this exhibition shows that this school is one of the most progressively traditional in the country.



Small House design, by F. Sturrock, 2nd year student, the Architectural Association School of Architecture.



An Academy for Dominion Scholars in London, by Denys Lasdun, 3rd year student, the Architectural Association School of Architecture.

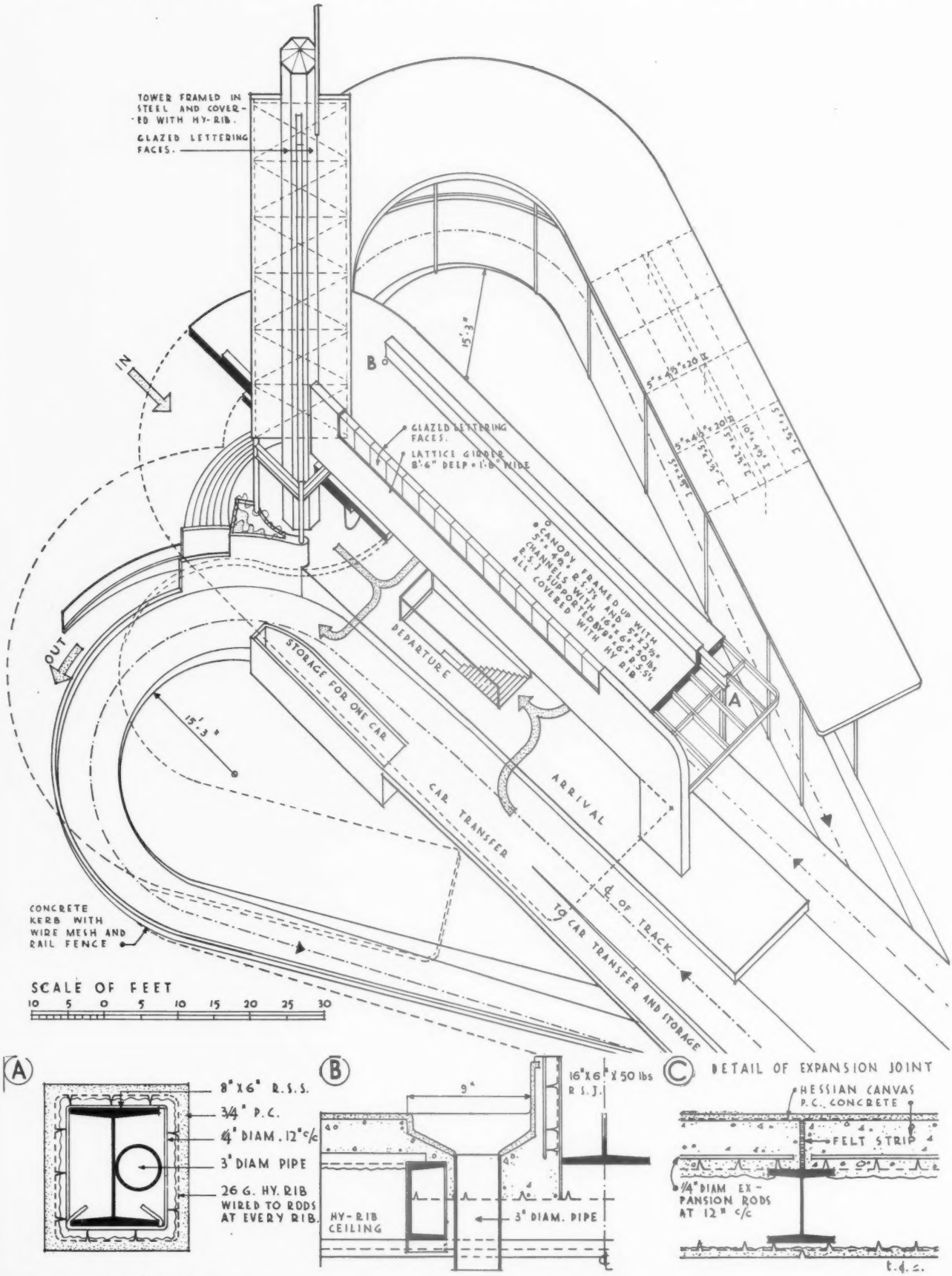
WORKING DETAILS : 295

"GRAND NATIONAL" • BLACKPOOL PLEASURE BEACH • JOSEPH EMBERTON

This illustration shows the arrangement of the "Grand National" section of the amusement park. The structure houses the arrival and departure platforms of two cars which, in racing each other, provide the thrill of this unit. Axonometric view and details are shown overleaf.

WORKING DETAILS : 296

"GRAND NATIONAL" • BLACKPOOL PLEASURE BEACH • JOSEPH EMBERTON



Axonometric and details of the "Grand National."

WORKING DETAILS : 297

RADIO GRAMOPHONE CABINET • 100 FULHAM ROAD, S.W. • CHRISTOPHER NICHOLSON

J. SOMERSET MURRAY

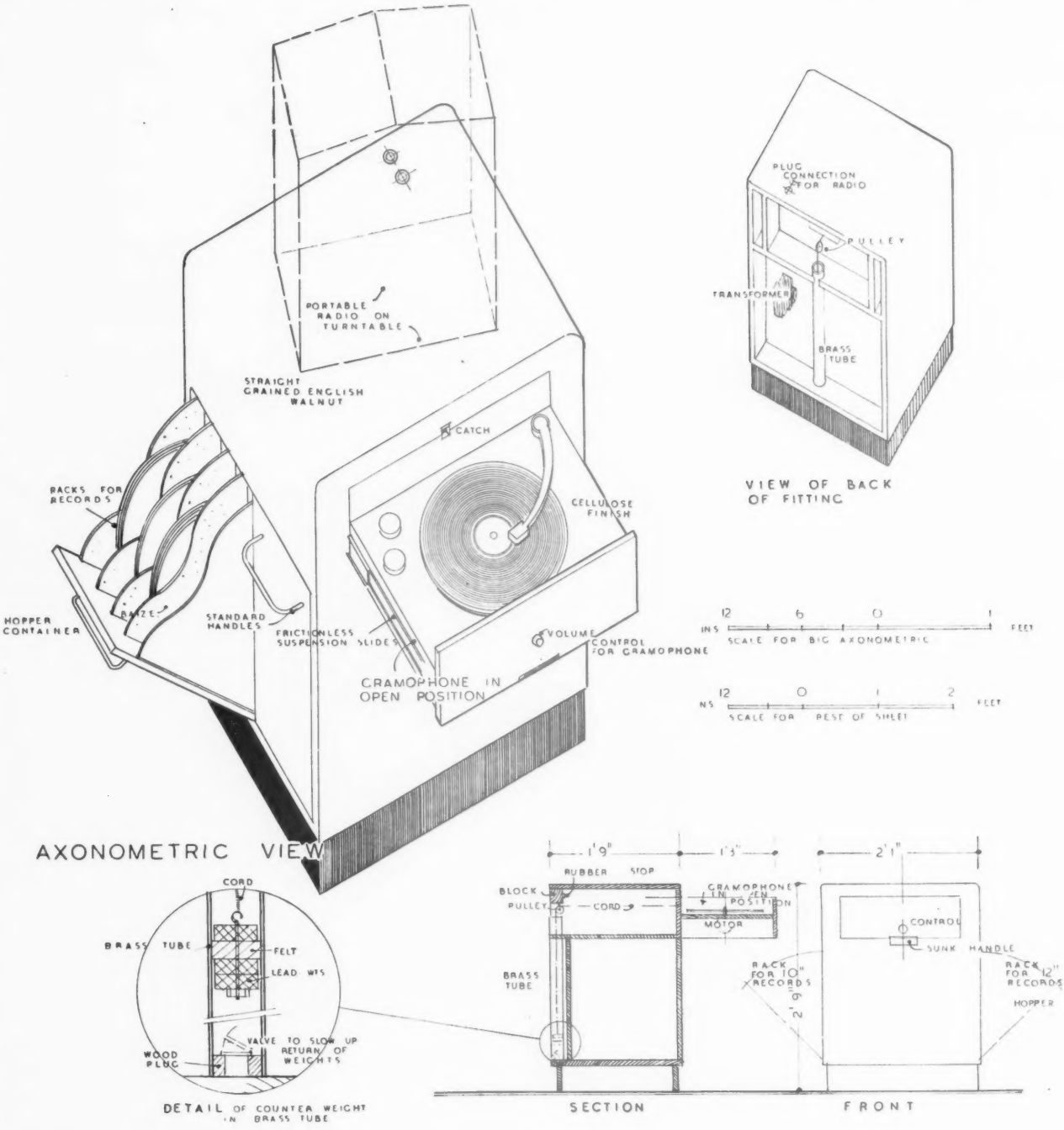
The fitting illustrated above is a combination of radio and gramophone. The usual practice is for the radio to be placed adjacent to, but not on top of, the gramophone. In this case, however, the radio is a standard portable set mounted on its own turntable on gramophone, and with plug connections to same. The gramophone drawer is fitted with a device whereby closing is regulated gradually, by a cord with counter weights in a brass tube. At the base of the tube is a valve that slows up the return of the weights, so making the drawer slide very gently in the last stage. Four record racks are provided, two each side, and are fitted with standard handles (designed by Wells Coates). A transformer was necessary in this case to bring the voltage to the required level.

The radio has its own volume control, that of the gramophone being mounted on the drawer front. Axonometric views and details of the cabinet are shown overleaf.

FILING REFERENCE :

WORKING DETAILS : 298

RADIO GRAMOPHONE CABINET • 100 FULHAM ROAD, S.W. • CHRISTOPHER NICHOLSON



Axonometrics and details of the radio gramophone cabinet illustrated overleaf.

HOUSING SUPPLEMENT : 10

This, the tenth of our series of HOUSING SUPPLEMENTS, *is devoted to a report of the paper entitled "Rehousing the People in Great Britain," compiled by Walter Goodesmith, A.R.I.B.A., in collaboration with B. Lubetkin, Philip H. Massey, B.Sc. (Econ.), F.R. Econ. S. (responsible for the Economic Aspect) and C. B. Purdom, for the fourteenth International Housing and Town Planning Congress, held in London last week. The paper covers the post-war period of housing in Great Britain and is divided into five sections—a general outline of the problem; the economic aspect; building the dwellings; equipment and fittings; and public utility housing societies. The whole of the papers prepared for the Congress were published in the official booklet issued to the delegates.*

REHOUSING

THE PEOPLE IN GREAT BRITAIN

GENERAL

THE housing of the lowly paid sections of the community is essentially a social problem in which society has recognized its responsibility. Scarcely any other social problem has occupied public opinion to such an extent since the war. This very aspect of the problem has placed it more than any other social problem at the mercy of the political fluctuation of policy of different successive governments. Once the need for rehousing the people, with governmental control, was established and enthusiastically supported by public opinion it ceased to be merely a political problem and became a technical one. Nevertheless, since the war politicians have continuously influenced the trend of development; this is to the detriment of a housing policy. An insufficient number of houses are being built, rents far exceed the possibilities of the poorer classes and the cost of building is prohibitive. The disorganization of the building industry through continually readapting itself to the political requirements is appalling, and last, but not least, the position of the building operatives is completely disorganized, and exposes them to fluctuating employment and periodical booms and depressions.

CENTRAL BODY NEEDED

It seems high time to cast off political influence and concentrate on its technical characteristics. It is essential that a body should be created to centralize all the problems, to adapt general measures of planning to the means at its disposal at any given moment, and to direct the whole housing policy of the nation according to a pre-established plan of activity. To ensure the political independence of such a body from fluctuations of a political trend, it seems essential that it should not be nominated by one or another government, and should therefore not feel obliged to work within predetermined political doctrines and slogans, but should approach the problem on purely technical grounds, pursuing a long-range, steady policy. It is also essential that it should have full governmental support and recognition in order to be able to mobilize the activity of the well-trained specialist and the moral support of the general public. Further, the housing problem being a national one, it is essential that such a body should not be limited to one or another of the towns or even regions, but should embrace a much wider field of activity within the framework of the whole country. This is clear if we consider that the organization of a highly decentralized building industry is one of the major problems of such a housing board. Although the advantages of such an organization seem elementary, nothing has been done.

NEEDS AND MEANS

If we examine the material we have at our disposal regarding planned activity in housing, we are obliged to declare the absolutely inadequate standard of knowledge and the general ignorance of the scientific aspects of the problem. The first work of such a housing board is, however, clear and could be put under two general headings :—

(1) Analysis of needs for housing the working classes.

(2) Analysis of means in respect to the proportion of wages that could be spent on rent.

The board would also have to deal with the general town-planning problems in relation to building land (type of development, density, regional planning, etc.), as well as with the problems of standardization of designs, research into building technique, reorganization of building labour and co-ordination of the efforts of the building industry, in the light of a long-range programme established on a sound economic basis.

None of the most essential information regarding needs is available. It puzzles us that it is possible for housing authorities to expend vast sums of money without having adequate statistical information. This fact has been very often stressed by various housing authorities and, lately, in the second part of the Dudley report.

The limits of rent that a poorly paid working-class family can afford have not been established. For various housing authorities the problem of rehousing the working classes reduces itself to that of supplying sufficient houses at around 10s. rent per week; but this figure is an arbitrary one and is not based on scientific investigation. There is not, to our knowledge, any existing statistical evidence of the earnings of families, and especially of the number of wage-earners in the family (except for London). The publication of these figures should be considered of national importance.

FAMILY EXPENDITURE

Further, there is no officially recognized standard of expenditure by a working-class family (including food, fuel, clothes and cleaning, the fully justified "decency" allowance, amusement and entertainment). The various scales prepared are contradictory and vary considerably (up to 50 per cent.), depending on the authority quoted. The British Medical Association norm for minimum subsistence level has been criticized as being much too low and not allowing anything for the extra expenses to which all working-class families are entitled. Neither does this scale make special allowance for pregnant women, doctors' clubs, health centres, etc. Nevertheless, in arriving at differential rents municipalities apply a scale of minimum expenditure much below the B.M.A. standard. On the other hand, scientific organizations, such as the Committee against Malnutrition, after a full investigation of the physiological needs, estimate a figure roughly 20 per cent. higher than the B.M.A., while Mr. Bottomley's and Mr. M'Gonigle's estimates, quoted very often by other authorities, are also different.

It is obvious that some kind of binding norm must be established. This physiological minimum expenditure should be deducted from the earnings of a family to arrive at the proposed rent. Here again the incomes of the family and the number of wage-earners is unknown. We can but judge from the income tax returns for 1930, which show that out of a population of 37,000,000 only 5,500,000 have paid tax (persons earning less than £150 per year are exempt). These figures, however staggering, are not of great use to us, be-

cause we do not know how many wage-earners there are per family and, therefore, cannot determine to a sufficient degree of exactitude the income per family. However, it is clear that no housing control could ignore these essential figures.

Even if it is accepted, on the basis of the prevailing rates of interest and cost of building, that private enterprise or unsubsidized building can and will supply houses at or above 10s. rent per week, there still remains the problem of supplying houses of a cheaper type. The provision of these latter is the main housing problem. If public money is to be spent on housing, it should be in the form of subsidies for rehousing the overcrowded and badly housed. Sir E. D. Simon's 1929 figure of 1,000,000 families being unable to pay 10s. per week rent has probably increased to 3,000,000. Unfortunately it is impossible to ascertain this figure accurately and use it as a basis for a housing programme.

