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The Editor will be glad to receive MS. articles and also illustrations of current architeture 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.

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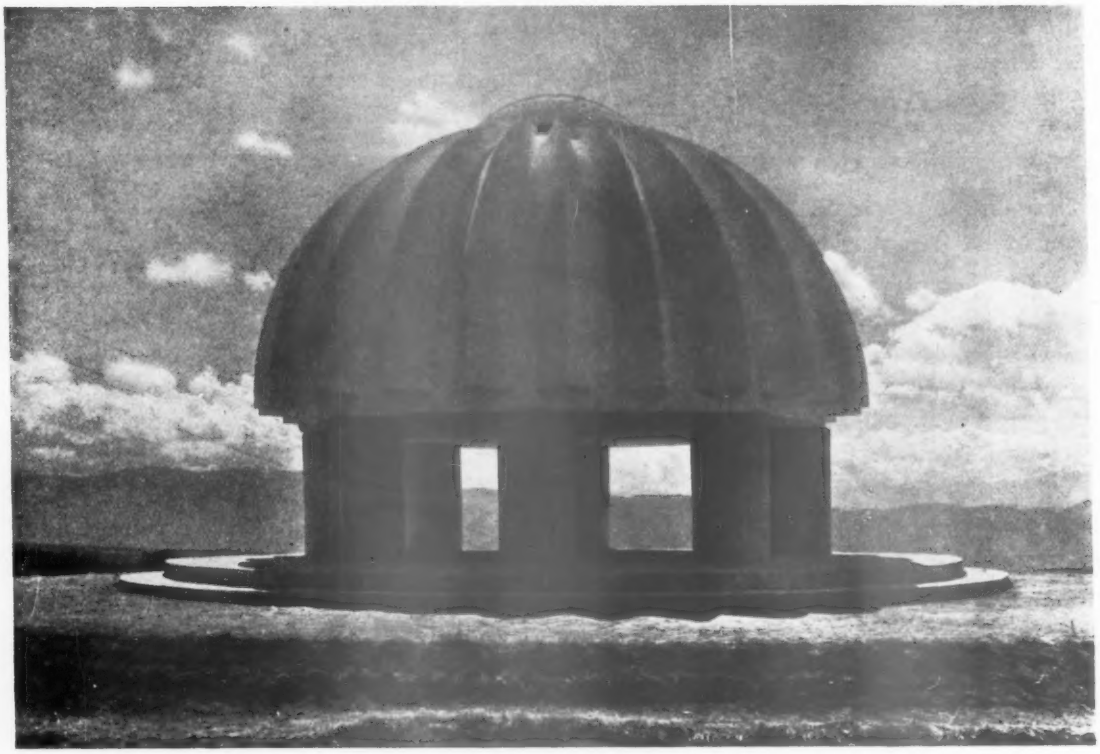
PRINCIPAL CONTENTS

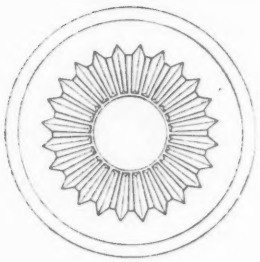
Owing to the paper shortage the JOURNAL, *in common with all other papers, is now only supplied to newsagents on a "firm order" basis. This means that newsagents are now unable to supply the* JOURNAL *except to a client's definite order.*

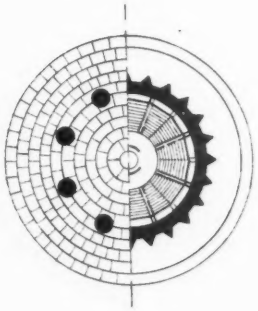
To obtain your copy of the JOURNAL *you must therefore either place a definite order with your newsagent or send a subscription order to the Publishers.*

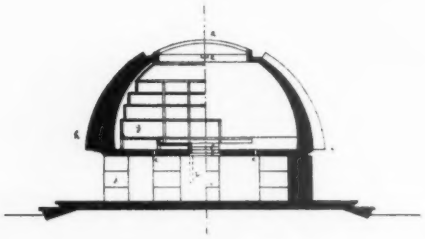
C O P E N H A G E N

Eighteenth-century baroque buildings forming part of the Danish Government offices, Copenhagen. The buildings are built in a brown stone, the roofs are of copper, and baroque spire is gilded.





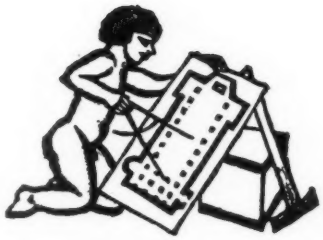




2,600 YEARS OF CULTURE

On the Tateshina Plateau, 100 miles from Tokyo and over 4,000 feet above sea-level, the Japanese have just completed this memorial commemorating the 2,600th anniversary of the foundation of the Japanese Empire. Its official title is the 2600th Year Culture Tower. The memorial has been designed to be as nearly everlasting as possible. The base and columns are of granite, the dome is of a very carefully composed mass concrete, and the crown is of glass. It is interesting that the core of the columns, the foundation raft and floor of the dome are of reinforced concrete: a material which the western world does not yet believe has been proved to be imperishable. Ventilation holes and access door seatings have been made insect-proof and typical Japanese foods and other articles will be kept inside in perpetuity.

This tower is referred to by Astragal on p. 157 of this issue.



ARCHITECTS MUST STANDARDIZE

THE R.I.B.A. has deserved the praise of all its members by the publication and circulation to all local authorities of a book called *Industrial Housing in Wartime.** This book, short and admirably produced, summarizes the problems of wartime housing and alternative solutions, and describes and illustrates the winning schemes in the recent industrial housing competition.

It is the more important for architects to realize their indebtedness to the R.I.B.A. for its action in that it is easy for them, among the duties and preoccupations of wartime, to underestimate its potential results.

Those results may be very great. At the end of this war, as at the end of the last, very many small houses will be needed. In 1919 architects failed to realize that the small house is the most fundamental of all architectural problems and that if architects did not design that house and show constant interest in its improvement, the standard of design of all other buildings would be lowered. By 1939 most architects had begun to see the consequences of that failure: to see that each year a greater number of the tenants of small houses were becoming the profession's clients for other buildings, and that the profession's neglect of small houses was coming home to roost in the guise of these clients' ignorance of architecture and distrust of the architects.

The publication of *Industrial Housing* is the first move to ensure that the same mistake is not made again. It will both help to solve an immediate problem and remind the public that architects *are* interested in the ordinary man's house, and are as ready to do all that they can to make it a better house in every way, as they are to design banks and town halls.

But architects should also appreciate that avoiding the mistakes of 1919 will not be enough to ensure the profession's leadership in rehousing after this war. All the evidence is that it will not. There is every sign that architectural leadership in post-war small houses can only be secured by a STANDARDIZATION begun, thought out and controlled by architects.

Before architects jump to the conclusion that this means the end of their Art, the position of small houses in 1939 should be carefully considered. By 1939 the mass of small houses were standardized in plan, accommodation and general form. But they were standardized in such a way that occupiers had all the drawbacks and none of the advantages of proper standardization. Their occupiers suffered from the lack of consideration of individual needs and tastes, in which all standardized products must fail to some extent; but they also suffered from the fact that every important detail in their houses—drainage, hot-water layout, roof linings, door clearances, cupboard arrangement, and so on—was left to the skill or honesty of individual builders. In all these points, which are the most important to the comfort and pocket of the ordinary man, outwardly identical houses differed from each other and even from all other houses.

Such a situation is absurd, and an opportunity for its remedy will occur at the end of this war. For it seems certain that, for the first post-war years at least, the range of equipment available for small houses will be small and the range of constructional methods which will have to be used will be very wide. There will therefore be an opportunity for architects to see that inevitable standardization is well used by being first applied to all those details of a house where no one —not even architects—would object to standardization.

To prepare for this opportunity the profession would need to change its attitude towards small houses very sharply. It would have to disregard—for the time being—external appearance and concentrate its attention on construction and equipment. It would have to prepare in the usual way designs for the best small houses it could produce—bearing in mind that after the war prefabricated units of large size will inevitably take the place of many pre-war finishes and much pre-war construction. But having reached this point where architectural design usually ends, the new architectural design would begin. With the aid of allied professions, the Building Research Station and manufacturers, architects would evolve for their standard house, standard drainage, hot water, electrical and plumbing systems, which would be designed for mass production, easy access and durable service, down to the last clip and fuse. And as the materials which will be available for post-war construction become more definitely known, the same standardization could be developed to cover any item of the construction, equipment, fixing and finish of small houses.

No part of this standardization would mean the standardization which architects fear and dislike. All of it would relieve the architect of onerous repetitive labour which benefits no one, and would bring great benefits to the ordinary citizen. The building situation at the end of the war will certainly lead to the introduction, complete or partial, of just such a standardization. Architects can begin and guide this introduction or see it begun less skilfully by others and without consideration of all that matters most to architecture. The publication of *Industrial Housing* is a first step towards choosing the first alternative.

* *Industrial Housing in Wartime.* The Results of the Competition Organized by the R.I.B.A. Price 2s. 3d. post free.

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

NOTES & TOPICS

RECONSTRUCTION COMES NEARER

IN its leading article for February 20, the JOURNAL made one or two prophecies about reconstruction. The first plank of any worthwhile reconstruction policy would, in its view, have to be State guidance for all large industries for the first post-war years; thesecond, a positive land utilization policy; the third,very big changes in local authorities' powers.

*

To me, as no doubt to other architects, the first of these steps seemed unavoidable and the other two to be essential for any lasting improvement in the location and form of industrial areas. But I had a strong presentiment that the JOURNAL would prove to be moving too fast for our rulers. And therefore Lord Reith's statement in the House of Lords last Wednesday came as the more pleasant surprise.

