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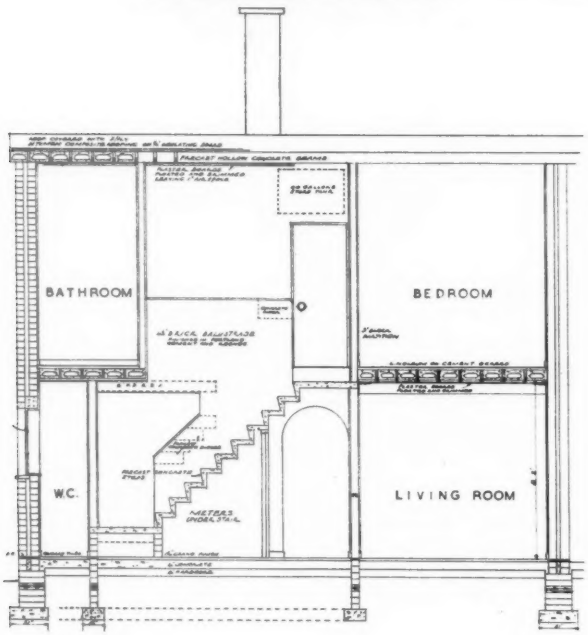
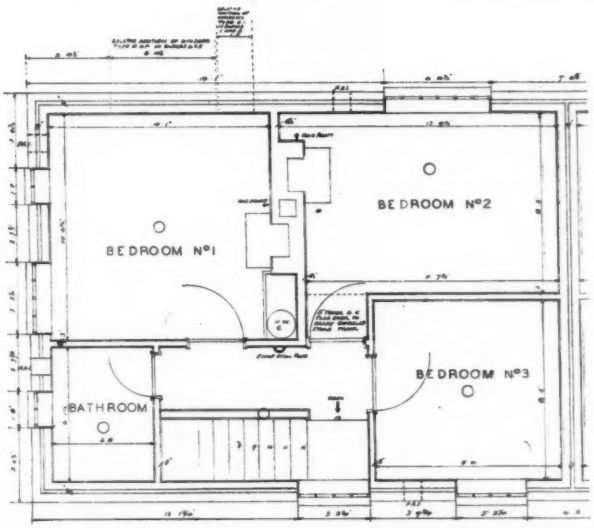
The Editor will be glad to receive MS. articles and also illustrations of current architecture in this country and abroad with a view to publication. Though every care will be taken, the Editor cannot hold himself responsible for material sent him.

THURSDAY, MAY 2, 1940. NUMBER 2363 : VOLUME 91

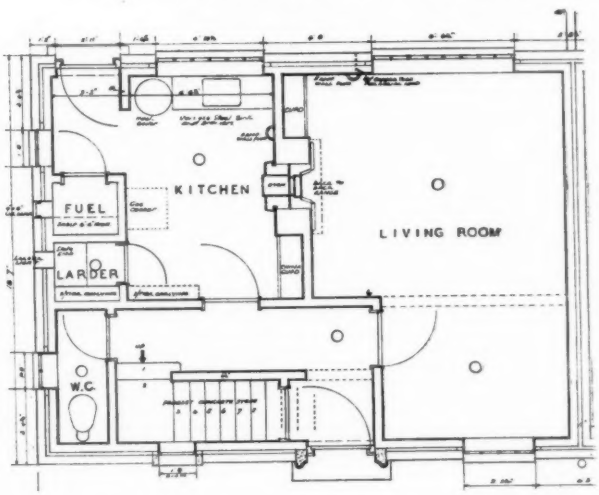
PRINCIPAL CONTENTS

NON-TIMBER HOUSES, LIVERPOOL





GROUND AND FIRST FLOOR PLAN AND LONGITUDINAL SECTION



Liverpool City Council is to build 20 experimental houses of the non-parlour type. Perspective, plans and section are reproduced on this page.

In view of the drastic reduction in the importation of timber and the necessity of diverting a large volume of the reduced import to war purposes, it is essential where house building is to continue to reduce the amount of timber used in construction to a minimum. The intention of the present experiment, which has the approval of the Minister of Health, is accordingly to produce a house which will be in every way satisfactory as a dwelling-house, in the construction of which other materials have been substituted for timber wherever possible and the design and construction varied on that account from traditional methods.

Details of construction and finishes:

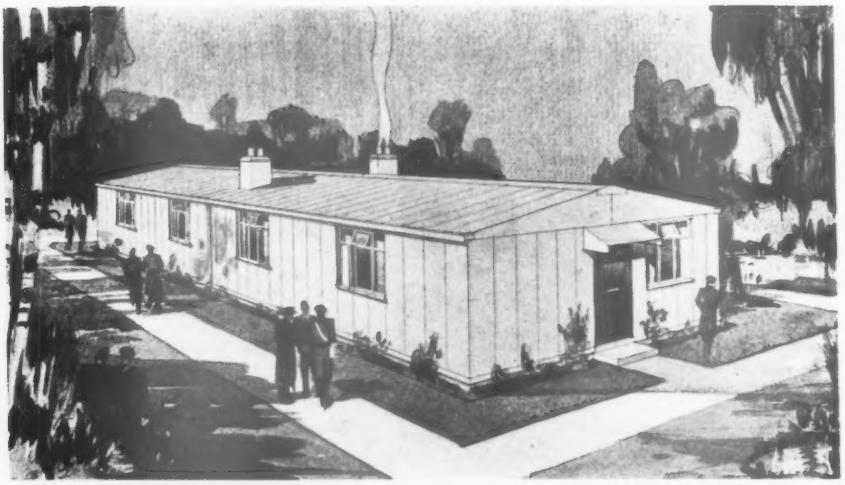
The houses, which are all of the type generally described as "long-fronted," are being erected by direct labour from designs prepared in the office of the City Architect, Mr. L. H. Keay. The houses will be built in common brick, and colour-washed, which is a feature of many of the Liverpool housing estates. Bright colours will be used in all paintwork.

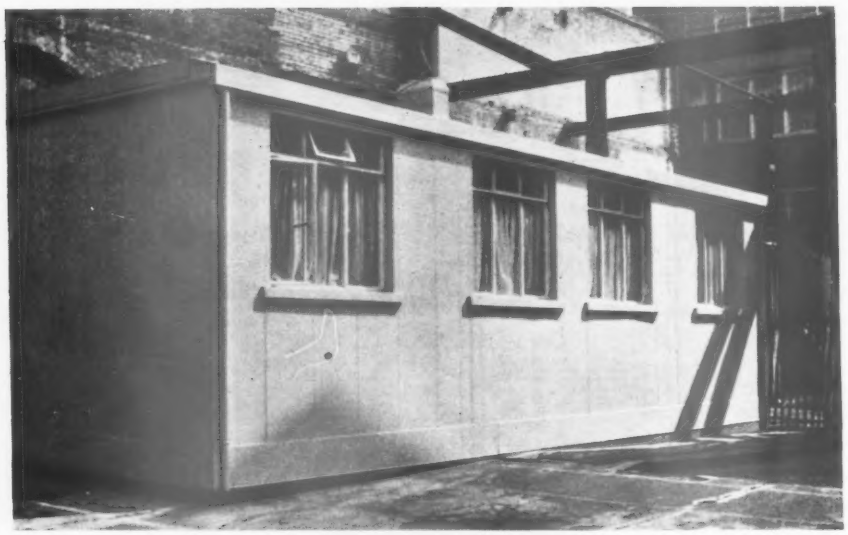
Ground floor will consist of a concrete raft laid on the solid, and will be finished in the hall, scullery and offices with either quarry tiles or one of the patent floorings. In the living-room the finish will be of one of the patent non-magnesite flooring blocks. First floor will be constructed of pre-cast concrete beams spanning between partitions or carried on steel joists and reinforced concrete beams between longer spans. Ceiling will be plastered in the usual way, and the floor covering to the upper surface will be of linoleum or one of the patent floorings laid direct on the concrete or on a cement screed. Roof will be of similar construction to the first floor, but pitched to a slope of about 12½ deg.

Projection of 12 in. will be given at the eaves and the usual cast-iron eaves gutter fixed on iron brackets fastened directly to the concrete. Insulation will be provided on top of the roof beams by a suitable insulating board, and on the underside by fixing the plaster boards 1 in. clear of the beams, which will also allow for the running of electric wiring immediately above the ceiling. Air space in the hollow beams will also provide additional insulation. The use of pre-cast roof beams eliminates the necessity for wood centering and propping, though it may be necessary to fix small timber strips between the roof beams to carry ceiling boards unless some other suitable material can be found for the purpose.

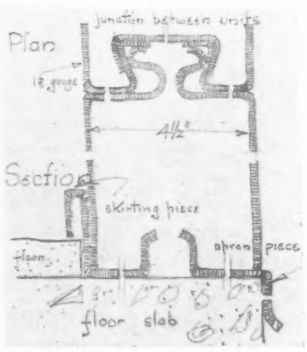
Windows will be of steel throughout with pre-cast stone or similar external sills and quarry tile window bottoms. Door-frames and architraves will be of steel, with the possible exception of those to the entrance doors. Doors may possibly have to be of timber, as steel doors are costly and have other disadvantages, but only the framing of the doors need be of timber, the panels being of heavily compressed fibre, metal or glass. Skirtings will be of tiles or cement, and there will be no picture-rails. Stairs will be of pre-cast concrete units, with either linoleum treads or with eyes cast in for stair rods.

Following the practice adopted in all recent building operations by the Corporation, an air-raid shelter will be provided in the entries between houses.





NEW STEEL CONSTRUCTION



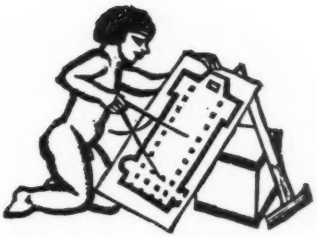
During the early months of the war a number of investigations were made of alternatives to timber construction for military hutting. The system of construction used for the building shown here was the outcome of one such investigation.

The system has been developed from a French prototype by Mr. G. Bacher, in conjunction with Mr. Alister MacDonald and Messrs. Pollard.

The construction is of pressed steel interlocking units. No bolt, lug or screw is used except for fixing doors and windows. Round a level concrete floor—slab lengths of loose external apron are laid and lengths of loose skirting inside it. Over these the 18 in. by 4½ in. standard vertical 18-gauge wall units are placed and clipped together as shown diagrammatically on the right. Ceiling and roof members are the same, and fit into pressed steel boxed trusses. Partitions are similar but thinner; and comparatively few special units are needed for corners, chimney breasts, windows and door jambs.

Insulation in external units can be either of slag wool or other mineral fibres, of straw or sawdust, or anything that is handy—like sand.

Roof joints drain into gutters, and external wall joints through weepholes or slots cut in concrete slab. The external finish is a chromate paint used by the R.A.F. for seaplanes and on other exceptionally exposed metal.



WANTED, LESS "*MORE WORK!*"

FOR eight months the building industry has been trying to make up its mind about the war. And it became clear at an early stage that the first step in that process was for the whole industry to reach agreement on the volume of building which should be maintained in wartime as an economic and strategic necessity.

The industry has failed to make up its mind on this primary question—has failed, with results that steadily grow more harmful.

It is easy, now, to see how this failure came about.

For the first months of war B.I.N.C. gave its attention to defects in the war building programme which were capable of immediate remedy. A somewhat wider distribution of contracts was secured and some improvement in the use of materials. But when B.I.N.C. came to deal with larger matters—such as the need for a single distributing centre for Service contracts, for a programme prepared in advance, for a carefully planned distribution of Service contracts—the Government refused to accept its advice. Thereafter B.I.N.C. succeeded in interesting some Members of Parliament in its contentions, but that was all.

The position of B.I.N.C. when this state of affairs first became clear early this year was extremely difficult. It was thrown back on the fundamental problem of the volume of building which ought to be maintained as a national necessity throughout the war—a problem primarily economic, partly strategic and partly dependent on factors which will only come into existence after the war.

The objections to B.I.N.C. itself stipulating what the minimum level of wartime building should be were obviously great. It would have been setting itself up as arbitrator in its own case, and was handicapped by having to obtain the support of an industry unaccustomed to united action.

If therefore B.I.N.C. had published in January its reasons for maintaining that building volumes should not be allowed to fall below, say, one-third of those existing in August, 1939, it would almost certainly have been attacked by the organizations it represents as having put its claims too low: while Members of Parliament and others outside the industry might well have suspected that it was asking for twice what it hoped to get.

These no doubt are the reasons why B.I.N.C. has so far left this thorny question alone. But the consequences of a neglect for which the whole industry is to blame will not easily be remedied.

Unable to move the Government's advisers on points of organization and materials, and unwilling to demand a definite volume of building, the industry has confined its recent efforts to a general appeal for more work—and has thus fallen between every stool.

"More work" is too vague a cry to command attention during war; it appears to have no relation to the country's war effort; it appears self-interested; and has even been thought unpatriotic by some of the industry's own members.

This is not a situation which should be allowed to continue. The industry must either accept what the Government thinks fit for it, or it must have a plan of its own which it is prepared to stick to because it is convinced that it is essential to the country's efficiency in war.

The question which must be decided at once, therefore, is by what means the industry can estimate the building volume which the country should maintain in wartime.

The JOURNAL believes that a suggestion made by Mr. J. L. Greaves in a letter published in this issue points the way—and the only way—by which this question may be answered for the whole industry. Mr. Greaves suggests that an economist of acknowledged eminence should be asked to prepare a report on the economic aspects of the industry's case.

In the JOURNAL's view the industry has everything to gain by the adoption of this course. As things now stand economic arguments presented to the Government by the industry itself must be regarded with suspicion; while individual members of the industry—who know nothing of economics—would welcome an authoritative statement on the degree to which national interests coincide with their private needs.

If B.I.N.C. were to ask an economist of the reputation of Mr. J. M. Keynes to examine and report on the whole economic question of the building industry and its proper functions in wartime, and if Mr. Keynes were able to accept such a request from the second largest industry in the country, this uneasy stalemate would be ended.

Mr. Keynes's verdict might be that it would be unwise to expend on building a much greater portion of national resources than that which is represented by the Service Departments' present programme. If so, the industry would be ready, the JOURNAL believes, to make the required sacrifices. On the other hand, if Mr. Keynes advocated the maintenance of a larger building volume, the industry would be armed with arguments which, when added to its own, would compel a full examination to be made of its case; and, furthermore, it would be fully justified in using its huge influence to see that the examination was not too long delayed.

The Architects' Journal
45 The Avenue, Cheam, Surrey
Telephone: Vigilant 0087-9.

NOTES & TOPICS

CHOOSING A BUILDER

IN his articles on the building industry, Mr. Howard Robertson has been bold enough to lay hands on that central pillar of industry's present organization—the competitive tender.

*

He believes that so involved an affair as a modern building demands—if it is to be successful—the collaboration of architect, builder, engineer and surveyor from the very beginning: and not from a point when the scheme is so advanced as to make going back almost impossible. He seems to advocate, in short, the selection of a builder on his reputation and his remuneration by a fee.

*

Unofficially, the choice of a builder on these grounds does sometimes take place—to the justifiable annoyance of those rivals who spend time providing a check for the lucky firm's price. But its general adoption will certainly depend on clients being convinced (1) that they know in advance what the building will cost to within 5 per cent., and (2) that it is in somebody's interest to reduce costs.

*

At least one of the big London builders has, for use on rush jobs, a variation of cost-plus-profit contract which ought to satisfy clients on (2). But point (1) remains the big difficulty.

ALL STEEL PREFABRICATION

I have examined in times past, in a multitude of architectural papers, as many new systems of prefabrication as most architects. All of them have seemed to have serious faults: the units were too large or too heavy, the system too complicated or needed very special skill.

*

The steel bungalow which rests snugly in the National Car Park behind the Holborn Restaurant changed my opinion about prefabrication. The system of construction used in building it (designed by Mr. G. Bacher in conjunction with Mr. Alister MacDonald and Messrs. Pollards) is an improvement on anything I have seen of the same type.

*

The bungalow and its construction are illustrated on another page* of this issue, and therefore I will only emphasize here the system's rigidity. A partition of 2-in. thick units, only clipped together and tied neither at head nor foot, seems as firm as 9-in. brick.

*

The increasing scarcity of steel may prevent this development being widely used for the hutting for which it was first intended. But we shall hear more of it, war or no war.

PALETTE FRONT

In writing last week of the National Gallery Exhibition of British painting that it should please everybody, I spoke with an easy optimism, for the correspondence columns of *The Times* have for some days been aflame with passionate discord on the subject.

*

Mr. J. B. "late-of-the-Tate" Manson, who will be remembered for his part in the famous Brancusi Customs dispute, has opened the attack by describing the exhibition as "masquerading . . . pictures chosen at the caprice of individuals."