The graphical chart on this page is reproduced (by permission of H.M. Stationery Office) from the Ministry of Health statement on Housing, House Production, Slum Clearance, etc., England and Wales, for the period up to March 31, 1935. It represents the total output of housing by the building industry but does not give any details for working-class housing. Lower rates of interest have undoubtedly created favourable conditions for the housing boom at present in progress; but it is in the nature of private enterprise to cater for the interests of the more well-to-do, which accounts for the high figures shown.

By far the majority of houses built during the last two years, were for sale and not to let, which automatically excludes a very large proportion of the working class. In the category of the house to let there is only a very negligible percentage of dwellings at 10s. per week and very few indeed below 10s., thus, although the general output is spectacularly high, the working-class housing, which is so urgently needed, shows a considerably smaller output than in previous years.

The table printed below has been adapted from a National Housing and Town Planning Council Memorandum by Mr. John G. Martin and shows the number of houses built in England and Wales since the war.

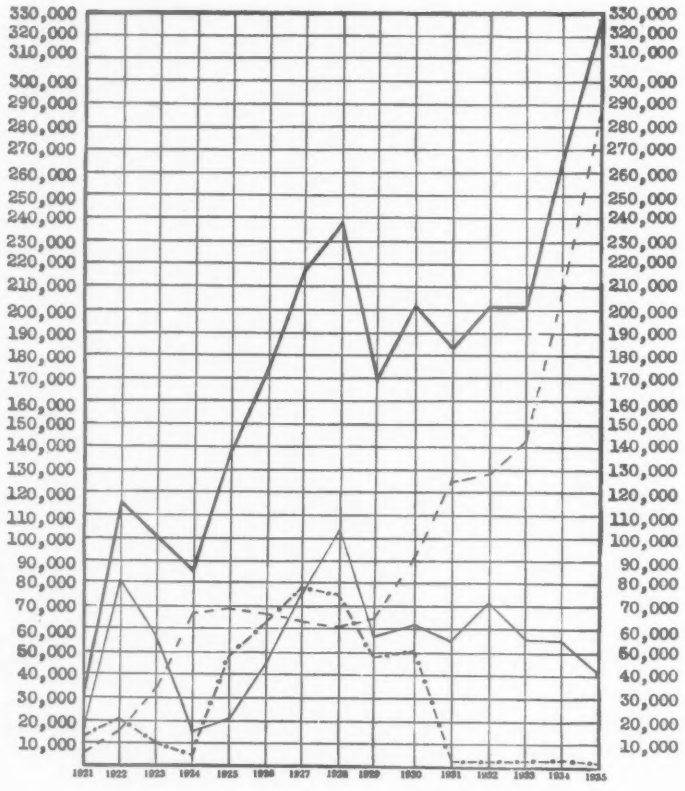


Chart showing the number of houses provided in England and Wales in the years ending March 31, 1921 to 1935.

Year ended Sept. 30	State-assisted dwellings built. 1919 Acts.	1923 Act.	1924 Act.	1930 Act.	Without State assistance.	Total (England & Wales.)
1919	—	—	—	—		
1920	6,127	—	—	—	30,000	210,237
1921	67,945	—	—	—		
1922	106,165	—	—	—		
1923	24,998	991	—	—	52,749	78,738
1924	5,525	30,934	—	—	73,032	109,491
1925	1,497	78,409	12,385	—	66,735	159,026
1926	975	84,431	46,489	—	65,689	197,584
1927	527	115,073	97,316	—	60,313	273,229
1928	30	47,969	53,792	—	64,624	166,415
1929	18	80,240	53,516	—	71,083	204,857
1930	14	—	51,310	—	110,375	161,699
1931	—	—	61,615	420	132,909	194,944
1932	—	—	62,530	5,146	132,886	200,562
1933	—	—	44,131	6,302	167,880	218,313
1934	—	—	36,439	15,058	258,256	309,753
Totals	213,821	438,047	519,523	26,926	1,286,531	2,484,848

The 1924 Act figures include 1,717 houses built with additional State assistance under the Housing Rural Authorities) Act, 1931

Houses with a rateable (taxable) value exceeding £78 (or £105 in the Metropolitan Area) are excluded.

The figure of 30,000 unassisted houses during 1919-1922 is an estimate.

WORK OF NATIONAL PLANNING BOARD

In centres with large-scale problems of general planning the work of a National Planning Board for Housing needs to be co-ordinated with that of a controlling authority representative of all bodies connected with the organization of that specific centre. To state that the problem of rehousing is both a housing and town planning one would seem to stress the obvious, were it not for the fact that so much housing is carried out without any attention being paid whatsoever to town planning. The problem of reconditioning existing areas and property which are not bad enough to be condemned is one that must be treated on its merits in each particular case. By zoning, and the removal of adjacent, often derelict, factories, etc., and sometimes some of the houses themselves and the reconditioning of others, it is often possible to add sufficient open spaces to make the area liveable again. It must be borne in mind, however, that whatever is done, it should conform to a plan for the future development of the district, for this reconditioning in any case is but a transitory measure.

THE ECONOMIC ASPECT

Since 1919 more than 2,500,000 houses have been erected in England and Wales and nearly 250,000 in Scotland. The capital expenditure must have been about £1,500,000,000, and State subsidies alone have amounted to more than £150,000,000. Despite this nearly 1,250,000 persons in England and Wales only (on the official

estimates, and considerably more according to most of the unofficial estimates) are living in houses unfit for human habitation.

SHORTAGE AND OVERCROWDING

The following information regarding overcrowding in England and Wales relates to 1921 and 1931, and is Census Report material. Though the measurement standards of overcrowding adopted in the Census have to be based purely on the mathematical standards of persons (and families) to the dwelling and the room, it is generally felt that the material contained in the Census Reports is the best available. Certainly the following figures show the amount of progress that had been made by 1931 as compared with 1921, and give an idea of the extent of the problem at the later date. (Figures are given to nearest thousand in each case.)

Total of structurally separate dwellings, occupied and unoccupied, exclusive of non-private habitations : 1921, 7,979,000 ; 1931, 9,400,000 ; increase 1,421,000.

There was an increase of 95,000 dwellings of one to three rooms, 1,055,000 dwellings of four and five rooms, and 300,000 dwellings of six to eight rooms, while there was a decrease of 29,000 dwellings of nine rooms or more.

YEAR 1931.

Structurally separate dwellings.

Occupied	9,123,279
Vacant, furnished	115,096
Vacant, unfurnished ..	161,160
Total	9,399,535
Number of private families ..	10,233,139

The shortage of dwellings, on this basis, can be taken as 833,604, or 994,764, or 1,109,860. This method of assessing shortage is unsatisfactory. It takes no account of overcrowding within the structurally separate dwelling. In the second place, since a very large proportion of the shared houses are large ones, originally inhabited by the middle classes, any plan to give every family a structurally separate dwelling must involve the demolition of a considerable number of these houses, which would be too large for a working-class family to run, however low the rent.

The increase of 1,421,000 structurally separate dwellings during the intercensal decade 1921-1931 may be compared with an increase of 1,494,000 in the number of private families.

The table shows the private families in England and Wales, and the population in private families, in 1931, classified according to the number of persons per room. The number of families at various densities in 1921 is given in column 2 for comparison. (Figures are given to nearest thousand in each case.)

A purely mathematical standard of judging overcrowding is not very satisfactory ; but taking "more than two to a room" as overcrowding the number of overcrowded families in 1931 was 397,000 ; at the slightly higher standard of "two or more" the number is almost doubled, and at "more than one and a half" the figure is 1,174,000 families, representing over 7,000,000 persons.

This Census information is more than four years old and nearly a million houses have been built since 1931. Considerable improvement must therefore have been effected. Conditions in large parts of Liverpool, Newcastle, Leeds, Edinburgh, Glasgow and London, in particular, continue to be outstandingly bad among the greater cities, but many other towns, large and small, in England, Wales and Scotland, are little, if at all, better. Numerous smaller towns in the north-east are undoubtedly worse on average as regards overcrowding.

BUILDING WITHOUT SUBSIDIES

Since the termination of the 1924 Act subsidy (as from December 7, 1932) activity has mainly been in building dwellings to sell to the middle classes and well-paid manual workers. The intentions and hopes of the Government in repealing the 1924 subsidy were stated in Circular 1334 on the Housing (Financial Provisions) Act, 1933 :—

"For the supply of houses for letting to the working classes it is anticipated that, with the present re-establishment of more normal conditions, economic forces, operating in a free field, will secure a large volume and variety of production at competitive rents, and that a great number and diversity of persons and organizations will play their part ; private builders, housing companies, public utility societies, finance societies and private investors will, it is hoped, all take a share in the ownership of working class houses."

These anticipations have not been realized. Section 2 of the 1933 Act was intended to encourage private enterprise to build small houses for letting, by means of a partial government guarantee of losses incurred by a local authority in guaranteeing the repayment of mortgages granted by building societies. Societies have displayed little interest in this scheme ; the rates of interest they charge are greater than the rates at which local authorities are able to borrow, while the repayment periods are shorter. It seems extremely unlikely that this scheme will produce any real results. Up to December 31, 1934, guarantees had been given in England and Wales in respect of 3,513 houses. Including houses for which guarantees had been promised by local authorities and houses in respect of which active negotiations for guarantees were in progress, the total was below 12,000.

Private enterprise has not supplied, and many housing experts think it cannot supply, houses for the working classes at rents they can afford. Of the 254,934 houses built by private enterprise in England and Wales without State assistance during the year ended September 30, 1934, only 28,092 with rateable value less than £13 (£20 in Greater London) and 19,202 with a rateable value exceeding £13 but not exceeding £26 (£21 to £35 in Greater London) have been occupied by persons other than the owners, although 224,351 of the 254,934 were houses within these two value categories.

APPROXIMATE ECONOMIC RENT

The average cost of non-parlour houses (excluding flats and houses specially erected for aged persons) for local authorities in England and Wales during 1934 was £291, exclusive of land, roads and sewers. Borrowing at 3½ per cent. for sixty years a house costing £360 (all in) can be let for about 10s. per week, including rates. If interest is 4 per cent., or rates are exceptionally high, such a rent will be impossible without subsidies. For houses or flats built on land costing more than a few hundred pounds per acre the same thing applies, particularly in many of our large cities where the available land costs well over £1,000 per acre and rates are about 15s. in the £. Unless money is borrowed at something like 3 or 3½ per cent. it is hardly possible to get down to a 10s. a week economic rent, and it is by no means certain even where capital is at 3 per cent.

The only bodies that can borrow so cheaply are the local authorities and the Government. Ruling out the possibility of a national housing loan at, say, 3 per cent., for houses to be built and owned by the nation, to let at an economic rent, we are left with the local authorities. The latter are not precluded from building houses for the working-classes in general. Sir Hilton Young, then Minister of Health, speaking in the House of Commons on November 27, 1933, said :—

"Private enterprise at the present time has a great opportunity of stepping into the field and providing the nation with this essential service of the small house to let. It has the ability to do it, and the best means to obtain the supply of that commodity is to encourage it to do it, and to bring into relation once more the natural forces of supply and demand on a commercial basis. There is no reason in the nature of things why this one great essential service should be the only one in which we cannot secure a supply of houses without a subsidy. It may be (and no man can foresee the future) that private enterprise may not do so, and in that case we shall

Density (Persons per room.)	1921 Families at density of col. 1.	1931 Families at density of col. 1.	1931 Families at and above density of col. 1.	1931 Population at density of col. 1.	1931 Population at and above density of col. 1.
Over 4	20,000	24,000	—	163,000	—
4	33,000	32,000	56,000	168,000	331,000
Under 4 and over 3 ..	37,000	29,000	85,000	235,000	566,000
3	120,000	98,000	183,000	505,000	1,071,000
Under 3 and over 2½	53,000	34,000	217,000	302,000	1,373,000
2½	99,000	85,000	302,000	496,000	1,869,000
Under 2½ and over 2	136,000	95,000	397,000	771,000	2,640,000
2	454,000	395,000	792,000	1,938,000	4,578,000
Under 2 and over 1½	471,000	382,000	1,174,000	2,509,000	7,087,000
1½	466,000	462,000	1,636,000	2,057,000	9,144,000
Under 1½ and over 1	1,077,000	1,036,000	2,672,000	5,653,000	14,797,000
1	1,608,000	1,896,000	4,568,000	6,674,000	21,471,000
Under 1 and over ½ ..	2,279,000	2,988,000	7,556,000	10,689,000	32,160,000
½	787,000	1,108,000	8,664,000	2,657,000	34,817,000
Under ½	1,099,000	1,569,000	10,233,000	3,225,000	38,042,000
Total		10,233,000	—	38,042,000	—

have to seek other means. We are maintaining no abstract theory of the way in which the supply should be obtained. We shall take whatever means are necessary for the purpose. We have the second line of insurance, namely, the obligation and duty of the local authorities to meet the housing needs of their inhabitants. I have shown the House already that owing to the fall in building costs they can now do so without subsidy. It is their duty to do so, in so far as private enterprise does not. They are as free to do so as ever."

Circular 1334 similarly contained this sentence: "The local authority will remain responsible for the provision of necessary houses in their district if private enterprise does not provide them." However, very few houses have been provided by local authorities without State assistance during recent years, and the total in England and Wales during the year ended September 30, 1934, was 3,322. The Housing Bill at present before Parliament presumably represents the "other means" referred to above.

WHAT RENTS CAN THE WORKING CLASSES AFFORD?

In the absence of full national statistics it is possible to obtain a certain amount of information from various social surveys recently conducted; but this is so unsystematized that it is impracticable to make use of it for the present purpose. There exists, however, a considerable amount of precise information on wage rates, compiled by the Ministry of Labour, and from time to time information respecting earnings is published. Excluding agricultural workers, coal miners, and other particularly poorly paid workers, it is probable that about two-thirds of the male manual workers in industry earn between 50s. and 60s. a week when in work. People in this income-group can be taken, subject to what is said below, as able to afford about 10s. or 12s. per week for rent, including rates.

But there are many workers who do not get the average wage of their trade, and numerous trades in which average earnings are far below 50s. Then there are the unemployed and the old age pensioners.

It has been pointed out that the unemployed are a stream, not a standing army. The Minister of Labour, speaking in the House of Commons on March 4, 1935, stated that only about 400,000 insured persons had been unemployed more than a year, but that about 5,000,000 made a claim at some time or other during the year, and these 5,000,000 people were employed, on an average, 32 weeks in the year. Instead of looking at the workers and the unemployed as two distinct income-groups we must realize that estimates of capacity to pay rent deduced from statistics of weekly earnings or from wage-rates will be too high for the considerable proportion of workers who are unemployed for one medium-length period or several short periods during a year. Yearly earnings must not be carelessly taken as being fifty-two times weekly earnings.

An inclusive rent of 10s. is the absolute maximum for a very large proportion of the working-class, and is too much for workers subject to persistent periods of unemployment, workers in trades where wages are much below 50s. (whether they experience much unemployment or not), workers with large families, and those who are living on the old age pension.

NEED FOR A SURVEY

These conclusions have been arrived at from data that is decidedly imperfect, but their general validity will probably not be denied. We need a survey and a plan. The material collected in the Population Census does not provide an adequate record of the occupation of buildings or of overcrowding. Exact knowledge of where the people are, why they are there, whether their houses are unfit, overcrowded, or in need of reconditioning, whether they are tending to move somewhere else, how they are living at present, what their incomes are, and so on, is essential if we are to avoid working in the dark.

The slum clearance campaign developed in 1933 under the Act of 1930 was conducted by means of surveys—of a sort. It was pointed out in Circular 1331 of the Ministry of Health that local authorities had had the duty, for more than twenty years, of inspecting and recording the condition of all working-class property in their areas, and that the material in their possession should enable them to prepare and adopt a programme and time-table of clearance, improvement and re-housing. From the time taken by the majority of authorities to reply to this circular, and the content of some of the programmes received, it seems doubtful whether many local authorities possessed the information the Minister anticipated.

