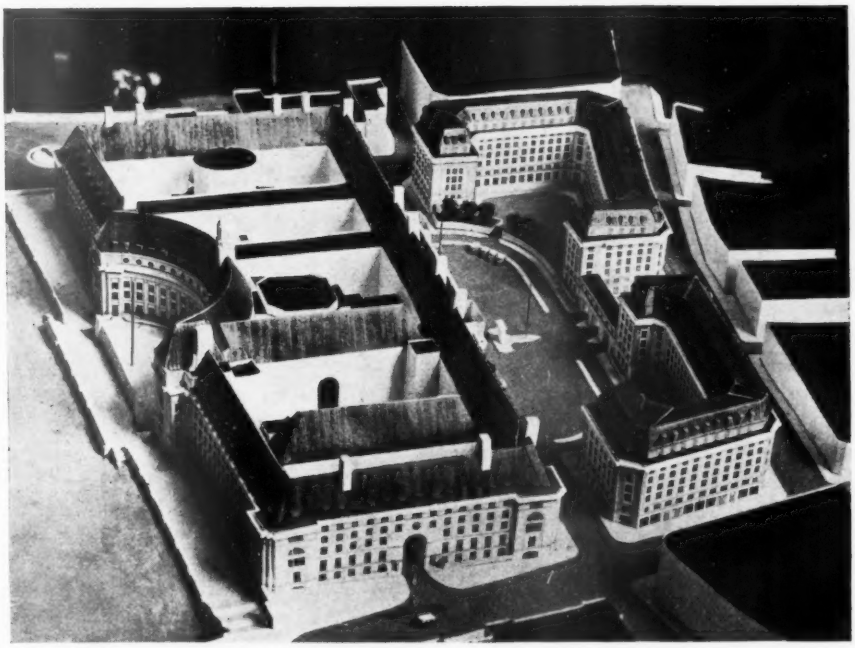
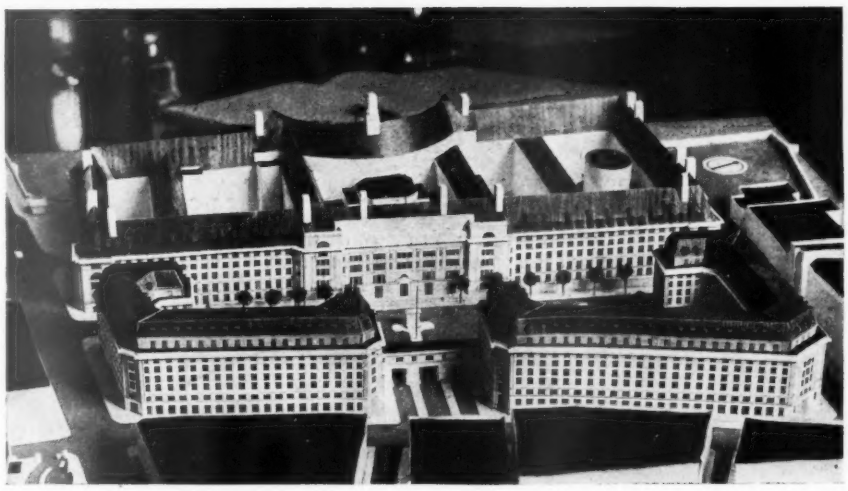
EXTENSION TO LONDON COUNTY HALL

PROPOSED NEW OFFICE ACCOMMODATION

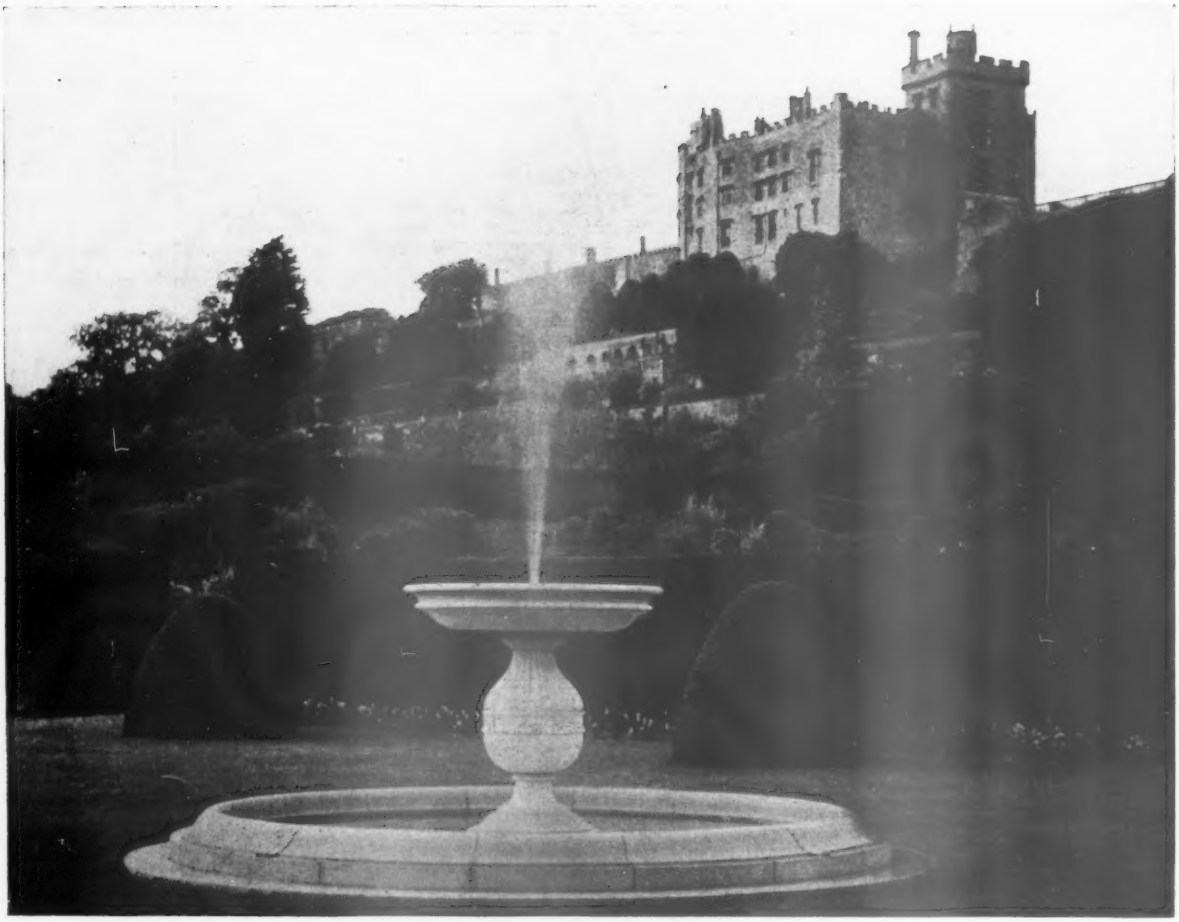




THE Establishment Committee of the L.C.C. has recently submitted to the Council its proposals for a large extension to the County Hall. The new buildings will occupy a site, measuring approximately 700 feet by a maximum of 280 feet, between York Road and Belvedere Road and extending from Westminster Bridge Road to the north of Chicheley Street.

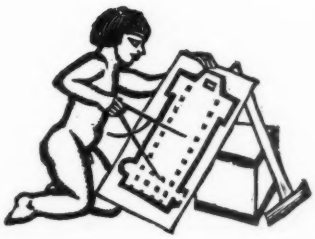
The new buildings will be placed mainly along the York Road frontage and will consist, on each floor, of offices 20 feet in depth on either side of a central corridor. The extension will be carried out by the Architect to the Council, Mr. E. P. Wheeler, with Sir Giles Gilbert Scott, R.A., as consultant.

The photographs reproduced are of the model prepared to illustrate the scheme and show: above, a view from the south with the existing County Hall on the left; below, a view of the proposed elevation to York Road.



A GARDEN FOUNTAIN

The design of this fountain, in the gardens of Powis Castle, Welshpool, was based upon that of a fifteenth century Florentine example. The fountain is executed in Portland stone, and was designed by George Hubbard and Sons.



MR. LLOYD GEORGE AND THE SLUMS

THERE is now available to all who care to spend the moderate sum of sixpence, a booklet called *Organizing Prosperity*—being the memorandum on unemployment and reconstruction recently submitted to the Government by Mr. David Lloyd George.

The booklet both draws a picture and makes proposals concerning what is shown within it ; and the picture is a large one. It includes the social conditions resulting from unemployment ; the country's financial resources ; housing, transport, heavy industries, and agriculture. Isolated details of the picture may be questioned but the general impression it conveys—an impression gloomy, bewildering and paradoxical—is a fairly just one.

Bluntly Mr. Lloyd George calls attention once more to the three basic and contradictory elements in the country's search for a lasting economic recovery. He states that there is now at any given moment a minimum of two million unemployed ; that over 70 per cent. of the country's savings are now on deposit in the banks awaiting profitable investments ; and that there is an enormous amount of work of various kinds which needs doing now, and which, when done, would add permanently to the country's real wealth and industrial capacity.

That all three of these statements are true all competent authorities are united in agreeing. But on the methods by which three such obviously complementary needs and capacities may be fully employed to their mutual benefit, the experts of economics and politics have in common only the tumult of their disagreement—to which, apparently, there may now be added a common rejection of the proposals of Mr. Lloyd George.

Organizing Prosperity is a very short book and its author's proposals are very large, and many of them directly or indirectly concern the building industry. The financing of these last must be carefully examined, for the industry has already learnt the dangers of a short and artificial stimulus of output.

But in the rightness of his approach to the problem of the slums, Mr. Lloyd George has the admiration of all who hope for an attitude of realism towards this question.

For years past every political party has stated that it was a national duty to provide for each family a certain minimum of dwelling accommodation—at a rent which that family can afford. Mr. Lloyd George realizes, as many others have realized, that the total number of houses built in any year—however suavely this total may be quoted by peripatetic cabinet ministers—has little or nothing to do with the question.

Let us summarize the essentials of slum elimination. The necessity of this achievement having been acknowledged by all political parties, the matter should become no longer political—but one purely social and technical. By social survey must be ascertained the maximum rent which rehoused slum dwellers can be expected to pay ; and by technical organization the minimum accommodation must then be provided as economically as possible.

But this simplicity, which would treat slum abolition as a problem entirely separate from all others, is far removed from the present facts.

Sir Kingsley Wood has not held office for very long, but we would draw his attention to the necessity of statistics concerning slum abolition being entirely separated from those concerning general housing.

The statement issued by the Ministry of Health (May 29, 1935) that 2,655,902 houses had been built since the Armistice is beside the point, and certainly of no use whatever concerning the problem of the slums.

Few people doubt that all families of which the principal wage-earner possesses a weekly income of £4 or over are now more or less decently housed. But very many suspect not only that the five-year plan for slum abolition is seriously behind schedule, but also that the Ministry of Health is quite unaware whether the families about to be rehoused will be able to pay the rents asked for the new dwellings.

It is high time that this general confusion was ended. The Government's campaign for slum abolition may be generously considered to have begun on April 1, 1934. Concerning that campaign two questions require answering :

How many families, living in slum conditions on April 1, 1934, may reasonably be considered to be unable to pay more than ten shillings a week in rent, inclusive of rates ?

How many dwellings have been built, since April 1, 1934, to let at rents within the means of such families ?

The new Minister of Health should have the answers to these questions published by his Department at the earliest possible moment. For until they are answered, real slum abolition cannot be said to have been begun.

The Architects' Journa
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NOTES & TOPICS

HOSPITAL PLANS

THE letter Mr. Charles Woodward sent, as the Hon. Secretary of the Practice Standing Committee of the R.I.B.A., to the hospital press, pointing out several ways in which hospital authorities may engage an architect's services, is sound and necessary reading. (I have not, by the way, seen the letter in any of the architectural papers.)

*

The habit which many small provincial hospitals are acquiring—of writing to several architects about their problem without mentioning that more than one architect has been communicated with—is not only stupid business, but very unfair to a profession which has given an incredible amount of time and energy to studying the hospital problem.

*

Indeed, it is now almost true to say that hospital planning has reached so advanced a stage that further development is delayed until the British hospital nursing system has discarded some of its superstitions and developed to a similar advanced stage.

THE KITCHEN SCIENTIFIC

There has just been completed in London the sixth International Congress for Scientific Management (which, incidentally, does not appear to have enjoyed the publicity it deserved).

*

The scope of the Conference was wide, but I was particularly interested in the deliberations of the Domestic Section . . . and disappointed, for their discussions on house-planning added nothing at all to a designer's knowledge of the subject. Indeed, the proceedings seemed to halt at a point which any competent domestic architect reached twenty years ago.

*

And, of course, when Miss H. Reynard drew the red herring of "kitchens" across the track everyone broke out into the most unmanageable, the most unscientific, gibbering. We were told, for at least the thousandth weary time since 1909, that kitchens are planned without any reference to the people who know how these things should be done—the people who are trained in domestic science.

*

The truth, of course, is that about 90 per cent. of the kitchens erected in this country are not planned at all, for the simple reason that no architect has been employed on them. The other 10 per cent. are usually successful, especially when the architect is a domestic specialist and is left alone to do the job he has studied—from the housewife's or cook's point of view, mind you—for a considerable number of years.

HOUSING PROGRESS

The charming habit, common to all our native newspapers, of reporting every proceeding from a comforting self-congratulatory angle was well exemplified by the reports that the Fourteenth International Housing and Town-Planning Congress has achieved in the popular press.

*

The Congress was given a whole column in last Sunday's *Observer*, headed "British Housing Praised: Foreign Experts Impressed"; whereas, according to the impressions I received from foreign delegates, they had a thoroughly dismal experience in a country that has, indeed, with a few local exceptions, hardly improved at all in housing technique in the last ten years.

*

The same *Observer* report contains some most revealing remarks that thoroughly demonstrate the attitude to housing of various factions.

*

One always knew that the recent German enthusiasm for cottage development was political in origin; that deliberate decentralization was part of the official German policy; but I had never seen it so frankly admitted as by a German delegate who was quoted in the *Observer*.

*

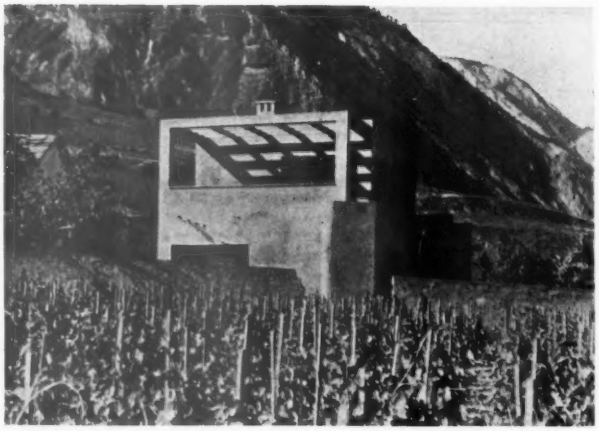
"The Germans," the report runs, "were strongly against flats (later they were deeply shocked when they found that Manchester had built a block of flats at Smedley Lane). Flats, they said, bred Communists—a race of nomads and wanderers, since the tenants felt no affection for their homes and moved on whenever anything a little more modern was built. They were, therefore, all in favour of the cottage homes we had seen at Bolton, ending a passionate plea by saying that a flat was not a castle but a dungeon."

*

Of course one must realize that if those delegates had taken any other viewpoint they would have been badly treated when they got home; but all the same it *is* pathetic to find those particular sentiments coming from a country that can boast (although it apparently no longer thinks it a thing to boast about) the finest multi-storey working-class housing colonies that have ever been put up.

*

In another most surprising passage very similar senti-



House in course of construction at clos d'Anze, Sailton, Valois, Switzerland. Architect: Alberto Sartoris.

ments are expressed by Mr. H. Chapman, the secretary of the International Federation. I don't know what I can do but quote Mr. Chapman's words.

*

"There are some people who advocate building flats, but I think cottage development is the best way of tackling your problem. You must remember that the higher your building the broader your road must be; that you are, in fact, making a tremendous traffic problem by building high. The population and all the services that provide them are concentrated, and this causes traffic blocks during the rush hours."

*

"Moreover, many Continental experts are now convinced that cottages lead to stability, whereas flats produce political and social instability, and are not good for quiet family life. The only sensible way is to distribute your population over the whole country."

*

That little piece of reasoning seems to me to contain too many quite horrifying misapprehensions for it to be worth even beginning any discussion of it in detail. The point about transport—that interminable suburban expansion raises a far greater transport problem than any amount of concentrated building—I should have thought, for example, was quite elementary.

*

I leave readers to analyze Mr. Chapman's opinions for themselves—particularly the last sentence quoted.

SIR WALTER TAPPER

The recent announcement that Mr. Walter Tapper had been honoured with a K.C.V.O. may be taken as one of the happy results of the new strange cleanliness which has been lately overtaking the Abbey.

*

Sir Walter has been surveyor to Westminster Abbey for the past seven years, succeeding the late W. R. Lethaby in that office, and recently his work upon it has received quite a surprising amount of publicity.

*

For a whispered report that milk was being used for treating the stonework reached the evening papers. And the extremely nourishing qualities of this fluid were so forcefully emphasized that I was conscious of a sudden fear lest the milk might not have been properly tested. Even Sir Walter might hesitate to prescribe for tuberculosis in the Poets' Corner.

THE CRYSTAL PALACE

Thursday Night Fireworks have started again at the Crystal Palace. To many people that may mean nothing at all: to the "fans" (of which I am one) who know where to find the best summer evening entertainment London has to offer, it is exciting news.

*

It is not only one's fondness for fireworks that makes these occasions so attractive; but also the entire suitability of their setting, in that prim Victorian pleasure garden, where small black figures move in and out of the smoke and give to the building itself a fantastic scale that enhances its already unreal appearance—the whole of a faint period flavour, which the naïve enjoyment of simple pleasures also possesses.

*

And then there is the intrinsic beauty of the scene, particularly when the building is at its most transparent just before dusk, that exists quite separately from its nostalgic period appeal. It needs no praise from me now that it has come into its own again as a piece of pure architecture. It must be looked at, of course, as a whole and as a structure; then its quality won't be submerged in the vistas of heroi-comic plaster statuary and the dismal "architectural courts."

*

As for the fireworks themselves: I don't really understand the satisfying (instead of disturbing) æsthetic appeal of a simple firework. Perhaps it's because its climax always comes at the end.

CLIPS, CRAMPS AND JOGGLES

I have been talking this week with an architect from abroad about building in areas subject to earthquake shock. He tells me that in California, for instance, it is quite simple to design a steel or concrete-framed building which will withstand the shocks. He complains, quite seriously, that it is the "architecture" which does the damage.

*

This intrigued me immensely and I could not resist a tentative enquiry as to what he meant by that word "architecture."

*

And then he explained: The framework is all right, but what falls down is all this stonework attached to it—cornices topple away from their anchor bolts, columns crash away from their embracing cramps, swags shake themselves free from their little steel clips and arches leap away from their supporting steelwork . . . to kill people in the streets below.

*

Hard things have been said about "The Orders," but this is the first time I've heard them criminally indicted.

ASTRAGAL

NEWS

POINTS FROM THIS ISSUE

WANDSWORTH BRIDGE

We understand that a scheme for the rebuilding of Wandsworth Bridge will come before the London County Council shortly after the summer recess, and work is likely to begin at the end of the year. The scheme is estimated to cost £1,000,000.

LIFTS AND ESCALATORS

The Building Industries National Council has just issued a booklet entitled " Code of Practice for the Installation of Lifts and Escalators " (price 1s. 3d.).

This publication is designed to meet the need arising from the fact that there has hitherto been no national code of practice for the installation of lifts and escalators in this country, and that such installations are rarely subject to legislative control in factories and workshops.

SAVING SUSSEX DOWNLAND

Negotiations are proceeding between Brighton Corporation and Chichester Estates for the preservation of nearly 300 acres of the Downs on the east side of the Brighton-Lewes road. The trustees are prepared to accept £40,000 for the land, and it is proposed to use a section for a housing estate which will extend the Corporation's estates at South and North Moulsecombe. The remainder it is proposed to preserve.

NEWS THEATRE FOR PARK LANE

A news theatre to seat 207 persons is proposed for Park Lane. The scheme is to convert part of No. 138, which has frontages to Park Lane, North Row and Norfolk Street.

THE ARCHITECTS' DIARY

Thursday, August 1

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

ST. PANCRAS TOWN HALL

The Mayor of St. Pancras last week laid the foundation stone of the new Town Hall in Euston Road, designed by Mr. Albert J. Thomas. It will have a 260 ft. frontage, facing St. Pancras Station, and a 250 ft. frontage in Bidborough Street.

MINISTER OF HEALTH PRAISES LETCHWORTH

" The country owes much to Letchworth as pioneers and is indebted to them for their courage and hard work," said the Minister of Health, Sir Kingsley Wood, at Thursday's opening of the new Letchworth U.D.C. offices. The town had achieved a full realisation of the garden city idea, he added, and it had achieved in good planning and lay-out the rational, healthy living conditions everyone would like to see extended throughout the country. The town had made good use of the national housing legislation, and with its aid had exemplified the possibilities of open development.

ADDITION TO THE " GREEN BELT "

In view of the danger of fresh speculative building, the L.C.C. Parks Committee recommends an early decision on the proposal that the L.C.C. should contribute £45,000 towards the acquisition of Nonsuch Park, Ewell, Surrey. Its area is 282 acres and, the committee states, the land may be considered as forming a semi-circle with Banstead Downs and Hampton Court and the adjoining Royal parks.

LIVERPOOL SCHOOL OF ARCHITECTURE

The first summer school promoted by the Liverpool School of Architecture was held in the Leverhulme Building, Liverpool, from Tuesday, July 23, to Saturday, July 27, inclusive. Following are some extracts from a paper entitled " Group Practice," read by Mr. W. G. Holford, B.ARCH., A.R.I.B.A., at the concluding session on July 27.

This is the final lecture of the Summer School and, although it is in no sense a summary of the lectures so far given, you will find that most of its ideas echo in some way the conclusions and the discussions of our previous meetings.