*

Mr. Olsson and Mr. Munnings (fresh from a recent campaign in other quarters), have made venomous flank assaults, while Mr. C. R. W. Nevinson (well represented, incidentally, in the show) has proved himself a shock-trooper by advancing boldly into the open with cries of "Nazism in the National Gallery" . . . "coteries" . . . and "ostracism."

*

Against such withering fire the defences of Mr. D. S. MacColl and Sir Hugh Walpole seem perhaps a little amiable in tone. However, if they lack the vitality of ill-temper they are sane and solid enough, and the day has not by any means been lost.

*

For furious excitement and displays of spleen there is nothing (except perhaps a meeting of the R.S.P.C.A.) like a good dispute about art. This one looks like being the best of recent years, and has not yet reached its climax. If you need a tonic, here is a cheap one.

WEEK-END BY THE SEA

I spent last week in what is known these days as a S.E. coast town. The whole place bulged with the Services; army lorries were ranked along the promenades and squares, and every hotel and boarding house was a service billet.

*

One hotel, however, had rooms available. It was a pleasant stuccoed villa built in 1806 by the then professor of astronomy at Cambridge. He was reputed to be an eccentric, but his house showed no sign of it, with its elegantly curved staircase and lofty, spacious rooms—marred only by modern partitions constructed, if noise transmission was any guide, of paper.

*

The lounge after dinner glowed with scarlet and braid behind the blue clouds of pipes and cigars. In the corner, like an idiot child, the radio crooned and gibbered to itself above the high, well-bred chatter of officers' wives (knitting, Urquhart tweeds, pearls and brogues) and the equally

* Page 446.

well-bred screams of officers' children. As the only civilian present (except for a bearded cleric) it was hard for one to resist assuming in quick succession the defensive rôles of secret-service agent, sufferer from an incurable disease, member of a very reserved occupation, or even, at one desperate point, of Mr. Montagu Norman. None of these shameful impersonations were noticed.

★

While trying to photograph Regency balconies and doorways I was stopped four times by police, soldiers or officious civilians, for behind every elegant fanlight and curved bay-window lurked a soldier. The fact that it was still possible to buy at any shop a postcard of the very hush-hush harbour was no defence, and I was forced to visit the police station—happily not for any length of time.

IT TAKES YOU BACK

Some weeks ago I drew attention to Hollywood's neglect of architects as potential screen material. As if in answer, a film called *Daytime Wife* has just been generally released, which tells of an architect's illicit love for a roofing contractor's wife.*

★

Business is rarely discussed, for all parties concerned are evidently prosperous. The roofing contractor lives in a house whose living room is a rich medley of marquetry and sheepskin, of sliding windows, black marble columns, and white wrot-iron furniture. The architect's office is suave and sumptuous, his twenty assistants work in a lofty room surrounded by full-size casts of the Orders, and when first discovered he is sitting, feet on streamlined desk, reading *two* architectural magazines at once. There's smartness for you.

★

The quality of his practice can be deduced from the specification he is at one point overheard dictating to his luscious secretary . . . " the walls are to be of hollow concrete blocks laid alternately moulded and smooth, and the roof is to be of copper-covered steel. . . ." (Evidently one of the organic school of designers.)

★

It is a trivial tale, but slickly and amusingly told. Those of you who have closed your offices or who sit in offices which might just as well be closed, will probably find it a tonic (as I did) to see again quickly moving tee-squares, to hear once more the barking of dictaphones, and to be present at the signing, even in shadow form, of a real contract.

TIMBER SHORTAGE

A correspondent has suggested that architects might well spare a moment during these days of worry over the shortage of building timber to consider the much more difficult position in which that shortage has placed other trades—for whose needs alternative forms of construction are very hard to find.

★

Consider, he writes, the problem now facing the toffee-apple industry—whose sticks are already both thinner and shorter. That the stick should be shorter is bad enough, and demands a far higher standard of skilled labour for the manipulation of the lower half. But regular consumers who have so far gone on the principle that the biggest is best are reported to view the reduction in scantling with grave misgiving, and to have complained that the safety factor has been reduced far below L.C.C. requirements.

★

The solution of short weight is likely to endanger a very sensitive market and unbalance a basic industry. It is this kind of thing that brings the war home to one.

★

I can only suggest the famous solution which the Timber Controller announced was going to be adopted for army broom handles: making them square instead of round, in order to save cutting to waste. Toffee-apple fans are a sporting lot and will regard an occasional splinter as part of the luck of the game.

ASTRAGAL

* Above, *Architect* Warren William and *Daytime Wife* Linda Darnell. Below, *Daytime Wife* with *Roofing Contractor* Tyrone Power.

PAPER CONTROL

Owing to the paper shortage caused by the German invasion of Scandinavia, the JOURNAL, in common with all other papers, is now only supplied to newsagents on a " firm order " basis. This means that newsagents are now unable to supply the JOURNAL except to a client's definite order.

To obtain your copy of the JOURNAL you must therefore either place a definite order with your newsagent or send a subscription order to the Publishers.

NEWS

INDUSTRY AND M.P.s

In the House of Commons today certain proposals which aim at alleviating the critical condition now prevailing in the Building Industry are being put before an all-party meeting of M.P.s.

MARGATE COMPETITION: EXTRA PREMIUM

Mr. A. Koerner is to receive £200 from the Margate Council for the design he submitted in the competition for the proposed Civic Centre, Margate. *The Ramsgate Advertiser and Echo* states :

Although there is little prospect of Margate's new municipal buildings being erected for some time to come, the council are faced with the expenditure of an additional £200 in connection with the submission of designs.

The report of the council in committee embodied a report of the sub-committee re municipal buildings, police station and courts and fire station.

The sub-committee reported that the assessor (Mr. Anderson) had not, in his original award, considered all the designs submitted, and had given instructions as to the procedure to be adopted. The assessor had since compared seven designs, which he had not considered when making his original award, with the three designs premiated under the award, and that he had placed the design of competitor No. 30 equal in merit to the design originally placed third, and that design No. 25 was highly commended.

The sub-committee therefore recommended that an additional third prize of £200 be awarded to competitor No. 30 who, on investigation, was found to be Mr. A. Koerner, 12 Great Russell Street, London, W.C.1.

Council in committee resolved that the sub-committee's recommendation be adopted.

ADDITIONS TO GREEN BELT

Further 250 acres of land are to be added to the Green Belt, and the L.C.C. is to contribute some £9,300 towards the cost of acquisition. Two areas in Buckinghamshire are principally concerned—Isle of Wight Farm, Gerrard's Cross, and Denham March Wood, occupying some 170 acres, and Bacombe Hill, Wendover. The latter is 77 acres in extent and adjoins Coombe Hill, which is owned by the National Trust.

ORDER FOR ONE MILLION CONCRETE BLOCKS

A million concrete blocks, the largest single order placed by the Government for building materials since the outbreak of war, have been ordered from a Nottingham firm for the construction of a new £350,000 militia camp in the East Midlands.

R.I.B.A. MEDAL AWARD

Messrs. Gribbon, Foggitt and Brown, of Leeds, have for a second time won the R.I.B.A. Bronze Medal for the best building erected in the area of West Yorkshire Society of Architects during the past three years. The award was for their design of the Church of St. Augustine.

MINISTRY OF SUPPLY

AIR-RAID SHELTERS

Ministry of Home Security has approved certain alternative materials for air raid shelter under the provisions of paragraph 2 of the "Revised Code of Air Raid Shelters for Persons Working in Factories, Mines and Commercial Buildings" (Statutory Rules and Orders, 1939, No. 920). Paragraph 2b (iv) of the Revised Code prescribes construction for overhead protection. The Minister has approved the following alternative construction under this paragraph :

Hollow type construction, in which are incorporated hollow tiles, hollow concrete blocks, or precast reinforced concrete structural units, provided that—

(*a*) It has been designed for its normal structural purpose in accordance with the Code of Practice for the use of Reinforced Concrete in Buildings prepared by the Reinforced Concrete Structure Committee of the Building Research Board, or in accordance with the appropriate building regulations at present in force, to carry safely a superimposed load, in addition to its own weight, of not less than 50 lb. per sq ft. of covered area; and

(*b*) It has, above the system of tiles, blocks or precast units, not less than 3 ins. of reinforced concrete, or alternatively, not less than 2½ ins. of reinforced concrete together with a superimposed screeding not less than 1 in. thick.

Paragraph 2 (*a*) of the Revised Code relates to lateral protection, and the following alternative special construction has been approved :

Walls, 18 ins. thick, built with precast rectangular hollow blocks of cement concrete, having overall dimensions approximately 18 ins. by 9 ins. by 9 ins.; the walls and central web of the blocks to be at least 2 ins. thick, and the cavities filled with ballast, shingle, earth or sand; the blocks to be bedded in a suitable mortar, which may be of a non-hydraulic lime and sand to facilitate the recovery of the blocks if and when the wall is no longer required.

The quality of the concrete to be such that the compressive strength of the blocks, tested at 28 days with the cavities unfilled, is not less than 1,500 lb./sq. in. calculated on the net area of the walls and central web of the blocks, and a test certificate must be provided if required.

TIMBER

Following notices have been issued by Ministry of Supply :

Timber Controller wishes to remind the timber trade that the closing date for the receipt of applications for trading quotas is now past. Accordingly no further applications or requests for forms of application can be entertained. A very large number of applications for quotas has been received, and it will be some time before these can be dealt with and the quotas made known to those to whom they have been granted.

With reference to the notice issued on April 17, 1940, about maximum prices for home-grown timber it should be noted that the statement that maximum prices for home-grown timber are "free on rail" applies only to converted softwoods and converted hardwoods (Divisions C and D of Part II of the Second Schedule to the Control of Timber (No. 1) Order, 1939).

WELSH BOARD OF HEALTH

Minister of Health (Mr. Walter Elliot) recently announced in the House of Commons that it was his intention in future

Mr. R. Fraser Reekie, A.R.I.B.A., who has been awarded the R.I.B.A. Grissell Gold Medal

to exercise through the Welsh Board of Health all the principal powers and duties of the Minister of Health in relation to Wales, subject to central direction of broad policy. Minister has now informed local authorities in Wales and Monmouthshire that arrangements to this end have been completed and will come into force on May 1. They will cover housing and town planning; local sanitary and other services, including water supply, sewerage and sewage disposal; and alterations of boundaries of local Government areas.

These duties are in addition to the functions already exercised through the Welsh Board of Health.

WEST YORKSHIRE SOCIETY

Mr. J. E. Stocks, F.R.I.B.A., was elected President of the West Yorkshire Society of Architects at the annual meeting on Thursday last. He is 55 years of age.

In an address, the retiring President (Mr. F. L. Charlton) said the architect did not seem to be considered necessary or to be the right person for structural work in the Service in wartime. The engineer of every branch had a niche found for him, but not the architect.

Mr. Charlton suggested that now supplies of raw materials were cut off from the building trade for all but essential needs, there must be research into substitute materials which one day might be universally used and bring about the birth of a new architecture. While architects were marking time, they might be employed in the preparation of measured drawings, as a record of buildings of historic interest and architectural merit where plans were no longer in existence, to be used for the purpose of rebuilding should they be destroyed by air attack.

Following officials were elected : Vice-presidents, Mr. R. A. H. Livett and Mr. C. Hickson; hon. secretaries, Mr. Norval R. Paxton and Mr. H. J. Brown; hon. treasurer, Mr. F. L. Charlton; chairmen of branches, Mr. E. Abbey (Huddersfield), Mr. B. W. Bailey (Bradford), Mr. C. E. Horsfall (Halifax), Mr. M. C. Kay (Wakefield).

PARIS TRADE FAIR

On presentation of the official Fair Voucher (Carte de Légitimation)* visitors to the Paris International Trade Fair (May 11–27) from Great Britain are entitled to specially reduced through return tickets (London–Paris), incorporating a reduction of approximately 40 per cent. on the French Railways and of 33⅓ per cent. on the English part of the journey.

Full details are obtainable from London office of the Foire de Paris at 17 Tothill Street, Westminster, S.W.1.

* The *Carte de Légitimation* is issued to *bona fide* trade visitors to the Fair by the following organizations : The London office of the Foire de Paris, 17 Tothill Street, S.W.1, The French Commercial Attaché in London and Dublin, French Consuls and Consular Agents, The French Chambers of Commerce in London and Liverpool.

ANNOUNCEMENTS

Mr. Herbert J. Rowse, F.R.I.B.A., has vacated his office at Puddington. His address is : Martins Bank Buildings, Liverpool. (Telephone : Bank 345.)

The practice carried on by Messrs. Walter Rudman and Edwards, F/A.R.I.B.A., at 32 Market Place, Chippenham, Wilts, is being continued by Mr. P. W. Edwards, A.R.I.B.A., under the same title and at the same address. The partnership was dissolved by the death of Mr. Walter Rudman, M.C., F.R.I.B.A., in November last.

W. E. Edleston and G. L. Cadell, A/A.R.I.B.A., have closed their office at 46 Old Bond Street, London, W.1, for the duration of the war. Correspondence should be addressed to 90 Westbourne Terrace, London, W.2. Tel. Paddington 5894.

OBITUARY

Death took place last week of Mr. B. T. Francis, F.R.I.B.A., of Vicarage Avenue, Derby, senior assistant to the architect to Derbyshire County Council, on whose staff he had served for 20 years.

ELECTION OF OFFICERS

At the annual meeting of the Nottingham, Derby and Lincoln Architectural Society, the following officers were appointed :

President, Mr. A. E. Eberlin, Nottingham; vice-president, Mr. C. H. Aslin, Derby; council : Messrs. W. W. Cooper, R. E. M. Coombes, Lincoln, W. C. Baldrey, Nottingham, T. Cecil Howitt, Nottingham, E. Phillips, Nottingham, W. H. Golightly, Nottingham, C. A. Pilkington, Nottingham, B. G. Hughes, Derby, B. Widdowes, Derby, Leonard Smith, Belper; secretary and treasurer, Mr. W. L. Dunn; hon. secreretary, Mr. Baldrey; hon. librarian, Mr. R. Spencer.

DIARY

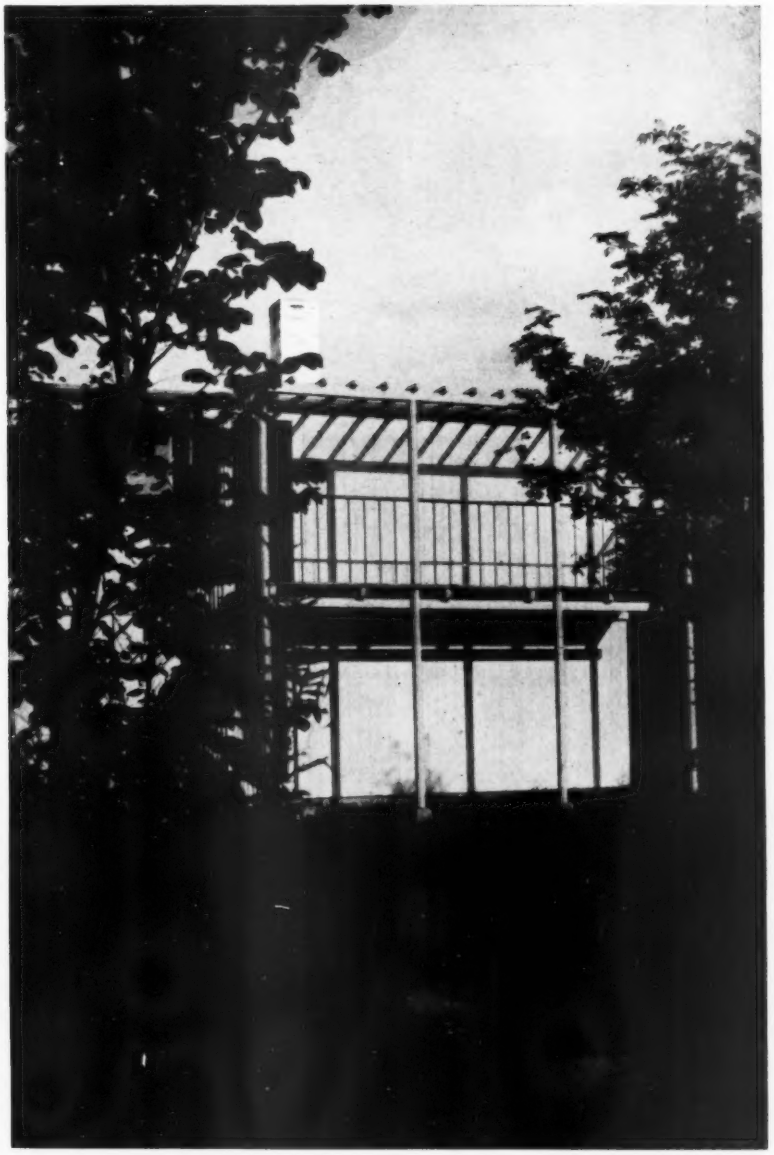
Thursday, May 2.—ARCHITECTURAL ASSOCIATION, 36 Bedford Square, W.C.1 (Joint Meeting of the Junior Members of the A.A. and R.I.B.A.). "The Case for Prefabrication." By Dennis Clarke Hall. 6.30 p.m. BUILDING CENTRE, 158 New Bond Street, W.1. "Clay Products." By Col. C. W. D. Rowe. 6 p.m.