A White Paper summarizing the results was eventually brought out by the Ministry of Health. The ignorance of those who were supervising the campaign about the extent of the problem with which they were attempting to deal was remarkable, and their experience would, one would have thought, have made them see the necessity for conducting and keeping continuously in action a national survey of housing.

The Housing Bill at present before Parliament provides, like the Circular that inaugurated the slum clearance campaign two years ago, for a survey—of a sort. Local authorities are to—

"cause an inspection thereof to be made with a view to ascertaining what dwelling-houses therein are overcrowded, and to prepare and submit to the Minister a report showing the result of the inspection and the number of new houses required in order to abate overcrowding in their district, and, unless they are satisfied that the required number of new houses will be otherwise provided, to prepare and submit to the Minister proposals for the provision thereof."

It appears that local authorities will conduct their surveys as they please. There is to be no national survey, covering every house in the country, and it seems extremely unlikely that local authorities in general will collect their information in a way that can be of more than ephemeral use. The task of conducting a survey on the lines we regard as essential for the formulation of a proper plan of action would, indeed, be quite beyond the capacity of many local authorities, though this difficulty could be overcome if counties and county boroughs were made responsible.

THE 1935 BILL

The Bill is mainly devoted to provisions for preventing overcrowding. Overcrowding as such has not been tackled in previous legislation. The 1930 Act was designed to do away with slums—a term that has no official definition—and it is being used with energy. Previous to that, the various Acts were devoted to encouraging by subsidies the building of working-class houses. Incidentally, the term "working-class" has been taken to apply to considerable numbers of what is generally known as the lower middle-class.

Under the new Bill permitted standards of accommodation are defined. None of the many standards previously existing has been followed. Overcrowding will be officially deemed to exist where there are more than two persons living in one room, more than three in two rooms, more than five in three rooms, more than seven and a half in four rooms, more than ten in five rooms, and thereafter more than two per additional room. Children under ten years count as halves and children under one year are not to be taken into account, but the permitted number of persons may be less where one or more rooms is of less than 110 sq. ft. (Rooms less than 50 sq. ft. are not to be counted. Rooms of 50 to 70 sq. ft. are to be reckoned as providing accommodation for "half a person" only, 70 to 90 sq. ft. one person, 90 to 110 sq. ft. one and a half persons.) Moreover, a house is to be considered overcrowded if any two persons, more than ten years old, of opposite sexes, not being persons living together as husband and wife, must sleep in the same room. There are provisions for modifying the standard in special circumstances.

No provision is made in the Bill for the date on which the standard is to come into operation. This will depend on the local authority surveys, as will the success of the whole scheme.

Overcrowding will be punishable by a maximum penalty of £5, plus £2 per day after conviction while the offence continues. Clause 3 (1) reads:—

"Subject to the provisions of this Part of this Act, if after the appointed day the occupier or the landlord of a dwelling-house causes or permits it to be overcrowded, he shall be guilty of an offence and shall be liable on summary conviction to a fine not exceeding. . . ."

The "provisions of this Part of this Act" refer to subsequent clauses providing that if people living in an overcrowded dwelling were there when the standard came into operation, and in certain other circumstances where the birth or growth of children after the appointed day causes the building to become overcrowded, then so long as suitable alternative accommodation has not been offered and refused and/or provided it has been applied for, the occupier shall not be guilty of an offence.

Local authorities will be empowered to treat large overcrowded urban areas as "redevelopment areas." This will involve planning the area for streets, dwellings, open spaces, etc. Powers of compulsory purchase will be given and compensation is to be paid at market value except for unfit houses and in other special circumstances.

The amount of Exchequer subsidy payable in respect of blocks of flats on expensive sites is to vary according to the cost of the site, and local authorities will have to pay half the amount provided by the Treasury.

Where the new accommodation is provided otherwise than in blocks of flats on expen-

sive sites the subsidy is in any case lower than the basic subsidy for dwellings in redevelopment areas, and is only to be paid where the Minister considers that the provision of new accommodation would otherwise impose an undue burden on the district concerned. Treasury contributions in respect of houses to be provided in rural areas are of wide range.

To enable local authorities to level the rents of houses built under various Housing Acts, the Bill provides for the consolidation of housing contributions and accounts, so that, subject to certain general conditions, local authorities shall be free to deal with their houses as a whole. Clause 48 (5) runs as follows :—

" In fixing rents the authority shall take into consideration the rents ordinarily payable by persons of the working classes in the locality, but may grant to any tenant such rebates from rent, subject to such terms and conditions, as they may think fit."

It is not proposed in this paper to attempt a full-length summary or criticism of the Bill. Two publications of the National Housing and Town Planning Council provide this : *Memorandum upon the provisions of the Housing Bill, 1935* (by John G. Martin) and *Memorandum upon the Housing Bill, 1935, the Consolidation of Housing Accounts* (by P. S. Phillips, F.I.M.T.A.). The chief criticisms that have been made are : That the overcrowding standard is too low, that the subsidies are insufficient to enable provision of proper accommodation at rents the working-class can afford, that the concessions to landowners in respect of compensation will increase land costs and therefore rents, and will slow up the work of slum clearance, that the Central Advisory Committee is not given power to control building material prices, that empowering local authorities to hand over their management powers to commissions is undemocratic.

The provisions for the survey of overcrowding, to precede the commencement of work, do not seem likely to produce really efficient schemes of replanning. It seems likely, therefore, that the campaign against overcrowding, like the campaign against the slums, will be undertaken in mental darkness.

BUILDING THE DWELLINGS

STANDARDS SHOULD BE DETERMINED

In reviewing the respective rôles of private enterprise and local authorities, it is essential to start from an understanding of existing needs. The following appears to be the only adequate way. An agreed minimum standard of accommodation must be determined on the basis of cubic feet of room space per person and so many persons per room, with an allowance for the separation of the sexes. On this basis each local authority can discover how many houses of a specified kind are needed and can grade the needs according to urgency. But if nothing more were done than to rehouse the unsatisfactorily housed population, the results would be devastating. The surveys of the Medical Officer of Health for Stockton-on-Tees and the more recent investigation of the Medical Research Council into the incidence of certain diseases (whose main causes are either unhealthy living conditions or malnutrition) in a slum and on a rehousing estate in Glasgow amply testify that such rehousing is simply a transference of the centres of malnutrition, disease and potential overcrowding. The working-class housing problem is not simply a physical one of building new houses. Some recent investigations into the subject, official and unofficial, have recognized this fact, only to dismiss it from immediate consideration on the grounds that it is a problem of poverty and not of housing. To do this is to evade the most essential issue, if the houses are to be built and slum clearance to be carried out properly.

The physiological minimum necessary to maintain the health and strength of a working-class family and the cost of this minimum must be ascertained. Sufficient data on this point already exist to enable a standard to be set, to which must be added a " decency " allowance and an allowance for ordinary waste. On this basis we can discover the number of families in the country unable to maintain this minimum and have enough margin to pay also for " decent minimum " housing accommodation.

PRIVATE ENTERPRISE BUILDS FOR PROFIT

Up to 1910, 99 per cent. of all houses were built by private enterprise, and between 1910 and 1914 the figure was 95 per cent., no subsidies being granted in any case. The local authorities' powers to build were few and rarely was advantage taken of them. Since the war local authorities have mainly built for letting and private enterprise for selling. It is the nature of private enterprise to charge the highest price it can, and so long as there is an effective demand for houses by people with reasonable incomes the needs of the poorer will remain neglected by such enterprise. Even subsidies to private enterprise, unless enormous, will only touch the fringe of this problem, for as a rule very little of the subsidy emerges in the form of reduced rents. And it is precisely the poorer classes who, finding rents too high, crowd together, however bad the structure and unhealthy the conditions of ventilation, drainage, etc.

QUALITY OF BUILDING

Another aspect of the relation between local authorities and private enterprise that deserves to be emphasized is the quality of building. Private enterprise, when it will, can produce houses of first-class design, efficiently planned and architecturally all that can be desired. But such houses are the exception, and where built are very expensive. They do not come within the scope of working-class housing at all. The large mass of the houses erected by speculative builders and building societies are of poor standard of design and equipment, produced as they are with an eye solely to rapid returns.

This is not to say that local authorities have not an enormous amount to learn as regards architectural value and structural soundness. But they usually employ architects and know they are undertaking a lasting responsibility. Further, there are certain economies obtainable when building on a very large scale that local authorities can enjoy, e.g., from centralization of administrative supervision, duplication of standard designs, standardization of details, greater possibilities of collaboration with research organizations, enabling the bolder application of synthetic materials, labour-saving devices, and rational systems of construction on the lines of Benziger, Mopin and Kleinloger, etc. They deal in larger quantities and plan on a larger scale. The private speculative builder is not, as a rule, interested and the smaller scale of his work precludes him, on the whole, from venturing into these sides of the work.

Local authorities are also unquestionably superior in the management of houses, a fact recognized even by many supporters of private enterprise. These people, of whom the Moyne Committee are an example, suggest that the local authorities buy the houses from the private builders for the sake of management, a policy that would encourage private builders in their careless and inefficient methods and mean that the local authorities would be buying houses at higher prices than they could themselves build.

That private enterprise will not solve the working-class problem as outlined above was recognized to some extent in the immediate post-war period. But housing policy has changed with different governments, sometimes, as with the 1923 Act, leaning more heavily on private enterprise : at others, as with the 1924 Act, putting greater emphasis on subsidies to local authorities. Building activity during the period down to 1930 was very great. Nevertheless no relief had been given to overcrowding in the slums, although under the 1924 Act a considerable number of houses with more moderate rents had been erected. In other words, the problem in 1930 was as urgent as ever before.

WHAT HAS BEEN DONE SINCE 1930 ?

The 1930 Act did make some provision for slum clearance with the aid of subsidies, though it remained for local authorities to take the initiative. and comparatively little was achieved. The 1933 Act was a deliberate step backwards. It repealed the 1924 Act, under which a number of houses at lower rents were built. It discouraged further slum clearance under the 1930 Act, and placed almost complete reliance on private enterprise, discouraging local authorities from building even unsubsidized houses, although on Hilton-Young's own admission they could afford to let them at lower rents. The Government's housing policy is based on the assumption that the fall in building costs and the low rate of interest will allow private enterprise to meet the need of working-class families.

We have tried to show that private enterprise will not cater for the most urgent working-class needs, and even a drastic fall in building costs and interest rates will hardly touch the problem. In other words, the housing problem of the workers —more urgent today than ever before—is receiving even less attention than before. Not only is there no advance on previous activity in this connection, but by relying on private enterprise alone the problem is now further from solution than ever.

The Housing Bill now before Parliament is in line with the rest of the Government's housing policy. It has revived the policy of subsidies, in a limited form, but in such a manner as to give a premium both to the landlord whose slum property is demolished and to the ground landlord from whom the land for the rehousing estate is bought. It is now introducing certain other forms of

compensation that mean further complication.

EQUIPMENT AND FITTINGS

Central laundries for use in common in tenement blocks *versus* a copper in each kitchen is a controversial issue. The advantages of the central laundry from the point of view of economy and equipment are obvious, but this arrangement has been objected to because the housewife must leave children without adequate supervision or arrange with neighbours to supervise them. These disadvantages could be remedied by the provision of crèches and kindergarten.

The kitchen and bathroom offer the greatest opportunities for standardization. In tenement buildings the best planning arrangements now group the kitchen and bathroom units together, combining the various service pipes in a common shaft with short leads to the respective fittings with the greatest possible economy. Standardised kitchen units and equipment offer a large field for improved design. The efforts to date are spasmodic and the general level of results far from satisfactory. It is possible on large schemes to standardize complete kitchen units, suitable for various sizes of families, ready to be built into the structure. These remarks apply also to the bathroom, where it is possible to have the bath already attached to a pre-fabricated wall surface (thus avoiding the never-ending trouble of water entering the junction between bath and wall) complete with the necessary services, pipes and connections.

Great improvement has been shown generally in sanitation with standardized fittings and more economical and advanced plumbing, such as the "one pipe" and "one stack" systems. Hot water and heating services have been too little explored. The centralized system of supply has great possibilities, but an accompanying method of rationing must be utilized, for economy alone. On the other hand, of the more usual systems of heating (solid fuel, gas or electricity), solid fuel has the distinct disadvantage of the necessity of flues (this also applies to gas in a lesser degree), which must be carried to the top of the structure, and are costly in material and planning space.

The subject of garbage disposal is a current contentious one. In addition to methods of collection in containers there are two main systems of chutes, the dry and the wet. With the dry method there is a risk of smells, greater noise of falling rubbish, tendency of rubbish to jamb, greater difficulty of disposal, and the necessity of placing them on the exterior, away from the kitchen. In the wet system, these objections are not present, but it is necessary to provide a garbage destructor that is uneconomical in a block containing less than 300 flats per installation. The heat from the destructor, however, can be used for providing hot water. It is also essential to provide as much flushing as possible, and in this direction it is possible to use the chute as a rain-water pipe.

Working-class flats with a completely all-electric service have increased so rapidly in recent years that it gives rise to a hope that before long, with the help of the "Grid System," this "clean, silent servant" will be everywhere.

PUBLIC UTILITY HOUSING SOCIETIES

These societies are registered under the Industrial and Provident Societies Act, 1893, which confers the benefits of incorporation and limited liability. Their objects must include the provision of houses for the working classes and their rules must include the provision that no dividend on share capital and no interest on borrowed money shall exceed the amount prescribed by the Lords Commissioners of His Majesty's Treasury. No member of a society may hold shares in excess of £200; but there is no restriction on the amount of loan capital any individual may hold.

The first recognition of such societies was under the Housing of the Working Classes Act, 1890, which enabled the Public Works Loan Board to make advances of money up to 50 per cent. of the cost of approved schemes for new houses. This was increased in 1909 to two-thirds of the cost. In 1914 there were about sixty societies in different parts of the country, most of them operating on a small scale.

At the end of the war, the societies were brought within the Government's housing scheme, and were offered loans and subsidies. A number of societies were formed and many embarked upon big schemes; but the high cost of building proved a serious obstacle, and Government regulations, drawn up to prevent misuse of the privileges offered to societies, were so severely administered that few societies were able to complete their schemes and their development was discouraged.

The various Housing Acts that have been passed have included provisions for assisting societies, in particular enabling local authorities to make loans up to 90 per cent. of the cost of schemes and enabling them to guarantee loans to societies by building societies. Local authorities are also empowered to invest in the shares or loan stock.

There are three main classes of societies :—

(*a*) Societies formed by public-spirited people to help towards a solution of the housing problem. Societies of this nature are operating in London and other towns. Church Army Housing, Ltd., operates in various centres.

(*b*) Societies formed to provide houses for the employees of industrial companies. A large group of societies is operating in South Wales under the Welsh Town Planning Housing Trust, and associated therewith is another group of ten or twelve societies formed in connection with the Great Western Railway. The management and membership of the latter group are entirely in the hands of railway employees at the various Great Western Railway's centres. The company have advanced loans to enable the societies to build. A group of colliery companies have set up a Co-operative Housing Trust, which has been responsible for building 12,000 cottages in several villages in the South Yorkshire coalfields.

(*c*) Societies formed for the development of working-class housing estates. Among these are societies that have built at Letchworth, Welwyn Garden City, Bournville Garden Village and elsewhere.