*

It was probably the most inspiring message that has ever reached architects and town planners from the Lords. Lord Reith said he had been authorized, in examining the problems of physical reconstruction, to make three assumptions: (1) that the principle of planning will be accepted as national policy and that a central authority will be needed; (2) that a positive policy will be worked out for agriculture, industrial development and transport; (3) that some public services "will require treatment" on a national basis, some regionally and some locally. These three authorized assumptions seem to show that, so far, the Cabinet, the JOURNAL and most architects are advancing side by side.

*

Lord Reith's carefully picked team are at present working on three of the big problems of physical reconstruction. First and foremost, a committee is examining betterment and compensation and another is examining the various existing obstacles to the proper reconstruction of three typical heavily bombed areas. A second group is carrying out the research which still needs doing before national planning policy can be laid down. A third group is examining faults in existing planning machinery and the legislation which would be required for the proper operation of regional and national planning.

The importance of these various enquiries cannot be exaggerated: their consequence for the nation is second only to the question of whether, at the end of this war, the public and its M.P.s will be wise enough to carry out—simultaneously—the changes which are needed. For, let there be no mistake, they must *all* be carried out simultaneously or all will fail.

*

Unless the problem of betterment is mastered no central planning authority or redistribution of local government powers will be of the least avail. And if betterment ceases to be an obstruction and a national planning policy is laid down, the good results will still be nil if half a dozen local authorities within two hundred square miles are left, in full local pride and jealousy, to carry it out or not to carry it out as they think fit. If Lord Reith's group who are examining existing obstacles to planning have any doubts on this point, they should look into the story of the attempt to bring local administration on Tyneside into reasonable conformity with the times in which we lived pre-war.

*

It is a story which does far more than throw a strong light on the pre-war mentality of local councillors in a declining industrial district. It compels realization that without the most skilful propaganda the measures which must precede good reconstruction will stand little chance of being carried out unless this war lasts for a very long time. Consider: those measures must threaten the immediate interests and personal power of many large landowners, many land speculators in and around cities, a multitude of local councillors and local officials and all industrialists whose ideal of Government help is big subsidies and no questions asked. They must even discomfort very many of the official town planners whose training and experience has been wholly concerned with fending off claims for compensation while keeping going a colourable pretence of fulfilling statutory obligations.

*

All these people will between them have enormous Parliamentary influence. All will be against one or other of the changes which must accompany a worthwhile reconstruction. That influence can only be countered if the ordinary citizen, and the ordinary M.P., understands clearly why the changes are needed and the lasting benefits they will bring. To bring about such an understanding will require a most carefully planned and skilfully executed course of public instruction and one which should begin at once.

*

All architects will hope that Lord Reith and Mr. Greenwood will not overlook this aspect of their present work and that, in thinking of it, they will remember the power of the B.B.C. Among all the stories of destruction which we shall have to listen to on the radio before the war ends, a few stories of construction would be well placed and deeply thought about.

TELLING THE WORLD

There is all the more reason for broadcasts of this kind in that the B.B.C. is already engaged on showing the world that, despite the war, we are still able to give some thought and interest to other things. On six Empire wavelengths, Professor Gilbert Murray began a new series of broadcasts with one on the influence of Hellenism; Sir Arthur Eddington followed and Professor Reilly came third with two broadcasts on "Modern Movements in Architecture."

It would be a tragedy if in telling the world of the things we *may* do in science and art we forgot to make clear to ourselves the things we *must* do.

RECORDS OF ARCHITECTURE

The setting up of a National Buildings Record is an architectural event of permanent consequence. Hitherto there has been no one place where the whereabouts of records of all buildings of architectural merit could be obtained, and no one organization has been charged with supplementing those records by measured drawings, photographs and textual description.

*

National Buildings Record has been set up for these purposes. Its immediate job is, of course, to index and supplement existing records of buildings which have been or are in most danger of being damaged by aerial bombardment. But all those who are interested in architecture will hope that its work will eventually extend to a comprehensive record of all buildings of merit.

*

Before bombing started, when British architecture was only in danger from Britons, the new organization was almost as badly needed as it is now. All over the country, particular societies were interested in particular buildings or limited classes of buildings and had accumulated certain records of them. But these societies had little contact with each other, and in any case the records in their possession covered only a small part of the buildings of great merit. The remaining records were often in the possession of persons or organizations who had no interest in them or appreciation of their value, and year by year a portion of them were finally lost.

*

National Buildings Record should be able, given reasonable publicity, to prevent much of this loss. And a very modest sum of money would ensure the compilation of a national architectural catalogue of immeasurable value. For the first step, the setting up of the organization, architects are indebted to the Record Council under the chairmanship of Sir Wilfrid Greene and, once again, to Lord Reith who obtained a Treasury grant. The size of future steps will be dependent on the readiness of the public, including architects, to provide funds.

*

That those funds will be well spent is certain. Mr. Walter Godfrey, Director of the Record, is an antiquary and an architect who has been responsible for the restoration of many famous buildings—among others, Hurstmonceaux Castle. Mr. J. N. Summerson, the Deputy Director, is the only possible choice for the position. A profound knowledge of the byways as well as the main stream of British architectural development is supplemented in Mr. Summerson by a seemingly inexhaustible knowledge of the family circumstances of individual buildings: of the architect's previous history, of his assistants, clients, and craftsmen. It is exactly these abilities which are needed for the National Record, and the whole profession will be pleased that, for once, the one job has come the way of the one man.

*

Only in one detail does it seem to me that the inauguration of the Record could have been done better. The "scoop" of the news of its formation was given to *The Times*. Quite apart from the human fact that no better way could be thought out for killing the start of this national venture in all other newspapers, there is an architectural side to the matter. *The Times* during the past ten years has had a singularly unimpressive architectural record. In the same period, the *Manchester Guardian* and the *News Chronicle*—to quote the two most obvious instances—have done great service to architecture and to architects. No doubt these two newspapers will be big-minded enough to overlook the way in which the National Record was first brought to public notice; but that way remains a little ungrateful.

HARDY'S HOUSE

Max Gate has become the care of the National Trust for Places of Historic Interest. It was designed by Thomas Hardy in 1883, and in it he wrote most of his books and poems. There also he was visited by his many famous admirers.

*

The degree of influence which Hardy's views of architecture exercised on his books would make an interesting R.I.B.A. paper, but I doubt whether any worthwhile conclusions could be reached. For a man's sympathies in two different fields of art are far more often contradictory than complementary.

SPREADING CULTURE

The Japanese whom I have met have spoken English to perfection. It is true I met them in England, yet I do not doubt that when the Japanese, in Japan, desire to write to English-speaking countries they have B.B.C. English on tap if they want to use it.

*

The official description of the Culture Tower illustrated on p. 154 of this issue convinces me that often they do not want to use it—that, like the writers of Dutch bulb catalogues, the Tokyo Foreign Relations Bureau have long ago discovered that writing in funny English is the one way in which to ensure that the fatuous British read your pronouncements to the end: and show it to friends. It is a good idea. It appeals to one of the elementary instincts in humanity—that foreigners are figures of fun. What architect or engineer could, for instance, resist pondering over this:

> The whole part of the column is an upright pile of three doughnut-shape granite works through whose holes runs the heart part. The floor structure of the dome has ferro-sinews which run horizontally 2 inches apart from and across one another and their both ends are connected with the upper ends of the short sinews which connect the floor and the columns through the concrete system. A sheet of dried Japanese sun tree is carefully furnished upon the floor. At the centre of the downside surface of the floor work is a manhole-castiron frame with which a round-shape door work is fixed, and around which are four ventilating holes of 5 inches round made.

*

And when you've got your man worked up, you slip in the powder with the jam:

> Attention will be drawn that these eight columns emblem our ideal of Hakkoichiu or "the whole universe as a family" and hereby the figure eight means in our ancestral interpretation "many and various"; and the dome bearing resemblance to our iron helmet impresses us with the importance of the holy war being waged today by us, and what is more, the ridges worked up after rays of the rising sun on the surface of the dome-shell, are namely designed to symbolize the illustrious virtue of his Imperial Majesty for the welfare of the whole world.

*

I commend this system of infiltration to the British Council. What is more, I think the Tower of Culture is a work of some merit, and I regret that Tokyo has not bothered to tell me the name of the architect.

ASTRAGAL

NEWS

HOUSE OF LORDS: RECONSTRUCTION DEBATE

The following debate took place in the House of Lords on February 26. The report is reprinted from *The Times*.

Viscount Samuel asked the Government what was their policy for town and country planning after the war; and whether such legislation as was necessary would be presented to Parliament at an early date.

The noble viscount, who moved for papers, said that when the end of the war came, and it might come more suddenly than was anticipated, the situation in this country would present many problems. The objects of such bodies as the Council for the Preservation of Rural England would be defeated, and Parliament would rightly be blamed for neglected opportunities. If the war ended suddenly it would be impossible then to improvise plans.

There must be a new Ministry, with its own title, which would absorb the present Ministry of Works and Buildings and would take over from the Ministry of Health its powers with regard to town and country planning and would absorb also parts of the functions of the Ministry of Transport. The location of industry which must come into this matter was a most formidable question presenting very great difficulties and grave problems.

He hoped that property owners would have no desire to press their rights in such a way as to hinder and block social welfare. Their lordships' House was once regarded as a citadel of property and privilege. He hoped it would place itself in the forefront of a movement which would strive to make Britain worthy of a great generation and a great people, worthy to be the centre of our Commonwealth, so that all our Dominions and Colonies might take pride in the Mother Country, and worthy also of the world-wide moral leadership which the sacrifices of her people had so nobly won.

Lord Addison said it was vital that there should be a central planning authority with adequate power.

The Bishop of Winchester also emphasized the need for a central authority for national planning.

The Earl of Cork and Orrery supported the motion. It was just as necessary to plan for peace in time of war as to plan for war in time of peace. It was, indeed, a great deal easier. Before the war there were in our cities intolerable conditions of squalor, ill-health and overcrowding. We should never recreate the tortuous streets and alleys. Hitler, with his bombing, had given us a wonderful chance, and we should be ready to act when the moment came. One amenity should be the supply by the municipality of hot running water to every house. That would not only encourage cleanliness but would ensure the warming of every house.