All our lectures without exception made us progressively wider awake to the task that awaits the new generation of architects, to the amount of leeway to be made up before we can hope to bring the work of our time to a like degree of perfection as that of previous periods in history—to the carefully refined standards of the Greeks, the organization of the Normans and the vitality of the Gothic builders or even the urban norm of eighteenth-century England. It is a case of all hands to the pump. As Lethaby foresaw, architecture cannot afford to be one man deep—it must be a hundred men deep. Hence the necessity to explore, in the light of urgent problems placed before us, all the various possibilities of group work.

Group practice is not a new thing, but there is a variant of it suited to any particular time. Moreover the reasons for its existence change equally. A vague idea of collective work will never come to anything unless there is a job to be done which requires it, and which is big enough to act as the motive force for the group. This is a truism often forgotten. Many people leave universities or schools fired with the desire for group work. But individuality is strong, and unless there is a really crying need for the work to be done and an equal determination on the part of every member of the group to make everything he does *contribute* to that central idea and not *detract* from it, then it is likely that the partnership will be a purely nominal one. For this reason group work cannot be successfully organized among those whose powers and beliefs are entirely untested. There is only a certain point in a man's life and work when he is more useful as a member of a group than as an individual, loosely connected with the other members of his profession.

There are various types of group practice. First of all a simple pooling of information. A good many research bureaus, government and municipal departments and standards associations, come under this heading. But its most important field is in education. It is a kind of office training in the assemblage of facts and preparation of data for a given work. It establishes method, and trains an architectural student both to approach a problem in the right analytical spirit and to collaborate with his fellows. This last is an essential qualification for the more important types of group work to be undertaken later on. A good many members of our profession would be a deal more useful and less cantankerous if they had had some training in group work in their school days.

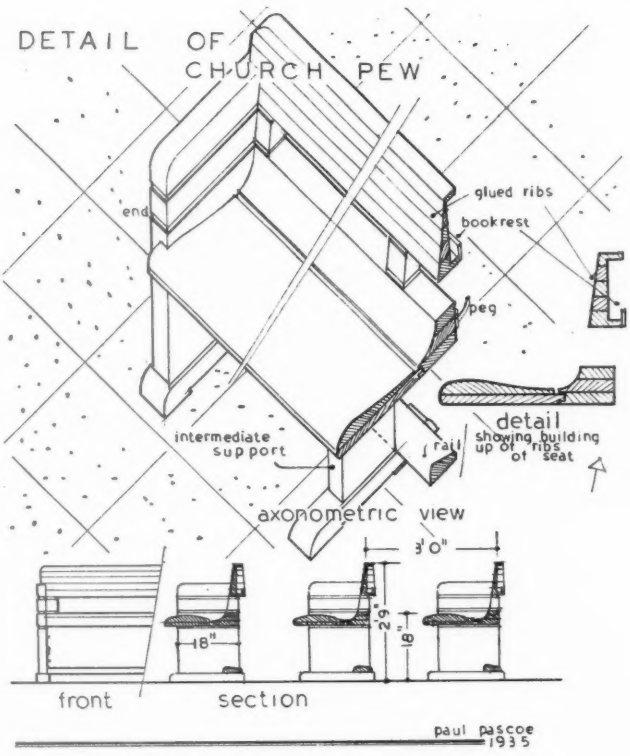
The second type of group practice is one which is really important to us here and now. I refer to the type of practice in which the members of the group, all with their different qualifications work together to create a plan or a standard, or to carry through a big piece of organization.

Mr. Fry in his talk on industrialized housing made it clear that before we started mass-production we must have something worth mass-producing. This requires a very high degree of real collaborative research and experiment, and its embodiment in a standard for building. The establishment of such a standard will be the work of a group.

Professor Abercrombie also made it plain that a regional plan could not be laid down by an expert or even by a handful of the same kind of experts. It needs the thought and experience of different kinds of experts, of a geographer, an architect, a lawyer, a town-planner, an engineer, a sociologist. Here again is a group with a purpose, and one in which the architect finds a place.

Mr. Keay in his talk on housing showed how much of a real group he has succeeded in creating in his own department. But it is a sad thing to realize that a less intelligent person could easily fail to do so. There is no guarantee that any municipal department will have the right outlook on collective effort. In fact such a thing is a rarity. And there appears to be very little help forthcoming for him from the other municipal departments. I suppose it is too much to expect ratepayers, who are themselves hardy individualists, to rise up and demand some degree of collective action from the departments of their municipality. But they certainly ought to do so.

Mr. Cole, speaking on colour, emphasized the need for a really practical and complete standardization of colour charts, which archi-



From a church in Berlin. Designer: Otto Bartning.

tects, painters, contractors, paint manufacturers and dress designers would find equally useful.

Mr. Glover spoke of the preparation of data on sound, thermal and weather insulation, and of the necessity for cheap, reliable standard walls, floors and partitions, reasonably satisfactory from all these points of view. At present they do not exist. And no lonely artist or architect, bursting with no matter how many cubic feet of the divine afflatus, can by himself provide them.

These are a few examples of the many groups of varied character and personnel, in which the architect should play a part. I foresee a steady migration of architects, in the next few decades, from the difficult territory of private practice to the more promising field of group work, whether professional, educational, municipal, industrial or governmental. An architect in a group is very often more useful to the community than an architect solo. And there are an enormous number of people with whom he will come into contact. In the first place with town-planners, then with sculptors, painters and artists generally, then with industrialists and lawyers, with sociologists and statisticians, with various technicians, geographers, geologists, chemists and engineers. It is an amazing extension of his powers.

There is also a third type of group work which necessitates a far larger background of theory. I refer to that difficult kind of group which is composed of people with the same qualifications and in which the process of work is dialectical. A certain course or thesis is proposed, arguments against it are searched for and opposed to it, and out of discussion and struggle emerges a synthesis which represents the resolution of forces.

The difficulty here is, that in a democratic kind of group the result is a compromise. And in others, where the need for action is paramount, the amount of time taken up in the clash of brains is apt to be disastrous.

In Russia, however, where social theory and politics form the background of every worker's mind, and where the social struggle is always the most important, this type of group work, is not only possible, but sometimes successful. It is extremely interesting to trace the influence of these groups on the architecture and town-planning of the five-year plans in the U.S.S.R. There are groups of all kinds with differing outlooks on the problem. Left, right and centre, and they all receive not only an expert but a public hearing.

There are modifications of this last method which are being experimented with in this country. In any programme or competition or building work the research is done by the group, the main objective is decided on by the group, and then it is left to individual members each to carry out a particular programme in practice, to settle questions of taste, make discussions, and be in fact responsible for the work in the name of the group. This is merely an extension of the principle of the well-run private partnership, and of certain municipal departments. A great deal can be done both in extending it, and in making it more effective.

ST. PANCRAS WORKING-CLASS FLATS

Two blocks of working-class flats are to be built in Ferdinand Street, Chalk Farm, by the St. Pancras House Improvement Society. The foundation stones were laid last week by Mr. H. W. S. Francis, Director of Housing and Slum Clearance in the Ministry of Health.

GOVERNMENT BUILDINGS, EDINBURGH

In Parliament on Monday last Mr. Guy asked the First Commissioner of Works what stage had now been reached in the erection of the new Government buildings on the Calton site at Edinburgh.

Mr. Ormsby-Gore said that the scheme designed by Mr. T. S. Tait had been approved. Working drawings were in preparation with a view to entering into a contract for the commencement of work on the site in November next.

SIR WALTER TAPPER

On Tuesday of last week Mr. Walter Tapper, R.A., PP.R.I.B.A., Surveyor of Westminster Abbey, was knighted by His Majesty the King, and invested with the insignia of a K.C.V.O. See Astragal's note on page 149.

WORTHING COUNCIL CHANGES ITS MIND

Despite two votes in favour of making a bathing pool at a cost of £63,000, Worthing Town Council decided last week to defer consideration of tenders. The scheme has the sanction of the Ministry of Health, but it was urged by members of the Council who had previously supported the scheme that bathing pools were less popular then they used to be.

TOWN PLANNING INSTITUTE

The seventeenth annual country meeting of the Town Planning Institute will be held at Eastbourne from October 4 to 6, inclusive, under the chairmanship of the President of the Institute, Major Leslie Roseveare, O.B.E., M.INST., C.E.

OBITUARY

We regret to record the death of Mr. Thomas Blakeley, A.R.I.B.A., for five years borough architect to the Dewsbury Corporation.

Mr. Blakeley, who was aged 43, was born in Carlisle, and was educated at the Carlisle Grammar School, upon leaving which he was articled to Mr. J. F. Forster, of Carlisle. In 1912 he was appointed assistant architect under the Cumberland County Council and Education Committee. When war broke out he joined the Royal Engineers.

On leaving the Army Mr. Blakeley returned to his position under the Cumberland County Council, and in February, 1920, he was appointed clerk and architectural assistant at Dewsbury. He was appointed deputy borough surveyor in 1925, and five years ago, on the death of Mr. Dearden, he was appointed architect and surveyor.

R. I. B. A.

ELECTION OF MEMBERS

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

As Fellows (*11*) : Messrs. J. T. Brooke, Shanghai ; W. T. Higgins, Aylesbury, Bucks ; G. Hollins, Newcastle, Staffs ; A. J. Hutton, Kenya Colony ; M. J. Tapper, London ; H. H. Dawson, Nottingham ; W. J. Gomm, London ; P. M. Padmore, Llanfairfechan ; D. Smith, Dundee ; A. E. Brooks, Brisbane, Queensland ; H. Oliver, London.

As Associates (*16*) : Messrs. F. P. Chambers, London ; G. J. Cowley, Calne, Wilts ; B. G. Duckett, School of Architecture, Victoria University, Manchester ; A. Hadjidemetrion,

Liverpool School of Architecture, University of Liverpool; C. E. Hopkins, Bartlett School of Architecture, University of London; C. J. Marshall, Architectural Association; C. D. Osborne, Sydney, N.S.W.; M. Policansky, Liverpool School of Architecture, University of Liverpool; K. Ramsinh, Architectural Association; H. D. Roberts, Birmingham School of Architecture and the Architectural Association; H. S. Robson, Liverpool School of Architecture, University of Liverpool; R. L. Stubbs, Victoria, Australia; W. G. Wilson, Sydney; R. Wilson, Architectural Association; B. M. Woods, Port Elizabeth. and Miss M. C. Gick, London.

As Licentiates (12): Messrs. E. Ashworth, Plymouth; R. G. Cox, London; R. F. Fox, Harold Wood, Essex; W. F. Hendry, Southern Rhodesia; A. E. Jury, Belfast; H. A. Keighley, Bolton; G. C. Lane, Gravesend; H. E. Owen, Littlehampton; F. H. Phillips, London; P. G. Prewett, Exeter; G. C. Thompson, London; R. B. Winter, Stevenage, Herts.

COMPETITION

NEWS

MUNICIPAL OFFICES, ROMFORD

As we go to press we learn that Mr. Kenneth M. B. Cross, M.A., F.R.I.B.A., the assessor in the competition for proposed municipal offices at Romford, has made his award as follows:

Design placed first (£250): Messrs. H. R. Collins and A. E. O. Geens, of Bournemouth.

Design placed second (£100): Messrs. H. R. Collins and A. E. O. Geens (alternative design).

Design placed third (£50): Mr. J. Wallace, of Cardiff.

TIMBER HOUSES

Conditions of a competition for timber houses, promoted by the Timber Development Association, have just been issued. The object of the competition is to explore the extent to which wood can be economically and effectively used in domestic building. The promoters point out that the object of this competition, which is organized by the Timber Development Association, Limited, is to explore the extent to which wood can be economically and effectively used in domestic building. "The part that wood can play in house design is not necessarily confined to a few internal fittings and to such things as window frames and doors: its structural possibilities and its use as a material for walls, floors and framework, can be extended, and it is hoped that this competition will give designers opportunities for illustrating fresh ways of using wood, and also of solving economically, problems of accommodation."

The assessors are: Messrs. Robert Atkinson, F.R.I.B.A., G. Grey Wornum, F.R.I.B.A. and E. Maxwell Fry, B.ARCH., A.R.I.B.A. The competition is divided into two sections and competitors may enter for one or both. In each section there will be the following awards: first premium, £100; second premium, £30; third premium, £25.

Section 1 calls for designs for a timber house suitable for a small family, the total cost to be £800; and, in section 2, competitors are asked to submit designs for a week-end timber cottage, the total cost to be £350.

The competition is open to any qualified architect or architectural student of British nationality. Conditions, etc., are obtainable from the Manager of the Timber Development Association, 69-73, Cannon Street, London, E.C.4, and designs are to be sent to him not later than Monday, October 28. Results will be announced by Monday, December 2.

TOWN HALL, BURY

Conditions (deposit £2) of the competition for a proposed town hall, Bury, for the Bury Corporation, are now obtainable from Mr. Richard Moore, Town Clerk, Municipal Offices, Bank Street, Bury. The assessor is Mr. J. Hubert Worthington, O.B.E., M.A., F.R.I.B.A., and three premiums are offered: £500, £300 and £150. The latest date for submission of designs is December 31.

NEW PARLIAMENT HOUSE, SOUTHERN RHODESIA

Conditions (deposit £2 2s.) of the competition for a proposed new Parliament House, Salisbury, Southern Rhodesia, are now obtainable from the High Commissioner for Southern Rhodesia, Crown House, Aldwych, W.C.2. Premiums of £500, £300, £200 and £100 are offered for the designs, placed first, second, third and fourth, respectively. The assessor is Mr. James Adamson, F.R.I.B.A., of 19, Silverwell Street, Bolton, to whom designs must be submitted not later than January 31 next.

Competitions Open

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

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.

THIS ARSHETECTURE

ARCHITECT AND HOUSING SCHEMES

In regard to a proposed housing scheme at South Normanton. Mr. Walker asked who was the architect.

The Clerk: Mr. Sudbury.

Mr. Walker said it was time that their Surveyor did the work. "Somebody is holding him out. I have no axe to grind but I say it is unfair. That is a bit of plain speaking."

The Chairman: It is the decision of the Council, and you will have to rescind the resolution on the minutes of the Council.

Mr. Boothby said the Surveyor had given them the assurance that he could do the work, and as that would effect a saving the Council should instruct him to do the work.

The Chairman: If you have to employ another you will have to sack one.

Mr. Walker: I want to sack one. It is the Surveyor's job. It makes my blood boil to see how things are carrying on. I want to know what are the architect's fees and the cost per house.

The matter is to be discussed at the next meeting.

From "The Derbyshire Times."

FLATS IN BERKELEY SQUARE, W.

The building stands upon the Mayfair site of the former Lansdowne House and gardens, with a principal frontage to Berkeley Square. The scheme comprises shops and offices at ground level; a large scheme of restaurants, hairdressing rooms and a cinema in the two basements; and 118 flats of full service type upon the upper floors.

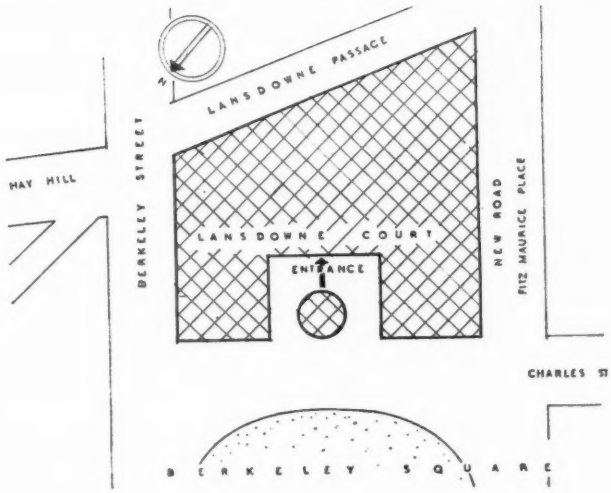
The flats are served by two principal stairways and four passenger lifts. Goods access is provided by four service lifts and stairways, and a special lift, with hot-plate equipment upon each floor, is provided for the service of meals from the restaurants in the basement.

The flats, of which type plans are illustrated on pages 156-7, are to be let at rents ranging from £275 to £1,815.

The building is steel framed with filler joist precast R.C. beam floors, and asphalt roofs. Partitions generally are of breeze slab, soundproofed by cavity construction in two thicknesses and quilting between.

The elevational treatment is of hand-made sand-faced brick with a Portland stone facing to the ground floor, and the mullion treatment between windows is in buff quartzite.

The photograph above is a general view from Berkeley Square.



DESIGNED BY WIMPERIS, SIMPSON AND GUTHRIE

FLATS IN BERKELEY SQUARE, W.: BY

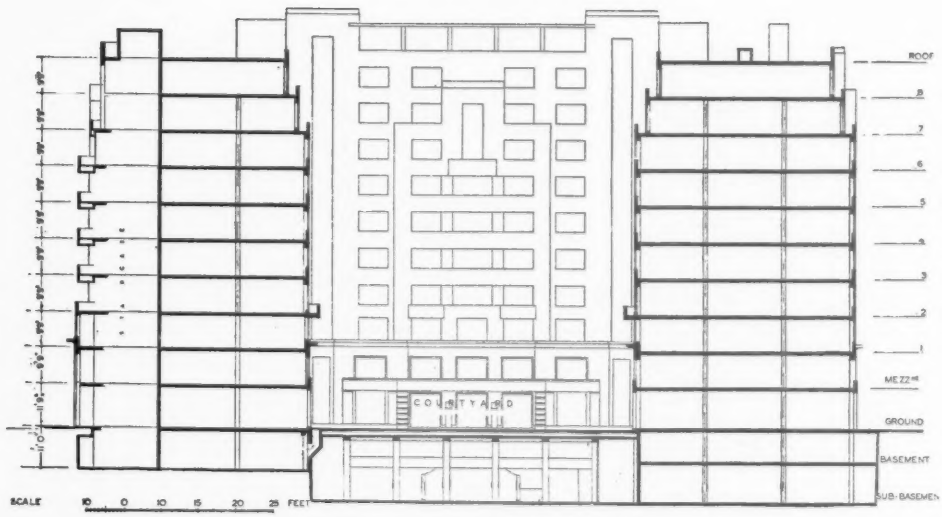
The principal entrance has a wall-treatment in tranimirabelle, a marble with a wavy cream-buff surfacing. The vestibule is floored with travertine and the wall finish is in silver leaf. The main staircases are in travertine up to first floor level, and thereafter close-carpeted, as are all corridors. The dwarf hand-rails are in silvered bronze.

Generally the bathrooms and kitchens of the flats are kept adjoining the corridor or entrance vestibule partitions, all service pipes running in ducts which both assist in soundproofing and are accessible for examination and overhaul from outside the flats by means of doors provided.

The finishing of the flats is as follows: walls, plaster in living rooms, tiles in kitchens, marble and terrazzo in bathrooms; floors, oak and pine strip in living-rooms, wood composition in kitchens, rubber in bathrooms; joinery is in walnut and deal, all doors being flush.

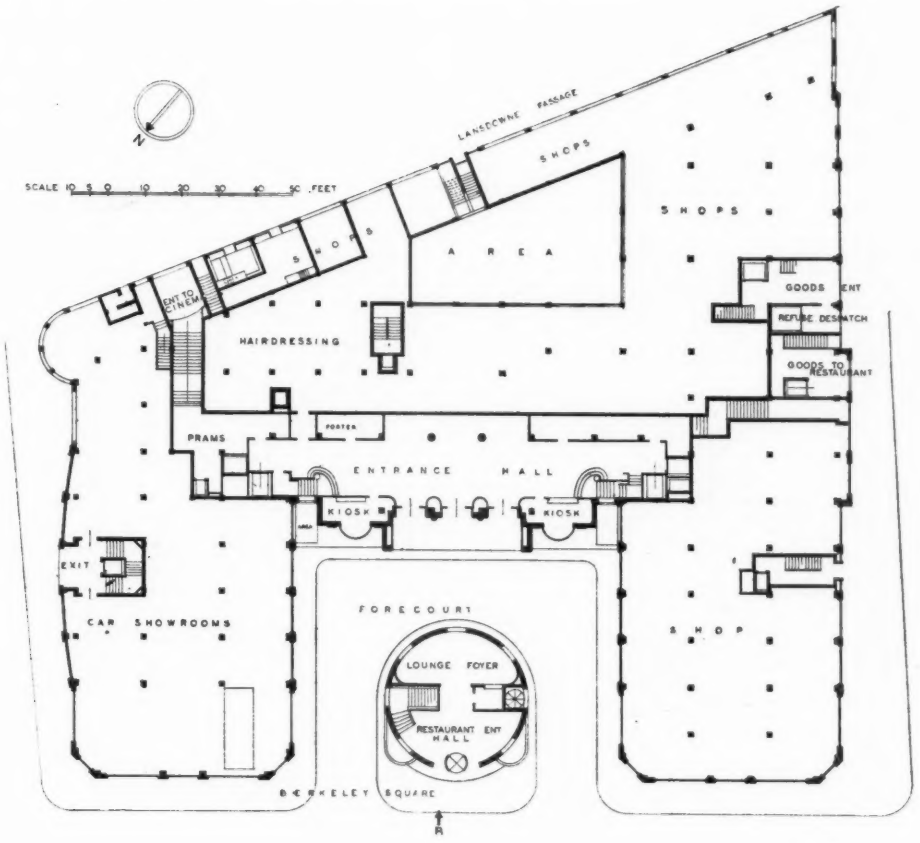
The flats are electrically equipped throughout, with the exception of the heating by low-pressure hot-water and auxiliary gas for cooking. Refuse cans are provided with hatches for their removal from outside the flats.

The detail to the left is of the entrance front, showing in the foreground the pavilion entrance to the basement restaurants.