The figures given by the Garden Cities and Town Planning Association in its evidence presented in 1933 to the Departmental Committee on Housing of which Lord Moyne was chairman, showed that about 11,000 dwellings had been provided by about 108 societies since the war. Allowing for societies whose figures were not included, it is probable that about 14,000 dwellings represents the contribution of housing societies together with 12,000 provided by industrial societies for miners in various colliery districts. The number of societies at present operating is as follows :—

Total number of registered public utility housing societies, 337.

Deduct 73 not solely housing, 15 defunct. 1 converted into a company, and 66 amalgamated.

Total number of registered public utility housing societies operating, 242.

In 1933 the Departmental Committee referred to above recommended that a Central Public Utility Council should be appointed by the Minister of Health to supervise the operations of societies and to give such help and guidance as the societies might need. This recommendation has not been acted upon, but in the Housing Bill now before Parliament, which consolidates the financial assistance to societies made by previous Acts, and to some extent increases it, power is given to the Minister to give financial support for a limited period to a National Federation of Housing Societies. This Federation has already been formed under the auspices of the Garden Cities and Town Planning Association as a central and co-ordinating body. It will work in close contact with the Ministry of Health and with the local authorities.

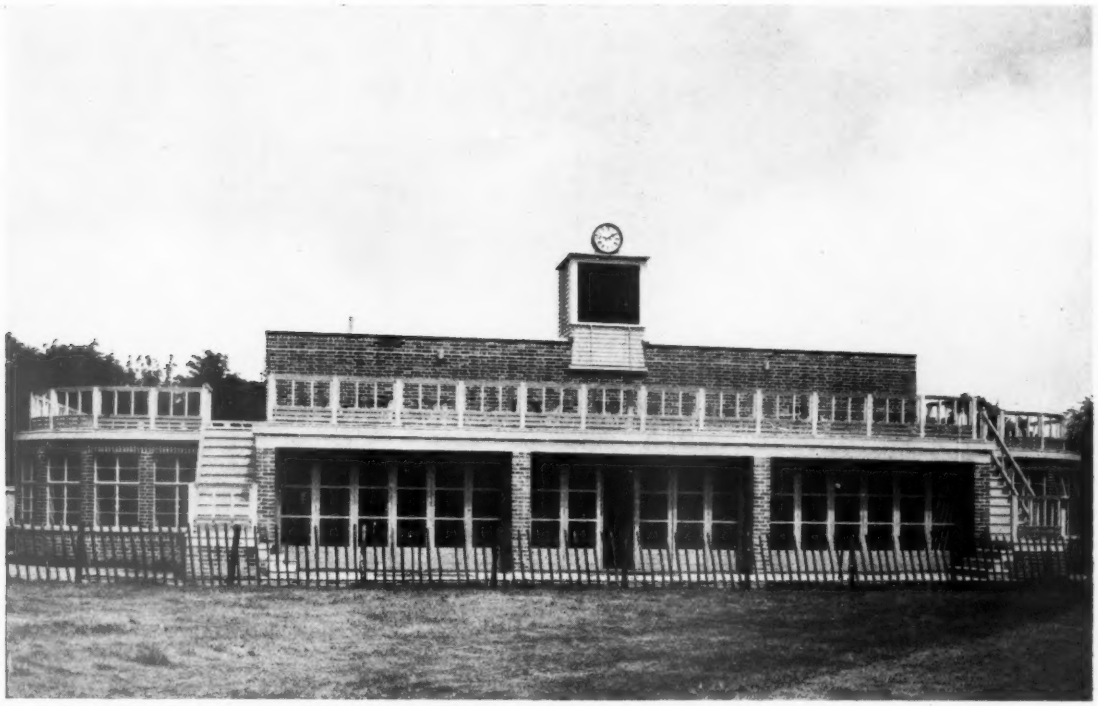
Societies are usually formed by people who wish to take an active part in helping to deal with the housing problem. As the rate of interest and dividend payable by the societies is limited, it is not easy to use them for profit-making purposes, though attempts have been made to do so from time to time. On the whole, it must be said that the quality of the work done by the societies is high.

The societies bring to bear upon housing in all its forms the assistance of those who would otherwise have no way of showing their practical interest. Their work is not so much an alternative to that of the local authorities as supplementary to it.

The difficulties experienced by the societies hitherto have to some extent been due to the administration of the Housing Acts, under which they operate, which has not invariably been favourable to them. The conditions laid down for the granting of loans and other financial assistance have been so onerous, that it has not always been possible for societies to be in a position to expect to pay the authorized interest on their capital. They have therefore been forced to rely on money from philanthropic persons on which a very low return is paid. There is no doubt that this state of things should be remedied.

Under the 1933 Relief of Overcrowding Bill the loan terms offered to societies have been improved and the conditions under which subsidies may be given for rehousing in connection with slum clearance schemes have been made clearer; subsidies are also given in connection with rehousing to deal with overcrowding. If the provisions of the Bill, when it becomes law, are administered sympathetically, there can be no doubt that the work of the societies will be advanced and that they will make an important contribution to the national effort to overcome the housing problem.

CRICKET PAVILION AT ACTON



THE SITE

The pavilion is situated upon the Goldsmiths Company's estate, which is to be zoned permanently for playing fields. Together with the adjoining public park this estate will form a green belt nearly a mile in length through Acton.

Although remaining open land the playing fields are intended to be remunerative, and so far have been developed to accommodate two tennis clubs and the cricket pavilion illustrated.

THE PLAN

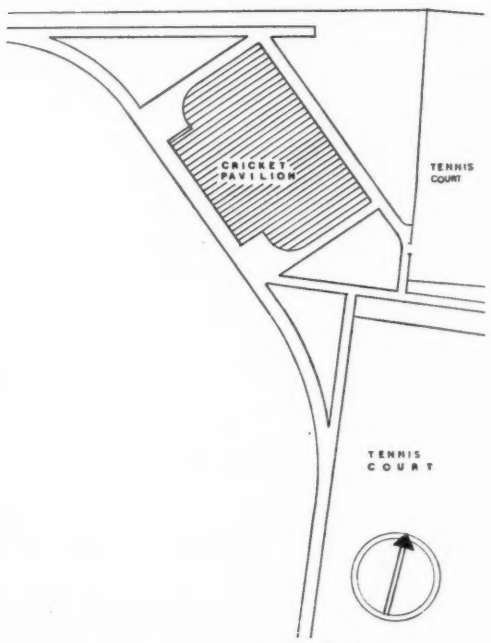
The club occupying the pavilion, although principally concerned with cricket, also possesses a bowling green and lawn and hard tennis courts, and this threefold membership has been allowed for in the planning of the changing room accommodation.

A service lift from the kitchen conveys refreshments to spectators on the flat roof over.

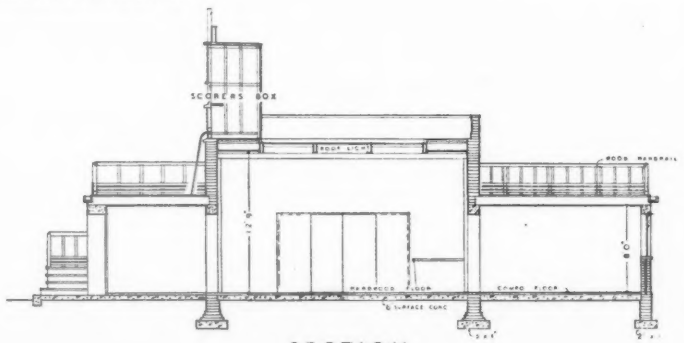
Above is a general view from the cricket field, point A. *(See plan on page 136.)*

ELEVATIONS

The external walls are in sand-faced brown brick, with window surrounds in a bluish hard brick. External joinery is in deal, painted cream and neutral green, and the metal windows are coloured cream. The steps are in reconstructed stone.



SITE PLAN

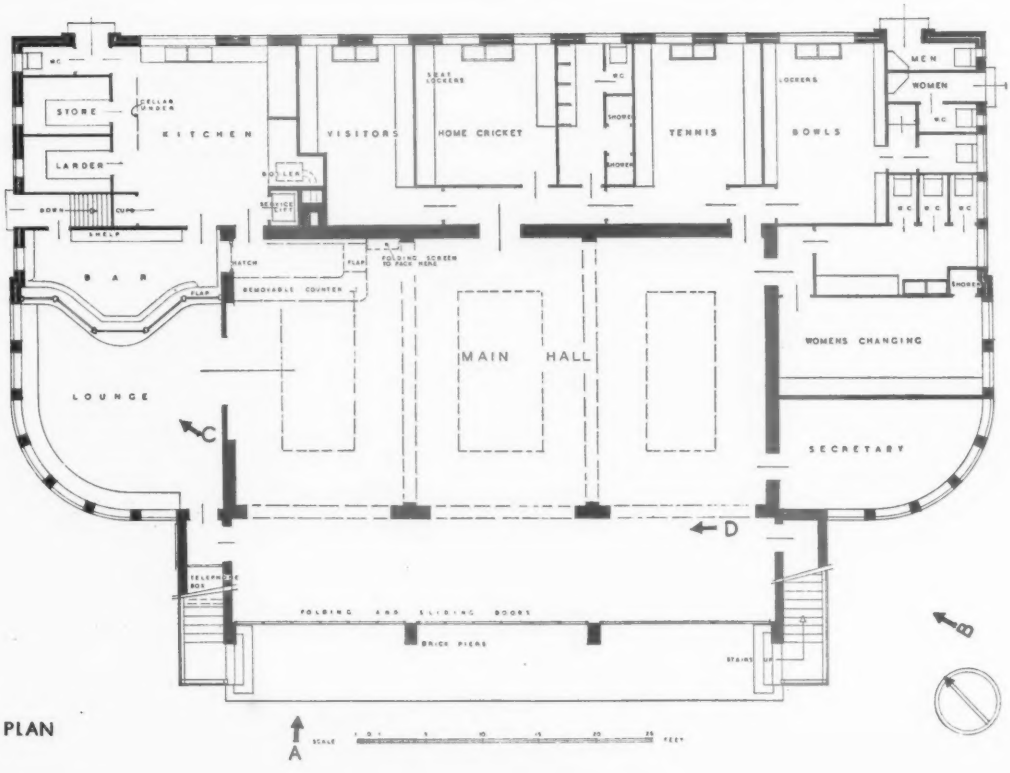


SECTION

DESIGNED BY JOHN GREY AND G. A. JELLICOE

CRICKET PAVILION AT ACTON:

A detail photograph from point **B.**



PLAN

BY JOHN GREY AND G. A. JELLICOE

CONTRACT

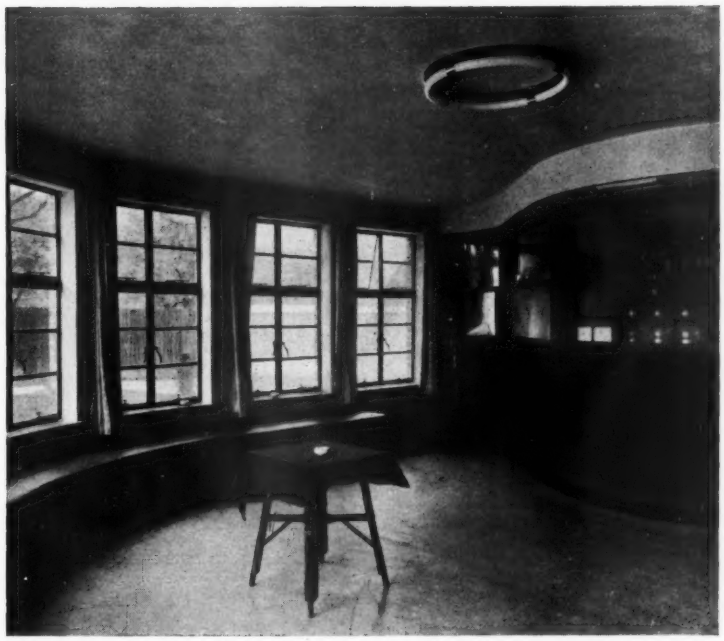
The contract price of the building was £4,099.

CONSTRUCTION

Brick weight-carrying cavity walls. Lower roof: filler joists and pre-cast R.C. beams, finished with 12 in. square heat-resisting slabs. Upper roof: wood joists, asphalt finish. Floors are of concrete.

INTERNAL FINISH

Main hall: jarrah strip floor, flush gaboon mahogany doors and ceiling panels, plaster walls. Elsewhere floors are of deal block, doors are standard panelled, and lockers are in deal, plywood fronted. Lavatories have metal-faced plywood partitions and quarry tile floors. The bar front is of hard composition board and the counter hardwood. The photographs show: above, a general view of the lounge from D. *Below, the bar from* C.



TECHNICAL SECTION: 23

HEATING, AIR CONDITIONING AND MECHANICAL EQUIPMENT

BY OSCAR FABER

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

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

PIPE SIZING WITH PUMP CIRCULATION

IT is first necessary to establish the pump head for which the system is to be designed. Economy of running cost in some cases calls for this to be kept low, but generally this aspect may be ignored.

One method is to assume beforehand a head of 5, 10 or 15 ft. or more, and size accordingly. Another is to allow a friction loss of ·10 in. or ·15 in. water column per ft. run of pipe and let the head come what it will. This gives a rational basis, as the head is consistently greater the larger the system. Thus, if the travel is 1,000 ft. the head at ·10 in. per ft. will be

$$1{,}000 \times \cdot 1 = 100 \text{ in.} = 8 \text{ ft. } 4 \text{ in.}$$

For this a 10 ft. head pump would be suitable.

Important points to notice in this connection are the following :

(1) The resistance of bends and fittings will be very much greater proportionately to that of the piping than with gravity circulation. As much as 50 per cent. to 100 per cent. additional travel may be called for.

(2) The resistance of the pump connections is often ignored, though this may be as much as 2 ft. of the total, and must therefore be allowed for.

(3) The gravity head may be ignored except in high buildings. Even here it will be found to have little effect on the pipe sizing.

(4) Pump heads up to 70 or 80 ft. may be allowed where extensive runs and large volumes of water call for high velocities for maximum economy of pipe sizing. This is particularly so where the pump may be steam driven and the exhaust steam used through a calorifier for heating the water, in which case the circulation costs are practically nil.

(5) The temperature drop assumed for purposes of arriving at the weight of water to be circulated should not be more than 30 deg., or excessively fine regulation will be called for. 25 deg. or 20 deg. are sometimes worked to.

The two-pipe system only will be considered, as this is by far the most advantageous with pump circulation.

As with system (*c*) the emissions of the radiators should be marked on the plans or diagrams as Fig. 131, and totalled back to the boiler with a suitable allowance for mains.

The travel "T" is then measured to the most distant point, as at "E," and an appropriate allowance made for bends and resistances by estimating the number from the drawings and multiplying the total by an appropriate average foot run each from Table XXXIX. (See page 29, July 4 issue.)

The pressure loss per foot run is then determined either arbitrarily at .1 in. or .15 in. or more per foot ; or from the pump head fixed beforehand thus :

Assumed pump head ..	15 ft.
Allowance for pump connections	2 ft.
Available	13 ft.

T = 1,300 ft. (including resistances).

$$\frac{CP}{T} = \frac{13 \times 12}{1{,}300} = .12 \text{ in. per ft.}$$

From this a table may be drawn up for the first approximate pipe sizing (as with gravity system (*c*)) and the sizes of the index circuit filled in, together with other circuits of somewhat similar travel.