Lord Harmsworth said that it was of the utmost importance that when peace came it should not find us utterly unprepared to deal with the problems that would arise.

Lord Brocket said that as chairman of the Land Union which fought the land taxes brought in by Mr. Lloyd George, he welcomed the speeches of Viscount Samuel and Lord Addison. Land owners and their organizations could contribute much in a non-party-spirit to the solution of these problems. Wholesale land nationalization would not be for the good of agriculture or the countryside.

Lord Reith, Minister of Works and Buildings, said that within the framework of the study of post-war problems to be undertaken by the Minister without Portfolio, he (the noble lord) had been charged with a special responsibility for seeing that all practicable preparations were made now for the physical reconstruction of town and country. "Physical reconstruction" was thus a definite and distinct section of post-war problems.

He was now selecting a small staff, with the necessary knowledge, to work with him at the centre, and was inviting a dozen or twenty individuals who had special experience in this field to assist him, and to be associated with this work from the beginning in a consultative capacity. To the establishment of this panel he attached great importance. They were set upon making a thorough examination of various points of view and profiting from the past. In due course they would need, and would have, policy decisions on such questions as the place of agriculture in the national economy, the distribution of industry, and the organization of transport. These decisions would be applied by planning.

There are other decisions which Government and Parliament may ultimately take (the noble lord continued). But, in the meatime and now, I am authorized in the preparatory work to proceed on certain assumptions: That the principle of planning will be accepted as national policy and that some central planning authority will be required; that this authority will proceed on a positive policy for such matters as agriculture, industrial development, and transport; that some services will require treatment on a national basis, some regionally, and some locally. Here there are issues of devolution of central responsibilities and of co-ordination of local ones. The importance of maintaining the character and independence of local authorities is recognized, but it will probably be found necessary to readjust their present functions to enable certain of their powers to be exercised on a wider basis. We must consider impartially the whole administrative machinery.

Immediate work falls into three groups. First, there are the measures necessary to prevent action during the war which would prejudice the work of reconstruction thereafter. I announced on January 29 the establishment of an expert committee under Mr. Justice Uthwatt's chairmanship. Its main reference was to examine the subject of compensation and betterment, which is fundamental to planning. I regard this examination as of first-rate importance, and it is proceeding apace. The committee also has the urgent reference about speculation in land values.

Another immediate step was to start an examination of actual conditions in what might be regarded as test areas. Three heavily damaged areas were chosen in order that the difficulties, legislative and administrative, standing in the way of redevelopment might be shown. The local authorities concerned are visualizing their cities as they might be, though they obviously cannot make final plans until all enemy menace has passed. Broad conceptions are being taken as the basis of this inquiry in Birmingham, Coventry, and Bristol. The Minister of Health and myself have sent specially qualified officers to consult with the local authorities, for whose co-operation we are grateful.

I will not anticipate the results of these surveys, but among the problems which have already emerged from discussions I have had in London and elsewhere, are: The prevention of building which would conflict with planned, sound, and comprehensive redevelopment; powers of land acquisition; powers which local authorities will themselves need in redevelopment—the normal procedure of separate Bills for each area being obviously inappropriate.

The second group is research and information. We need a sure foundation for national planning—that is for any central planning authority in discharge of its duty to secure the best use of land in the national interest. Much independent research has been done and is available; valuable investigation is in progress now. We shall take full advantage of it all and seek to collaborate in its extension.

Our initial programme is now being drawn up, but I can indicate what is in mind. We need, as the basic information of a planning authority, a survey of resources extending into regions and local areas and showing particulars of industry and population. Akin to this is the examination of what are suitable regional units for planning. We shall investigate particular problems, such as the possibilities, including the economics, of urban redevelopment and revival. As another illustration, the cost of different types of urban development, expansion and settlement, and the conditions in which each is suitable, will come under review. In this second group I include technological research into building methods and materials.

There is one matter which falls between the two groups. There is some uneasiness about the future of areas which had not previously been industrialized, but into which industries have been, and are being, injected during the war. However decisive war considerations may be for location, the implications of such developments and their relation to regional and local schemes of reconstruction must be considered. We need to determine how industrialization fits into the conditions of the areas, and during the war to exercise such foresight as possible on housing and public services.

The third group of things to be done concerns what might be called the system of planning—the examination of defects in the existing system, of the administrative machinery, central and local, and of the legislation required for the operation of planning on a national and regional basis. Much valuable criticism and information is set out in the report of the Royal Commission on the Distribution of the Industrial Population, and in other papers. It is probable that legislation will be required to give effect to some of the agreed conclusions which will emerge from all this work; and if so it will be promoted.

In the relationship between himself and the Minister without Portfolio (the noble lord continued) there would be neither overlapping nor working apart, nor pulling different ways. From what he had seen and the discussions he had had he believed there would be harmonious, satisfactory, and efficient collaboration between them.

GUILDHALL FIRE DAMAGE

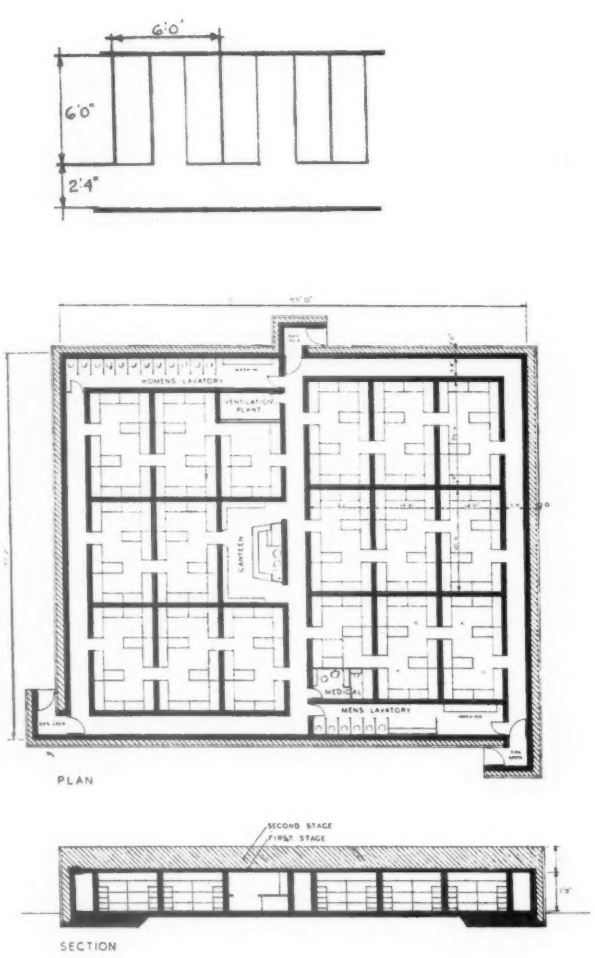
SIR GILES GILBERT SCOTT, R.A., in an interim report to the Corporation on the damage done to Guildhall in the fire raid on London, says that there are undoubted gains to be set against great losses. He will be unable to make a complete report until the charred remains of the roof have been removed from the floor of the hall.

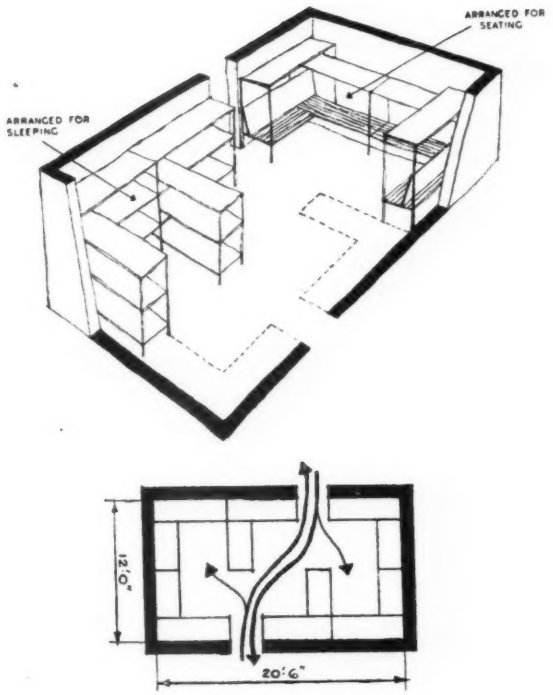
"It is a remarkable fact," he says, "that, in spite of the devastating effect of the fire upon the Guildhall buildings generally, the medieval portions of the old hall remain intact and practically uninjured.

"This medieval work, both in the walls of the hall and the crypt below the hall, formed by far the most valuable architectural treasure in the whole group of buildings, judged both from the artistic and historical points of view; and to find this old work bravely standing up in the midst of such destruction is still more remarkable when it is remembered that exactly the same fate overtook it in the Great Fire of London, and that for a second time this masonry has had to withstand the intense heat of a great fire.

"Most of the work destroyed in the hall, including the roof, was Victorian Gothic of no particular merit, and unless further damage is sustained I see no reason why it should not be restored in such a way as to give a much finer effect than it did before.

"The destruction of the stained glass windows has provided a solution of one of the most troublesome problems in restoration work—namely, how to remove windows that form memorials. The glass generally was dark and gloomy in character, and did much to frustrate the purpose for which the windows were provided, to admit light to the interior of the hall. There is no doubt that finer glass can be obtained now than





Two exhibits from the exhibition of designs for air raid shelters at the Association of Architects, Surveyors and Technical Assistants.
The drawings above show how it is possible to save space, while keeping heads of sleepers over 6 feet apart horizontally, by a careful layout of a sleeping shelter compartment. Top, left, the common arrangement; with the arrangement suggested by the A.A.S.T.A. on the right. Left, a scheme in which the proposed new units are grouped to provide a surface shelter for 588 persons.

was possible when most of these windows were put in, and here again is an opportunity for effecting a very great improvement."

Sir Giles Scott points out that it is not the purpose of his interim report to discuss permanent restoration; and dealing with the temporary protection of the walls and crypt, he says that this may be effected in two ways:

(1) Putting a flat pitched steel roof covered in asphalt over the whole of the hall and filling in the windows in such a manner as to make the hall usable, and installing temporary heating and lighting.

