Alphabetical Index to Advertisers

For Appointments (Wanted or Vacant), Competitions Open, Drawings, Tracings, etc., Educational Legal Notices, Miscellaneous, Property and Land Sales—*see* pages xlvi and xlviii.

The New Horizon . . 5

Original Painting by Anna Zinkeisen, R.O.I.

Through earth, sea, and heaven a doom shall be driven,
And, sown in the furrows it plougheth,
As fire bursts from stubble,
Shall spring the new wonders none troweth.

FRANCIS THOMPSON—"SONG OF THE HOURS."

Never in the long history of the world have so many nations been engulfed in war. Never has its misery and devastation so deeply affected so many lives. Never have the warped and sickly minds of bestial men wrought such irreparable harm with their ruthless and wanton cruelties. A doom has been driven which has obliterated the old complacencies for ever.

But the righteous fight against all brutal tyrannies has given to all free peoples a flame-quickened consciousness of the rich opportunities which exist for universal progress and understanding. Spreading like fire over stubble is a growing sense of individual responsibility; a unity of purpose that peace and liberty must be ensured for this and future generations.

When the dark and menacing clouds of war have receded from the stark and riven earth, enlightenment will be sown to emerge with a more intense appreciation of the manifold benefits which science can bestow upon an unshackled humanity.

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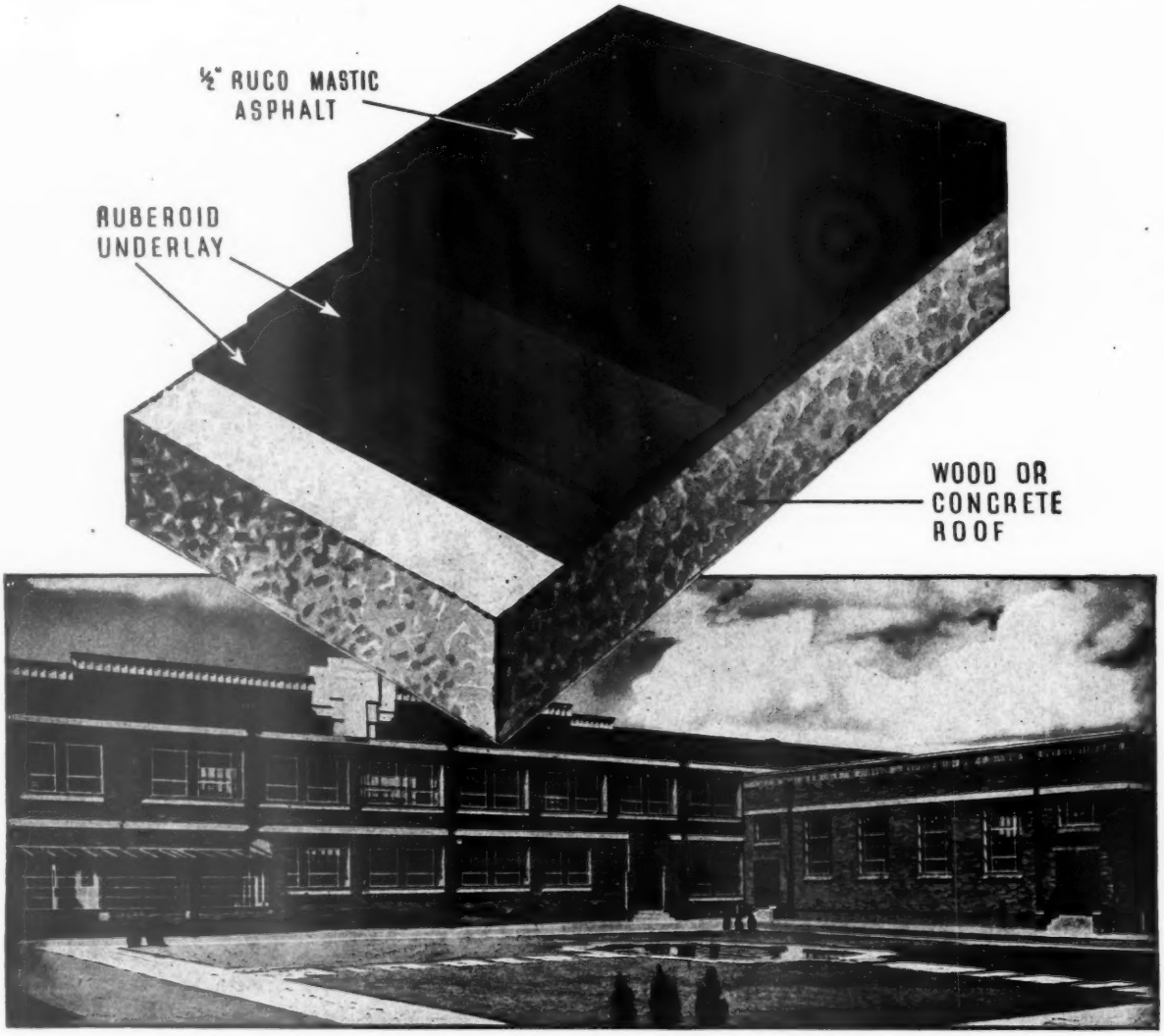

Grammar School, Mansfield.
Architects: Messrs. Cook, Howard & Lane, Mansfield.

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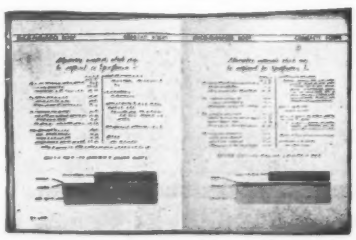

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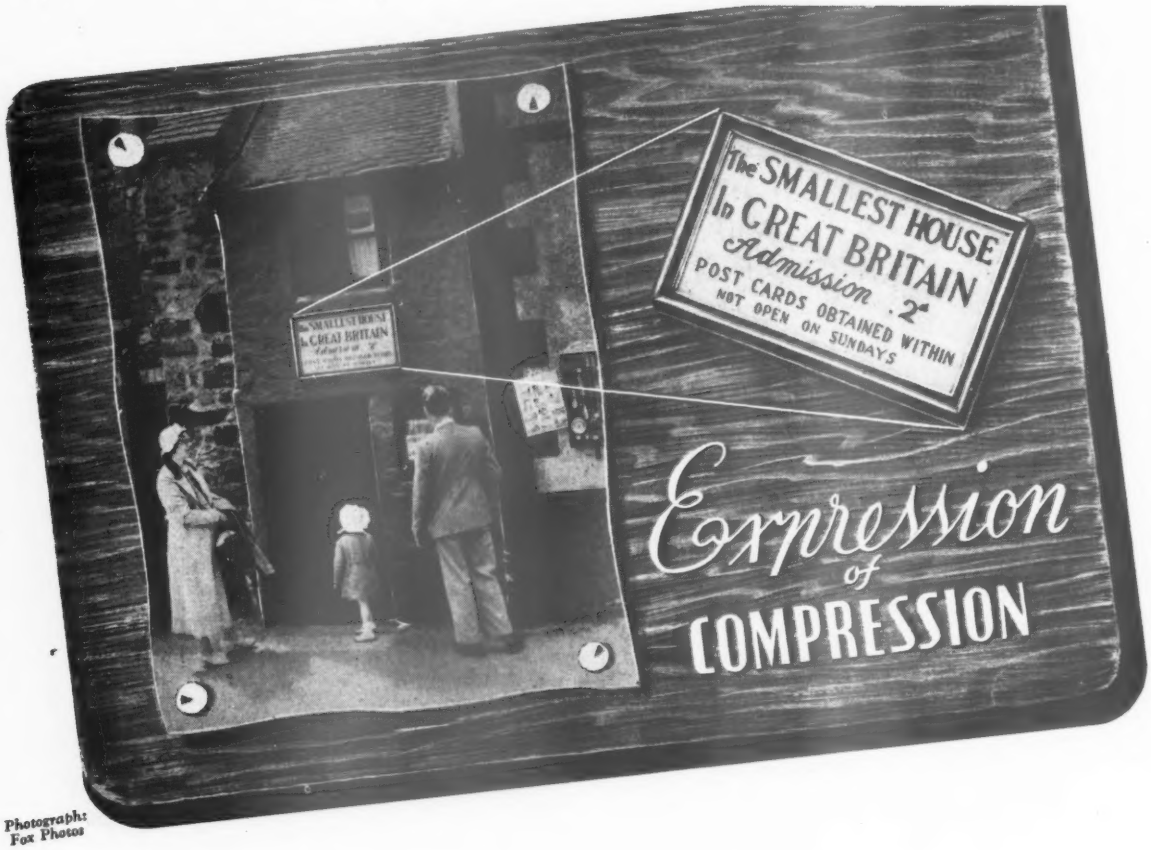

Photograph: Fox Photos

THERE may be some who will criticise the design of this house from an Architectural point of view, yet it has maintained its status quo for many years.

Permanency is — after all — a virtue, whether in past or future.

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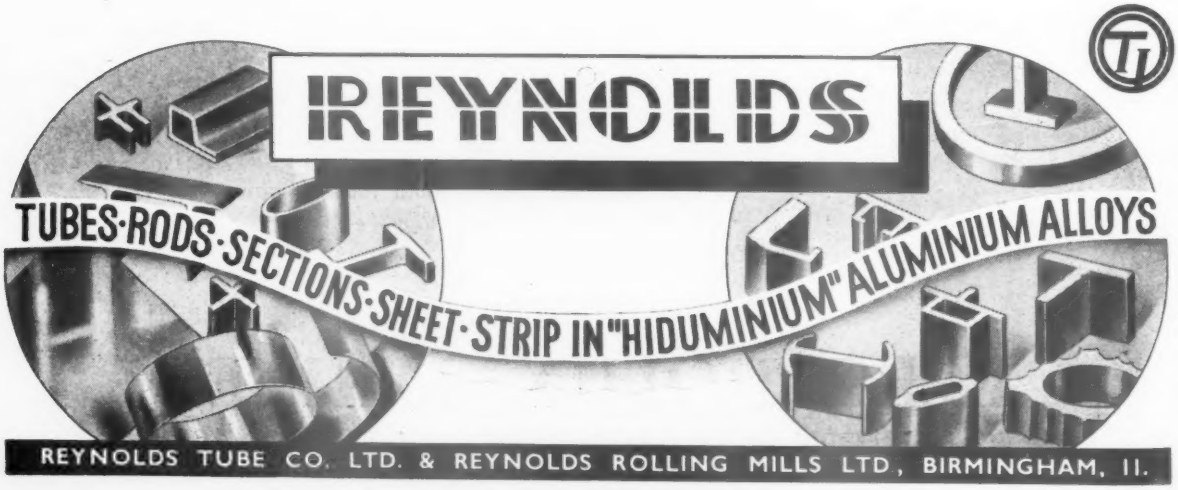

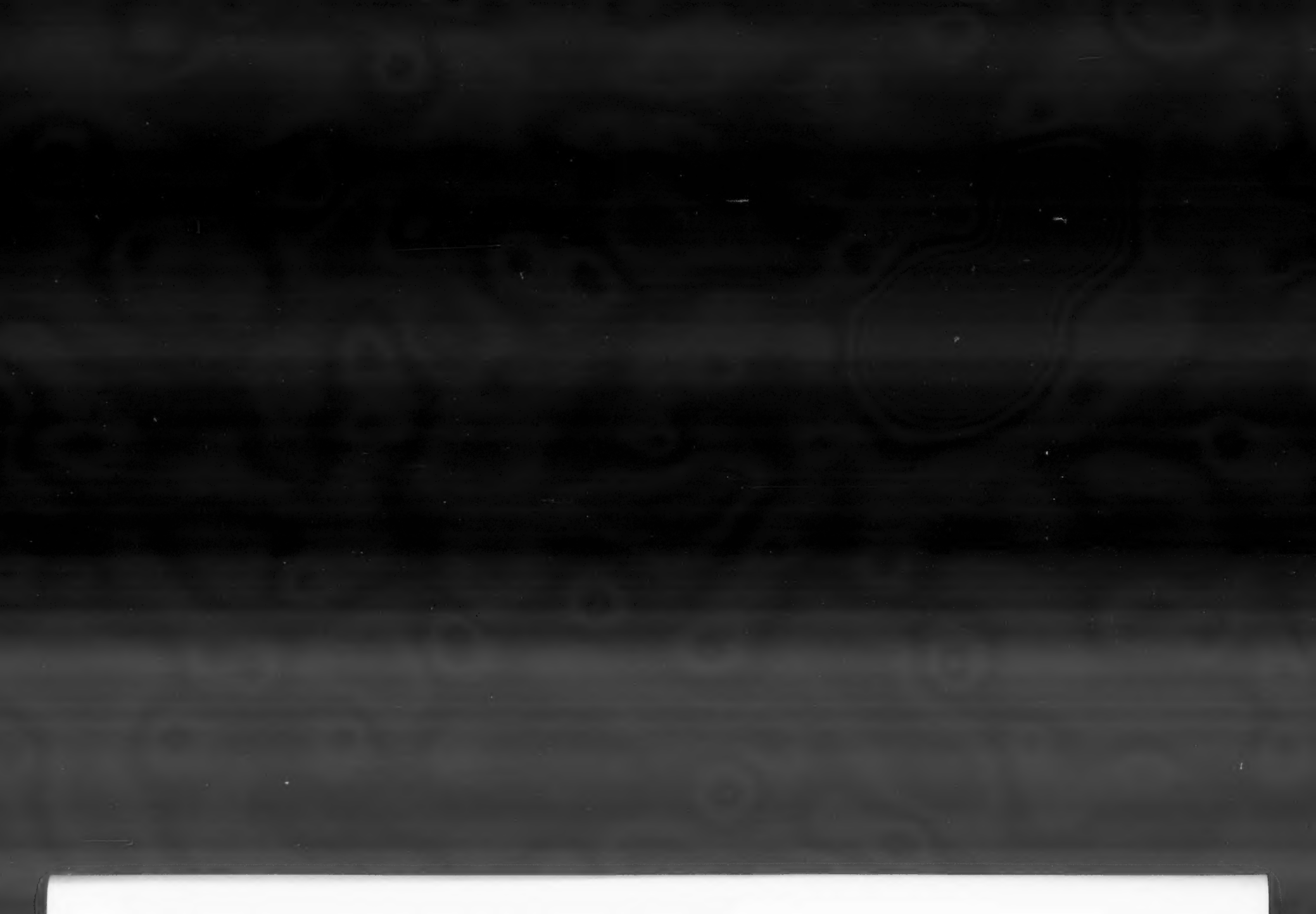

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IBECO WATERPROOF KRAFT PAPER

In common with every other periodical this JOURNAL *is rationed to a small part of its peace-time needs of paper. Thus a balance has to be struck between circulation and number of pages. We regret that unless a reader is a subscriber we cannot guarantee that he will get a copy of the* JOURNAL. *Newsagents now cannot supply the* JOURNAL *except to a "firm order." Subscription rates: by post in the U.K. or abroad, £1 15s. 0d. per annum. Single copies, 9d.; post free, 11d. Special numbers are included in subscription; single copies, 1s. 6d.; post free, 1s. 9d. Back numbers more than 12 months old (when available), double price. Volumes can be bound complete with index, in cloth cases, for 15s. each; carriage 1s. extra. Goods advertised in the* JOURNAL, *and made of raw materials now in short supply, are not necessarily available for export.*

DIARY FOR MARCH APRIL AND MAY

Titles of exhibitions, lectures and papers are printed in italics. In the case of papers and lectures the authors' names come first. Sponsors are represented by their initials as given in the glossary of abbreviations on the front cover.

B.B.C. HOME SERVICE. Wireless Discussion. *Homes for All.* Chairman, G. O. Slade, K.C. First of eight discussions. 9.25 p.m. March 21. Second discussion. 7.40 p.m. March 24. Third discussion. 7 p.m. March 26. Fourth discussion. 7.40 p.m. March 27. Fifth discussion. 9.25 p.m. March 28. Sixth discussion. 7.40 p.m. March 31. Seventh discussion. 7 p.m. April 2. Eighth and last discussion. 7.40 p.m. April 3.