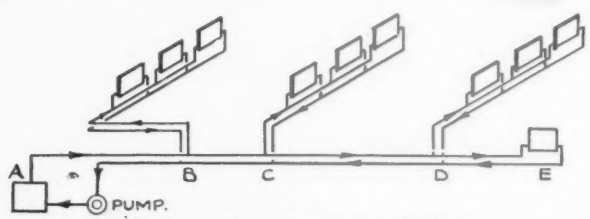


Figure 131. *Pipe sizing : pump circulation.*

For shorter circulations branching off nearer the boiler, as at B, time may be saved by first estimating the resistances of pipes A to B (flow and return), deducting this from the total head available, and constructing a separate table with a higher $\frac{CP}{T}$ for this branch only.

Accurate sizing may then be proceeded with on exactly similar lines to that already discussed under system (*c*). The mains emission should first be re-estimated and properly proportioned to each radiator. Following this the resistance of each section must be taken out, and each branch balanced against what is available. Lock shield regulating valves on radiators and branch mains are in any event essential with a pumped system for final regulation, as again meticulous accuracy in pipe sizing is unattainable.

Radiator connections will be found usually to be ½ in. ⅜ in. is often sufficient, but the risk of blockage is too great.

The *capacity of the pump* is determined from the total B.T.U. emission of the system by dividing this by the temperature drop assumed. The answer in pounds is then converted into gallons per minute by dividing by 60 × 10, this being the usual method of rating pumps.

To limit the pump to this duty would mean that every circuit and radiator is expected to take exactly its correct volume of water and no more. This is obviously impracticable, and in order to allow a margin to facilitate regulation an addition of 50 to 100 per cent. on the calculated pump duty is desirable.

The following example will show the application of the above :—

Total emission of radiators and mains .. .. 1,800,000 B.T.U.'s per hour.

Temperature drop .. .. 30°.

Gallons per minute $\frac{1{,}800{,}000}{30 \times 10 \times 60} = 100$ galls. per min.

A pump of not less than 150 g.p.m. would be recommended. The head would be that previously determined for the pipe sizing.

The horse-power delivered to the water for such a pump, operating at, say, 10 ft. head, would be

$$\frac{150 \times 10 \times 10}{33{,}000} = .46 \text{ h.p.}$$

Pump efficiencies vary between 50 per cent. and 80 per cent.

If the former the horse-power ab-

sorbed at the pump shaft would be

$$.46 \times \frac{100}{50} = .92 \text{ h.p.}$$

The electric motor for this duty would require to have a margin over this to allow for the possibility of error in the estimation of the head. Probably a 1.5 or 2 h.p. motor would be suitable, depending on the characteristics of the pump.

Types of pumps and their characteristics will be dealt with later.

PIPING SYSTEMS FOR EMBEDDED PANEL HEATING

Two systems only need be considered under this heading, Fig. 132 two-pipe drop, Fig. 133 two-pipe rising. Both are the same in principle as types (*d*) (Fig. 116) and (*c*) (Fig. 114) respectively.

Fig. 132 may be used for gravity

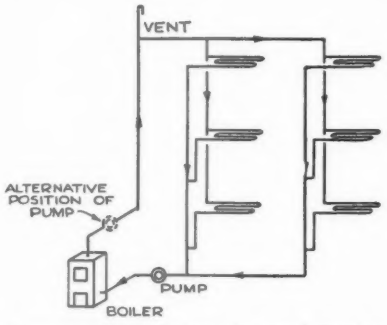


Figure 132. *Drop System for panel heating.*

circulation in very small systems, but the normal case is with a pump. Fig. 133 may only be used with a pump, as the circulation through the

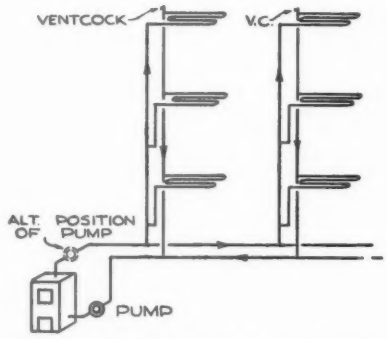


Figure 133. *Rising system for panel heating.*

coils is reversed, i.e., water enters at the bottom and leaves at the top.

The drop system suffers from the disadvantage of large mains at, or above, roof level, and some trouble occasionally occurs with air-locking of the coils, as air and water are travelling in opposite directions. Thus it is usual to provide with such a system "reversing connections" on the pump whereby the flow may be reversed and the water delivered up the return mains. This necessitates the boiler fire being out. Unless fresh water is introduced this trouble does not generally recur after the first heating season.

The riser system, being constantly "reversed," does not suffer from this difficulty nor from the objection of large mains at the top. All mains are kept in the basement. It does, however, call for a vent cock at the top of each riser, to be opened periodically just as an air cock on a radiator is opened from time to time.

The sizing of the pipes for panel systems is basically the same as for radiators and will not be gone into in further detail. The temperature drop normally assumed is 15 deg., and this means that much greater quantities of water must be circulated for the same heat output. On this account a higher friction head per foot run is called for, unless the mains are to be unduly large.

The resistance of each individual coil is, moreover, considerably greater than that of a radiator. As much as 60 sq. ft. of panel surface may be served by one coil, which, with pipes at 6 in. centres, calls for 120 ft. run of pipe, or perhaps 135 ft. with the connections. The resistance of this length of $\frac{1}{2}$ in. bore pipe with a number of 180 degree bends when passing sufficient water for its own emission, plus mains losses, is about 6 ft. It will thus be found that pump heads for embedded panel systems are commonly higher than with radiators.

One important effect of the high resistance of the panel coils is the self-regulation produced thereby.

Considering an electrical analogy (Fig. 134) a number of resistance coils R_1, R_2, R_3, R_4 are supplied in parallel from common wires, the resistance of which is low compared with the coils. R_4 at the end of the run has practically the same pressure (potential difference) across its two ends, and therefore passes nearly as much current as the nearer coil R_1. Thus each coil takes its share evenly irrespective of the distance (within limits) from the point of supply.

Exactly the same conditions apply with water circulating through mains of low resistance and coils of high resistance, though as the mains in this case do in fact constitute a higher ratio than in the electrical analogy, the balancing between the various circuits is to that extent not so perfect without the artificial aid of careful pipe sizing or regulating valves.

Another fact also emerges from the electrical comparison. If one of the coils, say R_2, is lower in resistance than the others it will pass relatively more current. In the water system this means that the shorter the coil and smaller the panel the more water will it allow to flow through. This is exactly the opposite of what is desired, but must, in fact, occur in practice, since these systems are rarely regulated to any degree of fineness. The problem might be overcome by calibrated resistance discs for each size of panel, inserted in the pipe, but so far

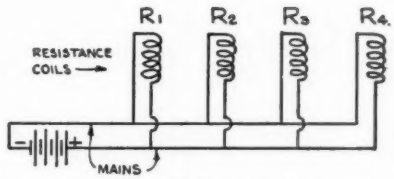


Figure 134. *Electrical analogy.*

this does not appear to have been done.

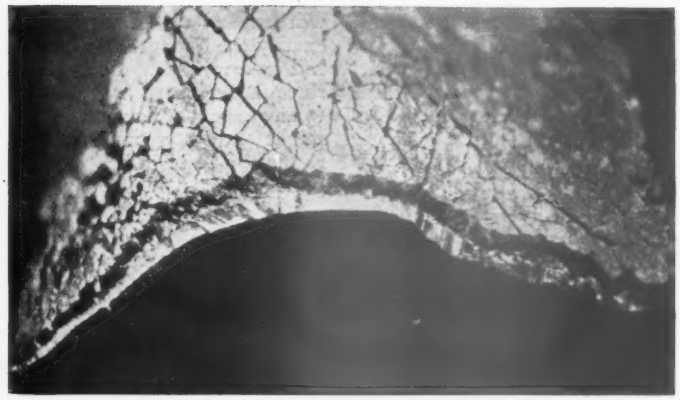
The low temperature drop assumed for this type of apparatus, however, overcomes these apparent disparities. If one small coil is passing twice as much water as its larger neighbour, it may have a drop of $7\frac{1}{2}$ deg. as compared with 15 deg., but this would have little effect, since the mean might be only $3\frac{3}{4}$ deg. different, which would be insignificant.

It will be seen that the method of sizing on B.T.U. output for panel systems is not consistent with what happens in practice, though in the average over a number of coils it is probably near the mark. Another method, though not one yet fully developed, is to assign to each coil a definite volume of water based on tests, giving more to the small than the large, and sizing accordingly. Provided the large ones were adequately supplied this would be both simple and satisfactory.

Announcements

The practice of Messrs. Wright and Renny, architects and surveyors, Midland Bank Chambers, 1 and 3 Powis Street, Woolwich, has been acquired by Mr. Frank J. Smith, P.A.S.I., etc., registered architect and chartered surveyor, together with Messrs. J. M. Roberts, P.A.S.I., S. M. Roberts, F.A.I., chartered surveyor, and P. M. Wright, and will be carried on at 1 and 3 Powis Street, Woolwich, and at 135/7 Queen Victoria Street, London. The firm will work in association with Messrs. Stocker and Roberts, surveyors, etc., of London, Lewisham and Cubitt Town.

Mr. T. Wynne Thomas, A.R.I.B.A., has changed his address to 58 St. Albans Road, Moseley, Birmingham, 13 (Telephone Number : South 2341), where he will continue to practise under the name of Nicol and Nicol and Thomas, chartered and registered architects.



Corroded lead dampcourse showing brittle corrosion product overlying unchanged lead (magnification × 3). From "The Prevention of Corrosion of Lead in Building," reviewed on this page.

TRADE NOTES

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

Paint for Concrete

SILEXORE is a flat paint consisting of a silicate liquid and a zinc base powder, supplied separately, and mixed by the painter before application. The liquid is delivered in kegs of ¼, ½, 1, 2, 5 and 10 gallons, and the powder in sacks containing 1, 7, 14, 28, 56 and 112 lb.

•

Silexore can be applied on any exterior surface, except metal. It is said to be resistant to atmospheric conditions, such as salt-laden air at the sea coast and acid-permeated air of industrial areas.

•

It provides a membrane waterproof to driving rain, but since the film is vapour porous, any moisture imprisoned in the material painted can dry out. It can be applied to green concrete without fear of destruction by alkalies present. Surfaces that are loose and friable can be solidified by applications of Silexore, giving a surface that is resistant to fracture by rapid temperature changes.

•

Silexore can be used in its liquid form as a colourless waterproofer.

•

The paint should be applied in two coats: the first composed of four volumes of liquid to one volume of powder. This coat should be applied generously. Two applications may be necessary in the case of very porous surfaces.

•

The second coat should be applied twenty-four hours after the first coat, and should consist of one volume of liquid mixed with two volumes of powder.

•

By volume 12 lb. powder = 1 gallon.

•

The paint can be brushed or sprayed.

Silexore should not be applied on materials with an oil-paint surface, and it is preferable that it should be applied on dry surfaces in dry weather, twenty-four hours being required for proper drying.

•

Glass should be well protected because Silexore is not easily removed from this material.

•

Liquid and powder should not be mixed long before use.

For two-coat work, fifteen gallons of liquid and one cwt. powder cover 200 yards. This means the cost of material for two-coat work is approximately 9d. per yard super. For special colours price increases.

Prevention of Lead Corrosion

A new edition of a brief bulletin issued this week by the Department of Scientific and Industrial Research provides information for the assistance of architects and builders in meeting and preventing troubles arising from the corrosion of lead in buildings,* many instances of which have been brought to the notice of the Building Research Station.

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These instances include corrosion due to the action of lime and cement on lead—one lead damp course examined had been reduced to paper thickness in fifteen years from this cause. Other examples frequently met with were the corrosion of lead sheet laid on insufficiently seasoned timber, particularly on oak, in roofs, and of buried lead pipes attacked by constituents of the soil. One serious, but very unusual, case reported was in a pickle factory where vinegar fumes attacked the lead-covered metal glazing bars in the roof with the formation of the poisonous dust of white lead.

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Curiously, lead is very resistant to the attack of most strong acids, hence its wide use in chemical engineering, but is rapidly attacked by many weak acids. When exposed to the atmosphere it is also very durable, since the carbon dioxide in the air causes a protective film to be formed which prevents further oxidation. A similar film is formed in lead water pipes and so generally protects the water from contamination.

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As regards prevention, research has shown that moisture in oxygen must be present before lead is severely attacked. Hence a dampcourse can be protected by a layer of bitumen. This will protect the lead until, with the passage of time, the mortar has become completely carbonized and so inert. Bitumen felt also will provide protection in other cases, for example, from the acids in roofing timbers, especially if the lead sheets are so laid that no moisture can leak in. Buried lead pipes can be protected by packing around them with chalk, limestone or old well-carbonated mortar

* *Bulletin No. 6.* 2nd edition. H.M. Stationery Office. Price 3d.

The Buildings Illustrated

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

The Scottish Widows Fund and Life Assurance Society's Building, Cornhill, E.C. (pages 117-120). General contractors: Trollope and Colls. Quantity surveyors, Deacon Son and Addiscott; electrical consultants, Albion T. Snell and Partners; structural engineer, B. L. Hurst; sculpture and carving, W. McMillan, R.A., Laurence A. Turner and Herbert W. Palliser. Sub-contractors: Archibald D. Dawnay and Sons, steelwork; Diespeker & Co., Ltd., structural flooring; Acme Flooring Co., oak flooring; Frazzi, Ltd., Paropa flat roofing; Sika-François, Ltd., damp-proofing and Betonac jointless flooring in basement; Walter W. Jenkins & Co., Ltd., marblework; Burke & Co., terrazzo; Electrical Installations, Ltd., electrical work; Allom Bros., Ltd., electric fittings in general office; Waygood-Otis, Ltd., lifts; Hopes Heating and Ventilating, Ltd., heating, hot water and ventilation; Leeds Fireclay Co., glazed bricks; Henry Hope and Sons, bronze and steel windows; Birmingham Guild, Ltd., bronze doors; Bromsgrove Guild, Ltd., external railings; Tudor Art Metal Co., wrought ironwork; London Spray and Brush Painting Co., Ltd., painting (using International Paint and Compositions Co.'s products); Cabot Quilting and Celotex, sound insulation; J. P. White and Sons, flush doors; Samuel Elliott and Sons, revolving doors and general office furniture; Pilkington Bros., glass (fixed by Wotton and Sons).

Cricket Pavilion, Acton (pages 135-137). General contractor: J. A. Perris. Sub-contractors: A. H. Herbert & Co., Ltd., bricks; Siegwart Fireproof Floor Co., Ltd., Thermotile roof slabs; Gillett and Johnson, Ltd., clock; Dryad Metalworks, Ltd., door furniture and metal grilles; Franklin and Son, electrical work; Hollis Bros., floors; Steele, heating; J. and E. Hall, Ltd., lifts; Haywards, Ltd., roof lights; P. C. Henderson, Ltd., sliding door gear; A. Goslett & Co., Ltd., sanitary fittings; Henry Hope and Sons, Ltd., windows; Marbolith Flooring Co., Ltd., bar floor; Eric Munday, lettering; Dernier Hamlyn, Ltd. light fittings in the hall.

THE WEEK'S BUILDING NEWS

LONDON & DISTRICTS (15-MILES RADIUS)

ACTON. *Flats.* Mr. G. A. Jellicoe has prepared a scheme for the erection of 24 flats on the White House site, East Acton Lane, Acton.

ACTON. *Municipal Centre.* The Corporation has approved an estimate of £98,411 for new municipal offices and instructed the borough engineer to prepare detailed plans.

BATTERSEA. *School.* The L.C.C. is to rebuild the Battersea central school on a new site in Culvert Road, at a cost of £51,570.

CAMBERWELL. *School.* The L.C.C. has accepted the tender of Messrs. Galbraith Bros., Ltd., for the reconstruction of Credon Road School.

