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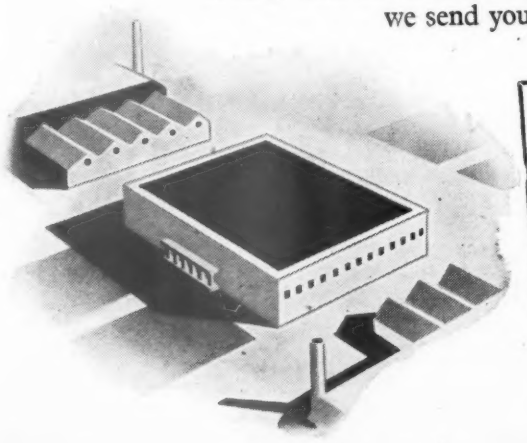

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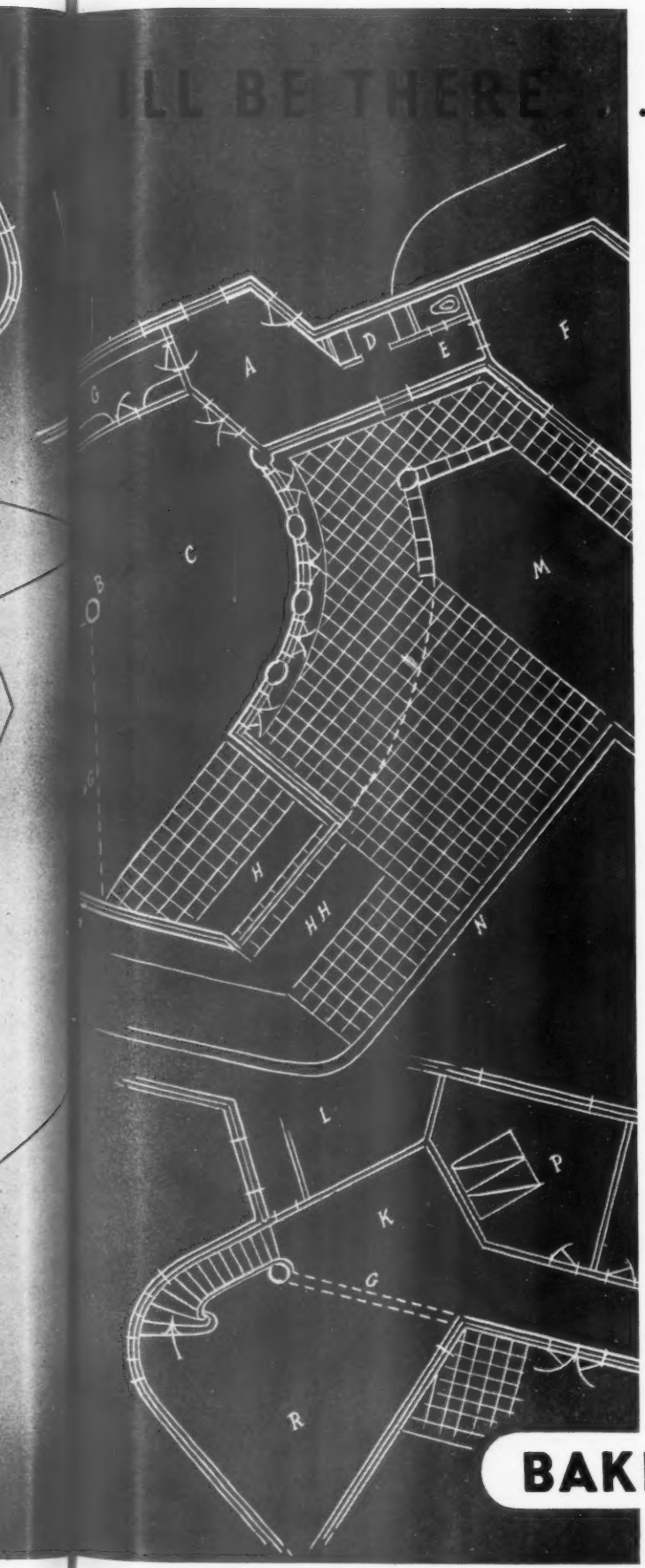

MAN has long worked in wood, metal and stone and become wise in their ways. He has made many beautiful and useful things of these materials. They have served him well, and will continue to serve him. But the list of new, man-made materials is growing — their influence on construction and design is constantly increasing.

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The pre-fabricated plastics house may be as yet a distant prospect, but let us keep an open mind about the future, for the history of the past three decades tells us that progress in the realms of science can overtake the most imaginative dreamer.

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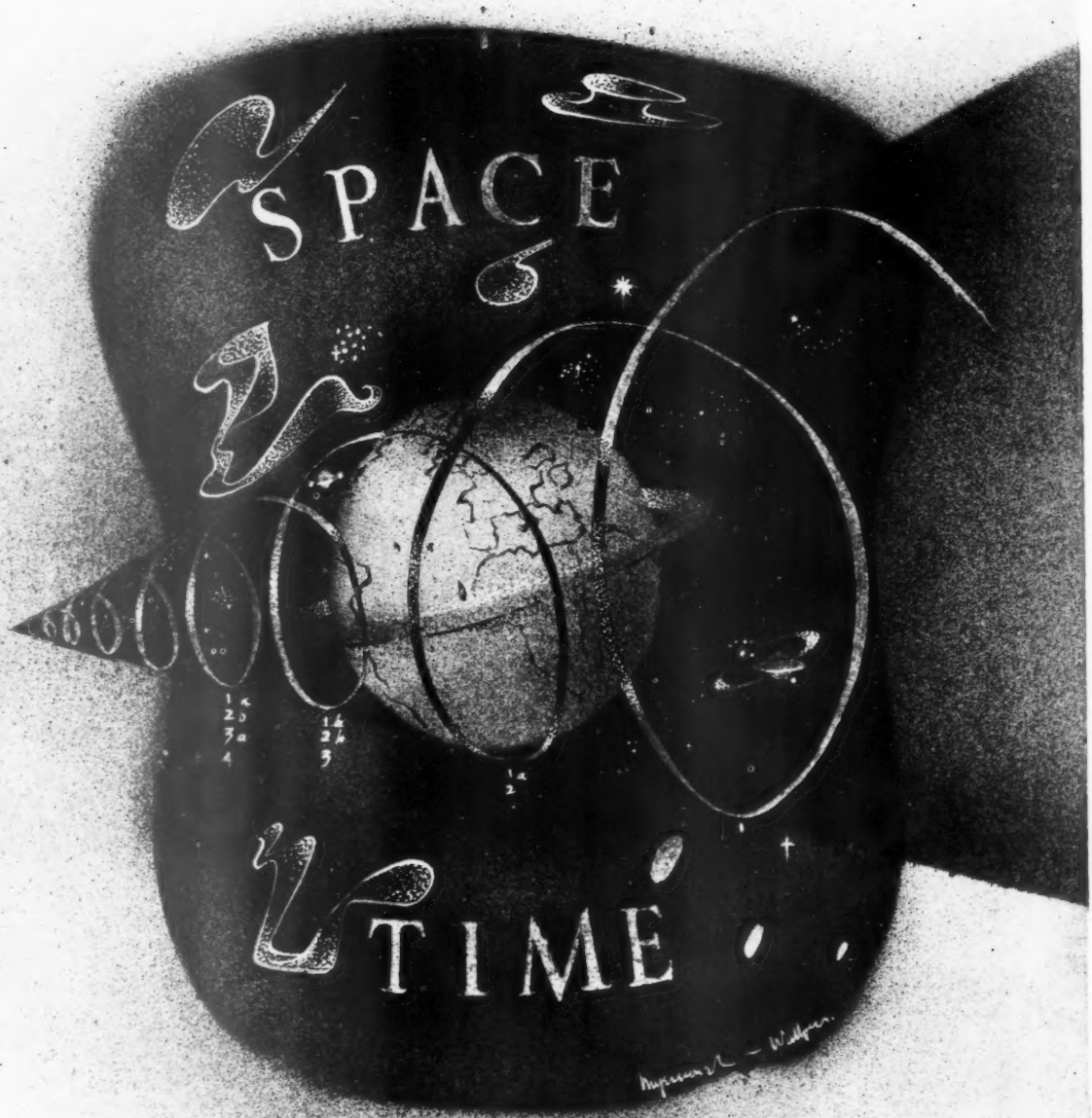
The Editor will be glad to receive MS. articles and also illustrations of current architecture in this country and abroad with a view to publication. Though every care will be taken, the Editor cannot hold himself responsible for material sent him.

THURSDAY, OCTOBER 29, 1942. NUMBER 2492: VOLUME 96

PRINCIPAL CONTENTS

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this JOURNAL *should not be taken as an indication that they are necessarily available for export.*

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



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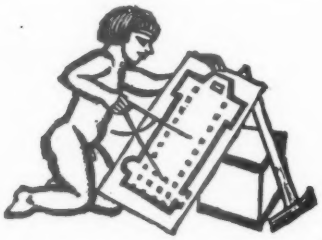
ST. NICHOLAS COLE ABBEY, KNIGHTRIDER STREET, CITY—a Wren church. The original wooden spire of the church has been burnt down. To the left is the tower of St. Mary Somerset Church.

In common with every other periodical and newspaper in the country, this JOURNAL *is rationed to a small proportion of its peace-time requirements of paper. This means that it is no longer a free agent printing as many pages as it thinks fit and selling to as many readers as wish to buy it. Instead a balance has to be struck between circulation and number of pages. A batch of new readers may mean that a page has to be struck off, and conversely a page added may mean that a number of readers have to go short of their copy. Thus in everyone's interest, including the reader's, it is important that the utmost economy of paper should be practised, and unless a reader is a subscriber he cannot be sure of getting a copy of the* JOURNAL. *We are sorry for this but it is a necessity imposed by the war on all newspapers. The subscription is £1 3s. 10d. per annum.*



from AN ARCHITECT'S *Commonplace Book*

" London fascinates. One visualizes it as a tract of quivering grey, intelligent without purpose, and excitable without love ; as a spirit that has altered before it can be chronicled ; as a heart that certainly beats, but with no pulsation of humanity. It lies beyond everything : Nature, with all her cruelty, comes nearer to us than do these crowds of men. A friend explains himself ; the earth is explicable—from her we came, and we must return to her. But who can explain Westminster Bridge Road or Liverpool Street in the morning—the city inhaling—or the same thoroughfares in the evening—the city exhaling her exhausted air ? "

Howards End, *By E. M. Forster.*

Though every news item is news to someone, it doesn't follow that all news has the same value for everyone. The stars are used to draw attention to the paragraphs which ought to interest every reader of the Journal.

★ *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 paragraph marked with more than two stars is very hot news indeed.

N E W S

Lord Portal, Minister of Works and Planning, is to be the guest of honour of the London Master Builders' Association at a celebration meeting at the R.I.B.A. on December 3 to mark the 70th BIRTHDAY *of the Association, which was founded in 1872.*

★★

In the House of Lords last Thursday LORD REITH *introduced a motion calling attention to the machinery of planning advocated in the Reports of the Uthwatt and Scott Committees; he asked the Government whether they propose immediately to adopt some such essential first step in preparation for post-war reconstruction. Lord Reith's speech is printed in full on page 288.*

Ditchling, a well-known Sussex beauty spot, has been SAVED FROM THE BUILDER. *MOWP has refused an application by a development company to build 2,000 model houses on 700 acres of land adjoining the High Street.*

★

"The London of the Future is already OUT OF DATE" *was the title of an article by Professor Reilly on the R.A. Plan for London in last Monday's "Evening Standard." Extracts from the article are printed below.*

All who go to the exhibition should realize that these designs, especially as regards the buildings shown, represent but one school of thought, that of the older men who live in the past rather than the present, let alone the future.

Let us take first the type of architecture shown. It is pre-steel, early 18th century British where it is not early 16th century Italian. Such architecture, especially in the hands of Sir Edwin Lutyens, President of the Academy and Chairman of this Group, can have a high standard of artificial beauty, like a well-dressed woman, but is in every case, to put it brutally, unreal.

It is unreal because it does not correspond to the life of to-day with its desire for sun and air and functional efficiency and will correspond still less to life after the war. Its stone columns and tall windows, garlanded and decorated, are derived from Italian palaces and belong to the parade life of princes, not to the new democratic world.

It is unreal because, though the buildings shown are steel buildings with steel doing all the work, yet they pretend to be stone or brick buildings, and do not allow the steel, with its immense possibilities of bridging wide openings and cantilevering from set-back piers whole facades so that they can be light and gay, even of glass, to affect design. In short, these drawings take no notice of the new architecture which has grown up all over the world during the last 30 years, an architecture which belongs by its very nature to the age of the motor-car, the airplane and a thousand other modern things.