(2) Protecting the top of the walls to prevent wet soaking down into the masonry and covering the floor with asphalt to protect the crypt below.

The second method would be cheaper, but the hall would be unusable.

The City Lands Committee are to recommend the erection of the flat pitched steel roof at a cost of £2,000; and they recommend that the work should be put in hand as soon as possible.

I.A.A.S. PRESIDENT

Mr. Victor S. Peel, F.I.A.A., has been elected President of the Incorporated Association of Architects and Surveyors. He is a native of Birmingham, where he was a pupil at the Oratory School, finishing his education at Bonn and Coblenz. Articled to a well-known Birmingham architect, he subsequently commenced a practice there, which he has carried on for over thirty years. His work includes ecclesiastical and school architecture, a number of important industrial works, several factories, and two of the largest bakeries in the Midlands. He has been a member of the Council of the Association for over fifteen years, and for several years has been a member of the Birmingham and Five Counties Architectural Association.

Mr. J. E. Swindlehurst, M.A., M.INST.C.E. F.I.A.S., Borough Surveyor of Hampstead, has been elected Chairman of the Council of the Association, and Mr. C. H. Taylor, F.I.A.S., of Messrs. Taylor and Smith, Quantity Surveyors, of New Square, Lincoln's Inn, Vice-Chairman.

INDUSTRIAL HOUSING COMPETITION

The results of the R.I.B.A. Industrial Housing Competition have now been published in a booklet with the title "Industrial Housing in Wartime," which can be obtained from the Royal Institute or from booksellers at the price of 2s. Illustration of the designs is preceded by an introduction outlining the problem which the jury set for the competitors and analyzing the results. The bulk of the booklet consists of illustrations of the schemes all of which have been redrawn so as to make excellently clear plates.

LETTERS

Replanning London

The lapse of time between Mr. W. H. Ansell's letter to "The Times" and our correspondent's comments on it is due, we understand, to the fact that Mr. Slater's letter was not accepted for publication in the Journal of the Royal Institute of British Architects. As inadequate reasons appear to have been given for its suppression by the Institute we publish it herewith.—ED. *A. J.*

SIR,—A letter from the President was published in *The Times* of January 23 on the subject of Replanning London.

It is not either the main content of the letter nor the subject under discussion to which I desire to call attention, but to the words used by Mr. Ansell, which run as follows: "The opinion expressed in Mr. Langley Taylor's letter . . . is *not shared generally* by the architectural profession."

This may or may not be so, but my point is whether anyone is in a position to know what the "general opinion of the architectural profession" is upon this or upon many very much more important and basic aspects of Architectural Planning.

B

Perhaps inevitably, the work of the R.I.B.A. is being carried on by a very small band of devoted people, but hitherto it has been considered either impracticable or unnecessary to attempt to discover what the main body of members are thinking upon the whole question of the relation of Architecture to the Community, not only in the post-war world, but also in this present period when post-war policy will inevitably be formed.

I suggest that it is vital that an attempt should be made here and now by the R.I.B.A., by means of a week-end conference or a series of general meetings to be followed by *the organization* of *research and discussion groups*, to ascertain the "general opinion" of architects on these matters, and that although unanimity will certainly not be obtained, there is a good chance of stating the general sense of architectural opinion. By this means the President will be enabled, in his dealings with Lord Reith or any other Government Department which may come to the R.I.B.A. for advice, to speak with more authority for the profession as a whole than is possible at the moment.

J. ALAN SLATER.

Planlessness

SIR,—I do not agree with Astragal's statement in the A.J. for 13th February, that "public opinion can be roused . . . about appalling factory conditions and appalling slums by describing these conditions in word, picture and film," but *not* "about the evils of planlessness."

Surely there is ample opportunity of bringing home to the public the fact that most of the inconveniences in their daily life are caused by bad planning, or by the lack of planning. In order to drive home the importance of better thinking and planning in all things, examples could be shown on films and posters, as well as in the press, of the evils of planlessness contrasted with orderly planning. Traffic jams in narrow streets, and the alternative of wide parkways with buildings set well back; the difficulties and proper solutions for car parking problems; the danger to children of going to school across a main traffic route, and the alternative that would save many parents hours of anxiety. These and thousands of similar discomforts felt by everyone, consciously or unconsciously, every day, could be illustrated by comparing examples of good planning with the chaotic state in which most of our towns and country-side are built over.

I suggest that a group of enthusiastic architects or architectural students should try to remedy the lack of public interest in so essential a service by organizing a campaign, in the press and on the screen, in which they would no doubt be backed by the Ministry of Information.

M. K. S.

PITHEAD

BATHS AND RECREATION BUILDINGS

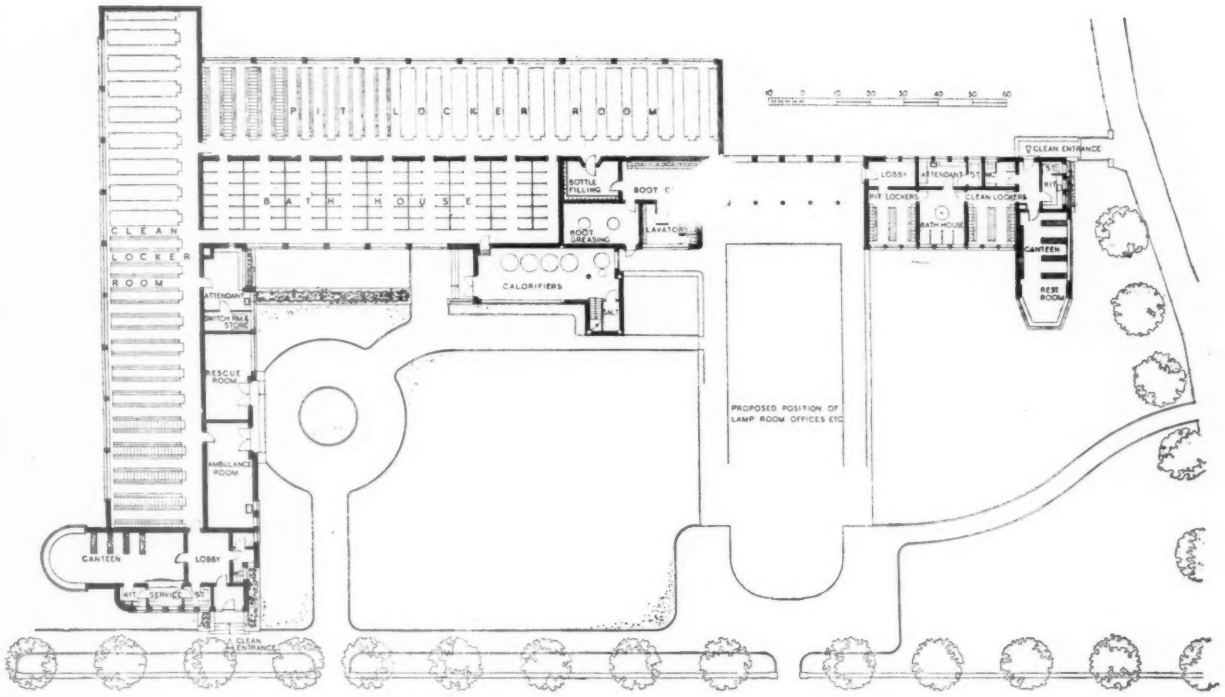
BY THE MINERS' WELFARE COMMISSION

PART TWO

GENERAL—This week we publish Part II, the concluding part, of the illustrated review of the work of the Architects' Department of the Miners' Welfare Commission. Part I appeared in our last issue.

More urgent calls on building materials and labour have rendered it necessary for the Commission to suspend temporarily its main building programme. Consequently a portion of the staff, of military age, was available for service in the armed forces or to be transferred to architectural work more closely associated with the war effort. A nucleus staff, comprised largely of members of the original team, who from the inception of the work have been responsible for initiating and directing the architectural policy and practice of the Department, will be retained. During the war they will be fully engaged upon the completion of works already under construction, the repair of war damage, works necessary for the proper maintenance of existing welfare facilities and work in preparation for continuing the building programme on an enlarged scale when conditions will permit.

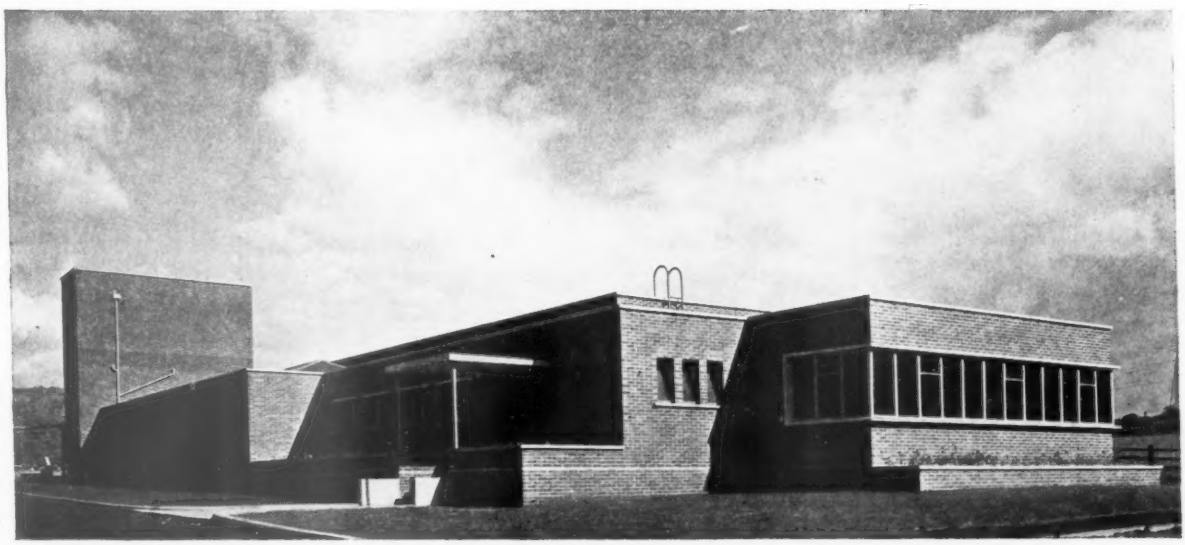
Building work in progress or in active preparation at the end of 1939 amounted to £1,777,000 for pithead baths. Baths had been provided at 345 collieries with accommodation for 430,228 persons. This brought the total grants made since



the inauguration of the fund to £5,684,688. The provision of grants for other welfare facilities including buildings and grants for recreational, health and cultural activities totalled £4,763,000 at the end of 1939, and at the outbreak of war far-reaching developments in this aspect of welfare were envisaged, including the establishment of holiday and recreation and welfare centres, catering for miners and their dependents of all ages.