FULHAM. *Housing.* The Borough Council is to develop housing sites in Margravine Road and Fulham Palace Road at a cost of £16,000.

GREENWICH. *Tenement.* The Borough Council is to erect six blocks of tenements in Victoria Road by direct labour, at a cost of £21,420.

ILFORD. *Houses, Shops.* The Corporation has passed plans for the following : 32 houses on the Gaysham Hall Estate for Messrs. Hilbery Chaplin, Ltd. ; 16 bungalows in Whitney Avenue and six bungalows in Lakeside Avenue for Mr. W. M. Edwards ; 38 houses in Redleafe Gardens, 25 houses in Greenleafe Drive and a shop in Wangye Lane for Mr. J. T. Perrin ; 22 bungalows in Tunstall Avenue for Mr. G. F. Seigerts ; 53 houses in Aintree Crescent for Mr. C. F. Fryatt ; 24 houses in Cleeves Walk for Messrs. A. Smith and Son.

RICHMOND (SURREY). *Houses.* The T.C. has approved plans by Messrs. Partridge and Daniel for the proposed erection of 164 houses near Lock Road, Ham.

RUISLIP-NORTHWOOD. *Houses, etc.* The U.D.C. has approved plans for 120 bungalows and 20 houses proposed to be erected in Potter Street.

SPRINGFIELD. *Houses.* The Wandsworth B.C. has approved plans submitted by Messrs. W. J. Marston and Son for the erection of 23 houses at Burcote Road and 20 houses at Multon Road.

STREATHAM. *Flats.* Mr. A. Soden is to erect a block of flats in Streatham High Road, adjoining No. 325.

SURREY. *School.* The Roman Catholic Community is to erect a school for 240 at Worcester Park.

VICTORIA PARK. *Swimming Pool.* The L.C.C. has accepted the tender, £23,902. of Messrs. J. Mowlem & Co., Ltd., for the construction of an open air swimming bath at Victoria Park.

WANDSWORTH. *Development.* The B.C. has approved the appointment of Mr. E. G. Culpin, F.R.I.B.A., to advise and assist in the preparation of a scheme and to prepare a lay-out and preliminary drawings for the development of a site in Garratt Lane, which has been acquired by the Council.

YIEWSLEY-DRAYTON. *Houses.* The Urban Council has approved plans submitted by Messrs. Dunthorne and Shore for the proposed erection of 251 houses on a site in Sipson Road.

EASTERN COUNTIES

GREAT YARMOUTH. *Conference Hall.* The Corporation has asked a committee to consider the question of the provision of a conference hall to seat at least 3,000 delegates.

SOUTHERN COUNTIES

ALTON (HANTS.). *Extension.* A new treatment centre, consisting of an operating theatre, recovery room, X-ray department, and a room for therapeutic treatment, is to be added at the Lord Mayor Treloar's Cripple Hospital and College at Alton. The estimated cost of the work is £20,000. Mr. Henry C. Smart is the architect.

BOURNEMOUTH AND POOLE. *Aerodrome.* The corporations of Bournemouth and Poole have agreed to the purchase of a site at Moortown for the provision of a joint aerodrome.

BOURNEMOUTH. *Hall.* The corporation has abandoned the proposal for a conference hall at the winter gardens and instructed the borough engineer to prepare plans for the erection of a building suitable for indoor bowls and exhibitions at a cost of £12,000.

BOURNEMOUTH. *Houses.* The corporation has approved the plans of the borough engineer for 70 houses on the Kinton estate and is to invite tenders for their erection.

HACKBRIDGE. *School.* The Surrey Education Committee has accepted the tender, £15,182, of Messrs. Truett and Steel, Ltd., for the erection of a central school.

HYTHE. *Houses.* The T.C. has accepted a tender for the erection of 45 houses on the Dymchurch Road site.

KENT. *Schools.* The Kent Education Committee proposes to erect further schools in the Bexley Chislehurst area. It is also agreed to purchase a site at Lydden for school purposes. The County Architect is Mr. W. H. Robinson.

SOUTH-WESTERN COUNTIES

BRISTOL. *Houses.* The Corporation Housing Committee recommends the erection of 1,000 additional houses on the Horfield, Knowle and Southmead Estates. The Corporation has accepted the tender, £29,144, of Mr. F. C. Hollister for the erection of 82 houses, 12 flats, and four shops on the Southmead Estate.

PENZANCE. *Slum Clearance.* The T.C. has decided to enter upon a large scheme of slum clearance. New Street is to be entirely demolished and new sites are to be procured at Treneere and Bolitho Road, Heamoor, where it is hoped to erect 265 houses.

TAUNTON. *Slum Clearance.* In order to provide accommodation for dispossessed tenants under Slum Clearance orders the T.C. has now accepted the tender of Messrs. J. Standerwick and Sons, Bridgwater, to erect 100 houses on the Halcon estate. The contract price is £28,288.

TORQUAY. *Houses.* Messrs. H. Lloyd and Son are to erect 188 houses in the vicinity of Shiphay Lane.

MIDLAND COUNTIES

CORBY. *School.* Northants Education Committee is to erect a junior school at Corby at a cost of £2,300.

DAVENTRY. *School.* Northants Education Committee is to erect new premises for the Daventry Grammar School at a cost of £19,500.

WELLINGBOROUGH. *School.* Northants Education Committee is to enlarge the High School, Wellingborough, at a cost of £4,000.

WELLINGBOROUGH. *Poor Law Institution.* Northants C.C. is to erect new premises for the poor law institution at Wellingborough at a cost of £19,700.

NORTHERN COUNTIES

ILKESTON. *Hospital.* The Corporation has asked the borough engineer to prepare plans for the erection of a new isolation hospital.

NEWCASTLE. *Flats.* It is proposed to build 252 special flats, designed by the City Housing Architect on the Buckingham Street clearance area, at an estimated cost of £107,000.

ROTHERHAM. *Sanatorium.* The Corporation has approved amended plans for the improvement of Oakwood Hall Sanatorium and the provision of a nurses' home, at a cost of £10,660.

SOUTHPORT. *Houses.* The Corporation has passed plans for the erection of 34 houses off Mill Road for Mr. R. W. Brown.

WAKEFIELD. *Swimming Bath.* The Ministry of Health has approved the scheme of the Wakefield Corporation for new baths in Sun Street and the housing architect is now to obtain tenders for the work.

WALES

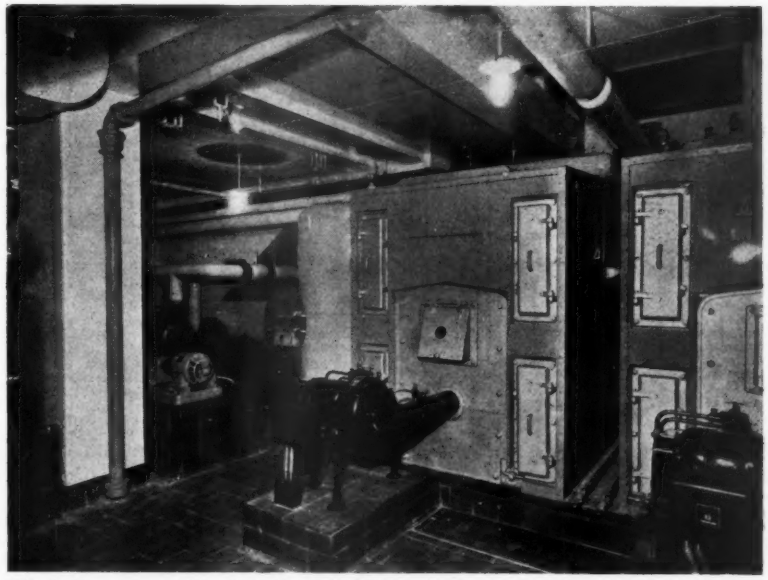
SWANSEA. *Houses.* The corporation has instructed the borough architect to prepare plans for the erection of houses on a 21 acre site at Gelligrafog.

Manufacturer's Item

Messrs Richards Tiles, Ltd., are preparing an illustrated booklet—Reference R.T. 29—on swimming pools and swimming pool tiling.

The notes summarize the various tiling problems arising in work of this nature, and include dimensional drawing of all fittings manufactured for swimming bath use. Grouped under various headings—Linings, Angles, Bankings, Scum Troughs, Ladders, etc.—the booklet discusses the several methods of treatments and gives the index numbers of the materials and fittings specially designed by this firm to provide the best solution for each.

The booklet will shortly be available to architects and others on application to the firm.



The boiler room at No. 28-30 Cornhill, E.C., showing automatic stokers. Architects : W. Curtis Green, R.A., and Partners. *See pages 117-120.*