MOWP has set up offices in Glasgow and Liverpool at which inquiries may be made, and information obtained, regarding the granting of CIVIL LICENCES *for* BUILDING.

The Regional Licensing Officer and Regional Technical Officer of the Ministry will be in attendance at the Ministry's premises, No. 16, Gordon Street, Glasgow, C.1, for interviewing applicants and answering inquiries on Thursdays between 10 a.m. and 5 p.m. On other days applications for information may be made to the Clerk in Charge, Civil Licensing Division, at the same address. Similarly a branch office has been opened at 81, Dale Street, Liverpool, where forms of application and notes for the guidance of applicants can be obtained between 9 a.m. and 6 p.m. daily (Saturdays 9 a.m. to 1 p.m.). To assist building owners, architects and contractors, the Regional Licensing Officer from Manchester, or his representative, will attend one day a week, at least, to give personal assistance to applicants. For the present that day has been fixed for Wednesday. All written communications should be addressed as heretofore—to the Regional Licensing Officer, 80, Princess Street, Manchester.

George Grey Wornum

Eight years ago next week the late King George V opened the new R.I.B.A. building in Portland Place, W.1; the architect was G. Grey Wornum, F.R.I.B.A., who, two years previously, had beaten 283 competitors in an open competition. Mr. Wornum has just been appointed Assistant-Director (Standards) in the Directorate of Post-War Building. Born in 1888, he was educated at Bradfield and the Slade. He received his architectural training at the Architectural Association, was articled to his uncle, R. Selden Wornum, F.R.I.B.A., and commenced private practice in 1910. Mr. Wornum served throughout the last war in the Artists' Rifles and the Durham Light Infantry. His buildings, apart from the R.I.B.A. premises, include the new British Girls' College, Alexandria, and the Highways Depot, City of Westminster (for which he was awarded the R.I.B.A. Street Architecture Bronze Medal, 1939) and he was decoration architect for s.s. "Queen Elizabeth." He was President of the A.A. in 1930. It might be worth adding (in view of the subject of this issue) that he is an expert on plastics, and designed this plastics section of the R.A. Exhibition of British Art in Industry held in 1935.

Numbers of requests have been received by MOWP for details of the STANDARD HUT. *These huts, which are designed for mass production, are at present being produced for urgent war purposes only and are not available for distribution for other purposes.*

The entire output is consigned to MOWP, and any Government Department requiring Standard Huts may requisition them from MOWP. The question of granting free licences to manufacturers to use the design of the concrete framework of the Hut is under consideration, and a public announcement is to be made as soon as possible.

Further advice on the practical application of payment by results is now issued by the Joint Advisory Panel of MOWP for the information of Contractors and Government Technical Officers who are responsible for the effective operation of the system on scheduled sites.

One of the main obstacles which has had to be overcome in applying the system has been

the difficulty of varying basic rates to suit site conditions. In *Site Adjustments*, which is Addendum No. 11 to the Payment by Results Memorandum issued by H.M. Stationery Office on March 31, 1942, the Panel gives its rulings on the variations which may be made. It is a most important document, which should be in the hands of everyone responsible for the application of the system. Copies may be obtained from A.S. 64 (Payment by Results), MOWP, London, S.E.1. To facilitate practical application of the system, notes were issued in January, 1942, and May, 1942, for guidance on questions of a general type that had arisen. These were called *P.R. Notes Nos. 1 and 2*. Now *P.R. Notes No. 3* is issued giving official rulings on further questions. Copies of P.R. Notes No. 3 may also be obtained direct from the Ministry (A.S. 64). Addenda Nos. 1-10 to the Memorandum of March 31 have been published as a *First Supplement*, which is now on sale at H.M. Stationery Office, price 2d.

At Stratford Petty Sessions on October 14, 1942, Mr. F. R. Steer and Mr. A. P. Steer, trading as Messrs. A. E. Roberts & Co. of 261, High Road, Leyton, E.10, were FINED £25 AND £5 *respectively for carrying on business under a title containing the word "architect," neither of the partners being a person registered under the Architects Registration Acts.*

★

The date for the submission of designs for the ILKLEY COMPETITION *has been extended to 4 p.m. on Friday, November 20. The competition is for the lay-out and replanning of the Castle Hill site and surroundings. The answers to questions have been sent to competitors.*

The Treasury-supported Council for the Encouragement of Music and the Arts (C.E.M.A.) has LEASED THE THEATRE ROYAL, BRISTOL, *which, dating from 1766 was in danger of being closed and used as a warehouse.* Now that the C.E.M.A. is in control only £7,000 of the £25,000 originally asked for by public subscription need be raised. Miss M. C. Glasgow, general secretary of the Council, said: "This action, the first of its kind, may be a sign of my Council's future policy. I hope the theatre will be reopened in February with a drama festival." The theatre was described in The ARCHITECTS' JOURNAL for September 10, page 161.

This issue is entirely devoted to an illustrated review of the existing and potential uses of plastic materials and products in building construction. Incidentally, an interim report on the subject, compiled by the British Plastics Federation on behalf of the Directorate of Post-War Building is to be submitted to MOWP on October 31.

THE FUTURE OF PLASTICS

NEARLY twenty years ago, an author, whose imagination has continually refreshed, perplexed and informed the somewhat staid outlook of the British nation, described a Utopia; and to point the contrast between this delectable land and the world as it was then, he took some earthly visitors there and confronted them with the remarkable achievements that scientific research may one day confer upon mankind. One of these visitors, contemplating the equipment of his Utopian bedroom, found that "the forms of everything were different, simpler and more graceful." His delighted surprise brought him to these conclusions:—"On earth, he reflected, art was largely wit. The artist had a certain limited selection of obdurate materials and certain needs, and his work was a clever reconciliation of the obduracy and the necessity and of the idiosyncrasy of the substance to the æsthetic preconceptions of the human mind. How delightful, for example, was the earthly carpenter dealing cleverly with the grain and character of this wood or that. But here the artist had a limitless control of material, and that element of witty adaptation had gone out of his work. His data were the human mind and body. Everything in this little room was unobtrusively but perfectly convenient—and difficult to misuse."

The writer, it need hardly be explained, was H. G. Wells. The book was "Men Like Gods." The year of its publication was 1923. The public had not yet heard of "Plastics," and yet Wells was visualising a world wherein designers had "a limitless control of material." That is precisely what Plastics give to the designer. Their range, their multifarious properties, their adaptability, and their capacity for stimulating innovation, must bring about all kinds of minor, and occasionally major, revolutions in the use of materials, not only in building but in many branches of industry. A capital mistake will be to assume that they can do everything; another, and one much more likely to be made, is that they are handy substitutes and not materials "in their own right," as it were.

This issue attempts a compact examination of the possibilities and problems created by the use of Plastics. It is an interim chart to enable designers to set a course that may lead them somewhere, instead of being caught distractingly in a whirl-

pool of admiration for the more superficial characteristics of the materials. Plastics certainly cannot do everything; but they can do a good many things, and may enable a lot of ideas, previously regarded as impossible, to become practical, everyday affairs. The chemist, the metallurgist and the engineer have brought so many surprises out of the hat of science this century that all our old preconceived notions about what is possible and permissible, have been destroyed. Even such time-honoured phrases as "when pigs have wings" are upset by institutions like the German Air Force. Plastics will upset a good many established beliefs and prejudices; and the chief danger is that persistent attempts will be made to preserve such prejudices and to turn the use of Plastics into a game of "Let's pretend" that we are still using wood, stone or metal.

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

LORD REITH AND NEW JERUSALEM

Last Thursday Lord Reith suddenly stepped forward in the House of Lords as champion of the two committees he set up as Minister, and attacked the Government vigorously for the lack of interest they have shown in their reports. "Why," he asked, "is the Paymaster-General, for whom I have a profound admiration, studying the reports of the Scott and Uthwatt Committees, and not Lord Portal? . . . Is he (Lord Portal) clear where he gets off and the Paymaster-General gets on, or are they both off and on together? . . . So long as there are two ministers," he concluded, "so long will there be confusion and procrastination, and I speak with no small experience of that particular administrative twilight."

His Lordship asked for three things in the following order :—

(i) Machinery for national planning now. The reports, he explained, did not recommend the abolition of the Ministry of Planning, but recommended the establishment for the first time of a Minister of Planning.

(ii) A Government decision on two at least of the major recommendations of the Uthwatt Committee—the acquisition of development rights in undeveloped areas, and the extension of powers of compulsory purchase in urban areas.

(iii) A decision on all points that had to be covered, and legislation thereon.

*

Urging the need for new machinery he said :—

On the only other occasion when I came here to speak, if not in from the sea, at least up from the seaside, I said that the lack of institutions was preventing the country from getting the most out of our key men. That applies to causes as well. By lack of institutions I mean the proper constitutional setting and adequate circumstances of all sorts to enable people to work and causes to be prosecuted. We are tired, some of us, of lip service to the Almighty and to dreams of new Jerusalems in what is left of our once green and pleasant land. New Jerusalems never have, and never will, come down from Heaven, and nothing of high significance — social, economic or physical—will ever come unless we start building now.

*

He gave the following outline of his own attitude to the problem :—

First, we cannot separate social and economic planning from physical planning. Secondly, in both the social and economic spheres and in the physical sphere, the machinery must be inter-departmental. Thirdly, about a dozen different Departments must all plan in their particular fields, planning not being the responsibility or prerogative of anyone. And, fourthly, there should be ultimately responsible one Minister, non-departmental, unbiased, of such authority as to be able to co-ordinate and reconcile, and, above all, to get things done.

THE R.A.'S REPLANNING

The R.A. exhibition is perhaps as good an example as one could wish to find of the kind of plan we are likely to get if physical planning *is* allowed to remain divorced from social and economic planning. That exhibition makes one realize how full a meaning has become attached in the minds of most of us during three years of war to "redevelopment" or "replanning." Replanning has come to mean the process by which an area of land surface can be brought—slowly or quickly—to provide the best conditions for *every* activity which will take place on it. In short, we know at last that in planning, as in the topographical survey which gave us the best maps in the world, one must always proceed from the whole to the part and never from the part to the whole. (Lord Samuel's view that the existing machinery at the centre would be all right if local boundaries were reorganized is more convincing in reverse.)

*

The "whole" as regards the replanning of London means infinitely more than the biggest aerial photographs can show. It means how its inhabitants live and work and warm and heat and entertain themselves, and how they might do these and many other things better. And one's strongest impression in Burlington House is of the danger that the public may be so dazzled by draughtsmanship and the prestige of the R.A. that they will forget this all-important fact.

*

It is true that the R.A. Planning Committee call their scheme one "for the *architectural* redevelopment of London." But this qualification, indeed the whole phrase, is meaningless. Redevelopment to make London a better place, whatever form it may take, must involve architects and architecture at every stage. The suggestion that architects can do their bit of redevelopment and then step aside for other

specialists to do theirs is specially unfortunate at a time when the idea of positive, comprehensive planning is just beginning to be accepted.

SCOTT, TRIPP AND THE CRITICS

Mr. Tripp's talk to the Town and Country Planning Association last week showed him to be as good a speaker as he is a writer. Lack of space and the fact that his talk was a précis of his latest book, fully reviewed in the JOURNAL for October 22, provide, however, two excellent reasons for not giving a further account of it here. What he had to say was very well received, and the audience clapped with real enthusiasm when he concluded by asking : " Why not now ? "

*

Sir Giles Gilbert Scott, in the chair, attempted to answer this question on behalf of the Town Planning Committee of the Royal Academy. The gist of his reply was that they had made a good start by including in their plan an elevated ring road on the lines suggested by Mr. Tripp, and that they hoped to work gradually towards a better solution of the problem presented by the roads of inner London—a problem which he frankly confessed they had not really tackled yet.

*

It's unfortunate that one of the points for which the Academy plan has been most criticized is their elevated ring road. Two critics at least have suggested that elevated roads are necessarily eyesores, and have compared them to railway embankments. In this case the comparison is apt, but there is no earthly reason why an elevated road *should* look like a railway embankment, or be less graceful than a well-designed bridge.

R.I.B.A. LECTURES

Last Saturday week saw about 100 architects with a sprinkling of other professions gather for the second time at the R.I.B.A. to be lectured on recent developments in the building industry. Speakers on this occasion were Mr. E. S. Andrews, and Mr. C. S. White, who were scheduled to speak on the effect of recent scientific research on the design of building structures, from the point of view of the engineer and the architect respectively.

*

The first lecture was remarkable, chiefly because it didn't deal with the subject set at all. From an engineer such a lack of precision was more than usually disconcerting. What Mr. Andrews did do was to spend most of his time lamenting that research work was better endowed in America than over here. Then having expressed some very proper sentiments on the possibilities of prefabrication he sat down. He did not even refer to such recent developments as prestressed concrete or the use of high tensile steel in building*, which I, at any rate, came to the lecture hoping to hear about.