Monday, May 6.—ARCHITECTS' BENEVOLENT SOCIETY. At 66 Portland Place, W.1. Annual general meeting. 5 p.m. CHARTERED SURVEYORS' INSTITUTION. 12 Gt. George Street, S.W.1. Discussion : "The Compensation (Defence) Act, 1939." To be opened by C. G. Eve and G. L. Vigers. 5 p.m.

Tuesday, May 7.—ARCHITECTURAL ASSOCIATION. "Architectural Finish." By W. L. Stevenson. 8.30 p.m. Also, exhibition of recent paintings, drawings and sculpture, by W. L. Stevenson. LEEDS SCHOOL OF ARCHITECTURE. At City Art Gallery, Leeds. Exhibition of students' work. To be opened by Lord Harlech at 3 p.m. Until May 21. (10 a.m. to 6 p.m.) BUILDING CENTRE. "Steel." By C. J. Kavanagh. 6 p.m. "Glass." By Geoffrey Pilkington. 6.45 p.m. AIR RAID PROTECTION INSTITUTE. At the Royal Society of Arts, John Street, Adelphi, W.C.2. "The Organization of the Casualty Services." By J. A. Struthers. 8 p.m.

HOUSE AT TISVILDELEJE, DENMARK

DESIGNED BY VAGN KAASTRUP



Above, living-room window from south; right, view from west

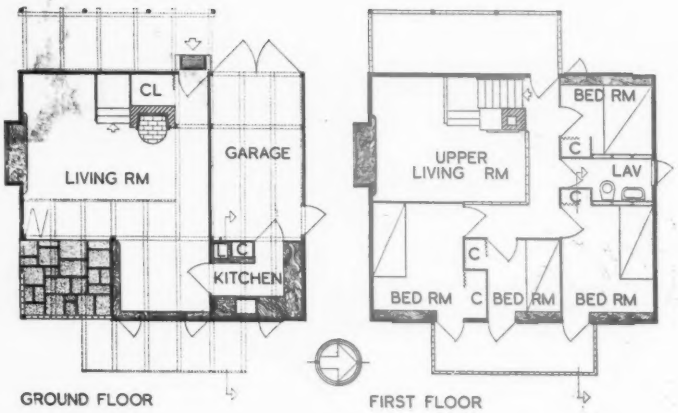
SKETCH FROM SOUTH-WEST

SITE—A flat field near the sea, sandy and protected by existing hedges.

CONSTRUCTION AND FINISHES—Framed, with T. and G. finish outside and lining. The roof truss, at its highest, is taken advantage of to raise the ceiling heights of the east bedrooms. The air space above serves as insulation space. The house is painted white outside, with natural wood interior. The wood posts supporting the balcony are light blue and the metal rails red.

SECTION DETAIL SHOWING CONSTRUCTION OF THE COLD BOX BELOW GROUND INTO WHICH FOOD-STUFFS ARE LOWERED BY HAND LIFT

View from south-west



PLAN—The house is planned for summer use only with cubicle bedrooms and double-height living-room. The stairs are supported by the central brick stack, and serve the bedroom floor over kitchen and garage. Outside balconies are provided for sleeping. Electric refrigeration is not possible, but a cold box below ground is provided according to the common Danish practice.

HOUSE AT TISVILDELEJE, DENMARK • DESIGNED BY VAGN KAASTRUP

THE NEXT YEARS

By

Howard Robertson

M. C., S. A. D. G.

[*VICE-PRESIDENT of the ROYAL INSTITUTE OF BRITISH ARCHITECTS*]

SYNOPSIS

THE present war is a fight for civilization. Civilization has been well defined as a state of well-being. A preliminary to well-being is order—now in danger throughout the world. Against increasing disorder certain groups within the community are bound to fight.

One of the national groups most closely bound up with good order is the building industry. When building achievement is at its highest so is the well-being of the community. But if building is to make its own contribution to order, the organizations which produce building must themselves be in order.

The first great problem affects the function of the architect, whose job has in the past years become more and more inclusive, and thus more and more nebulous. He is forced today to supply in building many of the functions which ought in fact to be carried out by other specialists—to the detriment of his own particular contribution.

That particular contribution is design. Our realization of this is obscured by differences over how that power to design should be used. New constructional possibilities, allied with influences from abroad, have led to a school of design in which simplicity of form may be succeeded by sterility. The reduction in range of materials and design forms may also reduce range and elasticity in power to design.

To preserve his power to design, the architect must be relieved of supervision, and this needs a closer collaboration between builder and architect. Bad workmanship should no more exist in building than in a new motor-car model. To achieve such collaboration and understanding the young architect and the young builder should receive some of their training in common. And it is equally important for architectural students to have contact with painters and sculptors, so that through architecture these arts will have a place, as a matter of course, in all buildings.

There is still too great a tendency to group architectural forms narrowly within various styles: whereas in fact a few basic influences have permeated all schools of design—the traditionalism of today is not that of yesterday.

A broader and truer standard of architectural criticism is what may be called THEME—the new direction from which a designer approaches his work.

There is a hierarchy in architectural design. After the originator of a theme come all conscientious architects who examine use or reject.

Those middlemen are still working on contemporary architecture, both traditional and modern. And it may be that progress could be quickened not only by standardization of good equipment, but also by the preparation of a Black Book of faults in design, which would never be repeated.

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IF war conditions are to leave their mark on architectural design, many problems will arise. First, that of protection—the air-raid precautions as part of the building programme. If A.R.P. is demanded, and there appears to be no guarantee that it will not be, the architect will have to meet new sets of conditions, which may be so studied in conjunction with other sets of requirements that a new solution to plan and section will arise.

There has always been much to be said in favour of the house on "stilts," because of the use which can be made—realistically considered—of the ground-floor space. Congestion, traffic problems, demands for recreation space, can all be eased by the raising of the house from off the ground, and at the same time there may be advantages in this from the standpoint of blast and shock—experience in this war will show. Nevertheless, the underground shelter will probably be considered a necessity, and it is more than likely that it will be developed into a peace-time amenity, as room space available for recreation, work, and general household service. It is possible, therefore, that the home of the future will contain two connected elements: that raised above the ground, and that below it; with sections devoted to daytime, evening, and night, connected by vertical circulations. The bedrooms of the future may become mere cabins, raised in the air, as would be the day-time living-room. Dining-rooms, work-rooms and studies, dormitories, kitchens and services, may be underground, permitting life to be carried on in emergency completely beneath the shelter of the abandoned structure

above. The improved technique in building, including perfection of heating and ventilation, renders such solutions practicable. They may not at first sight sound agreeable. But the skill of the designer will soon develop a technique rendering such arrangements at least as palatable as the basement playroom of many an American home today, with the gas or electric furnace as a gaily coloured and functional adornment.

With building considered as shelter, it is clear that the type of shelter will be largely conditioned by such questions as those of security against air attacks, gas, and all those techniques of offensive which the war may bring out. Within these limitations, however, there are possibilities of a general order which have not been fully exploited.

Among them is consideration of improved flexibility in planning if some better scheme can be devised for subdividing space than that offered by standard methods of partitioning.

Le Corbusier made a strong point of the advantages of post and slab construction in achieving freedom in fenestration and a resultant *plan libre*, with partitions placed at will. This idea has attractions for many of Le Corbusier's disciples; but in actual practice partitions are often tied to their original position and the subdivisions of space are permanent. Indeed, in some reinforced concrete structures the partitions form an integral part of the structure, and the flexibility is more apparent than real.

There would be many advantages, however, in any scheme by which partitions were designed less as fixtures and more as screens which could be arranged like furniture after the building was completed: provided that the very real technical difficulties could be overcome. The average block of flats today offers a variety of apartments, planned to provide the sort of accommodation which the promoters believe will be popular, and the same applies to the speculative house. In other words, the accommodation is imposed, and it is hoped that the tenant or purchaser will be suited.

This is not quite logical. If maximum comfort and convenience are going to be accepted as likely objectives, the very major point of internal room-space treatment lies at its root, and needs to be considered in relation to habits of life, furnishing. And in the case of rented flats in particular, the treatment should be capable of variation to meet the needs of successive tenants.

Certain elements of the plan will almost inevitably be fixed within limits; the kitchen, lavatories, and position of main and service entrances. But it would be an advantage if, when apartments are marketed, it were possible to offer the whole remaining floor surface as an open space, to be subdivided at will, in exactly the same way as is done in office buildings. It may be objected that the average tenant will not have enough imagination to visualize an effective subdivision. But that objection applies equally to offices, and is overcome without much difficulty. The material for partitions offers the biggest problem; but if it were possible to move a step beyond the sort of suggestions offered in the Stuttgart "Weissenhof" experiments, we might arrive at an up-to-date rendering of the Japanese system of standard units of partition and carpet divisions, at a mathematical scale of sizes any multiple of which would be available for room subdivisions. Conditions of life vary so rapidly today that flexibility may prove of greater concern than those forms of functionalism which are based on an aesthetic which is not directly contributing to standards of convenience. Providing a means, and an encouragement, for the public to develop an *art* of living is more important than imposing a design for living. And while the idea of the subdivision of shelters into cells will almost certainly persist for reasons of privacy, it would be of immense advantage if the layout of the cells were not predetermined. If speculative building of flats and houses continues, it would be an interesting and almost surely a profitable venture to develop a scheme offering space in lieu of rooms. Incidentally, something similar to this idea has been tried successfully in America in the construction of artizans' dwellings.

The type of shelter—of all types—which the building art of the future will provide should properly be governed by social considerations acting through organized town planning. Congestion in towns, the experience gained during the war of the value or otherwise of decentralization and provision for evacuation, may have very far-reaching effects, and we may see the establishment throughout the countryside of the sort of small self-contained centre which will offer amenities for independent living, while the towns retain their principal function as a workshop. In any case the big cities will require drastic treatment if problems of circulation are to be seriously attacked.

A possible solution for London and other large centres might be offered by the provision of a network of roadways above the roof-tops of controlled maximum-height buildings. Their approaches would have to be contrived by the provision of long ramps, and for these certain existing arteries and open spaces would have to be sacrificed. The roadways would be highways for throughway traffic, along the lines of the New York roadways of the Triborough Bridge. They would be supported on "legs," and would be laid out in the form of a huge diagonal mesh, not following the direction of main arteries at ground level. They would thus avoid what generally happens with elevated roadways—the darkening of the avenue below—and the diagonal disposition would enable the layout of the supports to avoid—in the main—interference with buildings below. Systems of lifts would be required at given points, as in the case of the tubes, but the stops would be widely spaced, and the traffic would be limited to express transit only, thus relieving the congestion of existing roadways. Provision of garaging and parking spaces underground and by an opening up of the ground floors of new buildings may palliate present difficulties. But London, for example, is too built-up to make feasible any drastic rebuilding operation such as would be necessary to achieve roadways at first floor level or underground.* The only feasible scheme seems to be one which can be grafted on to the existing structure of the city, without immobilizing whole sections of it. The operation should be envisaged as would be an alteration to a hotel or factory, the business of which must be maintained in operation during the course of the works. Town planners and architects have certainly been employed to a limited degree in the consideration of these problems. But the public authorities in such matters are apt to deal with each problem piecemeal, and it is fair to state that the architectural resources of the building industry have never been really tapped in any large-scale effort to envisage the whole problem. Neither has an opposite number to Park Commissioner Moses in New York as yet emerged in London.

It is obvious that any system of traffic arteries and reconstruction in large cities will have to be considered from the military as well as the civilian standpoint. Systems of overhead roads may have great defence values as offering a network of coverage for the protection of the areas below, as stations for anti-aircraft defences and, if extended over railway lines and stations, as landing grounds for defence aircraft.

Apart from questions of town planning and design generally, the post-war period will inevitably bring to the fore big problems of availability of materials, imports, and home production.

An organized building industry is probably the only machinery for studying and solving effectively the complicated problem of substitute materials to replace those which it may no longer be feasible to import; and it will have of course to collaborate with existing research bodies and steer a path among the vested interests which will be affected. It may be that new forms of plastics, based largely on the use of

* A scheme of this type would link up well with proposals of the type of Charles Frobisher's Rotary Elevated City Airport: a project for city landing grounds which seems full of promise and within the range of practical possibility.

waste products (England's secret weapon lies in our dustbins), will be evolved to take the place of timber for construction and shuttering, and even for light metal members such as roof trusses. In the past, nature has provided; but with reduced standards, and absence of foreign exchange, the inventor and scientist may have to come to the rescue in a much larger way than hitherto.

That such research should start at once is an obvious need, for the substitutes are urgently wanted for war purposes alone. But if, after the war, there is not to be a fantastic depression, it looks as though—apart from agriculture—it will be the building industry which will have to bear the brunt of a return to steady conditions. For that purpose a very big reconstruction programme is wanted, sponsored by the Government (which certainly will have none of it unless brought to see its importance), and this reconstruction will have to be carried out almost as a continuance of war expenditure, but this time of a constructive instead of a destructive character. To avoid the danger of such a vast building programme causing ultimate slumps, it may be necessary to study some system for licensing the life of buildings; in other words considering them as "temporary structures" with "lives" determined by category and specification. This whole problem is so vast that it needs to be tackled by the building industry and the Government together. A first step is for the Government to institute a special department to deal with the services required of, and provided by, the building industry considered as a whole, i.e. including all its trade and professional branches.

There is little need to worry over any question of a future "battle of the styles," in so much as history shows that any development with reason behind it is certain to survive and to evolve. The "modern" has been so universally adopted that it has become a recognized contemporary idiom. Nothing but extraneous pressure, such as might be exerted in a totalitarian state, could ever make architecture revert to a preceding phase, and even then the reversion would be superficial only. The real problem from the aesthetic standpoint will be to guard against the suppression of the individual artist's right to hold his own views on design, and express them even if they are out of line with the mass trend, and in the economic field to prevent low standards from creeping in on the score of saving costs. Further, if considerations of defence weigh heavily in the designing of future buildings, every effort will be necessary to prevent codification and bureaucratic stipulations from dictating design, as is so frequently the case with any emergency construction.

[*To be continued*]

Photograph taken after the annual meeting of the Devon and Cornwall Architectural Society. Mr. J. Challice, the new president, is on the right of the retiring president, Mr. R. F. Wheatly (wearing badge).

LETTERS

Building and the War

SIR,—I am writing to outline steps which I feel would help to avoid that complete dislocation and even annihilation of our industry which is inevitable if the present conditions continue. Although I am writing personally the views I am expressing are largely the same as those held by the representatives of the building industry in the North Staffordshire area who met together to discuss this matter on March 4.

Now at the outset I may as well admit that I formerly believed the R.I.B.A. Council to have been lax and insufficiently persistent in their efforts on behalf of the profession. This view came about largely through a lack of understanding on my part of the problem and of the difficulties facing anyone trying to get anything done in the welter of the last months of peace or the first of war. I am now convinced that in its representations to departments and to the heads of Government, either directly or in co-operation with the B.I.N.C., the Council has done all in its power and in fact everything that could be done in that way to bring about a change of heart in the authorities: and *it has all counted for very little.*

It is instructive to examine the extent of change which has come about by these representations and to deduce why such changes have not been more extensive. In order to appreciate these things it is necessary to outline what appears to have been the Government's policy immediately prior to and on the outbreak of war in regard to the building work it required for the prosecution of war.

Probably by reason of inspired advice, the Government came to the conclusion that the right persons to carry out their work expeditiously were the large contractors, and no doubt they were strengthened in this belief by some at least of the officials who had charge of the work and who relied on the organizing abilities of the larger firms to carry them on their shoulders.

Such scanty plans as were originally required could, so the Government seems to have argued, be prepared by the architects in their various departments whose peacetime activities had ceased with the commencement of hostilities. This left out of account practically the whole of the normal building industry with all its ready-made organization, its balanced craftsmanship and its professional direction, with the result that on the completion of such works as were then in progress, by restriction of materials and finance and through lack of confidence or direction from the Government, it was faced with complete idleness.