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RATES OF WAGES

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

			I s. d.	II s. d.
A_1	ABERDARE ..	S. Wales & M.	1 5	1 0½
A	Aberdeen ..	Scotland	1 6	1 1½
A_1	Abergavenny ..	S. Wales & M.	1 5	1 0½
A	Abingdon ..	S. Counties	1 4	1 0
A	Accrington ..	N.W. Counties	1 5½	1 1½
A	Addlestone ..	S. Counties	1 4	1 0
A	Adlington ..	N.W. Counties	1 5½	1 1½
A	Airdrie	Scotland	•1 5½	1 1½
C	Aldeburgh ..	E. Counties	1 1½	10½
A	Altrincham ..	N.W. Counties	1 5½	1 1½
B	Appleby ..	N.W. Counties	1 2	10½
A	Ashton-under Lyne	N.W. Counties	1 5½	1 1½
B_1	Aylesbury ..	S. Counties	1 3	11½
B_1	BANBURY ..	S. Counties	1 3	11½
B_1	Bangor ..	N.W. Counties	1 3	11½
A_2	Barnard Castle	N.E. Coast	1 4	1 0
A	Barnsley ..	Yorkshire	1 5½	1 1½
B	Barnstaple ..	S.W. Counties	1 3½	11½
A	Barrow	N.W. Counties	1 5½	1 1½
A	Barry	S. Wales & M.	1 5½	1 1½
B_1	Basingstoke ..	S.W. Counties	1 3	11½
A_2	Bath	S.W. Counties	1 4½	1 0½
A	Batley ..	Yorkshire	1 5½	1 1½
A_2	Bedford ..	E. Counties	1 4½	1 0½
A_2	Berwick-on-Tweed	N.E. Coast	1 4½	1 0½
A_2	Bewdley ..	Mid. Counties	1 4½	1 0½
B	Bicester ..	S. Counties	1 2	10½
	Birkenhead ..	N.W. Counties	•1 7	1 2½
A	Birmingham ..	Mid Counties	1 5½	1 1½
A_1	Bishop Auckland	N.E. Coast	1 5	1 0½
A	Blackburn ..	N.W. Counties	1 5½	1 1½
A	Blackpool ..	N.W. Counties	1 5½	1 1½
A	Blyth	N.E. Coast	1 5½	1 1½
B_1	Bognor ..	S. Counties	1 3	11½
A	Bolton	N.W. Counties	1 5½	1 1½
A	Boston	Mid. Counties	1 4	1 0
A_2	Bournemouth ..	S. Counties	1 4½	1 0½
B_1	Bovey Tracey	S.W. Counties	1 2½	11
A	Bradford ..	Yorkshire	1 5½	1 1½
A_1	Brentwood ..	E. Counties	1 5	1 0½
A	Bridgend ..	S. Wales & M.	1 5½	1 1½
B	Bridgwater ..	S.W. Counties	1 3½	11½
A_1	Bridlington ..	Yorkshire	1 5	1 0½
A	Brighouse ..	Yorkshire	1 5½	1 1½
A_2	Brighton ..	S. Counties	1 4½	1 0½
A	Bristol	S.W. Counties	1 5½	1 1½
B	Brixham ..	S.W. Counties	1 2½	11
A	Bromsgrove ..	Mid. Counties	1 4½	1 0½
B	Bromyard ..	Mid. Counties	1 2	10½
A	Burnley ..	N.W. Counties	1 5½	1 1½
A	Burslem ..	Mid. Counties	1 5½	1 1½
A	Burton-on-Trent	Mid. Counties	1 5½	1 1½
A	Bury	N.W. Counties	1 5½	1 1½
A	Buxton ..	N.W. Counties	1 5	1 0½
A_1	CAMBRIDGE ..	E. Counties	1 5	1 0½
B_1	Canterbury ..	S. Counties	1 3	11½
A	Cardiff	S. Wales & M.	1 5½	1 1½
A	Carlisle ..	N.W. Counties	1 5½	1 1½
B	Carmarthen ..	S. Wales & M.	1 3½	11½
B	Carnarvon ..	N.W. Counties	1 3½	11½
A	Carnforth ..	N.W. Counties	1 5½	1 1½
A	Castleford ..	Yorkshire	1 5½	1 1½
A_2	Chatham ..	S. Counties	1 4	1 0
A	Chelmsford ..	E. Counties	1 4	1 0
A	Cheltenham ..	S.W. Counties	1 4	1 0
A	Chester	N.W. Counties	1 5½	1 1½
A	Chesterfield ..	Mid. Counties	1 5½	1 1½
B_1	Chichester ..	S. Counties	1 3	11½
A	Chorley ..	N.W. Counties	1 5½	1 1½
B_1	Cirencester ..	S. Counties	1 3	11½
A	Clitheroe ..	N.W. Counties	1 5½	1 1½
A	Clydebank ..	Scotland	1 5½	1 1½
A	Coalville ..	Mid. Counties	1 5½	1 1½
A_2	Colchester ..	E. Counties	1 4½	1 0½
A	Colne	N.W. Counties	1 5½	1 1½
A_2	Colwyn Bay ..	N.W. Counties	1 4½	1 0½
A_1	Consett ..	N.E. Coast	1 5	1 0½
A_2	Conway ..	N.W. Counties	1 4½	1 0½
A	Coventry ..	Mid. Counties	1 5½	1 1½
A_2	Crewe	N.W. Counties	1 4½	1 0½
A	Cumberland ..	N.W. Counties	1 4	1 0
A	DARLINGTON	N.E. Coast	1 5½	1 1½
A	Darwen ..	N.W. Counties	1 5½	1 1½
B_1	Deal	S. Counties	1 3	11½
A_2	Denbigh ..	N.W. Counties	1 4	1 0
A	Derby	Mid. Counties	1 5½	1 1½
A	Dewsbury ..	Yorkshire	1 5½	1 1½
B	Didcot ..	S. Counties	1 3½	11½
A	Doncaster ..	Yorkshire	1 5½	1 1½
B_1	Dorchester ..	S.W. Counties	1 3	11½
A	Driffield ..	Yorkshire	1 4	1 0
A_2	Droitwich ..	Mid. Counties	1 4½	1 0½
A	Dudley ..	Mid. Counties	1 5½	1 1½
A_2	Dumfries ..	Scotland	1 5	1 0½
A	Dundee ..	Scotland	1 5½	1 1½
A	Durham	N.E. Coast	1 5½	1 1½
A_2	EASTBOURNE	S. Counties	1 4½	1 0½
A_1	Ebbw Vale ..	S. Wales & M.	1 5	1 0½
A	Edinburgh ..	Scotland	1 5½	1 1½
A_1	E. Glamorganshire, Rhondda Valley District	S. Wales & M.	1 5	1 0½
A_2	Exeter	S.W. Counties	•1 4½	1 0½
B	Exmouth ..	S.W. Counties	1 3½	11½
A_2	FELIXSTOWE	E. Counties	1 4	1 0
A	Filey	Yorkshire	1 4	1 0
A	Fleetwood ..	N.W. Counties	1 5½	1 1½
B_1	Folkestone ..	S. Counties	1 3	11½
A	Frodsham ..	N.W. Counties	1 5½	1 1½
B_2	Frome	S.W. Counties	1 2½	11
A	GATESHEAD	N.E. Coast	1 5½	1 1½
B	Gillingham ..	S. Counties	1 3½	11½
A	Glasgow	Scotland	1 6	1 1½
A_2	Gloucester ..	S.W. Counties	1 4½	1 0½
A_2	Goole	Yorkshire	1 4½	1 0½
A_2	Gosport ..	S. Counties	1 4½	1 0½
A_2	Grantham ..	Mid. Counties	1 4	1 0
A_1	Gravesend ..	S. Counties	1 5	1 0½
A	Greenock ..	Scotland	•1 5½	1 1½
A	Grimsby ..	Yorkshire	1 5½	1 1½
B	Guildford ..	S. Counties	1 3½	11½
A	HALIFAX ..	Yorkshire	1 5½	1 1½
A	Hanley	Mid. Counties	1 5½	1 1½
A	Harrogate ..	Yorkshire	1 5½	1 1½
A	Hartlepools ..	N.E. Coast	1 5½	1 1½
B	Harwich ..	E. Counties	1 3½	11½
B_1	Hastings ..	S. Counties	1 3	11½
A_2	Hatfield ..	S. Counties	1 4½	1 0½
B	Hereford ..	S.W. Counties	1 3½	11½
A_2	Hertford ..	E. Counties	1 4½	1 0½
A	Heysham ..	N.W. Counties	1 5½	1 1½
A	Howden ..	N.E. Coast	1 5½	1 1½
A	Huddersfield ..	Yorkshire	1 5½	1 1½
A	Hull	Yorkshire	1 5½	1 1½
A	ILKLEY ..	Yorkshire	1 5½	1 1½
A	Immingham ..	Mid. Counties	1 5½	1 1½
A_2	Ipswich ..	E. Counties	1 4½	1 0½
B_2	Isle of Wight ..	S. Counties	1 2½	11
A	JARROW ..	N.E. Coast	1 5½	1 1½
A	KEIGHLEY ..	Yorkshire	1 5½	1 1½
A_2	Kendal ..	N.W. Counties	1 4	1 0
A_2	Keswick ..	N.W. Counties	1 4	1 0
A_1	Kettering ..	Mid. Counties	1 5	1 0½
A_2	Kidderminster	Mid. Counties	1 4½	1 0½
B_1	King's Lynn ..	E. Counties	1 3	11½
A	LANCASTER ..	N.W. Counties	1 5½	1 1½
A_1	Leamington ..	Mid. Counties	1 5	1 0½
A	Leeds	Yorkshire	1 5½	1 1½
A	Leek	Mid. Counties	1 5½	1 1½
A	Leicester ..	Mid. Counties	1 5½	1 1½
A	Leigh	N.W. Counties	1 5½	1 1½
B	Lewes	S. Counties	1 2	10½
A_2	Lichfield ..	Mid. Counties	1 4½	1 0½
A	Lincoln	Mid. Counties	1 5½	1 1½
	Liverpool ..	N.W. Counties	•1 7	1 2½
A_2	Llandudno ..	N.W. Counties	1 4½	1 0½
A	Llanelly ..	S. Wales & M.	1 5½	1 1½
	London (12-miles radius)		1 7	1 2½
	Do. (12-15 miles radius)		1 6½	1 2
A	Long Eaton ..	Mid. Counties	1 5½	1 1½
A	Loughborough	Mid. Counties	1 5½	1 1½
A_1	Luton	E. Counties	1 5	1 0½
A	Lytham ..	N.W. Counties	1 5½	1 1½
A_1	MACCLESFIELD	N.W. Counties	1 5	1 0½
A_2	Maidstone ..	S. Counties	1 4	1 0
A_2	Malvern ..	Mid. Counties	1 4	1 0
A	Manchester ..	N.W. Counties	1 5½	1 1½
A	Mansfield ..	Mid. Counties	1 5½	1 1½
B_2	Margate ..	S. Counties	1 3	11½
A	Matlock ..	Mid. Counties	1 4	1 0
A_1	Merthyr ..	S. Wales & M.	1 5	1 0½
A	Middlesbrough	N. E. Coast	1 5½	1 1½
A_2	Middlewich ..	N. W. Counties	1 4½	1 0½
B_2	Minehead ..	S.W. Counties	1 2½	11
B_2	Monmouth & S. and E. Glamorganshire	S. Wales & M.	1 2½	11
A	Morecambe ..	N.W. Counties	1 5½	1 1½
A_2	NANTWICH ..	N.W. Counties	1 4½	1 0½
A	Neath	S. Wales & M.	1 5½	1 1½
A	Nelson	N.W. Counties	1 5½	1 1½
A	Newcastle ..	N.E. Coast	1 5½	1 1½
A	Newport ..	S. Wales & M.	1 5½	1 1½
A	Normanton ..	Yorkshire	1 5½	1 1½
A	Northampton	Mid. Counties	1 5½	1 1½
A	North Staffs ..	Mid. Counties	1 5½	1 1½
A	North Shields ..	N.E. Coast	1 5½	1 1½
A_1	Norwich ..	E. Counties	1 5	1 0½
A	Nottingham ..	Mid. Counties	1 5½	1 1½
A	Nuneaton ..	Mid. Counties	1 5½	1 1½
A	OAKHAM ..	Mid. Counties	1 4	1 0
A	Oldham	N.W. Counties	1 5½	1 1½
A_2	Oswestry ..	N.W. Counties	1 4	1 0
A_1	Oxford	S. Counties	1 5	1 0½
A	PAISLEY ..	Scotland	•1 5½	1 1½
B_2	Pembroke ..	S. Wales & M.	1 2	10½
A	Perth	Scotland	•1 5½	1 1½
A_1	Peterborough ..	E. Counties	1 5	1 0½
A	Plymouth ..	S.W. Counties	•1 5½	1 1½
A	Pontefract ..	Yorkshire	1 5½	1 1½
A_1	Pontypridd ..	S. Wales & M.	1 5	1 0½
A_2	Portsmouth ..	S. Counties	1 4½	1 0½
A	Preston ..	N.W. Counties	1 5½	1 1½
A	QUEENSFERRY	N.W. Counties	1 5½	1 1½
A_2	READING ..	S. Counties	1 4½	1 0½
B	Reigate ..	S. Counties	1 3½	11½
A	Retford ..	Mid. Counties	1 4	1 0
A_1	Rhondda Valley	S. Wales & M.	1 5	1 0½
A	Ripon	Yorkshire	1 4	1 0
A	Rochdale ..	N.W. Counties	1 5½	1 1½
B	Rochester ..	S. Counties	1 3½	11½
A_1	Ruabon ..	N.W. Counties	1 5	1 0½
A	Rugby	Mid. Counties	1 5½	1 1½
A_2	Rugeley ..	Mid. Counties	1 4½	1 0½
A	Runcorn ..	N.W. Counties	1 5½	1 1½
A_1	ST. ALBANS ..	E. Counties	1 5	1 0½
A	St. Helens ..	N.W. Counties	1 5½	1 1½
B_2	Salisbury ..	S.W. Counties	1 2½	11
A_1	Scarborough ..	Yorkshire	1 5	1 0½
A	Scunthorpe ..	Mid. Counties	1 5½	1 1½
A	Sheffield ..	Yorkshire	1 5½	1 1½
A	Shipley ..	Yorkshire	1 5½	1 1½
A_2	Shrewsbury ..	Mid. Counties	1 4½	1 0½
A_2	Skipton ..	Yorkshire	1 4½	1 0½
A_2	Slough	S. Counties	1 4½	1 0½
A_1	Solihull ..	Mid. Counties	1 5	1 0½
A_2	Southampton	S. Counties	1 4½	1 0½
A_1	Southend-on-Sea	E. Counties	1 5	1 0½
A	Southport ..	N.W. Counties	1 5½	1 1½
A	S. Shields ..	N.E. Coast	1 5½	1 1½
A_1	Stafford ..	Mid. Counties	1 5	1 0½
A	Stirling ..	Scotland	1 6	1 1½
A	Stockport ..	N.W. Counties	1 5½	1 1½
A	Stockton-on-Tees	N.E. Coast	1 5½	1 1½
A	Stoke-on-Trent	Mid. Counties	1 5½	1 1½
B	Stroud	S.W. Counties	1 3½	11½
A	Sunderland ..	N.E. Coast	1 5½	1 1½
A	Swansea ..	S. Wales & M.	1 5½	1 1½
A	Swindon ..	S.W. Counties	1 4	1 0
A_1	TAMWORTH ..	N.W. Counties	1 5	1 0½
B	Taunton ..	S.W. Counties	1 3½	11½
A	Teesside Dist. ..	N.E. Counties	1 5½	1 1½
A_2	Teignmouth	S.W. Coast	1 4½	1 0½
A	Todmorden ..	Yorkshire	1 5½	1 1½
A_1	Torquay ..	S.W. Counties	1 5	1 0½
B_2	Truro	S.W. Counties	1 2½	11
A_2	Tunbridge Wells	S. Counties	1 4	1 0
A	Tunstall ..	Mid. Counties	1 5½	1 1½
A	Tyne District ..	N.E. Coast	1 5½	1 1½
A	WAKEFIELD	Yorkshire	1 5½	1 1½
A	Walsall ..	Mid. Counties	1 5½	1 1½
A	Warrington ..	N.W. Counties	1 5½	1 1½
A_1	Warwick ..	Mid. Counties	1 5	1 0½
A_1	Wellingborough	Mid. Counties	1 5	1 0½
A	West Bromwich	Mid. Counties	1 5½	1 1½
A_2	Weston-s.-Mare	W. Counties	1 4½	1 0½
A_2	Whitby ..	Yorkshire	1 4½	1 0½
A	Widnes ..	N.W. Counties	1 5½	1 1½
A	Wigan ..	N.W. Counties	1 5½	1 1½
B	Winchester ..	S. Counties	1 3½	11½
A_2	Windsor ..	S. Counties	1 4½	1 0½
A	Wolverhampton	Mid. Counties	1 5½	1 1½
A_2	Worcester ..	Mid. Counties	1 4½	1 0½
A_2	Worksop ..	Yorkshire	1 4	1 0
A_1	Wrexham ..	N.W. Counties	1 5	1 0½
A	Wycombe ..	S. Counties	1 4	1 0
B	YARMOUTH ..	E. Counties	1 3½	11½
B	Yeovil	S.W. Counties	1 3½	11½
A	York	Yorkshire	1 5½	1 1½

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

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

CURRENT PRICES

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

WAGES

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

MATERIALS

EXCAVATOR AND CONCRETOR

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

DRAINLAYER

BEST STONEWARE DRAIN PIPES AND FITTINGS

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

MASON

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

SLATER AND TILER

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

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

CARPENTER AND JOINER

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

Thickness	¼" AA.	¼" A.	¼" B.	½" AA.	½" A.	½" B.	¾" AA.	¾" A.	¾" B.	1" AA.	1" A.	1" B.
Qualities	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Birch	4	3	2	5	4	3	7½	6	4½	8½	7	6
Alder	3½	3	2	5	4	3	6½	5½	4½	8	7	6
Gaboon Mahogany	4	3	3	6½	5½	4½	9½	7½	-	1/0½	10	-
Figured Oak 1 side	8½	7	-	10	8	-	11½	-	-	1/6	-	-
Plain Oak 1 side	6½	6	-	7½	7	-	9½	-	-	1/-	-	-
Oregon Pine	5	4	-	5½	5	-	6	-	-	-	-	-

	d.
Scotch glue	lb. 8

SMITH AND FOUNDER

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

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

Discounts:

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

FITTINGS.			
Gas	57½	Galvanized gas	47½
Water	52½	" water	42½
Steam	47½	" steam	37½

SMITH AND FOUNDER—*continued.*

		s.	d.
Rolled steel joists cut to length	cwt.	12	9
Mild steel reinforcing rods, ½"	"	9	6
" " ⅝"	"	9	3
" " ¾"	"	9	0
" " ⅞"	"	8	6
" " 1"	"	8	6
" " 1¼"	"	8	6
" " 1½"	"	8	6

Cast-iron rain-water pipes of ordinary thickness metal	F.R.	¾" s.	¾" d.	4" s.	4" d.
			8		10
Shoes	each	2	0	3	0
Anti-splash shoes	"	4	6	8	0
Boots	"	3	•	4	0
Bends	"	2	7	3	9
" with access door	"		—	6	3
Heads	"	4	•	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	•	2	6
Outlets	"	1	9	2	3

PLUMBER

		s	d.
Lead, milled sheets	cwt.	21	0
" drawn pipes	"	20	6
" soil pipe	"	21	0
" scrap	"	13	0
Solder, plumbers'	lb.		9½
" fine do.	"	1	0
Copper, sheet	"		8½
" tubes	"		11

L.C.C. soil and waste pipes:	3"	4"	6"
Plain cast F.R.	1 0	1 2	2 6
Coated "	1 1	1 3	2 8
Galvanized "	2 0	2 6	3 6
Holderbats each	3 10	4 0	4 9
Bends "	3 9	5 3	10 3
Shoes "	3 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	•
Keene's cement	"	5	0	•
Gothite Plaster	"	3	6	0
Pioneer Plaster	"	3	6	•
Thistle plaster	"	3	6	0
Sand, washed	Y.C.		11	6
Hair	lb.			6
Laths, sawn	bundle		2	4
" rent	"		3	9
Lath nails	lb.			3

GLAZIER

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

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

PAINTER

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

CURRENT PRICES FOR MEASURED WORK

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

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

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

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

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

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

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

CARPENTER AND JOINER		£ s. d.
Flat boarded centering to concrete floors, including all strutting	Sqr.	2 2 6
Shuttering to sides and soffits of beams	F.S.	7
" to stanchions	"	7
" to staircases	"	1 6
Fir and fixing in wall plates, lintols, etc.	F.C.	3 9
Fir framed in floors	"	4 6
" " roofs	"	6 6
" " trusses	"	7 6
" " partitions	"	8 6
¾" deal sawn boarding and fixing to joists	Sqr.	1 14 6
1" " " " "	"	1 17 6
1¼" " " " "	"	2 3 0
1" × 2" fir battening for Countess slating	"	9 0
Do. for 4" gauge tiling	"	12 0
Stout feather-edged tilting fillet	F.R.	4½
Patent inodorous felt, 1 ply	Y.S.	2 3
" " " 2 "	"	2 9
" " " 3 "	"	3 3
Stout herringbone strutting to 9" joists	F.R.	10½
1" deal gutter boards and bearers	F.S.	1 2
1¼" " " " "	"	1 6
2" deal wrought rounded roll	F.R.	8
1" deal grooved and tongued flooring, laid complete, including cleaning off	Sqr.	2 1 0
1¼" do.	"	2 10 0
1½" do.	"	2 17 0
1" deal moulded skirting, fixed on, and including grounds plugged to wall	F.S.	1 6
1½" do.	"	1 9

CARPENTER AND JOINER—*continued*		s. d.
1½" deal moulded sashes of average size	F.S.	1 9½
2" " " " "	"	1 11½
1½" deal cased frames double hung, of 6" × 3" oak sills, 1½" pulley stiles, 1½" heads, 1" inside and outside linings, ⅝" 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 14 6
Do. in flashings	"	1 18 0
Do. in covering to turrets	"	2 5 6
Do. in soakers	"	1 10 0
Labour to welted edge	F.R.	3½
Open copper nailing	"	3
Close " "	"	4