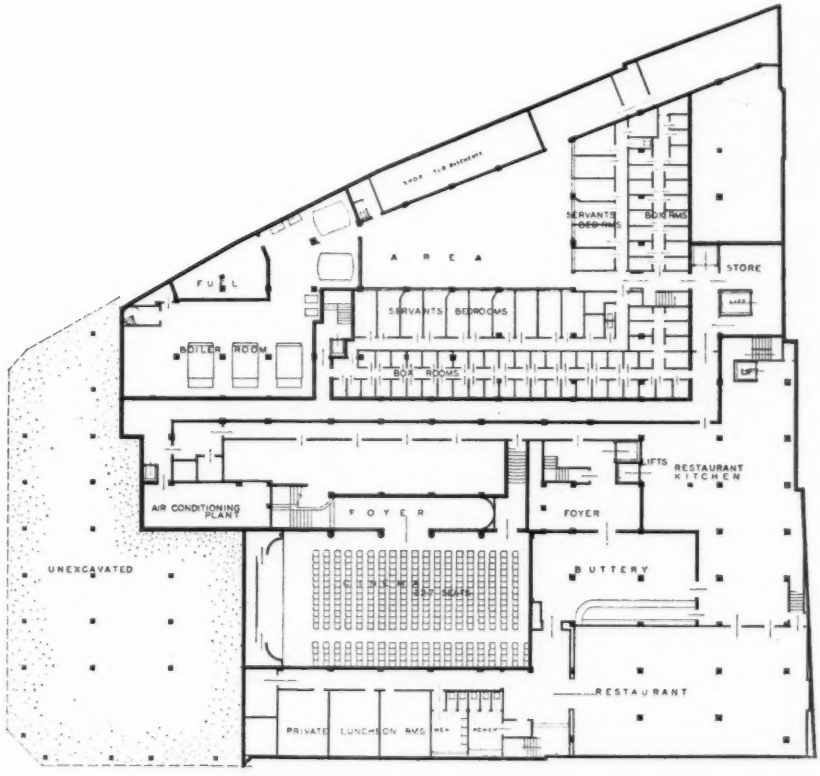


SECTION

WIMPERIS, SIMPSON AND GUTHRIE

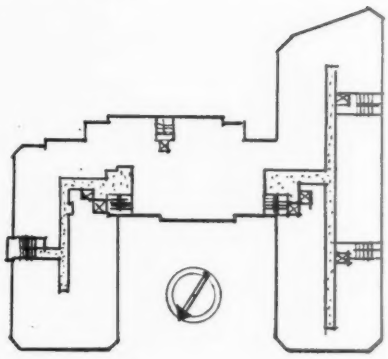


GROUND FLOOR PLAN



SUB-BASEMENT PLAN

FLATS IN BERKELEY SQUARE, W.: BY



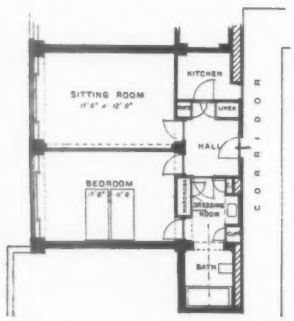


Figure 1 (left : typical outline plan of circulation).

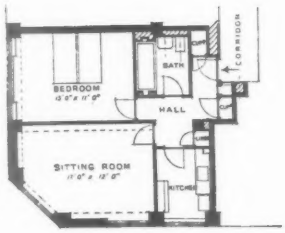


Figure 2.

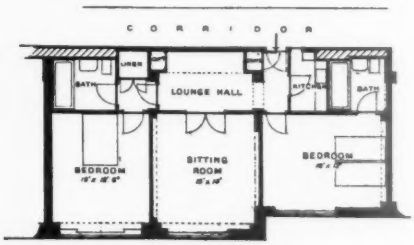


Figure 3.

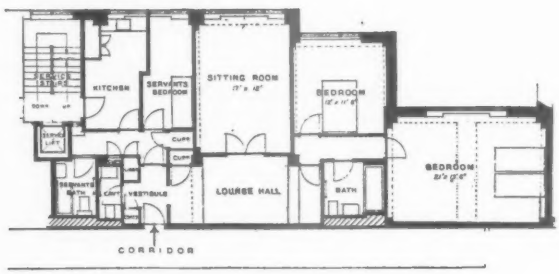


Figure 4.

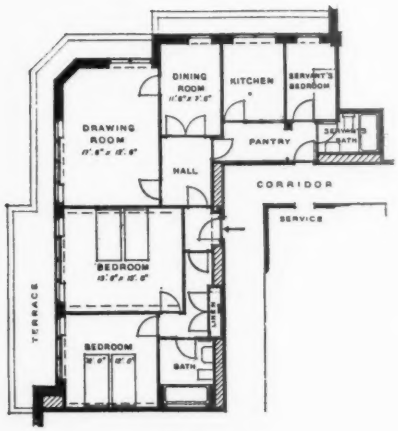


Figure 5.

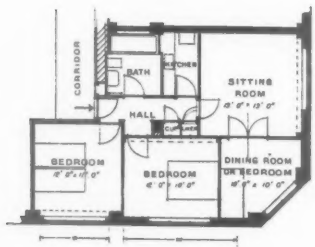


Figure 6.

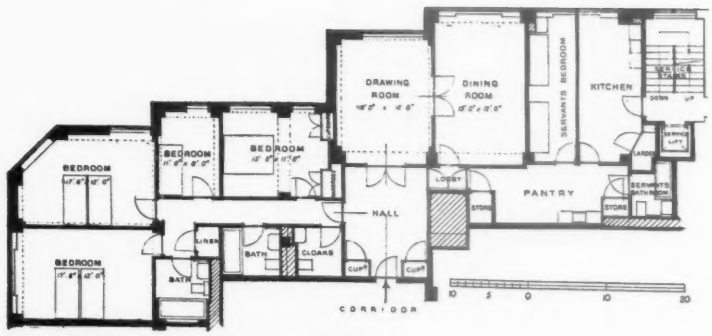


Figure 7.

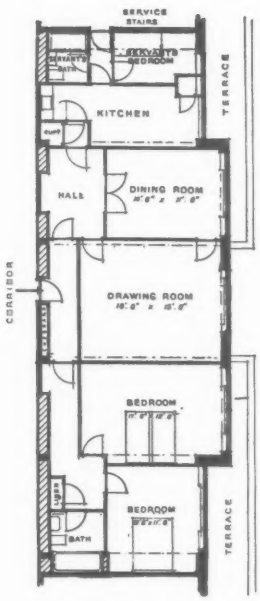


Figure 8.

WIMPERIS, SIMPSON AND GUTHRIE

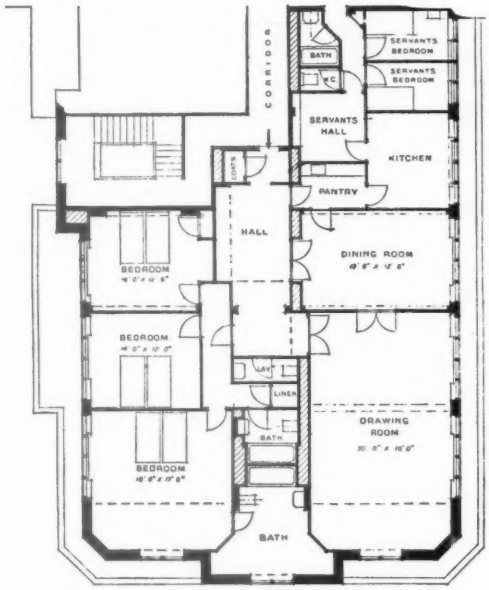


Figure 9.

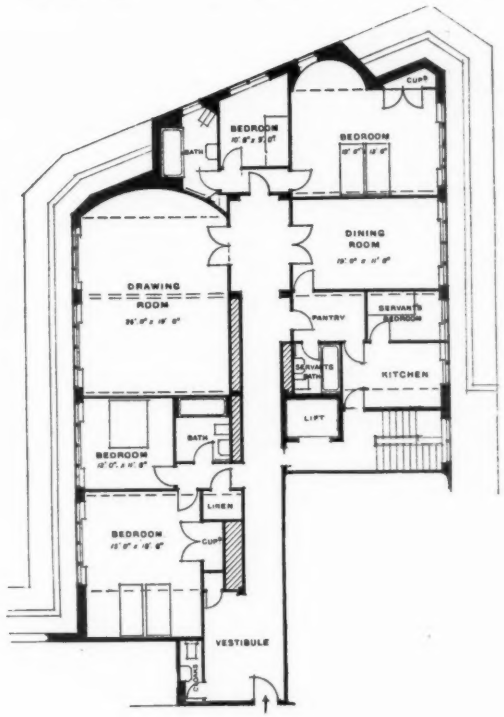


Figure 10.

LAY-OUT PLANS OF ELEVEN TYPICAL FLATS

Following is a key to the type plans illustrated on this and the facing page :

Figure 1. Rent : £275 (second to fifth floors) ; £280 (sixth floor).

Figure 2. Rent : £330 (second to fifth floors).

Figure 3. Rent : £355 (first floor) ; £360 (second and third floors) : £365 (fourth to sixth floors).

Figure 4. Rent, £385 (first floor) ; £440 (second and third floors) ; £470 (fourth and fifth floors) ; £485 (sixth floor).

Figure 5. Rent : £550 (eighth floor).

Figure 6. Rent : £440 (mezzanine and first floor).

Figure 7. Rent : £800 (second to sixth floors).

Figure 8. Rent : £600 (eighth floor).

Figure 9. Rent : £1,375 (eighth floor).

Figure 10. Rent : £975 (eighth floor).

Figure 11. Rent : £1,760 (second to fifth floors) ; £1,815 (sixth floor).

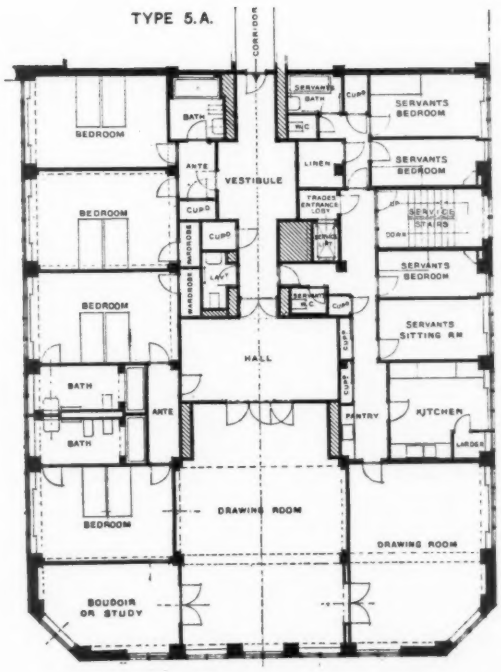
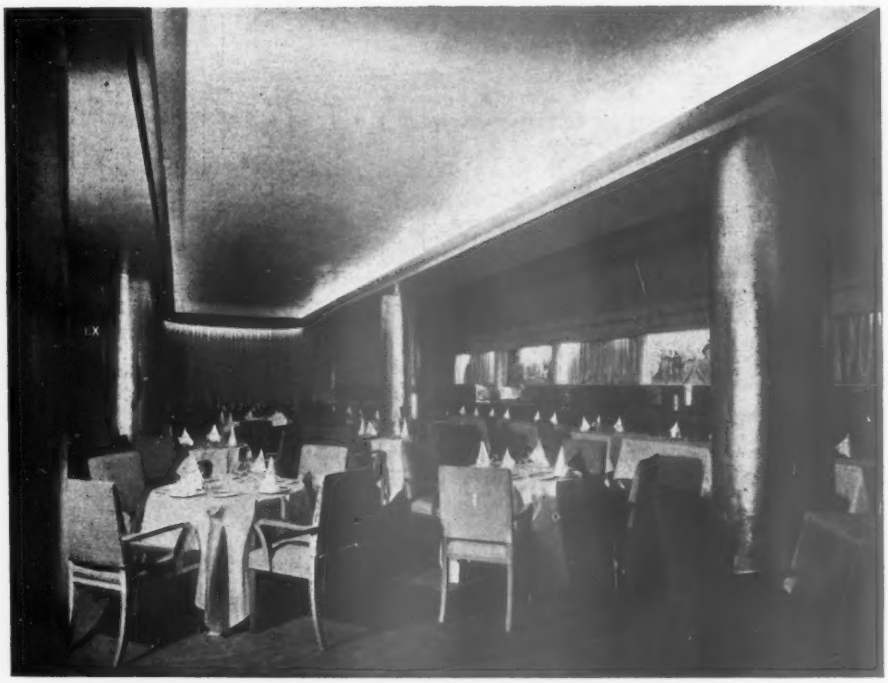


Figure 11.

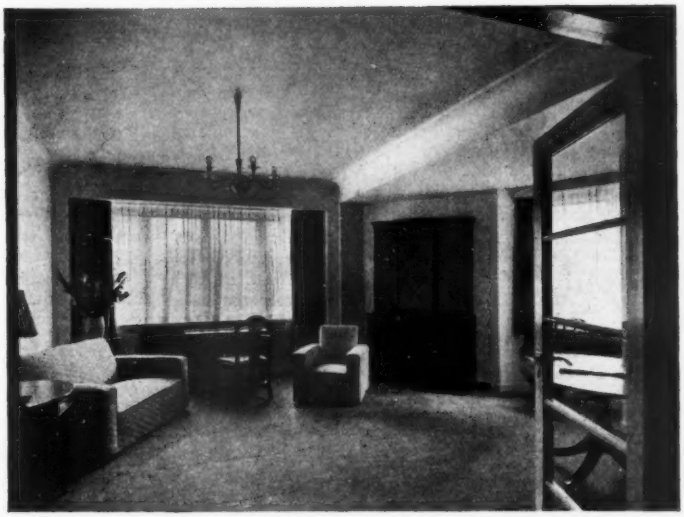
FLATS IN BERKELEY SQUARE, W.: BY

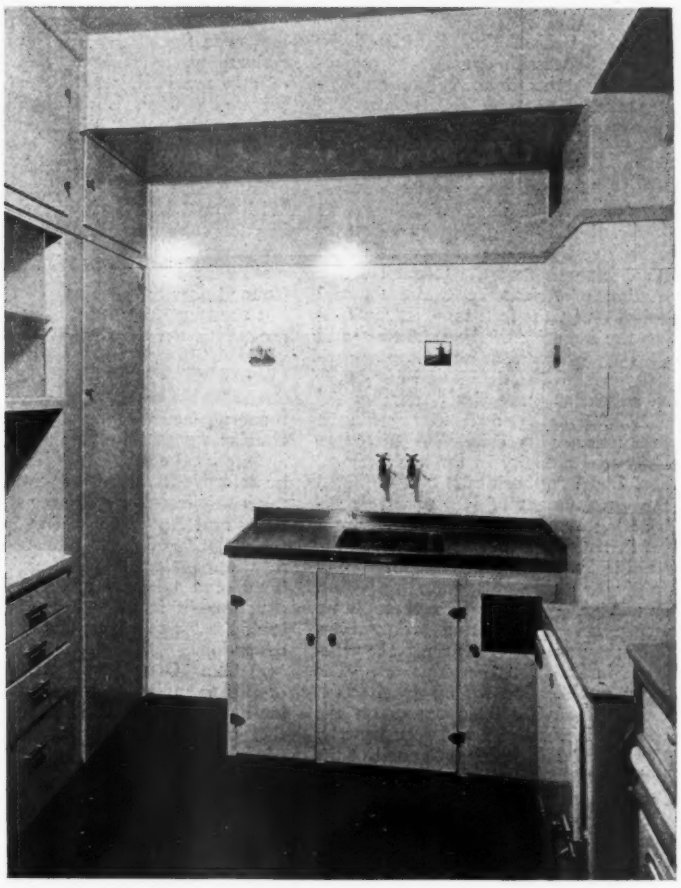


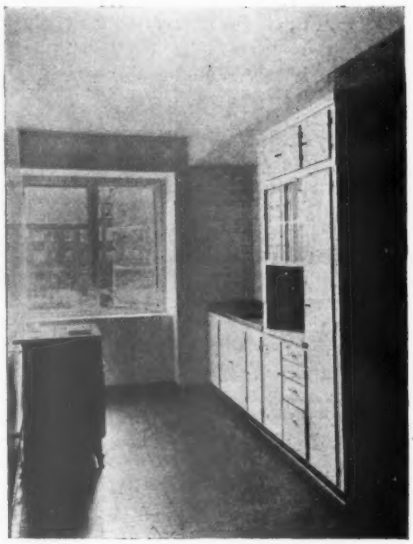
In the sub-basement: above, the restaurant lounge; below, the restaurant.

WIMPERIS, SIMPSON AND GUTHRIE

The photographs show: right, a typical living room; below, a typical bathroom; and internal and external kitchens.







The heating of the building is by flush ceiling panels and small hot water radiators. All internal rooms have forced ventilation from the roof. All flats have both G.P.O. and house telephones, and are equipped with refrigerators, built-in wireless equipment, and synchronized clocks. Full kitchen equipment in metal is also built-in. Cleaning is by portable apparatus from plugs.

LETTERS FROM READERS

Employment of Architects by Local Authorities

SIR,—I am requested by my Council to forward you the enclosed copy of a letter to the Association of Municipal Corporations sent from this Association.

A. SEYMOUR REEVES
Secretary, A.A.S.T.A.
London

Following is the letter referred to by the Secretary of the A.A.S.T.A. :

Sir Harry Pritchard,
Secretary, Association of Municipal Corporations,
Palace Chambers, London, S.W.1.

SIR,—On behalf of the Council of the Association of Architects, Surveyors and Technical Assistants, the accredited organization for all salaried architects, I am directed to draw your attention to the above matter, which formed the subject of a circular letter dated June 6 last sent to 2,250 Local Authorities by the Secretary of the Royal Institute of British Architects.

This circular letter gives expression to views so questionable on economic and technical grounds that the Council of the Association of Architects, Surveyors and Technical Assistants feels impelled, in fairness to the majority of the profession and the ratepaying public, to offer its own considered viewpoint on the issues involved.

(1) In the first place the Council of the A.A.S.T.A. wishes to express in the strongest possible manner its conviction that true economy and amenity in the architectural work of Local Authorities is best obtained by the employment of Registered Architects, acting in a responsible capacity. It desires further to point out that, from the aspect of legal qualification, membership of one body or another is quite irrelevant. Among Registered Architects there is no difference in qualification whatsoever, whether they are engaged in private practice or in salaried employment. The statutory qualification for *all* architects is now that of having their names on the Register of Registered Architects, kept by the Architects' Registration Council of the United Kingdom, of which the A.A.S.T.A. is a constituent body.

(2) The identity of qualification of all Registered Architects being established, it remains to be pointed out that the essential pre-occupation of the architect in private practice is the securing of future work. To this an enormous amount of time and energy must be devoted, while, on the other hand, the official architect, paid by salary, is not thus distracted, and is free to concentrate entirely on the more strictly technical aspects of his profession. His singleness of purpose, as a direct result, leads to an attitude of disinterested integrity which is in accordance with the highest of professional standards.

(3) The majority of official architects have undergone a training identical with that of the average qualified architect in private practice. This latter method of architectural production is rapidly disappearing, due to the economies and specialized excellence of salaried departments. To plead for the continuance of private practice on any grounds is, in face of its patent shortcomings, to defend an uneconomic and obsolescent system.

(4) Quite contrary to the view, expressed in the R.I.B.A. circular of June 6, that architects of Local Authorities are so much the less good technicians because their employers are "thinking mainly in terms of cost," it is the opinion of the A.A.S.T.A. Council that any employer of any architect is mainly concerned with cost. Such consideration is the more essential when the expenditure of public funds is in question, and need not militate in the least against rational modern design. The first problem of any architect, whether salaried or in private practice, is to obtain maximum accommodation at minimum cost. This problem having been overcome, the resultant building is a demonstration of the skill or otherwise of the architect concerned. With the R.I.B.A.'s implication contained in paragraph 7 of the circular letter, that architects in private practice do not think mainly in terms of cost, the A.A.S.T.A. Council does not feel impelled to disagree, but the suggestion has a direct bearing on the question of economy in the architectural work of Local Authorities. Nor is the Council of the A.A.S.T.A. inclined to minimize the extent of the complexities of modern practice or to deny, as the R.I.B.A. circular suggests in paragraph 8 (*b*), that architectural education in this country may be defective in adequately training men for the complicated requirements of present-day Local Authorities : but in fairness to the majority of the profession it should be mentioned that salaried architects, as a body, can take no responsibility for the situation—if it exists—since the R.I.B.A. itself has for over 50 years controlled such education.

(5) The Council of the A.A.S.T.A. desires to make some observations on the merits of the competition system. This, in their opinion, is a grossly over-rated method of obtaining good buildings. It is not only wasteful of time and energy, but has produced a definite "competition technique," which results in the choosing of a design which has very little relationship to the actual realities of the building subsequently erected. Over the past 25 years, in fact, competition designs have tended more and more to a stereotyped pattern where they have not been merely sycophantic to the known predilections of the assessor—and have, on the whole, shunned pioneer effort.

In conclusion, therefore, the Council of the A.A.S.T.A. desires to emphasize :—

(*a*) The statutory qualification for all architects today is Registration, whether salaried or in private practice.

(*b*) No case can be established on the only relevant grounds of technical or economic excellence for the employment of private practising Registered Architects in preference to the engagement of Registered salaried staffs in the work of Local Authorities.

(*c*) Architects in salaried employment who carry out work for Local Authorities should receive public recognition of their functions, and should, in the course of their activities, be unhampered by restrictions imposed by members of other professions.

(*d*) The obtaining of designs by open competition has, in the past, contributed but questionably to the advancement of architecture.

(*e*) The whole trend of modern developments, which has led to little more than 30 per cent. of the architectural profession remaining in private practice, offers striking comment on the suggested economy and effectiveness of this disappearing form of professional activity.

I am, Sir,
Your obedient servant.

A. SEYMOUR REEVES (Secretary of the Association of Architects, Surveyors, and Technical Assistants)

RAYMOND WALKER (Coal Utilization Council)

(Signed) V. LESLIE NASH, A.R.I.B.A.,
Honorary Secretary, Public Relations Committee, A.A.S.T.A.

Solid Fuel

SIR,—In the Housing Supplement published in your current issue, I note further disparaging references to the use of solid fuel. On a former occasion your correspondent, Miss Elizabeth Denby, described a coal range as an "anachronism," and seemed to accuse Messrs Tecton (of all firms) of being out of date. This time it is, apparently, the high cost of flues that is supposed to put solid fuel out of the running.