BILLINGHURST. *Living in the Country Exhibition.* (Sponsor, H.C.) MAR 16-APRIL 8

BIRMINGHAM. *Homes They Come From Exhibition.* (Sponsor, HC.) MAR. 27-APRIL 28

BOURNEMOUTH. *TCPA Conference.* MAR. 18

Your Inheritance Exhibition. At Y.W.C.A. (Sponsor, HC.) MAR. 21-28

BRISTOL. W. T. Creswell, K.C. *The Powers and Obligations of the Quantity Surveyor.* At the Grand Hotel, Broad Street, Bristol. (Meeting also open to members of Allied Professions). Admission by ticket only on application to the Chairman, V. Mace, 13, Hengrove Road, Knowle, Bristol, 4; the Hon. Secretary, A. Weeks, 13, Glebe Road, Bristol, 5; or any member of the Committee. (Sponsor, Institute of Quantity Surveyors.) 3 p.m. APRIL 1

CHISWICK. *When We Build Again. Exhibition and Film.* At the Town Hall. (Sponsor, TCPA.) MAR. 16-18

DAGENHAM. *Homes to Live In Exhibition.* At South-East Essex Technical College. (Sponsor, BIAE.) MAR. 16-25

DERBY. *Homes to Live In Exhibition.* At the School Museum. (Sponsor, BIAE) MAR. 16-APRIL

DIDCOT. *Twenty Women at Home Exhibition.* (Sponsor, HC.) MAR. 25-APRIL 1

HULL. *Display of Films on Various Industries in which Design plays an Important Part.* At the College of Arts and Crafts, Hull. (Sponsor, Group for the Encouragement of the Arts and Civic Design). 3.30 p.m. and 6 p.m. MAR. 22

LONDON. *Exhibition of Drawings illustrating Suggestions for the Replanning of the City of London.* By Kenneth Lindy and Winton Lewis. At 75, Eaton Place, S.W.1. (Sponsor, IAAS.) 10 a.m. to 5 p.m.; Saturdays, 10 a.m. to 1 p.m. MAR. 16-18

Dr. Kathe Liepmann. *The Journey to Work.* At 13, Suffolk Street, S.W.1. (Sponsor, HC.) 1.15 p.m. MAR. 21

R. S. F. Simson. *The Work of the Haywards Heath Housing Society.* At 13, Suffolk Street, S.W.1. (Sponsor, HC.) 1.15 p.m. MAR. 28

Professor C. H. Reilly. *Planning London.* At AIA, 84 Charlotte Street, W.1. 7.30 p.m. MAR. 29

Prefabrication. At an informal meeting at the RIBA on April 4, at 5.30 p.m. G. A. Jellicoe will open a discussion on *Prefabrication.* He will be followed by Richard Sheppard and A. Pott, of the Building Research Station. The meeting will then be open for general discussion. APRIL 4

Reconditioning England Exhibition. At St. Martin's School of Art, 109, Charing Cross Road, W.C.2., by fourteen societies interested in the preservation of beautiful and historical buildings. The exhibition is intended to show how many of these buildings have been reconditioned so that their external appearance is not spoilt but their internal arrangements altered to suit some form of modern use. Lectures are to be given in the afternoons. APRIL 8-22

AA Nomination of Officers and Council for Session 1944-5. At ordinary general meeting at 34-36, Bedford Square, W.C.1. 6 p.m. APRIL 18

LOWESTOFT. *Twenty Women at Home Exhibition.* (Sponsor, HC.) MAR. 28-APRIL 1

MIDDLESBROUGH. *Rebuilding Britain Exhibition.* At the Public Library. (Sponsor, BIAE.) MAR. 18-31

MOLD, FLINTSHIRE. *Twenty Women at Home Exhibition.* (Sponsor, HC.) MAR. 16-APRIL 18

Living in the Country Exhibition. (Sponsor, HC.) MAR. 16-APRIL 16

RISCA, MONMOUTH. *Octavia Hill Exhibition.* (Sponsor, HC.) MAR. 16-31

SOUTHEND. *Rebuilding Britain Exhibition.* At the Municipal College. The exhibition will be opened by Clough Williams-Ellis at 3 p.m. on March 22. (Sponsor, BIAE.) MAR 22-APRIL 5

THETFORD. *Twenty Women at Home Exhibition.* (Sponsor, HC.) MAR. 16-31

NEWS

THURSDAY, MARCH 16, 1944
No. 2564. VOL. 99

Though no feature in the JOURNAL *is without value for someone, there are often good reasons why certain news calls for special emphasis. The* JOURNAL'S *starring system is designed to give this emphasis, but without prejudice to the unstarred items which are often no less important.*

★ *means spare a second for this it will probably be worth it.*

★★ *means important news, for reasons which may or may not be obvious.*

Any feature marked with more than two stars is very big building news indeed.

Directly the war ends UTILITY FURNITURE SHOULD BE REPLACED by Standard furniture.

This is urged by the Furniture Industry Post-war Reconstruction Committee. In its first interim report the Committee states: Standard furniture should be of sound quality, designed for peace-time requirements. Like utility, it should be free of purchase tax, but subject to control of specification and price.

This is A GREAT DAY FOR THE BUILDING INDUSTRY, said Mr. Leslie Wallis, President of BINC.

Mr. Wallis was extending a welcome to the newly formed Ancillary Services Group of BINC at its first meeting. He said: It is a great day for the building industries in that the representatives of various ancillary services are meeting for the first time as part of the organized building industries. The group principle adopted by BINC means that no section can dominate the others, but that all sections have an equal status and meet together as a team. The building industries have one object, to produce the best possible buildings at a low cost, and the achievement of this will depend on full co-operation between the ancillary services and the other sections of the industry. The establishment of the group as a part of BINC will be of benefit to the whole industry and to the public. The meeting was attended by representatives of BEDA, the National Gas Council of Great Britain and Ireland, the National Association of Lift Makers, and observers attended from the Telephone Development Association.

from AN ARCHITECTS' *Commonplace Book*

ST. PETERSBURG PARADOX. [*From* Valse Des Fleurs : A Day in St. Petersburg and a Ball at the Winter Palace in 1868, *by Sacheverell Sitwell* (Faber & Faber)]. In the Nevski Prospekt the spectacle is such as could not be imagined by those who have not seen it. A street three miles long and leading from the Champs Elysées to Whitechapel or Mile End Road. Down at the far end, which tails off as the crow flies, towards Moscow, the buildings, the people, and even the colour of the sky are Asiatic, in the extent to which that word means wars and plagues and barbarian invasions. The first suburbs of another and an endless world, all plains and distance. Churches and synagogues, in plenty, help this illusion by their tawdry architecture. It could be thus all the way from Petersburg to Peking. In the other direction, towards the Neva, we begin to pass great porticos and palaces. And the colonnade of the Kazan cathedral, a semicircle of columns, barbarian echo of the Roman travertine, but which, like the spire of the Admiralty, is in sign of St. Petersburg. The painted shop signs, for those who cannot read, have given place to gilt lettering, dressmakers, jewellers, hairdressers. In one window the latest crinolines from Paris are displayed; or hung up in bunches like bright bird cages above the doors, all in the flaring gaslight as we glide past over the snows.

★

A motion that the City of London Improvements and Town Planning Committee should be instructed to make a statement concerning the CITY OF LONDON PLAN has been passed by the Court of Common Council.

The motion, carried by a large majority, was moved by Captain Alfred Instone in view of the conflicting Press reports regarding the non-publication of the City plan. He pointed out that last November Mr. C. W. Dennis, chairman of the committee, stated that the report was in the hands of the printers and that the presentation of the scheme depended on the rate at which finished drawings could be prepared. That statement gave general satisfaction and was thought to mean publication within a few weeks. On February 14, however, an interview was given to a newspaper by a colleague, who was in a position to speak, to the effect that fear of land speculation was holding up publication. No denial had been made, and he could not reconcile the statement with what the Court was told by the chairman of the Improvements and Town Planning Committee. Mr. H. S. Syrett urged Captain Instone not to take too much notice of what appeared in the newspapers or of the pundits of Fleet Street. Everything possible was being done to bring out the report. The committee was not waiting for any decision by the Government. Mr. Fred Gillett, as the member who made the statement to a friend in Fleet Street, said that he only communicated what had been stated many times in the Court.

★

In the first two years after the war ends THREE HUNDRED THOUSAND HOUSES are to be built in addition to many emergency homes.

At the close of the first year it is hoped that 100,000 houses will be completed or under construction. This was revealed in the Commons on March 8 by Mr. Willink, Minister of Health, who pointed out that the primary task is to meet the urgent needs of those who have no homes of their own. He said : These cannot be fully met, or met with sufficient speed, by building new houses of permanent construction. In addition, we shall have to undertake a substantial amount of emergency housing, both by adapting existing buildings and by providing temporary accommodation of various kinds. The Government has decided to introduce temporary legislation extending the present scope of housing subsidies so as to include dwellings built to meet general needs. Local authorities will be enabled to buy in advance land required for these housing operations, using compulsory powers if necessary. Parliament will be asked to empower the responsible Ministers to confirm compulsory purchase orders for the acquisition of land without holding an inquiry. I am to-day inviting representatives of the Associations of Local Authorities and of the LCC to meet me at an early date to discuss the arrangements for housing subsidies. This programme will cover Scotland as well as England and Wales. Mr. George Hicks said that it was the view of the Government that prefabrication could be used for either temporary or permanent houses. Work on foam slag houses was in progress and the first of them should be available for inspection by about the middle of May this year. (See this week's leading article.)

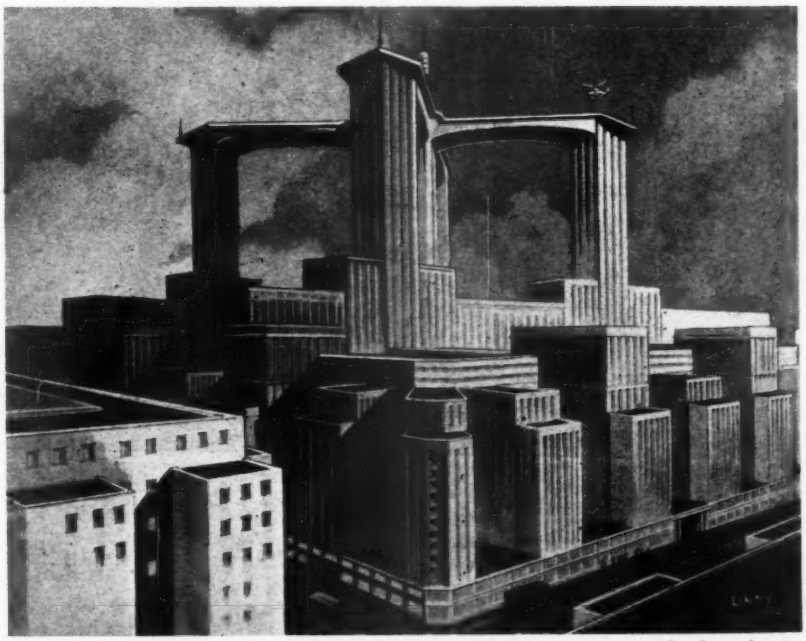
In rebuilt towns, fewer but BETTER PUBLIC HOUSES will be one of the aims of a new Licensing Planning Committee.

The establishment of the Committee is recommended by a Home Office Committee in a report published as a White Paper. The report commends present-day trends in public-house development—plenty of seats and tables, the sale of food and light refreshments, and, where appropriate, provision of gardens and bowling greens. Observations on such matters as architecture, siting, and inn signs, laid before the committee by the Royal Fine Art Commission, are quoted approvingly. The Home Office Committee, of which Mr. John Morris, K.C., is chairman, has been at work since August, 1932. There are minority reports by Mr. Frank Hunt, Sir Miles E. Mitchell, and Alderman F. H. Jones.

★

The LCC programme provides for starting work on SIXTEEN THOUSAND FIVE HUNDRED HOUSES in the first year after the war.

Presenting the Budget at a mee ing of the LCC, Mr. F. C. R. Douglas, chairman of the Finance Committee, said the estimates provided for £2,000,000 for contingencies, £1,250,000 more than last year. He considered this provision necessary in case a change in the war situation should enable substantial progress to be made in housing.



Liverpool Street Station. From an exhibition of drawings illustrating a suggestion for the replanning of the City of London by Kenneth Lindy and B. A. P. Winton Lewis, at the IAAS, 75 Eaton Place, S.W. A critique of the exhibition will appear in our next issue.

V.C. President of the ISE

Major A. H. S. Waters, V.C., the recently elected President of the Institution of Structural Engineers, held the same office ten years ago at the time the Institution was granted its Royal Charter of Incorporation by King George V. The youngest son of the Rev. Richard Waters, United Methodist Minister, the new president was born in 1886 at Plymouth, where he was educated and received his early professional training as a consulting engineer. An officer in the R.E.'s in 1915, he later commanded a field company. For a time he was C.R.E. in charge of the construction of defences in the Army battle zone in the northern half of the Ypres sector. In 1917 he was awarded the M.C., in 1918 the D.S.O., and in 1919 the V.C. Since 1919 he has practised in Birmingham as a consulting engineer.

★

Dr. R. E. Stradling has been appointed to the newly created position of CHIEF SCIENTIFIC ADVISER TO MOW.

Dr. Stradling will retain his post of Chief Adviser in Research and Experiments in the Ministry of Home Security. The new appointment has been made by MOW with the concurrence of the Minister of Home Security. It is designed to secure the greatest possible measure of co-ordination between scientific knowledge and research on the one hand, and the practical development of building technique on the other. Dr. Stradling was before the war Director of the Building Research Station of the Department of Scientific and Industrial Research.

★

The RIBA announce with regret that owing to the fact that SIR IAN MACALISTER has met with an accident it has been found necessary to postpone the presentation which was to have taken place on March 21. When Sir Ian has recovered another date will be arranged.

The Forestry Commission proposes to organise a FORESTRY CORPS OF EX-SERVICE MEN.

So announced Lord Croft in reply to a debate on forestry problems in the House of Lords. The corps, of 25,000 to 30,000 demobilized men would work in the forests and on road making, would be housed in camps, and be available for work both in State forests and private woods. Lord Croft said: It is suggested that the men shall be engaged for six months in the first instance, with provision for release of any man who secures suitable civil employment at any time. Work done on private estates will be paid for by the owners. The plan is still under consideration. Forestry is intended to take a very real place in reconstruction and will be of an imposing character, ranging up to some 5,000,000 acres as an ultimate aim. The Commission has been instructed to increase nursery stocks and to proceed with land acquisition.

Under the will of the late Mrs. William Heelis (Beatrix Potter) is announced THE GREATEST GIFT EVER MADE TO NT in the Lake District.

Her bequests will increase the properties actually owned by the Trust in the Lake District from about 14,500 acres to over 18,400 acres. The new properties include Penny Hill sheep farm, adjoining the Trust's holding in Eskdale, and farms, woods and cottages at Coniston, Skelwith, Little Langdale, Hawkshead and Sawrey, and also Troutbeck Park sheep farm at the head of the Troutbeck Valley, Westmorland. The Trust hopes that at some time not yet settled Hill Top Farmhouse, where Beatrix Potter lived and wrote many of her books, will be arranged (in collaboration with Mr. Heelis) as a permanent memorial to her and some of the original water-colours which illustrated her books preserved and exhibited there.

HOUSING PLUS PLANNING

FOLLOWING Lord Portal's recent statements on post-war housing in the Lords in February* two further advances on this front were made last week. First, a circular† was issued jointly by the Minister of Health and the Secretary of State for Scotland to all the 1,300 local authorities informing them of the Government's housing proposals for the first two years after the end of the war in Europe, and secondly, Mr. Willink, the Minister of Health, made a statement on the same matter in the Commons.

"The Minister of Works," he said, "has already outlined the preparations that are being made in the sphere of temporary housing. The object of this statement is to indicate the lines on which the Government propose to proceed, simultaneously, with the construction of new houses of a permanent type. Both types, the permanent and the temporary, are complementary parts of a single Government policy for providing the largest possible number of new homes during these first two years."

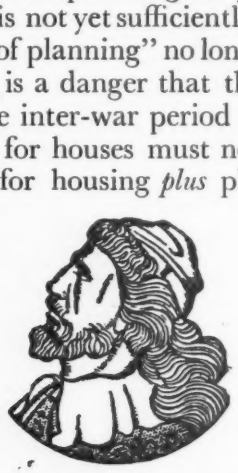
To allow local authorities to make an early start on the new permanent houses, temporary legislation will extend the present scope of housing subsidies to include dwellings to meet "general needs." (Since 1933 these subsidies have been paid only for rehousing slum dwellers, for abating overcrowding and for housing agricultural workers). Local authorities will be able to buy in advance land required for these housing operations, using compulsory powers if necessary. "Parliament will be asked to empower the responsible Ministers, as after the last war, to confirm compulsory purchase orders for the acquisition of land." Preliminary preparation will be based on the assumption that, so far as building resources permit, 100,000 permanent houses will be completed or under construction by the close of the first year after the end of the war in Europe, and a further 200,000 by the close of the second year. These decisions cover Scotland as well as England and Wales.