CONSTRUCTION—All the pithead baths illustrated in this issue are built with the following materials: Walls, brick; reinforcement, roofing, trusses and windows, steel; roof covering, asbestos; floors, asphalt; doors, flush and metal faced; internal walls, tiled and cement glazed dadoes; partitions, glazed bricks.

Above: Ground floor plan of the pithead baths at Clock Face Colliery, Lancashire. The principal accommodation is the same in every pithead bath and is approached and used in the same sequence by the miner when starting work and in the reverse when knocking off. Below: Clay Cross Colliery Baths, Derbyshire, for 768 men. Cost, approximately £14,000.

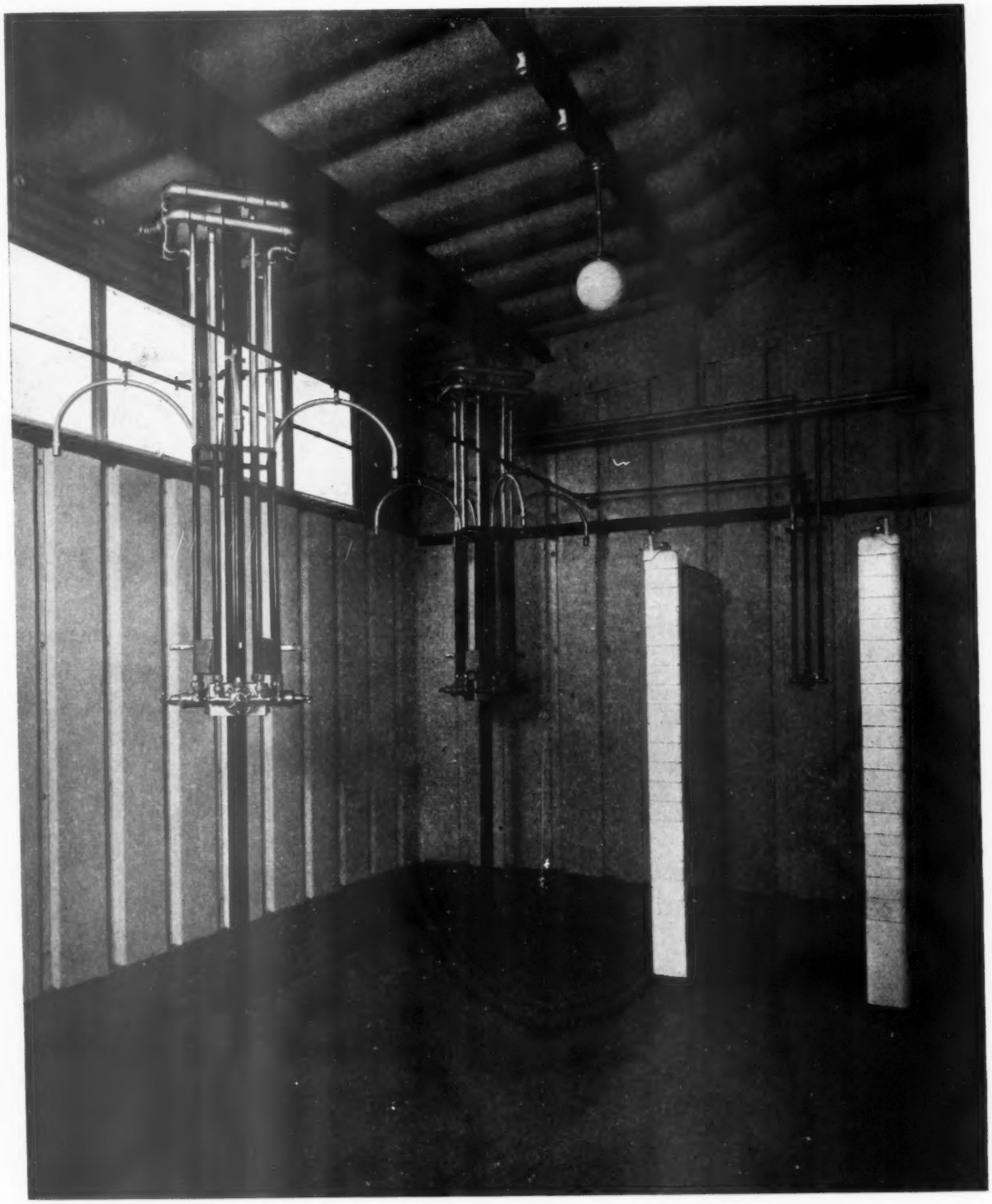


Left: Hopetown Colliery Baths, Lanarkshire, for 400 men and 30 women. Cost, £11,729 10s. 10d.

Below : Baths at Alexandra Colliery, Lancashire, for 216 men. These are built of steel frame, with double-sheeted asbestos walls. Cost, approximately £5,000. Facing page : interior of bathhouse showing showers.

THE ARCHITECTS' DEPARTMENT—The Architects' Department was established under Mr. J. H. Forshaw, M.A., F.R.I.B.A., who was chief architect until he resigned in July, 1939, to take up the appointment of deputy architect to the London County Council. The architects' department is now under the direction of Mr. C. G. Kemp, A.R.I.B.A., who joined the Commission's Staff in 1928, shortly after Mr. Forshaw, under whom he held posts as architect, senior architect and deputy chief architect. The chief quantity surveyor, Mr. H. J. Rayner, F.S.I., who was appointed shortly after Mr. Forshaw at the inception of the work, has been lent temporarily to the Regional Commissioner for London in connection with war damage and Mr. C. J. Bowra, P.A.S.I., is meanwhile acting in his place. The remaining principal members are as follows: senior architects: J. A. Dempster, F.R.I.B.A., and A. J. Saise, A.R.I.B.A.; architects: F. G. Frizzell, A.R.I.B.A., D. D. Jack, L.R.I.B.A., O. H. Parry, P.A.S.I., H. Smith, L.R.I.B.A., W. M. Traylor, F.R.I.B.A., W. A. Woodland, F.R.I.B.A., J. H. Bourne, A.R.I.B.A., and J. W. M. Dudding, L.R.I.B.A.