Is it not high time to warn uninstructed critics to seek corroboration before committing themselves to rash and inaccurate statements? Apart from other considerations, these statements can be challenged on arithmetical grounds alone. With coal, used in modern appliances—and there is a world of difference between the old and the new—smoke is reduced to a minimum. On the other side of the account, coal is unrivalled for cooking ; as a heating agent there is no real substitute for the open fire from the human standpoint ; for the provision of hot water, it is sure, safe, simple and really cheap. Without it there cannot be adequate and comfortable ventilation, which is essential for town dwellers.

At Newcastle, Shoreditch and other places attempts have been made to dispense with flues and so to force tenants to use a heating agency they do not like and cannot afford. Shoreditch has already been obliged to rebuild ; at Oldham the Lees Housing Committee, after long deliberation, has decided by a big majority in favour of coal.

As Professor W. A. Bone, the well-known fuel economist, has recently stated, the flueless house is "an innovation which should be prohibited as false economy and inconsistent with any proper standard of health."

RAYMOND WALKER
The Coal Utilization Council

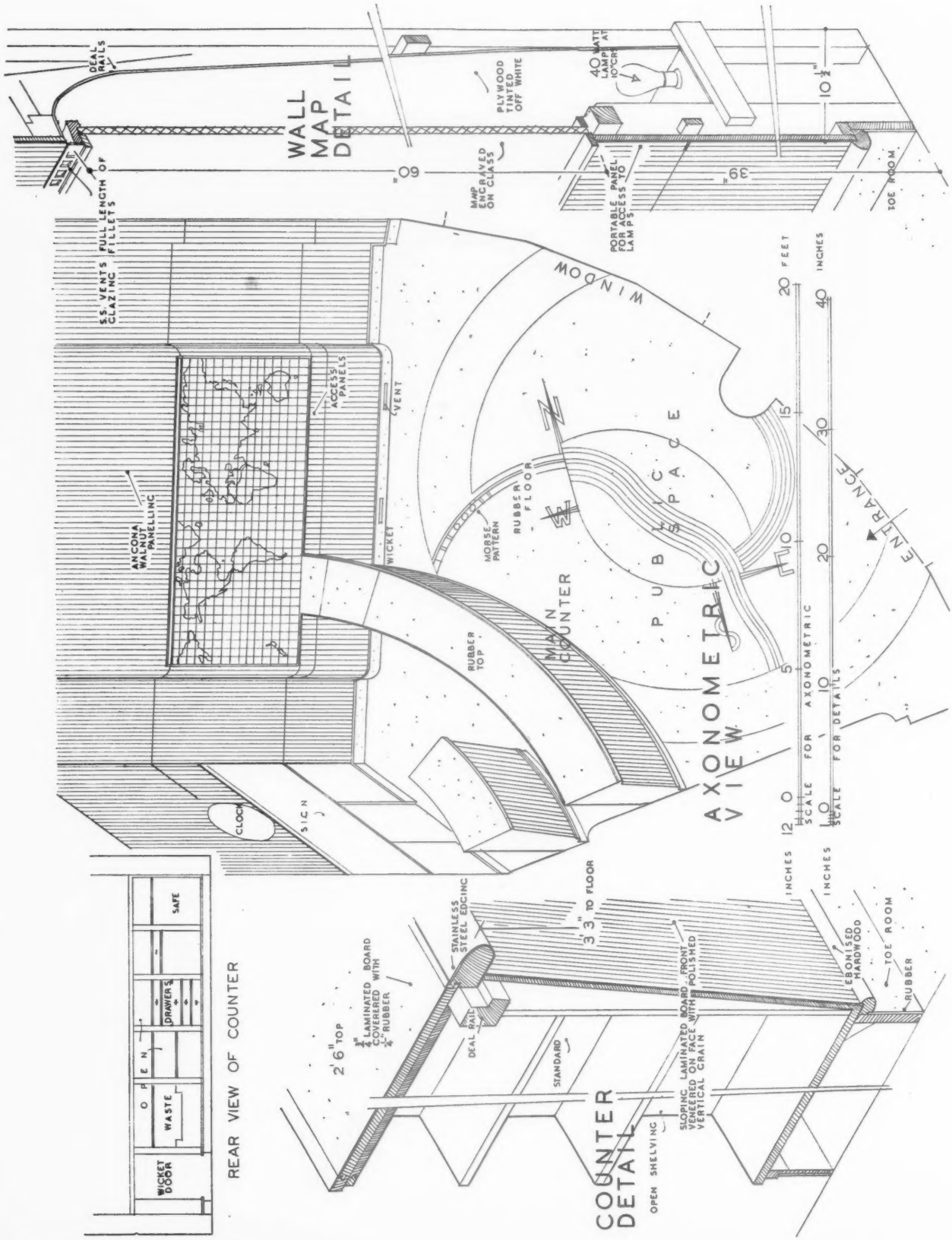
WORKING DETAILS : 299

OFFICE DETAIL • CANDLEWICK HOUSE, CANNON STREET, E.C. • MILNER AND CRAZE

This illustration is taken from one of the offices of Cable and Wireless Ltd., Cannon Street, E.C. The counter treatment and wall map are standardized designs which are now being carried out in various branches of the London offices of the firm. The map is engraved on glass and lit from behind. An axonometric view and isometric details are shown overleaf.

WORKING DETAILS : 300

OFFICE DETAIL • CANDLEWICK HOUSE, CANNON STREET, E.C. • MILNER AND CRAZE



An axonometric view and details of the counter, wall map, etc., in the office illustrated overleaf.

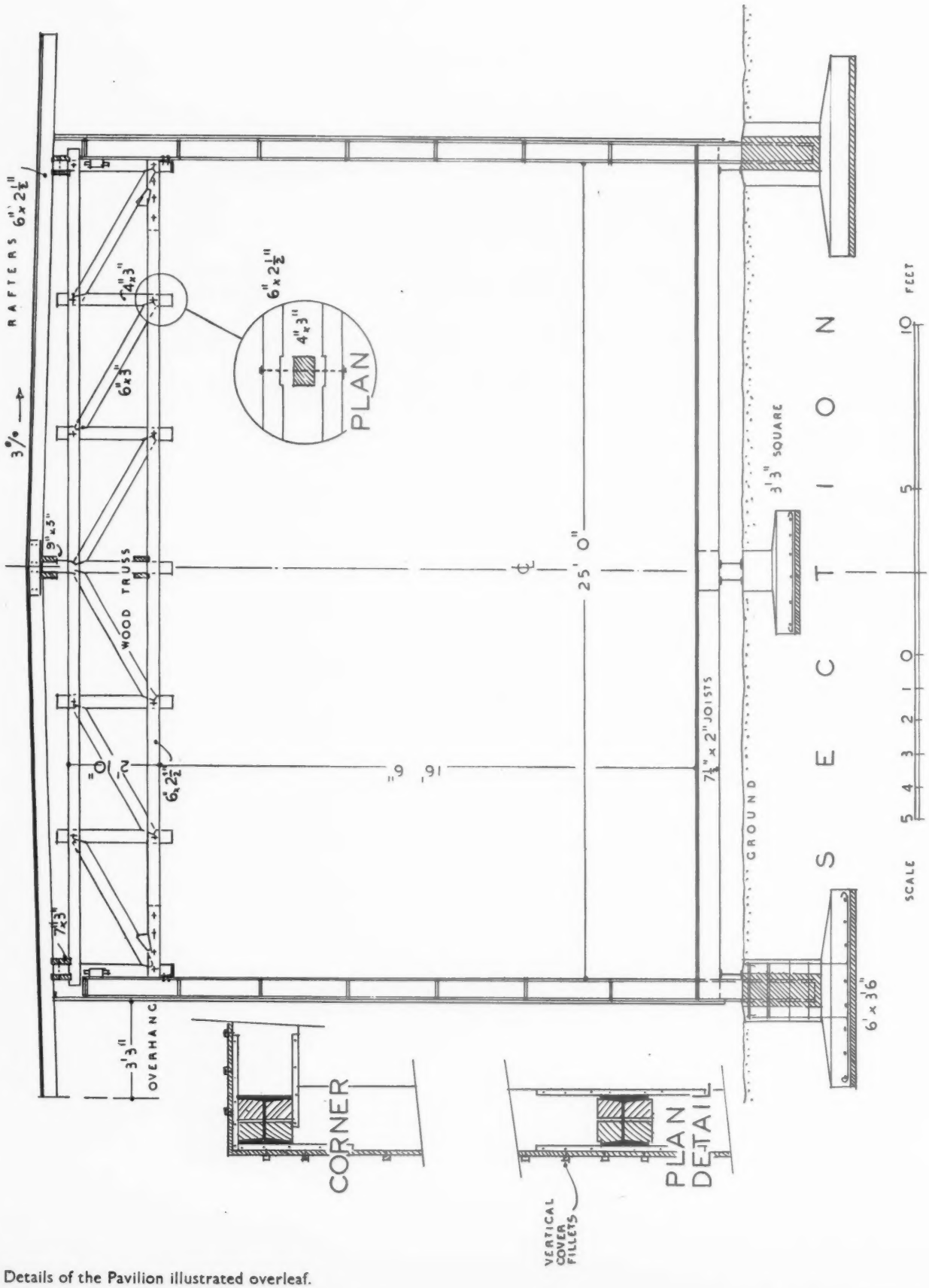
WORKING DETAILS : 301

CONSTRUCTION • SWISS PAVILION, BRUSSELS EXHIBITION • HANS HOFMANN

This is a view of the " hall of clocks " unit of the Swiss Pavilion at the Brussels Exhibition. The section overleaf shows constructional details of the hall. Special conditions governed the design, the chief of which were lack of time for construction ; necessity for re-using of material, and exposure to high winds. The structure had to be designed in Switzerland but, subject to Belgian regulations, therefore, everything had to be as simple as possible. Good wood was procurable, therefore high tensile stresses could be allowed.

WORKING DETAILS : 302

CONSTRUCTION • SWISS PAVILION, BRUSSELS EXHIBITION • HANS HOFMANN



Details of the Pavilion illustrated overleaf.

A small-family house at San Paolo, Brazil: architect, Gregori Warchavchik. From "Gli Elementi Dell' Architettura Funzionale."

LITERATURE

ITALIAN RENAISSANCE

[*BY J. M. RICHARDS*]

Gli Elementi Dell' Architettura Funzionale. By Alberto Sartoris. Milan: Ulrico Hoepli. Price 200 lire.

AN important propaganda technique that the modern rationalist must adopt in his proselytising work for a sane contemporary architecture is concerned with demonstrating to the public the size and ubiquity of the body of modern architectural example. As long as modern architecture is regarded as a mere freak, a fashion or a rebellion against current practice, so long will its converts be confined to a vocal but, as far as the bulk of architecture is concerned, irrelevant intelligentsia. This book serves admirably as a mass demonstration of the huge spread within recent years of really first-class modern work; a spread so remarkable that, if we are not yet approaching the time when rational astylar building is the normal and period façadism the survival, there is already a sufficient multiplication of examples to provide a background against which comparative judgments in the same kind can be made, a consistent vocabulary be evolved and a crystallization of idiom produce the germ of an æsthetic peculiar to contemporary conditions.

In the illustrations, of which the major part of this book consists, of selected modern work from 29 countries there is interesting evidence of the gradual development (out of astylar formalism) of national design characteristics within the compass of the modern definition. The illustrations of work in Brazil and the Argentine, hitherto little known in this country, provide especially illuminating examples of the localizing effect of national environmental factors, such as climate and social habit, on an originally international idiom. It is particularly encouraging to find that these countries, which have in the past been notorious for borrowing only the more superficial aspects of European culture, so that the provincial Beaux Arts tradition of latin America has become a byword of vulgarity, are now learning a new lesson from Europe of a kind that can be assimilated to native uses by growth from within outward.

Inevitably the most space in the book is given to Italian architecture, which has probably seen a greater advance than that of any country since Signor Sartoris's *Architettura Razionale* was published in 1931. The pictures of recent Italian architecture show that it is now overcoming the initial handicap of its chauvinistic impetus and settling down into as genuine a rational tradition as any inspired elsewhere by spontaneous sensibility and economic stringency undistracted by an official demand for novelism. Italy in recent times has a sad record as a nursery of æsthetic enterprise. Dilettantism has been too strong in the country of its terminological origin. Despite Marinetti's native genius, it took years of misunderstanding before enthusiastic foreign discipleship could establish the historical importance of Futurism. Abstract art has suffered similarly, and for many years it has been in Paris that Brancusi has found his spiritual home. Rational architecture might have gone the same way, and only a distant academic respect acknowledged Sant' Elia's prophetic projects, had it not been for the official adoption of the "new style" to symbolize a new régime and, far more important, the freedom allowed its Italian leaders to develop what might have become an architecture of merely conscientious contemporaneousness into a school of genuinely modern standards —also had it not been for the influence of critics of such constant integrity as Signor Sartoris.

Next to the rise of Italy the notable feature of the new edition of this book is the impressive entrance of England into international recognition. Under the ascendance of MARS England is seen to have made sufficient, if tentative, advances in recent years to be able to stand on an equal footing with other countries without any of the reservations and the careful balancing of virtues against defects which usually have to accompany the presentation of this country's æsthetic achievements.

As evidence of the widening acceptance of the modern idea this book is invaluable; equally so as a picture book that shows what exciting results the modern idea can produce. As a serious documentary work its value is lessened by the absence of much other than pictorial information about the buildings included. The author has attempted to give little technical information or description of materials and there are no plans of a large number of the buildings. It is possibly truer of modern buildings than of any others that their photogenic quality is no criterion of their proper virtues.

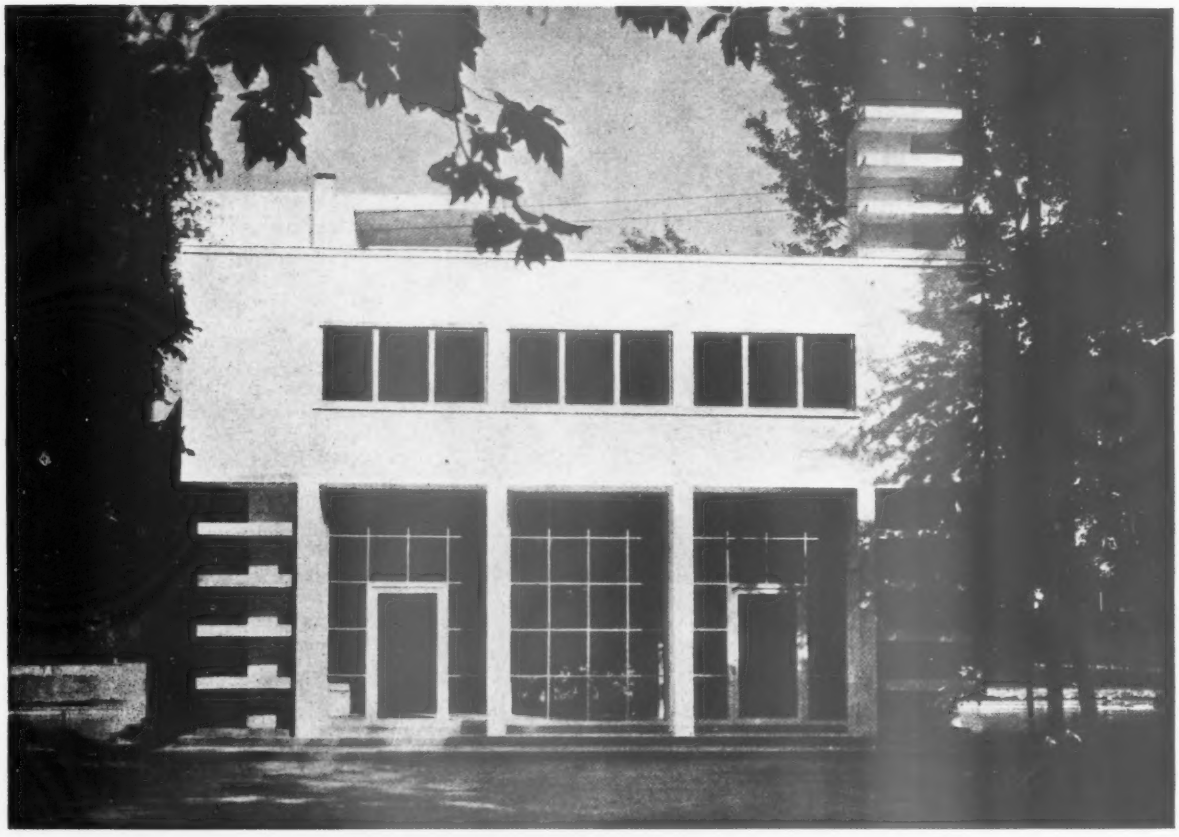
ART AND IDEOLOGY

[*BY MERLYN O. EVANS*]

Art Debunked, by Herbert Furst. London: Frederick Muller, Ltd.

IN this book Mr. Furst sets out two important aspects of contemporary art which have suffered some neglect in the last twenty years. One is the relation of the architect, painter and sculptor to "The Engineer's Æsthetic," the other is the importance of the subjective or ideological purpose underlying a work of art.

From 1880, when an English dictionary defined Art as a word meaning "the skilful production of the beautiful in visible forms," art has tended to maintain a position free of other qualifications. The attitude assumed



Building for a group of craftsmen at Turin, by Alberto Sartoris. The first floor is a workshop and above are dwellings for the group. The rows of shelves at the corners are for the external display of the wares made by the group. From "Gli Elementi Dell' Architettura Funzionale," reviewed on the previous page.

by Reynolds, that art is a very special cultural acquisition only to be attained and enjoyed by prolonged study, is directly opposed to Mr. Furst's Trotsky-ish view that it is an organic function or technical medium indissolubly bound up with man's part in society.

Academicism has in most fields of study tended to produce the reactionary pedant on the one hand, and the eternal over-eager-and-promising student on the other. This is, of course, an educational problem which Mr. Furst does not attempt to solve. He coincides with recently expressed opinions, however, that art schools and colleges are guilty of producing teachers who will occupy themselves in producing more teachers *ad infinitum*. This can be accomplished where the subject taught has become a queer semi-parasitic outgrowth on the main body of society, or where, like certain luxury pastimes such as yachting or fox-hunting, they are partially self-supporting. Unfortunately numbers of misled young people find that there are not enough art-teaching posts, or "commercial art" jobs, to go round, when they leave college, and existence as an art-for-art's-sake artist is plainly not feasible. Mr. Furst's suggestion that they might be taught "window dressing" instead of "art" at the schools is amusing, but a collection of window dressers derived from would-be artists is not a very livening prospect even if we are a "nation of shop-keepers."

The main outlet, however, the author feels, is to be found in propaganda; just what kind of propaganda art he does not say. Dictators, he believes, would insist, as in other countries, that art should be understood and used as a technical means for spreading the necessary doctrines and ideology for a "brave new world." Projects would then be accomplished *by* art, and not debased by being carried out *for* (the sake of) art.

Mr. Furst is a "functionalist," but a functionalist "with qualifications," not one of those mere functionalists-for-functionalism's-sake exponents. This quality, which he illustrates by the Shakespeare Memorial Theatre at Stratford, he feels to be quite as bad as any other slogan or 'ism for the 'ism's sake. Having established the notion that the concept of art as an end in itself should never have existed, and that art was unknowingly produced by primitive peoples before they were contaminated by our "articulturists," and encouraged to produce self-conscious knick-knacks and ornaments, Mr. Furst is naturally repelled by the notion of "art" being dragged back into social or industrial affairs under the title "Art and Industry." This "ominous" creation, he anticipates, will work irreparable harm. "I call it ominous," he says, "because it associates itself in my mind inevitably with something that is applied like a plaster to a sore, or like brass knobs on an iron bedstead." For him, the product of industry is already art, if it has been produced *by* art, or with perfect efficiency by the machine craftsman; art being "a perfect command over tools and materials, concrete and abstract." This almost Semper-like belief, coupled with a certain Spenglerian pessimistic jingoism, leads Mr. Furst to wonder if the old-fashioned arts of painting and sculpture are not already effete as efficient technical means which have been replaced by engineering and photography.

There is no doubt that as an instrument for doctrinal suggestion the

talking-film is much more potent than a painted sign or poster. Even the illustrative murals of the Marxian Giotto, Diego Rivera, pale to insignificance when compared to a film by an Eisenstein or a Pabst. The only virtue of the murals is one of permanence, just as ubiquity is the strong point of a poster or a press advertisement; although Mr. Furst's suggestion that a poster inspired by ethical ideals of a transcendental order could achieve a greatness similar to the "School of Athens" by Raphael is rather comical, especially when he hurriedly adds that art has little concern with ethics anyhow, and will flourish as gaily in hell as in heaven in the long run.

That the painstaking studies of the creators of cubism have been profitably exploited by the world of commercial art is well known. The work of Léger, in particular, has furnished a mine of inspiration for quick-witted but uninventive opportunists of advertising fame. On these grounds alone Mr. Furst feels that contemporary painters like Picasso should be encouraged to continue in ceaseless and self-denying experimentation, but with the single reservation that they must not show or sell their experiments to the public —scientists are not guilty of this indiscretion—as they are not actual results but only mere means; whereas those misled *superréalistes* who illustrate personal psychological symptoms are undeserving of either money or encouragement.

There are eight illustrations in the book, four of which Mr. Furst likes as being perfectly functional and "based on the facts of life," and three which he dislikes because tainted with the "art-without-qualification" disease. The frontispiece is a reproduction of "The Rape of Ganymede," believed by Mr. Furst to be a Rembrandt satire on the Italian "Grand Manner," and chosen as symbolical of the intention of the book, which is to "Debunk" or remove the false sentiment from art.

I am not sure, however, that the author is not a victim of the prevalent romanticism. It is rather worse than art for art's sake. It is the "ism" of "life for living's sake."

SUBSIDIES AND HOUSING FINANCE

Housing Finance: Report on Subsidies for Rehousing in Urban Areas. Council for Research on Housing Construction. London: P. S. King and Son, Ltd. Price 2s. 6d. net.