Through its central register the R.I.B.A. has been able to provide a number of suitable applicants for direct or indirect Government jobs, and it also secured A.R.P. work for private architects and through them for local builders. In certain other instances firms of architects have been recommended for carrying out building work, mostly on a small scale, for Government departments. Also through the R.I.B.A. architects have been brought into the scheme for advising householders with incomes of over £5 per week on shelter requirements, and into a further scheme for assessing air-raid damage, should large-scale air attacks develop.

Lastly, B.I.N.C. has persuaded the Government that smaller contractors should be asked to tender for their work, and instructions have now been sent out by some departments for this to be done. This is little enough in the aggregate, however, and the fault

seems to lie with the obstinacy of Government heads and departments rather than in our own efforts. Having got so far with their building schemes it can readily be realized that the Government would be extremely reluctant to change over in the midst, even if waste and muddle could be proved up to the hilt, which would be difficult. Any such change would inevitably mean delay and confusion in taking over and a great deal of extra work to the departments concerned which would not be countenanced by the Government.

If we accept that as a true statement of the position as it is today two points clearly emerge :—

(1) That it is useless to expect any useful purpose to be served by further direct representation to the Government or its departments.

(2) That it is equally useless to waste time arguing about what should have been done and exposing the deficiencies of the Government's scheme, except in so far as it is necessary to do this to prove that the industry has up to the present been unfairly treated and the Government ill-advised.

What then is the alternative if we are not simply to accept the situation ?

As a representative of the building industry in North Staffordshire, at the informal meeting at the R.I.B.A. on April 2, I tried to outline a policy of positive action upon which we were already engaged, and I have been strengthened in my belief in the proposals I then put forward by the interview which I had at the House of Commons on Wednesday last with Mr. Hicks, M.P., and members representing the North Staffordshire area.

Firstly, I feel it is important for us to realize our power as the second largest industry in the country and the widespread nature of our interests and constituent bodies, for in these two points lies our strength.

Secondly, it is equally vital that this matter should now be taken over by the ordinary members, as the scheme which I am proposing is one that requires co-operation and enthusiasm from members of allied societies throughout the country, and cannot by its very nature be carried through by the R.I.B.A. Council even if they agree, as I feel confident they will, to sponsor and encourage it.

The scheme can be summarized as follows :—

(1) We must act as an industry and not as architects.

(2) As architects we are best equipped and most suited to organize the whole industry in each local area.

(3) That every means should be taken to publicize the position of the industry by addressing meetings such as Chambers of Commerce, and obtaining Press reports on the subject, both local and national.

(4) That the Allied Societies, if they have not already done so, should call together a conference, each in its own area, of the various sections of the building industry, including builders, builders' merchants, operatives and manufacturers, etc.

(5) That this conference should prepare a statement of the present position of the building industry and the steps which should be taken to avoid its imminent collapse.

(6) That the R.I.B.A. should retain the services of an acknowledged expert economist to prepare a report on the economic aspects of our case, as these provide us with some of our strongest arguments.

(7) That this conference should then send a delegation to their local M.P.s to present the statement to them and to secure their support in the House if and when the matter is raised there, and even to promise such support in the face of a Party Whip.

(8) That a register of M.P.s from whom such support has been promised should be compiled by the R.I.B.A. or B.I.N.C.

(9) That when sufficient support is assured a letter should be signed by influential Members of Parliament representative of all parties in the House inviting M.P.s to a meeting in the House of Commons at which our case should be put briefly and breezily.

(10) That as soon as possible after this meeting the whole matter should be raised in Parliament.

There are one or two considerations in connection with such a scheme which I feel worth mentioning. We have a precedent in similar action which was taken by the Civil servants which had a successful conclusion, and our case is so strong that I do not doubt a similar satisfactory conclusion for us. The R.I.B.A. could launch the scheme by preparing a suitable short statement for presentation to M.P.s, which would form the basis of statements from the Allied Societies, being varied where necessary according to local conditions. This statement to be presented to the allied societies at a conference called for this purpose.

Such a statement should consist of a review of the present position and its consequences both to the industry and to the internal economy of the country if it is continued, and then go on to outline the steps to be taken, the most important of which I consider to be the following :—

(1) A more equitable distribution of any further Government work ; which can best be achieved by placing it through normal building channels.

(2) The consideration of and planning for a proper evacuation scheme on the lines of the report submitted by Professor Haldane.

(3) Taking measures now to assure that when the Government's immediate requirements have been satisfied (at present expected to be about September next), sufficient timber shall be made available for civil building by increasing imports, and that the best use is made of the present available supplies and all unnecessary waste avoided.

(4) The relaxation of financial restrictions on building to allow a resumption of civil building, both private and public, up to the limit of the available resources both in men and materials.

(5) The encouragement by the Government, either by statement of policy or by financial assistance through remission of taxes or otherwise, of the immediate preparation of plans so that delay in commencing building operations may be reduced to a minimum.

(6) The consideration by the Government of the provision of houses for workpeople who are now, or are to be, employed at new factories in new areas. Also the continuance of new housing in areas where it is urgently required. In this connection there is a very fine article in the March issue of the *Economic Journal* on page 42. Also the maintenance of existing houses and buildings generally should be considered and incorporated.

(7) The full use of the £1,000,000,000 reservoir of public works prepared by the Ministry of Health to combat slump conditions which soon obtain.

(8) The appointment of an Under-Secretary, preferably some person intimately connected with the building industry, to co-ordinate and control building for all Government departments and to assure that the interests of the industry are properly safeguarded.

You will no doubt realize that the statement of the position at present, the development of the inferences to be drawn from what has already happened, and the consequent scheme as proposed are the outcome of considerable thought, discussion and research. I believe the suggestions offer the *only* real hope of getting something done.

GEORGE L. GREAVES

Stoke-on-Trent.

The Next Years

SIR,—I read with great interest the article by Mr. Howard Robertson in the ARCHITECTS' JOURNAL for April 11. I think everyone will agree that when there is little building, that is the time to examine the machinery of the organization. For the building industry it is of vital import, requiring as it does the co-operation of so many sections of the community.

Whilst this examination is in progress it is essential to keep in mind the greatest need of the day.

To quote from the letter of Mr. Kenneth Bayes in the same issue of the JOURNAL : " When our civilization has decided which way its spiritual life is to go, æsthetics will again have depth and direction, and an organic style will mature. We can then cease writing and begin building."

Whatever the machinery, it is men who run the machine, and on the quality of each of these depends the efficiency and product of the machine. If we are to have architecture worthy of a new era we must have a new spirit to create that era.

G. V. CHARLES, A.R.I.B.A.

Streatham Hill.

Central part of the Belvedere Road front

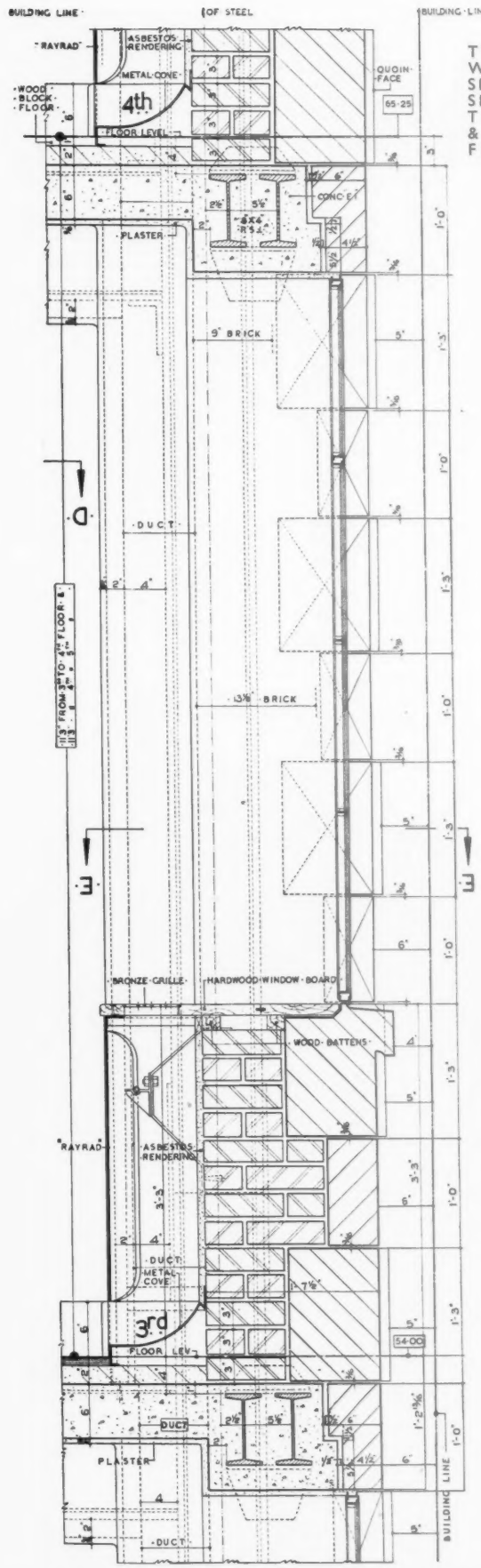
L. C. C.

COUNTY HALL EXTENSION

FIRST PORTION

ARCHITECTS: FREDERICK R. HIORNS AND E. P. WHEELER
CONSULTING ARCHITECT: SIR GILES GILBERT SCOTT, R.A.

GENERAL—Although the final section of the original County Hall building was not completed until 1933, it soon became apparent that, with the expansion of departments and the additional duties imposed upon the Council, the building had become inadequate to accommodate the increasing staff and that an extension would be necessary. Plans were drawn up in the department of the Council's Architect, for the provision of a building of the same length as the County Hall (about 750 ft.), to be built on adjoining land between Belvedere and York roads. The scheme was designed by, and is being carried out under the general direction and responsibility of, Mr. F. R. Hiorns, now Architect to the Council, in association with his predecessor, Mr. E. P. Wheeler. Sir Giles Gilbert Scott, R.A., has acted as Consulting Architect.



TYPICAL WALL SECTION, SECOND, THIRD, & FOURTH FLOORS

Centre of Belvedere Road front

LAYOUT—The large size and architectural scale of the old and new buildings called for a broad open space between them if their general effect was to be seen to advantage, in addition to which the provision of some car parking space and adequate traffic circulation facilities were desirable. These considerations, and the centrally placed triple road and bridge connecting the northern and southern sections of the new building, are explained by the plan, and make clear the effort made to relate the design of the new to that of the old building, while avoiding any attempt to follow its stylistic manner.

PLAN—The building consists of two parts, on the north and

1

2

3

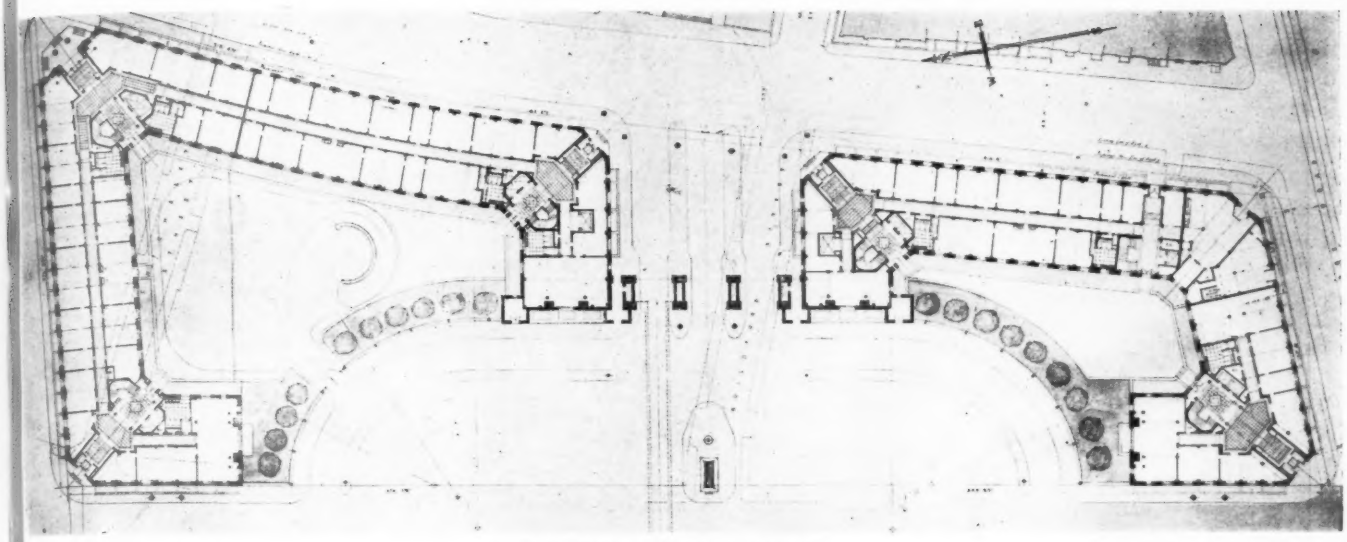
Three of the panels, by E. and A. Bradford, on central pavilions :

1, An heraldic illusion of London as the commercial centre of the world. A belt of crests is carved round the centre of the globe—the five in front are the City, Metropolitan Water Board, L.C.C., Port of London, and Westminster. The ancient ships on the left, and the aeroplanes on the right, suggest transport and trade, and on the clouds suggesting distance are heraldic charges of South Africa, Canada, New Zealand, Soudan, India and Australia.

2, The caduceus in the centre is a symbol of peace and commerce, and also that of healing, and here may refer to the Health Department of the Council. The fasces are the ancient Roman symbol of authority and government. The scales of justice, and the torches—giving light—suggest education.

3, The arms of the L.C.C., supported by sea gulls (suggesting the river) and a wreath of oak leaves.

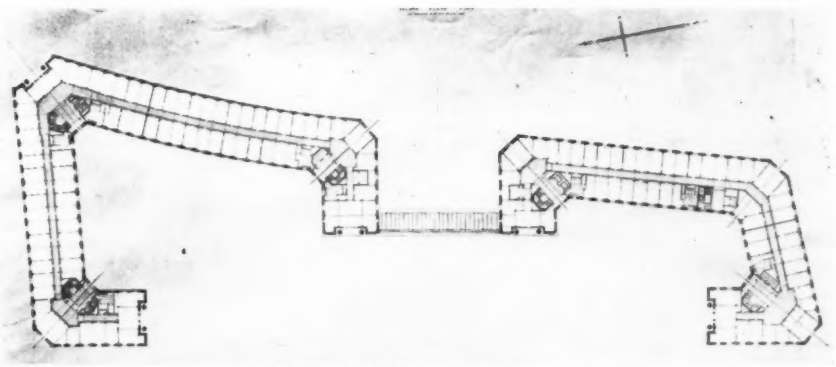
COUNTY HALL EXTENSION—FIRST PORTION • ARCHITECTS, F. R. HIORNS



GROUND FLOOR PLAN

south of the site, separated by a triple roadway. A bridge, at first floor level, connects the two blocks. The new extension has the same number of storeys as the old building—one storey less below the ground and one storey more above. When completed, the buildings will provide accommodation for 2,400 persons.

COST—Estimated cost of the whole scheme is £1,100,000, of which the present portion of the building is about one-half.



UPPER FLOOR PLAN

Central part of Belvedere Road front looking towards triple archway

AND E. P. WHEELER : CONSULTING ARCHITECT, SIR GILES GILBERT SCOTT, R.A.