*

Mr. White, by contrast, set out to summarize the results of war-time research, but rightly or wrongly he handicapped himself severely by assuming that his audience had not even read the war-time bulletins of the Building Research Station. The result was that his allotted time ended before he was able to do much more than give a brief and, on the whole, uncritical account of the subjects dealt with.

*

On the whole, these two lectures did not live up to the very high standard set by Mr. Skempton and Mr. Hausser the week before. Between them they introduced us in the humanest possible manner to a difficult subject, giving first a very clear outline of conclusions arrived at by research workers during the last twenty years, followed by a bibliography for those who might wish to pursue the matter further.

*

There is no doubt that the lectures as a whole were a success, and that the Architectural Science Board is catering for a long-felt need. The task they have set themselves is difficult to carry out in war-time, and they deserve to be congratulated on their enterprise in tackling it.

ASTRAGAL

* New only to this country.

LETTERS

Frederick Gibberd, F.R.I.B.A.
F.R.I.B.A.

R.A. Plan

SIR,—The Royal Academy have made proposals for the major streets of the City in the " Classic " manner. Could not also schemes be got out in the " Gothic " ? In this way the City Fathers would have an opportunity of choosing from both styles, thereby effecting a truly English compromise. Furthermore, other cities might borrow portions for their " reconstruction " schemes—the " Gothic " for the cathedral cities and the " Classic " for such cities as Birmingham, which already has a proposed centre in this style. This would undoubtedly save time and money on making surveys and the architects and town planners now serving with the Forces would have cut-and-dried jobs as draughtsman waiting for them when they are demobilized.

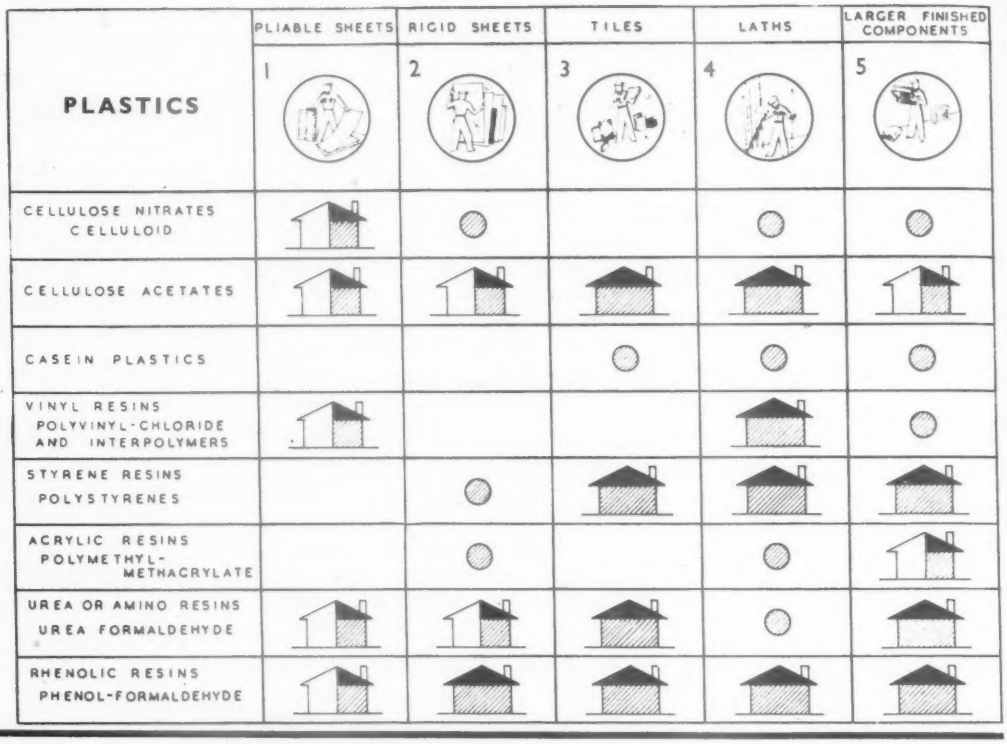
Of course, it might be that some would talk of new social conditions, new materials or new building methods, but should they become too vociferous, special jobs might be found for them, such as researching into, say, deep shelters or evacuation.

FREDERICK GIBBERD.

Unity in the Profession

Sir,—Translating Mr. Oldham's question from the personal to the general, I will answer that I regard Associateship of the R.I.B.A. as the hall-mark of a thorough architectural education and Fellowship as the sign of the successful application to actual practice of the skill so acquired. One follows from the other and the two are not alternatives. Architecture is judged for itself, but architectural ability can be assessed from graphical representation as part of a qualifying examination, and fortunately for the student (and the community) it is not necessary to erect a building in order to judge whether the designer is or is not fitted to become an architect. Mr. Oldham is wrong in stating that the R.I.B.A. have approached only those known to have reached the required standard for Licentiateship ; the approach has been made to the unattached architects on the Register. I quite agree that it is the present policy of the R.I.B.A. to require evidence of training and practice in architecture, and on these grounds many of those approached have since been rejected. If the Royal Institute can, by this means, preserve their dominating position and thus maintain or raise the present standard of qualification for entry into the profession, well and good. Whether domination is likely to be as effective as complete unification in the vital years remaining to this generation of architects, is a fundamental issue.

F.R.I.B.A.



On the chart illustrated above, the author of this article has attempted to sum up a number of points in a drastically simplified manner of the correlation of plastics and building components. Taking eight characteristic plastic families on the one hand, and the seven large divisions into which the building components have been divided on the other hand, we may note many an interesting intersection—but also some "blind spots." In other words, a plastic group such as the phenolics (or better phenol-formaldehyde) has already been made available in the form of pliable sheets, rigid sheets, etc., down to transparent varieties (cast) as building components. Many of the trade names given (on the right) are certainly regarded as household terms. It can be seen that the two thermosetting resins (ureas and phenolics) have been fairly well represented by direct and indirect uses, whilst some of the newer thermo-plastics have not reached that stage yet. Some of the components are stated on the chart as capable of forming a "part" of a building component; such an awkward definition needs some further explanation. For instance, urea resin is available in the form of thin sheets such as adhesive-films. These sheets cannot be considered as building components by themselves, and are mainly used in the manufacture of urea-resin bonded plywood, thus the resin sheet forms a part (and a very important part) of the plywood. If there is no symbol at all at the intersection points that means that there is a "blind spot" and the substance is not available yet in the shape concerned. The circles indicate that the availability excludes building-uses. Many items which can be made out of celluloid are not practical propositions for building work on account of the high inflammability.

There are, of course, many more plastics than the eight types mentioned, but it was necessary to concentrate on those plastics which are not only the most promising for the future, but are also well known already, and which have been developed on practical lines for building purposes. There are other plastics which should be mentioned. The regenerated cellulose plastics (cellophane) are probably the best known plastics, but it is difficult to visualise how this material could be used in buildings, although certain horticultural uses are known. The newer types of cellulose derivatives such as cellulose acetate-butyrate and cellulose triacetate are claimed to have marked advantages when compared with straight cellulose acetate, especially in regard to the resistance against moisture; it is, however, too early to know whether these plastics can take the place of acetate to a large extent. There is also more development to be expected in materials of the ethylcellulose basis, so far mainly used as thin films.

The thermosetting soya-formaldehyde and Melamine-

P L A S T

SMALL FITMENTS 6	TRANSLUCENT 7	TRADE NAMES
		PYRALIN * NIXONOID * XYLONITE
		BEXOID LUMARITH * CELLOMOLD RHODOID ERINOFORT TENITE * PLASTACELE *
		AMEROID * ERINOID CALA * LACTOID
		WELVYC VINYLITE
		DISTRENE STYRON *
		DIAKON LUCITE * PERSPEX PLEXIGLAS *
		BEETLE PLASKON * SCARAB MOULDRITE
		BAKELITE MOULDRITE CATALIN ROCKITE ELO

FORMS PART OF AN AVAILABLE BUILDING COMPONENT

* MATERIALS MANUFACTURED IN THE U.S.A.

formaldehyde resins may become important raw materials for future building components and the qualities of Melamine are most promising. Lignin resins, which are already being used in wallboards (probably as adhesives), may prove useful, cheap, and abundant as raw materials. New plastics which received much publicity immediately after their birth are "Nylon" filaments (the silk made of coal, air and water) and the extruded filaments called "Saran" (Vinylidene chloride). Whilst plastics which belong to the synthetic-rubber group of plastics are many, these materials have not been used in buildings (with the probable exception of some experimental uses of polyvinyl-chloride piping), and it is obvious that these synthetic "rubbers" are far too valuable for other purposes to be used as building components at present.

We must not over-estimate the importance of the newer types of plastics. Although hardly a year goes by without some sensational "discovery," the older types of plastics, and, in fact, the age-old types of natural resins, have not been beaten by the newer products. The competitive spirit which has created many varieties of plastics is useful in extending the choice of materials and enabling us to find an ideal substance for every purpose. Nevertheless, in the midst of a dazzling plastic development our gramophone records are still being made of a natural resin (shellac).

I C S

During the past 20 years we have witnessed the young plastics industry growing to be one of the great potential suppliers of modern engineering. To-day, plastics must be seriously considered as important raw materials. Many architects have been inspired by the possibilities offered by plastics, others just cannot help disliking these "synthetics." Both attitudes are based on a few facts as well as on prejudices. What we really need is a better understanding of the characteristics of plastics; it is hoped that this article will clarify one or two points on the subject.

By George Fejer

INTRODUCTION

Let us agree first to use the term "plastics" in a simplified way, understanding, thereby, *cellulose derivatives and synthetic resins*, excluding materials which have apparently equal rights to be called a plastic from a technological point of view. Both cellulose derivatives and synthetic resins go through a stage in their manufacture when they are plastic, i.e., malleable, but the finished products, such as telephone receivers, are very rigid indeed.

The most striking feature of cellulose derivatives and synthetic resins when compared with older materials, is the confusing range of properties shown by the large number of products derived from them. Even materials originating from the very same "family" of plastics, may show wide variations of characteristics which range sometimes from a pliable rubber-like consistency to rigid and even brittle articles. There is no doubt that such materials can help the builder in many ways, to solve problems which may appear impossible by using the usual range of building materials.

To give a full analysis of the correlation of plastics and modern methods of building would involve a minute examination of (*a*) The available plastic [1] raw materials, (*b*) the manufacturing and processing methods, and (*c*) the aims and possibilities of modern architecture on the whole. For the present argument, however, let us concentrate first on the development which has been *already achieved* in order to manufacture plastics for architectural use. After that survey we may consider the more elusive subject of the *future possibilities of plastics as building materials.*

THE PRESENT STAGE

A certain limited number of building components have already been made available in the past, and a few plastic products are still available for architectural use, subject to the obvious restrictions, as these products

[1] A series of data sheets has been published in the periodical "Plastics" under the title: "*Plastics, their origin and formation*"—starting from March, 1942. These sheets contain concise and accurate information on the general characteristics of the various plastic "families."

are just as scarce and valuable as any of the other essential war-materials. It is quite wrong to think that plastics are only suitable for pleasing and relatively useless articles. In fact, even before the war approximately half of the volume of these products was produced for industrial purposes. It is significant however, that there are many more plastics being used in the electrical or motorcar industries than in the various branches of the building trade. The reasons why this is so, might fill volumes. Here are four reasons :

1. The initial cost of plastics as raw materials was rather high when compared with the raw materials used in building.
2. All processes so far used in the manufacture of plastics have been eminently suitable for mass production only, as the tool-costs for the various moulding methods are rather heavy.
3. For a long time there was a lack of technical information on the properties and standards of plastics, and architects were not able to compare these new products with usual materials.
4. There are only a few firms in the plastics industry which have the necessary organization to cope with building problems, and to handle production and distribution on similar lines to other contributory industries of the building trade.

Because of these and many more similar difficulties (which all seem to be inter-related) the gap between the building trade and plastics is a very noticeable one. Nevertheless, some components have been already produced in the past—which are not mere substitutes—designed with the innate characteristics of plastics in mind.

When surveying the whole field of the architectural application of plastics we find that the uses fall into two large categories, i.e. indirect uses and direct uses.

INDIRECT USES

Plastic compounds, paints, lacquers, finishes and adhesives are widely employed in the manufacture of building materials as well as being used for protecting or decorating buildings. The importance of these uses should not be underestimated, and the improvements which have been brought about by using plastics are well known ; space, however, does not permit us to tabulate these more important uses in detail.

DIRECT USES

Although the impregnation and varnishing of timber with resins certainly improves some of the features of the timber itself, the main characteristics still remain the same as before such treatment. A more direct use of plastics is, when components are made with such a high content of plastic material, that the main characteristics are those of the plastic material itself. Let us concentrate on this second, more difficult—but also more inspiring—group, which we may call Plastic building components.

