THE ARCHITECTS' JOURNAL

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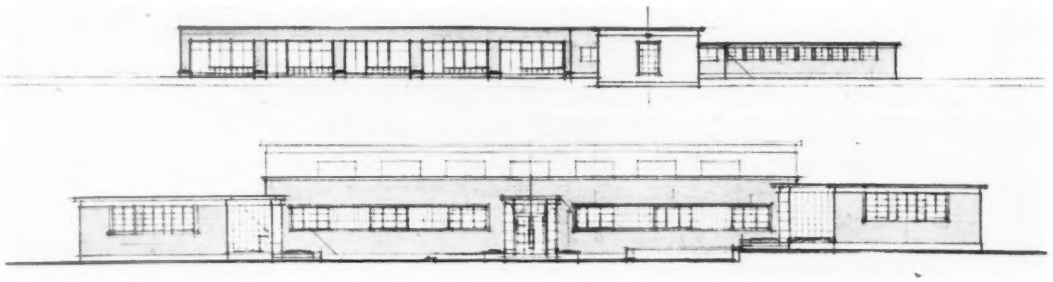
The Editor will be glad to receive MS. articles and also illustrations of current architecture in this country and abroad with a view to publication. Though every care will be taken, the Editor cannot hold himself responsible for material sent him.

THURSDAY, DECEMBER 21, 1939. NUMBER 2344 : VOLUME 90

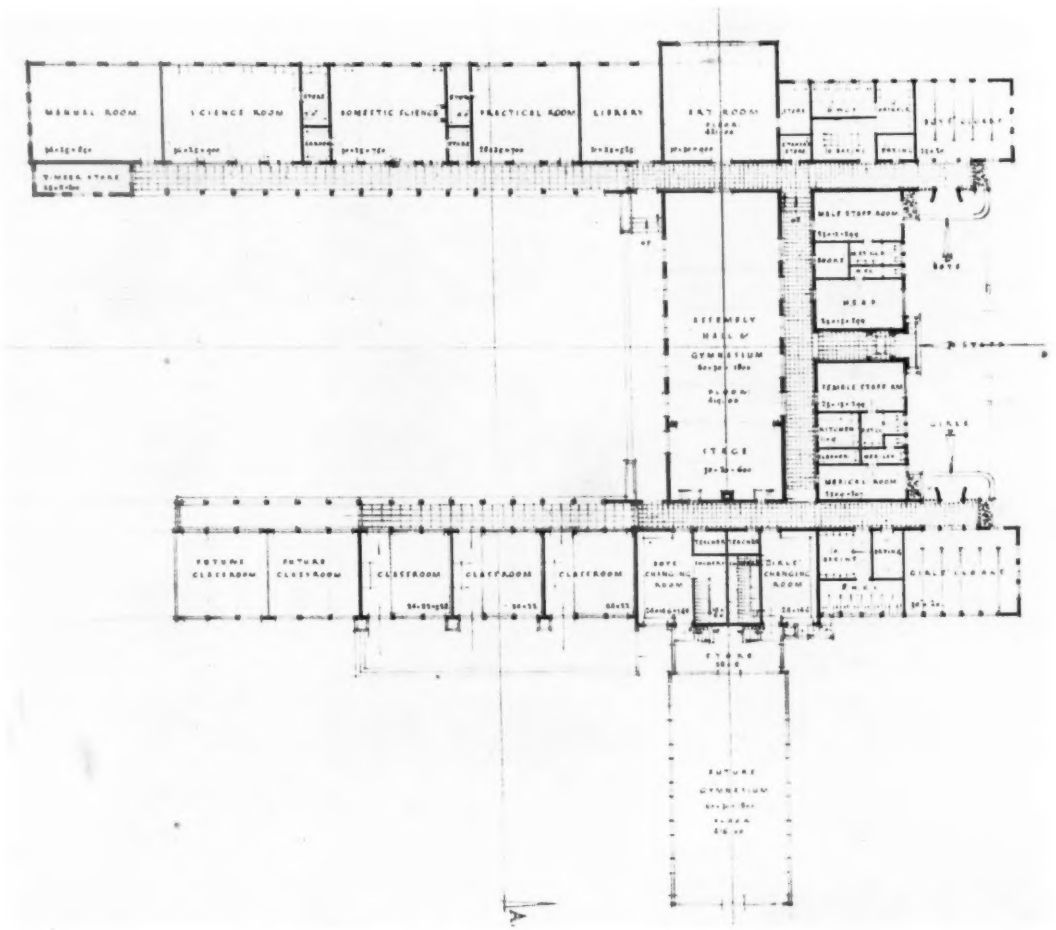
PRINCIPAL CONTENTS

COMPETITION FOR SENIOR SCHOOL, DUDLEY

WINNING DESIGN: BY HICKTON, MADELEY AND SALT



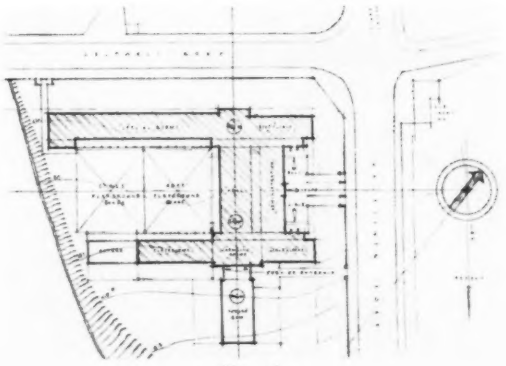
South-east elevation (top) and north-east elevation



Mr. S. N. Cooke, F.R.I.B.A., the assessor of the competition for a senior-mixed school, Dudley (limited to architects practising in the counties of Warwick, Worcester, Hereford, Salop and Stafford) has made his award as follows:

Design placed first (£150)—Messrs. Hickton, Madeley and Salt, AA.R.I.B.A., Walsall. Design placed second (£100)—Messrs. Redgrave, Son and Clarke, Coventry. Design placed third (£50)—Messrs. Coton, Harrison and Thomas, Smethwick. Highly commended: Mr. J. Blackburn, Old Hill, Staffs; Messrs. A. Edwards and Son, Birmingham; and Mr. Alfred Parker, Worcester.

Thirty-seven designs were submitted. The estimated cost of the winning scheme (reproduced on this page) is £16,800, exclusive of the gymnasium, which is to be built at a later date.

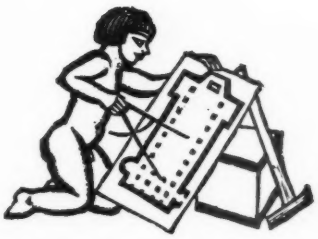


Site plan

CHICAGO'S NEW RIVER TUNNEL

Chicago's new river tunnel, a double tube of steel, 200 ft. long, with carriage ways 40 ft. wide and 23 ft. high, which is to carry subway cars under the river, is now ready for sinking into position. The steelwork itself is completed and the work of adding a lining and outer layer of concrete is proceeding. The tube will be sunk into position in a trench dredged to a 30-ft. depth below the river bottom. The 6,500-ton double tube will be sealed at both ends, towed 15 miles to its site and sunk by pouring concrete on its top. Sinking the section as a unit minimises the depth of earth covering it—5 ft. as against 15 with conventional practice. The shallower depth has the added advantage of providing a slighter grade in and out of the tube than would be the case otherwise. The steel tube structure is arc welded throughout.

A general view of the tube under construction in the dry dock by arc welding is shown above. In this illustration can be seen the two rectangular positioning bulkheads at either end and the intermediate framing stiffeners. Left, a close-up of a portion of the tube.



WHY HASN'T THE R.I.B.A. . . . ?

IN last week's issue of the JOURNAL there appeared a statement by the A.A.S.T.A. about the R.I.B.A.'s handling of the wartime situation of the building industry and architects.*

The A.A.S.T.A. statement charges the R.I.B.A. with lack of preparation for the war, with suspension of activity during the first weeks of war and with devoting its subsequent activities solely to the interests of the private practitioner. It asks for R.I.B.A. activities to be resumed and for reports on certain current problems to be prepared.

The chief fact about the A.A.S.T.A.'s criticisms of the R.I.B.A. and its handling of the war emergency is the ease with which they can be explained away. Explaining away has now become almost the whole-time job of the heads of most organizations—from the Government downwards.

It can be shown that the A.A.S.T.A.'s charges are ill-timed, largely unjustified, and unfair. Indeed, the whole present situation of architects and the building industry can be explained very clearly—while those in office can also truthfully claim that any post-mortem held now will delay the action needed to escape from that distressing situation. This has happened before many times in the history of architectural practice.

Nothing is more obvious about the R.I.B.A. than that in bad times three-quarters of its membership will ask bitterly, " What is the R.I.B.A. doing ? ", while in normal times that same three-quarters not only take no interest whatever in the R.I.B.A., but are indignant if they discover that someone has been trying to help it do something while they were not looking.

This dreary repetition cannot be stopped unless a majority of members of the R.I.B.A. become fiercely convinced of three things. First, that the R.I.B.A. at present is a society designed for calm periods ; second, that calms and crises will inevitably alternate in architectural practice ; third, that preparing for crises needs something quite different in organization from anything required in calms.

In normal times architects expect from the R.I.B.A. status and provision for education ; discipline ; a library and technical advice ; certain dignified events and non-controversial encouragement of public interest. They can get these from almost any kind of organization and representation.

But at other times almost every member feels the lack of something much more full-blooded and effective in their professional organization. Bluntly, what they need is FORESIGHT—they want someone or something which can foresee events or trends of consequence to the profession and make preparations to meet them or to utilize them on behalf of architects. This is where the trouble begins.

Foresight requires a man, or men, who are able to foresee trends out of the sight of the ordinary practising architect. And here the R.I.B.A. and other professional societies repeatedly break down. Nothing annoys the ordinary member of a learned society more than to see steps being taken on his behalf to ward off dangers he cannot see. His prickles come out at once and the odds are always in his favour. He has only to mutter " New-fangled nonsense, it looks to me . . . " and months of work is pigeonholed for ever.

Nor is this all. Questions that need most careful foresight are usually controversial and often political. Really important matters always are.

Consider : the growth in the numbers of official architects is partly political. Housing is political. Town-planning reeks of politics and so does Ribbon Development, A.R.P. and slumps ; while the famous Borders case about collateral security—of utmost importance to architects—had decided political ramifications. Yet developments of these questions, taken together, may easily decide in the fairly near future whether architects have large incomes or no incomes at all.

All who think seriously about such problems must realize that foreseeing and handling their architectural implications is as different from staging an R.I.B.A. dinner or appointing an assessor as digging potatoes is different from brain surgery. Having realized this hard fact the members of the R.I.B.A. must make up their minds. They can have foresight if enough of them want it—but only if they are prepared to pay the price.

The price of being as prepared for future events as an influential and tolerably wealthy professional society can be, is the establishment of a foresight organization which will endure through calms as well as crises—and whose advice will be taken. This demands brains, whole time, half time and paid for. In it the two-hour labours of tired committee-men can have no useful place.

But above all it demands that members of the R.I.B.A. should grasp and go on grasping the need for an efficient foresight organization. At present the nearest approach to this organization in architecture is the A.A.S.T.A. itself, which, with small membership and resources, produced a first-rate report on Structural A.R.P. nearly a year and a half before the first war-time syren was heard in Portland Place. That is why all A.A.S.T.A. statements command attention.

Until the average member realizes that foresight is needed all the time and not only in crisis weekends—and he ought to be realizing this now—he cannot expect effective help from the R.I.B.A. in emergencies.

* This statement is reprinted for convenient reference on page 730 of this issue.

The Architects' Journal
45 The Avenue, Cheam, Surrey
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NOTES & TOPICS

THE SINEWS OF TAXATION : HOUSING . . .

IT is encouraging to read that the Ministry of Health is beginning to allow a modicum of civil building to continue, particularly housing projects in which building has begun or contracts have been placed.

*

Croydon Council has the Ministry's consent for a scheme of 66 houses, eight flats and four shops, at a cost of £32,000. A rural council (Halstead, Essex) has also been allowed to proceed with its housing programme ; the Sheffield Estates Committee, the Coventry City Council and a Durham rural council are all hopeful of getting the Ministry's sanction, urging that building costs would be much higher after the war and that building now would reduce unemployment.

*

Coventry even hopes to get permission for *more* houses than those previously sanctioned, because of the increased demands of war work in the city.

. . . AND SCHOOLS

So far there is not much sign that the Board of Education is following the Ministry of Health, though there are many instances where the building of schools and training centres is as necessary as housing accommodation.

*

For instance, a £30,000 extension to Luton Technical College has been turned down by the Board in spite of the fact that a pressing need of this important industrial area is technical instruction—not only, as the Mayor has pointed out, for boys and girls about to leave school, but also for " the young fellows who will come out of the Services at the end of the war. They will need to re-equip themselves for industry, and we anticipate terrific pressure."

CAME THE DAWN

" Walking between the Strand and Baker Street one may wonder if the shops are glowworm-lit. Here the evening's all a-glimmer ; it is as if streets that once matched the Milky Way are lighted only by the tapers of the farthest stars. . . . At times it is like walking through an aquarium. Some of the lighting, in dim under-water blues and greens, calls for a slow-finning plaice or ray to complete the picture."

*

Thus *The Observer* on the shop-window lighting now —if grudgingly—permissible. Shopkeepers are naturally pleased that their goods no longer need to be completely invisible after dark, and street users are likewise thankful that the shape of the streets themselves has been rendered discernible at least during shopping hours.

*

Black-out casualties are still high, with no signs of any relaxation in the regulations governing street-lighting itself. At the moment the shopkeeper is beginning this service for the public at his own expense. Or was that the idea ?

MAGNETISM AND THE ARCHITECT

In the discussions in the press concerning the magnetic mine, nobody seems as yet to have mentioned the fact that we ourselves were studying this weapon, or variations of it, at the end of the last war. I know this because an architect of my acquaintance was entrusted at the time with the design of a factory for their manufacture or assembly. He remembers the job without difficulty, as the building had to be constructed without using ferrous metals.

*

In a maddening way, he has forgotten how the resulting difficulties were got over.

SOUTH AFRICA AND THE WAR

I am told by an architect who has just returned from a few months' holiday in South Africa that even there architects were the first people to be placed on the war-time shelf.

*

Assistants were sacked, jobs of every size curtailed or cancelled, and prices soared. This was due partly to war panic and partly to the fact that the majority of building material and equipment in South Africa has to be imported, and it was feared that supplies might become dangerously reduced or even completely cut off. Some shortage has in fact been experienced, but fears were exaggerated, and by the time my friend sailed the country was settling down (beneath the permanently bubbling froth of Dutch-English discord) into the realization that war, properly handled, could mean prosperity for a young and comparatively undeveloped country.

*

Of the voyage home, he writes :

. . . By day, shipboard life was normal, and there were no discomforts except the stuffiness in the tropics of the blacked-out public rooms. The only sign of war was the grey paint, the frequent boat drills, and, above the swimming pool, the ship's armaments—(bearing a notice " It is dangerous to dive "). By night, however, life took on a strange unreality. The ship showed no light of any kind. The passenger emerged on deck through elaborate light-locks, into a darkness which was relieved only by the glow of a cigarette from the distant fo'castle and the phosphorescence of the wake.

Few ships were sighted until the Channel was reached, where

A scene from the Ballet by Massine and Salvador Dali now playing in New York.

a flotilla of minesweepers below ragged streamers of smoke provided the first aspect of war.

Scarlet armlets gleamed on the quayside, and from the dock shed roof peered the mauve-cold faces of an anti-aircraft post. Immigration officials, carrying gas masks, filed aboard, and the first buff forms were produced for signature. Within an hour of arrival the ship was deserted except for the stevedores, and her commander, soft-hatted and sober-suited, was placing his golf clubs in a taxi.

*

Anyone (my friend concludes) who feels disheartened with the confusion and boredom of civilian existence in war-time, should take a voyage in a British merchant ship. He will find in its crew a solid, unmoved efficiency and confidence which relegates the phrase " war of nerves " to the advertising copy of bedtime drinks.

CLIVEDON CONTRIBUTION

That famous seat of alleged goings on, Lord Astor's estate at Clivedon, is to provide the site for the first Canadian Red Cross War Hospital. The Canadian National Red Cross Commissioner is now consulting with architects (we are not told their names) for its early construction.

*

The cost of the building and its equipment is to be borne by the Canadian Red Cross, and it will be staffed and administered by the Canadian Department of Defence.

PERHAPS, AND WITHOUT PERHAPS . . .

A New York correspondent has sent me the programme of a new and chattering ballet, the outcome of a partnership between Leonide Massine and Salvador Dali, inspired by the music of Wagner. The ballet, says my friend, is an interpretation of the Venusberg Bacchanale from Tannhäuser. It is now playing at the New York Metropolitan Opera House.