How will these 300,000 houses affect planning? The view of MOH is expressed in the circular sent to local authorities, as follows: "It is not the intention at the present time to sanction the purchase of the large areas of land required for a long-term housing programme. These suggested purchases must be deferred pending decisions on the major questions of planning which are still under consideration. Local authorities, will, however, now be able, without prejudice to these considerations, to acquire as much land as is required for proposals which they are likely to be able to put in hand for meeting urgent needs in the two years after the war."

It should be more generally realized, however, that housing and planning cannot be treated as separate activities. 300,000 new houses may not seriously affect long-term planning but a series of similar unrelated activities in house building most

*See A. J., February 17, pp. 129-130. †See A. J., March 2, pp. 163-164.

certainly will. Housing and planning are part and parcel of the one activity of providing satisfactory living conditions, and cannot be considered as unrelated functions. Industrial location, the key to planning, should, for instance, not be conditioned by the location of housing, but *vice versa*. Housing before planning simply means that the tail wags the dog. This is not yet sufficiently understood. Until "the major questions of planning" no longer remain "still under consideration," there is a danger that the unco-ordinated piecemeal building of the inter-war period will continue. The urgent need and drive for houses must not be allowed to obscure the greater need for housing *plus* planning.



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NOTES & TOPICS

IS A TANK A STRUCTURE?

I like reading the law reports. They run so true to form. Take, for instance, the case of *Hobday v. Nicol*, or when is a structure not a structure.

★

Apparently Mr. Nicol had erected along the bank of a river, on land he owned, some tanks filled with earth and hard core. Mr. Hobday was the clerk of the local catchment board and the board, as they are entitled to do under the Land Drainage Act 1930, had made bye-laws prohibiting the erection of "structures" along the bank of a main river, unless its consent was first obtained. Mr. Nicol's land did abut on a main river and he had not obtained the consent of the board before filling the tanks and putting them in position. But were they structures? The local magistrates said not. The Divisional Court inclined to the view that they were. As Mr. Justice Humphreys said, they were obviously structures within the ordinary acceptance of the word, but were they structures within the meaning of the bye-law? The case was remitted back to the local justices for that important point to be determined.

★

My sympathies are with the catchment board. Mr. Nicol's tanks seemed to have been designed to protect his own stretch of land, but the whole purpose of catchment boards is to devise comprehensive schemes for a whole river and one structure, injudiciously placed, may cause an infinity of damage elsewhere along the river. But the case is also of interest as a reminder that planning needs co-ordination. We sometimes forget that catchment boards, and suchlike bodies, not only have important functions but also important powers. Since the areas controlled by catchment boards are almost invariably much bigger than those of most town and country planning authorities, the need for a Central Planning Authority is all the more evident.

PLEASUREDOME DEVELOPERS INC.

Asked to describe in one sentence the difference between Great Britain and the United States, D. W. Brogan once replied: "Great Britain is the country where real estate is *not* news." To-day, unfortunately perhaps, this is not so true as it was before the war. However emaciated the pages of our contemporary newspapers may be, Property seems to manage to hit them pretty frequently in one way or another. Nor does the subject always make cheerful reading.

★

A few weeks ago, for instance, a Sunday newspaper reported that some Birmingham business men had so much enjoyed their weekend at a seaside resort that they had thereupon formed a syndicate to "develop" the place after the war. Within a few days they had bought the larger hotels and other property in the town and announced their plans for turning it into a high-class pleasure resort.

★

This news caused some concern among the residents of the place, and to re-assure them, the syndicate sent a Public Relations Officer to tell them at a meeting that their new overlords were not just out to make money, that the town would not be vulgarised by cheap attractions, and that "undesirable visitors" would be discouraged. (The operative word here, of course, is "undesirable." To many people perhaps there is nobody more undesirable than a Miami-minded real estate man).

★

Next comes the news, reported in a daily newspaper, that a group of London business-men is proposing to acquire a large stake in another area, which, in their opinion, will be a little gold mine after the war as a tourist centre. The reactions to this, of what is left of its population, are not yet known. There may, of course, be nothing to fear from this sort of thing, but the possibilities opened up are disturbing.

TRAGEDY TO THE TRADE

Only major tragedy is noticed outside the trade in which it occurs. While you don't have to be a sailor to be moved deeply by the sight of a sinking ship, a burst dam is only a sorry sight to a civil engineer and a field of poppies distresses nobody but a farmer. As for buildings in distress—well, only a few cranks bother about them. True, most buildings sink imperceptibly into noble ruins or are discreetly removed behind forests of picturesque scaffolding. Sudden disappearance was unfamiliar till the blitz and even then most people were too busy to record their reactions to the sight of a collapsing structure.

★

Perhaps therefore it was largely unfamiliarity which made the

recent newsfilm of the bombing of Monte Cassino monastery (for one architect at least) so intensely poignant. For what seemed minutes it was held by a dramatically still camera, poised with its pinnacles and battlements against a hot dark sky filled with the drumming of bomber engines—and then in an inky spouting flash it was gone, and the dust and smoke of the explosion towered and drifted up to blot out the vapour trails across the sky. It was a fearful, sickening sight.

★

But Monte Cassino monastery with its magnificent Baroque basilica is not the only lovely building which has been destroyed by war, and its loss is trivial compared with each one of the many personal little tragedies which take place daily beneath its walls. Its disappearance possibly seems more shocking and dramatic to the *embusqué* ignorant of compensations and with leisure to reflect, than to the man on the site.

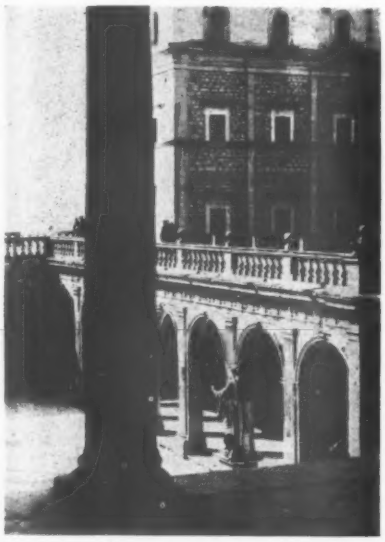
★

Also, to watch it vanish was in a way less distressing than to watch those superficially harmless items of the contemporary newsfilm—the lorries moving up, the cheery tank crew brewing tea against a ruined wall—little scenes which can be almost unbearably moving to anybody willing to accept their full implications. All this is true—and softens the blow somewhat for any architect who sees this film. I say architect, for from the bulk of the audience the only emotions apparently aroused by the sight were curiosity, astonishment and justifiable admiration at the sight of a job well done.

★

Like that moment in the film of the Lofoten Raid—do you remember it?—when a trim little weatherboarded warehouse suddenly caved in and vanished—the Monte Cassino affair is evidently a tragedy confined strictly to the trade.

ASTRAGAL



Views of Monte Cassino Monastery. Left, one side of the main cloisters of the Bramonte. Below, the great staircase in the courtyard. See Astragal's note above.

LETTERS

Alfred C. Bossom, M.P.

H. J. Venning, F.S.I.

D. R. Riley

Building Methods in USA

SIR,—I read Mr. Venning's comment with regard to the quantity surveyors in your issue for February 24, and thought he might like to see the attached copy of a letter published on February 26 in the correspondence columns of *The Times*.

ALFRED C. BOSSOM, M.P.

House of Commons.

Here is the letter published in *The Times* referred to by Mr. Bossom:

"In pursuing its investigations under its terms of reference, the mission found that, while the building industry in the USA is unstinting in its praise of the work done and the position occupied by quantity surveyors over here, it contends that the provision of fully detailed drawings and specifications by architects, with tendering contractors taking off their own quantities, is conducive to more realistic and careful analysis by contractors of the tasks involved in any large building operation, and permits them to give a closer and usually a lower estimate of costs—much more so in fact than if contractors base their estimates on our usual drawings and specifications, together with a separate bill of quantities provided at the direction and expense of owners.

"In its report the mission submits that:—

"As a result of a preliminary examination of the actual cost per cubic foot of certain specimen buildings in this country and the United States, we have concluded that before the present war the relative cost of building might be fairly expressed by the figures tabled below. The average wage rates in Great Britain furnished by the Ministry of Labour and the wage rates in the United States, given

A REFACED FACTORY

An emergency factory of the last war covered with corrugated iron sheets had to be transformed into a permanent building containing showrooms, store and offices. This had to be done with the least possible disturbance because the building was already occupied and the business could not be interrupted. The light steel frame which supported the large roof had to be maintained and strengthened for the new purpose. As the regulations did not allow building more than 3 in. in front of the existing steel frame and the space inside was valuable, 6 in. reinforced concrete walls were erected with piers incorporating the existing steel stanchions, thus making the new walls an integral part of the whole construction. Gradually parts of the corrugated iron covering were removed and immediately replaced by shuttering so that the client's business could be carried on without interference. This method of construction made it possible to provide the large continuous window for the exhibition on the first floor. The front is rendered in white Mortone cement; the plinth and surround to ground floor windows (boarded up for the duration) are in blue bricks. The architect was Rudolf Frankel. The building before, (above) and after alteration.

in the *Survey of Current Business*, are also compared, together with the cost of certain important building materials.

"British figures are standardized at 100. Rate of exchange assumed at F4.68 to the £ (average for January-August, 1939).

—	Gt. Britain	U.S.A.
Cost of building	100	75-175
Hourly wage rates : craftsmen ..	100	350-380
Hourly wage rates : labourers ..	100	215-245
Cost of materials (excluding timber)	100	110-160

"This shows that the actual cost of similar buildings in both countries is approximately the same; the cost of materials does not vary very much, but America can afford to pay her craftsmen approximately three-and-a-half and her labourers two-and-a-half times the amounts received by our own workers.

"Such differences are arresting. Therefore, while not for a moment belittling prevailing practices in our own country, but rather with an eye on all possible economies in the colossal annual building expenditure of £600,000,000-£800,000,000 unavoidable after the war—for even a comparatively small percentage saved at the expense of modifying an age-old procedure might well amount to scores of millions—the mission really felt compelled to 'recommend that an investigation be instituted into inviting of tenders without bills of quantities.'"

SIR,—You were good enough to publish my letter under this heading on February 11. May I refer to a letter which appeared in *The Times* of February 26, signed by Mr. Alfred C. Bossom, M.P.

Mr. Bossom speaks of "age-old procedure" in referring to the practice in the United Kingdom of preparing a bill of quantities in addition to the drawings and specification. This confirms what we thought—it was evidently assumed in the Report that, because a practice is English, it must be antediluvian.

Whilst the independent quantity surveyor has, as we hope, earned some respect, this is not merely based on antiquity, as Mr. Bossom appears to think. It is a development of the last 100 years keeping pace with the requirements of contracting methods during the great expansion of building, and it has been put on a basis of accepted principles in agreement with contractors (see the *Standard Method of Measurement for Building Works* and the *Report of the Committee on Engineering Quantities*).

In the USA bills of quantities, if not prepared by the contractor himself, are made, it appears, by commercial concerns which are employed by him. It is more than 50 years since British building discarded that practice. "The London Quantity Taking Co., Ltd." (a fictitious name, but one which accurately corresponds to its modern American counterpart) would have been an early-Victorian institution.

H. J. VENNING, F.S.I.

London.

Workmen's War Savings

SIR,—The staff and workmen of John Laing & Son, Ltd., have just passed another milestone in their National Savings Drive having collected £250,000 in the period from June 1, 1940, to January 7, 1944. The Building and Civil Engineering Contracting industry is severely handicapped in regard to National Savings as men are moved about so much from one contract to another and moreover there is a considerable difference between earnings at various times of the year.

The firm feel proud of their men having saved such a large amount, particularly in view of the especial difficulties of the Industry.

D. R. RILEY.

London.

1045

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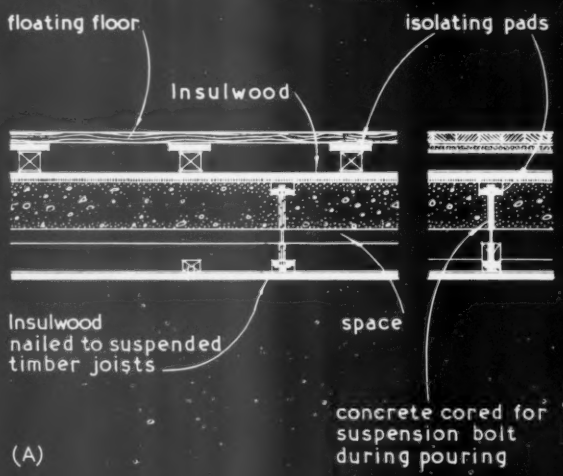
CONSTRUCTION OF TYPICAL SOUND-INSULATING FLOORS WITH INSULWOOD SUSPENDED CEILINGS



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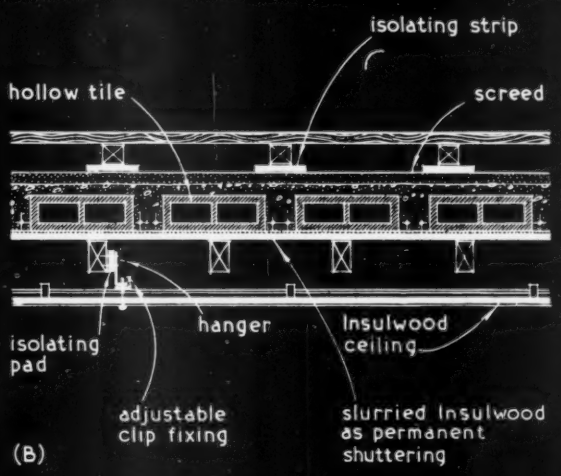

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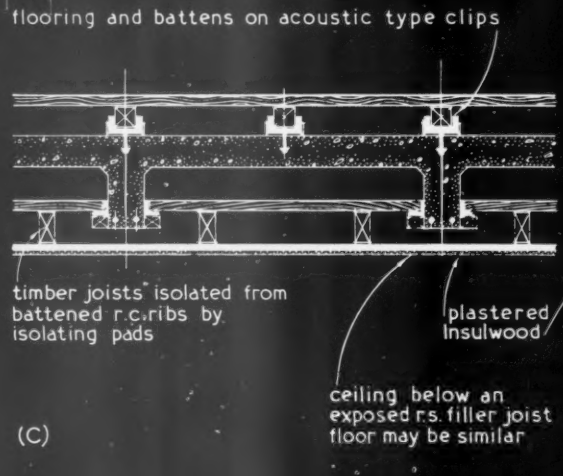

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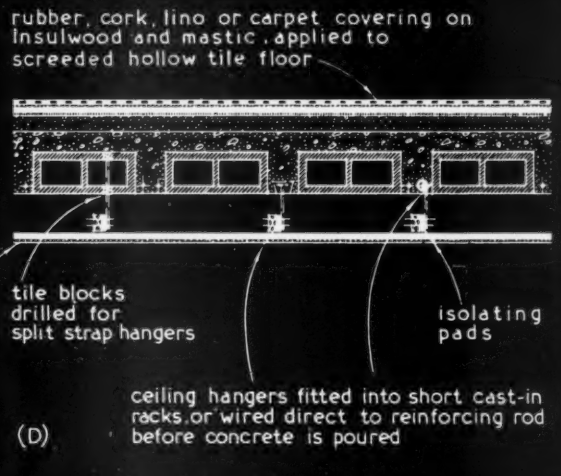

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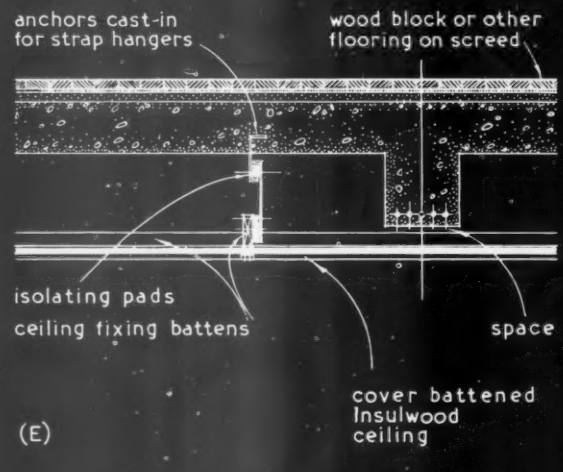

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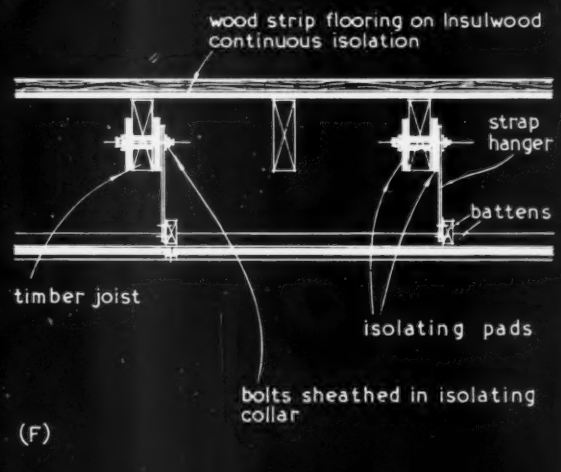

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443 INFORMATION SHEET: FIBRE BUILDING BOARDS 18. SOUND-INSULATING FLOORS (3). Sir John Burnet Tait and Lorne Architects One Montague Place Bedford Square London W.C.1.