THE COMPONENTS

Every building component can help or obstruct the architect's work, and the design of such components is very important. The choice of the right material and the design work should be the architect's job. Even decisions on the size and thickness of a sheet material involve the clear visualising of the use to which the sheet will be put. Strictly speaking, therefore, the decisions regarding every operation which converts amorphous material into solid articles is inseparably bound up with design work. It is, therefore, certainly worth while to survey the various methods by which plastic building components are being formed. In the notes below the writer intends to refer to the processing methods as briefly as possible, as there is a good range of works in the technical literature available to those who wish to know more about plastics, and how they are manufactured. To facilitate comparisons with generally-used building components, the subject has been subdivided into seven groups,[2] starting with pliable sheets as the simplest type of material.

1 PLIABLE SHEETS

Thin sheets made of plastics are often compared with pliable sheets such as wood-veneers, paper, thin sheets of metal. The manufacturing processes of making plastic foils (or film) include the possibility of *continuous casting* (cellophane, cellulose-acetate, etc.) or *slicing* from solid blocks. As neither of the above methods is applicable to all plastics, certain resins have to be *cast* to specific sizes and thickness. A method has been developed, of combining the advantages of the continuous process with the advantages of certain resins by applying the liquid resin to a paper or fabric base. This type of process is very similar to the well-known coating and impregnating processes.

2 RIGID SHEETS

Plastic sheets, comparable to other types of building boards are being manufactured either by the methods mentioned above (casting to size, slicing from blocks) or by lamination. There is no limit to the combination of materials which can be incorporated in such laminated boards. Non-plastic materials, especially wood veneers, paper, fabrics, etc., are incorporated to give the boards the exact required characteristics. The extrusion of thick sheets is not practicable yet. An interesting method, but seldom used so far, is the casting of thick cellular sheets. The addition of some gasifying agent to the liquid, or the forcing of air into the plastic before it solidifies, are probably the most frequently used alternatives for producing such cellular masses.

3 TILE-LIKE COMPONENTS

Plastic tiles (like most of the ceramic tiles) are not merely small sections of sheet material, but specially designed units, shaped with an eye on the requirements of fixing. The tiles are either *compression-moulded* or fabricated from sheet material. Thermoplastic sheets can be pressed to the required shape by using suitable means of heat and pressure.

4 LATHS

Trims, coverstrips and many other components which are often called " mouldings " in the building world, have been produced out of plastic materials mainly by the *extrusion* process, a fast and continuous method, superior to other means of forming such components, although casting is also practicable. Both thermoplastic and thermosetting plastics are available in extruded shapes.

[2] The division of the building components into 7 groups to facilitate a quick survey of the subject, has been adopted here, in a similar manner as used in a series of articles (Plastic Building Components) which appeared in the periodical " Plastics." The writer is indebted for the permission to use the symbols in the Chart, which he originally designed for " Plastics."

5 FINISHED COMPONENTS

Units of building equipment, of a comparatively large size, have been made by quite a number of methods. Whilst thermosetting resins lend themselves to compression moulding processes, the thermoplastics can be produced quickly and efficiently by *injection moulding*, a process which makes it possible to carry out the most intricate designs in a single operation.

Processes mentioned above are also being combined with subsequent machining. Thermoplastic sheets can be shaped into quite intricately designed articles, by heat and pressure. (The transparent display dolls in the shop windows illustrate clearly how good-natured thermoplastic sheets must be, to be pulled, pressed and blown into shapes closely resembling legs, hands and what you will). Compression moulding of thermoplastics is necessarily a slower operation, on account of the fact that the article has to be cooled before it can be removed from the form without danger of distortion. Both thermosettings and thermoplastics have developed super-fast methods, as well as slower processes more suitable for the craftsman than for the manufacturer. The shaping of aircraft observation panels is a matter of skilled and gloved hands. The fastest injection moulding machine is capable of " shooting " several thousands of articles daily. Another method which has not been exploited fully yet, and which may become interesting for the manufacture of building components, combines papier-mache with thermosetting resins. This may sound as if the result would be something flimsy—but it is reported that Ford adopted a similar system for nothing less solid than tractor-seats which have to stand quite a lot of wear.

6 SMALL FITMENTS

Plastic " hardware," handles, switches and fixing devices are being manufactured largely by the methods already described. The machining of the moulded or cast articles often plays an important part in the production. It is often possible to design small components so that the manufacture can be carried out in two steps—by casting (or extruding) the plastic into relatively simple laths, which can then be cut into sections and machined to the exact shape required.

7 TRANSLUCENT COMPONENTS

Most of the cellulose derivatives and synthetic resins are available in translucent varieties. The manufacturing methods are generally speaking the same as for the components described above. It must be noted however, that the clarity and transparency imposes certain limits on the methods of formation. Most of the fillers generally mixed with non-transparent resins have to be omitted entirely. The possibility of lamination with fibrous materials is also restricted. This accounts for the fact that whilst there are a number of reasonably priced " hardboard " type plastic sheets available, the transparent sheets which are cast (or cut from block) to thicknesses similar to those of glass, are high priced by comparison. Probably the most important method of producing translucent plastics is the continuous casting of films, which is well suited to a number of thermoplastics. The development of this process has a lot to do with the use of the transparent sheets as safety-glass interlayers. A large number of products have been developed in which plastics are combined with nettings. Wire and textile nettings dipped into plastics or coated with thin films on one or both sides were produced long before the war. The war-time uses of this type of plastic have been described in more detail in the various memoranda dealing with war-time glazing and issued by the Authorities.[3]

THERMO-PLASTICS VERSUS THERMO-SETTING RESINS

Although the technical literature [4] which is available on the subject makes the difference between thermoplastics and thermo-hardening resins perfectly clear, it may be of some use to comment on the importance of this division of plastics—from the architectural point of view.

Certain plastics such as the cellulose derivatives, acrylics, styrenes, etc., can be re-softened by applying heat and pressure, whereas resins such as the phenolics, ureas, melamine and soya formaldehyde resins are cured or otherwise treated with heat, in the course of the manufacture or moulding process, so that they become insoluble and infusible, finished articles. This fundamental difference in plastics is rather important from the architect's and builder's angle. When using thermosetting components it must be borne in mind that no alterations of the finished components can be made, with the exception of drilling or machining. When using thermoplastics, however, there is still the possibility of making some minor alterations, shaping or bending laths for instance, in a manner similar to certain metals. On the other hand the shaping of thermoplastics is still a highly specialised job and cannot be carried out by builders to-day. A new kind of craftsmanship, new tools and methods will have to be developed to deal with such problems efficiently. No doubt the possibility of modifying the shape of a component is a definite advantage on the side of the thermoplastics, *but* (and there is always a *but*) we cannot expect a high heat resistance in such materials. The lower heat resistance of thermoplastics should, however, not be confused with " inflammability " as such plastics are generally available in " non-flam " or slow combustible grades (with the exception of cellulose nitrate). Some indication as to the combustibility of a thermoplastic such as cellulose-acetate is given by the B.S.S. F.56. Details of a specially heatproof grade of thermosetting phenolics are described in the B.S.S.771, in more detail, together with specifications of the other typical grades.

Some plastics are not " truly " thermoplastic, and are therefore difficult to classify, nevertheless the division of the plastics into these two large groups, according to their behaviour in the presence of heat, is applicable to most of the resins which are suitable for architectural purposes.

[3] Bulletins issued by the Ministry of Home Security such as the C.10 are dealing with all questions relating to tests of glass replacement materials as well as of glass protective treatments. Similar information has been published in the various papers of the building trade issued by the Ministry of Works and Buildings. The P.A.D. Department (Ministry of Supply) also issued similar Memoranda for the guidance of the contractors.

[4] Out of the number of interesting works which appeared on the subject, may we only mention two which are as clear as inspring to read for non-chemists too. Plastics in Industry by " Plastes " (Chapman & Hall). Plastics by V. E. Yarsley and E. G. Couzens (Pelican).

★ [*Examples of the seven divisions of plastics listed under the heading " The Components " in the article are illustrated on the following five pages ; each set of examples has been cross-referenced with the text.*]

1 PLIABLE SHEETS

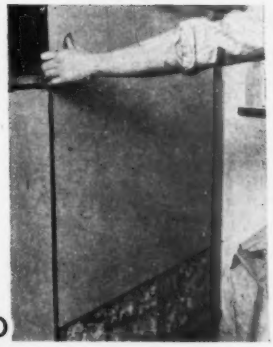
A

B

These have been used in the past as veneers in a thickness of, say, $\frac{1}{16}$", and also in thicker varieties for table-tops, etc. **A** *shows "Bakelite" veneered partitions, a pleasing as well as practical application of this water-resisting, durable veneer. There are already various wood-working firms which specialize in the use of plastic veneers and sheets, for the manufacture of various laminated articles.* **B** *illustrates the application of a plastic sheet on wood. Besides these applications of plastics, there are semi-plastic sheets such as treated fabrics, one of the most popular of which is the cellulose-nitrate treated variety for covering walls in buildings as well as in vehicles. The usefulness of this rexine-type of sheet needs no further emphasizing. It is clear that in certain cases and for certain purposes plastic sheets supersede other materials of similar description. In the course of natural development the plastic-based sheets have often masqueraded in fancy-dress disguised as leather, marble or taking the appearance of some exotic wood. It can be safely said that those days are practically over, and the newer varieties are honest representatives of the plastics family. An entirely different use of thin plastic sheets from the above, is the application of films (of the phenolic or urea type) for manufacturing plywood, and it is generally known that these resin-bonded plywoods supersede ordinary plywoods. The resin content of only 30-40 lb. per 1,000 sq. ft. wood veneer is sufficient to bring about this marked improvement of characteristics. There is an excellent heat insulating material on the market which we may mention in this category. This material (Isoflex) is built up from thin corrugated layers of heat reflecting cellulose-acetate, and it is stated to be used extensively for purposes such as insulation in shipbuilding, refrigerator walls, etc.*

2 RIGID SHEETS

C



D

E

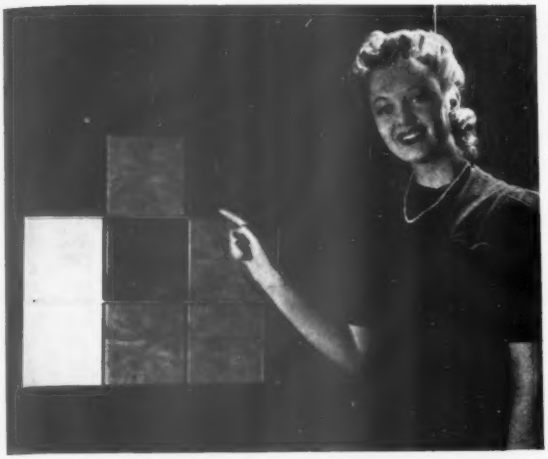
Plastic sheets of the wallboard type, which have to be supported at intervals similar to the generally used hard boards, have often been used with satisfactory results. There is not much information available on the thermal and acoustical properties of the various plastic boards, and the writer suspects that no real attempt has ever been made to produce a plastic board with qualities comparable to known low-density building boards.

The boards shown in the illustrations are certainly superior to some of the generally known boards in at least one respect, namely, their surface is more durable and impervious than any surface treated by paint.

C *shows telephone boxes, the internal walls of which are covered with "Catalin" cast phenolic resin sheets.* **D** *and* **E** *are examples of "Bakelite" wall panels (laminated phenolic), which have been developed specifically for architectural and decorative purposes. Some novel ways of fixing can be noted. The majority of the rigid plastic sheets are being used by the electrical industry, but some board types familiar to the building trade have not yet been developed in plastics. No plastic sheet is known to the writer which has been used for roofing or external covering of walls.*

It is only a recent development that plastic sheeting is being regarded seriously as a component for self-supporting, prefabricated panels. The evidence of systematic research in this connection, however, is not comparable with the abundance of systems developed in other sheet materials. Some isolated trials have been made in the past; there was, for instance, a "Vinylite" prefabricated house on show in 1934, in the U.S., and Messrs. Bakelite have also developed panel units (on aluminium frames) for tropical conditions.