*

Ballet sets should certainly provide an almost perfect medium for the Dali genius. Judging by the photographs and descriptions* he has certainly let himself go in this, his first venture. By way of enlightenment, Dali has himself contributed an apologia in the programme :

*

" Perhaps, and without perhaps, every passing day makes me feel myself, so to say, and this is the moment to state, nailed to my own geology . . . My brain and my eyes have always been attracted by mountains. And of all mountains, it was Wagner who produced the greatest effect upon me . . ."

* *Time* describes the ballet as having " enough assorted subconscious erotica to strain the limbo of an experienced psychopath."

ASTRAGAL

1940

IN the opening days of this war no architect would have cared to be definite about the work and surroundings of architecture in four months' time, and the JOURNAL *found it equally difficult to say what it would be doing after the same period. For the* JOURNAL, *only one plan, one policy, seemed war-proof in September—to keep most of a reduced space ready to meet new developments in very quick time.*

It provided for doing so by—

1. THE INFORMATION CENTRE, *which would answer, to the best of the* JOURNAL'S *ability, any war-time problem concerning architecture and building.*

2. ARTICLES ON CURRENT PROBLEMS. *An orgy of shelter construction made it seem best for the first series of these articles to supplement the Special Issues† published by the* JOURNAL *before the war.*

The outlook today is as uncertain as it was on September 3. In six months architects may be busy on work far removed from architecture, or most of them may be grappling with purely building problems of the utmost urgency. But in this state of uncertainty one fact is certain—that TEMPORARY AND SEMI-PERMANENT BUILDING TECHNIQUES will be of first importance during the war and for some time after it.

The JOURNAL *will therefore begin the New Year with four articles, by Eugenio Faludi and Godfrey Samuel, which review such methods, their application abroad and their possibilities in large-scale production.*

The JOURNAL'S *further plans for 1940 depend on what emerges from the Building Industry's appeal to the Government and (once again) on what happens to architects. But in the meantime the INFORMATION CENTRE will be ready to answer any question which is worrying architects ; and this week's CURRENT PROBLEM article is on that most typical and messy question, " Sandbags : Preservatives and Alternatives."*

† *Now published by The Architectural Press as* Civil Protection. *By Felix J. Samuely and Conrad W. Hamann. Price 8s. 6d.*

The Information Centre owed its inception to the difficulties that arose when architects were faced with the problems of A.R.P. and other emergency work that followed the outbreak of war. The specialized questioning goes on, but it is clear that an information centre is needed for general building problems too. This Centre exists primarily to simplify the task of the architect in these days when emergency legislation and defence measures have become his immediate concern, but it does not confine itself to this work alone. The Centre will provide an expert opinion on any question connected with building.

ARCHITECTS' JOURNAL

EMERGENCY

INFORMATION CENTRE

If you have a problem which demands an expert answer send it to:—

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

or ring:

THE A.J. INFORMATION CENTRE
FLAXMAN 5322

The Information Centre itself is working from London, but enquiries sent direct to the JOURNAL *will be passed on without delay.*

These are typical of the questions we have already answered:

What are the relative costs of sandbagging and brickwork?

How is a gas-lock formed?

How is a factory protected from incendiary bombs?

Are footings necessary to walls sub-dividing basement shelters?

How is wood protected against liquid gases?

How are ventilated black-out window screens formed?

How is sandbagging rotproofed?

How much safer is a 20-ft. deep shelter than a semi-surface type?

How is a light-lock formed?

How should screen walls be arranged?

How is a basement shelter protected from bursting water mains?

What is the definition of a light-proof material?

What publications are there on farm buildings?

What would be the maximum spread of debris if an h.e. bomb hit a 330-ft. stack?

What publications are there on camouflage?

What protection is needed for light shafts?

What is adequate provision for a first aid and decontamination centre?

Is a 1938 contract binding?

Who is responsible for making good air-raid damage to unfixed materials?

What is the cost per head of gas filtration?

Under what obligation is a building owner to provide shelter for the occupants?

How is a leaking shelter waterproofed?

How will the grant be paid?

Are cinemas to be provided with shelters?

Can blast-proof doors be used for naturally ventilated shelters?

Q117 SCOTLAND.—*I have to form, above ground, shelters for a factory where the urgent need for "carrying on" precludes the possibility of forming sand-bagging screens or 13½-in. partitions to screen doors. I propose to fall back on STEEL DOORS. The provision of the Code for lateral protection is 1½-in. thickness of mild steel plate or plates. A 1½-in. plate is an enormous thing to tackle, to hang or to operate. I suggest two ½-in. plates framed and braced, and a 1½-in. space between, which I propose to pack with silicate cotton or some other material. This does not meet the views of our local factory inspectors. Have you any knowledge of such a door as the one which I propose being considered good enough? I have also an academic argument which our pundits turn down. There is a building opposite my shelters which screens two of the doors to a very considerable extent. Indeed, I argue with the local worthies that the chances of a splinter even striking any portion of my shelters' doorways are remote in the extreme; but, of course, the factory inspector folk are bound hard and fast to the letter of the law. Do you think my case is good and worth carrying to a higher quarter or not? I shall be glad to know your opinion.*

The Home Office will not approve any steel door as being splinter-proof unless it consists of at least 1½-in. thickness of mild steel plate. Tests have been made on doors constructed of thinner plates with air space between them, but the results were not sufficiently conclusive to allow this form of construction for general use. One instance has been recorded, however, where, because the entrance of a shelter was protected by an embankment not more than 30 ft. away, a thinner door was allowed. This waiver cannot be given by a local factory inspector, who is empowered only to abide by the Code. We suggest in your case where the presence of a building opposite may afford some protection, the factory inspector be asked to put the case before the regional technical adviser. Alternatively, you could pass your inquiry direct to the Home Office A.R.P. Research and Experimental Station, Forest Products Research Laboratory, Princes Risborough, who will give a final ruling in this matter.

Q118 WOLVERHAMPTON.—*In a recent issue of the* JOURNAL, *we noticed a sketch of a steel door frame with electric LIGHTING SWITCH incorporated. We are using Sankey steel frames on one of our contracts, and should be glad if you could let us know from whom we can obtain a narrow type two gang switch box, as the narrowest we can find is 2⅝ in.*

The switch illustrated in the JOURNAL is obtainable only in conjunction with

the Morris Singer door frame. We understand Mortimer Gall* have made the type of switch you require for use with Sankey's steel frames. There is also a special *Mortise*† flush panel tumbler switch with plate $3\frac{3}{8}$ in. long, $\frac{3}{4}$ in. wide and porcelain box $2\frac{3}{4}$ in. long by 1 in. deep and about $\frac{3}{8}$ in. wide. The vitreous porcelain box entirely insulates the switch, and the metal conduit is not attached but is stopped just short of the switch. The switch is only made in a single type, and two are generally used together when a double switch is required. A double plate can be specially made, giving the appearance of a two gang.

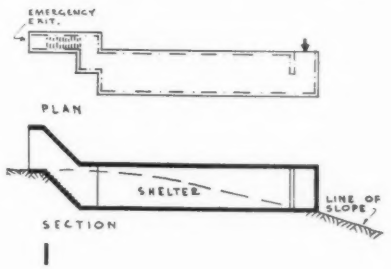
Q119 BOROUGH.—*Can you inform me what are the LIGHTING requirements for a shelter (36 ft. by 9 ft. by 7 ft. 9 in.) for 50 persons? How many points are required, what type of lamp, and should the w.c. be lit? Mains supply is available. Can the cable be carried overhead?*

According to British Standard Specification A.R.P.6 dealing with shelter lighting for a shelter to hold 50 persons (area 210 sq. ft.) where mains supply is available and suitable emergency lighting, as laid down in the specification, is made available, the following lighting shall be provided: 10 lighting points, nine for use with fixed lamps and one for use with a portable lamp. A transformer is required to give a voltage of 12 volts, and the lamps shall be bus lamps rated at 12 volts, 10 watts, with bayonet caps. One point is to be provided over the switchboard, and connected direct to the battery through its own switch and single pole fuse, to serve to light the switchboard and tell that the battery is in order. Two main circuits of five points and four points respectively are required for the remaining nine points, both connected to the mains supply, but in case the mains supply should fail the circuit of five points shall be provided with a change-over switch to connect it with the emergency battery lighting. The circuit of four points is required to be subdivided into two circuits of two points each, and the five-point circuit into two circuits of two and three points, each sub-circuit being fused with a single-pole fuse. The points shall be reasonably equally distributed over the whole area, the points on each circuit being placed alternately. For the w.c., it is required that one of the points in the main five-point circuit shall be placed in a convenient position to light this part of the shelter. All circuits are required to be wired with 3/.036 tough rubber sheathed twin cable, run on cleats securely fastened to walls and ceilings. The requirements for batteries, transformer switchboard, labelling, spare equipment, battery charger, etc., are all covered by the B.S. A.R.P.6, now obtainable from The B.S.I., 28 Victoria Street, S.W.1, to which reference should be made in connection with this work. Generally, of course, the installation is required to be to Institute of Electrical Engineers Regulations. No direct reference is made in the Specification to the question of the mains lead-in, but obviously it is desirable that where possible the lead-in should be below the ground, where it is best protected from the effects of aerial bombardment.

Q120 BRENTHAM.—*What is the new address of Fredk. McNeill & Co., roofing felt manufacturers?*

Pixhams Firs, Pixham Lane, Dorking, Surrey. Dorking 3271.

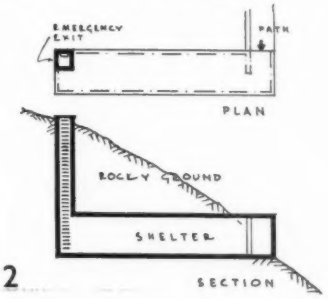
Q121 BOTLEY.—*Should a SURFACE AIR RAID SHELTER erected on gently sloping ground be sited at right angles or parallel to the contours of the land? Each shelter will be about 43 ft. by 9 ft., and the average fall of the ground is about 1 in 40, although in places it is*



1

1 in 25, so that if the shelters are erected at right angles to the contours each can be buried at the one end by between 12 and 24 in.; is there any appreciable advantage in this? If not, what is the minimum natural slope which will offer practical additional protection to the surface shelter built in this way where site conditions preclude completely buried shelters?

Where the slope is as gentle as 1 in 25 or 1 in 40 it cannot be expected that an appreciable amount of protection can be given at one end if the other end is a true surface shelter, i.e. above ground. Local conditions can be allowed to govern the direction of the shelter, but where these conditions are not decisive, shelters running parallel to the contours are preferable, as an equal depth of foundation can



2

be maintained and uneconomical excavation avoided. The slope can be of advantage only if the angle is great enough to allow a considerable proportion of the shelter to be at least 6 ft. under ground, when it can be considered as a trench. (Fig. 1.) In this case the degree of protection varies in different parts of the shelter. Only where the site is steep and rocky should shelters, cut in the form of tunnels, be arranged at right angles to the contours. (Fig. 2.)

Q122 N.3.—*Can you tell me if a $15\frac{1}{2}$-in. CAVITY WALL IS AS BLAST- AND SPLINTER - PROOF as $13\frac{1}{2}$-in. solid brickwork? The cavity wall would be built with a $4\frac{1}{2}$-in. outer skin, 2-in. cavity and 9-in. inner thickness, and the two thicknesses tied together with the usual ties. I have discussed the point with colleagues and whilst some hold that the former would be the better form of wall because the 2-in. cavity would act as a cushion, others say it would not be so good, and if there were gas about it might get into the cavity, through the occasional open vertical joints, and remain there indefinitely. It would be interesting to know if any actual tests have been made on the two types of wall construction in question.*

So far as we are aware there has been no official test to determine the comparative resistance to blast and splinters of a $15\frac{1}{2}$-in. cavity wall ($4\frac{1}{2}$-in. outer skin, 2-in. cavity and 9-in. wall) as against a $13\frac{1}{2}$-in. solid brick wall. In A.R.P. Handbook No. 6 for factory and business premises, both these constructions

* *Messrs. Mortimer, Gall & Co., Ltd., Electrical Engineers, 115 Cannon Street, E.C.4.*
† *Made by Messrs. A. P. Lundberg and Sons, Ltd., 477 Liverpool Road, Holloway, N.7. Ref. catalogue number E8580.*

are stated to afford protection against splinters from bombs up to 500 lb. which explode not less than 50 ft. away, but resistance to blast will vary with actual site conditions, i.e. proximity and height of nearby buildings, etc., but in unconfined areas both these constructions should also afford protection against blast from a similar explosion. The following comparisons may be drawn between the relative merits of the two constructions. If it were certain the two outer skins of the cavity wall would act in concert, then theoretically the resistance of the cavity wall to blast would be greater than that of a 13½-in. solid wall. In actual practice this is doubtful, and it is possible that either the ties or the 4½-in. brick would collapse under high stress. Although this may provide a cushioning effect it would involve the destruction, or at least considerable weakening, of the outer skin, thus lowering the resistance of the structure to further blast. Such walls might be sufficiently disturbed to need rebuilding, while a 13½-in. solid wall might under the same conditions remain strong enough to be of further use. Regarding protection from gas, the cavity wall would certainly prove a harbour for mustard gas, but it should be remembered that even solid walls are not immune. With either construction, if relatively porous bricks or mortar are used, the surface should be treated with a suitable preparation such as silicate of soda to resist penetration of gas.

CURRENT PROBLEMS

Below is the seventh of the JOURNAL'S articles on problems of immediate importance to architects. It will be followed on January 4 by the first of four articles, by Eugenio Faludi and Godfrey Samuel, on quick-building methods and materials.

Concrete blocks at the Royal Artillery Memorial, Hyde Park Corner.

SANDBAGS

THEIR PRESERVATION AND ALTERNATIVES

[BY A CIVIL ENGINEER]

ON the outbreak of hostilities sandbags were used extensively to form protective walls to buildings of importance. The fact that such revetments could be erected quickly and by unskilled labour popularized the use of sandbags; but already, in less than three months, many of these revetments are showing signs of rapid disintegration, and some in fact have had to be removed in the interests of public safety, owing to the danger of their immediate collapse.

This state of affairs has raised the question of giving the sandbags a preservative treatment to prolong their life, or, alternatively, where they have too badly decayed to be preserved, of finding alternative forms of protection.

The preservation of sandbags can be resolved into two main considerations: treatment of the jute so that it resists the attack of bacilli or fungi—a treatment which is essentially chemical or bacteriological in nature—and physical protection of the sandbags or of the revetment as a whole.

Creosote Treatment

For the preservation of the jute an official recommendation has been made on the use of creosote emulsions containing copper salts so that mineral copper will be deposited on the surface of the jute. Undoubtedly, the best result would be obtained by treating the sandbags before they are filled, but the large number of bags and the limited facilities available for such treatment render this procedure impracticable.

The second best is to treat the bags after they have been filled and as they are being stacked. This is done by spraying or brushing the preservative liquid on to each layer of the bags and finally spraying the complete revetment. To be effective, this treatment should be repeated at intervals of three months.

Such treatment may double or treble the life of the bags, but at its best cannot do much more. Sand-bags may fail not only through disintegration of the jute, but also through the stitching, or the thread, used not standing up to the imposed strain. How far this stitching is protected by the treatment described is questionable.

A creosote treatment may also result in unpleasant smells, and will, unless special care is taken in the application, permanently stain buildings and pavements in the vicinity of the revetment.

Cement Treatment

Many sandbag revetments have been treated with cement. Though the jute is liable to be attacked by the alkali in the cement, it has been found that where a thick slurry is applied immediately after the erection of the revetment it forms a surface waterproofer which keeps the bags dry and prevents, or at least retards, the decay. A mere wash of cement will not prevent the entry of water, and as it has no physical strength it is not to be recommended. The slurry should be applied to a thickness of at least ¼ in. by means of either a spray or brush in such a manner that it covers all the exposed surfaces. A waterproofed cement will be even more effective. If the revetment is thus protected against rain, and care is taken that water does not get into or behind it, its life will be greatly increased. If funds permit a thicker coating, such for example as might be applied by a cement gun, the physical strength of the concrete so formed will materially add to the strength of the revetment, as well as waterproofing it.

This treatment should not be applied to bags which have been exposed to alternate wetting and drying, as move-

ment is certain to take place in a pile of such bags.