THE third Report of the Council for Research on Housing Construction, published last week, is entitled *Housing Finance: Report on Subsidies for Rehousing in Urban Areas.* It is the work of the Economic and Finance Committee of the Council, of which Dr. W. H. Coates is chairman, and is eminently topical inasmuch as the new Housing Bill is expected to become law toward the end of this week. Local authorities will then be preoccupied with the financial problems arising out of the relief of overcrowding, and the new Report should prove of valuable assistance.

Beginning with a brief review of the subsidy position since 1919, the Report analyses the financial effect of the new contributions in aid of flats of three or more storeys on sites of high value, its estimates of cost being based on the figures put forward in the previous Report entitled *Slum Clearance and Rehousing.* Assuming the tenant can afford to pay 7s. 6d. (exclusive of rates) weekly for a three-roomed flat, the subsidies are ample, and with favourable building costs can give rise to surpluses in the hands of local authorities available for various purposes (including rent reduction). These surpluses materialize in the first instance as capital sums, but for convenience of reckoning they are converted into weekly equivalents spread over a term of 60 years.

The Report shows the results compactly in a main table designed for the benefit of the general reader and a series of auxiliary tables designed for the specialist. Assuming interest at the rate of 3¼ per cent. per annum and constructional costs of the order contemplated by the Council, surpluses may be expected to materialize on the majority of tenement schemes.

Certain qualifications have to be taken into account. Local authorities may not be in a position to avail themselves of all the economies contemplated by the Council, and, owing to the practice of pooling their loan charges, the full benefits of cheap money will not emerge until the effect of loans at higher rates has worn off. There are also complications due to the varying levels of rates in different localities. The subsidies are, however, sufficiently generous to allow for all these factors, and the Report clearly shows that no authority "need be deterred from the task of rehousing on account of excessive burdens upon the rates."

The second part of the Report consists of a comparison between the subsidies available for slum clearance under the Act of 1930 and for decrowding and redevelopment under the new Bill. Bearing in mind the difference in financial conditions between the two dates, it appears that the older legislation is more favourable to the local authority than the new, up to a point represented by a land cost of £15,000 per acre, after which the new legislation becomes more favourable than the old.

The Council again draws attention to the fundamental difficulty of sites in congested areas, and reprints a section from its first Report dealing with the "Progression of Sites."

In a preface to the Report Lord Dudley, chairman of the Council, points out that the new Bill "will do much to facilitate the acquisition by local authorities of sites commensurate with the need for imaginative replanning of wide areas of derelict property. The clearance of the slums, the attack on overcrowding and constructive town planning are cognate matters requiring a high degree of central and local co-ordination. It is to be hoped that these will receive the early attention of the Central Housing Advisory Committee to be set up. With the passage of the new Bill the legislative and financial machinery is completed for a bold attack on bad housing, and if the full resources of modern industrial and planning technique are pressed into service a successful issue is assured."

SHORTER NOTICES

A Standard Method for the Preparation of Calculations Relating to Steelwork in Buildings. Published by the Institution of Structural Engineers. Price 6d.

WITH the increase of standardized detailed regulations and "codes of practice" the "design" of steel frame buildings is being gradually reduced to semi-mechanical manipulations of a slide rule to find the minimum amount of steel which will comply with these regulations. Designers and authorities are no longer directly concerned with the safety of a member but only as to whether the stress, when "calculated" by a specified method, is below a specified figure. The next logical step is that all "calculations" shall be put forward in identically the same form, and the Institution of Structural Engineers in this report takes a step in this direction.

Briefly the report contains (1) a suggested standard method of numbering beams and stanchions on framing plans.

(2) A standard sheet for beam calculations.

(3) Two alternative standard sheets for stanchion calculations.

(4) An appendix explaining some of the detailed calculations given as examples on the standard sheets.

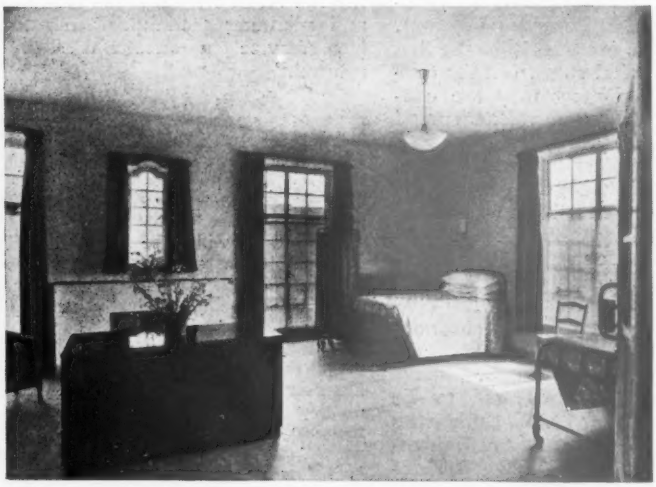
It is intended that the report should be read in conjunction with the Institution's Report on Steelwork in Buildings, Part 1, Loads and Stresses, 1933, which gives definitions of the terms and symbols used in the present report.

Criticism of the proposed standard forms will be largely influenced by the extent to which they differ from the critic's own methods of setting out his calculations, his own methods probably appearing to him to be much simpler than the proposed standards wherever differences occur. There is little doubt, however, that the general adoption of standard forms would prove a boon to District Surveyors and others responsible for the checking of steelwork calculations. W. E. J. B.

NEW PRIVATE PATIENTS' BLOCK,

DESIGNED BY

WALLACE MARCHMENT



The new block is situated upon sharply sloping ground to the south of the existing building. A connecting corridor runs from the ground floor of the main block to the first floor of the new building.

The lay-out of the wards was planned to obtain the maximum of sunlight.

The accommodation consists of two 4-bed wards, one 2-bed ward, and twelve single-bed wards; a total of twenty-two beds, arranged upon two floors.

The ground floor contains five single and one two-bed wards, staff quarters, consulting room and secretary's office.

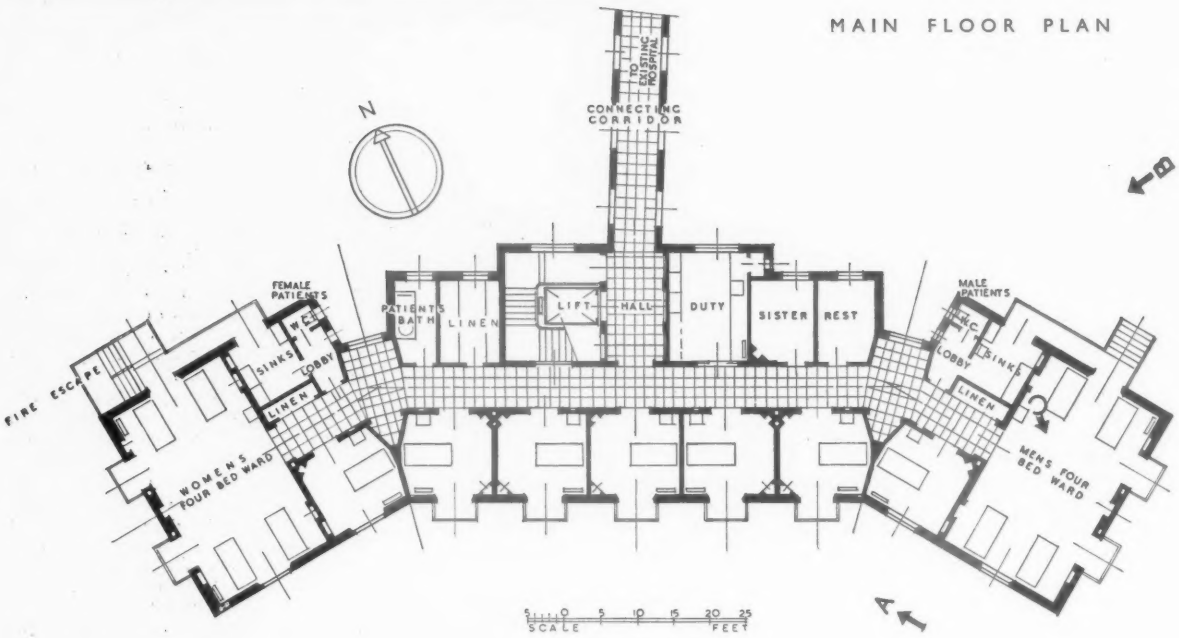
The construction is of weight-carrying brick with hollow-tile floors. The elevational treatment is in sand-faced brick and plain tiles, with metal casement windows in wood frames to all wards, and has been designed to harmonize with the existing buildings. The balustrades are in wrought iron.

The wards are heated by means of hot water radiators and are also provided with gas fires for additional heating.

Boilers for both heating and hot water services are situated in the basement of the new building.

The photographs show: above, a general view from B *; below, a 4-bed ward from* C.

MAIN FLOOR PLAN



HENDON COTTAGE HOSPITAL

A detail of the south front, taken from point A *(see plan)*

TECHNICAL SECTION: 24

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.

CIRCULATING PUMPS

IT has already been explained how the capacity and head of a circulating pump are calculated. The questions of type and characteristics will now be briefly referred to.

The centrifugal type of pump is most suitable for the purpose. This consists of an impeller rotating in a fixed casing of volute shape. The impeller may be open as in Fig. 135, in which

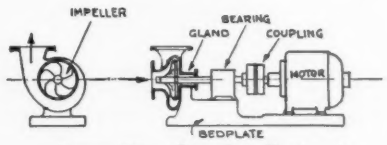


Figure 135. *Open impeller pump.*

case the pump is of the end suction type, i.e., with the suction entering at the centre at right angles to the discharge. Or the impeller may be closed (see Fig. 136), in which case the suction usually enters at both sides with water passages formed in the pump body from a single inlet in line with the discharge. The latter is generally termed a split casing pump, since the upper half is removable for inspection.

Centrifugal pumps of either type are more suitable for heating circulations than other types of pump since they are very conveniently and simply driven by electric motors, are low in cost, require little maintenance, and may be made silent in running.

The end suction type is not generally so efficient as the split casing, as in the former there is an unbalanced thrust due to the water being handled by one side of the impeller only, and the internal friction of the water in the stationary casing is of necessity greater. On the other hand it is usually cheaper, and for the smaller sizes covering most average size heating systems the slight difference in efficiency is unimportant.

Types relying on the gland to act as the only bearing are bad, as they invariably give trouble with leakage at this point in time. Those having external bearings with the gland simply acting as a water seal are to be preferred.

The closed impeller type has no out-of-balance thrust, and the two bearings on either side make it a good mechanical design. The advantage of the split casing with its freedom for easy inspection of the inside without removal of pipework is perhaps of no great value in a heating system, since sediment or clogging material is not present to give trouble, but in large installations where an annual overhaul is given this feature is useful.

Either type has characteristic curves of the form given in Fig. 137. From this it will be seen that at constant speed, the volume rises as the head is reduced. At the same time the power consumption also rises, and the efficiency rises to an optimum point and then falls off.

Remembering that in a heating circulation the head is frictional, water not being actually lifted from one definite level to another, the pressure to be produced by the pump may be different from that estimated by calculation. If the head is less than the pump has been installed for, the water delivered will be greater, with a higher horse-power consumption, and more current taken by the motor. This may be corrected artificially by partly closing a valve in the main circulation, but if this is not done the motor will be overloaded. Thus it is necessary to provide a motor with an ample margin of power, so that even if the head is badly out no risk of burning out will occur.

If, on the other hand, the frictional head is more than that for which the pump is rated, less water will be circulated and a reduced power consumption will result. The effect of this on the heating circulations will obviously be a greater temperature drop, and a tendency for the more distant radiators to be cool. There is no cure for this except to speed up the pump, which is sometimes possible with a direct current motor or turbine drive, but not with alternating current. Thus it is well to have something in hand on the pump head. If the estimated frictional head is, say, 96 in., a 10-ft. head pump would be suitable.

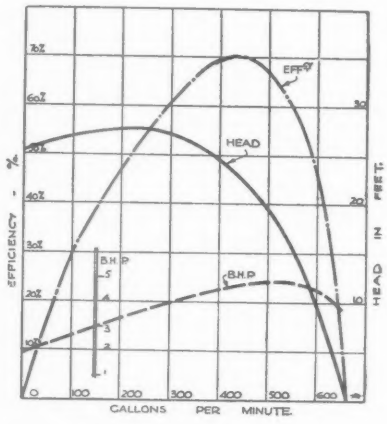


Figure 137. *Typical characteristics of circulating pumps.*

The pump should be chosen with this point strongly in mind, and the characteristic curve will at once show which is the most suitable. Other things being equal a volume/head curve having a flat top is better for heating circulation than one sharply peaked. The former will vary little in volume for considerable changes in head.

Pump Arrangement.—Direct coupling to an electric motor is the simplest form of drive, and a flexible coupling is

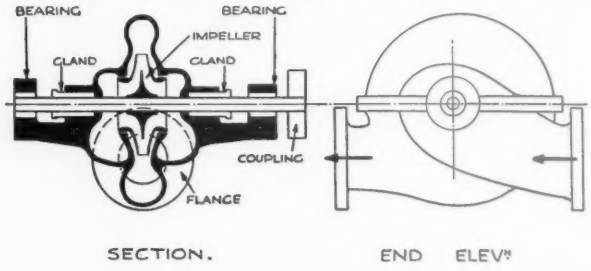


Figure 136. *Closed impeller pump (split casing).*

usual to allow for possible distortion of the base plate and misalignment of the bearings. An alternative arrangement is one in which the motor is separate, with a V-rubber belt drive to the pump. This permits the motor and pump to run at different speeds with resultant economy, and of complete mechanical isolation of the driving unit from the water circuit, with improved silence of running.

A further means of preventing the transmission of vibration from the pump to the piping is by the insertion of rubber connections in the flow and return. These are not without disadvantages and it is questionable whether the water itself does not act as a sound transmitter just as much as the pipe, and this it is impossible to isolate. When trouble occurs due to a noisy pump, rubber connections may, however, be tried as one of the means of improvement.

Automatic by-pass.—In order to allow of the circulation continuing by gravity in the event of the pump being stopped, or at night time when gravity circulation gives all the heat that is necessary, an automatic by-pass valve is necessary. This simply consists of a suspended flap normally off its seating, as in Fig. 138. On the pump being started the first tendency of the water is to flow through the by-pass in the reverse direction, so closing the valve, usually with a sharp bang.

Self-contained pumps.—Reference should be made to a class of pump developed in recent years incorporating in one unit, pump, motor, and by-pass, and in some cases including isolating valves to the pump.

Fig. 139 shows a typical example with V belt drive to the motor. A vertical spindle type (Fig. 140) is so designed as to require no by-pass, the water flowing freely through the pump when stopped. Another vertical spindle type (Fig. 141) employs a propeller type of blade which falls to the bottom when the pump is stopped and rises into position by its own thrust when running.

The merit of these self-contained pumps is compactness and price, but it should be remembered that in some cases the motor is very closely connected to the pipework, an arrangement which is not always desirable where silent running is required.

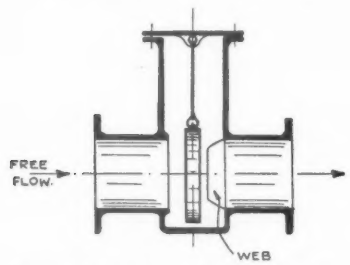


Figure 138. *Automatic by-pass valve.*

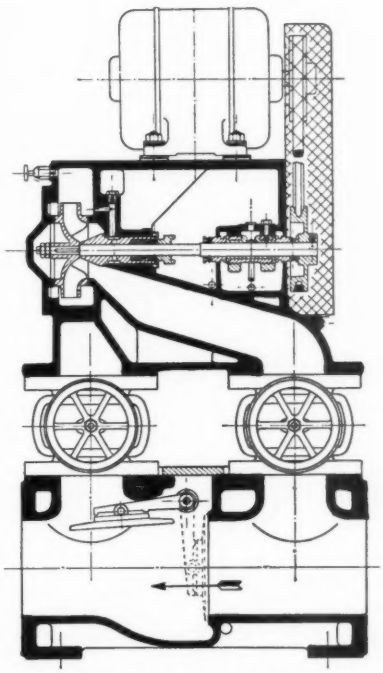


Figure 139. *Self-contained pump unit.*

Where a pump is relied on as the sole means of circulation, the gravity effect being too small to be useful, it is desirable to arrange for duplicate sets, with valves, so that either pump may be in commission with the other as standby.

EXPANSION TANK

The water in a heating system expands on being heated, and the purpose of the expansion tank is to receive this water when the system is hot and return it when it cools down. In so doing the water in the system is not changed, and encrustation or corrosion which might otherwise occur with a constantly changing supply is avoided.

For the same reason it is inadvisable to empty the system in the summer or to change the water at all, except when repairs or alterations call for it.

The expansion of water from 45 deg. F. to 212 deg. F. is one twenty-third of its volume at the initial temperature. In order to determine the size of expansion tank for a certain system it is therefore necessary to estimate its total water contents. For boilers and radiators, makers' catalogues may be consulted. As an approximation is all that is necessary, however, Table XL will be found to give a fair average. This table also gives the contents of piping per foot run.

In addition, about 4 in. of water is necessary permanently in the tank to float the ball valve, and a fair margin of space above, before the overflow is reached. This will call for a tank capacity about double that estimated.

The method of connection of the tank to the system depends on the

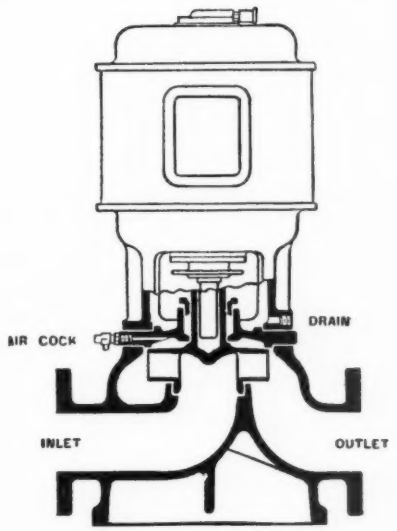


Figure 140. *Vertical spindle pump.*

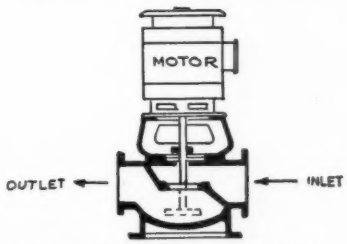


Figure 141. *Propeller type pump.*

TABLE XL

CONTENTS OF HEATING APPARATUS

(*a*) Boilers, cast iron sectional type ..	1 gall. per 6,000 B.T.U's.
(*b*) Radiators, "Classic" types	0·07 gall./sq. ft. heating surface.
(*c*) Radiators, hospital and old plain types	0·2 gall./sq. ft. heating surface.

(*d*) Piping :

Internal Diameter	Galls./foot run
½ in.	0·0084
¾ in.	0·019
1 in.	0·0339
1¼ in.	0·053
1½ in.	0·0763
2 in.	0·1356
2½ in.	0·212
3 in.	0·3053
3½ in.	0·4156
4 in.	0·5426
5 in.	0·848
6 in.	1·221
7 in.	1·665
8 in.	2·175
9 in.	2·753
10 in.	3·398

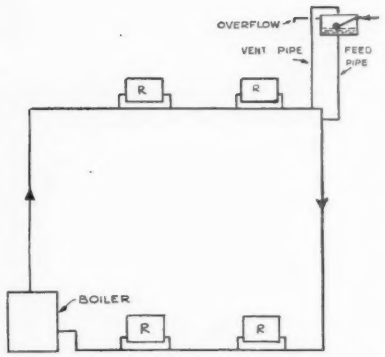


Figure 142. *Arrangement of feed and expansion tank in gravity system.*

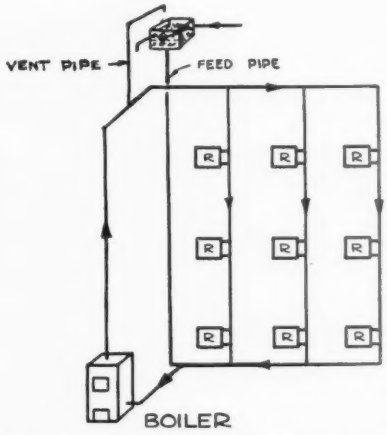


Figure 143. *Arrangement of feed and expansion tank in gravity system.*

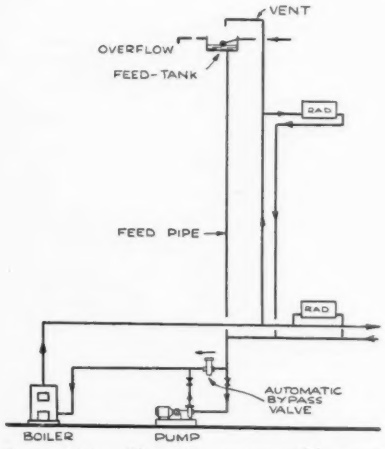


Figure 144. *Two-pipe system with pump, showing feed tank, feed and expansion pipe and vent.*

type of apparatus. With a simple gravity system this may be as Figs. 142 or 143.

When a pump is installed the feed pipe is often connected to the suction as in Fig. 144.

When open vent pipes are provided on the boilers the latter method calls for the vents to be run up unduly high to prevent their discharging water, when the pump is running. For this reason a connection direct to the boiler return is used, as in Fig. 83, page 745, which shows a battery of three boilers so connected, each being provided with a stop cock in the feed pipe to permit of individual emptying for repair. Such cocks should be locked open with a padlock to prevent accidental closing, when the boiler fire is alight.

Air venting may be troublesome with high level radiators with the last method, and some designers put the pump in the boiler flow instead of in the return. There appears to be no reason against this and it works perfectly well.

INSULATION OF PIPES

Boiler insulation has already been discussed (see page 780). Pipe insulation involves the question of maximum economical thickness due to the fact that the outer radiating surface is increased by the lagging.

Table XLI makes this clear. A 4 in. pipe insulated 1½ in. thick with the material in question transmits 10 per cent. of bare pipe loss and is then said to have an insulating efficiency of 90 per cent. A 1 in. pipe with exactly similar lagging has an efficiency of 81 per cent.

The table is based on N.P.L. tests for the materials, thicknesses and temperatures in question, carried out on a standard 4 in. diameter pipe. Values for the other sizes have been calculated from this basis.