North block, York Road front

York Road front

CONSTRUCTION AND EXTERNAL FINISHES—Steel frame, with steel and concrete floors and roofs. External walls are finished in Portland stone and the plinth is of granite. Portions of the granite from the old Waterloo Bridge have been incorporated in the piers of the triple arches of the central carriageways. Windows are metal casements and the roof is covered with Italian tiles, reddish colour. The axis of the layout is emphasized by a Portland stone pier, island refuge and flagstaff in a central position on the transverse axis of the scheme. This central pier embodies

COUNTY HALL EXTENSION—FIRST PORTION • ARCHITECTS, F. R. HIORNS

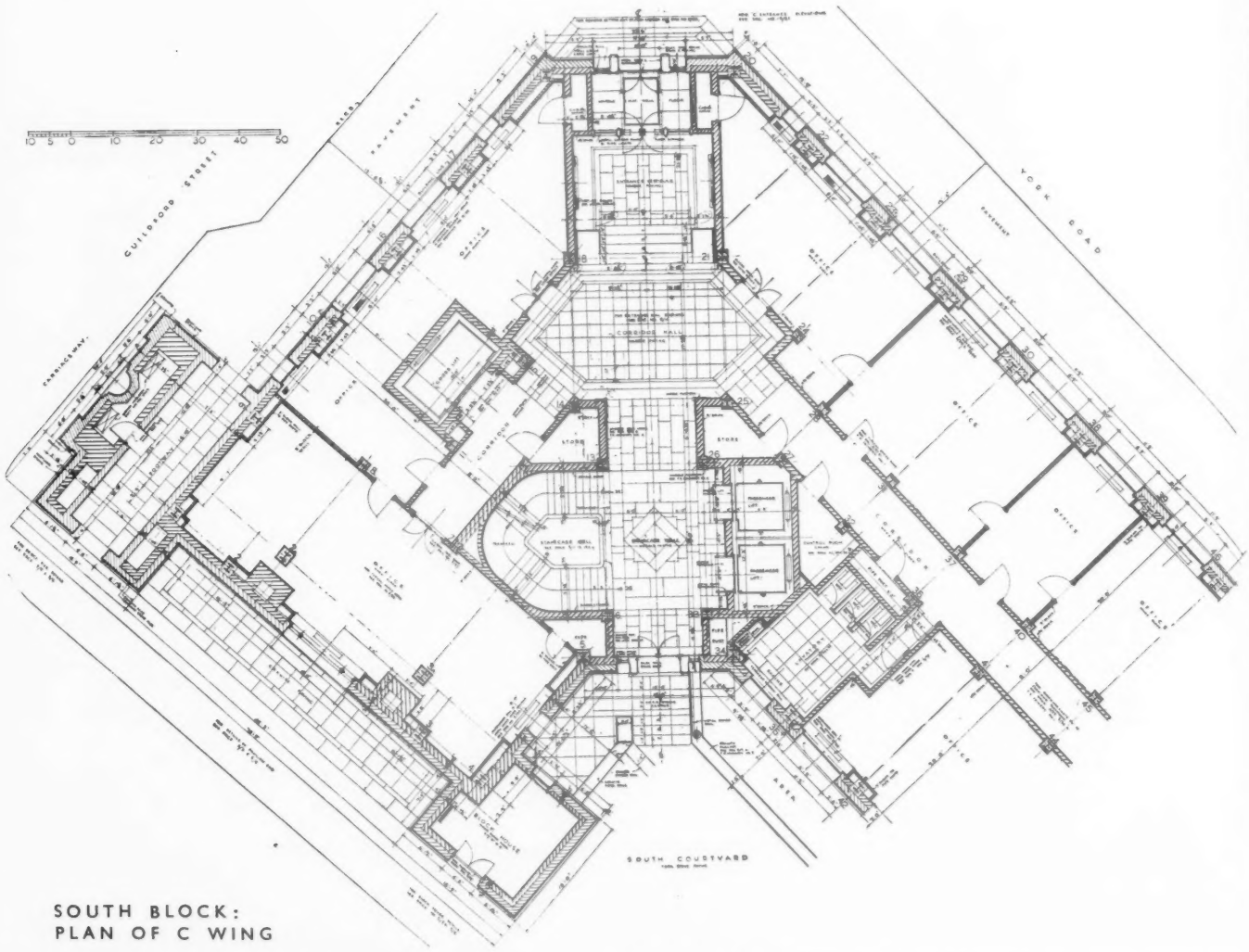
Entrance to north block, York Road front. Doors are of bronze.

in its upper surface floodlighting for ceremonial occasions. The carved column caps and the panels on the central pavilions and screen are the work of Messrs. A. J. Oakley, E. J. and A. T. Bradford, and F. P. Morton.

INTERNAL FINISHES—Vestibules are paved with Portland stone and the walls lined with travertine marble and Ancaster stone, relieved by a small amount of low relief carving executed by Mr. J. B. Spiro. Mr. Percy Smith was responsible for the lettering, numbering and notice panels throughout the building. Offices are plainly treated, finished in plaster and have flush type doors.

AND E. P. WHEELER : CONSULTING ARCHITECT, SIR GILES GILBERT SCOTT, R.A.

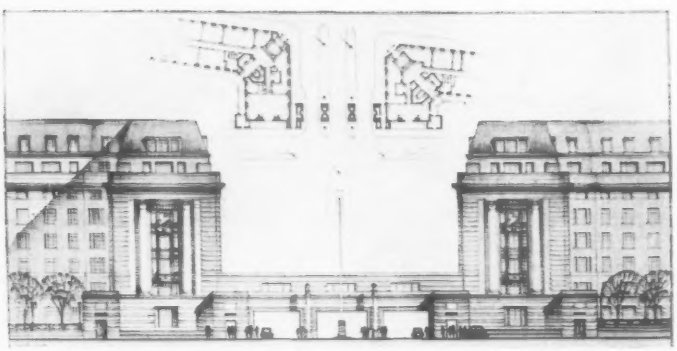
C



SOUTH BLOCK:
PLAN OF C WING

York Road front, south block

SERVICES—Foundations, engineering services, etc., were carried out under the direction of the Council's Chief Engineer, Mr. T. Peirson Frank. Boiler-house in old building was designed for boilers having a considerably lower output and could not conveniently accommodate additional boilers; therefore the problem was to instal boilers very little larger than those existing but with a much greater output. Five Sinuflo Economic hot-water boilers and one Sinuflo Economic steam boiler, all designed for a working pressure of 60 lb. per sq. in., were fitted. The particular design of these boilers, with their single pass of waved tubes, enables a greater output and a higher efficiency to be obtained than with similar boilers fitted with straight tubes.



Elevational drawing of the central pavilions and bridge

COUNTY HALL EXTENSION • ARCHITECTS, F. R. HIORNS AND E. P. WHEELER
CONSULTING ARCHITECT, SIR GILES GILBERT SCOTT, R.A.

SOME QUESTIONS ANSWERED THIS WEEK:

★ *I HAVE arranged to read a paper before my Society on "New Materials for Wartime Building" and would be grateful for any information and particulars of materials which are likely to be of interest* - - - Q281

★ *CAN you give me the names of firms producing forms of anti-syphonage traps?* - Q286

★ *WHAT firm would you suggest I approach to make up factory entrance gates in welded tubular steel?* - - - - - Q289

★ *WHAT official publications are available on the method of measurement of building and engineering works?* - - - - Q292

THE ARCHITECTS' JOURNAL

INFORMATION CENTRE

THE Information Centre answers any question about architecture, building, or the professions and trades within the building industry. It does so free of charge, and its services are available to any member of the industry.

Questions may be sent in writing to THE ARCHITECTS' JOURNAL, 45 The Avenue, Cheam, Surrey, or telephoned direct to the Information Centre: Regent 6888.

Enquirers do not have to wait for an answer until their question is published in the JOURNAL. Answers are sent direct to enquirers by post or telephone as soon as they have been prepared.

The service is confidential; and in no case is the identity of an enquirer disclosed to a third party. Samples and descriptive literature sent to the Information Centre by manufacturers for the use of a particular enquirer are forwarded whenever the Director of the Centre considers them likely to be of use.

Finally, if an answer does not provide all the information needed, the Centre is always glad to amplify any point on which the enquirer wants fuller explanation.

Any questions about building or architecture may be sent to:

THE ARCHITECTS' JOURNAL
45 THE AVENUE, CHEAM, SURREY.
Telephone: *VIGILANT 0087*

or ring the Architects' Journal Information Centre at

REGENT 6888

Q281 SECRETARY, ARCHITECTURAL SOCIETY. *—I have arranged to read a paper before my Society on "NEW MATERIALS FOR WARTIME BUILDING," and would be grateful for any information and particulars of materials which are likely to be of interest.*

The war has not caused any great output of new materials in the industry. The problem of wartime building is not so much one of new materials, nor even of new methods of construction, but of alternative constructions made necessary by lack of normal and commonly used materials. New uses have been found for a number of existing materials. Inventions of the past decades which could not then find a footing in the industry have been unearthed and re-presented as revolutionary discoveries; but in the main, wartime building remains a matter of choosing the best of fewer peacetime materials, the exception being when great speed is called for. For purposes of your paper, examination might be made of some of the following constructions or materials which are increasingly used in wartime building:—

(*a*) Precast concrete roof trusses.

(*b*) Lattice girders, joists, angles, etc., in pressed steel.
(*c*) Roof trusses in tubular steel with welded connections.
(*d*) Heavy duty wood-wool cement slabs and reinforced plaster slabs as infilling between purlins.
(*e*) Bitumen-faced plasterboards for external linings and roof coverings.
(*f*) Vertical and roof slating by means of clips and rods.
(*g*) The possibility of asbestos-cement moulded doors.
(*h*) Bricks specially designed for building on edge.
Below are given the names of firms to approach for particulars of the materials or constructions mentioned.*

Q282 ARCHITECT, ERDINGTON.—*If such a product is obtainable, I wish to finish the top of a chemical analytical bench with a slab of HEAT-RESISTING PLASTIC MATERIAL ⅝ in. thick and would appreciate the names of two or more firms who specialize in such a product.*

There is a firm of laboratory furnishers† marketing a chemical and heat-resisting material under the name Solacite and, in ⅝ in. thickness, the preformed slabs are available in sizes up to 4 ft. by 3 ft.

Q283 PUBLIC WORKS CONTRACTORS, NOTTINGHAM.—*We shall be glad if you will inform us of the name and address of the manufacturers of "ELASTO" paint AND also "RESWALD," which we think is a sheeting board suitable for interior and external use.*

We regret that despite careful inquiry in the trade we have been unable to locate the manufacturers of a paint marketed under the name of Elasto. In case it is of interest we would mention that one firm of paint manufacturers have registered the name of Elastol.* Resweld is a form of waterproof plywood said to be of American origin. The importers into this country are stated below.†

Q284 ENQUIRER, SOUTHAMPTON.—*I have an UNDERGROUND "DUG-OUT" built of 9-in. brick walls and concrete floor. Although built on fairly high ground WATER ENTERS slowly, especially between the bricks. The bricks have been covered with bitumen emulsion coatings, but this is pushed away from the bricks as small blisters, which ultimately burst and let the water in. Can you tell me of any way in which I can keep the water out at a reasonable cost?*

It is assumed, of course, that cost prevents the removal of the earth from the outside of the walls and applying asphalt; and that any work would have to be done internally. The difficulty will be in obtaining adhesion to the walls because of the bitumen coatings already applied. If, after examination of the work, it is felt that this bitumen coating can be removed and the brickwork joints raked out, all to a sufficient extent to provide a key for an applied cement rendering, then two coats of a waterproofed cement and sand rendering could be applied. The rigidity of this, when set, would provide greater resistance to water pressure. With waterproofed cement renderings it is often advisable to have these carried out by specialist sub-contractors, mentioned below,‡ the contractor supplying both materials and labour, so that if failure does arise, there is no divided responsibility. If it is thought impossible to use a rendering because of lack of adhesion, the use of a separate internal waterproof lining might be considered, using say a rigid dovetailed bitumen sheeting fixed by wire ties bedded into the brick joints. Such a lining can be obtained from the firm mentioned below.§ But in all such treatments it is to be expected that water infiltration will take place at floor level, and a concrete kerb should be provided round the base of the walls and a sump below the level of the existing floor and means whereby the water from the sump can be removed.

Q285 GLASS-WORKING FIRM, LONDON.—*Some considerable time ago we were asked to provide SHELTER ACCOMMODATION FOR our workpeople, some 300 in number, and on being assured that a grant would be made by the authorities, plans were prepared and the work has been completed by us and paid for. As yet no grant has been made. Can you inform us as to the likely AMOUNT OF such a GRANT?*

It is not possible to assess the amount which will be repaid under the grant scheme. This amount will be assessed by the authorities upon consideration of the actual expenditure involved. With outdoor shelters the maximum amount of grant is something like £3 10s. per head for personnel provided for and for internal shelters £7 per person.

Q286 BUILDERS, ESSEX.—*Can you give us the names of firms producing forms of ANTI-SYPHONAGE TRAPS?*

Resealing traps are available from the firms mentioned below.*

Q287 ARCHITECT, LONDON.—*I proposed putting a sliding steel or "Durasteel" door to a works A.R.P. SHELTER to provide protection from blast. This has been objected to by H.M. Inspector of Factories, however, on the grounds that it does not comply with the Civil Defence Act. I have heard that such DOORS have been approved in other cases, and I shall be glad if you could tell me of any such, or advise me where I might get such information.*

The Home Office Inspector of Factories will not approve any steel door as being spinter-proof unless it consists of at least 1½ in. thickness of mild steel plate. But it might well be that where the entrance to a shelter is protected by, say, an embankment, a thinner door would be accepted. We understand, however, that such a waiver could not be given by a local Factory Inspector, who is empowered only to abide by the Code, but the inspector can be asked to put the case before his Regional Technical Adviser. Alternatively, the matter may be

* *PRECAST CONCRETE ROOF TRUSSES.—Stent Precast Concrete, Ltd., 2 Central Buildings, London, S.W.1. Twisteel Reinforcement, Ltd., 8 Buckingham Palace Gardens, London, S.W.1.*
PRESSED STRUCTURAL STEEL.—Jos. Sankey and Sons, Ltd., 168 Regent Street, London, W.1. Fredk. Braby & Co., Ltd., 352 Euston Road, London, N.W.1. Steel Ceilings, Ltd., Steleonite Works, Hayes, Middlesex.
TUBULAR STEEL ROOF TRUSSES.—Stewarts and Lloyds, Ltd., Winchester House, Old Broad Street, London, E.C.2.
WOOD-WOOL CEMENT SLABS.—Honeywill and Stein, Ltd., 21 St. James's Square, London, S.W.1. Thermacoust Products, Ltd., 32 Victoria Street, London, S.W.1. Gliksten Doors, Ltd., Carpenters Road, London, E.15.
REINFORCED PLASTER SLABS.—J. A. King & Co., Ltd., 181 Queen Victoria Street, London, E.C.4.
BITUMEN-FACED PLASTER BOARD.—British Plaster Board Co., Ltd., Church Manorway, Erith, Kent.
SLATING BY CLIPS AND RODS.—Oakeley Slate Quarries Co., Ltd., Abbey House, Victoria Street, London, S.W.1.
ASBESTOS-CEMENT MOULDED DOORS.—Turners Asbestos Cement Co., Erith, Kent. Universal Asbestos Manufacturing Co., Ltd., 43 Southampton Buildings, London, W.C.2.
BRICKS FOR BUILDING ON EDGE.—Colthurst, Symons & Co., Ltd., Bridgwater, Somerset. London Brick Co., Ltd., Africa House, Kingsway, London, W.C.2.

† *Baird and Tatlock (London), Ltd., 14 St. Cross Street, London, E.C.1.*

* *The St. Helens Colour and Varnish Co., Ltd., Victoria Works, St. Helens, Lancs.*
† *Messrs. Keizer & Co., 66–72 Annes Street, Liverpool, 3.*
‡ *Sal Ferricite and Trading Co., Ltd., 748 Fulham Road, London, S.W.6. Structures Waterproofing, Ltd., Blackburn Road, London, N.W.10.*
§ *Messrs. Stronghold Co., Ltd., 10 Victoria Street, London, S.W.1.*

* *Greenwood and Hanson, 17 Bolan Street, Battersea, London, S.W.11. Kay & Co. (Engineers), Ltd., Bolton Brass Works, Blackhorse Street, Bolton, Lancs. Peglers, Ltd., Belmont Works, Doncaster. Chisholm Gray & Co., Ltd., Providence Works, Hudson's Drive, Cotteridge, Birmingham. McAlpine & Co., Ltd., 39 Cheapside, London, E.C.2.*