Other Methods

As an alternative to the treatment of the bags, means may be adopted to strengthen the revetment as a whole by giving it structured support and keeping out the weather. Keeping the sandbags dry will help very materially and can be effected by covering the revetment with bituminous felt or similar material. Care must be taken that water does not get down behind the bags, and that drainage is provided at the base of the revetment. It is best not to lay the sandbags on the ground, but to provide a low platform so that the bottom layer of bags, which has to carry the greatest weight, does not absorb moisture from the pavement. The casing of the revetment in timber or corrugated iron would merit commendation were it not for their present scarcity. For high revetments, however, a reasonable amount of bracing to prevent lateral movement is essential.

Fletton screen wall at the R.I.B.A.

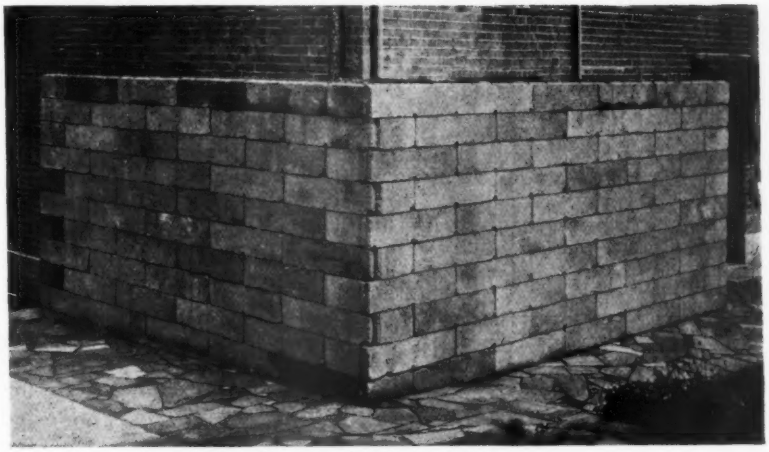
Alternative to Sandbags

In reviewing the subject of sandbags, it must be admitted that they are only a temporary measure, and if protection extending over years is to be provided, something better and more lasting must be used.

The Government has decreed that the present war is likely to last at least three years, and any revetments now to be erected should be such as can be relied upon to last for that period.

Apart from the question of its life, the revetment must be relied upon to give the necessary protection against blast and splinters, and it should be stable and easily erected with materials readily available. Further considerations, though not of immediate moment, are the ease of subsequent demolition, and the salvage value of the materials used.

The two materials which are most suitable and with which all architects are familiar are bricks and concrete. Occasionally, and in certain localities, other materials may suggest themselves and their possibilities should be examined, but for general purposes in any district the more familiar materials will be most easily used.



Concrete blocks erected dry.

Brickwork

To comply with the Home Office Code, brickwork in cement mortar should be 13½ in. thick. This will provide the desired protection against splinters and blast. The choice of bricks must be a matter for the architect, who can make the revetment to harmonize with its surroundings or background at a cost of about half that of sandbags and as permanent as the building it protects.

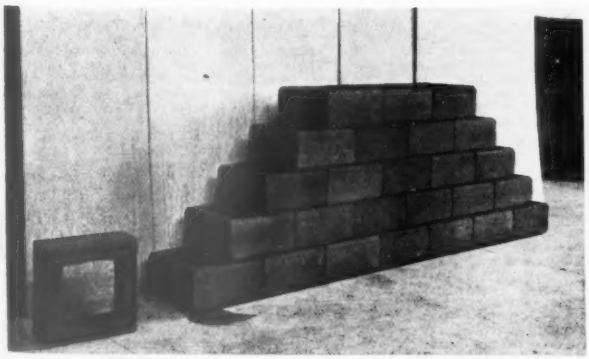
A brick wall for this purpose should have suitable foundations. Such a wall should not be very difficult to demolish at the end of hostilities, but its salvage value will be negligible.

Another use of bricks is to build stacks of loose bricks, which would have the advantage of easy removal and of good subsequent salvage value. Stacks should be not less than 27 in. in thickness. There is a possibility that an explosion in the vicinity of such a stack would scatter the bricks, especially the top courses, and thereby create a new danger. Bonding the bricks at various levels, encasing the stack in wire netting or similar material, and laying the top few courses in cement mortar could eliminate this danger.

Alternatively, brickwork in lime mortar will also allow of easy demolition.

Concrete

Pre-cast units provide the most satisfactory use of concrete. Of these, the ordinary 18 in. by 9 in. by 9 in. hollow concrete blocks are the most readily available and form an excellent revetment



Above, photograph of concrete blocks erected dry. Right, stone screen walls at the Houses of Parliament.

The blocks should be built to form a wall 18 inches in thickness and the cavities filled with gravel or sand, thus providing a use for any filling material surplus from decomposed sandbag revetments. The blocks should be laid and jointed in 1 : 5 cement mortar, as a richer mix would only increase the difficulty of subsequent demolition.

A revetment of this type is to be seen at Hyde Park Corner, where blocks have been used to protect the Royal Artillery Memorial.

In many districts manufacturers make concrete blocks and other units of different sizes and designs, and in some cases special blocks are made for revetments. Though the standard 18 in. by 9 in. by 9 in. block can be obtained in any part of the country, it may be found that special blocks are more readily obtainable in certain districts and are entirely suitable for protective revetments. Some are interlocking and can be stacked dry, resulting in an economy of skilled labour, while others are designed as larger units and so reduce the number of joints.

Other Alternatives

Other effective types of revetment will suggest themselves in different localities, and the choice of materials will be determined by the availability of supplies. A simple revetment could, for example, be made of timber sheeting enclosing sand, if timber is easily available. The filling of sandbags with ballast or sand containing a small proportion of cement is feasible, but of doubtful economy. All suggestions are worthy of consideration provided always that the revetment formed is stable and gives the protection required by the Home Office Code.

Costs

It may be taken as definite that the sandbags are the most expensive form of revetment, both in first cost and in upkeep. Further, their life is short and any efforts to prolong that life will be costly and of doubtful value.

Of the alternatives, a revetment of 13½ in. brick or of 18 in. concrete blocks costs about 25s. per super yard in the London area, which is about half the cost of a sandbag revetment of equal protective value. This figure will vary in different localities, and is, of course, subject to fluctuation at the present time.

Stacks of loose bricks, properly bonded, would cost about 30s. per super yard, against which could be set off the possible salvage value of the bricks.

Other concrete units vary greatly in price, which will also be affected by the question of transport. Some units can give the necessary protection at a cost of less than 25s. per super yard, but only when the work done is within easy reach of the factory where they are made. With larger units the cost tends to increase.

Timber sheeting enclosing sand or ballast would cost about the same as the stacks of dry bricks. Sandbags filled with a weak concrete would be considerably dearer.

Summary

Existing sandbag revetments, if in reasonably good condition, may have their life prolonged by preservative treatment, but the cost of preservation, doubtful stability, and limited life, indicate the desirability of using more permanent and stable alternatives.

Of these the cheapest are bricks and concrete blocks, both familiar materials, and either of which can give a revetment at half the price of sandbags.

Architectural Front

R.I.B.A.

Informal meeting was held on Tuesday, December 12. Mr. Stanley Hall presided.

The occasion was taken by some present to criticise strongly the R.I.B.A. for its alleged inactivity at the present crisis in the building industry. Various proposals were made. For example, it was urged that subscriptions should be remitted of members with the fighting forces, more meetings should be held and at a convenient time a great deal more should be done with regard to air-raid precautions. In this matter the policy of the Institute was denounced as nothing more than a pale reflection of that which emanated from Whitehall. Government's line was followed even when technically incorrect. Amount of shelter work being done in London was tremendous, but not 20 per cent. of it was under the supervision of architects. A.R.P. Committee should be called together to formulate a programme of what should be done, and an Evacuation Committee set up to deal with work in that field. Another point was that a meeting such as the present should have power to pass resolutions.

Replying to some of these points it was contended that the R.I.B.A. had not followed the Government's policy in the matter of air raid precautions: what it had done was to implement a Government policy based on R.I.B.A. recommendations. It was impossible for the Institute to launch a policy to which all members would subscribe: some preferred deep shelters while others thought that in the end these would cause more casualties than they would save lives.

Another criticism brought against the R.I.B.A. was that its policy was conceived in the interest of architects in private practice rather than in that of those working for the Government, municipalities and great corporations, and that in any case the assistants' interests were neglected.

Mr. Jordan said the fact of architects being largely ignored by Government and statutory bodies at the present moment was only an intensification of what was taking place before the war when architects had only a negligible proportion of the country's building in their hands. A commission should be set up to go into the question of the architect's position in national life—not only the position of the profession as a whole but that of all its sections.

Mr. R. A. Duncan said assistants in private offices had suffered far more than those in public offices as the result of the collapse of the building industry. It was not possible for the R.I.B.A. to do in war-time what it would do in peace-time. As to more meetings being held, a Council Meeting cost £100 and a General Meeting £300. Building industry employed 3½ million people, but of all these architects numbered only 10,000. At present their sole source of income was the Government, and if they attacked the Government they would be stamped flat and no notice whatever would be taken of them.

Mr. Goodhart-Rendel, replying to some remarks concerning the Research Committee, said it was a strictly practical small body of students with a certain knowledge of things that were possible. Among these possibilities there was not included the remodelling of the social framework of the country at the present moment, or the forcing of the views of architects upon a Government which did not want to hear them. Architects speaking for the building industry as a whole would be listened to by the Government, but not when they spoke only for themselves. Research Committee was hard at work planning for the peace after the war, and where it was now sitting a fairly orderly heap of material would be found that would be useful to somebody when peace came.

One speaker complained that assistant architects in Government Departments were being worked almost twice as many hours as they ought to be while so many architects were unemployed.

Mr. Thomas Scott replied that letters had been sent to Government Departments complaining of this abuse. He also replied to the complaint that the Executive Committee was concerned with the architect in private practice rather than with the one in receipt of a salary. The practice of architecture as a whole and not any one section was, he said, the concern of the Executive Committee.

Mr. Howard Robertson said their whole aim was to get the industry going, and in their efforts to get it going architects must not split on an internal difference of interest.

The Chairman replied briefly to the discussion. Among other things he said that Government offices had been inflated during the last war, and when that war was over assistants were discharged wholesale. R.I.B.A. was endeavouring to prevent these extra people being taken on by Government Departments now, and afterwards finding themselves with no hope of obtaining employment because the private practitioner had been driven out of business. Money should be released for essential work, such as schools and hospitals, at any rate for architects and quantity surveyors, in anticipation of an early start when the war was over. It would be a reversal of the Institute's by-laws to give a meeting like this power to pass resolutions, for which purpose it would be necessary to go to the Council and Privy Council; but he had made a note of all the points which had been raised and would bring them before the Council meeting in January.

A.A.S.T.A.

Although a War Executive Committee was set up at the beginning of September, Association reports that it has not been necessary to omit any of the monthly Council meetings, which will therefore continue to be held as usual.

[*Following is the A.A.S.T.A. statement mentioned on page 723.*]

The architectural profession faces a major crisis. The outbreak of war has produced a situation in the building world similar to the slump of 1931, but far more serious. Private building has all but stopped; so has the civil building of local authorities and Government departments. The resulting unemployment threatens to become universal. What is being done about this by the body which claims to represent the profession, the R.I.B.A.?

After a period of retirement—during vital weeks—under cover of an "Emergency Committee," the Institute has awakened to champion not the interests of the whole profession, nor even of the greater part of it, but those only of one small section—the architects in private practice. To their interest was devoted the main part of the business at the first war informal general meeting; in their interest the President has conferred with the Board of Inland Revenue on the question of war damage valuation; in their interest the Institute's representatives have been active on the Government Advisory Committees; in their interest the President is seeking information on the stoppage of building work. Indeed, the Chairman of the Practice Committee has made public a plea, in effect, that official departments should put work into the hands of private architects rather than engage (or should we say retain?) salaried assistants.

For the assistant the Institute has done practically nothing, nothing except obtain employment for a few through its own or the Central Register. It has failed even to secure the appointment of an assistant on any of the committees of the Central Register. The Salaried Members' Committee of the R.I.B.A. has not met since the war began.

This sectionalism has now become harmful to the entire profession. We believe the refusal of the R.I.B.A. to act for the profession as a whole or to adopt an independent policy, even on purely technical grounds, with regard to fundamental problems, such as A.R.P., evacuation, town planning, and the like, and its general aloofness from social building needs are the direct causes of our present troubles and justification for the contempt in which we are held by Government and public.

And now, without consulting the membership, those in office at Portland Place have taken the very grave step of supporting a Parliamentary Bill allowing them to suspend the Council elections and thus keep in their seats the very men who have brought the profession to its present position.

The A.A.S.T.A. publishes this statement with the conviction that the needs of the public and the interests of the profession urgently require us to put aside sectional interests, to awake from our æsthetic dreams, to forget our professional snobberies, and to attack at once the problems that face us. We—that is, the profession—must formulate an independent policy, publicise it, and press for its adoption by the Government.

The past has shown only too clearly that in their anxiety to avoid putting forward any proposal which might be at variance with Government policy, even on technical problems, such as A.R.P., the R.I.B.A. has forfeited its independence and has, in fact, become subservient to official policy even when that policy was technically incorrect. This is leading us to professional suicide.

The A.A.S.T.A., which to the limit of its resources has already attempted to frame professional policy on shelters and evacuation, puts forward as a first step the following demands:—

(1) The resignation from Council and committees of all who are unable to attend regular meetings. The nomination of assistants in their place, with a proper system of representation for provincial members.

(2) The resumption of regular meetings of Council and all committees. The calling of monthly general meetings with power to pass resolutions. The continuance of yearly elections to the Council.

(3) Replacement of all R.I.B.A. representatives on Government committees by men with a definite mandate from the profession, agreed on after discussion at a general meeting. Such representatives to make regular reports, which shall be subject to criticism at general meetings.

(4) The R.I.B.A. to take active steps, in collaboration

with the A.A.S.T.A., the building trade, local authorities and lay organizations, to urge on the Government the necessity for a resumption of civil buildings on a scale which will save our biggest internal industry from collapse and protect the welfare of the community.

(5) The A.R.P. Committee to undertake a technical study of the standards of existing air-raid protection with a view to putting forward a policy to end the present chaos.

(6) The appointment of a committee to study the problems raised by evacuation and to put forward a programme to end the present conditions in the reception areas.

(7) The Council of the R.I.B.A. to repudiate the policy of advising Government departments and local authorities to place work in the hands of private architects, and to urge actively on these authorities the need for retaining their salaried staffs.

(8) A campaign against overtime, in whatever form, and whether paid or unpaid, as long as there is unemployment in the profession.

We believe that these demands are in the interests of the profession as a whole, and that they will be supported by all who have its interests at heart, and that they will enable the R.I.B.A. to regain that position of authority which it once held.

WAR-TIME ATELIER

A meeting of members of the above was held on December 14, to discuss practical details. It was decided to start work, officially, on January 1, 1940, when the premises would be ready for occupation. The weekly membership fee was fixed for the time being at 2/6. The nucleus of various groups is already formed: Culture and History; Industrial Design; Hospital Research; History from the Contemporary Angle; Films, etc.

Anyone wishing to join should communicate with Miss M. Morrison, Honorary Secretary, 158 New Bond Street, W.1.

1940

What the JOURNAL *will do in the New Year depends on what architects do. And that is difficult to forecast. In the meantime—*

★ *The* INFORMATION CENTRE *will continue to try to answer any question which affects architects. It should be emphasized that this does not mean merely war-time problems.*

★ *The next four* ARTICLES ON CURRENT PROBLEMS *will review temporary and semi-permanent building techniques and materials and examine their application to the war-time building programme of Britain. The articles are by Eugenio Faludi and Godfrey Samuel and the first will be published on January 4.*

Building Front

CEMENT AND CONCRETE ASSOCIATION.—Lord Wolmer, speaking at an inspection of concrete hutments erected by the Association on a site adjoining the Coombe Hill Golf Club, said:

The cement industry had already played an important part in this war, and had managed to keep pace with the demands of the Government. There had, however, been serious complications at the outset owing to transport difficulties, but these had now all been surmounted, and at the moment there was actually a surplus of cement, and several cement kilns had been forced to close down, and there was a prospect of further kilns closing. He considered that it would be very unfortunate if this latter course became necessary. The technical experts of the cement industry had given their minds to the problem of concrete hut construction. The result of their work could be seen in the various systems of hutting which had been erected. These had shown that concrete could provide definite types of hut which were in every way as complete as any hut which could be built of any other material. In addition, such huts could be erected just as cheaply as any other material, and, when once erected, there was the additional advantage that they were a great deal more permanent.

Lord Wolmer said he had a complaint to make against certain Government departments. The point had been made that the conduct of economic warfare was not merely a question of outside trade and activity; it was also very much a question of internal economy. And yet the great spending departments—the War Office, Office of Works, Admiralty, Air Ministry, etc.—were too prone to use the old materials with which they had had experience, in many cases timber, and were using their power with the Timber Control to induce them to release for their departmental purposes vast quantities of timber which had to be imported at the expense of British tonnage and British exchange, and all the time huts could be erected in concrete just as cheaply and just as quickly from materials this country produces.