The corresponding efficiency of various other insulating materials in common use, referred to a 4 in. pipe, are given at the bottom of the table. Values for these materials for the other pipe sizes may be obtained by proportion from the table above.

It must be remembered that the texture and density of different samples vary widely in practice and test results vary similarly. Thus the values given in table XLI must not be taken as anything more than a guide when relative costs and thicknesses are under consideration. The figures should not be used when estimating mains losses in sizing the mains or boiler as they may not be obtained in practice. A sufficiently accurate method for this purpose is to allow an overall efficiency for insulated pipes of 75 per cent., which means that the bare pipe loss is simply divided by four.

It must also be remembered that insulation efficiencies are often given by makers on the basis of steam pipe temperatures. These may be misleading where water temperatures are concerned as the lower the temperature difference, air to pipe, the lower will be the efficiency of any given insulation. Efficiency figures are useless unless it is known on what temperatures they are based.

As to the materials themselves, dry or sectional laggings are usually dearer than the plastic but avoid the mess, steam and smell associated with the latter. They may be applied when the

TABLE XLI

INSULATION TRANSMISSIONS AND EFFICIENCIES.

Based on 4 in. Dia. Pipe, Insulated with Glass Silk. Figures in B.T.U./Hr. 100° Difference (165° F. to 65° F.).

Pipe Dia.	Loss Per Foot Run Bare Pipe	2 in. Thick		1½ in. Thick		1 in. Thick		½ in. Thick	
		Loss/Ft. Run	Efficiency	Loss/Ft. Run	Efficiency	Loss/Ft. Run	Efficiency	Loss/Ft. Run	Efficiency
6″	331	23·4	93%	29·3	91½%	39·5	88%	61·5	81½%
5″	282	21·3	92½%	26·2	91%	35·0	87½%	53·3	81½%
4″	232	18·6	92%	23·2	90%	30·2	87%	45·2	81½%
3″	188	17·1	91%	20·6	89%	26·5	86%	38·0	79½%
2½″	154	16·0	89½%	19·0	88%	24·0	84½%	34·0	78%
2″	129	14·6	88½%	17·1	87%	21·0	83½%	28·5	78%
1½″	110	14·0	87%	16·0	85½%	19·8	82%	25·0	77½%
1¼″	98	13·6	86%	15·5	84%	18·6	81%	23·5	76%
1″	80	13·3	83½%	15·1	81%	17·5	78%	21·4	73½%
¾″	70	13·1	81½%	14·6	79½%	16·5	76½%	19·7	72%
½″	56	13·0	77%	14·2	75%	15·8	72%	18·0	68%

RELATIVE INSULATING EFFICIENCIES OF VARIOUS MATERIALS

(Based on 4 in. dia. Pipe, Air 65°, Mean Water 165° F.)

Material	Total Thickness			
	2″	1½″	1″	½″
Glass silk	92%	90%	87%	81½%
Sectional 85% magnesia	87%	85%	82%	77%
Plastic 85% magnesia supercoated ½″ hard setting composition	82%	78%	73%	—
Blue asbestos sectional	82%	80%	77%	72%
Fossil meal and asbestos plastic composition	67%	62%	57%	—
Hair felt	—	—	60%	55%

TABLE XLII
COST OF HEATING INSTALLATIONS

No.	Type of Building	No. of Occupants	Type of Heating	Method of Firing	Cost of Heating Installation	Gross Building Cube (ft.³)	Cost Per Cubic Foot	Cost Per Occupant
					£		d.	£
1	Bank Head Office	1,100	Embedded Panel (Copper)	Oil	22,700	3,129,000	1·7	20·6
2	Bank	200	do.	Oil	6,200	915,000	1·63	31
3	Government Office Building	300	do.	Oil	8,500	1,127,000	1·8	28·3
4	Church	150	do.	Oil	600	108,000	1·33	4
5(a)	Secondary School	400	do.	Coke	3,280	523,000	1·5	8
5(b)	do.	400	Embedded Panel (Iron)	Coke	2,580	523,000	1·2	6·5
6	Hospital (Single Storey Blocks)	240	do.	Coal	10,800	1,048,000	2·47	45
7	Private Office Building	350	Ray-Rads	Coke	5,000	962,000	1·25	14·3
8	Church	1,000	do.	Oil	4,950	933,000	1·28	4·95
9	College	600	Radiators	Oil	3,200	584,000	1·3	5·3
10	Town Hall	100	do	Oil	1,580	331,000	1·15	15·8
11	Hotel	80	do.	Coke	1,450	286,000	1·22	18·1
12	Cathedral	2,500	do.	Coke (Automatic)	3,500	1,750,000	0·48	1·4
13	Flats (good class)	220	do.	Coke	1,750	750,000	0·56	8·0
14	Flats (cheap type)	80	do.	Coke	500	330,000	0·36	6·25
15	Factory	—	Unit Heaters (Steam)	Coal	1,050	350,000	0·72	—

pipes are cold, whereas plastic requires heat for drying out. All materials may be finished in a variety of ways with enamels, canvas, bitumastic paint, metallic sheathing, etc., according to position and taste and cost.

An interesting method of pipe insulation where these are in trenches inside, or outside in the open, is one much used on the Continent. This system makes use of the insulating properties of cellular concrete, which is filled in solid, around the pipes in the trench. The material is so friable when it has set that future attention to the pipes (of which the joints should, of course, be welded) is not so difficult as might be imagined. The simplicity of the method and its high efficiency will no doubt sooner or later be recognized in this country.

HEATING BY HOT WATER

(Conclusion)

Cost of Installations : Table XLII gives the total cost of hot water heating systems in a variety of actual buildings completed during the last five to ten years and the prices are further analysed into cost per foot cube and cost per occupant. It is hoped that these figures may be useful when comparing costs for similar buildings. In each case the type of heating and method of firing the boilers is stated. The costs are inclusive of all piping, radiators, boilers, pumps, insulation, tanks and all fittings complete, but do not include builder's work. The latter usually amounts to about 5 per cent. of the cost of a heating system in a new building, but may be more with an old one.

L A W R E P O R T S

ACTION AGAINST BUILDERS AND SUB-CONTRACTORS

Saunders v. *Holland and Hannen and Cubitts, Ltd., and Caxton Floors, Ltd.—King's Bench Division. Before Mr. Justice Humphreys.*

IN this case, Mrs. Annie Emily Saunders, of Oseney Crescent, Kentish Town, N.W., sued Holland and Hannen and Cubitts, Ltd., builders and contractors, of Queen Anne's Gate, S.W., and Caxton Floors, Ltd., reinforced concrete engineers, of Caxton Street, S.W., to recover on behalf of herself and her three infant children, damages for the death of her husband, Frank Saunders, through the alleged negligence and/or alleged breach of statutory duty of both or either of the defendants.

Mr. Sellars, K.C., and Mr. J. Macmillan appeared for the plaintiff, and Mr. H. Edmunds for Holland and Hannen and Cubitts, Ltd., and Mr. Macaskie, K.C., and Mr. M. Berryman for Caxton Floors, Ltd.

The dead man was employed by Holland and Hannen and Cubitts as a timber man and scaffolder and general labourer in September, 1934, on a large block of flats which were in course of erection in Lowndes Street, Knightsbridge, S.W. Holland and Hannen and Cubitts were the general contractors, and Caxton Floors were sub-contractors. On September 21 last, the dead man, soon after he came on to work, was standing on the seventh floor of the building, when he overbalanced himself and fell down a lift shaft which it was alleged was improperly fenced round. He received such serious injuries that he afterwards died. The plaintiff, the widow, based her claim for damages against both or one or the other of the defendants on the ground of negligence and breach of Building Regulations of June 21, 1926, by (1) failing to fence the lift shaft adequately, or at all ; (2) failing to inspect the lift shaft ; and (3) leaving an opening in the floor of a building unprovided with a suitable guard or rail or toe board or other sufficient means to prevent the fall of persons or material into the opening.

Messrs. Holland and Hannen and Cubitts denied liability for the injuries and death, and alleged that they were caused by either the negligence or breach of duty of the Caxton Floors Co., or through the contributory negligence of the dead man by failing to keep a proper look-out, and going too close to the lift shaft.

The Caxton Floor Co., pleaded a denial of liability, and said that if there was any defect in the fencing of the lift shaft, it was known or was obvious to the deceased, who had been guilty of contributory negligence.

For the defendants, the Caxton Floors, Ltd., Mr. Wm. John Bunhill, their foreman gave evidence. He had been foreman for five years, and at the time was in charge of the building in Lowndes Street. The work of his employers on the seventh floor of the building was completed at the time of the accident. Other contractors, although they did not use his company's machinery, did use the shaft hole for paving materials. During the time he was in charge he inspected the fencing from time to time and certainly every week, although the Building Regulations said it was to be done every month. He signed the register to that effect. He had received no complaint of the fencing or shaft not being in good order. After July, when his firm finished their work on the seventh floor, no more work was done on that floor by his men. At the time of the accident they were working on the ninth floor.

Cross-examined : There was no doubt that their mechanical hoist was working both before and after the accident. It was the duty of the sub-contractors to look after their own fencing and to keep and sign the register. When he inspected the fencing, the pole was properly fixed to the uprights by wire. There were a lot of people working on the different floors, but he would not say that there were a lot of people using the hole.

Mr. Wm. Maxted gave evidence as to putting up the fencing on the seventh floor. The pole was fastened to the two uprights by wire. That was done by hand, and unless the wire was untwisted, nothing on earth could shift it. He had no recollection of any of the poles on the job becoming loose. When he left the job the poles were all in absolutely perfect order.

Mr. Macaskie submitted that there was no liability on his clients, the Caxton Co. for the accident. Regulation 30 of the Building Regulations, he contended, only imposed an obligation or duty on the company to look after the safety of their own employees, but not that of other contractors. If he was right in that, there was no statutory duty imposed on the company to be responsible for the safety of Messrs. Holland and Hannen and Cubitts' workmen. The dead man was neither an invitee or licensee of Caxtons, but it was Messrs. Holland and Hannen and Cubitts who invited him to go where he was, and they must, in the circumstances, be held to have had knowledge of the condition of the hole. On the question of the alleged contributory negligence of the dead man, council said the evidence established that he had placed the ladder on which he stood within five inches of the toe board of the

fencing. So he must be taken as knowing the condition of the fencing. In all the circumstances, he contended the Caxton Co. were not responsible for the accident or liable in the action.

His lordship, in giving judgment, said he thought that both of the two sets of defendants were liable for the accident. He expressed the opinion that probably somebody, for some purpose or other, had removed the pole temporarily, and had failed to replace it properly, and if that was so, it was the duty of the person who had put up the fencing to make it safe. Upon the evidence he held that both sets of defendants were liable upon the ground of negligence and breach of statutory duty, and he gave judgment in favour of the plaintiff and her children against both sets of defendants for £1,454 13s., and the costs of the action.

ACTION FOR SPECIFIC PERFORMANCE

Chester and Others v. *British Brick and Tile Corporation, Ltd.—Chancery Division. Before Mr. Justice Luxmoore.*

THIS was an action by Mr. Herbert Chester, Mr. Thomas Leonard Chester and Mr. Percy Ronald Chester, all of Marston Park Farm, Marston Moretaine, Beds., against the British Brick and Tile Corporation, Ltd., whose registered office is at First Avenue House, Bedford Row, London, claiming the specific performance of a contract contained in letters dated October, 1933.

Plaintiffs' case was that the defendant company agreed to purchase from them at a price of £12,000 a freehold farm and lands at Marston Park.

The farm and land comprised approximately 334 acres, it was stated, and the plaintiffs had at all material times been ready and willing to complete the contract contained in the letters of October, 1933.

Despite repeated requests, however, the defendant company were alleged not to have completed the contract.

There was originally another defendant in the action, a Mr. Arthur Ferris, who was said to have acted as the agent for the defendant company, but after the case had opened Mr. G. P. Slade, counsel for the plaintiffs, said that his clients would submit to the action against Mr. Ferris being dismissed with costs. That, however, was without prejudice to their recovering the costs from the defendant company.

Mr. Ferris was accordingly dismissed from the action with costs.

The defendant company, in their pleaded defence, had denied that Mr. Ferris was their agent at any material date and contended that he had no authority to accept on their behalf an offer from the plaintiffs to sell the farm and land for £12,000.

It was stated, however, by Mr. Henry Johnson, counsel for the defendant company, that his clients now submitted to damages and that the only question to be tried was as to the quantum of damages.

Evidence was called on behalf of both sides with regard to the value of the property.

Giving judgment, His Lordship placed a value of £4,000 on the property in question. The purchase price of the property being fixed at £12,000, said His Lordship, he assessed the damages by reason of the defendant company's breach of contract at £8,000. He thought he must give judgment in favour of the plaintiffs for that amount.

Judgment was accordingly entered for the plaintiffs against the defendant company for £8,000 with costs, to include such costs as the plaintiffs might have to pay Mr. Ferris.

A public-house sign, designed by Gilbert T. Gardner.

BREACH OF COVENANT

Drake v. *Gray.—Chancery Division. Before Mr. Justice Luxmoore.*

THIS was an action by Mr. Hugh Garrard Try-White Drake, of Cobtree Manor, Maidstone, against Mrs. Marjorie Gray, of Knole Way, Sevenoaks, Kent, for a declaration that the house she had erected at Littlestone-on-Sea was in breach of restrictions that ran with the land.

Plaintiff was the owner of a house at Coast Drive, Littlestone-on-Sea, and the defendant has also erected a house there, and he complained that defendant's premises did not comply with the covenants, that the house should not be of less cubical capacity than 15,000 ft., and he feared that if the covenants were not enforced buildings might be erected which would seriously injure the estate and depreciate the character and value of plaintiff's property.

Defendant denied any breach, and said her land did not front Coast Drive, and that she was not subject to the covenant alleged.

His Lordship, in giving judgment, said the plaintiff brought his action to establish his right against defendant of certain covenants which were restrictive of the user of the defendant's land. The covenant was entered into by the predecessors in title of the parties. The plaintiff said the defendant had broken those covenants. Defendant denied that she had committed any breach of restrictions and said that the plaintiff had no legal right to enforce any of the restrictions. His Lordship was satisfied that the whole road as constructed in 1905-6 was known as Coast Drive. The defendant's land for about 10 ft. abutted on Coast Drive. It was well settled law, apart from a building scheme, and this was not a case of that nature, that a successor in title of the original covenantee in respect of the land was entitled to the benefit of the covenants if expressly assigned to him, if the benefit was the subject of the purchase, or if the covenant was intended to accrue for the benefit of the land conveyed. The question here was whether the benefit of the covenants was intended to accrue for the benefit of the land. In His Lordship's judgment, the plaintiff was entitled to enforce the covenant in question. The next question was whether there had been a breach of covenant by the defendant. On the true construction of the covenant he found that there had been a breach by the defendant. Plaintiff did not seek to compel defendant to alter or add to her house, nor did he ask for damages. Therefore plaintiff was entitled to bring his action, he was entitled to the declaration he asked as to the covenant applying to the land, and an injunction to restrain any further breach. The defendant must pay the costs of the action.

●

New Flat Scheme at Leeds

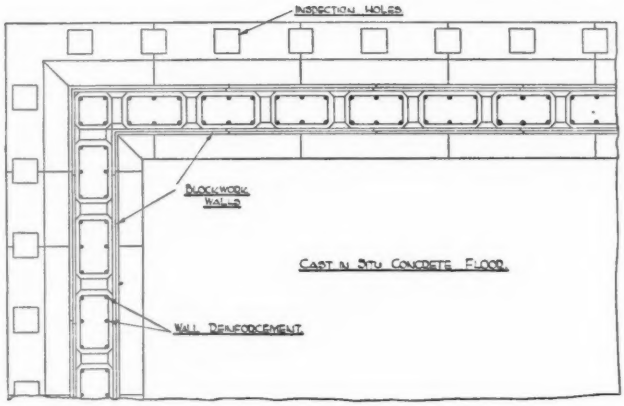
Within two years the Leeds Corporation expects to complete a scheme by the Housing Director, Mr. R. A. H. Livett, A.R.I.B.A., for the erection of a block of 940 flats at Quarry Hill, in the centre of the town. The flats will form part of the Council's £14,500,000 scheme to rehouse 30,000 slum families within 6½ years, and will be the first building in this country to be erected on the Mopin system.

The site covers 23 acres, of which less than a fifth will be occupied by buildings. The rest will be for internal roads, gardens, tennis courts and playgrounds. A central laundry will serve the whole block, and other features are a community hall, nursery school and shopping centre. There will be 78 passenger lifts, as the flats average five storeys and in certain places will rise to eight.

Building Centre Extension

Owing to the increasing demand for exhibition space and to make provision for further activities, the Building Centre has acquired the lease of the Grafton Galleries, which will be connected up with the present premises in New Bond Street. This will nearly double the area of the Building Centre.

It is intended to open formally the new extension as soon as the necessary alterations and re-arrangements are completed.



TRADE NOTES

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

Concrete Swimming Pools

A NEW system of construction for reinforced concrete tanks and swimming pools is described in the June issue of *Ferro-Concrete*.* It is a patented system, known as Impervious Precast Block, devised to enable pools to be constructed rapidly, and special surfaces to be cheaply and quickly provided.

•

It is a system of precast hollow concrete blocks, with thin walls built up dry on a prepared foundation. The lower courses of blocks are set over an arrangement of angle reinforcement bars previously placed on the foundation. These bars unite the walls with the floor, that is laid subsequently, and take the overturning movement.

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When the walls have been built up to the underside of the coping, further reinforcement bars are inserted from the top.

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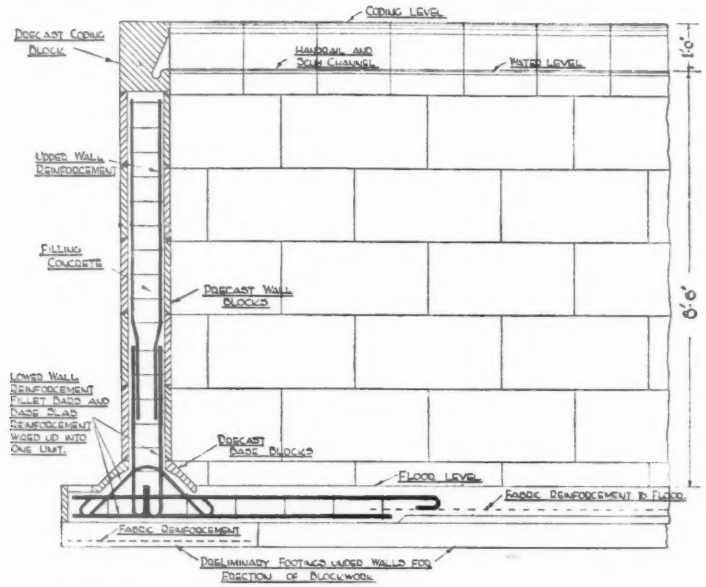
The whole of the interior of the walls is then filled with concrete, so that the blocks, reinforcement and filling form a solid homogeneous reinforced concrete wall, of much the same type as the wall usually constructed *in situ*.

•

The floor of the pool is constructed in the ordinary manner.

* Price 1s. 110 Cannon Street, E.C.4.



Bath constructed on the Impervious Precast Block system. Above: part sectional elevation of bath. The drawing at the top of this page shows plan at corner of bath with coding removed.

The blocks are made to standard sizes, and baths may be built from them to any size within the following limitations: Depth of water at deep end not to exceed 10 ft. This is the maximum depth at the foot of the end wall, but greater depths can be provided at a short distance out from the wall by the use of slopes.

•

Length inside and width inside, any multiple of 3 ft. plus 1 ft. 6 in.

•

Depth of water at either end, any multiple of 1 ft. 6 in., plus 1 ft.

•

Gradient of sloping portion of bottom, 1 in 4, or 1 in 8.

•

The face of the blocks can be treated in the factory with any normal type of finish, and if a polished or marbled finish is required, the grinding and polishing is a simple matter and, I understand, much cheaper than applying such finishes to concrete deposited *in situ*.

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The diagrams show vertical and horizontal sections of parts of the walls of a bath constructed on this system.

•

The lower courses are laid first and filled with concrete, which should be made with an aggregate containing stones not larger than ½ in. gauge, and well rammed. The complete filling of the base blocks can be checked by concrete overflowing the inspection holes.

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Horizontal reinforcement is also provided in the base blocks.

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The upper courses are then laid and the upper "clutches" of vertical reinforcement placed in the vertical recesses.

•

This reinforcement overlaps the vertical members of the lower reinforcement. The wall is then filled with concrete to the top and the coping is set.

•

Such construction should be rapid; it is claimed that a bath measuring 100 ft. by 40 ft. can be completed within one month of delivery of blocks on the site.

Radio for Flats

There is today much competition in the business of letting flats. Prospective tenants regard as necessities details that were considered luxuries a few years ago, and expect to find, among other provisions, facilities for radio reception.

•

Poor radio reception has been common in flats, owing to interference caused by steel framework, electric lifts, electrical equipment generally and refrigeration or vacuum-cleaning plant.

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It appears there are three principal types of radio installation: the aerial and earth system, the self-contained relay system, and the outside relay system.

•

Relay service has certain advantages over the aerial and earth system:—

1. Interference is reduced to a minimum.

2. Aerial, earth and mains connections are eliminated.
3. Large initial capital outlay is eliminated.
4. Exact annual service cost is known.
5. Maintenance service is provided.
6. Maximum volume of sound obtainable by individual tenants is controlled and complaints of excessive noise avoided.

The only apparent disadvantage is that choice of programme is limited, and this may in many cases be an advantage.

•

Broadcast Exchanges, Ltd., specialize in the installation of relay wireless. They carry out the installation at their own expense, having obtained the permission of the property owners to offer the service to tenants at a weekly charge of 1s. 6d. plus 6d. hire of speaker. Wiring is carried out to the requirements of the architect.

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An outside receiving station relays programmes by private land wire, under special licence of the P.M.G., to the block of flats, where it is amplified and distributed to individual speakers.

•

The wireless service may be given to the tenants—included in the rent—the owner paying maintenance and relay charges. Alternatively, the service may be hired to tenants individually.