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INFORMATION SHEET

• 933 •

BUILDING BOARDS

No. 18

Subject : Sound Transmission Reduction. Structural Detailing : Floors 3.

General :

This Sheet is the third of a group giving examples of structural detailing for sound transmission reduction, and illustrates typical suspended ceilings.

For information on the principles of sound transmission reduction by structural discontinuity, see Sound Transmission Reduction by Structural Isolation : Sheets Nos. 12, 13, 14 and 15 of this series. ½ in. Insulwood is used both as a sound absorbing and isolating medium, in the constructions illustrated.

Sound Transmission Reduction :

A reduction in the amount of sound transmitted by a structural barrier may be effected : (*a*) by reflecting the sound back to the source ; (*b*) by providing for the absorption of the sound energy within the barrier ; or (*c*) by preventing by structural discontinuity, the sound vibrations in the side of the barrier adjacent to the source being transmitted to the " quiet " side and setting in vibration that air in contact with the " quiet " side.

A measure of Sound Insulation may therefore be effected either by confining the sound to the source, or by absorbing it within the structure separating the source from the " quiet cell."

In designing for sound transmission reduction it is essential to consider buildings *as a whole*. No degree of efficiency in the detailing of—say an internal partition between two rooms—would appreciably reduce the amount of sound transmitted by walls or floors continuous with the two rooms.

The diagrams illustrated on this and other Sheets of the group are primarily intended to indicate solutions to the type of practical structural problem which arises. The above principles are exploited in varying degree, in the examples illustrated, but the efficiency of any *detailing alone*, will not result in 100 per cent. sound insulation. Further, the insulating properties of any given barrier must necessarily vary with the predominant frequency, and amplitude of the sound against which insulation is desired.

Insulwood :

This board belongs to the low-density range, and has a sound absorption coefficient of 0.26 at 512 cycles per second.

The waterproofing process undergone by the board during manufacture ensures both a dry medium, and the rejection of any atmospheric moisture.

The material can be left in its natural state, or distempered, painted, enamelled, coated with plaster, or paper, etc. It may be used as an underlay and as a permanent shuttering to concrete.

Sizes, weight and other physical properties are given in previous Sheets of this series.

Detailing and Application :

The constructions illustrated suggest methods of overcoming the technical detailing problems which occur. For further information on fixing Insulwood under various circumstances, see Pimco systems of metal ceiling and partition fixing, Sheets Nos. 854, 858, 861, 864, 868, 872, 879, 884 ; and other Sheets of this series.

Previous Sheets :

Previous Sheets of this series on wallboards are Nos. 893, 895, 896, 898, 900, 902, 904, 909, 911, 912, 913, 916, 920, 923, 926, 928, and 931.

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PHYSICAL PLANNING

THE JOBS TO BE DONE

Transport, whether by road, rail, canal, sea or air, should be planned as a combined operation to serve with the maximum efficiency the needs of the community. Unless transport is conceived as a co-ordinated distributing service operating between well-planned clearance centres, the lines of communication, however efficient in themselves, will not meet the real needs of people and industry. In this week's article F. M. Wilson considers the subjects of road and rail transport. By tracing their recent development he shows the complexity of the problem that faces those who wish to plan for a rational use of transport. It is an issue upon which economists and town planners must reach some agreement if post-war transport is to be a real public service.

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The Job

F. M. Wilson, B.Arch., A.R.I.B.A., Dip. T.P., author of this week's article on Transport, went to King's College (Newcastle) School of Architecture, and has had architectural experience with The Gateshead-on-Tyne Corporation. As a member of the LCC Architect's Department he has been working on The County of London Plan since September 1941

WE MUST PLAN TRANSPORT AS A COMBINED OPERATION

Part 1, by F. M. Wilson

A civilisation, it has been remarked, is reflected most faithfully in its communications. Communications, in fact, are the only constant element in a nation's economy; alone they touch and relate all its aspects, and in turn are reacted upon by each. If a national plan is to be approached as a unity, it is communications which make it so. It follows that transport, in its planning aspects, must be considered altogether or not at all.

Road, rail, airway and waterway are each a part of the single problem, each with its own particular function, though there may be some overlapping. It is, in fact, the nature and extent of this overlapping which is at the bottom of the so-called road-rail controversy — really the controversy between the private interests separately controlling road and rail transport.

The fundamental difference between road and rail is that whereas road freights are comparatively frequent and small (normally with about 10 tons as their upper limit), a railway train has to wait for an economic load, and is to that extent a form of transport less flexible, but better adapted to operate over long distances and serve heavy industrial concentrations.

Now heavy industry—mining, ironworking, shipbuilding—was precisely the group to which this country owed its Victorian prosperity, and it is significant that the last thirty years have seen an entirely opposite trend. The Barlow Report summarises this trend as follows :—

(1) The decline of the basic heavy industries of the North and Midlands.
(2) The expansion of such miscellaneous light industries as small-scale engineering, patent food manufacture and chemicals.
(3) The steady growth in the use of electricity and oil at the expense of steam power.
(4) The decline of the railway owing to the discovery of the internal combustion engine.

From about 1840 until the first decade of this century, the railways enjoyed a virtual monopoly of transport, and this enabled them to give the staple materials of British industry preferential rates which were recouped by bigger charges on more highly-finished goods.

Since the last war, two new circumstances arose.

The first was that the new light industries found in the motor vehicle a form of transport which served them more conveniently, cheaply and quickly, especially over short distances, than the railways could. The railways were handicapped, first of all by

their preferential rates for basic industrial products, secondly by the fact that, unlike the road interests, they had to pay for the initial cost, upkeep, rates and other charges of their permanent way, stations and equipment.

The second was the enormous growth of urban areas. Not only did urban populations increase at a great rate—they spread themselves over a disproportionate area on the periphery. Now these suburban populations on the whole looked for their work and recreation to the cities which they fringed; and traffic between town and suburbs—relatively short-distance, frequent traffic—underwent a vast increase. The LPTB has estimated that two-thirds of its traffic was due to the daily journey to work.

Most of this increase took place on the roads. As an answer to road competitors between town and suburb the railways had developed the rapid-transit service—electric trains running at regular headways, with high rates of acceleration and automatic signalling. But this type of service was possible only in the largest urban concentrations, where enough passengers were available to give an economic load; and even there it was not exploited to the full. None of the main line companies, for example (with the exception of the Southern Railway to a small degree), have adopted rapid transit principles on their London suburban services.

In 1938, British railways carried almost exactly the same number of passengers (1,253,000,000) as in 1928; the goods tonnage carried had gone down by 13 per cent. More than 80 per cent. of this tonnage was still in the low-grade categories. It is highly probable that long-distance passenger services had remained roughly stationary, suburban services to large towns had carried more, and the country and smaller urban services had declined.

During the same period, the number of licensed commercial motor vehicles rose by 60 per cent., and the number of private cars by 120 per cent. Of the 3 million mechanically propelled road vehicles in use in 1939, 63 per cent. were private cars, 17 per cent. motor cycles, 15 per cent. goods vehicles, and 3 per cent. public conveyances. It will be seen to what an overwhelming degree the recent development in road traffic has been a development of passenger traffic, in light loads and of short radius of operation.

It is sometimes assumed that the consequences of the journey to work are entirely bad. This is not so. The mobility of labour has gained greatly from it; employers and workers have alike benefited through being no longer dependent upon one locality for labour and a living respectively. Large-scale undertakings require a large area from which to draw their employees. And travel facilities, besides assisting the establishment of new enterprises in districts where there is for the moment little housing, absorb the shock to the working populations of periodic trade fluctuation.

Against this, the cost to the community of reduced workmen's fares is considerable. The employer does not normally contribute towards this cost, except in the building trade. The expense, even of a workman's ticket, makes a big hole in the weekly budget of a man working the quite normal distance of six miles from his home. The average expenditure of a London family on transport was £15 a year in 1938. The most important single item was the journey to work, on which 60 per cent. of families on LCC cottage estates spent over £7 10s., 21 per cent. over £15 annually. The cost in time and energy to the daily traveller is complementary to the financial cost. Half-an-hour's travel morning and evening is aggravated by the existence of a rush-hour.

On the whole it may be said that however necessary it may have been from some economic standpoints, the daily journey created much inconvenience and hardship which better planning would have prevented. And worst of all was its effect on road traffic.

road

The exceptional nature of the road traffic problem in this country is not generally realised. Although in 1935 there was but one motor vehicle per 15 Britons, as against 1 to 5 in the United States, our roads were the most congested in the world, having 13.7 motor vehicles per mile, as against 9 in the case of America. Whereas railway traffic, as we have seen, was tending before the war to decline, road traffic had doubled in ten years, and showed every likelihood of continuing the process. Road improvements cannot be said to have kept pace with this growth. In contrast with the railways, built from scratch to meet the needs of an industrial age, the road system already existed, but for a set of traffic conditions entirely different from those it was now called upon to face. That such a system was bound to prove inadequate was learned eventually only in the school of bitter experience. The tendency has constantly been to adapt existing roads rather than to lay down new tracks. The number of mechanically-propelled road vehicles rose from 150,000 to 3¼ million between 1910 and 1939. The percentage increase in new road construction over the same period was 2.

The defects of inter-war road transport had two main consequences. Speed, the principal asset of motor transport, was not realised in urban areas; and the indiscriminate mixture of traffic resulted in accidents.

The Bressey Report contains some interesting facts about delay due to congestion in heavily built-up areas. The average speed of a car on several journeys from Ludgate Circus to Commercial Road was 5.8 m.p.h.; the slowest journey took place at 3.6 m.p.h. Horse-drawn vehicles are as quick, to walk nearly so. It took as long to cross central London from Chiswick to Ilford as to use the North Circular.

In 1936-7 there were 236,000 injuries through road accidents, of which 6,000 were fatal. 74 per cent. of all injuries, 62 per cent. of road deaths, occurred in urban areas. Of the deaths in urban areas 6 out of every 10 were pedestrians, 2 cyclists. Two-thirds of these pedestrians—40 per cent. of all road fatalities—were killed while crossing the road. Yet the evidence is that accidents are not an insoluble problem. Between 1934 and 1938 the number of road accidents actually declined, in spite of an uninterrupted rise, averaging 170,000 a year, in the number of mechanically-propelled vehicles.

The reason for these unfortunate developments is that no scientific attempt has been made to distinguish between the various functions of roads. A road can have two functions: transit and access. One or the other should predominate in its design. Only too often the appearance and efficiency of new roads have been ruined by mushroom growths of shacks, garages and speculative buildings. Examples are the Barnet By-pass at Hatfield, and the Staines Road. (Little benefit has been realised from the Restriction of Ribbon Development Act.)

Points of access to new roads continue to be far too frequent, since many local authorities lack Treasury grants large enough to create an efficient arterial, and try to recoup constructional cost by selling adjoining strips. Where service roads are provided, buses, vans and other access traffic still use the main road. Shopping centres are regularly sited on the junction of two main roads—surely the least suitable spot.

This state of affairs is actually being perpetuated in some zoning schemes. The Hornchurch U.D.C. has zoned for industry a strip of land 1,000 feet in depth along the Purfleet Tunnel approach road, with no relation to any residential area; the Middlesex County Council are actually selling frontages for development along the Western Avenue.

Highway authorities have been far more concerned with eradicating the results of bad planning than with insisting on really adequate roads in the first place. Enormous sums have been spent on service roads, improved lighting, pedestrian barriers, probably in excess of that which would originally have been required for preserving the road from ribbon building.

From these observations it is apparent that it is not enough to build new roads. Access to the roads and user on either side must be strictly controlled. Only then can the speed to which motor traffic has a right be achieved safely.

Much discussion recently has centred on motorways. A motorway is a one-purpose road for fast traffic only, avoiding built-up areas itself, but contacting the main urban

and industrial centres by means of arterial spurs. Junctions are naturally at long intervals, and by trumpet crossings, which allow an unbroken traffic flow. No building or field-gate frontage is allowed along any part of the road, except for a limited number of wayside coffee-houses for long-distance lorry drivers, with specially-designed pull-in facilities. Such roads, if constructed, would be essentially national in importance, and might be justified by the post-war expansion in private car ownership, by the further development of light consumer industries, and by the need for speedy marketing of home-produced perishable foodstuffs. Much, it can be seen, depends on the national economic policy after the war. One cannot help feeling that the greater part of long-distance passenger travel will continue to be done by rail, with equal speed and greater comfort to the traveller. At the same time a series of new traffic routes, linking the main populous areas and kept rigorously free of building development, would perform a valuable service in freeing towns and existing arterials of through traffic.

These one-purpose routes would be supplemented by regional arterial roads of an all-purpose nature, likewise avoiding built-up areas, and with no building frontages (though this would take time to realise, since in most cases existing arterial routes would be used), but with sub-arterial spurs linking them with the chief towns. All motorways and arterial roads should have dual carriageways, each of at least three lanes, and preferably four. There is, moreover, no reason why the carriageways should be kept together except at an intersection. To separate them by means of copses, steep slopes, even a field or two, helps to tie in the highway to the landscape; cheapness results from the less excavation needed; future widening is facilitated, and the motorist gains in both safety and pleasure. Intersections would be by roundabout only, with over—or under—passes. The main function of these roads would be as collecting and distributing routes for regional traffic, mainly commercial.

The main traffic routes within the urban areas are called sub-arterial by H. Alker Tripp. Building frontages would again be prohibited except on service roads with access at (say) quarter-mile intervals. Intersections with major local roads would be by roundabout or traffic lights. Community units and areas of purely local traffic importance would be by-passed.

Cycle-tracks are often thought to be necessary in conjunction with roads of arterial status. In fact, in country districts there is everything to be said for making cycle-tracks as well as public footpaths follow routes completely independent of the motor roads, which would fly over or under without contact at intersections. It must, however, be admitted that no way has yet been found of catering specially for cyclists in towns, which is precisely where they are most frequent.

Local roads, including those Ministry of Transport Class I and II roads not absorbed in the sub-arterial grid, would collect traffic from the residential units and industrial trading estates, and feed the sub-arterial and regional routes. Intersections with development roads would be at (say) 200-yard intervals; intervening buildings would have to have service roads.

There remain the development streets in residential, shopping, commercial and industrial zones. Access here predominates; only the minimum width should be left as passing-lanes for access traffic, but ample car-parking space should be provided, especially in shopping streets. Industrial buildings would have their own car-parking facilities.

Road-planning, in short, is inseparable from use-zoning. Each zone has its own typical traffic, varying according to speed, manœuvrability, peak-hours. What is needed is to study simultaneously each route and the zones it is likely to connect, and to try to ensure that heavy industrial vehicles and private cars, buses, horse-drawn vehicles and bicycles do not use the same routes, or at least use them at different periods. Obviously, too, it is not only roads that one must consider in this connection; the relation between road and rail, air and inland waterway is ultimately bound up with the problem.

rail

For an ideal railway system, as one might expect, the same principles apply, yet railways have their own special problems, some of which have already been indicated.