GENERAL ELECTRIC CO. Current issue of the Osram Bulletin illustrates and describes a range of lighting fittings (complying with B.R.S. Nos. A.R.P., 16/20/21) to give a very low level of exterior illumination in areas where work of national importance is being carried out. Reflectors constructed of heavy gauge sheet metal, having a $1\frac{1}{8}$-in. hole to fit on to B.C. shade carrier lamps. These fittings give the following maximum intensities at mounting heights of 10, 15, or 20 feet:—

F16081/3. 0·002 foot candle—sufficient to allow movement in a works area, docks, railway yards, etc. F16084/6. 0·02 foot candle—for use in the immediate neighbourhood of actual working areas, allowing the handling of relatively bulky goods, the wheeling of trucks, etc. F16087. 0·2 foot candle—permitting simple skilled work. This is the highest standard at present visualized as permissible.

PILKINGTON BROS. — Results of two blast tests carried out by firm's Research Department are summarized below:—

(1) That wires and toughened glasses exercise a much greater resistance to fracture by blast than any other type of glass; (2) that no simple method of protection of glass against fracture by blast appears to be appreciably effective; (3) that strips of paper, Cellophane and surgical tape, also sheets of paper and millboards of various thicknesses, give a restricted measure of reinforcement, but their main value would lie in preventing injury due to flying splinters of glass. If, however, the glass burst outwards, as would appear likely in the majority of cases, prevention of flying splinters would not be of direct and particular interest to the inmates of a building. The behaviour of one example in test No. 2 leads to the conclusion that double glazing might be very dangerous to the occupants of a building if the outer glass were stronger than the inner glass, as in this particular case.

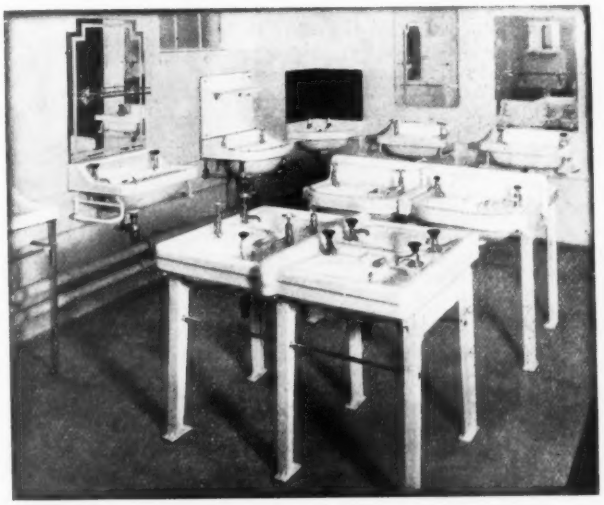
PHILIP SCHOLBERG

on

Equipment

Electric Shock in Shelters

DURING the last few weeks I have had two circulars from electrical fitting manufacturers offering heaters, kettles and whatnots for A.R.P. purposes. Quite a number of the fittings are put forward for use in warden's posts and similar places, for which they are no doubt perfectly suitable, but in a private Anderson shelter or in a trench they seem to me possibly dangerous. This JOURNAL has already had a number of queries about the difficulty of waterlogged shelters, and it may not unreasonably be assumed that almost every garden shelter will have a damp floor and plenty of condensation on the walls. People, as I have pointed out before in this JOURNAL, have been killed with voltages as low as 25 a.c. Experiments have also been carried out in Switzerland during the last few months, a dangerous current being taken to be a current large enough to prevent the subject from letting go of the live surface—a perfectly fair definition. With dry hands the danger figure was reached at about 25 volts, but with wet hands this figure may be less than 20. Experimentally, it was found that a certain percentage of subjects developed clammy hands purely owing to stage fright because they did not know whether the experimental shock was going to hurt them or not. It seems reasonable to assume that people would be a lot more apprehensive if there were an air raid going on. So that we have almost perfect conditions for the maximum shock, about as bad, in fact, as if one were lying in the bath. And we know that wiring regulations do not allow switches of any kind to be fixed so that it is possible to reach them from the bath. Several people have told me recently with pride that they have arranged a long flex so that they can take a fire down the garden, and although I have tried to dissuade them I have no doubt that they will go on thinking that it is a good idea. And since there



Dent and Hellyer's new general showroom (lavatory section) showing two types of Island twin and back-to-back lavatory basins supported on white porcelain enamelled stands (foreground); also a selection of lavatory basins for domestic use, with various types of supply valves, mirror splashbacks etc. (background).

INFORMATION CENTRE

are still plenty of installations which have no three-pin plugs and proper earthing, it seems more than likely that we shall have a nice crop of deaths if there are raids in any quantity. It is easy enough to be alarmist, but the danger is by no means imaginary, and it would be a most excellent thing if the supply companies were to issue a general warning about it. But I doubt if they will, for they find it very difficult to admit that electricity can be dangerous. This is not the place to comment on the paucity of invention which followed the lead of Mr. Therm and evolved the revolting little electrical figure who has not even the dignity of a name. But it is worth remembering that electricity, although it will do a lot of things very well, is completely indiscriminating and will quite happily bite a large piece out of your thumb if you put it in the wrong place. And here it is perhaps fair to add that Mr. Therm will poison you quite as gaily.

But the point is that electrical fittings in a shelter must be very carefully installed, with proper safeguards. Three-pin plugs should be regarded as absolutely essential, and an extra earth plate should be buried in the wettest spot you can find as near the shelter as possible. The ordinary earthing system *should* work, but it would be worth while having an extra earth to make certain that the earth resistance is kept as low as possible. The lead from the house could, at a pinch, be ordinary cab tyre laid on the ground, but it would be better to use galvanized conduit and bury it. If you have a very timid client it would be possible to use a transformer to step the current down to a safe figure. There would be a difficulty in finding fittings suitable for low voltages, but there is a certain amount of 12-volt car equipment available, heaters, fans and such. The transformer would have to be in or near the shelter, not in the house, as it is not possible to transmit low voltages for any distance; the volts tend to disappear on the way. The transformer business is, of course, a counsel of ultra protection, but a proper earth is essential and no more than common sense.

Christmas is Coming

So far the gadgets produced to meet black-out problems have been more or less serious, but I am now delighted to find an element of humour in a walking-stick torch which has been produced by Berry's Electric. Quite ordinary to look at, but it has a battery in the handle and a light at the ferrule end which shoots out and shows you where the pavement ends. This is really a perfectly sensible idea, but it also has the right air of absurdity about it, and one of these sticks, price 14s. 6d., would be just the thing for Christmas presents. The only thing missing seems to be a sword inside as well, for then one would be able to hang it up over the mantelpiece and explain that that was what one did in the war.—(*Berry's Electric, Ltd., Touch-button House, Newman Street, London, W.1.*)

Glass for A.R.P.

The two photographs reproduced on page 627 of The A.J. for Nov. 23 showed the inside and the outside of a window which has been bricked up, but which has had a narrow panel left in the centre to take a line of glass bricks. Tests at Shoeburyness have shown that glass bricks are reasonably proof against blast. A 500-pound bomb 50 ft. away produced a few cracks from blast even though the panels were sheltered from direct splinters, while if the bricks are made of toughened glass the expansion produced by any cracking seems to be enough to hold the bricks in place. The narrow slit window admits enough light to show a considerable saving in artificial lighting costs, and the time and trouble taken in blacking it out is considerably less than with the full-size window.

Tests have also been carried out on toughened glass lenses in a flat concrete roof to see if they will withstand incendiary bombs. These tests are in a sense artificial in that they cannot imitate the actual impact effect of a bomb, nor is there any means of telling if the generally accepted figure of 2 lb. for incendiary bombs will be exceeded. It is possible that an incendiary bomb might go right through a toughened glass lens if it were to hit it slap in the middle, but, unless it does so, the tests seem to show that the bomb will burn itself out on the roof without damaging the lenses enough to make the room underneath untenable. The lenses may crack on cooling, but the expansion referred to above keeps them gas tight in spite of it.

Pilkington's have further sensible remarks to make about the problem of protecting ordinary windows against blast, and they take the view that the popular gummed tape or brown paper is more or less useless, which seems more or less probable, but it is all that most people can afford. Wired glass is an obvious solution, but Pilkingtons also say that a loosely hanging screen of half-inch wire mesh will stop flying glass splinters quite satisfactorily. Two or three layers of curtain would also do the job, particularly if they were separated by a distance of two or three inches. Nor is there any reason why the two inner layers should not be made of some quite cheap material such as hessian. Various films of the tests which were made are on show at Pilkington's Piccadilly showrooms, and will remain so for some weeks.—(*Pilkington Brothers, Ltd., St. Helens, Lancs, and 63 Piccadilly, London, W.1.*)

LETTERS

HOWARD ROBERTSON, S.A.D.G., F.R.I.B.A.
R. A. DUNCAN, A.R.I.B.A.
GEORGE G. ATKINSON A.R.I.B.A.
BRIAN GRANT

Reserved for What?

SIR,—The architects are part of the building industry—a professional part. Besides the architects there are other professions engaged. The interests of all are the same, to make an efficient industry and to keep it in being.

Under both counts the closest collaboration is necessary, and the organs of liaison exist, the R.I.B.A. and B.I.N.C.

The architect loses nothing of his status by thus co-operating. Professional men and industrialists mix in ordinary life without harm, in fact with good results. A Labour member does not lose caste by mixing with Conservatives, even if their public platforms do not coincide. Neither side loses its identity by so doing.

The architect need fear nothing by getting better acquainted with the industry in which he plays a rôle. He neither loses caste nor professional standing thereby. This contact is, in fact, already in being, and has existed now for several years. The idea is to extend it and make it efficacious in coping with the present emergency.

HOWARD ROBERTSON

SIR,—May I be permitted to congratulate you on your leading article under the heading "Reserved for What?" It will serve an extremely useful purpose as an introduction to the war-time and future peace-time problems of the building industry. I trust I may be permitted to reinforce the arguments.

Private building operations have practically ceased. The enemy has in effect destroyed an industry of an annual value of £600,000,000, without firing a shot. This is a serious matter of the greatest national importance. Although individual enterprise must inevitably be curtailed in war, the brains and manpower thus released should with proper foresight be quickly capable of being harnessed to collective war effort.

What should have happened was a great speed-up in war building and A.R.P. work. This speed-up has not been in any way commensurate with the energy released. Superficially, the cause may be attributed to the change-over time lag and limitations in certain materials. The true cause, however, is the absence of any coherent co-ordinated policy in advance—our national besetting sin.

This must be remedied, and quickly. What has been done cannot be undone, but there is a stern and difficult task before us, and present systems and methods will not serve. The serious situation demands the mobilization of the whole industry and nothing less, with forward planning for—

(1) The rapid production of war buildings and equipment;

(2) The buildings and repair requirements in anticipation of bombing;

(3) Preparation for future reconstruction.

The first prerequisite is the research into the supply and nature of materials required to render the industry almost wholly internal and self-supporting. This is a matter of life and death now, and owing to our inevitable impoverishment as a result of the war, will prove of vital significance in the immediately succeeding years of the peace, whatever the form.

Our village bazaar procedure must give way to something more in keeping with the age in which we live. Casual consultation with old friends and good fellows must be replaced by scientific system. The whole industry must be canalized so as to be represented through one body: professions, manufacturers, suppliers, contractors, operatives, crafts-

men and artists—two and a half millions of us, and the approach to the State must be centralized in a responsible Minister. In a civilized community, buildings are at least as important as fish.

The woeful condition of the industry in war-time is in part due to its own incoherence as well as to the fact that its woes can be passed like a hot potato from government department to government department, so that no one individual may burn his fingers.

R. A. DUNCAN

A.A.S.T.A. Manifesto

SIR,—Astragal criticises the A.A.S.T.A. manifesto, "The R.I.B.A. and the War," for putting forward "the claims of a subsection of a section of the (building) industry." Surely the essence of the manifesto, the full text of which you were, unfortunately, unable to publish, was to condemn sectionalism in the profession and stressed the necessity for active collaboration not only with the building industry but with public authorities and lay organizations, and not only on questions of defence building but also on measures for the resumption of civil building.

Can the profession afford to leave the conduct of such a policy to the present Emergency Committee, who have forfeited the confidence of many members of the profession by their recent activities, their undemocratic administration of the profession's affairs, and their championing of the interests of the one small circle they represent? The medical profession discovered long ago that any measure which upheld the status of its members employed on a salaried basis was in the interest of the whole. Such actions as that of the chairman of the Practice Committee in opposing the employment of "technical draughtsmen" by Government Departments, men as often as not qualified members of the Institute whose employment on civil work in public or private offices has ceased, and urging that work should be "farmed" out to a number of private architects, instead of insisting on proper conditions of employment for its qualified members as architects and not as "technical" draughtsmen in such departments, do in fact undermine the status of the whole profession.

GEORGE G. ATKINSON,
B.A. (ARCH.) A.R.I.B.A.

Camps v. Billeting

SIR,—Is the present unsatisfactory billeting system to be maintained until the end of the war? Alas, I rather fear that such is the Government's intention, though most thinking people seem to agree that a carefully planned camp programme to cater for the needs of the evacuated children affords the only proper solution.

One of the major obstructions to such a programme is, I understand, the shortage of suitable materials for the construction of temporary buildings—all suitable materials available being required for more urgent and warlike purposes, such as military camps, barracks, armament factories, food and munition stores and the like.

But why erect temporary structures when these evacuation centres should rightly be designed to fulfil a most valuable permanent function?

In your issue for November 23 a correspondent, W. Noel Moffett, suggests "how vitally necessary these buildings would be to the permanent rural community." Why "rural community?" Why should they not, after the war, continue to serve as happy and healthy educational centres for town children?

The children of the poor go to "board" schools; the children of the rich go to "boarding school." Since this is, we are assured (with such monotonous regularity that we are inclined to grow suspicious), a fight for Democracy, let us already make our plans for democratic gain. Let the children of the poor also go to "boarding schools." Few will regret the subsequent demolition of those grim, sunless board schools situated, as they invariably are, in the midst of squalor and traffic danger.

Architects, builders and manufacturers are ready to participate in such a building programme with the greatest gusto and goodwill—indeed, only such a scheme as this can save the building industry from something desperately akin to bankruptcy.

BRIAN GRANT

LAW REPORT

PROPOSAL NOT A STATUTORY REQUIREMENT

Hole v. *Medcalfe and Another.—King's Bench Divisional Court. Before the Lord Chief Justice and Justices Charles and Humphreys.*

This matter came before the Court by way of a special case stated by the magistrates sitting at West Malling on an appeal by Harold Medcalfe and Roy Booth from a decision in favour of John Hole, building and town planning surveyor of the Malling Rural District Council, on an information preferred on behalf of the Council.

The appellants, trading as Medcalfe and Booth, were summoned in respect of the letting of four dwelling houses on the Orchard Valley Estate, at Wilton, which the Council alleged had not been previously certified as fit for habitation. The Bench found that there had been a breach of the Council's by-laws, and imposed a fine of £5 in respect of each information, with five guineas costs.

It appeared that there was a communicating road from the main road to the land on which the houses in question were erected, and the Council's case was that they gave an interim development permission to the plans subject to the condition that proper and definite proposals were to be made before the commencement of the work for the making up and dedication to the public of the length of private road between the main London Road and the proposed new estate road. This condition had not been complied with, said the Council, and though the four houses were in every respect fit for habitation, the Council withheld the certificate on the ground of the breach of by-laws in connection with the road.

The Justices came to the conclusion that the houses were let without being certified, that the condition imposed was a statutory requirement within the meaning of the by-law.

Mr. Marshall Freeman argued the case for the appellants, and submitted that the condition laid down was in no way a statutory requirement, and that the decision of the Justices was wrong.

Mr. A. Sharp supported the Justices' finding.

The court allowed the appeal, with costs.

Mr. Justice Charles observed that there was no statutory requirement that had not been observed here.

The Lord Chief Justice said there was no ambiguity whatever about the condition of the Council. The matter was a "proposal," having no stipulation in point of time. The refusal to give the certificate was based on a misreading of the condition relied upon. Something was read into the condition that was not there.

R.I.B.A.