IN THAT CONTINGENCY

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

Failure of Paint on Brickwork

¶ *An architect asked for an opinion as to the cause of the failure of a proprietary stone paint on brickwork. The trouble occurred in the walls of a house built in the winter of 1933 but the paint was applied in apparently favourable weather, fairly dry but not frosty. The bricks were laid in lime mortar. Attention was drawn to the job about six months ago when dampness appeared on the inside of the S.W. wall. The condition of the stone paint was then noticed. On the mortar joints it was peeling badly though it was adhering well to the bricks. The trouble on the joints has since extended. Examination has revealed that the mortar joints are quite hard where the paint is still adhering, but very soft and powdery where the trouble occurs. A small sample of the powdery mortar was submitted.*

From the description of the position of the injuries—that is, where the mortar is soft and powdery—it would appear most probable that the failure is to be ascribed to defective mortar. From the situation of the building, it is assumed that a blue lias lime was used. This type of lime gives an excellent mortar if it is handled by operatives who are familiar with the behaviour of the individual brand and know how to slake it properly, conserving the hydraulic strength but producing a sound mortar. Otherwise the lime may be very variable and some of the batches may be definitely unsound. This possibly accounts for the varying condition of the mortar in the present work. Unsoundness resulting from unsuitable handling may take quite a considerable time to develop and in the process will make the mortar soft and powdery. Some of the textured stone paints give a good durable film of a robust nature, but like all paints and distempers, they can only be used successfully on surfaces of a stable character.

There are, of course, other possible explanations of the injuries. The presence of salts in brickwork is frequently a cause of paint failure, but since in the present case the trouble is confined to the joints it seems improbable that it is due to this cause.

The action of frost on a partially set mortar is another possibility but, in this instance, the progressive character of the injury is against this explanation.

Periodic observation should show when the renovation may be undertaken with fair chances of success.

Construction of Foundations in Sulphur-Impregnated Ground

¶ *THE architects for a cinema to be erected on a site previously occupied by a gasworks, realising the severe contamination of the ground, asked for advice as to precautions which should be taken with the concrete foundations.*

An examination was made which showed that the top five feet of earth on the site was heavily charged with sulphide, sulphates and ammonia compounds, and, in places, tarry matter also. This material was potentially very dangerous to concrete, and would probably become worse in time as the sulphides oxidized.

Certain pieces of old concrete excavated on the site showed marked attack by sulphates.

Some piers four to five feet square and eight feet deep had already been placed before the danger of the site was fully appreciated and the protection of these had to be considered as well as the method to be adopted in future work. The bases were on good clay so that it would probably be sufficient to protect the sides of the existing piers.

The most effective measure of protection would be to use high alumina cement for the concrete work in this ground or to surround both the bottom and the sides of Portland cement concrete with a skin, say 3 in. thick, of concrete made with high alumina cement.

Attention is drawn to the necessity of placing mass high alumina cement concrete in small lifts, not exceeding 1 foot, as otherwise the development of heat during setting causes a marked rise in temperature in the concrete, and both its strength and resistance to sulphate attack may be impaired. Successive lifts should be separated by intervals of not less than one day. The mix should not be richer than 1 : 6, but on the other hand very much leaner mixes should not be used. It was suggested that the sides of the existing piers should be protected by excavating round the existing concrete and encasing in a skin, say 3 in., of high alumina cement concrete.

As far as possible, all the harmful material which is excavated should be completely removed from the site since it might otherwise come into contact, directly or otherwise, with concrete floors or other parts of the structure and lead to attack.

THE BUILDINGS ILLUSTRATED

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

Lansdowne Court, Berkeley Square (pages 153-159). General contractors, Gee, Walker and Slater, Ltd. Sub-contractors : Benham and Sons, Ltd., kitchen apparatus ; Caxton Floors, Ltd., floors and staircases ; Crittall Manufacturing Co., Ltd., windows ; Dorman Long & Co., Ltd., steelwork ; Samuel Elliott and Sons, Ltd., revolving door ; Excel Asphalte Co., Ltd., asphalte ; Frigidaire, Ltd., refrigeration ; Gas, Light and Coke Co., gas services ; J. and E. Hall, Ltd., lifts ; Haywards, Ltd., iron staircases and pavement lights ; A. Johnson & Co., Ltd., Synkunits ; Mather and Platt, Ltd., sprinkler installation ; Shanks & Co., Ltd., sanitary fittings ; South Western Stone Co., Ltd., Portland stone ; Standard Telephones and Cables, Ltd., telephone system ; John Stubbs and Son, Ltd., marble work ; Duncan Watson (Electrical Engineers), Ltd., electrical work ; Granwood Flooring Co., flooring in kitchens, maids' bathrooms, all service rooms and corridors in the interior of the flats themselves, and also several small offices. They were also responsible for 670 yds. of floor in the offices of Gee, Walker and Slater on the ground floor.

New Private Patients' Block, Hendon Cottage Hospital (pages 168-169). General contractors, William Moss & Sons, Ltd. Sub-contractors : The Kleine Co., Ltd., hollow tile floors ; S. Howard, Gt. Missenden, facing bricks ; The Limmer and Trinidad Lake Asphalte Co., Ltd., asphalte roofs and tanking ; Art Pavements and Decorations, Ltd., terrazzo floors, wall linings and marble work ; Carter & Co. (London), Ltd., wall and floor tiling ; Ames and Finnis, roof tiling ; Inlaid Ruboleum Tile Co., Ltd., linoleum floors ; Sorbo, Ltd., sorbo rubber floors ; Stevens and Adams, Ltd., wood block floors ; J. P. White and Sons, Ltd., flush doors ; James Gibbons, Ltd., door and window furniture, steel cabinets and secretary's safe ; Garton and Thorne, Ltd., built-in cabinets ; Crittall Manufacturing Co., Ltd., metal windows and screen to lift well ; Birmingham Guild, Ltd., iron railings and name plates ; Waygood-Otis, Ltd., electric bed lift ; Doulton & Co., Ltd., sanitary fittings ; James Slater & Co., Ltd., heating and hot water supplies and kitchen cooking apparatus ; Sankey Oil Systems, Ltd., oil firing equipment to boilers ; Troughton and Young Ltd., electrical installation and lighting fittings ; Bratt Colbran & Co., electric and gas fires ; R. Sawford, wireless installation ; Paripan Ltd., paints and distempers ; Fletcher Russell & Co., Ltd., gas incinerator ; Reliance Telephone Co., Ltd., intercommunicating telephones ; International Refrigerator Co., Ltd., B.T.-H. Refrigerators ; McDowall Steven & Co., Ltd., ward kitchen hot closet.

IN PARLIAMENT

The Housing Bill

Both Houses are expected to rise on Friday, August 2, for the Summer Recess, and by that date the Royal Assent will have been given to the Housing Bill.

The House of Commons, in considering the Lords amendments to the Bill, accepted some, and amended others. For instance, on Clause 6, Mr. Shakespeare, the Parliamentary Secretary to the Ministry of Health, moved that the House agree with an amendment to the effect that regulations prescribing the manner in which the floor area of a room is to be ascertained for the purpose of Schedule I " may provide for the

exclusion from computation, or for the bringing into computation at a reduced figure, of floor space in any part of a room which is of less than a specified height." He said that this amendment allowed the Minister in the regulations to deal with rooms with sloping roofs in such a way as not to take account of the floor space between ceilings of a certain height.

Mr. H. Williams moved an amendment to limit this provision to rooms of a height not exceeding 8 ft. This was accepted by the Government, and the Lords amendment, as amended, agreed to.

On Clause 28 (unification of conditions affecting housing associations' houses), Sir K. Wood, the Minister of Health, moved that the House agree with the following amendment: "If a housing association represent to the Minister that they have submitted to the local authority proposals for arrangements under this section and that the local authority have unreasonably refused to make arrangements in accordance with the proposals, the Minister may require the authority to furnish him with a report as to the matter stating their reason for their refusal."

Sir K. Wood said that the amendment was aimed at local authorities who unreasonably refused to assist a housing association able and willing to do some of the necessary work. In such an event the unreasonable attitude of the local authority would receive due publicity. This was an endeavour to meet a situation which he hoped would very rarely arise, but a number of people who felt very keenly about the work of housing associations wanted to see something of the kind incorporated in the Bill. He hoped it would do something to sustain the housing associations in that branch of housing work in which the Government liked to see them engaged.

Mr. Greenwood, on behalf of the Labour Party, opposed the amendment, which, he said, would enable the Government to hold a pistol at the head of the local authorities. The amendment was agreed to by 102 votes to 33.

Sir K. Wood then moved that the House agree to a Lords amendment to limit the powers of local authorities to acquire land compulsorily for housing development so as to include land which the Minister was satisfied was likely to be required within five years.

Sir S. Cripps, on behalf of the Labour Party, thought that five years was too short a period, and Sir K. Wood agreed to make the period ten years.

The Lords amendment, as amended, was agreed to.

Housing: The Flat Question

The flat question will come to the front this autumn, when the Ministry of Health issues the explanatory circular to local authorities on the administration of the new Housing Bill which is about to receive Royal Assent. It is hoped that by then the Government will have made up its mind whether to limit municipal flats to a height of four storeys, as was suggested by Sir Hilton Young shortly before he left the Ministry of Health, or whether Lord Dudley and the Council for Research on Housing Construction will have their way. In that case, experiments in steel-framed and reinforced concrete flats of 10 storeys and higher for the housing of persons now living in overcrowded conditions will be made.

For years past on housing committees, the pros and cons of high flats have been considered, and always the issue concentrates on the possibility of providing lifts at reasonable charges. Valuable information on the question of cost has been provided during the last few days by two authorities: Miss Murray, the Secretary of the Westminster Housing Trust, which has just completed 180 flats in seven five-storey blocks, served by three lifts, estimates that the weekly addition to the rent will be 4d. The Chairman of the Leeds Corporation Housing Committee, which is installing a number of small automatic electric passenger lifts in a block of 939 flats, estimates the weekly cost of upkeep, including insurance, but not depreciation, will be 9½d. per week.

THE WEEK'S BUILDING NEWS

LONDON & DISTRICTS (15-MILES RADIUS)

BALHAM. *School.* The L.C.C. is to remodel the Oldridge Road School, at a cost of £17,000.

BEDDINGTON. *Sewage Works Extension.* Croydon Corporation has approved plans by the borough engineer for sewage works extensions at Beddington at a cost of £79,000.

BERMONDSEY. *Dwellings.* The L.C.C. is to erect nine blocks of tenements on the Minto Street area at a cost of £164,000.

BERMONDSEY. *Flats.* The B.C. is to erect 60 flats at Upper Grange Road at a cost of £33,000.

BERMONDSEY. *Schools.* The L.C.C. is to erect two central schools in Bermondsey, one for boys in Rolls Road and the other for girls in Monnow Road.

BLOOMSBURY. *Hostel.* Sir Herbert Baker and Mr. A. T. Scott have prepared plans for the erection of a hostel for overseas students of the London University on a site in Mecklenburgh Mews.

CHELSEA. *Dwellings.* The B.C. has approved plans by Mr. A. S. Soutar for dwellings on the Manor Street clearance area and is shortly to invite tenders for their erection.

HACKNEY. *Refuse Disposal.* The B.C. recommends the erection of premises in connection with refuse disposal at the Homerton wharf, at a cost of £15,750.

HAMMERSMITH. *Institution.* The L.C.C. is to enlarge the Hammersmith institution at a cost of £47,830.

HAYES. *School.* Middlesex Education Committee is to erect an elementary school for 1,200 at Mellow Lane.

ILFORD. *Housing Scheme.* The L.C.C. is seeking permission to purchase 1,022 acres at Fairlop Plain, for housing purposes.

LAMBETH. *Dwellings.* The L.C.C. is to erect 284 tenements on the Tyers Street area at a cost of £124,000.

LEWISHAM AND GREENWICH. *Housing Scheme.* The L.C.C. is to clear and redevelop the Sparta Street area at a cost of £111,000.

POPLAR. *Cleansing Station.* The B.C. has approved revised plans for the erection of a cleansing station, small-pox shelter, etc., at a cost of £26,000.

POPLAR. *Flats.* The B.C. is to erect 50 flats at the Harrow Lane area at a cost of £35,577.

STOKE NEWINGTON. *Dwellings.* The L.C.C. is to erect a block of dwellings on the Church Street site, at a cost of £33,350.

STOKE NEWINGTON. *Flats.* The Ecclesiastical Commissioners are to erect 88 flats at Barn Street.

TWICKENHAM. *Flats.* Subject to the consent of the Richmond Corporation and the L.C.C., the Corporation has given consent to the erection of a block of 141 flats and an underground garage on the north side of Cambridge Park. The architects are Messrs. Marshall and Tweedy, FF.R.I.B.A.

TWICKENHAM. *Flats.* Messrs. John Turner and Sons (Preston) Ltd., propose to erect 76 flats and 23 garages on the south side of Chertsey Road. The flats are to be erected in blocks of four. Plans by Mr. G. L. Russell, A.R.I.B.A. 16 Basinghall Street, E.C.

WESTMINSTER. *Nurses' Home.* Westminster City Council has approved revised plans submitted by Messrs. Adams, Holden and Pearson, architects, for the erection of a nurses' home and medical school for Westminster Hospital, in St. John's Gardens.

WATFORD. *Hospital.* Herts. C.C. is to extend the casual wards at the Shrodells institution, at a cost of £6,200.

EASTERN COUNTIES

BISHOP'S STORTFORD. *Hospital.* Herts. C.C, is to erect new casual wards at the Haymeans institution, at a cost of £15,000.

EAST BARNET. *School.* Herts. Education Committee has approved plans by Mr. W. Fraser Granger for the erection of a Grammar School at a cost of £33,252.

CHESHUNT. *School.* Herts Education Committee has approved plans by the county surveyor for the erection of a Grammar School at a cost of £35,840.

ST. ALBANS. *School.* Herts. Education Committee has approved plans by the county surveyor for the erection of an elementary school on the Beaumont estate, at a cost of £30,169.

WARE. *School.* Herts. Education Committee has asked the county surveyor to prepare plans for new buildings for the Ware Girls' Grammar School, at an estimated cost of £35,000.

SOUTHERN COUNTIES

BRIGHTON. *Bathing Pool.* The Corporation is seeking sanction to borrow £40,000 for the construction of a bathing pool, sun bathing station and solarium at Black Rock.

BRIGHTON. *Central Transport Depot.* The Corporation proposes a scheme for the establishment of a central transport depot estimated to cost nearly £20,000.

BRIGHTON. *Promenade.* The Corporation has instructed the borough engineer, in consultation with Prof. Adshead, to prepare a scheme for extending the King's Road and Promenade, such scheme to include the improvement of the beach unwashed by sea.

WORTHING. *Flats.* Mr. M. R. Fletcher, architect, has prepared plans for Mr. L. W. Waterman, for the erection of 40 flats in Boundary Road, and 48 flats in Lansdowne Road, Worthing.

WORTHING. *Hotel.* Mr. H. Osborne, architect, has prepared plans for the erection of a hotel at the corner of West Parade and Grand Avenue, Worthing.

MIDLAND COUNTIES

ARLESEY. *Nurses' Home.* Beds., Herts. and Hunts. county councils are to erect a nurses' home at the Three Counties' Hospital, Arlesey, at a cost of £25,000.

BEDFORD. *Houses.* The Corporation is to erect a further 168 houses on the London Road estate, at a cost of £65,500.

BIRMINGHAM. *Houses.* The Corporation has leased a further 250 sites on the Mill Pool Hill estate to the Lanchester Housing Trust, Ltd.

BIRMINGHAM. *Houses.* The Corporation is to erect 112 maisonettes at Coventry Road, at a cost of £43,056.

NORTHERN COUNTIES

BRADFORD. *Flats, Houses, etc.* The Corporation has approved plans by the city architect for the erection of 432 tenements, 146 houses and 60 single room dwellings on the Canterbury estate at a cost of £212,200.

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_2	Bovey Tracey	S.W. Counties	1 2½	11
A	Bradford ..	Yorkshire	1 5½	1 1½
A	Brentwood ..	E. Counties	1 5	1 0½
A_1	Bridgend ..	S. Wales & M.	1 5½	1 1½
A	Bridgwater ..	S.W. Counties	1 3½	11½
B	Bridlington ..	Yorkshire	1 5	1 0½
A_1	Brighouse ..	Yorkshire	1 5½	1 1½
A	Brighton ..	S. Counties	1 4½	1 0½
A_2	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	Kendal ..	N.W. Counties	1 4	1 0
A_2	Keswick ..	N.W. Counties	1 4	1 0
A_1	Kettering ..	Mid. Counties	1 5	1 0½
A_2	Kidderminster	Mid. Counties	1 4½	1 0½
B_1	King's Lynn ..	E. Counties	1 3	11½
A	LANCASTER ..	N.W. Counties	1 5½	1 1½
A_1	Leamington ..	Mid. Counties	1 5	1 0½
A	Leeds	Yorkshire	1 5½	1 1½
A	Leek	Mid. Counties	1 5½	1 1½
A	Leicester ..	Mid. Counties	1 5½	1 1½
A	Leigh	N.W. Counties	1 5½	1 1½
B	Lewes	S. Counties	1 2	10½
A_2	Lichfield ..	Mid. Counties	1 4½	1 0½
A	Lincoln ..	Mid. Counties	1 5½	1 1½
	Liverpool ..	N.W Counties	*1 7	1 2½
	Llandudno ..	N.W Counties	1 4½	1 0½
A_2	Llanelly ..	S. Wales & M.	1 5½	1 1½
	London (12-miles radius)		1 7½	1 2½
	Do. (12-15 miles radius)		1 7	1 2½
A	Long Eaton ..	Mid. Counties	1 5½	1 1½
A	Loughborough	Mid. Counties	1 5½	1 1½
A_1	Luton	E. Counties	1 5	1 0½
A	Lytham ..	N.W. Counties	1 5½	1 1½
A_1	MACCLESFIELD	N.W. Counties	1 5	1 0½
A_2	Maidstone ..	S. Counties	1 4	1 0
A_2	Malvern ..	Mid. Counties	1 4	1 0
A	Manchester ..	N.W. Counties	1 5½	1 1½
A	Mansfield ..	Mid. Counties	1 5½	1 1½
B_1	Margate ..	S. Counties	1 3	11½
A	Matlock ..	Mid. Counties	1 4	1 0
A_1	Merthyr ..	S. Wales & M.	1 5	1 0½
A	Middlesbrough	N. E. Coast	1 5½	1 1½
A_2	Middlewich ..	N. W. Counties	1 4½	1 0½
B_2	Minehead ..	S.W. Counties	1 2½	11
B_2	Monmouth & S. 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	•
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	•
Rapid Hardening Cement, in 4-ton lots (d/d site, including Paper Bags)	"	2	6	0
White Portland Cement, in 1-ton lots	"	8	15	0
Thames Ballast	per Y.C.		6	3
¾" Crushed Ballast	"		6	9
Building Sand	"		7	3
Washed Sand	"		8	3
2" Broken Brick	"		8	0
¾" " "	"		10	3
Pan Breeze	"		6	6
Coke Breeze	"		8	9

DRAINLAYER

BEST STONEWARE DRAIN PIPES AND FITTINGS

		4" s.	4" d.	6" s.	6" d.
Straight Pipes	per F.R.	0	9	1	1
Bends	each	1	9	2	6
Taper Bends	"	3	6	5	3
Rest Bends	"	4	3	6	3
Single Junctions	"	3	6	5	3
Double "	"	4	9	6	6
Straight channels	per F.R.	1	6	2	6
¾" Channel bends	each	2	9	4	•
Channel junctions	"	4	6	6	6
Channel tapers	"	2	9	4	•
Yard gullies	"	6	9	8	9
Interceptors	"	16	0	19	6
IRON DRAINS:					
Iron drain pipe	per F.R.	1	6	2	6
Bends	each	5	0	10	6
Inspection bends	"	9	•	15	0
Single junctions	"	8	9	18	0
Double junctions	"	13	6	30	0
Lead Wool	lb.		6		—
Gaskin	"		5		—

BRICKLAYER

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

MASON

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

SLATER AND TILER

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

		£	s.	d.
24"×12" Duchesses	per M.	28	17	6
22"×12" Marchionesses	"	24	10	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,		£	s.	d.
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
¾"	"		15	6
1"	"	1	4	0
Rough boarding ¾"	"		16	0
1"	"		18	0
1¼"	"	1	6	0

Plywood, per ft. sup.