The railways were founded by a number of small companies operating over short distances: Canterbury — Whitstable, Liverpool—Manchester, Leeds—Selby and so on. Amalgamation was prohibited by law for many years. Competition was fierce, and resulted in the uneconomic duplication of many lines and stations. What surplus profits were made were swallowed up in excessive capital charges, and various necessary technical improvements were not made.

The century ended; the lean years came, and by 1939 the railways were reaping the evil consequences of their early disunity. Landowners in the forties and fifties had charged the railways at extortionate rates in the knowledge that they would be paid; much money had been thrown away in buying out rival interests.

The result is that the railways are now grossly over-capitalised. Their nominal value, on which dividends have to be paid, is £1,100,000,000 or more; the real value usually quoted by the Stock Exchange is £750,000,000. This means that money which should be spent in modernising the stations and rolling-stock, co-ordinating lines and eliminating redundancy, goes annually into the pockets of the shareholders. Even the LPTB is handicapped in this way by the guaranteed dividend of its junior stock. When improvements become urgently necessary in the public interest, the railways have to be subsidised by the State. This actually occurred in 1935, when by the formation of the London Electric Transport Finance Corporation, the LPTB, GWR and LNER were lent nearly £40,000,000 at 2½ per cent. by the Government, to pay for the improvement of the existing LNER service in the eastern suburban London area.

Some of the redundancies had been eliminated by amalgamation, but a great number of superfluous passenger and goods stations remained. We have already suggested that the railways might be better off if they abandoned their rural services (the local bus is normally a far quicker and more economic link between country villages), and their claim to light industrial traffic.

A more far-sighted policy would be to embark on technical economies with the object of making economic the preferential basic industry rates. Such economies would include mechanical handling, scientific development of feeder services, larger wagons, abolition of private wagons, and the development of internationally-standardised container transport.

Long-distance services should be separated from regional. Much can be done in this direction by the setting apart of alternate tracks for fast and slow traffic, and by the principle of skip-stops.

Goods should be separated from passenger lines. The wholesale markets should be sited near an independent goods marshalling ring on the edge of the built-up area.

Suburban services to, at least, the larger towns should be electrified on a rapid-transit basis. It is argued that various steam locomotives have attained acceleration speeds comparable to those possible with electric traction, and that the loss of amenity due to steam locomotives could be overcome by all-steel welded construction, air-conditioning and smoke-lifting devices. But the virtual replacement of all suburban locomotives entailed by this policy would surely mean an expenditure at least comparable with that involved in electrification. There remains the loss to amenity from overhead lines and cuttings in town centres; and in favour of electrification must be set the fact that not only have the Southern Railway adopted it on many suburban services, but certain other companies have proposals for extensive electrification ready to put into operation after the war. A series of interchange stations from main-line steam to electric traction would be situated on the edge of the urban region, and the adoption of a system of loops in the central area would ensure flexibility of services as well as economy in rolling stock.

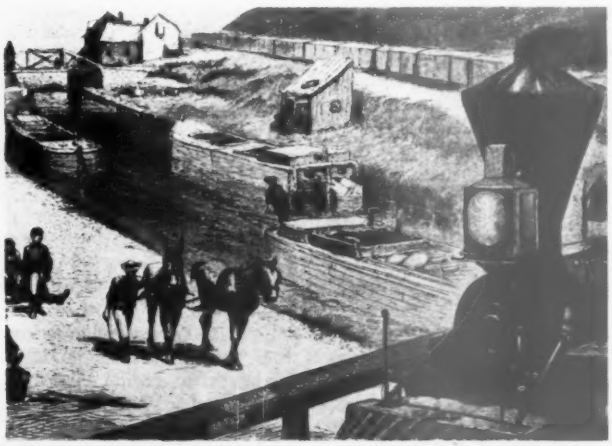
But as we have seen, the railways have not the resources to carry out such modifications, even if they wanted to. Some central authority is obviously needed, to distribute the railway's financial burden as well as to induce it to make the necessary sacrifices in the interests of road-rail harmony. It is doubtful whether outright nationalisation of transport would provide the solution. State ownership, it is argued, would subject transport to political influences, place too much responsibility for day-to-day decisions on the Minister, and establish Treasury control over the service to an undesirable extent. The argument against transport as a public corporation on the lines of the Post Office is that the Post Office services are of a more routine character than those of transport, and ministerial decisions would be required too often.

A proposal has recently been advanced by Mr. Gilbert Szlumper for a National Transport Board, consisting of representatives of the main branches of transport, controlling antonomous regional executive bodies, together with an advisory council, whose chairman would be a government nominee, to determine policy. The Board would issue its own stocks in exchange for its assets and for the existing stocks and shares. Some portion of the stocks should be remunerated by dividends that would fluctuate with the prosperity of the undertaking; apart from this, surplus profits would be ploughed back into the business. The Government would guarantee the dividend on the prior stocks.

In considering this proposal, it is essential to bear in mind the enormous size and importance of such an undertaking; it may be doubted whether this most essential public service is best left so firmly in the hands of private enterprise. One positive criticism is that the Board as proposed would concern itself too exclusively with purely transport matters, and we have seen that transport cannot be considered aside from the entire social and economic life of the community. A criticism of the LPTB would be that it neglected just those matters. Might not then the Board if it does not include economists, sociologists and town planners, condemn us to a Britain in perpetual motion? An accusation that was levelled at Frank Pick's vision of a future London.

War-time government control has been much criticised, and certainly its success has been due to dictatorial powers under the spur of a national emergency. Its success remains very real; it is moreover certain that the pooling of services and supplies will have to be continued for some years after the war.

Mr. Szlumper's scheme would mean a good deal of reorganization, because of this it might be as well to operate the present system until there is some definite agreement on policy for those other problems which are inseparably linked with that of transport,—the location of population and industry.



This engraving shows the fate of the canals in the USA by 1873. *The barges are empty while the freight train, triumphant over its competitor, stretches away out of sight. The second article on Transport next week will deal with the problems of waterways and airways.*

PLANNING REVIEW

CITY OF LONDON PLAN

At a recent meeting of the Court of Common Council, over which the Lord Mayor presided, Captain Alfred Instone moved that in view of the conflicting Press reports regarding the non-publication of the City Plan the Improvements and Town Planning Committee should be instructed to make a statement. The motion was carried by a very large majority. Captain Instone pointed out that last November Mr. C. W. Dennis, chairman of the committee, stated that the report was in the hands of the printers, and that the presentation of the scheme depended on the rate at which finished drawings could be prepared. That statement gave general satisfaction and was thought to mean publication within a few weeks. On February 14, however, an interview was given to a newspaper by a colleague, who was in a position to speak, to the effect that fear of land speculation was holding up publication. No denial has been made, and he could not reconcile the statement with what the Court was told by the chairman of the Improvements and Town Planning Committee. Mr. H. S. Syrett urged Captain Instone not to take too much notice of what appeared in the newspapers or of the pundits of Fleet Street. Everything possible was being done to bring out the report. The committee was not waiting for any decision by the Government. Mr. Fred Gillett, as the member who made the statement to a friend in Fleet Street, said he only communicated what had been stated many times in the Court.

LCC

At a recent meeting of the London County Council, Dr. Somerville Hastings was elected chairman for the ensuing year in succession to Mr. R. Coppock. In concluding his statement on the financial estimates for the coming year, Mr. Douglas said that the amount provided for contingencies was £1,250,000 more than last year. He considered this provision necessary in case such a change should take place in the war situation as would enable substantial progress to be made in carrying out the Council's housing programme. The programme envisaged the beginning of work in the first year in respect of 16,500 houses. The sum included in the capital estimate should enable the council to acquire any additional sites needed for immediate use in addition to those already possessed. The committee's recommendations were adopted.

COUNTY OF LONDON PLAN

Mr. F. J. Osborn states in a letter to *The Times* on March 4, his disagreement with Sir William Davison's opinion that the article in *The Times* of February 19 (Planning Review, March 9, 1944) indicates a practicable revision of the London Plan. The article assumes that numbers and sizes of dwellings can be planned to fit closely numbers and sizes of families. That would only be so if families changed house every time babies are born or persons die or leave home. And that, even if workable, would destroy the continuity of the home. Normally a house is occupied throughout a series of family changes. People move at choice—not to keep statistics tidy. Hence in any housing scheme, even if some dwellings are crowded, many are (rightly) occupied at much less than capacity. Mr. Osborn does not think that any experienced developer would quarrel seriously with the LCC's calculations as to the possible number of houses, or of flats, an acre. It is only in the excessive ratio of flats to houses that the plan is open to criticism, and it can be amended in this respect if a greater measure of decentralization is faced.

LIMPLEY STOKE VALLEY

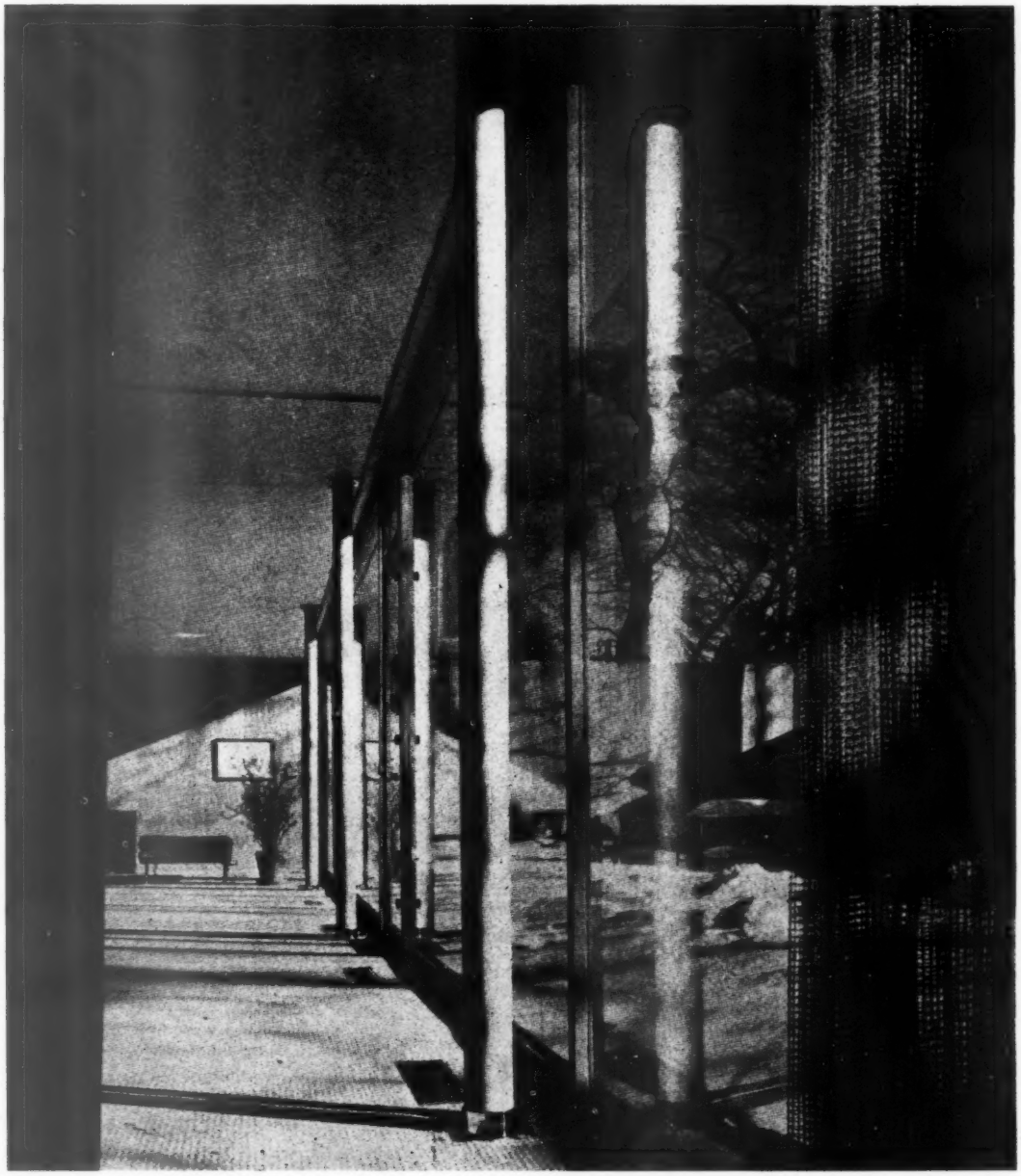
The owners of Limpley Stoke Valley, near Bath, have entered into an agreement with the Somerset County Council and the Bath-avon Rural District Council whereby the 1,200 acres involved—part of the Warleigh and Claverton Estates—shall be preserved in its present state for 25 years. The agreement made under the Town and Country Planning Act will now be incorporated in the Bath and District Planning scheme.

ELECTRICITY PLANS

Inquiries before the war made it clear that the distribution of electricity needs to be planned over wide areas, that such planning involves unified financing and administration, and that these in turn imply unified ownership of the undertakings in each area. *The Times* points out in a leading article that since legislation and public opinion have always envisaged ultimate public ownership of private undertakings in this field, local authorities are vested with powers of compulsory acquisition after a certain period of years. There are now two hundred companies whose period of primary tenure has expired or will expire in the next few years. Uncertainty as to their future is hampering their work. A joint memorandum published by the Incorporated Municipal Electrical Association on the subject, is criticized by the London and Home Counties Joint Electricity Authority as the product of a united front of those who want to be left alone, both local authorities and private companies. *The Times* points out that whatever may ultimately be decided, it is futile to discuss the case for public ownership in isolation; problems of ownership cannot be dissociated from plans for reorganization, and they are what really matter. The policy outlined in the Government's White Paper of 1937 must be taken to provide the essential minimum of change.

MAIDENHEAD

The future of Maidenhead is the subject of a report issued by the local Chamber of Commerce. In this it is suggested that Maidenhead should retain its predominating character as a residential town, but that a certain amount of new industry should be encouraged. Its development mainly as a dormitory or suburb of London, or as an outpost of Slough, should be avoided at all costs.



HOUSE

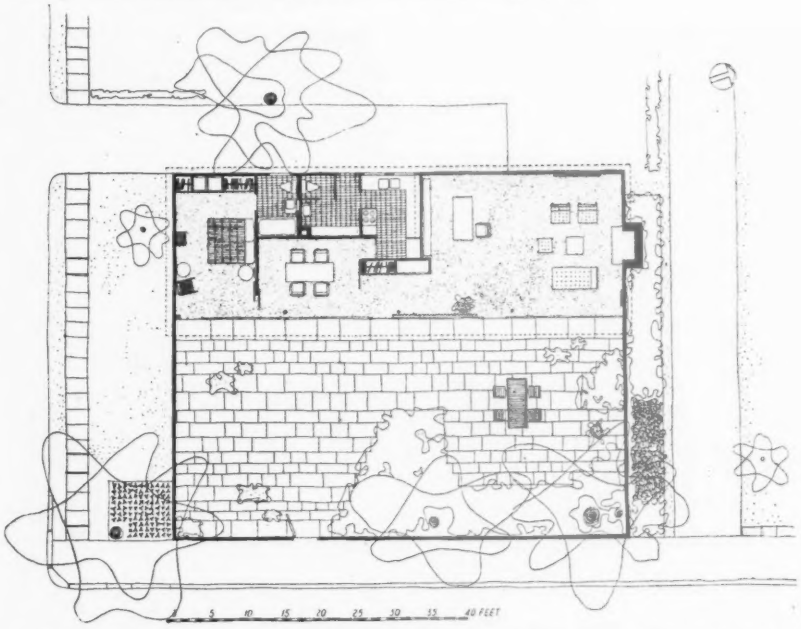
AT CAMBRIDGE, MASS.