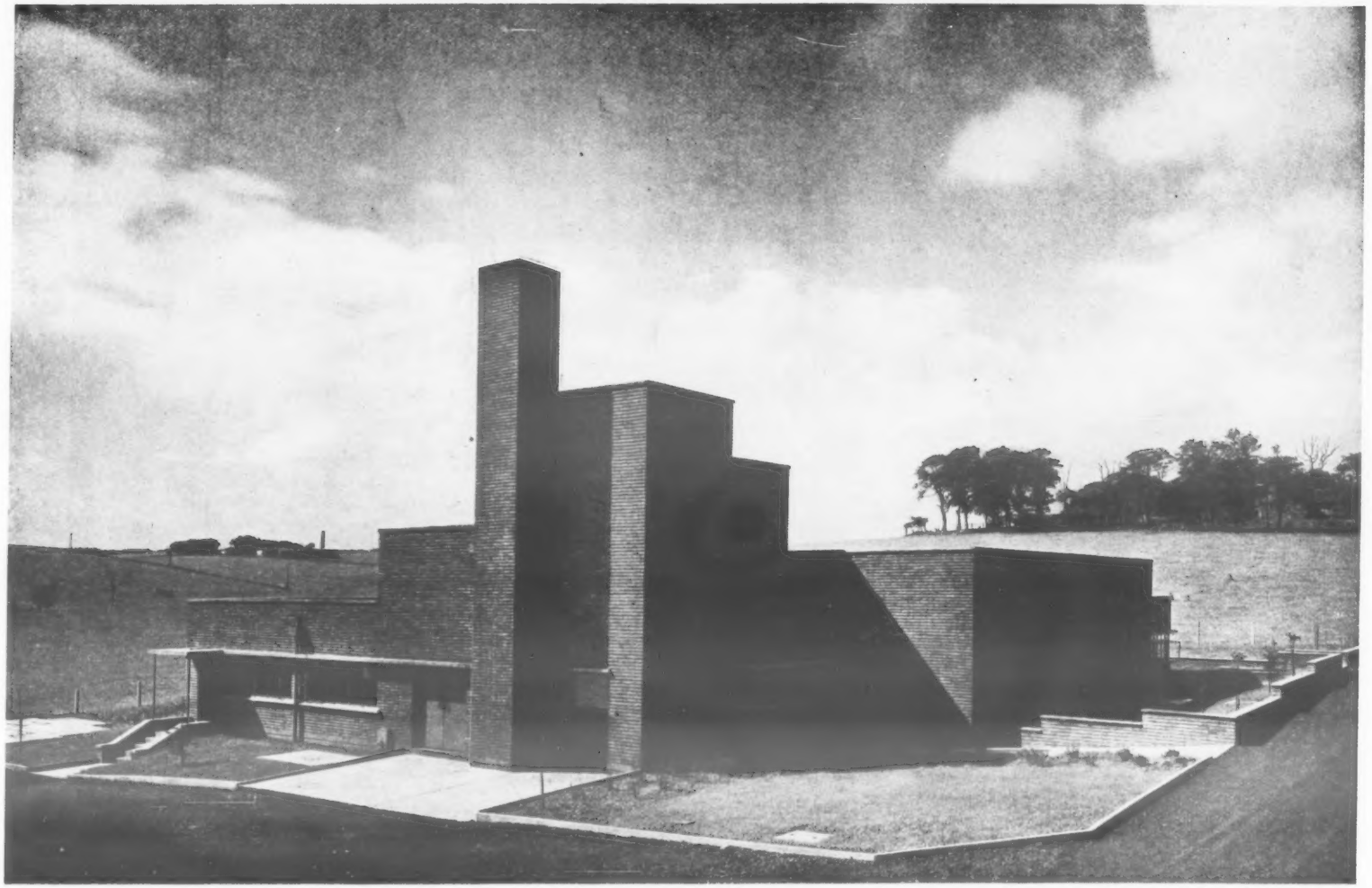
PITHEAD BATHS AND RECREATION BUILDINGS



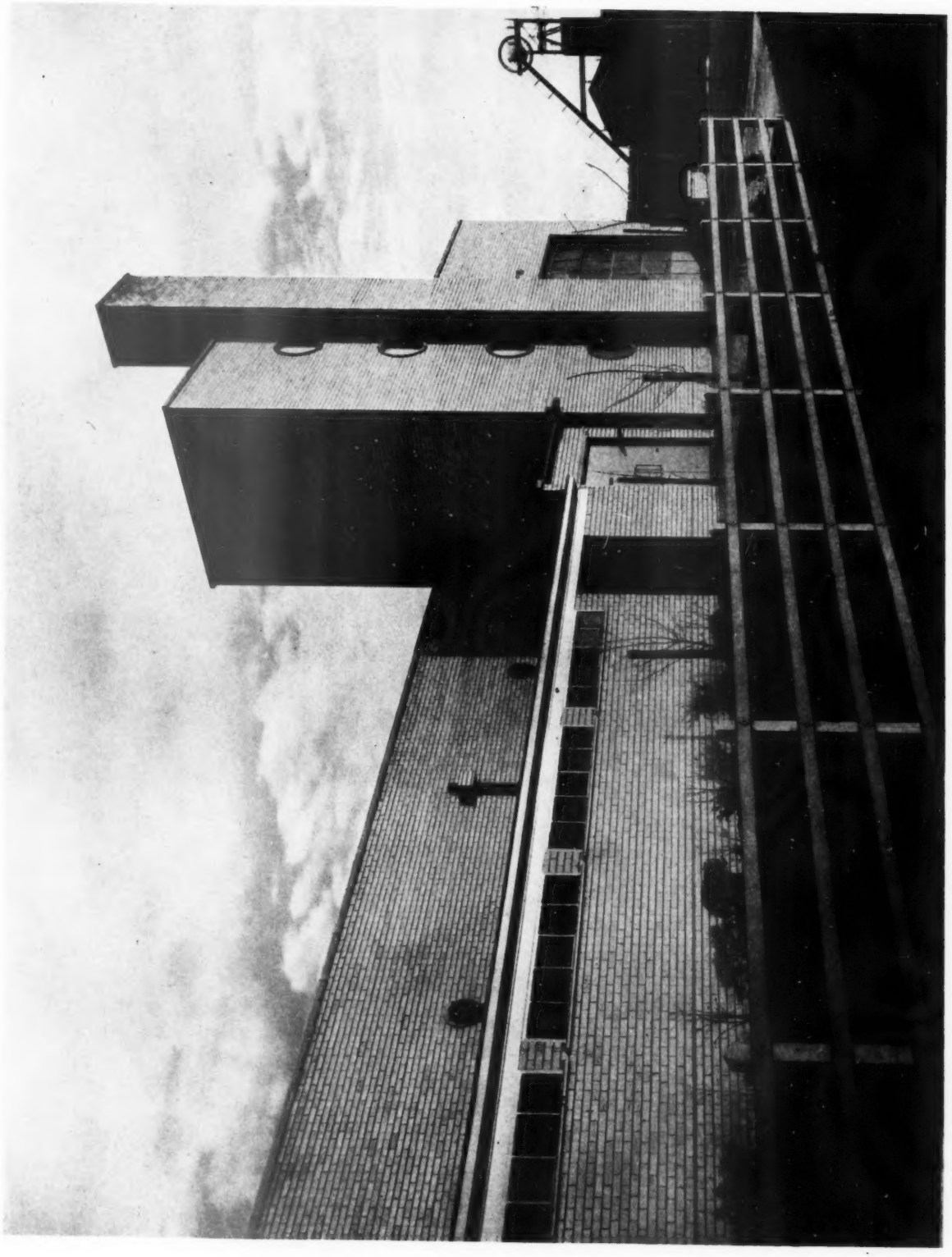
BY THE MINERS' WELFARE COMMISSION

PITHEAD BATHS AND RECREATION BUILDINGS

BY THE MINERS' WELFARE COMMISSION



Wester Auchengeich Colliery Baths, Lanarkshire, for 504 men. Cost, £11,362.



Ravensworth (Shop) Colliery Baths, Durham, for 756 men. Cost, £16,254 11s. 4d.

Above : Canteen at Herbertshire Colliery Baths, Lanarkshire.

Left : Women's canteen and rest room, Lyme Colliery Baths, Lancashire.

For list of sub-contractors for the buildings illustrated see page xviii.

PITHEAD BATHS AND RECREATION BUILDINGS

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ZEISS DYWIDAG CHISARC & SHELL D CONSTRUCTION :

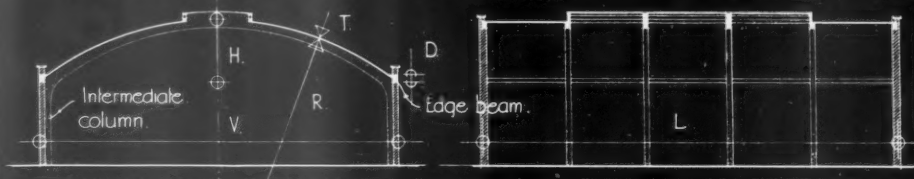


FIGURE 1 : SECTIONS OF BEAM & COLUMN TYPE.

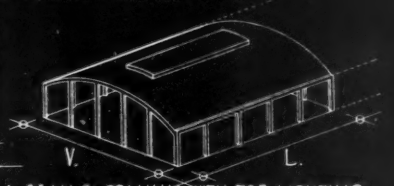


FIGURE 1A : BEAM & COLUMN WITH TOP LIGHTING.

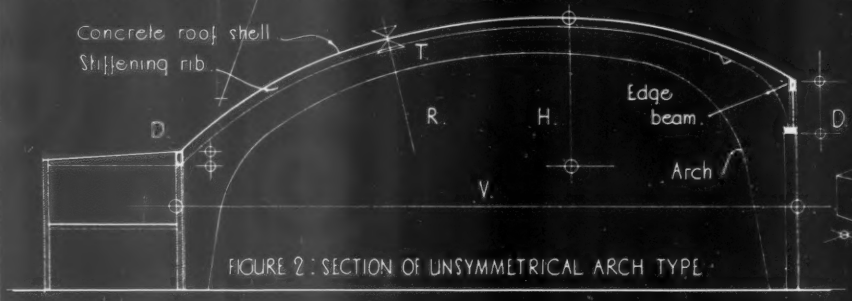
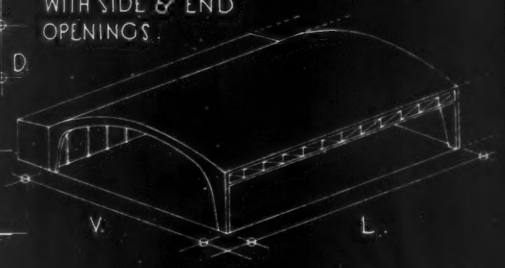


FIGURE 2 : SECTION OF UNSYMMETRICAL ARCH TYPE.

FIGURE 2A : ARCH WITH SIDE & END OPENINGS.



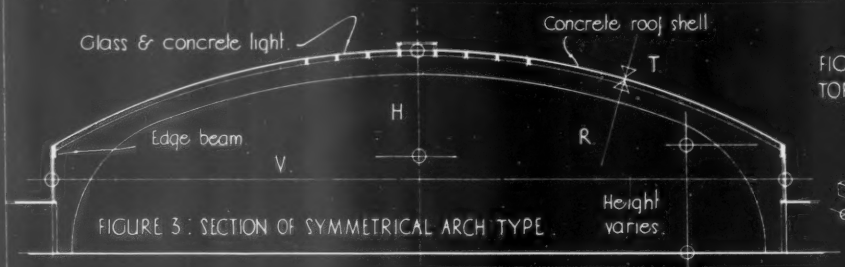
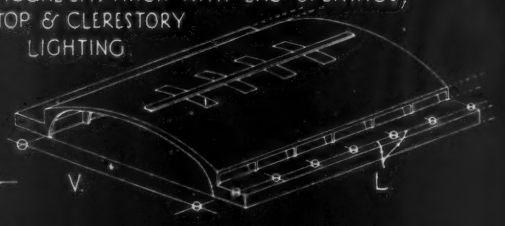


FIGURE 3 : SECTION OF SYMMETRICAL ARCH TYPE.

FIGURE 3A : ARCH WITH END OPENINGS, TOP & CLERESTORY LIGHTING.



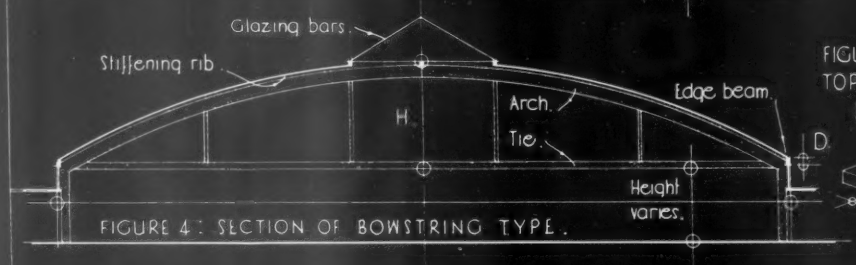
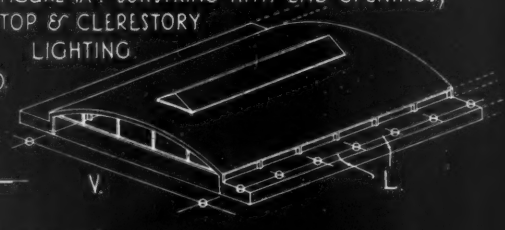


FIGURE 4 : SECTION OF BOWSTRING TYPE.