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IMPINGTON VILLAGE

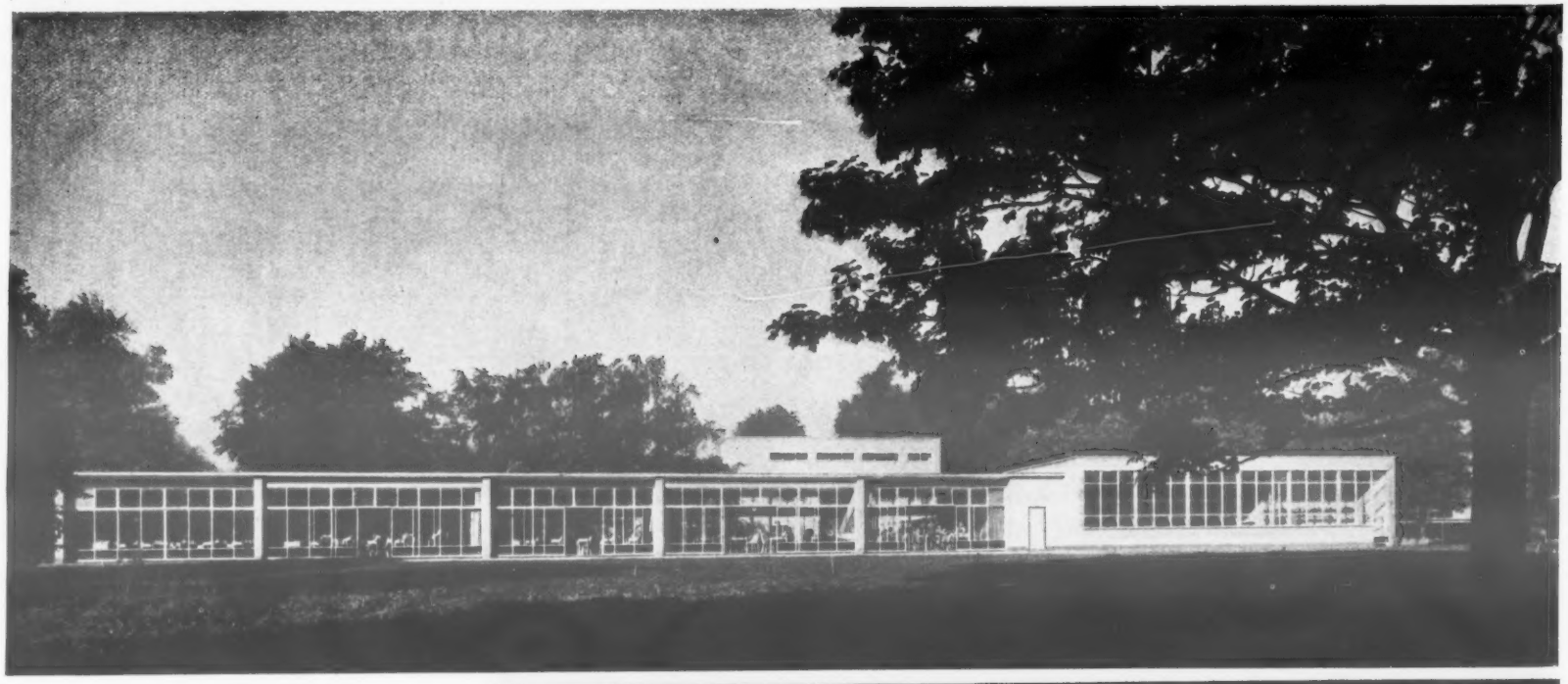
DESIGNED BY WALTER

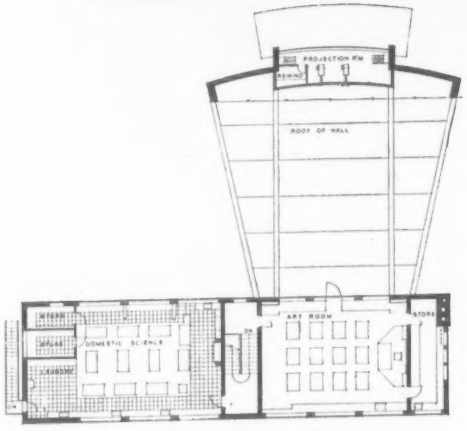
GE COLLEGE, CAMBRIDGESHIRE

ER GROPIUS AND E. MAXWELL FRY

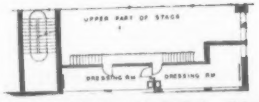
GENERAL AND SITE—This is the fourth of a series of Village Colleges to be built in Cambridgeshire. The Impington site is one of 7½ acres and was formerly Impington Park. It contained many fine trees, and the College has been planned so as to take the greatest possible advantage of them. It is principally a single-storey building, but with a two-storey block at the back of the large assembly hall which, together with the " promenade " or crush-hall, forms the centre of the plan. The school portion was planned for 240 pupils (boys and girls) aged 11 to 15 years, though the number was increased to 280 after work on the building had begun. Each section of the building is directly accessible from the promenade, which serves also as a mid-day dining hall for the school. The class-room wing is served by a covered way along one side. This wing contains five class-rooms and a science laboratory. Only two of the former are general subject class-rooms. In the two-storey block, reached from the other end of the promenade, are a domestic science room, a workshop and an art room. These latter, though designed for the use of the school in the daytime, are also fully equipped so that they can be used for more advanced teaching of adults in the evening. The photograph of a model of the whole scheme, reproduced on the following page, shows the gymnasium block which has not yet been built. It is to be linked with the main building by an extension of the covered way.

Facing page : entrance to the Assembly Hall. Above : view from the west showing the Assembly Hall entrance and the two-storey block containing the domestic science and art rooms. Left (top), west side of the adult recreation wing : (bottom) a view taken from the covered way looking across the grass courts towards the two-storey block.



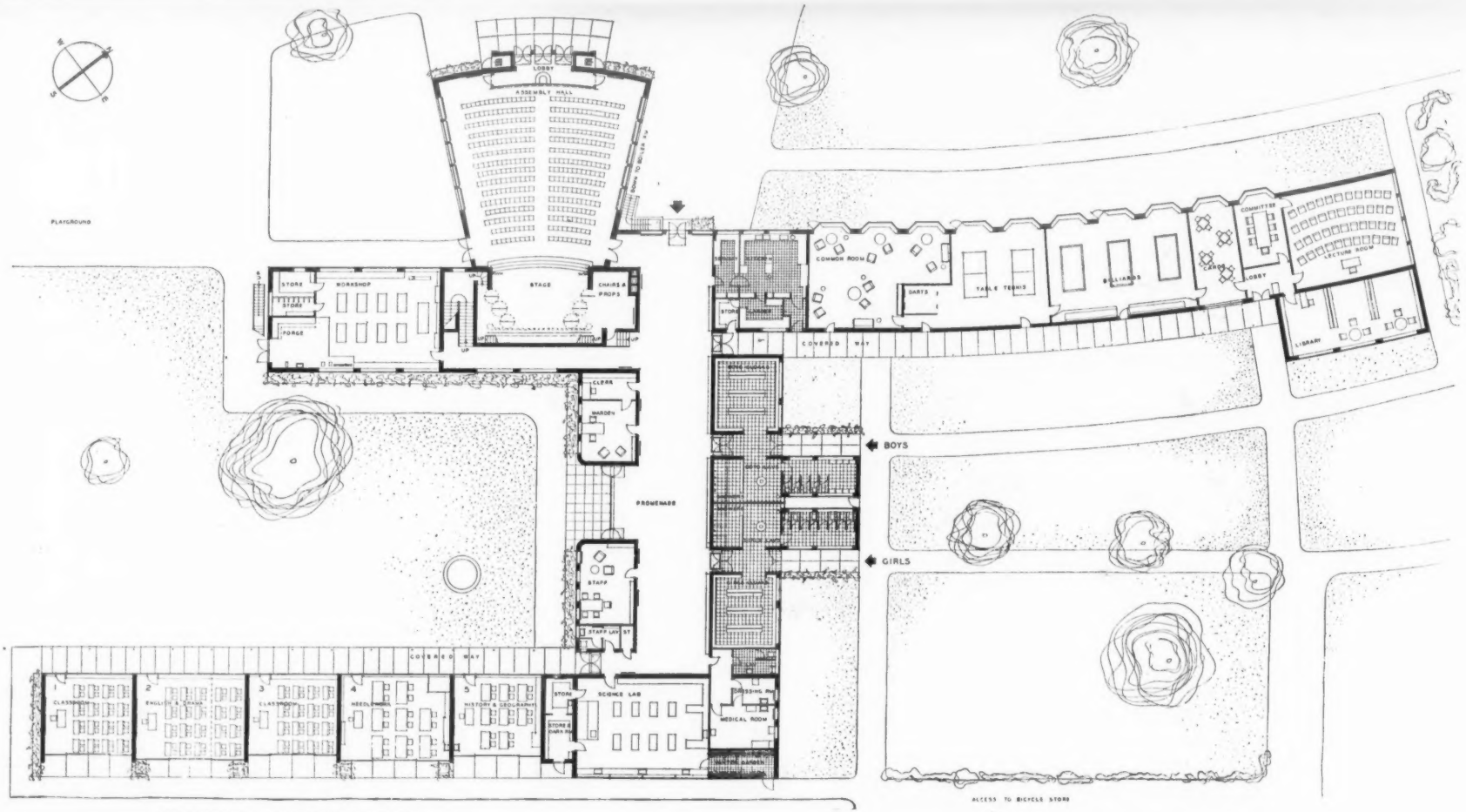


FIRST FLOOR PLAN



MEZZANINE FLOOR PLAN

MEZZANINE FLOOR PLAN



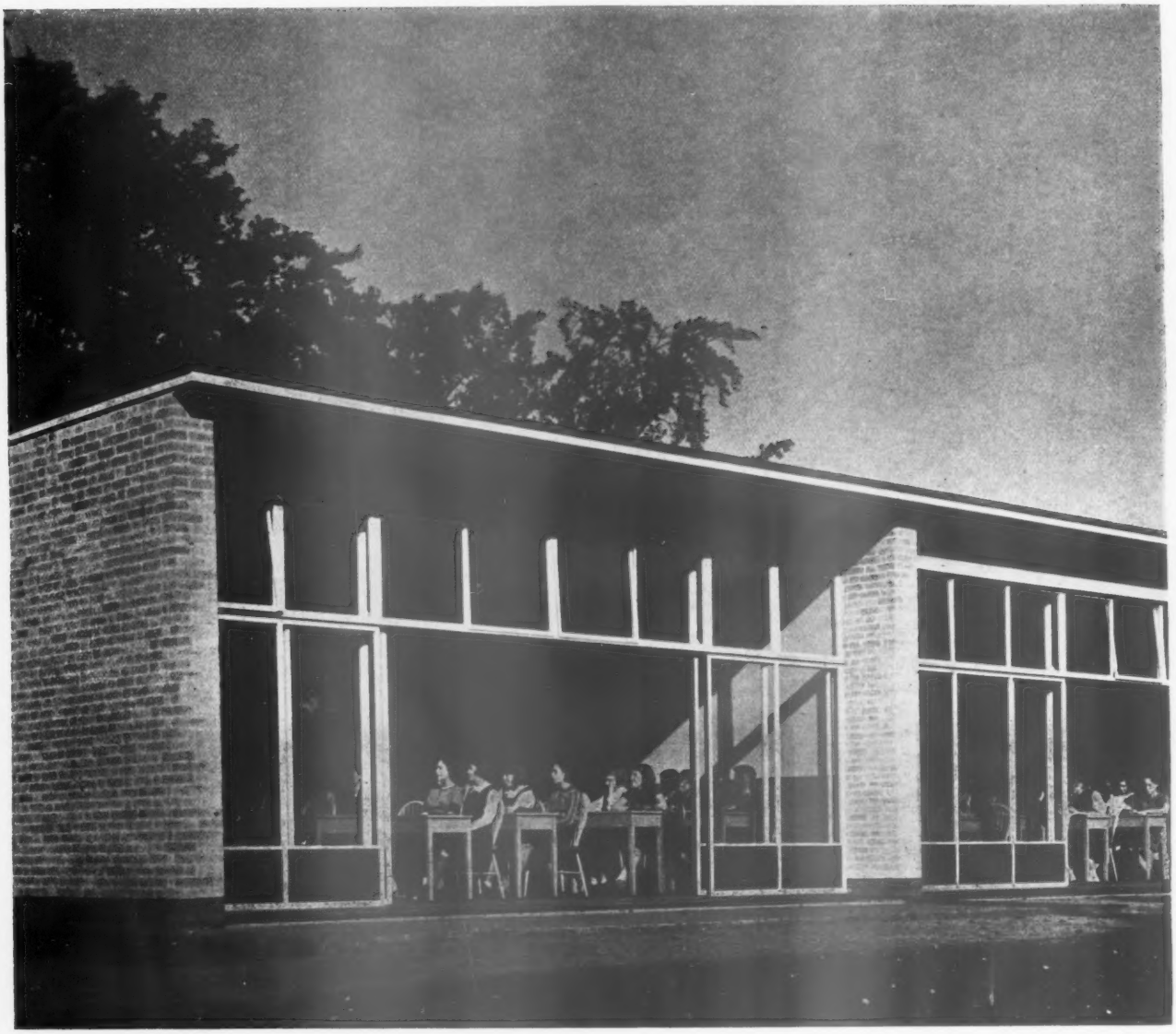
GROUND FLOOR PLAN

Opposite page : the classroom wing, and a photograph of a model of the whole scheme : it shows, on the left, the gymnasium block which has not yet been built owing to the shortage of funds. Left, a general view from the north-east with the library block on the right.

CONSTRUCTION AND EXTERNAL FINISHES—Brick walls, with steel used to a limited extent for roofing and in the construction of the assembly hall. External brick walls (14½ in.) are faced with rough-textured yellow bricks, with dark brown bricks for the plinths, chimney stacks and the piers carrying the steel girders which span the hall roof. Roofs are of timber covered with boarding and asphalt. Class-rooms are divided by 14-in. structural walls which carry the steel joists supporting the roof. This enables both sides to be completely glazed. On the south-east side horizontally sliding windows give an opening of 50 per cent. All windows are of steel.

IMPINGTON VILLAGE COLLEGE

BY WALTER GROPIUS AND E. MAXWELL FRY

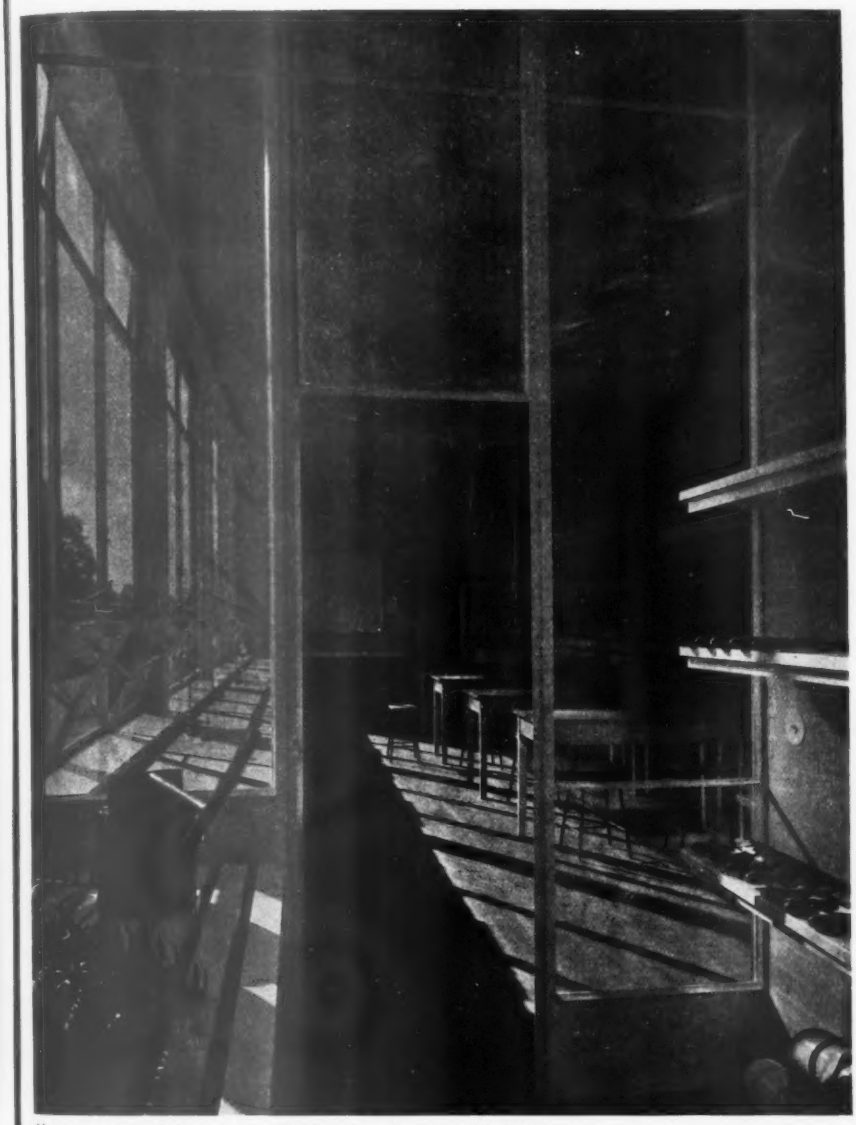


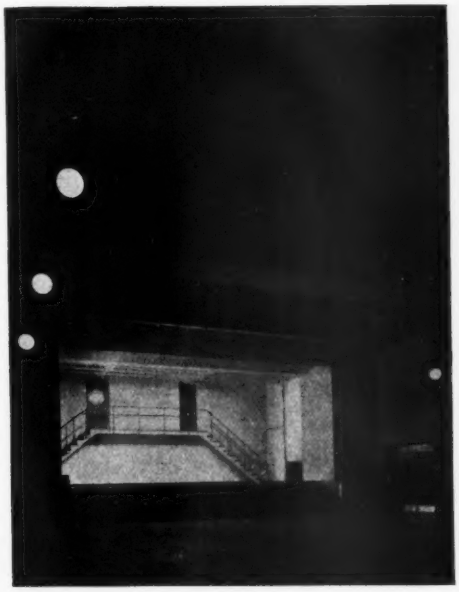
Close-up view of the end of the classroom wing.