PHILIP JOHNSON, AND

S. CLEMENTS HORSLEY

ASSOCIATED ARCHITECTS

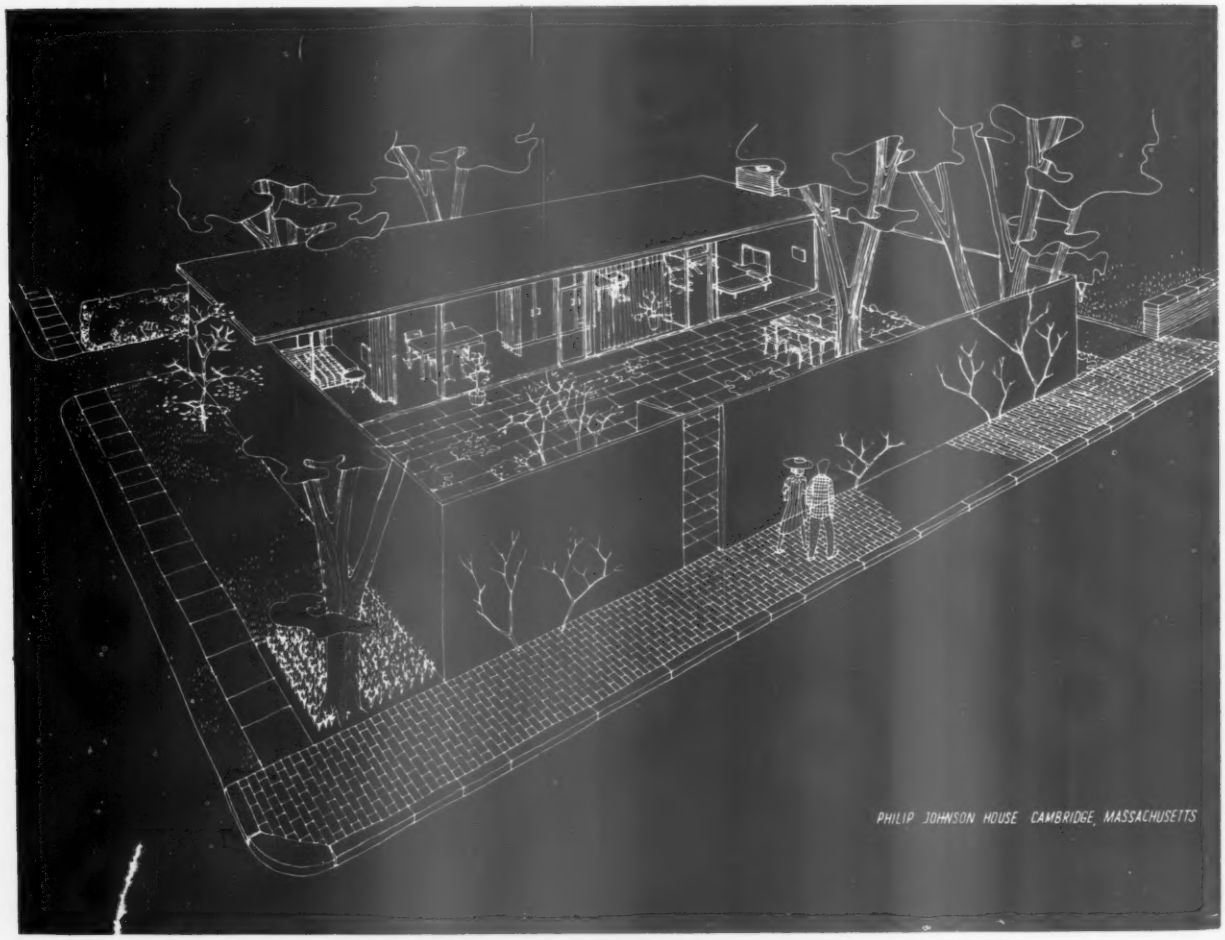
Built for an architect, who is also a bachelor, this house stands on a site enclosed almost entirely by a high wall. The house itself is faced with a glass wall and the interior is visible from outdoors. Of the design, the *Architectural Forum*, from which the accompanying illustrations are reproduced,



Above, plan. Below, sketch showing relationship between the house, wall and front garden. Facing page, top, the interior, faced with a glass wall, is visible from the garden. Below, two views in the interior.

HOUSE AT CAMBRIDGE, MASS., USA.

says : One of the most obvious and consistent trends in modern architecture has been the tendency to simplify, through standardization and repetition, and through elimination of every element which might possibly be left out. Described in this manner, the process sounds more negative than constructive, but in the hands of an accomplished artist and technician, such as Mies van der Rohe, the approach has produced buildings of remarkable quality. Mies' Tugendhat House, built in Czechoslovakia over a dozen years ago, is considered a masterpiece by architects the world over. This little house in Cambridge is probably the best example in America of the same attitude towards design. In its use of a high wall which encloses almost all of the site, it disregards entirely the



traditional American neighbourhood pattern, which does not recognize such barriers between one house and its neighbours. Nevertheless, it is hard to see how the house could have been used otherwise for its wall of glass exposes the entire house and its workings to the outside. Nowhere is the complete formality of the basic design better illustrated than in the living room. A chaste fireplace is set in the exact centre of a wall discreetly enriched with wood veneer. The furniture (all designed by Mies van de Rohe) is arranged with complete regularity on either side of a square coffee table. Nothing is casual; nothing is accidental. Few people would be at ease in so disciplined a background for everyday living. But the architect, as we have seen, was not concerned with the requirements of anybody except himself. Despite the regulated, formal perfection of the house, there are many elements which have been popular and will become more so.

INFORMATION CENTRE

The function of this feature is to supply an index and a digest of all current developments in planning and building technique throughout the world as recorded in technical publications and statements of every kind whether official, private or commercial. Items are written by specialists of the highest authority who are not on the permanent staff of the Journal and views expressed are disinterested and objective. The Editors welcome information on all developments from any source, including manufacturers and contractors.

PHYSICAL PLANNING

1406 — ***USA Housing Scheme***

WORTHY IDEAS FROM WARTIME HOUSING. (*Architectural Record, November*, 1943.) Normont Terrace FWA Housing Project, Los Angeles, on 38 acres for 400 housing units, 60 with one bedroom, 240 with two, 100 with three (say 1,200 people).

A standard two-storey terrace unit was evolved containing five dwellings: one with one bedroom, three with two and one with three.

The minimum FWA areas for the first floor were higher than the maximums for the ground. The first floors therefore project over the ground floors.

The scheme includes one "administration—community building" with an assembly room, two committee rooms and a large kitchen—but no shop or school.

The layout is traversed by two 90 ft. streets on which no houses face. The dwellings, in staggered groups of four or five terrace units, are freely disposed on the site and connected by 16 ft. service roads.

PLUMBING and Sanitation

1407 — ***Prefabricated Unit***

KITCHEN AND PLUMBING PREFABRICATED UNIT. *Designed by Charles E. Elcock.* (*Architects' Journal, December* 23; *The Builder, December* 3, 1943.) Unit combining all sanitary appliances, cold and hot water services, sink and refrigerator and cooker and heating devices with all water, gas and electric services and drainage in one assembly.

Several house plans in *The Builder* show how such a unit may be incorporated in varying plans.

1408 — ***Prefabricated Unit***

PREFABRICATED COMPONENTS. (*Architect and Building News, September* 29, 1943.) Prefabricated plumbing unit for Universal plan house, designed by Walter Segal, described by Edwin Gunn.

A description, with very complete illustrations of a hot-water service unit for a small house of the Universal plan type. The unit consists of two sections, each contained within a light angle iron framework. In the bottom section is the boiler, with cylinder over. In the top section is a linen cupboard with cold tank over. An anthracite Urastone flue pipe is included in the units. The general arrangement seems satisfactory although one wonders if the suggestion that site handling is not beyond the capacity of the present means of delivery and man-handling is a little optimistic. The weights of the units are not given. The amount of site work involved in connecting up a boiler need not be great and the weight of the bottom unit would be considerably less if the boiler was delivered separately. Points of detail might be criticized, e.g. the use of a smooth flue pipe from a slow combustion boiler is apt to result in a fair amount of condensation if kitchen refuse is burnt and provision for this at the bottom of the flue might be wise although the danger in this case is less than usual owing to the flue being kept warm for most of its height. Another small detail is that the slats of the linen cupboard run across the width of the cupboard. It is easier to slide in and out heavy articles such as a pile of sheets when the slats run at right angles to the door. Some disagreement may be felt with the remarks about the adequacy of a 30 gallon hot cylinder and also with the suggestion that it does not matter whether this is placed horizontally or vertically.

1409 — ***Prefabricated Unit***

THE DENHAM PLUMBING AND HEATING SYSTEM UNIT. *Designers, S. G. Gravely and S. C. Warren.* (*Architect and Building News, December* 10, 1943; *Architects' Journal, January* 20, 1944.) Prefabricated plumbing and hot-water unit for small house. Illustrated by diagrams.

General descriptions of a fairly straightforward prefabricated unit. All vertical piping, tanks and flue from boiler run in a steel framed mast, the overall size of which is approximately 2 ft. by 2 ft. This unit on the first floor contains hot water tank, w.c. flushing cistern, cold tank, soil pipe, flue and water pipes, in addition to acting as an airing cupboard.

Many features are described as being of special design. This suggests that they may be interesting but in numerous cases no description follows.

FIRST FLOOR PLAN

GROUND FLOOR PLAN

Normont Terrace FWA Housing Project at Los Angeles. Top, site lay-out. Left, plans of one of the buildings containing five dwellings. Above, a typical building with exterior finish of cement rendering and redwood flush shiplap boarding.

HEATING and Ventilation

1410 — **Panel Heating**

OPTIMUM SURFACE DISTRIBUTION IN PANEL HEATING AND COOLING SYSTEMS. *B. F. Raber and F. W. Hutchinson* (*Heating, Piping, November*, 1943, *pp.* 602-614). Gives methods for evaluating the uniformity of radiation from floor, wall or ceiling panels. Consideration of some particular cases. Conclusions drawn as to optimum distribution of panels for rooms of various sizes and heights.

1411 — **Panel Heating**

RADIANT HEATING. *L. J. Fischer* (*Heating and Ventilating Engineer, December*, 1943, *pp.* 221-227). One of series of articles describing design and specification of panel warming systems.

1412 — **Floor Heating**

FLOOR HEATING SYSTEM IN HANGAR CONSERVES METAL. *J. K. Fairbourn and J. D. Dillon* (*Heating, Piping, November*, 1943, *pp.* 573-575). Short description of particular application of floor heating.

Aircraft hangar is heated by warm air circulated through asbestos-cement ducts in the floor. The air is heated by steam coils. It is claimed that the initial cost is low, that it is economical and that the use of metal is reduced to a minimum.

1413 — **District Heating**

DISTRICT HEATING. *P. G. Kaufman.* (*Industrial Heating Engineer, January*, 1944, 1, 33.) Summary of conclusions included in Report on District Heating for Bristol.

Recognition of the need for master plans in towns of the future has led the authorities in several British cities to seek advice on the possibilities of district heating in the reconstruction of blitzed areas; among these is the Corporation of Bristol. A series of reports concerning the latter has now been submitted by the staff of Messrs. Arthur Scull & Sons, Ltd.

These reports embody the results of a comprehensive enquiry based on a detailed survey of the area, which measures nearly 1 mile by 1 mile (345 acres). The following conclusions are reached:

(1) District heating is economically possible.
(2) The density will be well in excess of the minimum economic value.
(3) Hourly aggregate load (maximum ?) should not be less than 6 therms per acre (15.2 estimated for Bristol).
(4) Annual aggregate load should not be less than 120 therms per annum per foot run of distributing conduit (163 estimated for Bristol).

The scheme proposed envisages:

(*a*) A power-heat station of 25,000 kwh. capacity, with pass-out turbines.
(*b*) Distribution of heat energy by high pressure hot water in pipes below street level.
(*c*) Coal consumption 77,500 tons per annum (compared with an estimated consumption of 100,000 tons per annum by normal methods).
(*d*) Heat output 12 million therms per annum.
(*e*) Price of power (to Corporation): 0.214 pence per kwh.
(*f*) Price of heat: 4.53 pence per therm (presumably nett).
(*g*) Cost £1.55 million (1939 price), spent over a period of 15 years.
(*h*) Cost recovered over 21 years, from revenue.
(*i*) Seventeen years to full fruition.
(*j*) Administration by the Corporation.

QUESTIONS and Answers

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. 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. Questions should be sent to: THE ARCHITECTS' JOURNAL, 45, *The Avenue, Cheam, Surrey.*

1414 — **Dilapidations**

Q *My clients have had a Schedule of Dilapidations served on them by their landlord's surveyors. My clients have complied with the repairing covenants of their lease in a most conscientious manner with one exception, that is, they have not carried out complete re-decoration throughout internally and externally during the current year as expressly covenanted in the lease.*

I am informed that schemes had been prepared for the rebuilding of the entire block in which my client's house occurs and had the war not come about, it is pretty certain that the entire block would have been demolished.

It is my opinion that the landlords have no moral right to claim a substantial sum for dilapidations. They certainly do not propose utilizing any money obtained in repairing their property, which could be let in its present condition.

I am informed by other tenants that the landlords will not agree to new leases for more than two years. This shows that they do not wish to commit themselves in case a large rebuilding scheme will be agreed to soon after the war.

Can you advise me as to my client's rights?

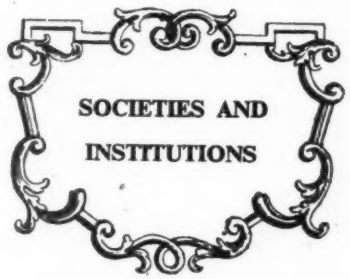
A The answer to your question is governed by the Landlord and Tenant Act, 1937. Section 18 (1) of the Act provides that damages for a breach of a covenant or agreement to keep or put premises in repair during the currency of a lease, or to leave or put premises in repair at the termination of a lease, whether such covenant or agreement is expressed or implied, and whether general or specific, shall in no case exceed the amount (if any) by which the value of the reversion (whether immediate or not) in the premises is diminished owing to the breach of such covenant or agreement as aforesaid; and in particular no damage shall be recovered for a breach of any such covenant or agreement to leave or put premises in repair at the termination of a lease, if it is shown that the premises, in whatever state of repair they might be, would at or shortly after the termination of the tenancy have been or be pulled down, or such structural alterations made therein as would render valueless the repairs covered by the covenant or agreement.

It is clear that the tenant's liability is limited if the premises are to be pulled down but the tenant would have to show that it was the landlord's intention at the time of the termination of the lease, so to pull down.

In cases where there is no intention to pull down, the limitation of the tenant's liability is not so clear. An extract from Mr. Edgar Foa's memorandum prepared at the request of the Council of the Chartered Surveyors' Institution, reads as follows: "Probably the true explanation of the enactment is that it is put into the form of forbidding excess of damages beyond the specified limits solely by regard to the concluding words of the clause, and that the principles already established as to their assessment remain unimpaired in all cases except where these concluding words require that effect should be given to them."

Decisions have since been given in the Courts and Mr. Foa may or may not have revised his opinion, but the quotation is sufficient to illustrate our point—that it would be unwise for the layman to jump to conclusions.

If your client wishes to obtain relief under the Act you would be well advised to consult a solicitor.



Speeches and lectures delivered before societies, as well as reports of their activities, are dealt with under this title, which includes trade associations, Government departments, Parliament and professional societies. To economise space the bodies concerned are represented by their initials, but a glossary of abbreviations will be found on the front cover. Except where inverted commas are used, the reports are summaries, and not verbatim.

RIBA

ASB Lecture

February 12, at 66, Portland Place, W.1. Lecture arranged by the Architectural Science Board of the RIBA, on THE INFLUENCE OF NEW DEVELOPMENTS IN CONSTRUCTION ON ARCHITECTURAL DESIGN, by M. Hartland Thomas, M.A., F.R.I.B.A.

M. H. Thomas: A large field has already been covered by the present series of lectures sponsored by the ASB, but a very much larger expanse of country remains to be explored, and it is perhaps appropriate to pause for a while and reconsider some of the reasons for our participation in these occasions. The connection between Architecture and Science—in the modern sense of Natural Science founded upon Experiment—has not always been as close as it should be, but it remains one of the declared aims of this Institute as witnessed by the original charter.

To point the moral rather a happy instance came over the radio the other day. It was in the introduction to a talk upon the history and uses of blood transfusion. Describing the early experiments in intravenous injections at the meetings of the Royal Society, one member was said to have been outstanding with an experiment which involved the injection of wine and beer into the veins of a dog, which inebriated the dog. The broadcaster identified this experimenter by saying that he

is better known to-day as the designer of St. Paul's Cathedral.

Sir Christopher Wren graduated from science into architecture. Some of us, who have not been so wise as he in the order of our education, are eager to repair the omission under the auspices of the Architectural Science Board. The title *Architectural* Science Board is important. This paper will be largely concerned with the implications of the word Architectural in this connotation.