FIGURE 4A : BOWSTRING WITH END OPENINGS, TOP & CLERESTORY LIGHTING.



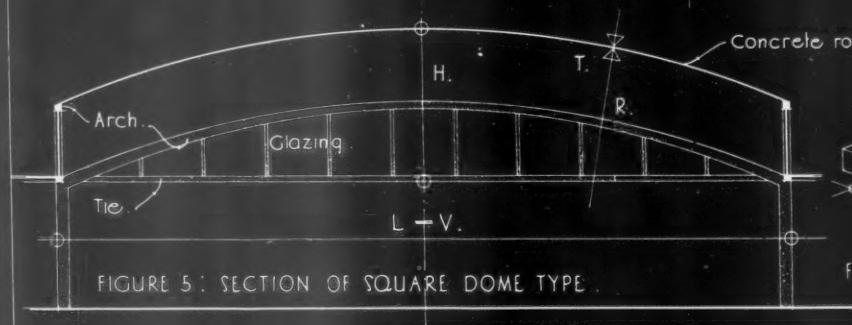


FIGURE 5 : SECTION OF SQUARE DOME TYPE.

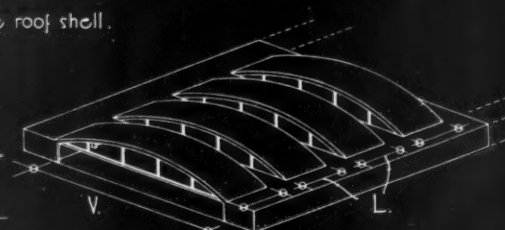


FIGURE 4B : BOWSTRING WITH END OPENINGS, SPANDREL LIGHTING.

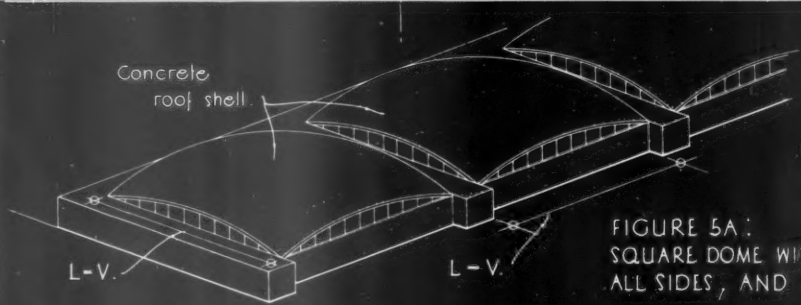


FIGURE 5A : SQUARE DOME WITH CLEAR OPENINGS ALL SIDES, AND SPANDREL LIGHTING.

Issued by Ernest A. Newton, Chartered Architect; Compiled by H.G. Cousins, Chartered Civil Engineer.

INFORMATION SHEET : ROOF CONSTRUCTION : R·C BARREL VAULTS - 3 - LARGE RADIUS.

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

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INFORMATION SHEET

• 820 •

ROOF CONSTRUCTION

Subject: Reinforced Concrete Barrel Vaults and Domes of Large Radius. Zeiss, Dywidag, Chisarc, and Shell "D" Construction.
(British Letters Patent No. 362473.) Egypt Patent Nos. 223/51 and 10/51 and 107/51.

General:

This series of Sheets is designed and intended to give an outline of the application of the many types of roof construction available. It is not intended to give the full working details of the reinforced concrete, which are readily adaptable to the particular problem to be solved. There is a great variety in the shapes and dimensions of the roof surface and of the supporting members, the details of which can be varied to suit the required column spacing and height of the structure and details of the wall fillings.

Each design in this construction includes the roof slabs together with all supporting beams, columns and foundations.

This Sheet is the third of the series and illustrates the dimensions of cylindrical and dome-shaped reinforced concrete vaults of large radius, or those in which the chord (V) is large in comparison with the length (L) of the barrel.

The first Sheet dealt with barrel vaults of small radius and the second Sheet with barrel vaults which are unsymmetrical.

General Design:

The concrete shell slab is not rigidly supported at its springings as is common practice with vaulted roofs. Instead it spans as a beam of span (L) between the end frames which are rigid.

The members at the springing or edge beams act only as tie members. The total height (H) should be at least one-tenth of the span (L), and should be at least one-tenth of the chord (V).

The depth of the edge beam (D) should be one-fifteenth of the span (L) unless intermediate supporting columns are inserted in its length, in which case (D) can be approximately one-fifteenth of such column spacing.

Stiffening ribs are usually required for the shell slabs of vaults of more than 40′ radius. These occur at 10′ to 20′ centres along the arch and may be placed either above or below the slab.

The end frames are of various types. Where no large openings are required in the end walls, they are usually of the beam and column type (see Fig. 1). In other cases they are of open-arch or bowstring types (see Figs. 2-4).

When the width (V) exceeds 60′, it becomes necessary to make the cross-section of the shell slab of elliptical form unless the distance (L) is short.

If openings on four sides are required, the shell slab is curved in two directions. The end frames in this type can be of bowstring type, as shown in Fig. 5, or can be of the portal type, as shown in Fig. 8 of Sheet I of this series.

The details of the connections of the edge beams and end frames with the masonry of the walls can take any of the forms shown on Sheet I of this series.

The following table gives some typical dimensions for various spans of large radius:

Span (L)	Radius (R)	Depth (H)	Width (V)	Thickness (T)	Type
80′ 0″	56′ 0″	11′ 0″	66′ 0″	3″	Figure 1.
112′ 0″	60′ 0″	11′ 0″	68′ 0″	3½″	Figure 1.
165′ 0″	140′ 0″	24′ 0″	120′ 0″	4½″	Figure 2.
200′ 0″	170′ 0″	30′ 0″	150′ 0″	5½″	Figure 2.
42′ 0″	180′ 0″	23′ 0″	170′ 0″	2⅜″	Figures 3 and 4.
65′ 0″	400′ 0″	35′ 0″	300′ 0″	4″	Figures 3 and 4.
60′ 0″	70′ 0″	13′ 0″	60′ 0″	2½″	Figure 5.
170′ 0″	220′ 0″	32′ 0″	170′ 0″	3½″	Figure 5.

Roof Lighting:

Roof lighting may be obtained by forming openings longitudinally or transversely in the barrels or at the crown of the dome-shaped roofs. Clerestory lighting can be provided at the sides as shown in 3A and 4A, or spandrell lighting can be provided through the end frames (see Figs. 4B and 5A). See also Sheet I.

Issued by: Ernest A. Newton, Chartered Architect

Address: Rutherford Chambers, Bow Lane, Manchester, 2

Telephone: Manchester, Central 1021

SOME QUESTIONS ANSWERED THIS WEEK:

★ *ARE building surveyors still reserved at 18 years of age? For architects and surveyors, does the schedule only apply to those who are A.R.I.B.A. or F.S.I.?* - - - Q662

★ *WHICH firms manufacture small surface reservoirs which can be quickly erected in open spaces?* Q664

★ *CAN you supply names and addresses of manufacturers of fire-proof paint?* - - Q665

THE ARCHITECTS' JOURNAL

INFORMATION CENTRE

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

Enquirers do not have to wait for an answer until their question is published in the JOURNAL. Answers are sent direct to enquirers as soon as they have been prepared. The service is confidential; and in no case is the identity of an enquirer disclosed to a third party. Samples and descriptive literature sent to the Information Centre by manufacturers for the use of a particular enquirer are forwarded whenever the director of the Centre considers them likely to be of use.

Questions should be sent by post to—

THE ARCHITECTS' JOURNAL
45 THE AVENUE, CHEAM, SURREY

—but in cases where an enquirer urgently requires an answer to a simple question, he may save time by telephoning the question to—

VIGILANT 0087

The reply will come by post.

Q662

ARCHITECT, DORSET.—*With reference to the correspondence recently printed in the Information Section of your* JOURNAL, *I have been surprised to note that architects have been called up. I understood that they were in a RESERVED OCCUPATION from a low age.*

Does the reserved age for building surveyors—i.e., 18 years upwards—still remain in force? So far as ARCHITECTS AND SURVEYORS are concerned, does the schedule only extend to those who are A.R.I.B.A. or F.S.I., or does it include an architect or building surveyor who can show a bona-fide *claim to such a description?*

The answers to your enquiry are as follows:

1. Architecture is not a reserved occupation.

2. Building surveyors are still reserved from the age of 18 upwards, but, as stated in the answer to Q. 603, those below the age of 23 can be called up if they are required in their trade or professional capacity. They are only fully reserved from the age of 23 upwards.

3. Classification in the schedule depends upon actual employment at time of registration—*i.e.*, upon whether the

person concerned is actually engaged, at that time, in doing the work of a Quantity Surveyor or Architect or Building Surveyor. Evidence has to be produced to bear out this statement, but professional qualifications do not affect the matter.

Q663

ARCHITECTS, NORFOLK.—*We have been consulted by a large firm of wholesale provision merchants who wish advice as to the possibility of rendering the ROOFS over the whole of the buildings PROOF AGAINST penetration of light INCENDIARY BOMBS. The buildings, generally, consist of light steel roof trusses supported on stancheons with brick infillings to walls and either corrugated iron, asbestos or pantile roofs supported on steel purlins. Other roofs are of earlier construction, mainly timber covered with tiles.*

Our clients suggest that these roofs should be covered with 2 in. of fine concrete reinforced with expanded metal or similar material. The problem of obtaining the additional strength necessary for the increased load would, of course, be a difficult one to solve, and we should be very grateful for your advice as to whether, even if carried out, 2 in. thickness of concrete would be sufficient for this purpose.