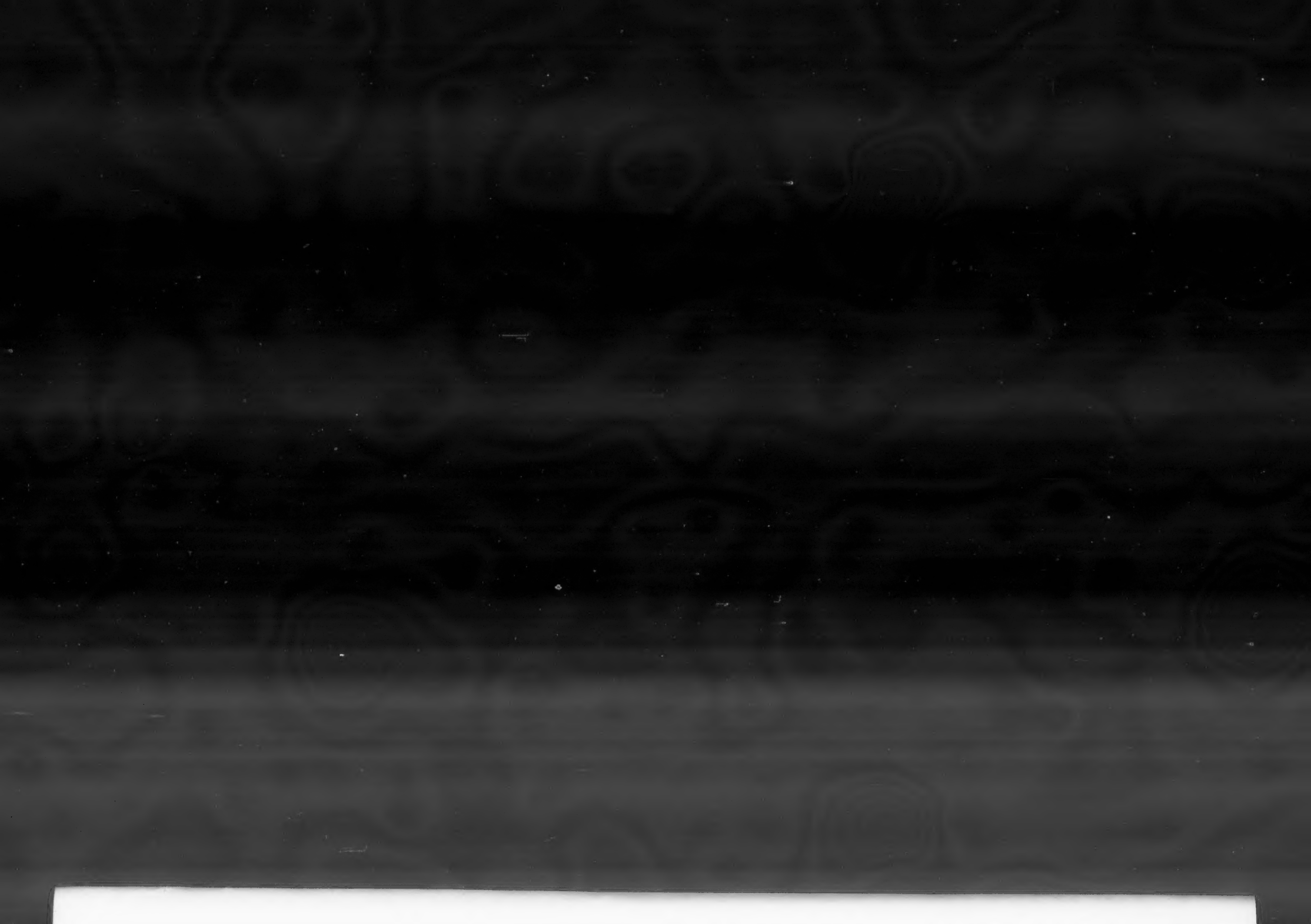
Lead service pipe and fixing with pipe hooks	F.R.	½" s. d. 10	¾" s. d. 1 0	1" s. d. 1 3	1¼" s. d. 2 0	2" s. d. 2 10	4" s. d. —
Do. soil pipe and fixing with cast lead tacks		—	—	—	—	—	5 6
Extra, only to bends	Each	—	—	—	—	2 0	6 9
Do. to stop ends	"	6½	8	9	11	1 0	—
Boiler screws and unions	"	3 3	3 9	5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

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

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

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



CLASSIFICATION :

The Death Watch timber beetle (Xestobium Tessellatum) belongs to the Anobium family, and is a slightly larger variety than that usually seen in furniture (Xestobium Striatum).

INCUBATION :

The parent beetle, which is roughly ¼" in length, lays from thirty to sixty eggs in a convenient crack or shake in the timber, and a month later the eggs hatch out in the form of larva grubs, ⅛ to ¼ inch long. The grub commences to burrow some week or two after hatching, and it is in this stage of the insect's development that the destruction of the roof timbers, etc., takes place.

CHRYSALIS STAGE :

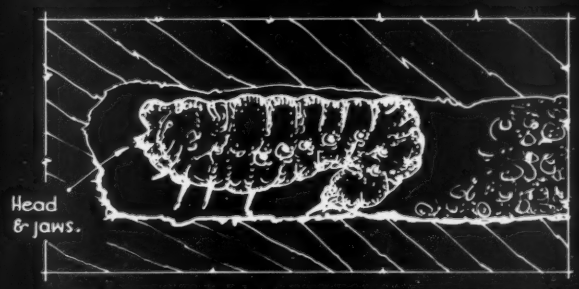
The life of the grub is from nine to twenty months or more, and continues until the boring almost reaches an outer surface of the timber. With only a thin skin of wood between itself and the open air, the larva now enlarges the end of the boring and forms the cell in which the change to the chrysalis occurs.

EMERGENCE :

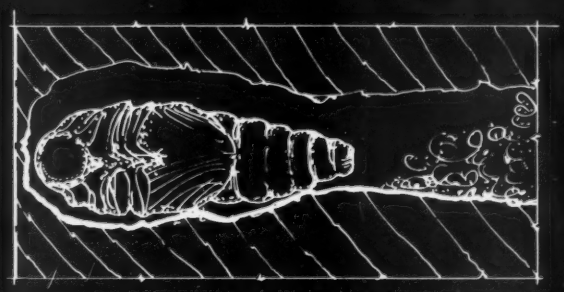
During the months of June to September, and two or three weeks after the formation of the chrysalis, the grown beetle emerges into the open air by beating its way through the thin skin of remaining wood.

DEPARTURE :

Just prior to leaving the timber the fledged beetle throws its body forward seven or eight times in succession, striking the wood with the lower part of its head. This tapping, from which the insect's name derives, is answered by another mature beetle if within hearing, and joint departure takes place.



LARVA : developed from egg laid in crevice of timber. Has soft body armed with horny pegs to press against sides of bore & give driving power.



PUPA : quiescent chrysalis state intermediate between larva and complete beetle. Lies near end of bore hole, which has been excavated by the larva almost through to the open air.

THE GROWN BEETLE. (Enlarged).

VIEW OF UPPER SURFACE.

SIDE VIEW OF BEETLE. (Enlarged).

Information from Heppells.

INFORMATION SHEET : THE DEATH-WATCH TIMBER BEETLE.

SIR JOHN BURNET TAIT AND LORNE ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON WC1 • Oliver A Boyne

Supplement to THE ARCHITECTS' JOURNAL for July 25, 1935

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INFORMATION SHEET

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TIMBER FLUID

Product : Heppells Timber Fluid

General :

On this Sheet is set out a brief survey of the life and means of identification of the beetle commonly known as the "Death Watch." This destructive insect will attack any variety of timber in roofs or wooden buildings generally, either indoor or outdoor ; no timber is immune from its attack. Ventilation itself is not a cure once the insect has established itself.

Causes of Affection :

All timbers are liable to be affected, irrespective of their location or their actual origin. Once the beetle makes contact with the timber the destructive forces are soon apparent.

Treatment :

Heppells Timber Fluid is a vapour-forming liquid, fatal to all destructive wood insects and harmless to the user.

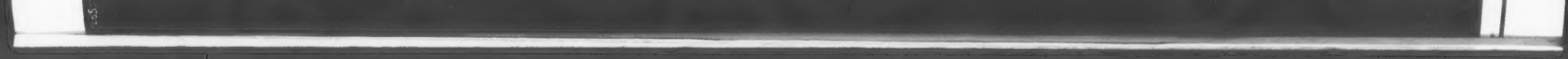
Application :

Affected timber should be thoroughly treated with Heppells Timber Fluid as a preliminary ; this application will ensure the destruction of any eggs which may be in the cracks or crevices. The timber should then be brushed clear of all castings and wood powder, leaving it clean to take the fluid. To saturate the timber the fluid should be applied by means of a spray or brush coating, and this operation must be repeated after two or three years. The grub, although not actually in the hole, may thus be reached and destroyed. The covering capacity of the fluid depends largely on the condition of the timber, but on most timbers the covering capacity is twenty-nine square feet per gallon, giving two coats, on the average thickness of timber.

Name of Manufacturer : Heppells

Address (Head Office) : 34 Osnaburgh Street, N.W.1

Telephone : Museum 8036



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ARMOURPLATE GLASS • DESCRIPTION •

Armourplate is manufactured from clear Polished Plate glass by a process of heating & sudden cooling, finally resulting in strong compression in the two outer surfaces, with tension in the centre.

As there is no introduction of an organic interlayer there is no change in transparency & no discolouration even with years of use or after the glass has been subjected to severe changes of temperature.

PROPERTIES:

1. PROTECTION	2. RESISTANCE TO IMPACT.	3. RESISTANCE TO PRESSURE.
The protective quality of Armourplate Glass lies in the fact that on breakage it does not fly into large splinters with razor-like edges, as is the case with ordinary plate glass, but it disintegrates into innumerable small pieces which are neither large enough nor sharp enough to cause serious injury. (These fragments can be crumpled between the fingers.)	When simply supported at the ends or bedded along the edges upon putty, the resistance to impact loading of Armourplate glass is about seven times that of ordinary plate glass, but when bedded evenly on a layer of sand the resistance is reduced to about twice that of ordinary plate glass.	The transverse tests on sheets simply supported show Armour plate glass to be about four times as strong as ordinary plate glass: e.g. the breaking load for Armourplate = 230 to 280 lbs. for ordinary plate glass = 50 lbs. for a load applied without shock to the centre of the glass surface.

RESISTANCE TO WAVE SHOCK:

In the case of ships' port-lights the pressure to which the glass is subjected is different from the examples already quoted. The shock of a wave exerts a momentary pressure all over the glass.

The Board of Trade permits Armour-plate glass in the following thicknesses to replace ordinary plate glass of the greater thicknesses given:

BOARD OF TRADE REGULATIONS.

ARMOURPLATE		ORDINARY PLATE GLASS.
1 inch thick	instead of	1½ inches thick.
13/16"	"	1¼ " "
¾ "	"	1⅛ " "
⅝ "	"	1 " "
½ "	"	¾ " "
⅜ "	"	½ " "

RESISTANCE TO SUDDEN CHANGES OF TEMPERATURE:

Ordinary plate glass breaks if unevenly heated. It cannot be used with certainty for an inspection window to an electric oven or be exposed to steam from the spout of a boiling kettle. Armourplate is quite safe under either of these conditions, and will if desired withstand much more severe tests.

Thermal tests show that Armourplate glass offers considerable resistance to severe temperature changes, if free to expand it will withstand a temperature of 300°C. on one surface with the other at ordinary atmospheric temperature. It has also been tested for resistance to impact at 15° below zero.

FIRE RESISTING GLAZING:

Armourplate when correctly glazed in metal frames complies with the require-ments of the British Standards Institution for Fire-resisting Materials, grade D, i.e. it will provide protection against the spread of fire for at least one hour.

Glass, 1. must be fixed in all-metal frames.
2. must not be glazed with putty, asbestos, etc.
3. rebate must not be more than ¼".
4. glass must be free & not fixed tightly.

SIZES AVAILABLE:

	UP TO LENGTH	UP TO WIDTH	
3/16" (4·5/5·5 mm)	51"	25"	Sizes over 3'0" should be as near 5·5 mm. as possible.
¼"	70"	52"	Sizes over 70"x30" in 9/32".
5/16"	70"	52"	
⅜"	70"	52"	Also strips 9"-18" wide x 110"
½"	70"	52"	
⅝"	70"	52"	
¾", ⅞", 1", 1¼"	in sizes up to 8 feet super.		

SPECIAL REQUIREMENTS:

SILVERED ARMOURPLATE	SHAPED ARMOURPLATE	BENT ARMOURPLATE.
Armourplate can be silvered if necessary, but it cannot be guaranteed to be perfectly free from distortion.	Most shapes, if they are not too irregular, can be Armourplated. Any irregular shape should be submitted to the works for consideration.	Can be supplied within certain limitations. Details should be submitted to the works for consideration.

For information on the toughening of other types & tints of glass, especially worked sheets etc. see the reverse side of this sheet.

Information from Pilkington Brothers Limited.

INFORMATION SHEET: THE ARMOURPLATING OF PLATE GLASS.

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

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GLASS

Type of Product : Toughened Glasses

The toughening process can be applied to certain other forms of glass, but the extent to which the strength of the glass and its resistance to temperature changes can be increased depends upon the type of glass used.

Types :

Toughened Black Glass.

in.	Up to Length in.	Up to Width in.	
$\frac{5}{16}$	70	54	Also in sizes up to 110 in. long by 9 in. to 18 in. wide.
$\frac{3}{8}$	70	54	
$\frac{1}{2}$	70	54	

It is recommended that all Black Glass used for exterior work be toughened to lessen the possibility of breakage due to sudden changes in climatic temperature.

Toughened Rough Cast Double Rolled.

in.	Up to Length in.	Up to Width in.
$\frac{1}{4}$	70	30
$\frac{9}{32}$ to $\frac{5}{16}$	70	52

Toughened, Figured and Tinted Cathedral Glasses.

Certain standard patterns can be toughened in sizes up to 3 ft. super in $\frac{3}{16}$ in. and $\frac{1}{4}$ in. substance.

Toughened Tinted Polished Plate.

$\frac{3}{16}$ in.
$\frac{1}{4}$ in.
$\frac{5}{16}$ in.
} Sizes as for Armourplate.

The following tints only can be toughened :—

$\frac{1}{4}$ in. Standard Blue.
$\frac{1}{4}$ in. Pale Blue.
$\frac{3}{16}$ in. and $\frac{1}{4}$ in. Amber.
$\frac{1}{4}$ in. Pink.
$\frac{1}{4}$ in. Deep Green.

Neutral Tinted cannot be toughened.

Important :

Any work on Armourplate or Toughened Glass, i.e., embossing, brilliant cutting, sand-blasting or drilling of holes, must be carried out before the glass is subjected to the special treatment, as it definitely cannot be cut or worked afterwards.

Holes should not be too near the edge of the glass, and the bevel for $\frac{1}{4}$ in. glass must not exceed $\frac{1}{2}$ in., the thickness of the edge being not less than $\frac{1}{8}$ in.

Care is necessary in handling and fixing Armourplate Glass so as not to damage the edge of the sheets by chipping. The edge of Armourplate Glass and Toughened Glass is not stronger than the edge of ordinary glass, and wherever possible the edge should be protected.

To avoid confusion, three distinctive types of labels are used to denote the different forms of glass.

Manufacturers : Pilkington Brothers, Ltd.
Head Address : St. Helens, England
Telephone : St. Helens 4001
London Office : 164 Shepherdess Walk, N.1
Telephone : Clerkenwell 0751