POTTED SCIENCE

It may with some justification be objected that these science lectures are merely packets of potted science for the architect, which with imperfect knowledge in any particular branch he will apply at some considerable risk. Potted they are, admittedly—even perhaps, in the interests of portability, dehydrated. Your committee, quite unashamedly, in the conferences beforehand at which lecturers are briefed, asks for short cuts and useful approximations that an architect can employ at the sketch design stage, long before the scientific experts are called into conference. For it is important both that approximate provision for the specialist should be made beforehand, and that the architect should have enough acquaintance with all the branches of science concerned in his design to explain his requirements to the experts and to understand their advice.

Potted science can equip the architect to preside over a team of experts. But it could so equip anybody else. An architectural education is not a prerequisite for the absorption of potted science—in fact, with its emphasis upon taste and imagination, it is probably a disadvantage.

THE ARTISTIC CONCEPTION

There are some who fear, and rightly, that the present emphasis upon team-work in design, and upon the architect's function as the co-ordinator of experts, might lead to the disintegration of architecture into its component parts. It is not our purpose to assist in such a disintegration. Admitted that the time has passed, and long passed, when one man, however brilliant, could carry in his own person sufficient knowledge to produce good architecture unaided. But the importance of the artistic conception persists. Indeed, the artistic conception, the vision of a building project in its entirety, as a whole, is unavoidable. It must be seen as a single idea by somebody at some stage in the work. It is the concern of architecture that the vision should be seen early, seen clearly, and seen whole. It is our concern to contribute something to the mental equipment of those upon the rightness of whose vision so much depends.

There are few architects who would not admit the need among us for a deeper understanding of the true function of the component parts of a building. Only thus can the development of architectural form be released from mere convention—falsely sometimes called scholarship—on the one hand, or protected from the assaults of fashion on the other.

CARRIED-OVER FORMS

Negative evidence for the existence of fundamental thinking at the back of a design can be provided by the absence of derivative or carried-over forms. Conscious imitation is not meant, such as the lining-out of plaster to simulate masonry, or the surfacing of asbestos-cement by some photographic process in reproduction of oak. It is the unconscious inability to think in terms of the new material or the new problem, so that the habitual appearance is carried over into the new conditions. The history of architecture offers many instances of this weakness in human ingenuity and, such is the facility with which artistic refinement can reduce appearances to our liking, the resultant forms are often held in high esteem.

An early instance of carried-over form is the Egyptian reeded column, in which the stone-work retains the form of the bundles of reeds that preceded it.

The most famous of all is, of course, the Greek Order which clearly exhibits in marble its derivation from timber construction, modified by the addition of terra-cotta dressings, before translation into stone. This is not to say that appropriate changes were not made at the transitions. For one thing the shortening of lintel spans was unavoidable. And refinements were introduced—both optical, such as the use of fluting to make cylindrical surfaces more clearly indentifiable, and emotional refinements, such as the choice of profiles according to their position and the imagined work that they were called upon to perform. Indeed it is admitted that the Classical Orders had already in the fifth century B.C. attained a perfection of form never since equalled in the design of the orders, still less surpassed. Can it be that, if the Athenian architects had first gone to school in Ionia, where experimental science was then being born in the liberal climate of the Greek colonies, before expending their brilliant ingenuity upon the perfection of obsolete forms, then the subsequent history of Classical Architecture might have been one of sustained and orderly progress, instead of many centuries of repeated imitations never attaining again to the original perfection of Athens?

The carry-over of architectural form in the Greek Orders was largely influenced by religious considerations as the most elaborate buildings in the Golden Age were the temples. It was felt that if the new temple was too unlike the old, the god would not recognize it and return to dwell there again at the reconsecration. A not dissimilar emotion persists to this day in the preference for the Gothic arch for religious buildings, no matter how unsuitable the material, as in the windows of many a corrugated iron mission church, or the location, as in the wilds of a tropical jungle, or the recent R.A.F. chapel in North Africa.

MODERN INSTANCES

Modern instances of this tendency to carry over old forms into a new situation confront us on all sides. The multiplication of minor examples is perhaps more illuminating than a sketch of broader tendencies. An instance often noticed is the misuse of rusticated stone-work for the casing of a steel structure. In massive walls there was a risk of the edges of the ashlar blocks spalling off in the lower courses. This was prevented by chamfering those edges. Such chamfering also served the purpose of emphasising the size and thickness of the stones, so that this and other forms of rustication came to be the accepted treatment for the bottom storey of a massive building. To carry this treatment over to stonework that is mere facing to steel was either thoughtless or a deliberate falsification.

But it is important not to be hasty in ascribing an apparent carry-over to mere copyism. For example, the grooving out of granolithic paving in small squares, which appears to imitate stone setts, has two reasons appertaining to the newer material. One is to release the surface tension to avoid cracks, the other to prevent slipping.

A type of carry-over that is common, is where the newer material has no particular shape due to the exigencies of the material itself, and is so tractable that almost any modelling can be imparted to it. Cast iron is one of these. In the last century iron masqueraded as wood treillage, ropework, logs with the bark on, masonry, and many others; so that modern designers pass over in contempt what is by nature an excellent and versatile material.

Coming nearer to the present time, one notices the meagre size of the panes in standard steel sash, and of the panels in standardized tea-shop style plywood panelling. The meagre proportions are a carry-over from the limitations of the previous material.

STRUCTURAL EXAMPLES

The tendency to carry-over is by no means confined to matters of architectural form in the restricted sense. It also appears in structural practice. For instance, the almost universal provision of a slight fall to asphalt flat roofs. There is not the least need for this and the grading is an addition in labour and materials. The asphalt indeed would be better preserved for a little water standing on it. The slope is a carry-over from sheet metal construction.

A fairly common method of wall construction is reinforced concrete frame with brick infilling to the panels. This is not a logical way of using moulded concrete, which so easily runs in broad masses of continuous walling, doing duty here as pillar, there as beam, and elsewhere merely as weather protection. The unnatural restriction of concrete into posts and beams of small section is a carry-over from steel frame with brick infilling.

A very recent example is the compilation of tables of properties for standard sections in aluminium alloy. These sections are to be of the same shapes as those already in use for steel, although the newer metal with its different physical properties—such as a lower modulus of elasticity—demands a new range of sections proper to itself.

Another not so recent example comes from the early welded steel multi-storey framed buildings. It is customary in riveted construction to change the section of a stanchion at a few feet above the floor level, so as to avoid the complexity that would result if the cover plates to the stanchion and the bearings of the girders occurred together. This position for the change of stanchion section, with its awkwardness for internal finishes, was unthinkingly maintained in the early welded versions. In later examples, the change occurs where it should, at the level of the floor girders.

ENGINEERING EXAMPLES

To move on to an example where the architect probably had no part in the definition of the form of the new invention, consider the electric light bulb. The choice of a point source for the emission of electric light gave birth to a whole industry whose sole function has been the attempted rectification of that original error. The intolerable brilliance of the filament concentrated at a point has had to be masked, reflected, shaded, filtered, concealed—half a century of lost efficiency and elaborate botching, which is only now drawing to a close with the recent introduction of the fluorescent tube: and all because the inventive engineer could only think in terms of artificial light sources that had gone before him—the individual flame from candle, lamp and gas jet.

This tendency to carry over forms after they have lost their meaning is, as will have appeared from the last example, by no means confined to architecture. To go further afield, take an ordinary table spoon. Many generations ago the manual craftsman used to make the bowl and the handle separately, and then to braze the two together. Nowadays they are stamped or moulded in one piece, but on nine out of ten you will still find the rat's tail on the back of the bowl which used to effect the junction between the two.

We architects are often advised to take as our models for functional design the products of the mechanical engineer. But what do we see? Why is the engine of the automobile placed at the front, in spite of all the problems in transmission of power to the driving wheels at the back? It is not there, as some argue, to keep the driver's toes warm, nor as a shock absorber when he encounters a lamp-post. The motor car is still the horseless carriage, as it was dubbed at its introduction; the ghost of a horse still trots in front of the driver, who, to prove it, measures the capacity of his mechanical ghost-horse in terms of horse power.

The railway coach shows a similar carry-over. We are accustomed to the queer little compartments each with its separate door and take them for granted. But who, confronted with an empty shell of a coach, would subdivide it for seating in such a curious manner?

Reference to early railway prints supplies the explanation. There we find on the first coaches a painted line on the outside in a series of sagging curves, marking off each compartment at the bottom to a shape reminiscent of the curved underside of the old stage coach. It is of course a carry-over. We rub knees in our cramped compartments because Pickwick rode that way. It is a wonder we are not still expected to clamber up on to the roof when it is full inside.

WEAKNESS OF INVENTION

Enough has been said to indicate that this tendency to carry over obsolete forms is not the peculiar shame of architecture, but a widely spread weakness of man's invention. It is often due to superstition, or else to conservatism (which is a compound of superstition and lethargy), but most of all to the difficulty of fundamental logic which is a very real barrier to the attainment of clarity in design. Every designer who has made the attempt to discard habitual forms and to solve a problem from the logic of the situation alone, knows well how easily his pencil runs along the well-worn lines. That is the easy way ; and unfortunately it is made still easier by the resources of modern technique. There is always a material or a technique available to make a passable construction out of an ill-conceived design. For instance, there is scarcely any limit to the loads and spans attainable in steel construction, but it is quite another matter to make exactly the right demands upon the steel constructor. It is not enough for architects to sit back and accept the results of science like ripe plums falling in our laps. We must ourselves acquire enough of the scientific outlook, and become sufficiently well acquainted with the theories and experiments that lie behind the results, to assess the value to architecture of the many different products and methods that are presented to our notice. Unless we do this, there is always the risk of taking one aspect of science and running it for a short time as an architectural craze, just because somebody of great knowledge and persuasiveness read a paper on that subject to the Royal Institute, and its novelty took us all by storm. Usually it is something that should not have been new to us at all. An instance of this was the craze a few years ago for insolation. The architectural press was at that time replete with elaborate diagrams and machinery for measuring the number of hours per day during which the sun might, if not obscured by cloud, shine into a particular window and how far it would strike into the room ; sunshine was for a time the main factor in the design of every house ; and the craze ran on until the term Suntrap was added to the vocabulary of house-agent's English.

Just as crazes are bad in the profession at large, so the individual architect has no business to specialize in any one branch of science to the exclusion of the others ; or rather he abdicates from his function as an architect if he does.

COURSE OF STUDY

It is with these considerations in mind that the Architectural Science Board embarked upon a very wide course of subjects for these lectures. Some of the subjects so far attempted have been Soil Mechanics, Lighting (natural and artificial), Weathering, Ventilation, Hygiene, Heating, Sound Transmission. The method of dealing with each subject that is asked of the lecturers in conference beforehand, is first to give a broad impression of the present state of knowledge on their subject, second to pack in as much hard fact and illuminating illustration as will go, and third to give some simple rules and approximations for rapid use at the sketch design stage. The subjects dealt with in this manner have been diverse, but they all have their bearing upon architecture and each contributes towards a deeper conception of the art. After those that have a general bearing on design, although the list of possible titles has by no means been exhausted and will be returned to later, we have turned in the present series to subjects that have a more direct bearing upon the construction of buildings. These have been concerned with the three main materials for constructing the skeleton of a building—Timber, Metal and Reinforced Concrete—and are well suited to prompt some broad reflections upon the influence of Science upon Architecture, and structural invention upon architectural form.

SIMILARITY OF FORM

These three methods of construction are, as we have seen from the three lectures that we have attended in this series, approaching a similarity of form that should be particularly acceptable to architects—the architect's function being to conceive the building project as a whole in all its implications—for we now find that structural theory is coming to meet him half-way, in offering structures that are conceived as a whole, rather than as the sum of separately calculated parts. Let us summarize the three lectures from this point of view.

TIMBER

Mr. Reece, in his lecture on New Developments in Timber Construction,* paid us the compliment of presenting a closely reasoned theoretical analysis leading up to conclusions of more immediate utility to the architect. The clarity of his explanation was so illuminating that an understanding of the inner behaviour of timber under conditions of strain can now become part of the architect's mental equipment. It would not have been so valuable had he merely listed the new developments such as Stress Grading, Laminated Construction, Ring Connectors, Adhesives and the rest, given a few figures for working stresses and ended with a run of pictures showing examples of recent structures employing the new methods. That would have been a superficial approach, which does not really meet the architect's needs. The list of new developments and the illustrations of recent uses would merely have whetted his appetite, and might have prompted inappropriate applications of the new methods owing to imperfect understanding. As for a table of working stresses, these belong to the detailed checking of a design, and not to the original conception of it, which is the highest function of design. The analytical knowledge presented in Mr. Reece's lecture, when fully assimilated, can become part of the unconscious mental background of architectural design in timber.

For the details I must refer you to his lecture, but here is a synopsis.

Timber, though one of the oldest of materials for the craftsman, is, owing to the lateness of its scientific analysis, one of the newest in potentiality. A comparison of strength-weight ratios (which are a useful avenue leading to strength-cost assessments) between timber, metals and plastics shows timber best in flexural rigidity (that is, for all components lightly loaded in relation to size—slender columns, long beams, stressed skin construction), stronger than steel in tension, weak in sheer and, as plywood with a plastic adhesive, good in compression and best of all again in bending. This analysis confirms most of the traditional uses of timber, except that members have tended to be larger than necessary and, more significant, the use of timber struts but steel ties in a truss is a reversal of their respective best properties.

Two reasons for this reversal are given—knots which hitherto unpredictably diminish tensile strength, and joints which are made by cutting away part of the member's cross-section. These two faults of timber construction can now be overcome by stress grading, which by statistical method gives quantitative values to qualitative judgments upon samples from a batch ; by laminated construction which allows the average instead of the lowest strength to dictate the working stress ; and by the use of the new and stable adhesives, together with the intersurface connectors, to design joints that develop the full strength of the member.

* Published in last issue of the A.J.

The use of the plastic adhesives means to timber construction what welding means to steel construction, namely, the possibility of rigid frame or one-piece construction, whether it be the laminated arch or the plywood box girder with rigidly connected uprights, or the stressed skin of the Mosquito wing.

The Redux adhesive, not long released from the secret list by the Ministry of Aircraft Production, which can join metals to timber, as well as to metal, by specific adhesion, points the way towards the design of composite one-piece structures in which metals, timber and plastics are combined with each in its most advantageous situation.

METAL

Mr. Moon's lecture on Welded Steel Structure* followed a different pattern. The research work upon welding is not recent, as with timber, but was elaborated many years ago. The reason why welded structures are not common in this country is that their use has been deliberately stifled by a price ring (reminiscent of Breakages, Ltd., in Mr. Bernard Shaw's play *The Apple Cart*) designed to maintain in use the capital equipment already established for riveting. The stress of war has forced the adoption of the more economical method for war production, and it is hoped that the many thousands of trained welders available after the war will exert sufficient pressure for their skill to be employed.

Mr. Moon began by stating that a weld is the natural method for joining metals and instanced the wedding ring, which is welded by hammering. Continuity of homogeneous material is the characteristic of a weld, so that the welded structure becomes one piece of metal. The rigid framework is economical (some 20 per cent. of weight is saved) and it expresses the inherent character of steel, which is first of all strength and furthermore strength with lightness and slenderness. Welding develops the full allowable load to best advantage—if one part is overstressed the stresses tend to redistribute themselves—with the result that the peculiar character of steelwork is most clearly brought out by welding.

This emphasis upon the character of the welded construction was a marked feature of the commentary upon a very ample series of illustrations. The intellectual and æsthetic satisfaction that welded construction affords the designer is a strong recommendation for the addition of the welded method to the architect's vocabulary.

Much encouragement was given to any architect desirous of making the attempt to think in terms of welded frame, by the story of a small structure shaped as half a decagon (or a Mansard roof on posts), in which the original choice of steel section by the simple graphical method of the load line parabola, was confirmed by four subsequent analyses in ascending order of complexity. Mr. Moon gave other useful approximations for the sketch-design stage, and revealing explanations of technique, for which reference should be made to the published version of his address.

The examples shown ranged from multi storey structures, in which advantage was taken of the savings effected by continuity of girders and stanchions, to two-pin and three-pin arches of small and large loading and span ; and to north-light and monitor-type tree-form structures ; and ended with a series of bridges of arch or girder, or mixed arch and girder, shape, in which last the magnitude of the structure compels, as it so often does, a faithful presentation of the essential possibilities of the material and method employed.