3 TILES



F

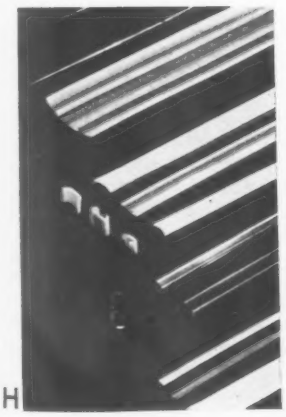
G

Plastics have been used in the past to a small extent for covering internal surfaces in shapes similar to ceramic tiles. In **F** *we see some "Lumitiles" which have been used in the U.S. in translucent and coloured varieties. The tiles are moulded of polystyrene (the lightest plastic), a material of interesting characteristics, and immense future. Special ways of easy and quick fixing have been developed simultaneously with the design of the sections.* **G** *shows an application of "Bakelite" tiles (below the wash-basins). Here again certain special ways of speedy fixing are claimed.*

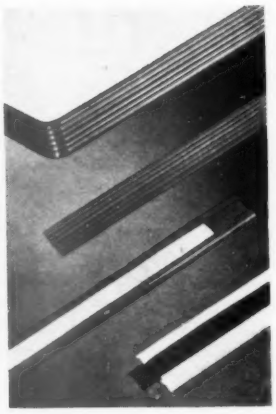
There are many reasons for using tiles instead of large sheets in places such as bathrooms and kitchens. For instance, the tiles have perfectly finished edges and have not to be cut on the job, as the whole covering system is laid out on the exact mesh sizes. Thus there are no weak points such as often occur at the fixing and joining points of large sheets. This and similar considerations seem to indicate that the use of tiles is quite justified as a wall-covering in whatever material they may be. Plastic tiles will probably offer little competition to the glazed ceramic tiles, as total sales go, but their lighter weight and safer transportability make it possible to use these tiles for the covering of pre-fabricated wall sections.

As far as it can be ascertained there are no plastic flooring tiles available, although some plastics have been used to a small extent in conjunction with terrazzo flooring and have shown good general qualities for this purpose. (Modern Plastics, Dec., 1941.)

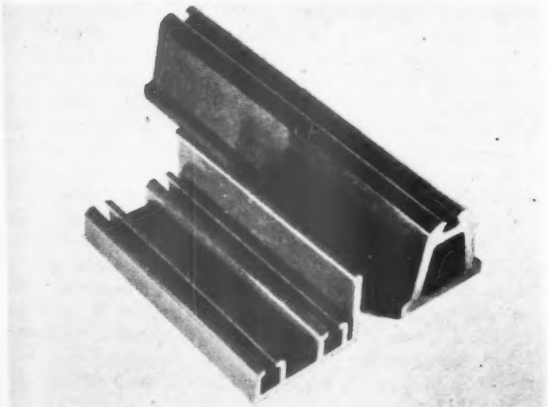
4 LATHS, EXTRUSIONS



H



I



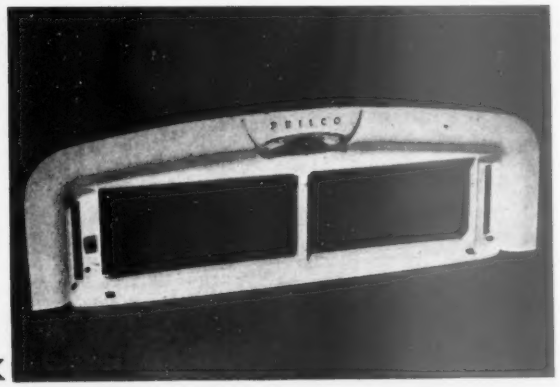
J

There are a few types of extruded plastics available even now in this country. A wider range of sections is available in the U.S. The sections in **H** *and* **I** *are extruded cellulose-acetates. Some of these are being used for interior decorations as coverstrips, trims, etc.* **J** *is an illustration of extruded phenolic material used as curtain rails.*

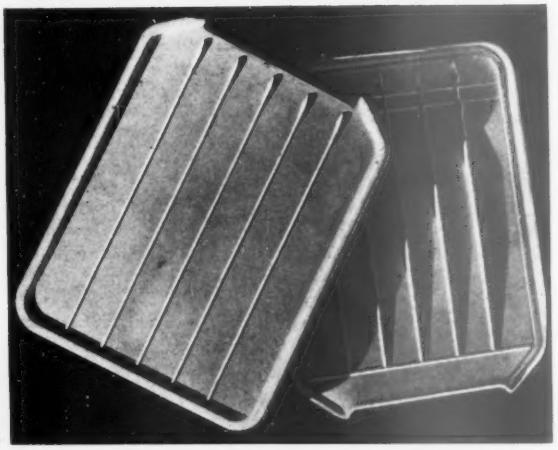
The few successful products of this kind are probably the first of a series of useful building components. The Development of trims, coverstrips, guide rails, handrails, etc., has not been pushed in the past as intensively as the more obvious uses such as pipes for electric conduits, on the one hand, and decorative uses (say, towel rails) on the other. Considerable progress is being made in the production of extruded building components, however, and there is every reason to believe that for certain purposes plastics will definitely supersede metal or wood laths. Certain elements of plumbing are also being investigated and tested at the Building Research Station. Phenolics and polymerized vynyl compounds are considered the most suitable basic materials for plumbing elements so far; the latter, of course, as a thermo-plastic material should be used for the conveyance of cold liquids only. The phenolics are heat-resistant and therefore apparently more suitable for items such as say waste-pipes, but of course we have to remember that extruded phenolics cannot be bent to such a degree as is customary with certain metal-pipes.

Polymerized vinylchloride pipes have been used in the past in industrial plants (such as breweries) and they are being used quite a lot now—but not for architectural purposes.

5 FINISHED COMPONENTS



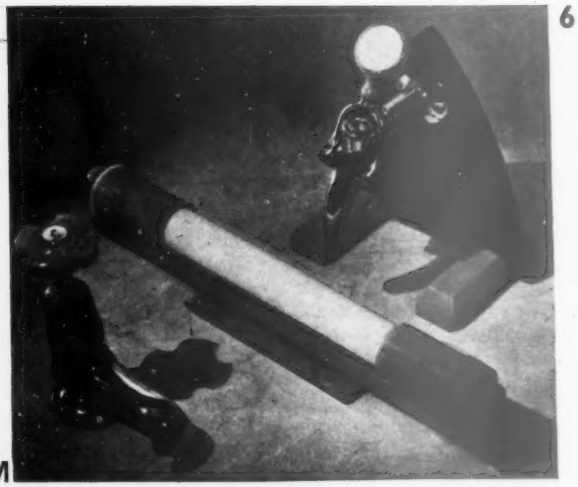
K



L

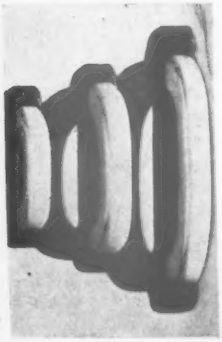
When we say Finished Components we have in mind articles which belong to the category of building equipment units. There are many such articles which the general public would probably welcome in an improved form. It has often been asked why there are no plastic building slabs, built-in cabinets, or window-frames which would need no paint? Such questions are not unjustified. The answer is that there are plastic windows but their use is limited to the manufacture of motor-cars and Pullmans. There are also plenty of small lamps and lamp-shades available, but no architectural lighting fitments. There are portable electric radiators with moulded plastic bodies, but no built-in types. It is likely that the scarcity of plastic equipment units is bound up with the yet-unsolved general problems of standardization. It can be concluded that, in view of the potentialities and modern manufacturing methods of plastics, we shall see a good number of plastic equipment units after the war, in addition to those types which are already available. The illustration **K** *is an American example (Monsanto Plastics). It is one of the larger sections which forms part of the insulating frame of a refrigerator cabinet. Polystyrene plastic has been used to produce this injection-moulded article. The same type of material is also being used to manufacture the doors of the refrigerator.* **L** *illustrates an all-plastic draining board, moulded from urea resin. Note how the back of the draining board incorporates reinforcing ribs to give the correct section required for strength and rigidity. Both photographs demonstrate how the easy and pleasing flow of lines is not merely a matter of "style" but a functional necessity.*

6 SMALL FITMENTS



M

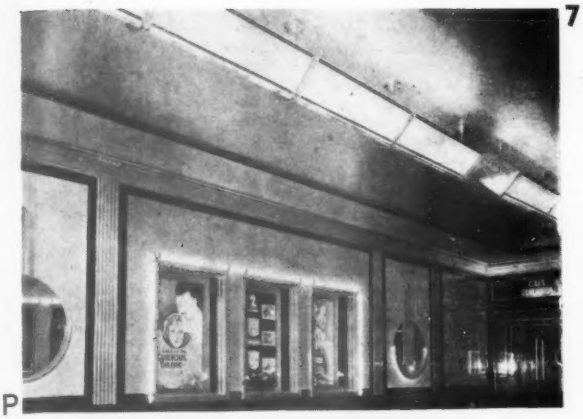
N



O

Small items of building equipment such as door-handles, hinges, switches and many other articles of the "ironmongery" and electric installation need no further introduction. These components are not only well known to everyone, but we may guess that many people only know about the existence of plastics through these articles. The moulded phenol-formaldehdye products proved to be the most popular for such purposes, and these brownish coloured, useful and inexpensive articles are so well known that it has not been thought necessary to include a photograph illustrating them. **M** *shows some cast phenolic products ("Catalin") which are available in wider range of colour than moulded phenolics.* **N** *shows further examples of the same resin, and the door-handles seen in* **O** *are made of urea formaldehyde plastic ("Beetle"). In the case of small components, it can be said with certainty that plastics have done more than merely replace other materials. The simplification of design, which is a functional necessity for efficient mass production, has already exercised a certain influence in the æsthetic sense. There are many inexpensive gadgets we use every day which are quite "elegant" in design, and make their older, non-plastic brothers look a bit clumsy. In the early days, too much emphasis was laid on the unbreakable nature of some plastics, the marked brittleness of which was, however, rather embarrassing. Since those days, considerable technical progress has been achieved, and the impact resistance of plastics has been improved, by introducing some specially "tough" grades of materials. The general public, on the other hand, has learned to go easy with the hammer.*

7 TRANSLUCENT COMPONENTS



P

Q

R

In view of the difficulties mentioned under the same heading on page 280 there are very few translucent plastic sheets being used in buildings. The straight imitations of glass by using plastics is possible but proved to be uneconomic. Moreover, the advantages gained have to be exchanged for new snags, which do not occur when using glass. Let us examine, therefore, some examples which are not imitations, but attempts to find the right line on which translucent plastics can be developed for building use.

The interior of the entrance hall seen on the picture **P** *is well lit by a row of lamps, screened by translucent Catalin (cast-phenolic) resin. The second example* (**Q**) *is the use of polymethyl-methacrylate for laylights, an application which was carried out in days when this material (" Perspex ") was not as generally known as it is to-day. The third example* (**R**) *is one of the cellulose-acetate products (" Isolumen "), which is one of the approved war-time glazing materials, though originally developed for horticultural uses and as a translucent heat insulator for the lining of glass.*

It is safe to say that the proper relation between translucent plastics and glass is more a supplementary than a competitive one. Plastics can be used as interlayers in laminated glasses to obtain sheets which are really superior in many ways to straight plastic as well as glass, combining the advantages of both. In a more direct way, plastics can be used to obtain certain light effects which would not be practicable with glass.

ASSESSING THE PROPERTIES OF PLASTICS

It must be noted that the examples were chosen to illustrate as wide a range of uses and products as possible, and is by no means a " catalogue " as most of these products are no longer available commercially, although some are still obtainable and can be used in the building trade whenever the purpose is sufficiently important from the national point of view. The next question that emerges is how to assess the qualities of such materials, and how to compare them with other materials.

There has not yet been either time or urgent need to exploit fully the possibilities of plastics for building purposes. The use of plastics in buildings presents quite considerable difficulties as neither the architect nor the builder has yet had an opportunity to acquire the necessary knowledge of the behaviour of plastics. But, just as builders have a good working knowledge of metals without being metallurgists, so they will learn to judge plastic materials without getting entangled in the jungles of modern organic chemistry, as soon as sufficient specialized technical guidance is available.

Information at present in hand is not compiled on a comparative basis, and is by no means easy to interpret. It can be stated, however, that some guidance is available in relation to practically any of the problems which the architect has to tackle. Let us mention a few sources of information :—

British Standard Specifications have been prepared on the subject of a number of plastics.

Specifications prepared by large consumers such as electrical concerns, G.P.O., and others.

Bulletins and specifications have been worked out by the Ministries chiefly concerned with the control of quality of certain components.

Test reports, issued in the current technical literature, carried out by independent scientists.

Test reports carried out by Authorities such as the Building Research Station, N.P.L., etc.

Manufacturers' test reports, and manufacturers' specifications.

Unfortunately, the comparisons between different plastics and the comparisons between plastics and established materials are rather difficult. Most of the manufacturers are ready to make information readily available, some, however, prefer to camouflage their products even in peace time.

All serious technical guidance, however, refers to plastics in generic terms rather than by the trade names under which the materials are marketed. *It is essential, therefore, to get acquainted with the main families of plastics and not to go by the trade names.* There are several hundreds of trade names, although there may be not more than a dozen plastic " families " which can be considered seriously suitable as raw materials for building components.

Generalizations on the qualities of various plastics are of little value, and there is no possibility of making any statement which would equally apply to all plastic products, with any useful degree of accuracy. We often hear statements that plastics are unaffected by water—or the opposite that plastics do not stand the weather. Let us examine this question in greater detail as the question of moisture absorption (and subsequent movements) is certainly one of the most important and most discussed considerations in assessing plastics for architectural purposes.