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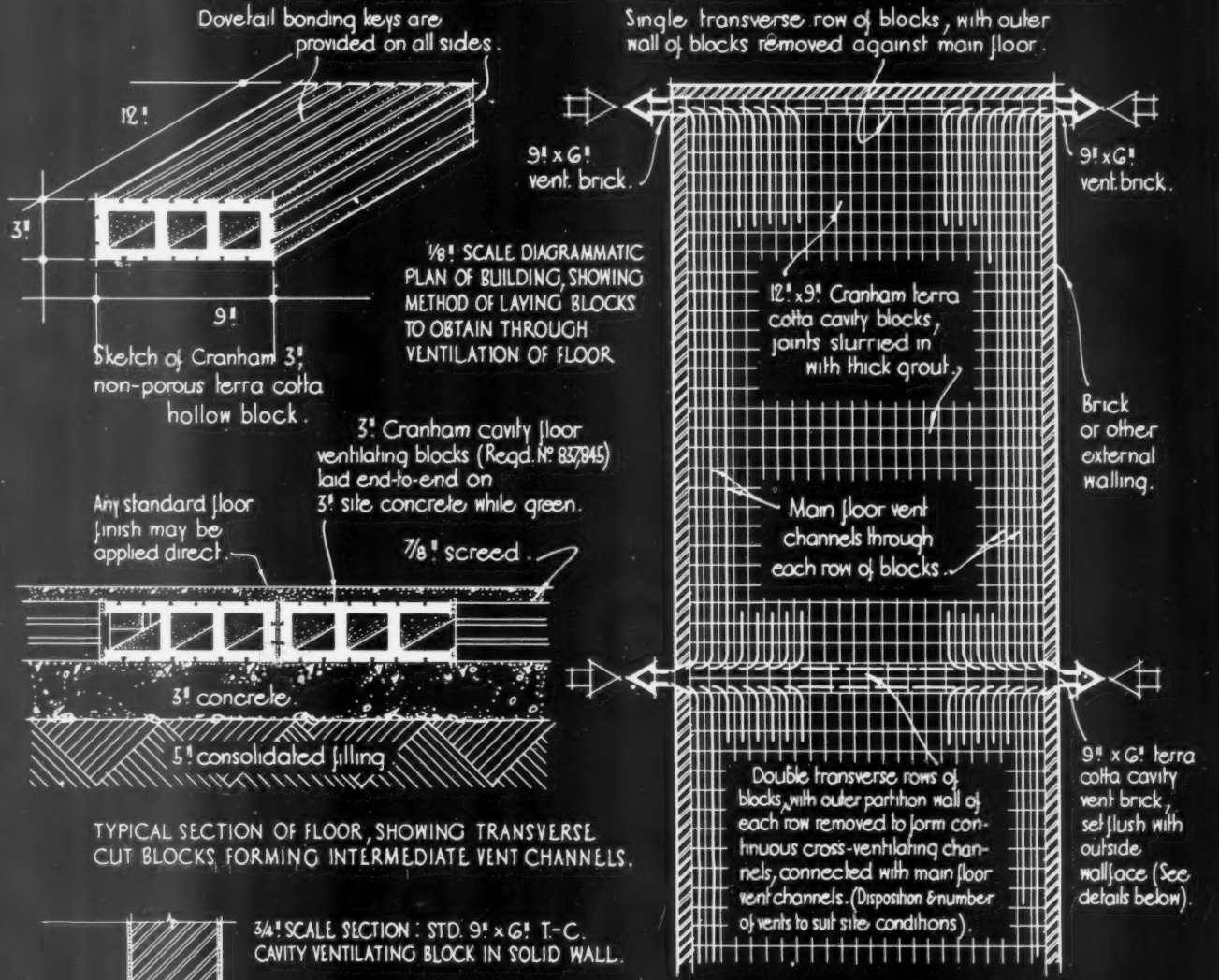
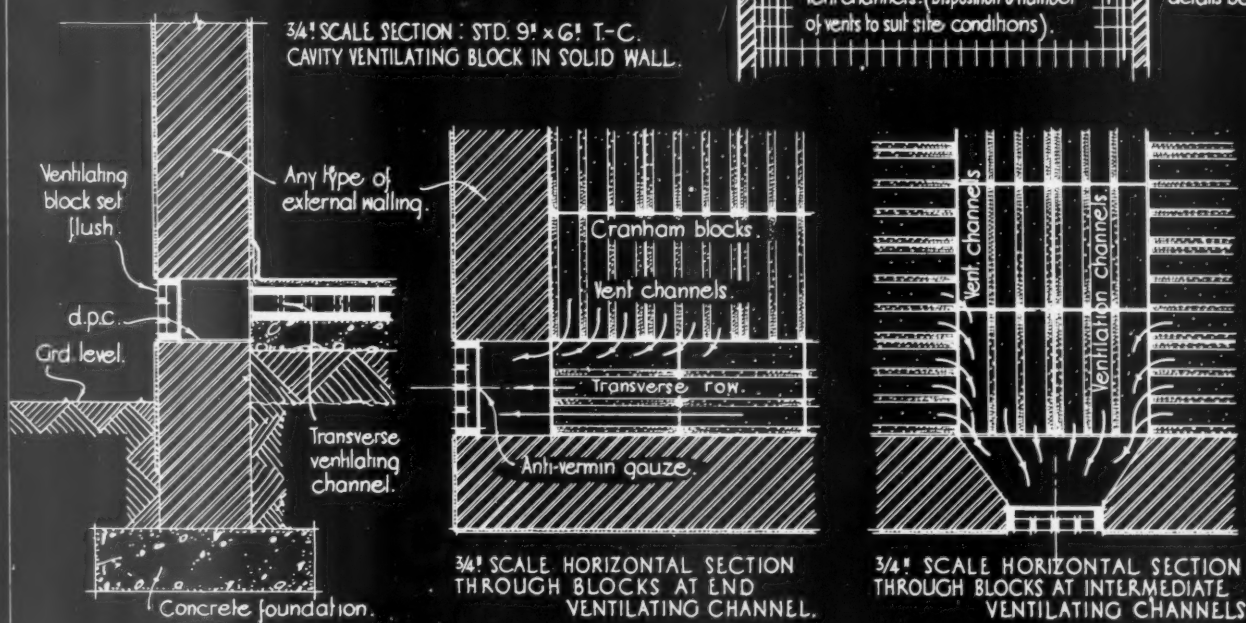
TYPICAL CONSTRUCTIONAL DETAILS OF LONGLEY CAVITY-VENT FLOOR :



TYPICAL SECTION OF FLOOR, SHOWING TRANSVERSE CUT BLOCKS FORMING INTERMEDIATE VENT CHANNELS.



3/4! SCALE HORIZONTAL SECTION THROUGH BLOCKS AT END VENTILATING CHANNEL.

3/4! SCALE HORIZONTAL SECTION THROUGH BLOCKS AT INTERMEDIATE VENTILATING CHANNELS.

Information from James Longley & Co. Ltd, and J. H. Sankey & Son, Ltd.

INFORMATION SHEET : SOLID FLOORS OF SELF-VENTILATING HOLLOW BLOCK CONSTRUCTION

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

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SOLID FLOORS

Subject : Floors of Self-Ventilating Hollow Block Construction. *British Provisional Patent Application No. 1041/40.171.40*

General :

Longley's Cavity-Vent floor has been designed primarily for structures where speed of erection by a minimum of skilled labour is of prime importance. Where it is desirable that the materials should be readily obtainable, it largely displaces the normal wood floor.

To this end the use of prefabricated or precast members has been avoided, with the elimination of possible time lag in the sequence of construction. The system illustrated possesses structural strength adequate for all normal purposes, while its propensity of self-ventilation precludes troubles resultant upon surface condensation.

Construction :

The floor consists of no other components than surface concrete and Cranham (non-porous) terra cotta cavity floor blocks.

The site is prepared by filling and consolidating in the usual manner, and a 3-in. slab of concrete is then poured and brought to a level surface. While the concrete is green, 12 in. by 9 in. by 3 in. Cranham (non-porous) terra cotta blocks are bedded horizontally over the whole area between walls, and the joints slurried in with thick grout.

A final screeding $\frac{7}{8}$ in. in thickness provides the base for any standard type of floor finish. As the screed is separated from the surface concrete by the blocks, no protracted drying out period is necessary.

Ventilation :

The diagrammatic plan illustrates the method of laying the block, by which the cavity ducts are utilised to obtain permanent through and cross ventilation over the whole floor area.

Cross ventilation at the ends of the floor, and intermediately as desired, is procured by laying at these points one or two rows respectively of Cranham (non-porous) terra cotta cavity floor ventilating blocks (Regd. No. 837,845) specially made with one open outer duct on each block. In this manner the paralleled hollow tubes of end-to-end blocks, forming the long run of the floor, are directly connected with the end and intermediate cross tubes, these in turn discharging directly through air bricks in the perimeter walls or into the cavity of hollow wall construction.

To prevent any absorption of concrete whilst green, it is necessary to employ a hollow block that is sufficiently non-porous in type to reduce the capillary attraction to a minimum.

The Cranham (non-porous) terra cotta block has been selected with a tested absorption of 0·2 per cent. for $\frac{1}{2}$ minute and 1·2 per cent. for 60 minutes (Stanger, March, 1940). This degree of porosity should not be exceeded.

Rising Damp :

Complete immersion tests show only the degree of absorption mentioned above, and possible rising damp would be adequately disposed of by the continuous ventilation of the floor.

Information from :

James Longley & Company, Ltd., and Eric White (Patentees)

Sole Distributors : J. H. Sankey and Son, Ltd.

Address : Aldwych House, Aldwych, W.C.2

Telephone : Holborn 6949 (Extn. 6 & 7)

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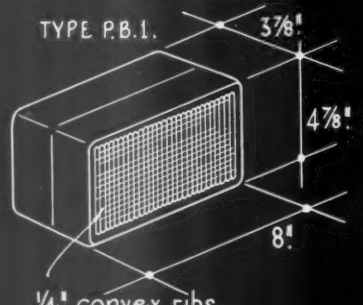
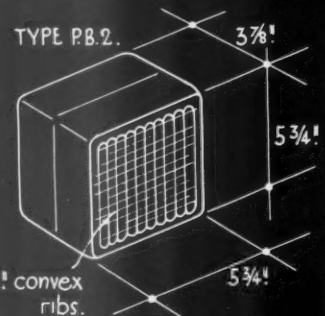
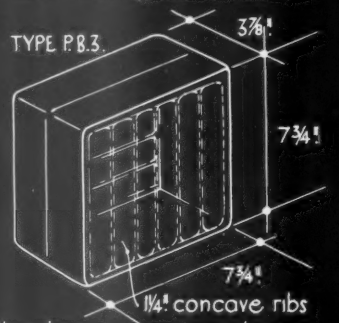
DIAGRAMS SHOWING UNITS AVAILABLE.

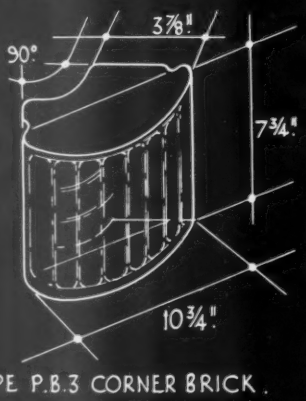




Corner bricks also made.
N.B. TYPE P.B.3.2, 7¾" x 7¾" x 3⅞" has similar ribbing, & corner bricks.

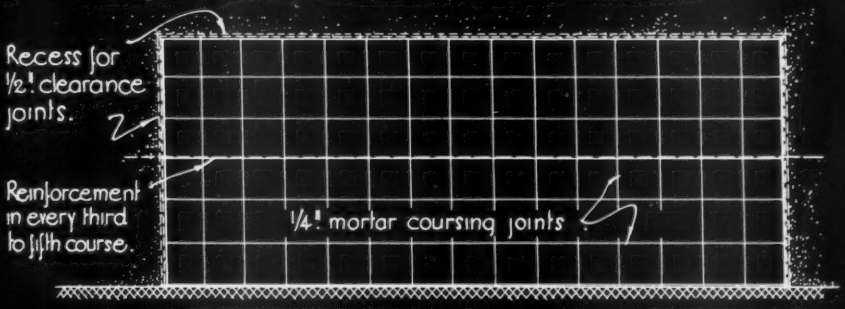


Both exterior faces are smooth.



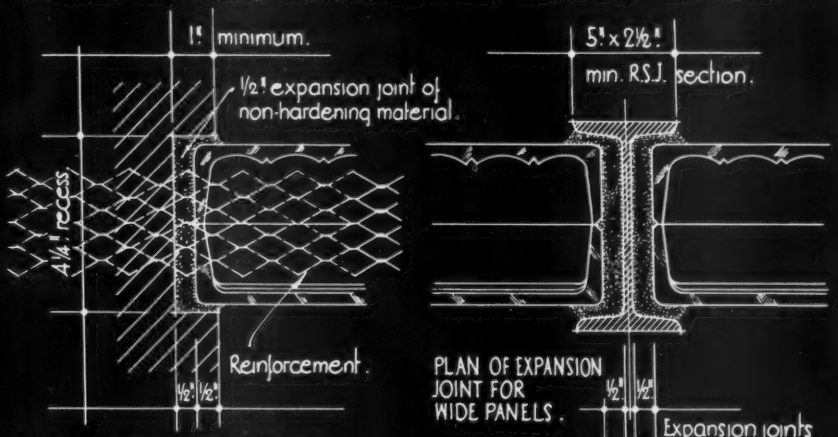
TYPE P.B.3 CORNER BRICK.

CONSTRUCTION OF INSULIGHT GLASS MASONRY :

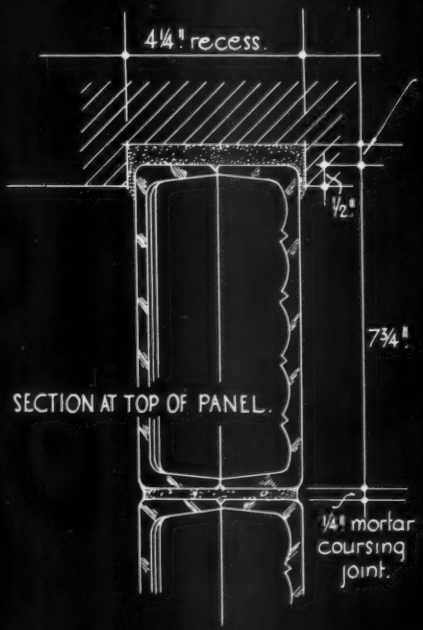


TYPICAL ELEVATION OF PANEL.

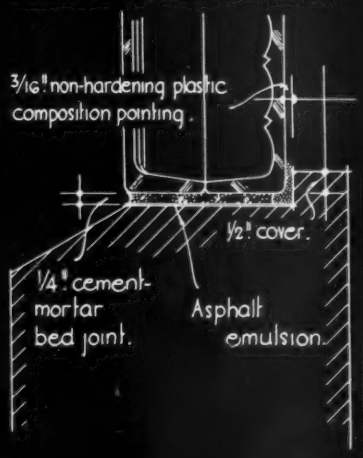
TYPICAL SETTING, JOINTING AND LAYING DETAILS :



PLAN OF RECESSED VERTICAL CLEARANCE JOINT.



SECTION AT SILL OF PANEL.



Issued by Pilkington Brothers Ltd.

INFORMATION SHEET : GLASS BRICK UNITS FOR NON-LOAD BEARING CONSTRUCTION.
SIR JOHN BURNET TAIT AND LORNE ARCHITECTS ONE MONTAGUE PLACE BEDFORD SQUARE LONDON WC1

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GLASS BRICKS

Name of Product : Insulight Glass Bricks

P.B.1 :

8 in. by $4\frac{7}{8}$ in. by $3\frac{7}{8}$ in. Surface pattern of $\frac{1}{4}$-in. convex ribs carried vertically on both exterior faces and horizontally on both interior faces. Approx. weight—4 lbs. 5 ozs.

P.B.2 :

$5\frac{3}{4}$ in. by $5\frac{3}{4}$ in. by $3\frac{7}{8}$ in. Surface pattern of $\frac{1}{2}$-in. convex ribs carried vertically on both exterior faces and horizontally on both interior faces. Approx. weight—3 lbs. 11 ozs.

P.B.2 Corner Brick :

Surface pattern of $\frac{1}{2}$-in. convex ribs carried vertically on both exterior faces and horizontally on both interior faces. Approx. weight—3 lbs. 10 ozs.

P.B.3 :

$7\frac{3}{4}$ in. by $7\frac{3}{4}$ in. by $3\frac{7}{8}$ in. Surface pattern of $1\frac{1}{4}$-in. concave ribs carried on both interior faces, running vertically on one face and horizontally on the other. Both exterior faces are smooth. Approx. weight—6 lbs.

P.B.3 Corner Brick :

Surface pattern of $1\frac{1}{4}$-in. concave ribs carried on both interior faces, running vertically on one face and horizontally on the other. Both exterior faces are smooth. Approx. weight—7 lbs. 10 ozs.

P.B. 3.2 :

$7\frac{3}{4}$ in. by $7\frac{3}{4}$ in. by $3\frac{7}{8}$ in. Surface pattern of $\frac{1}{2}$-in. convex ribs carried vertically on both exterior faces and horizontally on both interior faces. Approx. weight—6 lbs.

P.B. 3.2 Corner Brick :

Surface pattern of $\frac{1}{2}$-in. convex ribs carried vertically on both exterior faces and horizontally on both interior faces. Approx. weight—7 lbs. 10 ozs.

Fixing Instructions :

Insulight glass bricks are non-load bearing units which will carry their own weight with a wide factor of safety up to any practical height, but because of wind pressure and other stresses it is necessary to put in intermediate supports in panels over 20 ft. high or 120 ft. super. Very wide panels require an expansion joint every 20 ft.

Mortar :

A fairly dry and fatty mortar is advisable as the glass bricks are non-absorbent. The best mix has been found to be 4 parts (by volume) sand, 1 part Portland cement and 1 part slaked lime putty. Sand should be free from gravel.