One particular bridge had evoked a comment which has great significance. It was a two-pin frame with legs sloping outwards, in the form of approximately three sides of an octagon, so that its classification would be partly a girder and partly an arch. The cleanness of the welded platework and the evident rightness of the tapered legs, and of the disposition of material generally, so impressed an experienced

* To be published in a forthcoming issue of the A.J.

craftsman that he exclaimed that it gave him the same feeling as did the interior of a vaulted cathedral. In both cases the unity of the structure and the rightness of the form can impress the beholder with a satisfaction that is at the same time intellectual and emotional.

CONCRETE

Mr. Parry's lecture is too recently in our minds to require more than a short synopsis.* The possibilities of reinforced concrete for monolithic design are a commonplace, but it is not so well understood that the design of the formwork is a master factor. We used to be told that reinforced concrete is a plastic material, in the sense that it can be moulded to any shape. So it may be, but the timber and steel used for the moulds are rigid, and if the would-be designer of reinforced concrete could be persuaded to think in terms of formwork, he would come much nearer to using this material in its appropriate fashion.

The most important characteristic of design arising from the best use of formwork is simplicity and continuity of line or pattern. Special shapes were said to be easy to make provided they run in the direction of repetition and not against it.

The monolithic character of the material is further emphasized by Mr. Parry's insistence upon the rhythm and continuity of operations —whole columns and walls should be poured in one operation, the use of sliding forms was significantly described as, in effect, fabrication by extrusion. His deprecation of imitation finishes, and of subsequent working of the surfaces by chemical applications, hammering or rendering; and his recommendation of surfaces straight from the mould, after attention to clean joints between lifts and a good face, remind us that reinforced concrete is a material that merits respectful understanding of its possibilities by the designer.

UNITY OF FORM

There emerges from the consideration of these three materials—timber, metal and concrete—in their present stage of development, a suggestion of the unity of structural form. That unity is of course a fact of nature, but the fortunate situation at the present time is that the current technique of structural method serves to bring out that unity, instead of to obscure it. Rigidly framed structures are total structures, imagined from the first as coherent wholes, rather than by the laborious juxtaposition of many component parts. One is no longer to think in terms of stanchion plus beam, or pier plus roof truss, or wall plus floor (each being separately calculated), but to return to a conception of building that is in some ways primitive, and imagine the whole structure as one piece, as did the builders who in the past might have used the simple cruck for pillar and roof-tree combined.

But it is not to be merely a return to the primitive. We have the resources of mathematical analysis to assist our understanding of form. The unity of that analysis can be a partner to the unity of artistic conception. The closer we study the structural theory, and the results of research into the nature of materials, the better shall we cultivate that instantaneous feeling for correctness of form. The parabola of resultant forces is a mathematical conception, but it portrays a physical fact, and is an example of how science can furnish the artist with a picturable idea to give intellectual meaning to emotional appreciations of form.

THE LAMP OF TRUTH

John Ruskin in his *The Seven Lamps of Architecture* named one of his lamps The Lamp of Truth. The principle was good, but his applications of it were superficial. He found all his seven lamps best tended in Italian Gothic architecture, and his influence caused that very alien style to be much imitated in this country. As an example of truth, he would praise the Gothic arch with its hood-mould around it, clearly defining the upper limit of the arch-stones; and he would blame the classical arch in which the voussoirs run up into the coursed ashlar above. Had the conception of the resultant parabola been available to him, he might have advocated truth in architecture with more reliable exhibits.

A significant justification of the parabola occurred in a bomb-damaged church. The parts of the chancel arch and wall, that were less firmly held in place by the resultant of pressure, were shaken down by the shock, leaving the profiles both of the underside of the arch, and of the top of the walling above, in distinctive parabolic form.

Truth in architecture is not merely a matter of approving one form of arch as true, not even the parabolic and condemning others as false; nor yet is it mere frankness of structure, achieved by exposed steelwork or unceiled timber roofs. Nor, again, is it the narrow interpretation that its critics used to lay upon Functionalism, as if the meticulous assessment of all the practical factors in a design could automatically dictate the solution. Practical considerations must of course have their place, or the design does not begin to qualify at all: but the rightness of a design needs to be readily understood—and felt.

If the exigencies of structure do not require one form more than another, then the refinement of shape follows the demands of emotion. The distinction in Greek mouldings between the upright wave for the crowning mould, and the reversed wave for the supporting mould, is an example where the emotional understanding of the situation takes command, for there would be no serious risk of the marble spalling off if the upright wave were worked in the supporting position, but that would feel wrong to the eye.

On the other hand, when the demands of the eye are in conflict with the proprieties of structure, then the eye must be taught by the mind. The eye must learn, for example, that the sagging line of a fish-belly girder is not weaker but stronger for its greater depth where the bending stress is greater. In the same way a two-pin arch should be deep at the supports, shallow around the points of contraflexure and deep again in the centre. It is an offence against the intellect, and bad education for the understanding eye, to smooth away that undulating profile, which should be characteristic of the two-pin structure, out of deference to a preconceived æsthetic.

THE ARCHITECTURE OF HUMANISM

But why, it will be asked, is this of importance? May we not let Taste be the final arbiter, provided that stability and convenience have had their due? It is because architecture has a contribution to make to man's realization of his environment. Architecture can surround civilized man, as it does to-day, in a world of shams, deadening his susceptibility of intellect and feeling; or it can give him enclosures that portray the forces of Nature in a manner that his mind and spirit can apprehend. The distinction between intellect and emotion is very largely one of verbal convenience. One has heard mathematicians exclaim upon the beauty of an abstract proposition. So it is not out of place to demand that a work of art should seek intellectual and emotional justification at the same time. Truth in architecture, the true functionalism founded upon scientific understanding, can provide the much-needed intellectual backbone to æsthetics. It removes æsthetic understanding from the exclusive province of the æsthete and makes Everyman a participator. For the answer to the question "does it work?" can be given to any man who knows how to tinker with his motor-bike; and to go on to the question "Does it look as if it works?" is no very hard step to take. But it is a step of supreme importance, for there is the Architecture of Humanism—an architecture within the comprehension of the ordinary man who is able to understand its simpler message to him, but at the same time an architecture that at higher levels of understanding admits of limitless intellectual analysis and emotional refinement—and, most of all, has the potentiality of achievement more splendid than anything that has gone before. The welding craftsman, who felt himself to be in the same line of tradition as the cathedral builders of the past, voices clearly a latent demand for the true Architecture of Humanism, and warns us to stop our ears to the demands of the pedants and the æsthetes who claim to speak in the name of Humanism.

FALSE PROPHETS

Among the pedants is the Art Historian. He has been arguing for the return, in the name of Humanism, to adventitious ornament in architecture. It is not a disinterested appeal. It is from the convenient labels afforded by ornament that the insensitive pigeon-holing mind can catalogue the exhibits in his museum, and lead round the parties of reluctant school children telling them that the dog's tooth is Norman but the strap ornament is Tudor. Unless modern architecture is to be prematurely relegated to the museum, this appeal for the return of superimposed ornamentation must be refused. And remember that architecture was at its lowest ebb in the whole of recorded history during that part of the last century when the art historian was supreme.

A similar appeal that appears to have more weight in it, but is none the less superficial, is the æsthete's advocacy of a return to the cult of the Picturesque—in the landscaping sense of the direct appeal to the eye. (It may be noted in passing that these specious appeals to step aside from the main stream of architecture always involve a return to something or other in the past.) The advocates of landscaping our cities in the manner of the Picturesque would admit any object and any form, however debased, provided that the self-conscious æsthete could go into a squirm about the pictorial effect of a certain vista seen from a particular point of view. Of course, the visual appeal is important, but that way would produce an æsthetic without any backbone at all, powerless to resist the assaults of controversy or the vagaries of fashion.

As will be recognized, I am joining issue here with the current policy of *The Architectural Review*, chiefly for an exaggerated stress on the visual appeal which is bordering upon the ridiculous. The cover design of the February issue is, however, an example from the past of just that union of Science and Art that I am advocating in this paper. It shows an exquisitely drawn human skeleton, closely annotated, leaning in an easy attitude against a classic pedestal. The *Review's* comment is quoted:

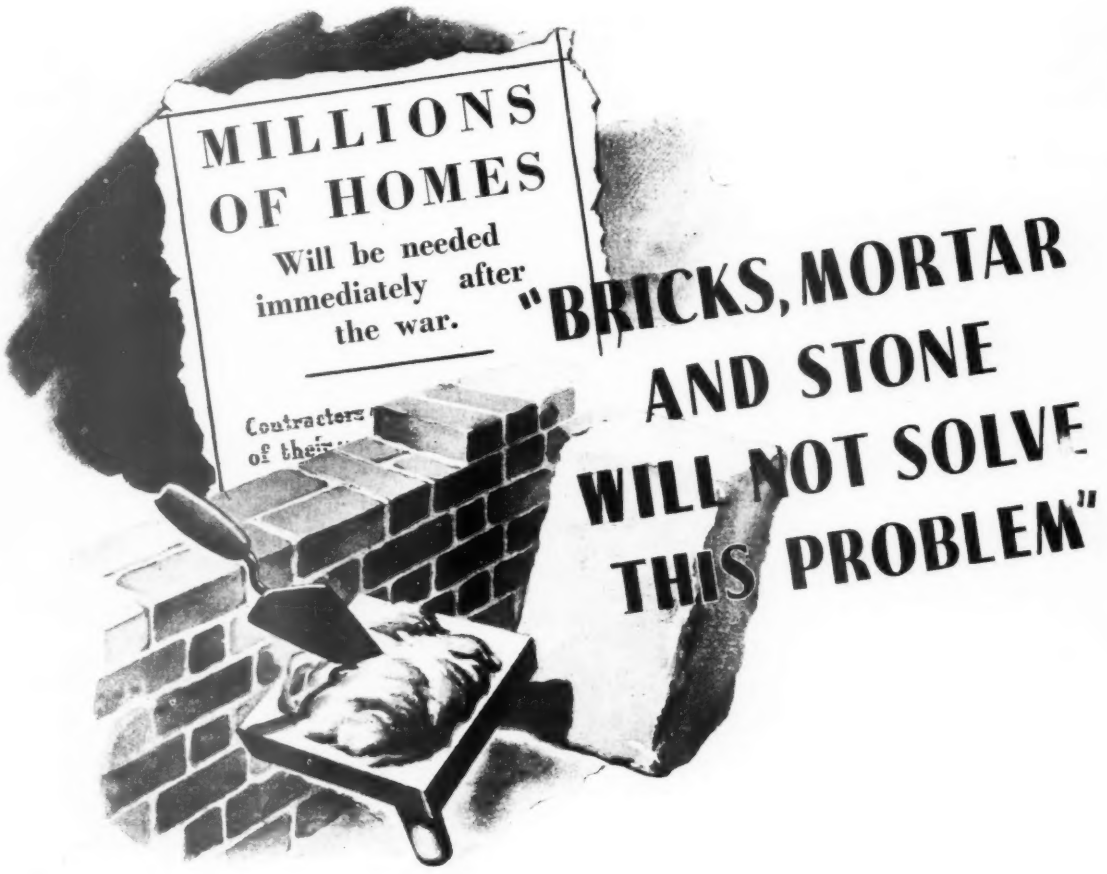
> "... visual intensity is combined with an equally strong emotional intensity. The skeleton is not placed before us stiff as a doll—which is what an anatomical primer of to-day would do—but in an attitude as though it were a live being stripped of its flesh. There is a great value to the student in such a presentation. ..."

SPLENDOUR

The pedants and the æsthetes are men of straw, easily dismissed provided they are recognized. More serious is the risk of a popular revulsion after the war from anything that savours of austerity and an insistent popular demand for everything that is lavish. This is what happened in Russia when the lean period of the Revolution was past. Functional Architecture—the product of the keenest architectural minds of a generation in search, through simplification, of essential rightness of form—has gone into battle-dress as Utility Building. There is a risk that this may be the end of that great adventure.

The post-war craving for splendour must, nevertheless, be served. There is nothing dishonourable about it. Indeed it should be encouraged, for it will nourish and keep strong the popular determination to rebuild all our world to a better design. But if the Disenchantment, that was so characteristic of the twenties, is to be avoided this time, the splendour must be of a different kind. Then

*To be published in a forthcoming issue of the A.J.



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it was the conspicuous waste advocated by a certain school of economics. (Adventitious ornament is but an example of conspicuous waste.) Now the very magnitude of our task must, in the manner of its achievement, provide the splendour that we crave. Science must give us a deep understanding for that splendid achievement and our understanding of it must find its clear expression by Art.

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OBITUARY

The death has occurred in New York of Dr. L. H. Baekeland, the scientist. Born in Ghent in 1863 Leo Hendrik Baekeland graduated as Doctor of Science at Ghent University in 1884, and emigrated to America where he pursued his chemical researches. In 1893 he founded the Nepara Chemical Society and manufactured Velox and other photographic papers, which were his invention. After selling his Company to the Eastman Kodak Company he devoted his time to chemical research work. As a Consulting Chemist he helped in the development of the Townsend Electrolytic Cell for the Hooker Electro Chemical Company of Niagara Falls. Becoming President of the Bakelite Corporation, he began his most important work, which will no doubt give him perpetual fame as a pioneer of plastics.

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County Architect.

Park Street,
Taunton.
9th March, 1944. 573

OVERSEAS EMPLOYMENT.—TOWN PLANNING OFFICER required by the Sierra Leone Government Public Works Department for one tour of 12 to 24 months, with possibility of further employment. Salary scale £475, rising to £840 a year. Initial salary according to age, qualifications and experience. Free passages and quarters. Candidates must be Associates of the Royal Institute of British Architects and preferably also Associate Members of the Town Planning Institute, or hold equivalent qualifications and have had good town planning and general experience of municipal work.

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Architectural Appointments Vacant

Four lines or under, 4s.; each additional line, 1s.

Wherever possible prospective employers are urged to give in their advertisement full information about the duty and responsibilities involved, the location of the office, and the salary offered. The inclusion of the Advertiser's name in lieu of a box number is welcomed.

JUNIOR ARCHITECTURAL ASSISTANT required for West Norfolk. Apply stating experience, age and salary required, to Box 271. Permanent position with good prospects. [Architect and Surveyor].

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Classified Advertisements continued on page xlviii.

ARCHITECT - ENGINEER, qualified, American citizen, desires new appointment, varied experience. Box 257.

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ARCHITECT, fully qualified, A.M.T.P.I., with long practice, first-class references, seeks change. Would consider responsible position where initiative, drive and capability appreciated. Post-war development, housing, prefabrication, town planning. Reply to Box 275.

ARCHITECTURAL ASSISTANT desires change. Keen, practical. Experience in private, commercial and Local Government offices, and constructional experience. Now studying for R.I.B.A. Age 21. Exempt H.M. Forces. Box 276.

Other Appointments Vacant

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ASSISTANT EDITOR wanted for Architectural Paper. Write, with full particulars of qualifications, salary required, &c., to Box 51.

ASSISTANT SECRETARY, preferably with some technical knowledge of the Woodworking Trade. Reply by letter only, stating age, experience and salary required to The Secretary, The English Joinery Manufacturers' Association (Incorporated), Sackville House, 40, Piccadilly, W.1. 563

RESEARCH ASSISTANT required to work on housing and prefabrication. Editing ability necessary. Full applications Box 566.

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SUBSTANTIAL AND ENTERPRISING WOOD-WORKING FIRM, London area, is looking for SUGGESTIONS AND COLLABORATION from those who have specialized in the manufacture, sale or design of architectural or other specialized wood-work. Sports goods also considered. Preparatory work undertaken as soon as possible. Purchase of controlling interest in company complementary to the above considered. Replies should indicate the nature of the proposal, be marked "Principal" and will be treated as confidential. Box 564.

WANTED copies of *The Architectural Review* for September, 1943. Ref.: Methodist. Box 266.

PROGRESSIVE BUSINESS MEN'S FORUM.

A debate will take place on Wednesday, March 22nd, at 5 p.m., at Langham Hotel (Bolivar Entrance, Chandos Street, Cavendish Square, W.1) on the "Nationalisation of the Mining Industry."

For, Mr. Will Lawther, President of the Miners' Federation; Against, Sir Arnold Ridley, K.B.E., M.P. Business and Professional men are cordially invited. 571

TECHNICAL JOURNALIST undertakes writing interesting articles and providing drawings from data supplied on Building and Civil Engineering matters. Many articles already published in technical journals and trade catalogues. Box 570.

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