On the table below the dimensional stability of a few specimens of the most popular plastics can be readily compared. The figures are based on the test report which appeared in *Modern Plastics*, Technical Section, December, 1941, and which was originally presented to the American Society for Testing Materials (Chicago). It must be noted that every type of material such as say casein, or urea resin, is available in other grades (slightly better or inferior) to those of the specimen tested. The table, however, gives a fairly clear *comparative* picture as to the question of water absorption, as the specimens have been tested in the same series, and under the observation of the standard test methods. By examining the figures we find how *different* plastics behave when soaked for 7 days. The increase of weight is very different indeed in the case of *casein* from that of the *polystyrene* resin, and the dimensional changes follow the same course. The specimens, after being re-conditioned for 28 days, were measured again and the change from the original weight shows a noticeable decrease in the case of cellulose acetate, which indicates that a certain amount of volatile matter (plasticiser) has been lost. It must be noted, however, that figures expressing the percentage of change in length are subject to a tolerance due to the limits up to which small specimens (approximately 3 in. long) can be measured. Therefore figures expressing less than say a-half per cent. change in lengths are practically negligible. The table also shows that there is some truth in the statement that plastics are unaffected by water, although we have to be careful *which* plastic is meant.

It would be quite interesting to compare this table side by side with test figures on specimens of woods, fibre-boards, ceramic tiles and roofing materials extensively used in buildings.

In addition to the above considerations on the subject of water-absorption, we have to investigate many other characteristics of plastics carefully, to be able to decide whether the plastic raw material is the right one for the purpose for which the architect intends to use it. As the technical literature on the subject makes the potentialities of the various resins quite clear, the architect will be able to assess the qualities of certain plastic products, based on information describing the substance used, and the method of manufacture. The architect has the right as well as the duty, to get this description, because terms such as " synthetic resin " can be applied to a number of plastics which are very different in performance.

MATERIAL.		Specific gravity	Immersion in distilled water (7 days) caused the following changes in weight and dimensions: In weight %	In length %	In thickness %	After immersion the plastics exposed to air at 25°C. and 50% relative humidity for 4 weeks, the changes from the original are: In weight %	In length %	In thickness %
Cellulose Nitrate		1.36	1.5	0.42	0.0	0.1	0.0	0.0
Cellulose Acetate		1.28	4.6	1.2	2.8	—0.7	—0.7	0.8
Casein		1.25	30.0	11.0	13.0	0.3	2.0	0.8
Polyvinyl-Chloride-Acetate		1.35	0.09	0.06	0.0	0.0	0.0	0.0
Polystyrene	Moulded	1.03	0.03	0.00	0.8	0.0	0.0	0.8
	Cast	1.03	0.03	0.02	—0.3	0.0	0.0	0.0
Polymethyl-Methacrylate		1.16	0.7	0.16	0.0	0.1	0.0	0.0
Urea-Formaldehyde	Moulded	1.47	2.0	0.70	1.6	0.6	0.3	0.8
	Laminated	1.46	1.1	0.11	0.0	0.4	0.1	—0.4
Phenol-Formaldehyde	Moulded	1.40	0.8	0.4	0.8	0.4	0.3	0.0
	Cast	1.29	0.5	0.09	0.0	0.2	0.0	—0.4
	Laminated	1.33	2.2	0.08	2.5	0.6	0.0	0.8

As already mentioned, the plastic industry is all out to win the war and the manufacture of war material comes first. The industry which includes a number of chemical suppliers as well as moulders, fabricators, etc., is doing a fine job, and the time and energy which can be spent on examining post-war building uses is very limited. Whilst no one can expect plastic technicians to tackle problems which involve highly specialised architectural work (such as devising new pre-fabrication systems) just now, it is equally improbable that architects and builders will plunge wholeheartedly into the study of the miracles of modern chemistry, urged by the prospect of using a few plastic panels or doorhandles at some future date. This gap makes it impossible to-day, to estimate the course of further development of building plastics. It is difficult to predict whether plastics will be welcomed in the future architectural world or not, as this depends very much on what both parties are going to do about the gap which exists between those engaged in plastics development and those setting the course for the building systems to come. In conclusion, let us try to sum up, by grouping the pessimistic arguments (Italic type), balanced by a more optimistic viewpoint (Roman type). These notes are, of course, purely personal opinions of the writer and should be read as such.

F U T U R E

STRUCTURAL ELEMENTS

Pessimist *The use of plastics for structural elements, such as binders, joists, etc., is a very remote possibility. Whenever thermosetting plastics are used without some reinforcing fibrous filler the result is often a rather brittle rigid article. It is very unlikely that resins with tensile strengths [5] of say ten thousand lb./sq. in. would play important part in the construction. On the other hand if we provide large enough sections to suit the purpose the cost of raw material would become prohibitive.*

The moduli of elasticity of plastics are not as good as we wish, and there is no reason why excellent structural materials such as say steel should be replaced by more expensive plastic components with necessarily larger sections.

Plastics may offer some advantages in respect of their resistance to corrosion compared with metals, resistance to moisture compared with wood, but the general mechanical properties of most of the moulded articles made entirely of one plastic or another are totally unsuitable for the manufacture of structural elements such as are used in buildings to-day.

Optimist The plastics manufacturer would hate the idea of making H sections to same sizes and purpose as metals. The use of plastics as structural members has a more modest, supplementary, task to fulfil in improving other materials. Laminated products, plastics combined with fibrous substances such as fabrics, wood veneer, etc., seem to give the answer to many questions. Already there are products of this semi-plastic type which have shown excellent qualities. Think of the plastic gear wheels which are being used to a considerable extent on industrial machines, which are more silent in running, tough, impervious and often outlast steel. Another semi-plastic laminated product above criticism is the resin-bonded plywood. It remains to be seen how far the ingenuity, research and collaboration of the various parties will further develop such laminated products. We have a number of such products at hand already with tensile strengths which are claimed to be exceeding that of steel. Figures of tensile strength [6] such as 40,000 lb./sq. in. (twice that of the spruce) are claimed.

We all know the various excellent results which have been obtained in the past with laminated wood structures, even if simply cemented with ordinary glue. The examples range from binders made for wide span roofs, to the springy armchairs made by Aalto. With the extensive use of plastics the prospect is nothing less than that we shall be able to " make " wood into the material we want. The specific weight, the tensile strength, resistance to moisture, electric properties and all other features can be simply designed for the purpose, and the material " made to measure." You may not consider such products entirely as plastics, as the proportion of timber or other fibrous material may exceed the resin-content, but the opportunity of making such " built-up " materials is only possible by using plastics.

[5] The tensile strengths specified in the BS.771 for various grades of phenolic moulding materials are ranging from 3,500 to 7,000 lb./sq. in. Most commercial products show higher strengths, according to the fillers used. It must be noted that " Saran " filaments are claimed to be exceedingly strong, with tensile strength up to 100,000 lb./sq. in. (" Fortune," October, 1940).

[6] An article appeared in the " Wood " (March, 1942) gives interesting details of various resin-fibreboard combinations.

PATENT WELDED TUBULAR CONSTRUCTION

Data Sheet No. 7

LIGHT FRAME CONSTRUCTION

The form of light tubular frame construction detailed in this sheet has been designed specifically to fulfil wartime requirements — lightness of structure, simple and rapid assembly, and economy in steel. The particular example dealt with, designed as a store building, provides a floor area of 100 ft. by 30 ft. and has three sets of double doors and six 4 ft. by 4 ft. standard metal casements. The framework of the building is constructed throughout in prefabricated tubular sections, each sectional wall frame (see Fig. 17 overleaf) being supplied complete with doors and window casements. The double doors, being constructed of angle-iron, are self-weathering and are covered with corrugated iron sheeting. To simplify transport and site assembly each column and half-truss is supplied in one welded unit; after erection of the columns and composite trusses the wall and door frames are assembled, and in order to effect rigidity the roof purlins are then engaged and fixed in position before the final fixings and adjustments of the complete structure are carried out. In Fig. 15 the dotted lines represent the gable-end frame, which is also supplied in prefabricated sectional units. Asbestos sheeting is used as an external covering for the walls and roof, and a notable feature of this form of construction is the extremely simple method of fixing the external sheeting. The steel tonnage employed is 5.5 and estimate for delivery and erection (complete with all external sheeting but excluding glazing, gutters and foundations) may be had on application.

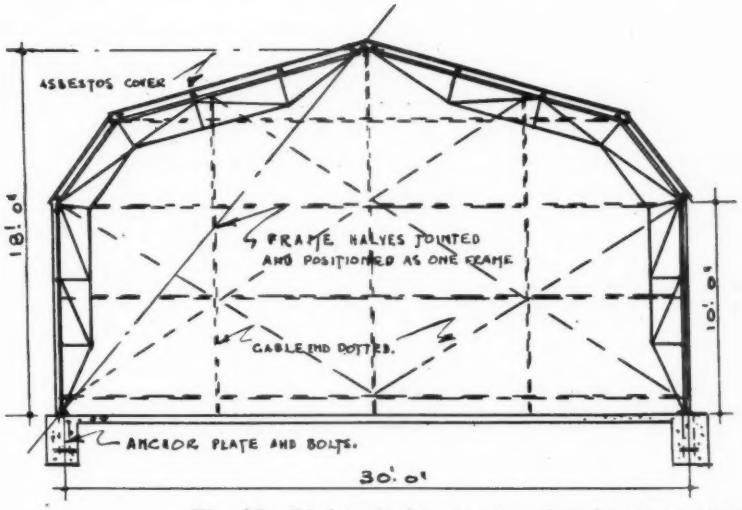


Fig. 15. Light tubular construction incorporating composite roof truss and tubular columns.

This form of construction is extremely flexible and adaptable, the tubular section, being uniform in all directions, allowing connections to be made from any side and at any angle. Further advantages of the tube, as compared with other steel sections, lies in its stiffness (*a*) in taking compressions, and (*b*) during transport.

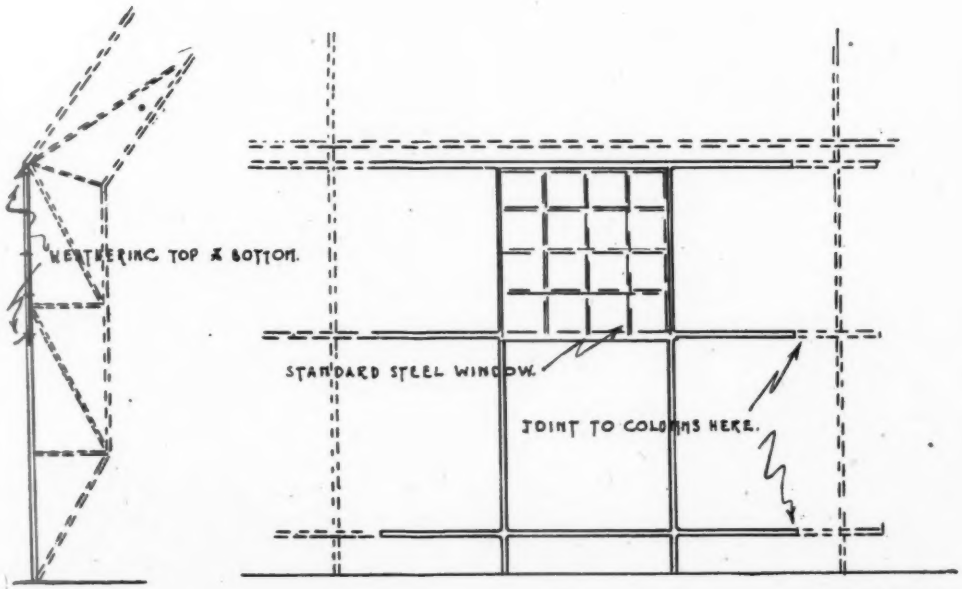


Fig. 16. Tubular column and detail of sectional wall frame incorporating standard metal casement.

(Continued overleaf)

PATENT WELDED TUBULAR CONSTRUCTION—Data Sheet No. 7

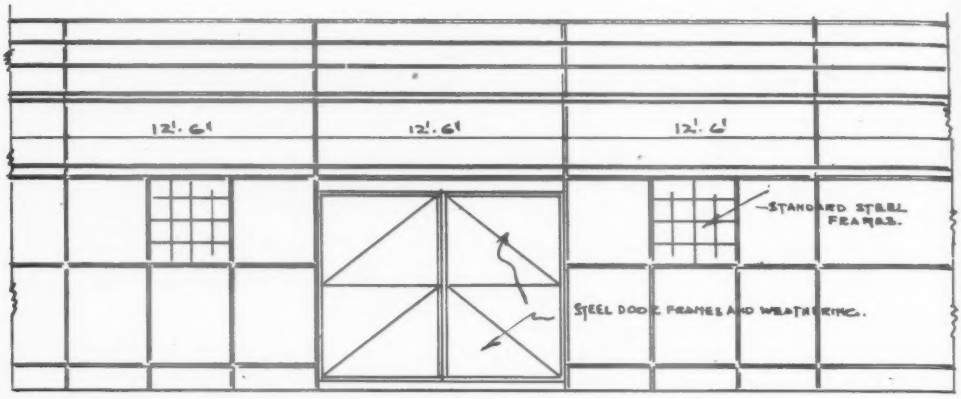


Fig. 17. Part elevation shewing sectional wall framing, standard metal casements and tubular framed double doors.