PLAN AND INTERNAL FINISHES—The assembly hall has been designed for use as a cinema—it is wired for sound films—a concert hall for chamber music or a small orchestra, a repertory theatre and lecture hall. Two dressing-rooms are provided on a mezzanine floor at the back of the stage, approached by staircases and gallery which can be used in conjunction with curtains to form stage settings if necessary. A cyclorama is included and a system of back stage curtains in reversible sections on swivels and tracks will give opportunity for a large number of different setting arrangements. A minimum three-colour stage lighting system has been provided by one batten of 300-watt floods plus five 500-watt front-of-house spots recessed in the ceiling. Outlets are provided for further battens and stage lamps should they be required. The lights are controlled both from the stage and from the hall. The hall, which seats 360, is fan-shaped on plan with a sloping ceiling, the centre portion of which consists of a hard plaster reflector the width of the stage opening, and of zigzag section from front to back. This is painted white. The triangular portions of flat ceiling on each side of this reflector are finished with V-jointed fibre boards distempered blue.

The promenade consists of a covered space 20 ft. wide and 140 ft. long from which all rooms in the building are approached. The ceiling is faced with V-jointed fibre board distempered sulphur yellow. The walls are of sand lime bricks with yellow joints. Along one side are 280 lockers, fixed to the wall at a height easily reached by all children. They are painted blue and grey with polished aluminium handles running the length of the door.

The science laboratory occupies the end of the class-room wing;





Above, science laboratory. Right, top, the assembly hall; bottom, the promenade. Below, domestic science room.

it is equipped for physics, chemistry and electrical experiment. On the upper level of the two-storey block is the domestic science room. It includes a laundry, larder and kitchenette. Walls and floors have white tiles except in the centre of the floor, where compressed wood blocks are laid over underfloor heating. Below it is the workshop, which contains a forge and large doors to allow a complete car chassis to be brought inside.

In the class-rooms and in the whole of the adult wing and the two-storey block underfloor heating is employed. Floors here (and in the promenade) are finished with compressed wood composition blocks.

COST—Total contract cost, excluding the laying-out and levelling of playing fields, was £26,656. This works out at 1s. 1·9d. per cubic foot including site works, and 1s. 1·2d. for the building only.

BY WALTER GROPIUS AND E. MAXWELL FRY

Top, the lecture room ; left, the library

IMPINGTON VILLAGE COLLEGE • BY WALTER GROPIUS AND E. MAXWELL FRY

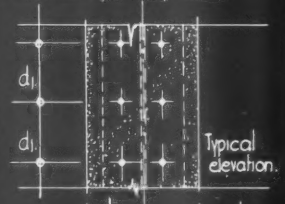
951.

THE ARCHITECTS' JOURNAL LIBRARY OF PLANNED INFORMATION

THE USE OF STEEL SECTIONS AS COLUMNS AND STRUTS:

Columns & struts can be carried out in a great variety of sections. Examples of the groupings are shown on Sheet № 11 of this series.

GROUP (2): columns consisting of composed sections for any load.



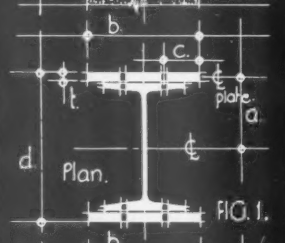


FIG. 1.

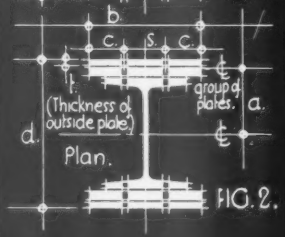
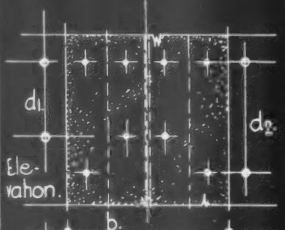


FIG. 2.



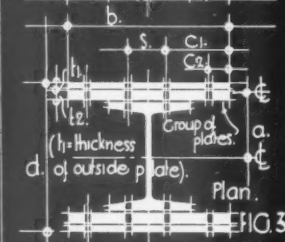


FIG. 3.

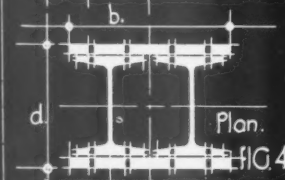


FIG. 4.

Double joist section plated.

TABLE GIVING EFFICIENCY FACTORS (e) FOR PLATED, SINGLE B.S.S. JOIST SECTIONS AS CENTRALLY LOADED COLUMNS (STRUTS)

Overall size of col. d x b ins.	Section of joist. ins.	Total № of Plates.	Section of Plates. Ins.	LENGTH OF COLUMN OR STRUT IN FEET. 6.	6·5.	7.	7·5.	8.	8·5.	9.	10.	11.	12.	13.	14.	16.	18	20.
9 x 12	8x6	2	12x½	0·83	0·82	0·82	0·81	0·80	0·79	0·78	0·77	0·75	0·73	0·71	0·70	0·64	0·60	0·54
9½ x 16	8x6	2	16x¾	0·85	0·85	0·85	0·84	0·84	0·83	0·82	0·82	0·81	0·80	0·78	0·77	0·75	0·72	0·70
** 10 x 18	8x6	2	18x1	0·85	0·85	0·85	0·85	0·84	0·84	0·83	0·82	0·82	0·80	0·79	0·78	0·77	0·74	0·71
10 x 10	8x6	2	10x1	0·82	0·81	0·80	0·80	0·79	0·78	0·77	0·75	0·73	0·71	0·68	0·65	0·60	0·54	0·47
10 x 12	9x7	2	12x½	0·83	0·82	0·81	0·81	0·80	0·79	0·78	0·76	0·74	0·72	0·70	0·69	0·63	0·57	0·52
10½ x 16	9x7	2	16x¾	0·85	0·85	0·84	0·84	0·83	0·82	0·82	0·81	0·80	0·79	0·78	0·77	0·74	0·71	0·68
** 11 x 20	9x7	2	20x1	0·85	0·85	0·85	0·85	0·85	0·84	0·84	0·83	0·82	0·82	0·81	0·80	0·78	0·76	0·74
11 x 12	9x7	2	12x1	0·83	0·82	0·82	0·82	0·81	0·80	0·79	0·78	0·77	0·75	0·72	0·71	0·66	0·61	0·57
11 x 12	10x8	2	12x½	0·83	0·82	0·81	0·81	0·80	0·79	0·78	0·76	0·74	0·72	0·70	0·69	0·63	0·57	0·52
11½ x 16	10x8	2	16x¾	0·85	0·85	0·84	0·84	0·83	0·82	0·82	0·81	0·80	0·79	0·78	0·77	0·74	0·71	0·68
** 12 x 22	10x8	2	22x1	0·85	0·85	0·85	0·85	0·85	0·85	0·85	0·84	0·83	0·82	0·82	0·81	0·79	0·77	0·76
12 x 12	10x8	2	12x1	0·83	0·82	0·82	0·82	0·81	0·80	0·79	0·78	0·77	0·75	0·72	0·71	0·66	0·61	0·57
13 x 12	12x8	2	12x½	0·83	0·82	0·81	0·81	0·80	0·79	0·78	0·76	0·74	0·72	0·70	0·69	0·63	0·57	0·52
15½ x 16	14x8	2	16x¾	0·85	0·84	0·84	0·83	0·83	0·82	0·82	0·81	0·80	0·78	0·77	0·76	0·73	0·71	0·66
18 x 24	16x8	2	24x1	0·85	0·85	0·85	0·85	0·85	0·85	0·85	0·85	0·84	0·83	0·83	0·82	0·81	0·80	0·78
20 x 12	18x8	2	12x1	0·83	0·82	0·82	0·81	0·80	0·80	0·79	0·77	0·76	0·74	0·72	0·70	0·65	0·60	0·54
Depends on joist used *	One of 4 above.	4	24x1	0·85	0·85	0·85	0·85	0·85	0·85	0·85	0·85	0·85	0·84	0·83	0·82	0·82	0·80	0·79
14 x 9	13x5	2	9x½	0·79	0·78	0·77	0·76	0·74	0·73	0·71	0·68	0·65	0·61	0·57	0·53	0·45	0·37	0·31
14½ x 16	13x5	2	16x¾	0·85	0·85	0·84	0·84	0·83	0·83	0·82	0·82	0·80	0·79	0·78	0·77	0·75	0·71	0·69
** 15 x 20	13x5	2	20x1	0·85	0·85	0·85	0·85	0·85	0·85	0·85	0·84	0·83	0·82	0·82	0·81	0·79	0·77	0·76
15 x 9	13x5	2	9x1	0·81	0·80	0·78	0·77	0·77	0·76	0·74	0·71	0·70	0·67	0·63	0·60	0·52	0·45	0·36
16 x 10	15x6	2	10x½	0·80	0·79	0·78	0·77	0·76	0·75	0·73	0·71	0·68	0·65	0·61	0·58	0·50	0·42	0·37
16½ x 16	15x6	2	16x¾	0·85	0·85	0·84	0·84	0·83	0·82	0·82	0·81	0·80	0·79	0·78	0·77	0·74	0·71	0·68
17 x 20	15x6	2	20x1	0·85	0·85	0·85	0·85	0·85	0·85	0·85	0·84	0·83	0·82	0·82	0·81	0·79	0·77	0·76
17 x 10	15x6	2	10x1	0·82	0·81	0·80	0·79	0·78	0·77	0·76	0·74	0·71	0·68	0·66	0·63	0·57	0·56	0·44
* 19 x 24	15x6	4	24x1	0·85	0·85	0·85	0·85	0·85	0·85	0·85	0·85	0·85	0·84	0·84	0·83	0·82	0·81	0·79

* These columns are to be carried out in accordance with fig. 3.

Columns marked with one or two asterisks may be also of double joist section as fig. 4 and have practically the same efficiency coefficients.

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INFORMATION SHEET: STEEL FRAME CONSTRUCTION: №14.

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

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INFORMATION SHEET • 772 •

STRUCTURAL STEELWORK

Subject : Economical Column Sections, 4

General :

This series of Sheets on steel construction is not intended to cover the whole field of engineering design in steel, but to deal with those general principles governing economical design which affect or are affected by the general planning of the building. It also deals with a number of details of steel construction which have an important effect upon the design of the steelwork.

Both principles and details are considered in relation to the adjoining masonry or concrete construction, and are intended to serve in the preliminary design of a building, so that a maximum economy may be obtained in the design of the steel framing.

This Sheet is the fourteenth of the series, and sets out in tabular form the comparative economic efficiencies of columns or struts composed of plated joist sections.

Column Groupings :

Where centrally loaded columns consisting of one section only are not desirable (see Group (1) on Sheet No. 11 of this series), composite sections (as shown in Group (2)) may be used. The advantages of composite sections are set out on Sheet No. 12.

Plated Joists :

The possibilities when using plated joists as columns are so manifold that it is not possible to give efficiency coefficients for all of them. While for beams usually only the largest sections are used in this manner (see Sheets 2 and 3), for columns—where the section modulus for the *x-x* axis is usually of less importance than the smallest radius of gyration—sections composed of the smaller types of joists with plates are of equal importance.

Practically excluded from such use are only those joists, of which the flange does not allow rivets of at least $\frac{1}{2}$" diameter to be used for the fastening of the flange plates—these are 3" × 1$\frac{1}{2}$", 4" × 1$\frac{3}{4}$", 4$\frac{3}{4}$" × 1$\frac{3}{4}$". In the case of other small sections, however, the cost of labour involved in riveting is so great when compared with that of the material itself that they are used as plated columns only in certain exceptional circumstances ; for instance, when for architectural reasons it is desired to limit the dimensions of the columns to a minimum regardless of cost. These sections are 3" × 3", 4" × 3", 5" × 3", 5" × 4$\frac{1}{2}$", 6" × 3", 6" × 4$\frac{1}{2}$", 6" × 5", 7" × 4", 8" × 4", 8" × 5", 9" × 4", 10" × 4$\frac{1}{2}$", 10" × 5", 12" × 5".

Of the remaining B.S.S. sections, as a rule those with the wider flanges are the more useful for columns, therefore the table on this Sheet takes only these into account. This does not mean, however, that other sections are always impracticable.

Plates :

It is often useful to carry columns through two floors without joints, and have flange plates on the lower storey where the greater load prevails. On the other hand, it may be perfectly reasonable to use a joist of less width, if it is sufficient, for the upper floor. As these cases are, however, less frequent and a selection is necessary, they have been disregarded. It will be seen from the table that the efficiency of columns having the same joist section increases with the width of the flange plates.

Loading :

See formula quoted on the back of Sheet No. 11 of this series. The foregoing considerations refer to centrally loaded columns only. Where bending moments of any considerable magnitude have to be provided for, other considerations become important. For instance, where the bending moment M_x is very important, plated joists will be restricted to the larger sections, as for beams. Where M_y is important, the width of the plates becomes of greater importance than the joist itself. Such columns will have to withstand large bending moments and will be dealt with in a separate Sheet.

Radius of Gyration :

For centrally loaded columns, it will generally be of advantage to arrange the plates so that the radius of gyration is almost equal in both directions. This will be the case if in Figures 1, 2 and 3 on this Sheet :—

$$b = 2\sqrt{3\left[a^2 + \frac{i_x^2 + i_y^2}{\alpha}\right]}$$

where α = proportion of material in plates to material in joist, and i_x and i_y = radii of gyration of joist sections.

Riveting :

Certain practical rules are to be observed for the distance of rivets from each other and from the edges of plates.

Fig. 1

c must not be greater than $9t$.

Fig. 2 :

As the distance s of rivet holes is practically fixed for every joist section this can be expressed as follows :

b must not be greater than $s + 18t$ or t must not be less than $\frac{b - s}{18}$. d_1 must not be more than $16t$, or more than 6", whichever is less. Where two or more plates are employed, t = thickness of outer plate.

Fig. 3 :

An alternative arrangement with tacking rivets is, however, permitted, where several plates are used :

There c_1 must not be greater than $12\,t_1$.

b must not be greater than $s + 24\,t_1$.

t_1 must not be less than $\frac{b - s}{24}$.

c_2 must not be less than 1$\frac{1}{2}$ times the diameter of the rivets.

d_1 must not be greater than $\left\{\begin{matrix} 6" \\ 16\,t_1 \end{matrix}\right\}$ whichever is the less.

d_2 must not be greater than $\left\{\begin{matrix} 24\,t_1 \\ 24\,t_2 \\ 12" \end{matrix}\right\}$ whichever is the less.

The rules for c_2, d_1 and d_2 are merely questions of detail, while the rules for b, t, t_1, t_2 are of importance for the dimensioning of the plates. There is no advantage in staggering rivets on the two sides of the flange.

Efficiency Coefficient :

For general clauses see back of Sheet No. 11 of this series. The factors given on this Sheet allow for cost of riveting and assembly and can never be greater than 0·85.

Buckling :

See clauses on the back of Sheet No. 11 of this series.

Previous Sheets :

Previous Sheets of this series dealing with structural steelwork are :—

No. 729 : Basic Steel Sections.
No. 733 : Mechanics of Sections, 1.
No. 736 : Mechanics of Sections, 2.
No. 737 : Economical Framing, 1.
No. 741 : Economical Framing, 2.
No. 745 : Economical Beam Sections, 1.
No. 751 : Economical Beam Sections, 2.
No. 755 : Economical Beam Sections, 3.
No. 759 : Riveted Plate Girders.
No. 763 : Fire Resisting Cover to Steel Beams.
No. 765 : Economical Column Sections, 1.
No. 769 : Economical Column Sections, 2.
No. 770 : Economical Column Sections, 3.