Reinforcement :

Reinforcing strips should be built in every third to every fifth course, according to size and position of panel. Exmet $2\frac{1}{2}$ in. wide No. 20 gauge expanded metal has been found suitable for this purpose. The ends should pass through the clearance joint and be built into or secured to the main structure.

Clearance Joints :

The top and both vertical edges of every panel must be built free of the main structure—except for the reinforcement—to avoid risk of settlement, load or expansion strains affecting the panel. A $\frac{1}{2}$-in. clearance is advisable, and this should be kept free of any spillings of mortar and be filled with non-hardening material. Wherever possible, the top and ends of panel should be built into a recess to provide stability not otherwise obtainable owing to the clearance joint.

This recess should be $4\frac{1}{4}$ in. wide by 1 in. deep, allowing $\frac{1}{2}$-in. clearance and $\frac{1}{2}$-in. cover with $\frac{3}{16}$-in. play on either face, and this should be pointed with a non-hardening plastic composition.

Sills :

The bottom course should be bedded in cement mortar on to the sill, which should first be coated with an asphalt emulsion to allow for slight movement without disrupting the mortar bed and thereby preserving the weather-resistance of the panel.

Small Windows :

These can be set in a panel as insets. Larger windows require clearance joints and sometimes special details.

Note :

The uses to which glass bricks can be put are numerous, but there are some problems of fixing where technical guidance is necessary, and on such occasions reference should be made to the Technical Department of the Manufacturers—Pilkington Brothers, Ltd., St. Helens, Lancs.

Quantities (allowing for $\frac{1}{4}$-in. mortar joints) :

P.B.1. 1 square yard requires $30\frac{2}{3}$ bricks
P.B.2. 1 square yard requires 36 bricks
P.B.3. 1 square yard requires $20\frac{1}{2}$ bricks
P.B. 3.2. 1 square yard requires $20\frac{1}{4}$ bricks

or in metric figures,

P.B.1. 1 square metre requires 36·6 bricks
P.B.2. 1 square metre requires 43·00 bricks
P.B.3. 1 square metre requires 24·00 bricks
P.B. 3.2. 1 square metre requires 24·00 bricks

Manufacturers : Pilkington Brothers, Ltd.
Head Address : St. Helens, England.
Telephone : St. Helens 4001

London Office : 164 Shepherdess Walk, N.1
Telephone : Clerkenwell 1051

West End : Office and Showrooms : 63 Piccadilly, W.1
Telephone : Regent 4281

passed direct to the Home Office,* who give a final ruling on all such matters.

Q288 ARCHITECT, LONDON, S.E.—*In shop premises recently completed, objection has been raised by our clients to the VIBRATION AND NOISE set up BY MOTORS used in conjunction with the cash tubing. What steps can I take to eliminate this trouble?*

Motor noise and vibration will form a most serious nuisance once they are allowed to reach the actual structure. The only effective means of overcoming the trouble is for the individual motors to be mounted on vibration elimination bases. But work of this kind requires some quite involved calculations concerning weight and stroke frequency before an effective base can be designed. Usually the whole work is given to a specialist firm of vibration elimination engineers such as those mentioned below.†

Q289 ARCHITECT, NEAR BRISTOL.—*What firm would you suggest I approach to make up factory entrance GATES IN WELDED TUBULAR STEEL with square pattern fabric infilling of the panels?*

Firms with experience of simple and complex welded tubular work are mentioned below‡ and from enquiry both would be willing to tender for your requirements.

Q290 CONTRACTORS, GATESHEAD.—*We shall be obliged if you can put us in touch with any manufacturers of LIGHT FLAT ROOFS suitable as a substitute for board and felt.*

From the few particulars given it would seem that use could be made of:

1. Steel decking.
2. Dovetail pattern steel sheeting.
3. Asbestos-cement troughing with the beam section concrete filled and reinforced.
4. Hollow asbestos-cement building slab.
5. Slabs of heavy duty wood wool cement board or of reinforced plaster on supports or between L-shaped purlins.

All of these materials would require the provision of bitumen sheeting or other form of weatherproof covering on top. Bitumen faced plaster board might also be mentioned as a possibility. Details can be obtained from firms mentioned below.*

Q291 BOAT BUILDERS, SOUTHAMPTON.—*We would welcome any data you are able to give us regarding the FITTING OUT OF DECONTAMINATION CENTRES.*

By far the most useful and comprehensive information is contained in a publication issued free upon request of any responsible body by the Home Office,† entitled "Specification of materials and fittings to be used in the erection of new and adaptation of existing buildings for cleansing stations for A.R.P. personnel."

Q292 HOME OFFICE, A.R.P. DEPT.—*What official publications are available on the method of MEASUREMENT OF BUILDING and Engineering WORKS?*

The mode of measurement of building work is set out in a publication entitled "The Standard Method of Measurement of Building Works," and available from the Chartered Surveyors Institution, 12 Gt. George Street, London, S.W.1, or The National Federation of Building Trades Employers, 82 New Cavendish Street, London, W.1. Price 10s. 6d. For engineering work the equivalent is the "Report of the Committee on Engineering Quantities," published by Wm. Clowes and Son, Ltd., St. Mary's, Ballygate, Beccles, Suffolk. Price 2s. For engineering works, there is also another form of General Conditions of Contract entitled "Form of Agreement and General Conditions of Contract for use in connection with works of Civil Engineering Construction," available from the Consulting Engineers Association.*

Q293 BUILDING CONTRACTORS, KENT.—*We understand there is now a shortage of eelgrass, and we should be pleased to know what alternative material in blanket form you suggest for SOUND DEADENING.*

There are a number of alternative materials available, all home produced. Slag wool, rock wool, glass silk and asbestos are all made up in blanket form, and can be used in sound deadening work. Firms supplying these materials are mentioned below.†

* *The Home Office, Air Raid Precautions, Research and Experimental Station, Forest Products Research Laboratory, Princes Risborough, Bucks.*
† *W. Christie and Grey, Ltd., Lloyds Avenue, London, E.C.3. Absorbit, Ltd., 24 Ryder Street, London, S.W.1. François Cementation, Ltd., 39 Victoria Street, London, S.W.1.*
‡ *Brown and Tawse, Ltd., St. Leonards Street, Bromley-by-Bow. James Gibbons, Ltd., Wolverhampton.*

* *STEEL DECKING. Ruberoid Co., Lincoln House, 296 High Holborn, W.C.1.*
DOVETAILED STEEL SHEETING. Jos. Sankey and Sons, Ltd., 168 Regent Street, London, W.1. Fredk. Braby & Co., Ltd., 352 Euston Road, London, N.W.1. Steel Ceilings, Ltd., Steleonite Works, Hayes.
ASBESTOS-CEMENT TROUGHING. D. Anderson and Son, Ltd., Roach Road Works, Old Ford, London, E.3. Universal Asbestos Manufacturing Co., Ltd., 43-46 Southampton Buildings, W.C.2.
ASBESTOS-CEMENT HOLLOW BUILDING SLAB. Turners Asbestos Cement Co., Ltd., Erith, Kent.
WOOD WOOL CEMENT SLAB. Thermacoust Products, Ltd., 32 Victoria Street, London, S.W.1. Honeywill and Stein, Ltd., 21 St. James's Square, London, S.W.1. Gliksten Doors, Ltd., Carpenters Road, London, E.15.
REINFORCED PLASTER SLABS. J. A. King & Co., Ltd., 181 Queen Victoria Street, London, E.C.1.
BITUMEN-FACED PLASTER BOARD. British Plaster Board Co., Ltd., Church Manorway, Erith, Kent.
†*Home Office, Air Raids Precaution Publication Dept., Horseferry House, London, S.W.1.*

* *Association of Consulting Engineers, 214 Abbey House, Victoria Street, London, S.W.1. Price 2s.*
† *SLAG WOOL.—Fredk. Jones, & Co., Ltd. Perren Street, Kentish Town, N.W.5. J. C. Broadbent & Co., 36 Basinghall Street, London, E.C.2.*
ROCK WOOL.—H. W. Cullum & Co., Ltd., Connaught, Connaught Gardens, Muswell Hill, N.10.
GLASS SILK.—Versil, Ltd., Rayner Mills, Liversedge, Yorks. Glass Fibres, Ltd., Firhill, Glasgow, N.W.
ASBESTOS.—Newalls Insulation Co., Ltd., Broxbournebury, Broxbourne, Herts. Bells Asbestos and Engineering Supplies, Ltd., Slough.
‡ *COLOURED ASPHALT FLOORING. — Limmer and Trinidad Lake Asphalt Co., Ltd., Berry Hill House, Taplow, Bucks.*
§ *PLASTIC RUBBER FLOORINGS.—North British Rubber Co., Ltd., 200 Tottenham Court Road, London, W.1.*

The Information Centre must make clear that, while it gives general opinions on problems involving legal matters, such advice must in no case be taken as a legal opinion on the facts of a particular case. It must also be made clear that the Centre, in helping to solve enquirers' problems, can accept no responsibility for any action taken as a result of its advice.

REFERENCE BACK

[*This section deals with previous questions and answers.*]

Q209. *March* 14, 1940.

The reply made to this enquiry which was for a satisfactory factory flooring, intended originally to consist of a timber sub-floor with further wood strip flooring on top, has brought additional information from manufacturers whose products would be of interest to the enquirer. As alternative surface treatments to the magnesium oxychloride jointless flooring suggested other forms of *in situ* plastic laid floorings which might be considered are :—(1) ordinary or coloured asphalt,‡ and (2) plaster rubber mixes with fillers of cork, marble or rubber chippings.§

It has been suggested also that the fixing of the light machinery could be arranged by embedding fixing fillets in the cement screed underlying the floor surfacing. Rot-proof fibre fixing fillets* are suggested for the work.

* *FIBRE FIXING FILLETS.—F. Dejong & Co., Ltd., 84 Albert Street, London, N.W.1.*

TIMBERLESS FLOORS AND FLAT ROOFS

Following is the second part of a statement by the Information Bureau of the Building Research Station† on "Timberless Floors and Flat Roofs"—a survey of continental materials and methods of construction. The first part was published last week.

Type 3.—Floors consisting of pre-fabricated hollow tile beams with steel-and-concrete reinforcement

Methods of floor construction using pre-cast hollow reinforced concrete beams laid side by side are well known in this country. With this system it is necessary either to cast the beams specially for each job or the manufacturers must carry very large stocks to meet varying requirements. There is, however, a method used on the Continent which, it is believed, has so far not received much consideration in Britain, though a modification of it has met with a certain amount of success in parts of the United States of America.

The constructional basis of this method is the manufacture, on the site, of beams consisting of hollow clay blocks laid end to end. Special sections are used and these are shaped to accommodate reinforcement in both tension and compression zones. A lower flange on each block maintains a gap between adjacent beams which is later filled with concrete and serves to key the floor together, besides affording space for additional reinforcement should this be required. Beams to suit any span may thus be built up. Each beam is capable of carrying its own weight when simply supported at the ends, but should not be called upon to carry live load until the spaces between adjacent beams have been filled with mortar and this has set. A thin layer of mortar is used to cover the beams to protect them from damage during building operations, but is not assumed to relieve the blocks of stress when under load.

Following are some details of three Continental types and an American modification :

(*a*) The first of these types is shown in Figs. 15, 16 and 17. In this case no reinforcement is shown between beams, but may, of course, be added if required. The method of assembly is as follows :

The blocks are wetted and laid end to end on a board. The upper reinforcement is placed in the groove and mortared, and the gap in the compression zone filled up with mortar. The beam is then turned over and the same is done with the tensile bar. (A special clamp has been devised to keep the blocks in alignment and facilitate turning over ; details of this are not available.) The clamps are then removed and the mortar allowed to set. This requires about 10 days for rapid hardening cement and about 28 days for ordinary Portland cement.

A horizontal, lightly reinforced concrete girdle beam is provided, and the compressive reinforcement is carried beyond the ends of the beams and hooked into this frame. The tensile reinforcement finishes at the ends of the beams : nevertheless, sufficient anchorage is obtained here by knocking out the short horizontal rib, thus deepening the centre groove, and hooking the end of the bar. The torsional and other resistance of the girdle is sufficient to partly fix the end of the beam, and a maximum bending moment in the beam of $\frac{wl_2}{12}$ is usually assumed.

This type of floor carries light partitions without further support, and their weight is assumed to be distributed and added to the dead weight of the floor itself.

Openings for fireplaces and staircases are made by casting reinforced concrete trimmers *in situ*. These are tied to the trimming beams by breaking away the tiles of the latter for a short space and bedding the reinforcement into the tile. Temporary support and a certain amount of shuttering are, of course, required for this operation.

Tests have shown that the beams may be made continuous over two or more spans despite the reversal of bending moment and the absence of compression-transmitting areas of mortar on their undersides.

Four labourers can make about 50 sq. yds. of beam in eight hours. (This is known as the "Rapid" system, and has a dead weight of 64 lb. per sq. ft. The production of this floor has been started by a British firm and tests have been made at the Building Research Station of a floor section constructed by them.)

(*b*) A similar type of construction is shown in Figs. 18, 19 and 20. The dotted lines in Fig. 18 represent webs which support the lower flange during transport and are broken away immediately before use. The method of fabrication of a beam is similar to that described under (*a*) above, with the exception that the beam does not require turning over in order to insert the tensile reinforcement. Compression is transmitted from tile to tile through the mortar which fills the gap provided by the chamfering of the upper corners of each block. The spaces between beams allow the placing of shear reinforcement, and also, at points where there is reversed bending moment, of tensile reinforcement.

Normal lengths of tile are 11¾ in. and 15¾ in., but odd lengths can be made up with special tiles 8 in. and 10 in. long. As in the previous example, there is sufficient bond between beams and walls to partially fix the ends of the former. The floor is designed as a solid slab spanning in one direction only. It will be noticed that a staggered system of jointing is used.

High tensile steel bars with an ultimate strength of 47 tons per sq. in. and a working stress of 15·25 tons per sq. in. are advocated for use in these floors. Rapid hardening Portland cement with a mortar strength of 9,250 lb. per sq. in. compression at 28 days is used, and the working stress of a 1 : 4 mix is of the order of 925 lb. per sq. in. (This is the "Adamoli" construction.)

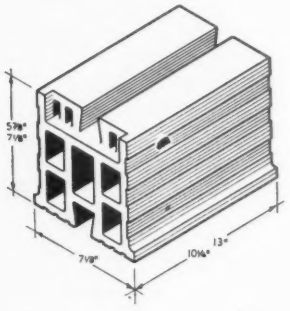
(*c*) A third example of this type of floor is shown in Figs. 21, 22 and 23. This has disadvantages due to the absence of mortar compression areas between tiles with the result that a single beam has considerable deflection under the weight of one person. Props at intervals of 6 ft. of span are used to counteract this, and when the mortar is finally placed between beams and allowed to set, tests show that the floor is satisfactory.

The method of fabrication is as follows :—

Two of the blocks are laid end to end upside down on a board which is depressed at the centre to give a ¼-in. camber in the finished beam. Two $\frac{3}{16}$-in. dia. steel bars are placed in the side grooves one on each side of the block, and are tied together with thin wire. Further blocks are then fitted between the bars, which are wired together after every third block. The tensile reinforcement is then mortared into position and a thin uniform layer of fine sand spread over the blocks preparatory to the placing of blocks for a second beam. In this way the beams are made up one above the other to a convenient height. The side grooves are then filled with mortar, and this is allowed to set for 15 days. Two men then carry the beams and place them in position, and when the whole floor is ready, the gaps between beams are filled with liquid mortar.

A certain number of additional bars are used to resist reversed bending moment at the ends which results from the embedding of the main

† Crown copyright reserved.