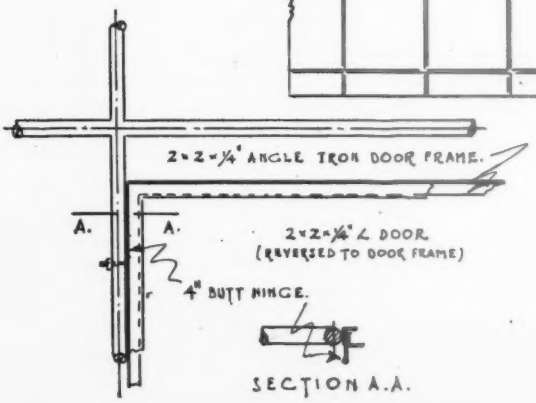


Fig. 18. Detail of door frame construction.

NOTE.—These data sheets are appearing weekly in THE ARCHITECTS' JOURNAL—*they are now available in complete Folder form and application for these Folders should be addressed to Scaffolding [Great Britain] Limited, 77, Easton Street, High Wycombe, Buckinghamshire.*

AN "IDEAL" PLASTIC?

Pessimist *Most of the known plastics show certain outstanding advantages when compared with the traditional materials, but there are quite novel snags too. You achieve an improvement in one respect, by using a plastic, but it lets you down in another respect. It seems to be the chemist's job to make further research to find a really good plastic, with reliable over-all qualities.*

Phenolic and urea resins are excellent thermosetting resins, but it is a pity that they can not be bent and shaped like wood, and although thermoplastics can be worked fairly easily, the good workability and nailholding quality of wood has not been achieved by any of the known plastics.

It is a considerable difficulty in applying plastics, that the usual operations which are currently used on other materials, are seldom applicable. The builder knows how to nail, screw, cut, rivet or joint, paint and stick other materials, but is often at a loss when handling plastics.

How can you have trust in materials which have not been really tested by age, most of which were nothing more than an idea 50 years ago? The oldest thermosetting resin (Bakelite) is not forty yet, and celluloid, the oldest plastic, has only just reached the age of seventy, while its non-inflammable relatives are mere youngsters. Polystyrene and acrylics (though known to chemists for a considerable time) have only come on the commercial market about 10 years ago.

Our domestic buildings built of traditional materials often remain quite serviceable for centuries, as far as the main fabrics are concerned. It seems to be impossible to go in for extensive use of materials which are either known to age rapidly, or have only had their durability tested in a laboratory.

Optimist If you expect some miraculous materials combining all advantages of all known materials, plastics can not give the answer yet. The strength of steel, the impervious surface of glazed tiles, the pliability of rubber, the workability of wood, the transparency of glass, the colourfulness of marble, can be obtained or even surpassed by one variety or another, but not all at the same time in the same plastic. But is this a serious drawback? Plastics do not intend to replace every material. Plastics can be useful to the architect and builder, but obviously houses should not be moulded like ashtrays at a rate of several thousands a day. How they can be used to the best advantage of the public is a matter which of course requires a lot of specialised research. Research must perfect techniques of application, and evolve new tools and methods for the builders, also solve questions relating to the formulation of a code of practice in handling.

It is obvious that the uses of brand new plastics for the construction of domestic buildings should be limited to interchangeable parts of equipment, until their durability has been proved. But not all buildings have to stand centuries of wear. Industrial buildings, interiors of shops, restaurants, workshops are often built for a period of, say, 10, 20 or 30 years, after which certain alterations may become necessary to bring them up to date. New building materials can be used for temporary and semi-temporary buildings to-day, without being tested for a couple of hundred years first. It is apparent that in the future, the interchangeability of components will become a more important feature of construction in view of the increasing rapidity of development.

PREFABRICATION

Pessimist *Plastics, like many other industrial products, will be suitable one day for the mass production of equipment units of all kinds. Besides equipment parts such as bathroom-cabinets or refrigerators, there are many items which can be made of plastics. In the same way as an all-concrete or all-timber house is possible, the pre-fabricated, all-plastic house is a possibility which has already been investigated as far back as 1934.*

When an industrial concern decides to turn out buildings on the assembly line,[7] *the procedure adopted will be certainly very similar to the manufacture of motor cars. Timber buildings which have been pre-fabricated to a large extent (not only in the U.S. but a long time ago in Switzerland too), have generally followed the pre-determined scheme of things laid out by the industrialist in a way which suits his productive capacity, plant and machinery the best. Nobody can expect that industrial concern should go further than that. He can not be expected to worry about the co-ordination of his products with those of a rival firm. Nor can he be expected to struggle with individual specifications of architects.*

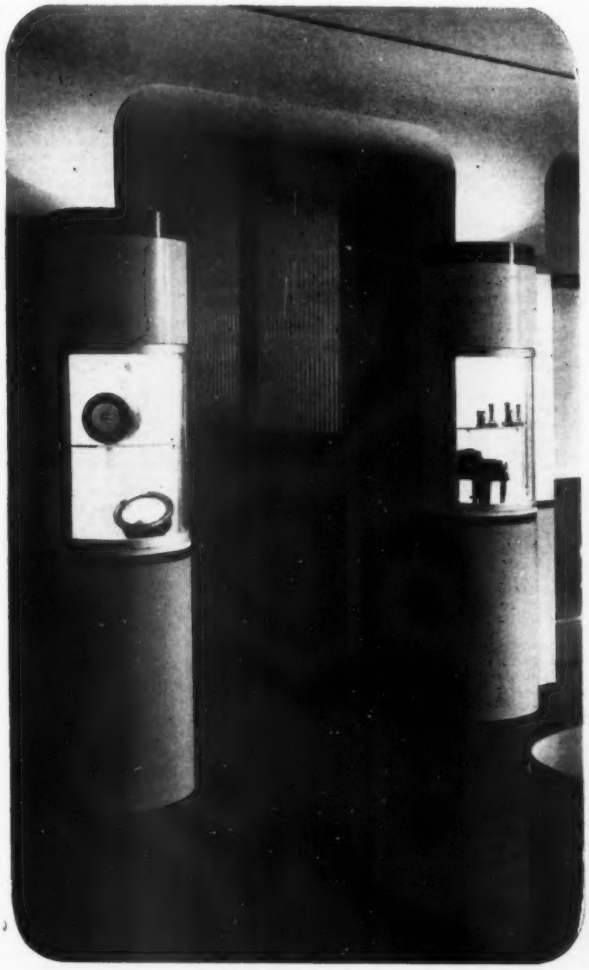
It may be an advantage that plastics can be manufactured so quickly, but this large industrial potentiality poses further hard problems to the building world. If development is promoted entirely from a business point of view, plastics may add to the existing confusion of standards.

[7] An article "Houses off the Assembly Line" gives a good example of the proper use of resin-bonded plywood (Modern Plastics, December, 1941).

Optimist Plastics have proved their usefulness to designers of electric equipment, engineers, etc., and there is no doubt that these materials could be very useful for the architect too. The number of *types* of buildings which can be or should be pre-fabricated may not be large, and fundamentally there is nothing new in pre-fabrication as most of our modern buildings have already factory-made doors, windows, equipment, etc. With the development of transport-facilities the *pre-assembly* of many components can go, of course, much further, and examples of workers hostels transported on lorries in three parts, completely assembled, are not unusual. The maximum shipping size and weight is apparently the only limit.[8]

Let us hope, that the architectural authorities will set the course by making it clear what types of building should be, to a large extent, pre-assembled, what are the advisable pre-assembled elements, and, if possible, what methods of fixing should be used when large units—(such as, say, whole partition walls)—are secured into their final positions. At some distant future when such architectural guidance is made available to industrialists, it will be possible to make intelligent use of plastics in combination with other materials in the manufacture of pre-fabricated (and even exportable) buildings. Large preassembled sections (such as, say, the walls of bathrooms with all wiring and plumbing already incorporated) could be made by using a certain percentage of plastics, as the lightness and other unusual features of these synthetic products could be exploited to a large extent.

[8] Pre-assembled units of approximately 3 tons each, in sizes 9 ft. by 22 ft. by 8 ft. have been described in the American magazine "Pencil Points."



The plastic wall-covering need not imitate the character of other materials; it simply provides a pleasing, colourful, untarnishable, heat and moisture-resistant surface.

Lord Reith's speech in the House of Lords last Thursday, and points from other speeches, are printed on this page. The subject discussed was

Post-War PLANNING

LORD REITH: As it was I who invited Lord Justice Scott and Mr. Justice Uthwatt to set their minds to the task which your Lordships know of, I might be permitted to say a word of appreciation to them and to their colleagues. Whatever your Lordships may feel about the recommendations in those two Reports, I think it will be agreed that in a task of such magnitude and complexity they have done their work so well as to merit anything that we could say in admiration of them and of gratitude to them.

The motion which I have the honour to submit to-day deals not with the content of those Reports but with the machinery which they advocate for national planning. I should like to make that clear—that I am dealing with machinery and not with anything else in those two voluminous documents. If one contemplates putting an article on the market or establishing a cause, there are three points which, if one is sensible, one considers: first, whether in fact there be a market for the article or a need or a demand for the cause; secondly, the processes of production; and, thirdly, the machinery or organization required for the purpose. We might argue as to whether processes have to be designed to fit the machinery available, or whether machinery should be devised to which processes must conform. In this case I submit that it is the machinery which has to be settled, and that if it is settled it will not be so difficult to design the processes of production.

My submission is that the machinery for national planning should be settled now, and that it is quite impossible to wait until all the points in the two Reports have been studied and analysed, and decisions taken on them. Three decisions are required, and in this order of urgency. First, machinery for national planning now, as I have indicated; secondly, a Government decision quickly on two, anyhow, of the major recommendations of the Uthwatt Report; and, thirdly, as soon as may be, decisions on all the points which have to be covered, and legislation introduced thereon. I believe that any machinery is better than none, and my advocacy to-day is that, primarily, machinery should be settled. The motion says "some such essential first step." It does not say this or that step—not even what the Uthwatt and Scott Reports recommend. But subject to the qualification that any machinery is better than none, may I give my views on the machinery? First, we cannot separate social and economic planning from physical planning. Secondly, in both the social and economic spheres and in the physical sphere the machinery must be inter-departmental. Thirdly, about a dozen different departments must all plan in their particular fields, planning not being the responsibility or prerogative of anyone. And, fourthly, there should be ultimately responsible one Minister, non-departmental, unbiased, of such authority as to be able to co-ordinate and reconcile and, above all, to get things done.

Both reports recommend such a Minister, and that is significant. It is no less significant in that their terms of reference did not include a specific recommendation on machinery, and if they have gone beyond their terms of reference I for one am glad, and I endorse that recommendation of one Minister such as I have indicated. Your Lordships may ask: "Does this mean the undoing of what was so lately done in the transference of town and country planning powers from the Ministry of Health to the Ministry of Works?" Yes, my Lords, it does. You may say that it was I more than another who was responsible for that transference, that after more than a year of effort, and with no small satisfaction, I announced it in your Lordships' House on February 11. Yes, it was I. So then, your Lordships may I ask: "Is this a change of front?" No, it is not a change of front. What is recommended now is what I wanted in December, 1940. What I was able to secure was what I announced in your Lordships' House on February 11, 1942. As it was I who was to be Minister of Planning, I was perhaps entitled to hope, despite the experiences of the past fifteen months, that more might come. Well aware of the difficulties—there were times when I saw little else but difficulties—but with the encouragement and support of the Lord President, to whom this country owes more than it knows, we came to what was then announced; we established a position from which I had hoped to advance.

My noble friend—and I am fortunately able to use the term personally if I am not entitled to use it officially—my noble friend the Minister of Works and Planning—is he clear where he gets off and the Paymaster-General gets on, or are they both off or on together? I am sure they are very polite to each other, but I suspect at that times they are rather bored with each other and with the lack of definition of their respective responsibilities. Why is my noble friend not replying to-day? "Because it is an inter-departmental matter," I presume he would say, and, indeed, it is. And why is the Paymaster-General, for whom I have an admiration, study the Reports of the Scott and Uthwatt Committees and not Lord Portal? Those Reports do not recommend the abolition of a Minister of Planning, as some may feel and may contend this afternoon. May I submit to your Lordships from experience that those Reports are recommending the establishment, for the first time, of a Minister of Planning. So long as there are two Ministers so long will there be confusion and procrastination—and I speak with no small experience of that particular administrative twilight. The rest of the machinery is of less importance than that there should be one Minister in general charge, a Minister of National Development; secondly, under his chairmanship a Committee of the Departmental Ministers concerned; thirdly, the central planning body for land control in which the town and country planning powers would be vested; and, fourthly, the individual Ministers concerned with particular aspects of planning.