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PRICES

On the following pages appears Prices for Measured Work—Part I, with prices last published on November 16, brought up to date.

IMPORTANT ★ NOTE

The prices given below are for work executed complete and are for an average job in the London Area; all prices include overhead charges and profit for the General Contractor.

The prices given in italics are for "Materials Only" and represent the cost of the materials included in the measured rates. They are based on the prices given in "Current Market Prices of Materials" with the addition of 10% for overhead charges and profit, ***though owing to present conditions many of these prices may no longer hold good.***

The cost of labour (including its proportion of overhead charges and profit) can be ascertained by subtracting the prices in italics from the prices in heavier type.

PART 3

CURRENT PRICES FOR MEASURED WORK—I

BY DAVIS AND BELFIELD

PRELIMINARIES

Water for the works	1½%
Third party and other insurances to persons and property, employer's liability, unemployment and Public Health insurances, and fire insurances (based on value of contract) ..	
Single scaffolding .. .. per yard super	2/-
Independent scaffolding .. per yard super	2/8

EXCAVATOR

	Ordinary Ground	Clay
Surface digging average 9″ deep and wheeling and depositing on spoil heap, not exceeding two runs per yard super	-/9	1/1
Excavating not exceeding 5′ 0″ deep to form basement and getting out per yard cube	1/11	2/10½
Ditto, exceeding 5′ 0″ deep and not exceeding 10′ 0″ deep .. .. per yard cube	2/5	3/6
Excavating not exceeding 5′ 0″ deep to form surface trenches and getting out per yard cube	2/7	3/10
Ditto, exceeding 5′ 0″ deep and not exceeding 10′ 0″ deep .. .. per yard cube	3/7	5/0
Ditto, not exceeding 5′ 0″ deep to form basement trench excavation commencing 10′ 0″ deep, and getting out .. .. per yard cube	3/4½	4/6
Returning, filling in and ramming around foundations .. .. .. per yard cube	1/1	1/5

EXCAVATOR—(*continued*)

	Ordinary Ground	Clay
Filling barrows and wheeling and depositing excavated soil not exceeding two runs per yard cube	1/1	1/5
Spreading and levelling from excavated heaps in layers not exceeding 12″ per yard cube	-/9	1/-
Filling into carts or lorries and carting away per yard cube	4/6	4/10
Planking and strutting to sides of basement, excavation, including strutting per foot super	1/-	-/9
Planking and strutting to surface trenches (both sides measured) .. .. per foot super	-/4½	-/3
Hardcore, broken brick, filled in under floors and well rammed and consolidated per yard cube	8/-	6/-
Hardcore, broken brick, deposited, spread and levelled, and rammed to a true surface 6″ thick per yard super	1/7	1/-

CONCRETOR

Foundations and Mass Concrete

• Portland cement concrete 1 : 6 with unscreened ballast, in foundations and masses exceeding 12″ thick per yard cube	21/10	*18/4*
• Ditto, 1 : 3 : 6, with one part of cement and three parts of sand and six parts of clean gravel per yard cube	22/3	*18/9*
• Ditto, 1 : 2 : 4 with one part of cement, two parts of sand and four parts of ¾″ crushed graded shingle per yard cube	27/3	*23/9*

• Items marked thus have risen since November 16.

CURRENT PRICES

BY DAVIS AND BELFIELD

EXCAVATOR, CONCRETOR AND BRICKLAYER

CONCRETOR—(*continued*)

Add if mixed by hand labour ..	per yard cube	2/–
Add if in foundations not exceeding 12″ thick	per yard cube	2/3
Add for mechanical hoisting ..	per yard cube	1/6
Add for hand hoisting per 10 feet	per yard cube	2/3

Surface Beds

• Portland cement concrete 1 : 6, bed 6″ thick, spread and levelled	per yard super	4/–	*3/1*
Add or deduct for each inch over or under 6″ in thickness	per yard super	–/6	
Add for surface finished with spade face	per yard super	–/3½	
Add if laid in two layers with fabric reinforcement (measured separately) ..	per yard super	–/3½	

Upper Floors and Flats

• Portland cement concrete 1 : 2 : 4 as before described, 6″ thick, packed around fabric reinforcement (measured separately) finished with spade face	per yard super	5/6	*4/–*
Add or deduct for each inch over or under 6″ in thickness	per yard super	–/7½	

Casings

• Portland cement concrete 1 : 2 : 4 as before, in encasing to steel joists	per foot cube	1/3½	*–/10½*
• Ditto, packed around rods (measured separately) in lintols, sectional area not exceeding 36 inches	per foot cube	1/5½	*–/10½*
• Ditto, ditto, over 36 inches and not exceeding 72 inches sectional area	per foot cube	1/4½	*–/10½*
• Ditto, ditto, over 72 inches and not exceeding 144 inches sectional area	per foot cube	1/3½	*–/10½*
• Ditto, ditto, over 144 inches sectional area	per foot cube	1/2½	*–/10½*

Walls in Situ

• Portland cement concrete 1 : 6 with unscreened ballast in 9″ walls packed around rods (m/s)	per yard super	6/11	*4/7*
• Ditto, in 12″ walls ditto	per yard super	8/6	*6/1*

Reinforcement

• ½″ diameter and upwards mild steel rod reinforcement, cut to lengths, including bends and hooked ends and embedding in concrete lintols	per cwt.	23/1	*17/–*
• Under ½″ diameter, ditto	per cwt.	24/7	*18/6*

Formwork

Close boarded formwork to soffites of floors and strutting up	per yard super	3/9	*1/6*
Vertical formwork to sides of concrete walls, including struts, etc. (both sides measured)	per yard super	3/–	*1/3*
Formwork to sides and soffites of concrete lintols and beams	per foot super	–/6	*–/2½*
Wrot ditto	per foot super	–/7	*–/2½*

BRICKLAYER

		Flettons £ s. d.	Second Stocks £ s. d.	Blue Staffordshire Wirecuts £ s. d.
Reduced brickwork in lime mortar 1 : 3 with ¼″ joints..	per rod	23 2 0 *14 1 10*	32 10 8 *23 10 8*	
Ditto, ½″ joints ..	per rod	22 15 8 *14 1 9*	31 9 5 *22 19 1*	
• Reduced brickwork in cement mortar 1 : 3 with ¼″ joints	per rod	25 16 2 *14 19 0*	34 4 10 *24 7 6*	51 16 6 *38 7 10*
• Ditto with ½″ joints	per rod	24 15 7 *15 5 3*	33 8 4 *24 1 10*	50 7 6 *37 9 1*
Add if lime mortar hand mixed	per rod	5/8	5/8	
Ditto cement mortar ..	per rod	12/9	12/9	9/–
Half brick walls in lime mortar 1 : 3 ¼″ joints	per yard super	5/1 *3/–*	7/2 *5/2*	
Ditto in cement mortar 1 : 3	per yard super	5/5½ *3/2*	7/6½ *5/3*	11/5 *8/6*
Labour forming 2″ cavity to hollow walls including wall ties, etc.	per yard super			–/9

		£ s. d.
Add to the price of reduced brickwork for brickwork in underpinning	per rod	4 0 0
Ditto, for brickwork circular on plan to flat sweep	per rod	5 0 0
Ditto, ditto, to quick sweep	per rod	10 0 0
Extra for internal fairface and flush jointing	per yard super	1/1½
Extra for grooved bricks as key for plaster	per yard super	–/3
Hacking concrete ditto	per yard super	–/6

BRICKLAYER—(*continued*)

Horizontal double slate damp-proof course 4½″ wide bedded in cement mortar ..	per foot run	–/4	*–/1⅞*
Ditto exceeding 4½″ in width ..	per foot super	–/10	*–/5*
Vertical ditto	per foot super	1/–	*–/5*
"Ledkore" (Grade B) D.P.C. ..	per foot super	–/9	*–/7*
Plumbing angles	per foot run	–/1	
Rake out joints and point to lead flashings	per foot run	–/2	
Ditto stepped	per foot run	–/3	
Bedding door frames	per foot run	–/1	
Ditto and pointing one side	per foot run	–/2	
Ditto and pointing both sides	per foot run	–/3	
Parge and core flues	each	4/–	
Set and flaunch only chimney pots	each	5/–	
Hoisting and fixing metal windows size 3′ 6″ × 4′ including cutting and pinning lugs to brickwork and bedding frames in cement mortar and pointing in mastic on one side	each	5/–	
Ditto, including screwing to wood frame (measured separately)	each	3/–	

		9″×3″	9″×6″
Form opening for air brick including slate lintol and render around in cement and sand to 13½″ wall and build in Terra Cotta air brick	each	1/6 *–/10½*	2/6 *1/7*
Galvanized cast iron School Board pattern air bricks and building in	each	1/1½ *–/6*	1/10½ *1/–*
Fixing only fireplace simple interior and surround	each	27/6	

Partitions

		2″	2½″	3″	4″
Breeze set in cement mortar	per yard super	2/11 *1/8*	3/5 *1/11*	4/1½ *2/2*	5/1½ *2/11*
Clay tile ditto ..	per yard super	4/5 *2/9*	4/11 *3/1*	5/8 *3/5*	6/4½ *3/11*
Pumice ditto ..	per yard super	4/6 *3/3*	5/2½ *3/10*	6/3 *4/4*	7/2 *5/–*
Plaster ditto ..	per yard super	4/– *2/9*	4/11 *3/5*	6/– *4/–*	7/2 *5/–*
White glazed both sides best quality bricks, set in cement mortar and pointed in Parian cement	per yard super		42/5	*33/–*	

Facings

Prices are extra over Fletton brickwork and are for raking out joints and pointing with a neat struck weathered ½″ joint in cement mortar. For raking joints and pointing in white cement add an extra 11d. per yard super to the following prices.

		Flemish Bond	English Bond	Stretcher Bond
Stock facings p.c. 95/3 ..	per yard super	5/1 *3/4*	5/5½ *3/8*	4/3 *2/6*
Rustic Flettons p.c. 70/6	per yard super	3/4 *1/6*	3/6 *1/8*	2/11 *1/3*
Blue pressed p.c. 185/– ..	per yard super	11/11½ *8/10½*	13/4 *10/0½*	9/4½ *6/9½*
Sand faced hand made reds p.c. 120/–	per yard super	8/– *5/2½*	8/7 *5/10*	6/4 *3/11*
White glazed headers p.c. 470/– and stretchers 480/– ..	per yard super	32/– *28/2½*	36/– *32/2*	24/8 *21/4*
For a variation of 10/– per M. in p.c. of facing bricks size 8¾″×2⅝″ on face with ¼″ joints add or deduct	per yard super	–/9	–/10	–/6½

		Rustic Flettons	Stock Facings	Sand Faced Hand Made Reds
Half brick wall stretcher bond in cement mortar built fair and joints raked out and pointed in cement mortar on one side	per yard super	8/7½ *4/4½*	9/11 *5/7¾*	12/– *7/1½*
Ditto and pointed both sides	per yd. super	10/6 *4/5*	11/9½ *5/8¼*	13/10 *7/1¾*
One brick wall in cement mortar built fair and joints raked out and pointed in cement mortar on one side	per yard super	15/5 *8/9½*	17/11½ *11/4*	22/1 *14/3*
Ditto and pointed both sides	per yd. super	17/3 *8/10*	19/9½ *11/4½*	23/10 *14/3½*
Half brick wall built in best quality white glazed one side bricks, stretcher bond, in cement mortar built fair and pointed in Parian cement	per yard super		31/–	*24/2*
Ditto white glazed both sides and pointed both sides	per yard super		41/9	*32/7*

• Items marked thus have risen since November 16.

CURRENT PRICES

BY DAVIS AND BELFIELD

BRICKLAYER, DRAINLAYER, ASPHALTER AND PAVIOR

BRICKLAYER—(*continued*)

Facings—(continued)

Labour and material in hand made sand faced red brick on end window head and pointing to face and 4½″ soffite ..	per foot run	1/3	-/7
Hand made, sand faced brick on edge coping including double course of tile creasing with two cement angle fillets to one brick wall	per foot run	2/3	1/3

DRAINLAYER

Excavate to form drain trenches for 4″ pipes and get out, including planking and strutting, filling in and ramming, and wheeling and spreading surplus.

Prices per 12″ average depth per foot run :	Ordinary ground	Clay
Trenches not exceeding 3′ 0″ deep	-/2½	-/3
Ditto, exceeding 3′ 0″ and not exceeding 5′ 0″ ..	-/5½	-/7
Ditto, exceeding 5′ 0″ and not exceeding 10′ 0″ ..	-/8½	-/9½
● 6″ thick Portland cement concrete bed 6 : 1, 12″ wider than diameter of pipe, and flaunched halfway up sides of pipe .. per foot run	4″ pipes -/9 *-/7*	6″ pipes -/10½ *-/8*
● 6″ ditto, and completely encasing per foot run	1/8 *1/3½*	2/- *1/6¼*

Agricultural land drain pipes, laid complete with butted joints, exclusive of digging .. .. .. per yard run	2″	3″	4″	6″
	-/4	-/6	-/8	1/1
	-/2¾	*-/3¾*	*-/4¾*	*-/8¼*

British Standard Quality Salt Glazed Socketed Stoneware Drainpipes and Fittings

	4″ pipes Over 2-ton lots	4″ pipes Under 2 tons, 100 pieces upwards	6″ pipes Over 2-ton lots	6″ pipes Under 2 tons, 100 pieces upwards	9″ pipes Over 2-ton lots	9″ pipes Under 2 tons, 100 pieces upwards
Pipes jointed in 1:1 cement and sand per foot run	1/1	1/3	1/7	1/10	2/8½	3/4
	-/8¾	*-/10¾*	*1/1¼*	*1/4¼*	*2/-*	*2/5¼*
Extra for bends .. each	1/4	1/7	2/-	2/4	3/6	4/-
	-/11¾	*1/2½*	*1/5½*	*1/9½*	*2/7½*	*3/2½*
Ditto, single junction each	1/10	2/2	2/9	3/3	4/9	5/8
	1/5½	*1/9½*	*2/2½*	*2/8¼*	*3/11¼*	*4/8*
Trapped yard gulleys with galvanized iron gratings, and setting in concrete and jointing to drain each	10/-	11/5	12/4	14/-	19/-	22/-
	8/3	*9/8*	*9/11*	*11/7*	*15/11*	*18/11*
Ditto, with horizontal back inlet .. .. each	11/5	13/-	13/9	15/7	20/5	23/7
	9/8	*11/3*	*11/4*	*13/2*	*17/4*	*20/6*
Ditto, with vertical back inlet .. .. each	12/-	13/9	14/4	16/4	21/-	24/4
	10/3	*12/-*	*11/11*	*13/11*	*17/11*	*21/3*
Intercepting trap with Stanford stopper and setting in manhole and making good .. each	20/5	23/10	25/4	29/8	—	—
	16/11	*20/4*	*21/6*	*25/10*	—	—

Coated Cast Iron Socketed Drain Pipes

	4″	6″	9″
● Pipes in 9′ 0″ lengths and laying in trench, including caulked lead joints per foot run	3/7	5/2	9/3
	2/7	*3/9*	*6/11*
Cutting and waste .. .. each	1/9	3/6	—
● Extra for bends, including extra joints and cutting and waste on pipe each	10/10	20/11	60/1
	7/9	*17/8*	*54/8*
Ditto, junction ditto .. each	17/2	✱32/0	● 97/3
	11/7	*25/2*	*81/10*
Intercepting trap .. .. each	✱40/9	✱77/5	● 167/4
	34/1	*52/8*	*137/8*
● H.M.O.W. large socket gulley trap with 9″ gulley top and heavy grating and one back inlet	39/9	82/7	—
	22/7	*52/7*	—

● Items marked thus have risen since November 16.

DRAINLAYER—(*continued*)

● 4″ inspection chamber with one 4″ branch	each	65/5	*42/11*
● 4″ ditto with two 4″ branches one side ..	each	99/8	*66/-*
● 6″ ditto with one 4″ branch	each	94/6	*61/3*
● 6″ ditto with two 6″ branches one side ..	each	140/-	*91/4*
● 9″ ditto with one 9″ branch	each	212/7	*145/-*
● 9″ ditto with two 9″ branches one side ..	each	319/1	*216/2*

		White glazed	Salt glazed
4″ half-round straight main channel 24″ long	each	4/10	2/1
		4/1½	*1/4½*
Ditto, channel bends (ordinary)	each	8/1	3/-
		7/5	*2/0½*
4″ Three-quarter round branch bends (short)	each	8/6	6/9
		7/2	*5/6*
Fixing only, manhole covers and frames, including bedding in grease and setting in cement mortar	each	4/-	

ASPHALTER

Various qualities of asphalte are marketed by different firms. The term "Best" is intended to imply the best quality produced by a single representative firm, and not necessarily the best or most expensive asphalte obtainable.