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

		£	s.	d.
Scotch glue	lb.			8

SMITH AND FOUNDER

Tubes and Fittings:

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

		¼"	½"	1"	1¼"	2"
Tubes, 2'-14' long, per ft. run		4	5½	9½	1/1	1/10
Pieces, 12"-23" long	each	10	1/1	1/11	2/8	4/9
" 3"-11½" long	"	7	9	1/3	1/8	3/–
Long screws, 12"-23½" long	"	11	1/3	2/2	2/10	5/3
" " 3"M-½" long	"	8	10	1/5	1/11	3/6
Bends	"	8	11	1/7½	2/7½	5/2
Springs not socketed	"	5	7	1/1½	1/11½	3/11
Socket unions	"	2/–	3/–	5/6	6/9	10/–
Elbows, square	"	10	1/1	1/6	2/2	4/3
Tees	"	1/–	1/3	1/10	2/6	5/1
Crosses	"	2/2	2/9	4/1	5/6	10/6
Plain sockets and nipples	"	3	4	6	8	1/3
Diminished sockets	"	4	6	9	1/–	2/–
Flanges	"	9	1/–	1/4	1/9	2/9
Caps	"	3½	5	8	1/–	2/–
Backnuts	"	2	3	5	6	1/1
Iron main cocks	"	1/6	2/3	4/2	5/4	11/6
" with brass plugs	"	—	4/–	7/6	10/–	21/–

Discounts:

TUBES.	Per cent.		Per cent.
Gas	65	Galvanized gas	52½
Water	61½	" water	47½
Steam	57½	" steam	42½
FITTINGS.			
Gas	37½	Galvanized gas	47½
Water	52½	" water	42½
Steam	47½	" steam	37½

SMITH AND FOUNDER—*continued.*

		s.	d.
Rolled steel joists cut to length	cwt.	12	9
Mild steel reinforcing rods, ¼"	"	10	6
" " ⅜"	"	10	3
" " ½"	"	10	0
" " ⅝"	"	9	6
" " ¾"	"	9	6
" " 1"	"	9	6
" " 1¼"	"	9	6
" " 1½"	"	9	6
		4"	
Cast-iron rain-water pipes of ordinary thickness metal	F.R.	8	
Shoes	each	2	0	3	0
Anti-splash shoes	"	4	6	8	0
Boots	"	3	0	4	0
Bends	"	2	7	3	9
" with access door	"	—		6	3
Heads	"	4	0	5	0
Swan-necks up to 9" offsets	"	3	9	6	0
Plinth bends, 4½" to 6"	"	3	9	5	3
Half-round rain-water gutters of ordinary thickness metal	F.R.	5		6	
Stop ends	each	6		6	
Angles	"	1	7	1	11
Obtuse angles	"	2	0	2	6
Outlets	"	1	9	2	3

PLUMBER

		s	d.
Lead, milled sheets	cwt.	22	0
" drawn pipes	"	21	6
" soil pipe	"	24	6
" scrap	"	13	0
Solder, plumbers'	lb.		9½
" fine do.	"	1	0
Copper, sheet	"		8½
" tubes	"		11

L.C.C. soil and waste pipes:	3"	4"	6"
Plain cast F.R.	1 0	1 2	2 6
Coated "	1 1	1 3	2 8
Galvanized "	2 0	2 6	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	•
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. × 10 in.)	"		2	0
Flashed opals (white and coloured)	"	1 •	and 2	•
¼" rough cast; rolled plate	"			5½
¼" wired cast; wired rolled	"			9½
¼" Georgian wired cast	"			11
¼" Polished plate, n/e 1 ft.	"	†10	to ‡1	1
" " 2 "	"	†1	2 " ‡1	4
" " 4 "	"	†2	3 " ‡2	6
" " 8 "	"	†2	9 " ‡3	2
" " 20 "	"	†3	7 " ‡4	2
" " 45 "	"	†3	11 " ‡4	7
" " 100 "	"	†5	0 " ‡5	7
Vita glass, sheet, n/e 1 ft.	"		1	•
" " " 2 ft.	"		1	3
" " " over 2 ft.	"		1	9
" " plate, n/e 1 ft.	"		1	6
" " " 2 ft.	"		3	•
" " " 5 ft.	"		4	0
" " " 7 ft.	"		5	0
" " " 15 ft.	"		6	0
" " " over 15 ft.	"		7	6
"Calorex" sheet 21 oz., and 32 oz.	"	2	6 and	3 6
" rough cast ¼" and ½"	"		8½ "	1 •
Putty, linseed oil	lb.			3

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

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

PAINTER

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

CURRENT PRICES FOR MEASURED WORK

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

EXCAVATOR AND CONCRETOR

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

DRAINLAYER

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

BRICKLAYER

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

ASPHALTER

		s.	d.
½″ Horizontal dampcourse	Y.S.	4	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	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
1½″ ,, ,, ,, ,,	,,	2	3	0
3″ × 2″ fir battening tor Countess slating	,,		9	0
Do. for 4″ gauge tiling	,,		12	0
Stout feather-edged tilting fillet	F.R.			4½
Patent inodorous felt, 1 ply	Y.S.		2	3
,, ,, ,, 2 ,,	,,		2	9
,, ,, ,, 3 ,,	,,		3	3
Stout herringbone strutting to 9″ joists	F.R.			10½
1″ deal gutter boards and bearers	F.S.		1	2
1½″ ,, ,, ,,	,,		1	6
2″ deal wrought rounded roll	F.R.			8
1″ deal grooved and tongued flooring, laid complete, including cleaning off	Sqr.	2	1	0
1¼″ do.	,,	2	10	0
1½″ do.	,,	2	17	0
1″ deal moulded skirting, fixed on, and including grounds plugged to wall	F.S.		1	6
11″ do.	,,		1	9

CARPENTER AND JOINER—*continued*

		s.	d.
1¼″ deal moulded sashes of average size	F.S.	1	9½
2″ ,, ,, ,,	,,	1	11½
1¼″ deal cased frames double hung, of 6″ × 3″ oak sills, 1¼″ pulley stiles, 1¼″ 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
1¼″ deal four-panel square, both sides, door	F.S.	2	0
2″ ,, ,, ,,	,,	2	8
1¼″ ,, but moulded both sides	,,	2	4
2″ ,, ,, ,,	,,	3	0
4″ × 3″ deal, rebated and moulded frames	F.R.	1	0
4½″ × 3½″ ,, ,, ,,	,,	1	4
1¼″ deal tongued and moulded window board, on and including deal bearers	F.S.	1	9
1¼″ deal treads, 1″ risers in staircases, and tongued and grooved together on and including strong fir carriages	,,	2	6
1¼″ deal moulded wall strings	,,	2	1
1¼″ ,, outer strings	,,	2	4
Ends of treads and risers housed to string	Each	1	9
3″ × 2″ deal moulded handrail	F.R.	1	3
1″ × 1″ deal balusters and housing each end	Each	2	0
1½″ × 1½″ ,, ,, ,,	,,	2	9
3″ × 3″ deal wrought framed newels	F.R.	1	3
Extra only for newel caps	Each	6	0
Do., pendants	,,	6	0

SMITH AND FOUNDER

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

PLUMBER

		£	s.	d.
Milled lead and labour in flats	cwt.	1	15	6
Do. in flashings	,,	1	19	0
Do. in covering to turrets	,,	2	6	6
Do. in soakers	,,	1	11	0
Labour to welted edge	F.R.			3½
Open copper nailing	,,			3
Close ,, ,,	,,			4

Lead service pipe and fixing with pipe hooks	½″ s. d.	¾″ s. d.	1″ s. d.	1¼″ s. d.	2″ s. d.	4″ s. d.
F.R.	10	1 0	1 3	2 0	2 10	—
Do. soil pipe and fixing with cast lead tacks Each	—	—	—	—	—	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

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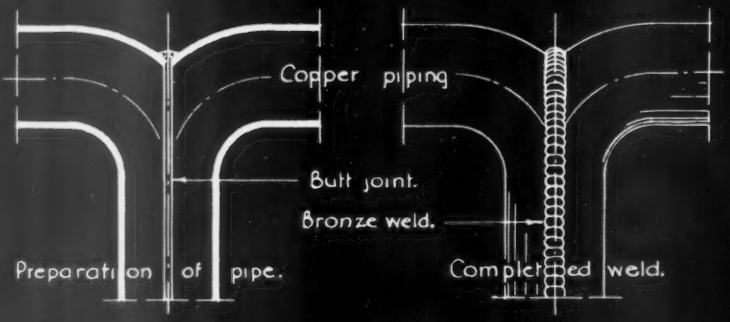
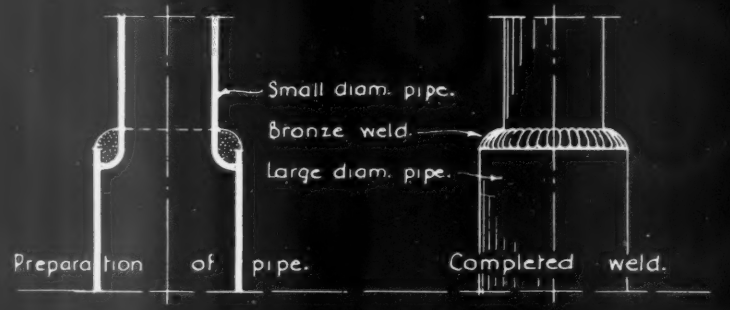
TYPES OF BRONZE-WELDED JOINTS:

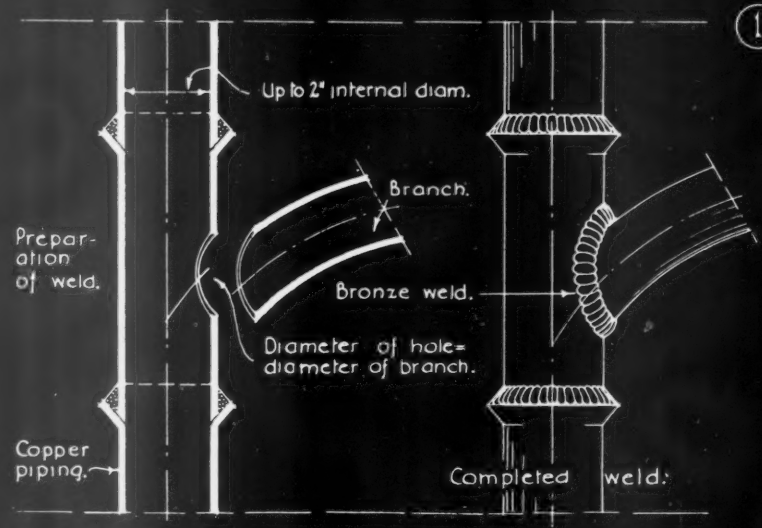


6. BUILT UP Y-BRANCH:
Part of the outer curves of two copper bends are cut away to the centre line as shown on the diagram. The cut edges are then butted together, spot tack-welded and the joint completed by feeding on a bronze filler rod.

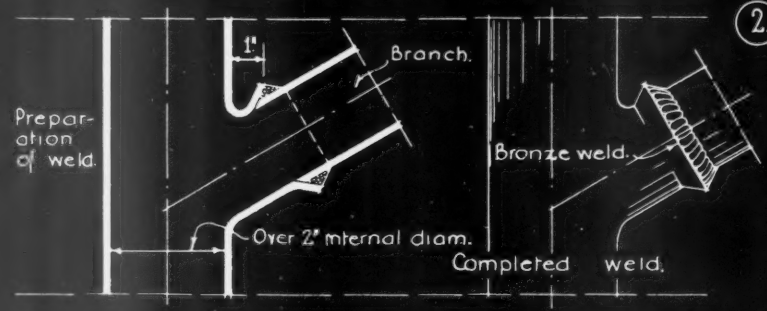


7. A DIMINISHING JOINT:
The smaller diameter pipe is tofted out to the internal diam. of the larger pipe & inserted to a depth of approx. 1/8 inch. The circular orifice is then filled by feeding on a bronze filler rod, as above.

BRANCH JUNCTIONS FOR VARYING SIZE PIPES.



1. STUB-JOINTING FOR TEES UP TO 2" INTERNAL DIAM:
For equal or smaller sized branches. Method of preparing a weld in light gauge copper piping with bronze welding for pipes up to 2" internal diameter. This method of jointing is suitable for cold and hot water systems and for air pipes, but not for sanitary systems.



2. SHORT BELL JOINTING FOR TEES ABOVE 2" INTERNAL DIAM:
for equal or smaller sized branches Method of preparing weld in light gauge copper pipe with bronze weld for pipes up to 2" internal diameter. This method of jointing is suitable for sanitary systems, waste pipes & all large diam. work generally.

Information from W. L. Kilburn, R.P. *Issued by British Oxygen Co. Ltd.*

14.5.35.

INFORMATION SHEET: PLUMBING IN WELDED COPPER · 3 ·

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

Supplement to THE ARCHITECTS' JOURNAL for August 1, 1935

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INFORMATION SHEET

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PLUMBING IN WELDED COPPER PIPING

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

The preference for copper for water services is due to the fact that copper and copper alloys are highly resistant to corrosion, while oxy-acetylene welding has numerous advantages over the threaded joint of other metals. The wall-thickness of a threaded pipe must be heavier than the welded pipe because the wall must be heavy enough to take a full depth thread and still have sufficient thickness to carry the pressure. Hence there is an excess of metal over the remainder of the length. With welded tubes there is no reduction of cross-sectional area and thinner-walled pipe may be used to carry the same pressure. The weld forms an integral part of the pipe and is in many cases stronger than the base metal.

Previous Information Sheets of this series (Nos. 225 and 234) dealt with the various methods of jointing light-gauge copper piping and the more common types of bronze welded joints.

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


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THE INFLUENCE OF THE CONSTITUENT MATERIALS ON THE PERMEABILITY OF THE CONCRETE.

CONSTITUENTS of normal concrete are Water, Cement, Fine Aggregate and Coarse Aggregate. Integral Waterproofing may also be added in small quantities, see reverse side hereof.

PERMEABILITY may be defined as that property which permits the passage of a liquid through a material as distinct from the penetration of moisture into a substance by means of absorption due to capillary action.

A, WATER : (Influences are due to percentage used, and to purity).

TABLE SHOWING EFFECTS DUE TO CHANGING % MIXING WATER.

	MIX, by Weight.	Water / cement, % by Weight.†	% Mortar Voids, (Air + Water)	CONSISTENCY TESTS: Slump. Ins.	CONSISTENCY TESTS: Flow. Ins.	TEST PRESSURE, lbs/in²	PERMEABILITY: rate of flow after 24 hrs. cc/hr/ft²	COMPRESSIVE STRENGTH, ◑ lbs/in²
Water-cured Concrete, one month old.	1 : 1 : 2	35	23·5	¼	7	100	3·2	4100
		37·5	21·8	1	7¾		2·1	4520
		40	22·9	2½	9¾		3·8	3880
		42·5	23·5	•	•		•	3200
		45	24·1	5½	15		7·5	2880
		50	25·7	7½	•		21·5	2370
	1 : 2 : 4	50	25·1	•	6¼	100	206	1980
		55	21·2	¼	6¾		26	2408
		60	19·9	½	8		13	2440
		65	20·3	1	9		57	1860
		70	21·3	1½	13		100	1410
		75	22·2	3	15		192	•
	1 : 3⅓ : 6⅔	80	21·4	•	•	50	•	930
		85	19·8	¼	10		882	1010
		90	19·6	⅜	10½		525	1060
		95	19·9	⅜	10½		672	850
		100	20·4	½	10½		1076	725
		110	21·7	½	11¼		2570	•

EFFECTS OF IMPURE WATER :
Although no information is available to show the influence of impure mixing water on the permeability of the concrete, it has been proved that the strength is very little impaired.

◑ (See table). Determined from cylinders 4" diameter, 8" high.

† Actual percentage of water to whole of dry materials can be obtained by dividing W/C percentage by the number of parts in the mix, i.e. 1 : 1 : 2 mix with W/C = 50 per cent, contains 50/4, = 12·5 per cent. of water.

B, CEMENT : (Influences are due to quantity, strength, fineness and chemical composition).

TABLE SHOWING EFFECTS DUE TO VARYING % OF CEMENT

	PROPORTIONS OF MIX, cement, sand gravel, by wt.	% CEMENT (by weight) to dry materials)	WATER / CEMENT, % by weight.	% MORTAR VOIDS.	CONSISTENCY TESTS: Slump. Ins.	CONSISTENCY TESTS: Flow. Ins.	PERMEABILITY: rate of flow after 24 hrs. cc/hr/ft²	TEST PRESSURE, lbs/in²	CRUSHING STRENGTH, lbs/in²
		Normal Water content, i.e. that producing the least volume of concrete.							
Water-cured concrete.	1 : 3·33 : 6·67	9·1	90	19·6	⅜	•	525	50	950
	1 : 2·67 : 5·33	11·1	74	19·7	½	7¾	196	100	1570
	1 : 2·3 : 4·6	12·7	65	19·5	½	7¾	40	100	2100
	1 : 2 : 4	14·3	59	19·8	1	8	9	100	2400
	1 : 1·6 : 3·2	17·2	49	20·1	1	8	3	100	3220
	1 : 1·33 : 2·67	20	44	20·8	1	8	1·5	100	3800
	1 : 1·14 : 2·28	22·6	40	21·3	1¼	8	1	100	3780
	1 : 1 : 2	25	37·5	21·8	1	7¾	•	100	4250
		20 per cent above Normal Water Content							
	1 : 2·67 : 5·33	11·1	89	21·7	4	13	965	100	750
	1 : 2·3 : 4·6	12·7	78	21·3	4¼	13½	512	100	960
	1 : 2 : 4	14·3	71	22·3	4¾	13½	145	100	1310
	1 : 1·6 : 3·2	17·2	60	22·3	5	14	26	100	1630
	1 : 1·33 : 2·67	20	53	23·1	5¼	15	26	100	2160
	1 : 1·14 : 2·28	22·6	48	23·6	5½	15	12	100	2490
	1 : 1 : 2	25	45	24·1	6	15	7·5	100	2880

STRENGTH :
The quantity of cement used has a greater effect upon permeability than upon strength.

FINENESS :
The use of fine cements in lean mixes reduces the rate of flow and increases the strength.

QUANTITY :
The cement content has been shown to be the most important factor in determining the degree of permeability. With all mixes, other factors remaining constant, an increased cement content results in decreased permeability.

C, AGGREGATE : (Influences are due to quantity, grading, type and size).

TABLE SHOWING EFFECTS DUE TO VARYING QUANTITIES OF AGGREGATE.

	MIX, by weight.	WATER / CEMENT, % by weight.	% MORTAR VOIDS.	CONSISTENCY TESTS: Slump. Ins.	CONSISTENCY TESTS: Flow. Ins.	PERMEABILITY: rate of flow after 24 hrs. cc/hr/ft²	CRUSHING STRENGTH, lbs/in²
New batch of cement.	1 : 1½ : 4	54	19·1	⅜	8	14	2560
	1 : 1¾ : 4	56	19·4	¾	8¼	16	2480
	1 : 2 : 4	58	19·8	½	8	16	2400
	1 : 2¼ : 4	60	20·2	⅝	7½	25	2240
	1 : 2½ : 4	62	20·6	½	7½	31	2280
	1 : 3 : 4	66	20·7	½	8	65	1720
	1 : 2 : 2½	47·5	22·3	½	6¾	5	3150
	1 : 2 : 3	50	21·3	½	6¾	2	3020
	1 : 2 : 3½	53·5	20·4	½	7½	2·6	2740
	1 : 2 : 4	58	19·8	½	8	4	2400
	1 : 2 : 4½	62·5	19·5	¾	8¼	8·9	1770
	1 : 2 : 5	66	19·3	¾	9¾	18	1470

GRADING :
Tests show that grading the aggregate reduces the permeability, though not as much as does the presence of the correct quantity of fine materials.

TYPE :
Experiments have proved that the most impermeable concrete is made with an aggregate of sand and gravel.

SIZE :
For a 1 : 2 : 4 mix tests show that sand remaining on a 40 mesh sieve gives least permeability, although a slightly larger diameter particle is req. to give maximum crushing strength.

Data from B.R.S. Technical Paper No. 3.

Issued by A.H. Rawnsley Associated Building Products (Leicester) Limited.

INFORMATION SHEET : FACTORS IN THE WATERPROOFING OF CONCRETE·1·

SIR JOHN BURNET TAIT AND LORNE ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON WC1 • Otto R. Bayer.

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INFORMATION SHEET

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WATERPROOFING OF CONCRETE

Type of Product : Aquex Waterproofing Powder and Liquid

This Information Sheet is the first of a series dealing with the subject of waterproofing concrete. In these Sheets the findings of the Building Research Station are being summarised to give in convenient form a reference to the essential points so far as they are at present known.

This summary will consist of three Sheets, each dealing with one of the following sections:—

(a) The influence of constituent materials.

(b) The effect of the method of preparing concrete.

(c) The Influence of subsequent Treatment.

Permeability.

As will be seen from the definition given on this Sheet, permeability should be considered separately from absorption. Rate of Absorption depends on two factors, pressure and capillary attraction, but permeability depends only on the former.

Permeability is due to the existence of continuous passages through the concrete and any consideration of the means of waterproofing becomes therefore a consideration of the means of filling or reducing the size of these passages.

Aquex Powder.

Is a greyish-white waterproofing powder which is mixed with the concrete in certain definite proportions as set out below.

The effects of the powder on the waterproofing of concrete are threefold.

(a) The powder when mixed with concrete produces an easier working concrete, thereby reducing the number of small passages and voids in the structure of the concrete when set.

(b) The powder itself tends to fill the remaining pores and passages.

(c) As the powder produces a more workable concrete, it therefore permits less water to be used than would be necessary and otherwise.

The general effects of the powder on concrete are :—

(a) That is increases the compressive strength by approximately 10 per cent.

(b) That it does not vary the setting time of the concrete.

(c) That it does not discolour or stain the cement.

(d) That as it increases the workability of the concrete it therefore permits a smooth rendered surface to be obtained more easily.

Proportions.

The following proportions of cement to aggregate are to be measured by weight :—

For Cement renderings for sand or pebble dash, rough-cast or plain stucco, use

One part of Portland cement.
Three parts of clean sharp sand.
4 lb. Aquex per 100 lb. cement.

Mass Concrete for Reservoirs, Swimming Pools, etc., use

One part Portland cement.
Two parts fine aggregate.
Four parts coarse aggregate.
2 lb. Aquex per 100 lb. cement.

Concrete for basements, and work subject to water pressure, garage pits, stoke-holes, etc., use for floors :—

One part Portland cement.
One part sand.
Three parts coarse aggregate.
4 lb. Aquex per 100 lb. cement.

And for walls use :—

One part Portland cement.
Two parts sand.
4 lb. Aquex per 100 lb. cement.
Render in three coats one inch thick.

Flat roofs :—

One part Portland cement.
Two parts sand.
Three parts coarse aggregate.
3 lb. Aquex per 100 lb. cement.
Finish with a three-quarter inch rendering composed of :—
One part Portland cement.
Two parts sand.
4 lb. Aquex per 100 lb. cement.

Prices :—

7 lb. tin	7s. 6d.
28 lb. keg	26s. 5d.
56 lb. keg	11½d. per lb. Packing 1s.
1 cwt. keg	11d. per lb. Packing 1s.
10 1 cwt. kegs ..	10d. per lb. Packing 1s. per cwt.
20 1 cwt. kegs ..	9d. per lb. Packing 1s. per cwt.

All prices are Carriage paid to nearest Railway Station.

Aquex Waterproofing Liquid.

Is added to the gauging water for the concrete. For full details, characteristics and application see future Information Sheets.

Manufacturers : Associated Building Products (Leicester), Ltd.
Address : 19, Albion Hill, Leicester
Telephone : Leicester 59209
London Office : 109, Kingsway, W.C.2
Telephone : Holborn 7670