We imagine that many owners are faced with the same difficulties, and we wonder whether any alternative means are available. Your help in this matter would be greatly appreciated.

Concrete 2 ins. thick cannot be said to be proof against incendiary bombs as A.R.P. Handbook No. 9, " Incendiary Bombs and Fire Precautions " (obtainable from H.M. Stationery Office, London, price 6d.), states that 3½ to 4 in. of *good reinforced concrete* is necessary to give certain protection against penetration by impact.

Unfortunately we cannot suggest any cheap method of making pitched roofs, such as you mention, proof against the penetration of incendiary bombs, but you might like to consider the use of ¾ in. Durasteel 3DF2, made by Durasteel Roofs Ltd., of Oldfield Lane, Greenford, Middlesex. This material weighs 9·5 lb. per square foot and is made in lengths up to 8 ft. It might, perhaps, be fixed between existing purlins and would give protection against 1 kilo bombs. A permit would be required. The cost would be about 3s. 1d. per square foot, and although this would be costly for a large warehouse, it might be used in the more inaccessible positions, where a fire would be particularly difficult to deal with in its first stages.

Q664

ARCHITECT, WALES.—*I am connected with a scheme which is being considered for the storage of an EMERGENCY supply of WATER of approximately 40,000 gallons, in one of the County Institutions, to be used in the event of*

PRICES

BY DAVIS AND BELFIELD, CHARTERED QUANTITY SURVEYORS

THE following table shows the increases in cost over pre-war prices of certain basic materials for each month of 1940. The prices are expressed as a percentage increase over the last pre-war price published in the JOURNAL (a full list of these pre-war prices was published as a supplement in the JOURNAL for January 18, 1940). Readers are advised to file these notes for future use as they are unlikely to be reprinted.

PRICE CHANGES OF BASIC MATERIALS DURING 1940

BASIC MATERIALS	Increases over pre-war prices for 1940 at end of											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
Portland cement	+ 9·8	+ 9·8	+ 9·8	+ 9·8	+18·3	+20·7	+20·7	+20·7	+20·7	+20·7	+20·7	+20·7
2-in. unscreened ballast ...	+17½	+17½	+17½	+17½	+17½	+17½	+21¾	+21¾	+30·4	+30·4	+39·1	+47·8
Fletton bricks (at station) ...	—	—	—	—	—	+ 5·9	+ 5·9	+ 5·9	+10·3	+10·3	+10·3	+11·89
Stoneware drainpipes (British Standard) 2 tons and over	+ 9·4	+ 9·4	+ 9·4	+ 9·4	+ 9·4	+ 9·4	+ 9·4	+ 9·4	+ 9·4	+ 9·4	+18¾	+18¾
Roofing tiles	+ 7½	+ 7½	+ 7½	+ 7½	+12½	+12½	+12½	+12½	+23·0	+23·0	+43¾	+43¾
Steel joists (basic sections) ex mills	+19	+19	+19	+19	+19	+19	+30·8	+30·8	+30·8	+30·8	+47·5	+47·5
Lime greystone ...	+14·3	+14·3	+14·3	+14·3	+19	+19	+19	+19	+19	+19	+25	+25
Sheet lead	+50	+50	+50	+50	+50	+50	+50	+50	+50	+50	+50	+50
Iron rainwater goods and soil pipes	+ 3¾	+12½	+12½	+12½	+12½	+12½	+12½	+12½	+12½	+16	+18	+18
Copper tubes	+23½	+25½	+25½	+25½	+25½	+25½	+25½	+25½	+25½	+25½	+25½	+25½
White lead paint	+21¼	+22¾	+22¾	+22¾	+22¾	+22¾	+22¾	+22¾	+26½	+26½	+26½	+26½
RATES OF WAGES (Central London Area)												
Labourers	+3·18	+6·35	+6·35	+6·35	+6·35	+9·52	+9·52	+9·52	+9·52	+9·52	+9·52	+12·70
Craftsmen	+2·38	+4·76	+4·76	+4·76	+4·76	+7·14	+7·14	+7·14	+7·14	+7·14	+7·14	+ 9·52

Notes on Price Changes during January and February, 1941.

The price increases for basic materials at the end of February remain the same as those given for December, 1940, except for the following, which rose during January:

Portland Cement	..	35·37% (over pre-war prices)
Greystone Lime	..	29·76% (,, ,, ,,)
Copper Tubes	..	27·66% (,, ,, ,,)

Rates of Wages rose by ½d. both on December 1st last and on the 1st February. The rates in the Central London Area are, therefore, 1s. 11½d. for craftsmen and 1s. 6½d. for labourers. This represents an increase of 11·90 per cent. and 15·87 per cent. respectively since pre-war days.

INFORMATION CENTRE

F.S.I.

a breakdown in the mains due to enemy action. Will you kindly furnish me with the names and addresses of firms who manufacture small surface RESERVOIRS of a type which can be quickly erected in courtyards and other open spaces?

Galvanized water storage tanks coupled up into batteries are too expensive for the purpose and canvas dams are not sufficiently durable.

Large circular galvanized corrugated iron water tanks are being considered, but these, again, would prove expensive.

In reply to your enquiry, painted light sectional pressed steel tanks are in general use, and three sources from which they can be obtained are given below.* You will have to be in possession of a licence in order to obtain them, and we believe that delivery will take up to fourteen weeks, although this should be verified from the firms concerned.

We are not aware of any surface reservoirs suitable for your purpose cheaper than these, but it might be worth your while investigating the possibility of building waterproofed brick or concrete reservoirs. So much depends upon the size of the reservoir and local conditions that no indication of the cost can be given here.

If these are too expensive you may have to fall back upon the canvas type, which are reasonably durable; particulars can be obtained from the firms mentioned below.

* Pressed Steel Sectional Reservoirs: *G. A. Harvey & Co. (London), Ltd., Greenwich Metal Works, Woolwich Road, London, S.E.7; F. Braby & Co., Ltd., 352-364 Euston Road, London, N.W.1; Braithwaite & Co. (Engineers), Ltd., 20 King's House, Haymarket, London, S.W.1.* Canvas Reservoirs: *Sportapools Ltd., 34 Oxford Street, London, W.1; Adam & Lane & Neeve, Ltd., Falcon Works, Copperfield Road, London, E.3.*

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ARCHITECT, LONDON.—*Can you tell us one or two names and addresses of manufacturers of fire-proof paint?*

We give below* a list of five manufacturers.

* *Docker Parker, Rotton Park Street, Ladywood, Birmingham; John Line & Sons, Ltd., 214, Tottenham Court Road, London, W.1; The Walpamur Co., Ltd., 35 Rathbone Place, London, W.1; Blundell Spence & Co., Ltd., 9 Upper Thames Street, London, E.C.4; Griffiths Bros. & Co. (London), Ltd., Marks Road, Bermondsey, London, S.E.16.*

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THE BUILDINGS ILLUSTRATED

PITHEAD BATHS (pages 143-149). ARCHITECTS' BRANCH OF THE MINERS' WELFARE COMMISSION. Subcontractors and suppliers included: Etna Brickworks, Auchenlea Brick Co., bricks; Crittall Manufacturing Co., Ltd., Hoskins and Sewell, Ltd., Gardiner Sons and Co., Ltd., Russell Edwards and Co., steel windows; Grip Steel Bar Co., Ltd., Johnsons Reinforced Concrete Engineering Co., Ltd., Liversedge Reinforced Concrete Engineering Co., Ltd., F. A. MacDonald and Partners (Glasgow), Ltd., Ferrocon Engineering Co., Ltd., Matthews and Mumby, Ltd., steel reinforcement; Reid Ferens and Co., Ltd., S. H. Heywood and Co., Ltd., Muir Goodfellow and Co., Ltd., McLennan and Co. (Mansfield), Ltd., Woolman Electrical Contractors, Ltd., R. Algar and Sons, Ltd., T. S. Bell and Co., electrical work; British Challenge Glazing Co., Ltd., Henry Hope and Sons, Ltd., Puttyless Glazing Co., Ltd., W. H. Heywood and Co., Ltd., patent glazing; Lenscrete, Ltd., Girlings Ferro-concrete Co., Ltd., pavement lights; Dunwoodie and Co., Ltd., Shanks and Co., Ltd., Southhook Potteries, Ltd., Adamsez, Ltd., sanitary fittings; Donald Clark and Son, Ltd., Edward Wood and Co., Ltd., Lambhill Ironworks, Ltd., roofing and trusses; Turners Asbestos Cement Co., Ltd., Universa Asbestos Manufacturing Co., Ltd., Permutit Co., Ltd., asbestos roof covering; Brightside Foundry and Engineering Co., Ltd., Young, Austen and Young, Ltd., Hope's Heating and Lighting Co., Ltd., heating and ventilation; Nobel Chemical Finishes, Ltd., J. and D. Hamilton, Ltd., Cement Marketing Co., Ltd., paint manufacturers; W. A. Baker and Co., Ltd., Lion Foundry Co., Ltd., R. N. F. Ramsay and Co., Ltd., ironwork; Parker Winder and Achurch, Ltd., ironmongery; Western Trinidad Lake Asphalt Co., Ltd., Scottish Speedwell Co., Ltd., asphalt; Rubrey Owen and Co., Ltd., Speedwell Gear Case Co., Ltd., lockers; Hoyle Robson Barnett and Co., Ltd., cement glaze dadoes; Venesta, Ltd., flush doors; Flexo-Plywood Industries, Ltd., metal-faced doors; A. Odoni and Co., steel cycle racks; Cox and Co., canteen equipment; Gummers, Ltd., Bell and Smart, Ltd., boot-cleaning machines; S. G. B. (Dudley), Ltd., James Woodward, Ltd., wall tiling and glazed brick partitions; Eric Munday, Esq., signs and lettering; A. L. Hawkins and Co., Ltd., first-aid equipment.