I have no time to define the respective responsibilities of those four parts of the organization. There are obvious difficulties, but they are slight compared with the magnificence of the objective. I am in favour of a Commission and such a Commission as those two Reports recommend. Let me say again, please let us have machinery settled, any machinery that will work; but subject to that I would make these observations. I am in favour of a Commission, rather than a department, for all the reasons that I gave four months ago when I spoke on public corporations and commissions. I know well the arguments that will be advanced against such a Commission, that it is undemocratic, that it might become arbitrary and autocratic, that Parliament would never agree to such a range of responsibilities passing from its own control, the control of the elected representatives, that local authorities might find it or consider it *infra dig* to deal with a commission in such an important matter. The Commission would be subject to the Minister of National Development; it would be subject to directions from Parliament; it would operate under such safeguards as Parliament wishes to impose upon it. I believe that a Commission would be much the most efficient type of organization and, incidentally, that Londoners and others concerned would have more confidence in it than in a Civil Service bureaucracy.

Its main duty obviously would be to advise the Minister on the proper use of land and to administer and strengthen the Town and Country Planning Act. I mentioned the second stage—a decision quickly undertaken on the principles of the more important recommendations of the Uthwatt Committee. The country expects an early decision, first, that the Government accept the principle of wholesale prohibition of the development of undeveloped land, subject to fair compensation, and, secondly, that local authorities should have wide powers of purchase where areas require development as a whole (and not merely because of war damage). Such a statement would be welcomed by the country, I believe, and it would encourage local authorities to go ahead with their plans. I ventured to tell them, when I was in a position to speak to or with them, that if I were they I would plan boldly and comprehensively. Someone should see that they do it now.

On the only other occasion when I came here to speak, if not in from the sea, at least up from the seaside, I said that the lack of institutions was preventing the country from getting the most out of our key men. That applies to causes as well. By lack of institutions I mean the proper constitutional setting and adequate circumstances of all sorts to enable people to work and causes to be prosecuted. We are tired, some of us, of lip service to the Almighty and to dreams of new Jerusalems in what little is left of our once green and pleasant land. New Jerusalems never have, and never will, come down from Heaven, and nothing of high significance—social, economic or physical—will ever come unless we start building now.

I well know the oppositions that will come—oppositions of vested interests, prejudices, apprehensions (some more understandable than others), politicians, political parties, party machines, local authorities, landowners, speculative builders. Cannot they be subordinated to unbiased consideration of these tremendous issues at stake, for the good of England and the English people? Despite all that has happened and all that may yet happen, the people of this country believe in victory, unshakably believe in victory. Victory as an aim is splendid, but tolerably obvious. I would urge on the Government that victory is not enough—just that, my Lords, that victory is not enough—that the people in England, in their faith and courage, are looking beyond victory to the coming of peace with healing in its wings. They require of the Government a vision of England beyond the war; they require a vision of clear shining to cheer them after storm and rain, and they ask the Government now a token of a covenant thereto.

VISCOUNT SAMUEL: We are grateful to Lord Reith for the work which he did while he held the office of Minister of Works and Building; and we are grateful to him for opening the debate to-day, and especially, perhaps, for limiting its scope by the terms of his motion. The subject is an exceedingly wide one. The two Reports which we now have under consideration, the Scott and Uthwatt Reports, contain over 300 closely printed pages, full of a variety of suggestions and of many technicalities. The noble Lord's motion to-day does not ask us to consider what the plans ought to be, but who it is that should make them. He is not raising the question of the planning of Britain, but the question of planning the planners.

With regard to the problems that immediately arise now owing to the devastation caused by the war in so many of our cities and the reconstruction of the "blitzed" areas, it may be that at the present time the Minister of Planning would be the best person to deal with that problem. Then he would have to superintend the general policy of national parks and preservation of the coastline and of landscape scenery. His would be the duty also of carrying out the specific recommendations of the Uthwatt Committee with regard to development rights and to superintend the administration of that property. Furthermore, he would have an extremely important duty in research and in the supply of information on all matters relating to this aspect of our national life, drawing that information from all sources at home and abroad and spreading it throughout the nation. In Parliament he, the Minister of Planning, would be responsible for the execution of the whole of this vast policy. There I differ from the two Committees and from the noble Lord, Lord Reith, with regard to the entirely different plan which they suggest. They suggest that the whole of this policy should be in charge of the Minister who is to be the Chairman of the Council of Ministers. He is to be responsible in Parlimaent. There is to be no Minister of Planning, but a Commission which is to act under the general superintendence of this Minister of the first rank. I make the less apology for differing from those two Committees, great as is their authority—the Scott Committee and the Uthwatt Committee—because this matter was entirely outside their terms of reference. They were not asked to advise on the machinery of planning at all. The title of the Scott Committee is a "Committee on Land Utilization in Rural Areas." It is not the business of a committee with that title to decide how the Cabinet should devolve its work, whether on a Minister or on a commission. The other, the Uthwatt Committee, had the title of an "expert Committee on Compensation and Betterment," so that the matter is even further from their terms of reference than in the other case. With all respect to the distinguished character of the membership of that Committee, I venture to say that they were not constituted as a body qualified to adjudicate upon this point.

Let us visualize the situation that will certainly arise the moment that the war is over. I myself am haunted by the gravity of the problem of unemployment which will straightway confront the country and other countries. It has been well said that the signal "Cease fire" will also be for millions of people a signal "Cease work," and unless we are ready with our plans and arrangements for giving employment over this great field of industry, the field of construction, there will be in this land a surging tide of passionate feeling and of indignation that provision had not been made duly in advance.

LORD BALFOUR OF BURLEIGH: My Lords, it is rather pathetic to reflect that it must be two years this month, or possibly early next month since Lord Reith received permission to set up machinery for the physical planning of this country. Nothing has happened yet in the way of the appearance of anything in the nature of an effective Central Planning Authority. My own feeling is that the passage of these two years has proved one thing. It has proved the need of one Minister, not two, to handle the economic and social planning and physical town and country planning.

It is the glory and the strength of our Constitution that new demands find a response in our constitutional machinery. Constitutional principles remain unchanged, but constitutional forms change. One constitutional principle which we have to observe is, of course, democratic control, the responsibility of Parliament and the control of Parliament over all these arrangements. Another is that one Minister cannot interfere with the department of another; and that is why I think that a Minister of Planning is a wrong conception of the inter-departmental arrangements which are necessary for securing this ordered planning. The Central Land Control—which is the term which I should use, since "Commission" has made itself so unpopular—has to be the servant of all departments and not the master of any, except through its Minister, the Minister of National Development, if I may give him that name. The Central Land Control will influence all departments, because all departments will consult it.

LORD SNELL: Certain charges have been made to-day that there has been undue delay on the part of the Government in announcing their decisions. That charge, I venture to suggest, is ungenerous, and I think it is untrue. In actual fact, of these two Reports the first was presented to Parliament in August, 1942, and the second, the Uthwatt Report, in September, 1942, so that the Government are chided because in a few short weeks they have not been able to decide on this very complicated and important matter.

Bearing in mind, however, the declared policy of Parliament, as expressed in the Land Transfer Act, 1925, and the recommendations made by Lord Justice Scott's Committee, the Lord Chancellor thinks that the time has come when a further extension of the compulsory provisions of the Act demands serious consideration, and he has, therefore, appointed a committee to consider the recommendations.

LORD REITH: My Lords, the noble Lord Snell speaks as though the Scott and Uthwatt Reports had fallen like bolts, or rather like bombs, from the blue of heaven on an unsuspecting and unprepared community. Two years have passed! I am glad to hear that a Committee has been appointed, at any rate. I thank Lord Snell for his reply—courtesy demands that I should—and I shall say no more except this. He maintained two or three times that Government policy in this matter of the creation of a Central Planning Authority for England still stands. I submit to him that he has merely made it clear that it is standing still. I beg leave to withdraw my motion.

Motion for papers, by leave, withdrawn.

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Films

On Monday and Tuesday, November 2 and 3, at 6.30 p.m., in the Alliance Hall, Caxton Street, S.W.1, the Westminster Branch of the Association announces two performances of the film "Prefabrication in the U.S.A." (by courtesy of Mr. G. A. Jellicoe, F.R.I.B.A.), "The Builders" (M.O.I.) and "Building a Building" (Walt Disney) will also be shown. Admission will be one shilling.

E.J.M.A. LUNCHEON

Mr. Alfred Bossom, M.P., speaking at a luncheon of the English Joinery Manufactuers' Association, held in London recently, said: Is further incontestable evidence necessary to convince us of the innumerable benefits to be derived from the appropriate application of the principles of prefabrication to the building industry than Henry J. Kaiser finishing a 10,500-ton Liberty cargo ship in a fortnight which only last December took 235 days to complete? So, also, by prefabrication, once the site is ready, houses can easily be assembled in two months.

How the science of prefabrication has been maligned by the necessities of war! Unattractive, grey, concrete slabs, painfully drab composition-board shacks have, up to the present, been the public's idea of prefabrication. This is entirely inaccurate.

Building prefabrication means finishing in a comfortable, light, clean, airy, weather-proof factory three-quarters of the inside and parts of the outside of the house, and bringing these to the site ready for assembly.

It does not mean that every part of every house should be just a dead repetition of every other, nor that every house will be a twin of its neighbour; but it does mean that once the architect gives his completed drawings to the builder, he will be able to order complete, fabricated units—bathrooms, kitchens, staircases, cupboards, etc.—without bothering about individual items. Partition walls complete with doors, electric light conduits and finishes; plumbing units in panels simply waiting connection, floor slabs, etc., all in large units instead of piecemeal. Space will be set aside for these units and regulation heights established between floors for staircases, but this is simple. It does mean, however, that these units—bathrooms, kitchens, staircases—will all come to the house the same as a new motor car arrives ready to be placed in its garage.

We are stepping into the age of plastics, but there is a super-abundant demand of things waiting to be done which will more than overfill all factories—whether making plastics or using timber. In fact, they could well be combined. Timber has had a parlous time recently and, if the war continues another two years, the best part of our home-grown soft wood will have been used as well as our hard wood. This means that the Empire's possibilities must be reviewed to provide our post-war raw materials and replenish our stocks. Hundreds of millions of new trees will have to be planted at home, and experts should see to it that this afforestation will produce, in the years to come, the most desirable kind of timber.

It is possible when the war ends there may be a world-wide shortage of carcasing lumber for many years, and we shall have to fall back on substitutes such as concrete—lumber which, when stiffened with a few rods of worn or even thin sheets of metal and nails driven in, can be pressed into shapes needed for beams, floor joists, studs, rafters, purlins, sleepers, ridges, etc. Prefabricated slabs of this concrete-lumber may well take the place of floor boards; and pressed metal or cast sawdust and cement for skirtings.

Something like four million houses are already needed to make good the "blitzing" and those worn out. A great many new ones will be of brick, a few of stone, but why not many of wood? Timber houses are most attractive. They are warm in winter and cool in summer; much more so than stone or brick, and particularly so if the space between the studs on the wind side of the house is backplastered. Look at the beautiful examples in Williamsburg, in the United States; or those majestic homes on the banks of the James River. These houses are almost entirely of wood. So, too, is the delightful American colonial architecture which is a procession of buildings, homes, churches, shops, warehouses, all fashioned from timber. If these were being built in the States to-day, they would be largely prefabricated. There is no doubt that variety, beauty and space will be demanded in post-war homes.

Mr. Henry Newsum, M.A., J.P. (President), who occupied the chair, said: I do not think we have a discontented firm amongst our list of members. I would go further, and say that every one of the 100 firms who compose the Association is intensely proud of it. There are three main reasons why our ship is riding reasonably smoothly on very rough waters. First, we have complete identity of interests, secondly, our members know that we are working for the future as well as for the present; thirdly, the smallest firms in the Association have learnt that when they being along their troubles and difficulties to us, those difficulties are tackled with the same energy and thoroughness as if they were the largest firm in the Association.

MEETING

Monday, November 2.

Leicester College of Art and Crafts, School of Architecture, 6.15 p.m., "New Methods of Building." By Alfred C. Bossom, M.P., F.R.I.B.A. Chairman: Lt.-Col. Sir R. E. Martin, C.M.G., M.A., T.D.

PLASTICS

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Classified Advertisements continued on page xxvi.

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