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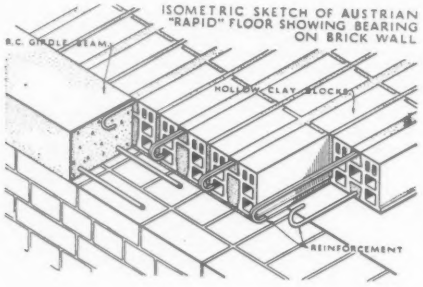

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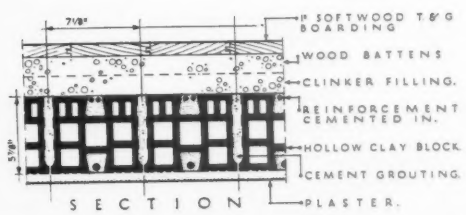

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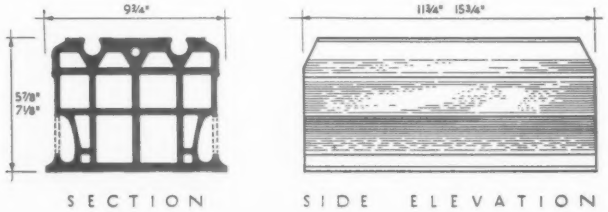

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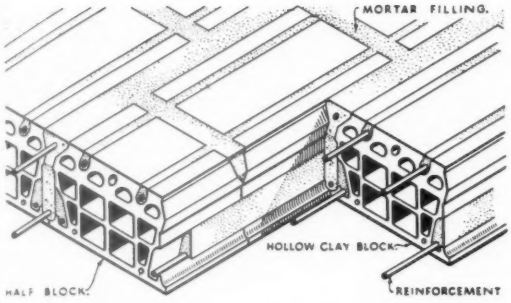
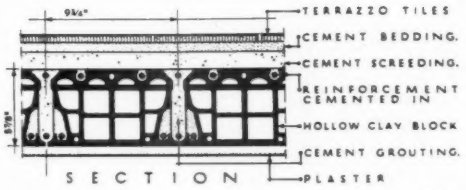


ISOMETRIC SKETCH OF "ADAMOLI" FLOOR

19



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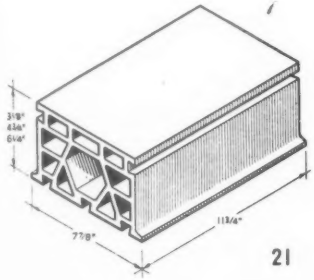

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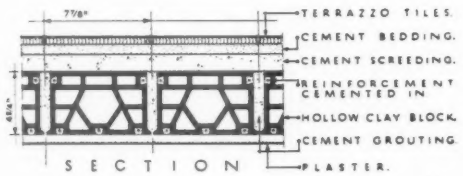

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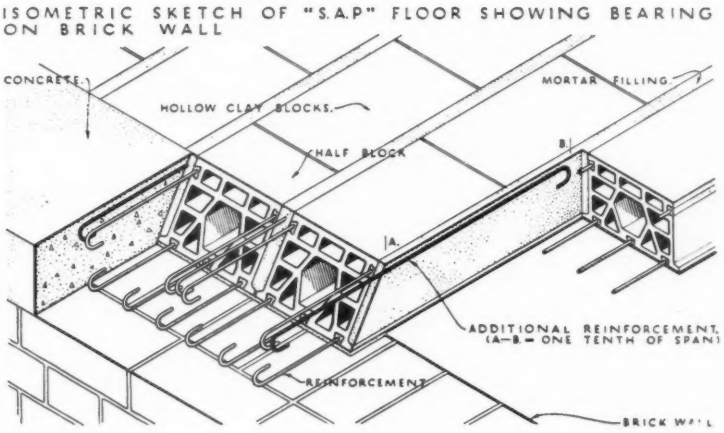
ISOMETRIC SKETCH OF "S.A.P" FLOOR SHOWING BEARING ON BRICK WALL



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reinforcement in a concrete girdle beam over the wall. (Flat roofs, however, are designed for a maximum bending moment of $\left(\frac{wl^2}{8}\right)$.

The main blocks are 11¾ in. long. The splayed end-blocks are made 5¾ in. and 11¾ in. long, and these are used in alternate beams so as to stagger the joints. The small size of groove requires small sizes of bar and these are always of high tensile steel (ultimate strength 74 tons per sq. in.). The rapid hardening Portland cement mortar (1 : 2 mix) has a crushing strength of 5,000 lb. per sq. in. at 15 days.

It has been shown that the strength of these floors may be estimated by taking the net compression area into account, and using a modular ratio of 10. (This is the S.A.P. floor, weighing about 42 lb. per sq. ft.).

(*d*) In certain parts of the United States of America a modification of this method of construction has been used. The tile beams are of inverted T section with a hollow web. (A similar section used in aircraft construction in Britain is called a "top-hat" section). The beams are not close set as in the other tile beam constructions described above, but are spaced so as to carry hollow tile bridging blocks resting on their flanges.

The beams are fabricated by buttering the ends of the tiles and laying them end to end on a board to the required length. Steel bar reinforcement is then laid in the channels of both flanges and mortared into position. Vertical shear reinforcement is also used where necessary. The beams are sprinkled with water daily, and when sufficiently strong, are hoisted into position. The hollow clay bridging blocks are about 1 ft. wide, by 4 in. or 6 in. deep by 1 ft. to 2 ft. 6 in. long. They are buttered together with mortar and laid transversely between the beams on mortar beds. This method does not give a flat ceiling, but a flat ceiling is provided if required by using blocks laid lengthwise with the beams and rebated so that their under surface is flush with the bottom of the beam. Steel reinforcing bars are placed over the beams wherever reversed bending moments occur, and the floor is then covered with a 2-in. or 2½-in. layer of concrete lightly reinforced to prevent thermal and shrinkage cracks. The whole floor is sprinkled with water daily and will carry its working load about 14 days after laying the concrete. This type of floor weighs about 43 lb. per sq. ft., and is suitable for spans of 10 ft. to 16 ft.

4. COST

It is difficult to assess the cost in this country of these types of floor, as it is not known at what price the various kinds of tile could be produced. As a guide, however, it may be assumed that the ratio of the cost per sq. yd. of any one type of floor to the labourer's hourly wage is very approximately constant from country to country and hence provides an index figure showing the relative costs of different types of floor. In Table II are given values of this index for the Continental floors described. The indices given were calculated before the war on the basis of information obtained in the course of the survey already mentioned and relate to floors of 13 ft. span.

It should also be borne in mind that these values are based on the cost of materials, particularly tiles, as produced abroad, and may need modification for this country.

5. DESIGN

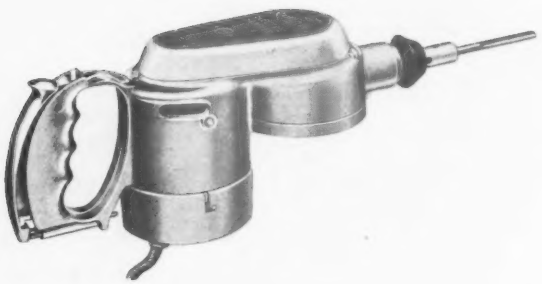
The types of floor construction described above are, in general, not new; they are standard practice in many countries. No attempt is made in this note to give figures for design purposes, as these will depend, among other things, on the strength of the tiles used, and, since most of them are not manufactured in this country, no information thereon is available. Where the illustrations give dimensions and spacings of beams, etc., it may be taken that these are for the usual domestic loading of 40 lb. per sq. ft., the lighter sections being for a span of 13 ft., when using Continental-made tiles.

6. PROPRIETARY RIGHTS

Many of the floors described are of a proprietary character, and any firms proposing to adopt the designs should take steps to ensure that they are not infringing patent rights.

TABLE II

Type	1 (*a*)			1 (*b*)	2			3		
Description	Clay Filler Block (A)	(B)	(C)	"Schild" (D)	Reed Bridging Block (A)	"Norma" (A)	"Schleutermann" (B)	"Ottiker" (C)	Austrian Rapid (A)	"Adamoli" (B)	"S.A.P." (C)
Index Figure ..	11·6	15·8	20·0	12·0	10·8	10·5	11·4	12·2	15·6	15·5	15·0



TRADE NOTES

[*By PHILIP SCHOLBERG*]

An Electric Hammer by Rawlplugs

Most architects know Rawlplug fixing methods well enough, and some may remember that this firm introduced a few years ago a hand-operated mechanical hammer for jumping the necessary holes. This hammer was quite suitable for the jobbing builder, but power operation is obviously necessary if there is a large amount of work to be done, and a new electric type has now been introduced for holes up to ⅞ in. diameter. The motor is wound for D.C. or A.C., and the current consumption is only 170 watts, while the price is £7 10s.

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The hammer unit is driven by a pair of canvas and rubber belts and the drill is given about 3,000 blows a minute, enough to drill a ¼-in. hole 2 in. deep in about half a minute. The hammer can, of course, also be used for hacking, pointing or chase cutting.

Light in our Darkness

Rawlplugs have just sent me a calendar which gives, not the usual information about parcel rates to the Falkland Islands and "dividends due" (whatever that may mean), but a series of curves for the different months showing the hours during which one can expect a certain amount of co-operation from the moon. Not, unfortunately, expressed in foot-candles, but just as "bright."

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The advertising manager sends it to me in the hope that it "will prove useful to me and a friend when planning late evenings together." You can have one, too, if you write and ask for it. I extract also the following slogan, "If you don't use Rawlplugs there's a screw loose somewhere." Quite.—(*The Rawlplug Company, Ltd., Rawlplug House, Cromwell Road, London, S.W.7.*)

Glass Bricks for A.R.P.

Some weeks ago there appeared a note in this JOURNAL giving the official requirements for the use of glass bricks in air-raid shelters and existing buildings. Some of these regulations have now been relaxed or modified, the most important being the following:

1. Panels of glass bricks or lenses must still not exceed 14 sq. ft. in area, but the provision that no dimension is to be more than 4 ft. is omitted.

[*Continued on page xxvi*]

PRICES

BY DAVIS AND BELFIELD, CHARTERED QUANTITY SURVEYORS

GENERAL POSITION—MAY 1

The general position has remained much the same for the past two months and no important changes, either in rates of wages or in the prices of basic building materials have occurred since the end of February. Rates of wages are due to be reviewed in May and there is a possibility that the price of Fletton bricks will be increased in the near future.

LABOUR COSTS

As previously stated in these columns the increase in cost of labour, for Central London, since pre-war days is 6·35 per cent. for labourers and 4·76 per cent. for craftsmen; should there be a further ½d. increase, the percentages will be 9·52 and 7·14 respectively.

MATERIALS

A full list of prices was published on April 4 and as a full list of pre-war prices (Market Prices) has also been published, the percentage increase in cost of any particular material can readily be calculated.

MEASURED RATES

It may be remembered that against the prices for work fixed complete (Measured Work) appearing in the Schedule of Pre-War Prices, are notes of the amounts included in the prices for "materials only"—thus the prices can be subdivided into "labour costs" and "material costs." The reference to the percentage increase in cost of Labour and Materials given above should enable anyone to work out current prices for Measured Work with a reasonable degree of accuracy, providing sufficient note is taken of the conditions affecting the particular job.

BASIC MATERIALS

A list of basic materials with the percentage increases in cost since pre-war days is given below once more, though this feature will be discontinued if there are not sufficient changes in the future to make it of interest.

	Increase at end of			
	Jan., 1940	Feb., 1940	Mar., 1940	Apr., 1940
	Per cent.	Per cent.	Per cent.	Per cent.
Portland cement	+ 9·8	+ 9·8	+ 9·8	+ 9·8
2-in. Unscreened ballast	+17½	+17½	+17½	+17½
Fletton bricks (at station)	—	—	—	—
Stoneware drainpipes (British Standard) 2 tons and over	+ 9·4	+ 9·4	+ 9·4	+ 9·4
Roofing tiles	+ 7½	+ 7½	+ 7½	+ 7½
Steel joists (basic sections) ex mills	+19	+19	+19	+19
Lime (greystone)	+14·3	+14·3	+14·3	+14·3
Sheet lead	+50	+50	+50	+50
Iron rainwater goods	+ 3¾	+12½	+12½	+12½
Iron soil pipes	+ 3¾	+12½	+12½	+12½
Copper tubes	+23½	+25½	+25½	+25½
White lead paint	+21¼	+21¼	+22¾	+22¾

These percentages include the increased cost of delivery in London except for steel joists which are priced ex mills and Fletton bricks which are priced delivered to King's Cross Station.

Davis.

F.S.I.

2. The minimum thickness of the concrete panel, previously 5 in., is now reduced to the overall thickness of the lens used.

3. Instead of allowing not more than one lens in each square foot of panel, the lenses may now be fixed so that there is a minimum of 2 in. of reinforced concrete between each lens.

MANUFACTURERS' ITEMS

On page 395 of our issue for April 11 we described Ellicem as an external wash, whereas it should have been described as a tenacious cement coating for external use. On the same page the name of Eric Munday, who carries out lettering, should have been printed instead of Design Productions, Ltd.

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At their last board meeting, the directors of Imperial Chemical Industries, Ltd., appointed the following members of the board, Mr. John Rogers (now on Government service), Mr. J. G. Nicholson and Lord Melchett, to be deputy-chairmen of the board. They also appointed Mr. F. W. Bain and Mr. A. J. Quig directors of the company. Both Mr. Bain and Mr. Quig have recently held the post of executive managers.

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Turners Asbestos Cement Co. have recommenced issuing their series of Problem Booklets. We have just received a copy of No. 13 of this series, which deals with a wartime problem that has been solved by the use of asbestos-cement. It gives full details, drawings and photographs of the new Everite asbestos-cement sand-boxes which are advocated as the best means of replacing perished sandbags. These boxes, which are constructed of asbestos-cement throughout, are ⅜ in. thick and are available in two sizes, 24 in. by 12 in. by 10 in. deep, and 18 in. by 9 in. by 9 in. deep. The price is 4s. each for the larger size, and 2s. 10d. for the smaller size box; prices include delivery in lots of 100 and upwards. It is claimed that the clean light grey appearance of the boxes is permanent without any painting. Another point brought out in this booklet is that they possess one hundred per cent. demolition value for, when no longer required for their original purpose, they can be put to a number of uses, such as window-boxes for flowers. Manufacturers will be pleased to supply copies of the booklet upon request.

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At a meeting of the board of Bovis, Ltd., it was decided to recommend the undermentioned dividend: First and final on ordinary shares, 1¼d. per share (same as last year), namely 10·4 per cent. Profit for 1939, £37,356 (against £39,057). (Note: £12,954 has been transferred from the reserve for contingencies, etc., to meet losses of subsidiary companies.) Reserve for contingencies, £15,954. Carry forward, £1,405 (against £1,645).

THE BUILDINGS ILLUSTRATED

NEW COUNTY OFFICES (FIRST PORTION) FOR L.C.C. (pages 457-462). Architects: F. R. Hiorns, F.R.I.B.A., and E. P. Wheeler, F.R.I.B.A. Consulting architect: Sir Giles Gilbert Scott, R.A. Contractors and suppliers included: Higgs and Hill, Ltd., foundations and superstructure; Redpath, Brown & Co., Ltd., steel framework; Waygood-Otis, Ltd., lifts; John Cochrane and Sons, Ltd., subways; Cochran & Co. (Annan), Ltd., boilers (for new County Offices and County Hall); Henry Hope and Sons, Ltd., casements; Williams, Smith and Evans, Ltd., roof tiling; Shanks & Co., Ltd., sanitary fittings; Diespeker & Co., Ltd., terrazzo; Walter W. Jenkins & Co., Ltd., marblework; Hollis Bros. & Co., Ltd., wood-block flooring (Rhodesian teak); Automatic Sprinkler Co., Ltd., sprinkler installation; J. Starkie Gardner, Ltd., ornamental metalwork; Osler and Faraday, Ltd., special lighting fittings; J. Jeffreys & Co., Ltd., G. N. Haden and Sons, Ltd., Richard Crittall & Co., Ltd., and Norris Warming Co., Ltd., heating, hot water and ventilating apparatus; W. J. Furse & Co. (London), Ltd., electric lighting, power, telephones, cables, switchboards, etc.; Smiths English Clocks, Ltd., clocks; Adams-Hydraulics, Ltd., water booster and sewage pumping sets; Fenning & Co., Ltd., granite and marble paving (bank); South Western Stone Co., Ltd., stonework; L. Carter & Co., Ltd., copper work; W. A. Telling, Ltd., plasterwork; Plumbing Guild, Ltd., plumbing; A. Goldstein & Co., Ltd., glazing; General Asphalte Co., Ltd., asphalt; Hobbs, Hart & Co., Ltd., ironmongery (rising butts); Joseph Kaye and Sons, Ltd., ironmongery (indicator bolts); Comyn Ching & Co. (London), Ltd., ironmongery (locks); Robert Adams, Ltd., ironmongery (door springs, etc.); Petroil Installations, Ltd., petrol tank and pump; H. and C. Davis & Co., Ltd., steel doors to transformer room; J. A. King & Co., Ltd., pavement lights; British Engraving and Nameplate Mfg. Co., Chrystolex number plates; Percy Smith, letters and numerals; Turners Asbestos Cement Co., asbestos ventilating trunking; Clark, Hunt & Co., Ltd., metal frames for radiators; Indestructible Paint Co., Ltd., and Keystone Paint and Varnish Co., Ltd., paint; Braithwaite & Co., Engineers, Ltd., steel tanks; Joseph Spiro, seven marble panels, etc. (ground floor and entrance halls "B," "C" and "D"); Alfred J. Oakley, ten lighting column caps ("C" and "D" entrances and bridge); E. J. and T. Bradford, Ltd., panels (Belvedere Road front); F. P. Morton, plasterwork in entrance halls and panels on York Road front.