	Natural Rock Asphalte Best Quality	Natural Rock Asphalte Second Quality
Basement (Tanking).		
1½″ horizontal d.p.c. in three layers on concrete per yard super	8/5	6/10
¾″ vertical ditto in three coats on brickwork or concrete .. .. .. per yard super	11/6½	10/-
Double angle fillet .. .. .. per foot run	-/6½	-/5½
Hard Graded Paving.		
1″ thick .. .. per yard super	7/4	6/3½
¾″ thick .. .. per yard super	6/3½	5/8½
½″ dampcourse finish, with smooth surface to receive lino or other floor covering	5/3	4/8½
Roofing (Flat).		
¾″ thick in 2 layers .. .. per yard super	6/3½	5/3
1″ ditto .. .. per yard super	7/4	6/3½
Extras.		
Felt supplied and fixed .. per yard super	-/6½	—
Expanded metal reinforcement ditto per yard super	1/0½	—
6″ skirting and fillet on brickwork .. per foot run	1/0½	-/11½
6″ ditto on wood (reinforced) .. .. per foot run	1/2½	1/1½
Nosing at eaves on lead apron (measured separately) .. .. per foot run	-/3½	-/3½
Parapet outlets .. .. each	4/2½	3/8

PAVIOR

	1″	1½″	2″
Granolithic paving .. per yard super	2/7½	3/6	4/7
	1/5½	*2/2*	*2/10½*
Add for dusting with carborundum powder per yard super			-/9
Cement and sand paving (1 : 3) per yard super	1/10	2/4½	—
	-/9	*1/1½*	—

½″ Jointless flooring, red, buff or brown, finished to a smooth trowelled surface, on concrete sub floors per yard super	6/3½
● ¾″ Ditto, in two coats on spade faced concrete or wood sub floors	7/10½
⅝″ thick ditto, reinforced with laths and galvanized wire netting .. .. .. per yard super	7/1
Add for polishing .. .. per yard super	-/6½
Terrazzo paving, white chips set in white cement, panelled into squares with 1½″ × ½″ deep ebonite strips, on and including cement and sand screed. Total thickness 1½″ per yard super	19/5
Ditto, but white chips set in grey Portland cement per yard super	17/4
Terrazzo tiles, white chips set in white cement :—	
Size 9″ × 9″ × ¾″ .. .. .. per yard super	20/6
Size 12″ × 12″ × 1″ .. .. per yard super	18/8
Ditto, but white chips set in grey Portland cement :—	
Size 9″ × 9″ × ¾″ .. .. .. per yard super	18/11
Size 12″ × 12″ × 1″ .. .. per yard super	17/1

	½″	⅝″	¾″
Sheet rubber .. .. per yard super	13/8	16/9½	20/-
Rubber tiles .. .. per yard super	16/9½	20/-	23/1
	½″	¾″	¼″
Cork tiles, polished .. per yard super	14/4	● 12/10	● 11/10

Hard red paving bricks laid flat (9″ × 4½″ × 2⅝″) per yard super	9/- *6/3*
Ditto, laid on edge .. .. per yard super	11/9 *9/-*

✱ Items marked thus have fallen since November 16.

CURRENT PRICES

BY DAVIS AND BELFIELD

MASON, SLATER, TILER AND ROOFER, AND CARPENTER

PAVIOR—(*continued*)

	⅝″ thick	¾″ thick
6″ × 6″ best quality red quarry tiles per yard super	9/8 *5/8*	11/2 *6/10*
6″ × 6″ best quality buff quarry tiles per yard super	10/5 *6/3*	11/9 *7/5*
2″ Yorkshire stone paving, square joints and bedding per yard super	22/–	*17/4½*
2″ Finished path of coarse gravel finished with good binding gravel to slight camber per yard super	1/7½	*–/9¾*
8½″ Do. path of clean hard clinker and 1½″ gravel finished to slight camber .. .. per yard super	2/3	*1/3*
7½″ Do. carriage drive of 3″ clinker, 3″ coarse gravel and 1½″ binding gravel finished to slight camber per yard super	3/9	*2/2*
2½″ Do. tar paving in two layers, tar sprayed and blinded with sand .. .. .. per yard super	4/9	*3/3*

MASON

	Bath	*Portland*
Stone and all labours of usual character, covering 7″ on bed, roughly squared at back, fixed and cleaned down complete .. per foot cube	11/–	*8/9½* 16/3 *14/–*

Yorkstone

Templates tooled on exposed faces, sawn beds and joints, and set in cement mortar :

		Thickness 3″		4″		6″	
Size 9″ × 9″	each	1/9	*1/6*	2/5	*2/–*	3/7	*3/–*
,, 14″ × 9″	each	2/11	*2/6*	3/10	*3/3*	5/10	*4/11*
,, 18″ × 14″	each	5/7	*4/9*	7/5	*6/3*	11/2	*9/5*
,, 22½″ × 14″	each	6/11	*5/11*	9/3	*7/10*	13/10	*11/9*
,, 27″ × 14″	each	8/5	*7/1*	11/2	*9/5*	16/9	*14/2*

Artificial Stone

In steps, copings, band courses, etc., per foot cube from	8/5 *7/5*

Reconstructed Stone

In steps, dressings, band courses, etc., per foot cube	13/7 *12/7*

Slate	1″	1¼″	1½″
Slate slabs, sawn to size, not exceeding 10 ft. sup. and planed, with rubbed face and fixing as shelving, etc. per foot super	4/6 *3/4¾*	5/– *3/8*	6/– *4/3¾*
Ditto, not exceeding 20 ft. sup. per foot super	5/4 *4/1½*	5/10 *4/6*	7/– *5/3¾*
Rubbed edges .. per foot run	–/4½	–/4½	–/4½

SLATER, TILER AND ROOFER

Bangor and Portmadoc Slates

	20″ × 10″	16″ × 8″	24″ × 12″
Slates laid to a 3″ lap and fixed with zinc nails .. per square	79/–	77/–	80/5

Old Delabole Slates

	20″ × 12″	16″ × 10″
Grey medium gradings .. per square	86/–	84/6
Unselected greens (V.M.S.) (weathering greens and grey greens mixed) .. per square	96/6	94/6

Randoms	No. 1 Gradings 24″/22″ to 12″/10″
Ordinary grey greens .. .. .. per square	91/3
Weathering grey greens (V.M.S.) .. per square	101/9
	No. 2 Gradings 24″/22″ to 12″/10″
Weathering greens (V.M.S.) .. .. per square	107/–

Westmorland Green Slates Randoms	Bests 24″ to 12″ long proportionate widths
No. 1 Buttermere, fine light green .. per square	122/9
No. 2 Buttermere, light green (coarse grained) per square	120/9
No. 5 Buttermere, olive green (coarse grained) per square	117/6
Broughton Moor light sea green, olive green, silver grey green and mixed shades .. per square	128/–

Tiles

Hand made sand faced 10½″ × 6½″ laid to 4″ gauge, fourth course nailed with galvanized nails per square	65/–
Machine made ditto .. .. .. per square	56/7

Pantiles

Berkshire hand made surface red laid dry, per square	65/–
Bridgewater hand made red laid dry per square	65/–
Bridgewater double Roman laid dry per square	48/3

SLATER, TILER AND ROOFER—(*continued*)

Sundries

Stripping, slating down to and including, 18″ × 9″ per square	4/6
Ditto smaller sizes .. .. .. per square	6/–
Add for carrying down and stacking per square	1/8
Ditto stripping battens down to and including 18″ × 9″ .. .. per square	1/4½
Ditto, ditto, smaller sizes .. .. per square	2/3

Cedarwood Tiles

Canadian Cedarwood shingles laid to 5″ gauge per square	47/4 *36/–*

Asbestos

Russet brown asbestos cement roofing tiles 15¾″ × 15¾″ laid diagonally with 2¾″ lap, per square	38/– *33/–*

CARPENTER

The prices given below are based on the controlled prices for orders of not less than £15 in value, for any one size and quality. 20% must be added for smaller orders and owing to restrictions it is seldom practicable to place larger orders except under licence.

Centering

Turning piece to flat soffites 4½″ wide .. per foot run (For Formwork see "Concreter.")	–/4

Fir Sawn and Fixed

Plates, dragon ties, sleeper joists and lintols, ground floor (4″ × 2″ and 4″ × 3″) per foot cube	4/2	*3/4*
Floor joists (7″ × 2″) .. .. per foot cube	4/7½	*3/5½*
Partitions (stud) (4″ × 2″ and 4″ × 3″) per foot cube	5/5½	*3/4*
Rafters and ceiling joists (4″ × 2″ and 4″ × 3″) per foot cube	5/2½	*3/4*
Purlins (6″ × 4″) .. .. per foot cube	5/2½	*3/4*
Hand labour wrot face .. per foot super	–/2	
Machine ditto .. .. per foot super	–/1	
Rebates, grooves, beads, chamfers and splays per foot run	–/1	
1½″ × 9″ ridge .. .. per foot run	–/6½	*–/4*
1½″ × 11″ hips or valleys, including cutting ends of rafters against same .. per foot run	–/7½	*–/4½*
Extra labour trimming 6″ × 2″ floor joists around fireplace, including notching ends of joists at 14″ centres to trimmer joist 7′ 0″ long and two tusk tenons .. .. each	6/–	
Boring small hole per inch of depth per doz.	–/6	
Ditto large .. .. per doz.	1/–	

Deal Battening for Slates and Tiles

2″ × 1″ spaced for Countess (20″ × 10″) slates to 3″ lap .. .. per square	9/7½	*6/10½*
2″ × 1″ ditto for Ladies (16″ × 8″) .. per square	12/4	*9/0½*
2″ × 1″ ditto for Duchess (24″ × 12″) ditto per square	7/9½	*5/7*
2″ × 1″ ditto for randoms 24″/22″ to 12″/10″ per square	10/9	*6/4*
1½″ × ¾″ ditto for plain tiles (10½″ × 6½″) to a 4″ gauge .. .. per square	13/3½	*8/4½*
1½″ × 1″ ditto for pantiles to approximately 11½″ gauge .. .. per square	7/6	*4/1*

Roof Boarding

	¾″	1″
Deal roof boarding in batten widths close jointed per square	30/3 *22/–*	38/1 *29/4*
Ditto, prepared for patent flat roofing and including firrings to falls .. .. per square	40/3 *27/–*	48/1 *34/4*
Small tilting fillet .. .. per foot run	–/2	–/2½
Large ditto .. .. .. per foot run	–/4	*–/1½*

Felt

Sarking or slaters felt, fixed with 2″ side laps and 6″ end laps .. .. per yard super	1/1½	*–/8¾*
Roofing felt ditto .. .. per yard super	1/3½	*–/10¾*
Bituminous hair felt ditto .. per yard super	2/3½	*1/10¾*

Weather Boarding

Rough deal feather edge boarding in batten widths ½″ average with 1½″ laps per square	30/8	*20/6*

Fascia and Soffite Boards

1″ × 6″ wrot deal splayed fascia fixed to rafter feet per foot run	–/4½	*–/1½*
1″ × 9″ wrot deal soffite tongued both edges, including grooves .. .. per foot run	–/8½	*–/2¼*

(To be continued in next issue)

THE BUILDINGS ILLUSTRATED

VILLAGE COLLEGE, IMPINGTON, CAMBRIDGESHIRE (pages 734-740). Architects: Walter Gropius and E. Maxwell Fry. Engineers, R. T. James and Partners; Quantity Surveyor, William G. P. Potter; Clerk of Works, F. S. Chappell; General Foreman, A. E. Sheldrick; Foreman Joiner, S. Quinney; Foreman Carpenter, H. B. Hinde; Foreman Plumber, W. Hunt; Foreman Bricklayer, F. I. Greenall; Foreman Painter, C. H. Cooper; Ganger Labourer, A. A. Shead; general contractors were Johnson and Bailey, Ltd. Subcontractors and suppliers included: Williams and Williams, Ltd., metal windows; Granwood Flooring Co., Ltd., flooring and underfloor heating; Brickart, Ltd., facing bricks; P. H. Allin and Sons, electrical contractors; Powers and Deane, Ransomes, Ltd., structural steelwork; F. McNeill & Co., Ltd., "Foamagg" partition blocks; Whitehead Iron and Steel Co., Ltd., concrete reinforcement; John Bolding and Sons, Ltd., sanitary fittings; Smith and Wellstood, Ltd., cooking range; Parkinson Stove Co., Ltd., warming chamber in kitchen; Cambridge University and Town Gas Light Co., gas carcassing; Potter Rax Gate Co., Ltd., cloakroom fittings; Septic Tank Co., Ltd., sewage disposal; Donovan Flush Doors, flush doors (metal faced); Merchant Trading Co., Ltd., flush doors (alder faced); Cambridge Artificial Stone Co., Ltd., reconstructed stone copings; Celotex, Ltd., Acousti Celotex; Tentest Fibre Board Co., Ltd., insulating boards for ceilings; Masonite, Ltd., hardboard; C. A. and A. W. Haward, metalwork; J. Starkie Gardner, Ltd., commemorative tablet; Tile Decorations, Ltd., floor and wall tiling; Radiation Ltd., double oven range, stockpot stand, and two hotplates; W. H. Dean and Son, Ltd., Staines Kitchen Equipment Co., Ltd., General Electric Co., Ltd., General Iron Foundry Co., Ltd., Burco, Ltd., domestic science room equipment; Cubax Kitchen Cabinets, Ltd., kitchen cabinet; A. J. Binns, Ltd., ironmongery; James Clark and Son, Ltd., glazing; Cellulin Flooring Co., Ltd., lino covered floors; Highways Construction Co., Ltd., asphalt tanking and roofs; H. C. Hiscock, Ltd., Merchant Adventurers of London, Ltd., Troughton and Young, Ltd., electric lighting fittings; Strand Electric and Engineering Co., Ltd., stage lighting fittings; Gent & Co., Ltd., electric clocks; Nobel Chemical Finishes, Ltd., paint and distemper—"Dulux"; Mander Bros., Ltd., paint and distemper; Walpamur Co., Ltd., paint and distemper—"Walpamur"; Hunter and Hyland, Ltd., curtain tracks; Ernest Race, Ltd., curtains; Finmar, Ltd., Thonet Bros., Ltd., Fredk. Parker and Sons, Ltd., Henry Stone and Son, Ltd., Wrinch & Co., Ltd., Mann Egerton & Co., Ltd., Kerridge (Builders), Ltd., furniture; Stonehenge Brick Co., sand lime bricks for interior facings; W. T. Lamb and Sons, dark brown facings; London Brick Co., Fletton bricks.

GENERAL NEWS

PITHEAD BATHS

The Miners' Welfare Committee announces that it intends to continue the building of pithead baths as far as practicable under the war conditions.

ANNOUNCEMENT

The directors of E. Pollard & Co., Ltd., have recommended the payment of the final dividend for the year ending December 31, 1939, less Income Tax on all 7 per cent. Cumulative Preference Shares issued and registered in the company's books on or before Monday, December 18, 1939. The dividend warrants are to be posted on January 1, 1940.

APPOINTMENTS

The Hull Corporation has appointed Mr. Andrew Rankine as city architect. Mr. Rankine is a senior assistant to the city architect (Mr. D. Harvey), who is retiring. Mr. H. E. Horth, Hull, has been recommended as deputy city architect.

Mr. Peter McFall, for some years sales engineer in Scotland of William Sanders & Co. (Wednesbury), Ltd., has been appointed to their London office, where Commander Preston and he will be jointly responsible for its administration.

THE ROYAL SANITARY INSTITUTE

Mr. Percival T. Harrison, M.INST.C.E., Borough Engineer and Surveyor of Finchley, has been elected as Chairman of the Council of the Royal Sanitary Institute.

LIGHTING FITTINGS

A further Specification in A.R.P. Series of British Standards for Lighting Fittings just issued. This specification, BS/A.R.P.21, deals with fittings, both gas and electric, for providing an even illumination of an intensity of 0.2 foot-candles. There are now BS/A.R.P. specifications dealing with fittings for three intensities of illumination, namely, 0.002, 0.02 and 0.2 foot-candles (BS/A.R.P., 16, 20 and 21, respectively). Copies of specifications obtainable from British Standards Institution, 28 Victoria Street, London, S.W.1, price 3d. (post free).