THE ARCHITECTS' JOURNAL

standard contents

every issue does not necessarily contain all these contents, but they are the regular features which continually recur

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★ A glossary of abbreviations of Government Departments and Societies and Committees of all kinds, together with their full address and telephone numbers. The glossary is published in two parts—A to Ie one week, Ih to Z the next. In all cases where the town is not mentioned the word LONDON is implicit in the address.

IHVE	Institution of Heating and Ventilating Engineers. 49, Cadogan Square. Sloane 1601/3158
IIBDID	Incorporated Institute of British Decorators and Interior Designers. 100 Park Street, Grosvenor Square, W.1. Mayfair 7086
ILA	Institute of Landscape Architects. 12, Gower Street, W.C.1. Museum 1783
I of Arb	Institute of Arbitrators. Hastings House, 10, Norfolk Street, Strand W.C.2. Temple Bar 4071
IOB	Institute of Builders. 48, Bedford Square, W.C.1. Museum 7197
IQS	Institute of Quantity Surveyors, 98, Gloucester Place, W.1. Welbeck 1859
IR	Institute of Refrigeration. Dalmeny House, Monument Street, E.C.3. Avenue 6851
IRA	Institute of Registered Architects. 47, Victoria Street, S.W.1. Abbey 6172
ISE	Institute of Structural Engineers. 11, Upper Belgrave Street, S.W.1. Sloane 7128
LDA	Lead Development Association. Eagle House, Jermyn Street, S.W.1. Whitehall 7264/4175
LMBA	London Master Builders' Association. 47, Bedford Square, W.C.1. Museum 3891
LSPC	Lead Sheet and Pipe Council. Eagle House, Jermyn Street, S.W.1. Whitehall 7264/4175
MAFF	Ministry of Agriculture, Fisheries and Food. Whitehall Place, S.W.1. Trafalgar 7711
MARS	Modern Architectural Research Group (English Branch of CIAM). Secretary : Trevor Dannatt, A.R.I.B.A., 71, Blandford Street, W.1. Welbeck 4713
MOE	Ministry of Education. Curzon Street House, Curzon Street, W.1. Mayfair 9400
MOH	Ministry of Health. 23, Savile Row, W.1. Regent 8411
MOHLG	Ministry of Housing and Local Government. Whitehall, S.W.1. Whitehall 4300
MOLNS	Ministry of Labour and National Service. 8, St. James' Square, S.W.1. Whitehall 6200
MOS	Ministry of Supply. Shell Mex House, W.C.2 Gerrard 6933
MOT	Ministry of Transport. Berkeley Square House, Berkeley Square, W.1. Mayfair 9494
MOW	Ministry of Works. Lambeth Bridge House, S.E.1. Reliance 7611
NAMMC	Natural Asphalte Mine Owners and Manufacturers Council. 94/98, Petty France, S.W.1. Abbey 1010
NAS	National Association of Shopfitters. 9, Victoria Street, S.W.1. Abbey 4813
NBR	National Buildings Record. 31, Chester Terrace, Regent's Park, N.W.1. Welbeck 0619
NCBMP	National Council of Building Material Producers. 10 Storey's Gate, S.W.1. Abbey5111
NEFMAI	National Employers Federation of the Mastic Asphalt Industry. 21, John Adam Street, Adelphi, W.C.2. Trafalgar 3927
NFBTE	National Federation of Building Trades Employers. 82, New Cavendish Street, W.1. Langham 4041/4054
NFBTO	National Federation of Building Trades Operatives. Federal House, Cedars Road, Clapham, S.W.4. Macaulay 4451
NFHS	National Federation of Housing Societies 12, Suffolk St., S.W.1. Whitehall 1693
NHBRC	National House Builders Registration Council. 82, New Cavendish Street, W.1. Langham 4341
NPL	National Physical Laboratory. Head Office, Teddington. Molesey 1380
NRDB	Natural Rubber Development Board. Market Buildings, Mark Lane, E.C.3. Mansion House 9383
NSAS	National Smoke Abatement Society. Palace Chambers, Bridge Street, S.W.1. Trafalgar 6838
NT	National Trust for Places of Historic Interest or Natural Beauty. 42, Queen Anne's Gate, S.W.1. Whitehall 0211
PEP	Political and Economic Planning. 16, Queen Anne's Gate, S.W.1. Whitehall 7245
RCA	Reinforced Concrete Association. 94, Petty France, S.W.1. Abbey 4504
RIAS	Royal Incorporation of Architects in Scotland. 15, Rutland Square, Edinburgh. Fountainbridge 7631
RIBA	Royal Institute of British Architects. 66, Portland Place, W.1. Langham 5721
RICS	Royal Institution of Chartered Surveyors. 12, Great George St., S.W.1. Whitehall 5322/9242
RFAC	Royal Fine Art Commission. 5, Old Palace Yard, S.W.1. Whitehall 3935
RS	Royal Society. Burlington House, Piccadilly, W.1. Regent 3335
RSA	Royal Society of Arts. 6, John Adam Street, W.C.2. Trafalgar 2366
RSH	Royal Society of Health. 90, Buckingham Palace Road, S.W.1. Sloane 5134
RIB	Rural Industries Bureau. 35, Camp Road, Wimbledon, S.W.19. Wimbledon 5101
SBPM	Society of British Paint Manufacturers. Grosvenor Gardens House, Grosvenor Gardens, S.W.1. Victoria 2186
SE	Society of Engineers. 17, Victoria Street, Westminster, S.W.1. Abbey 7244
SFMA	School Furniture Manufacturers' Association. 30, Cornhill, London, E.C.3. Mansion House 3921
SIA	Society of Industrial Artists. 7, Woburn Square, London, W.C.1. Langham 1984/5
SIA	Structural Insulation Association. 32, Queen Anne Street, W.1. Langham 7616
SNHTPC	Scottish National Housing. Town Planning Council. Hon. Sec., Robert Pollock, Town Clerk, Rutherglen.
SPAB	Society for the Protection of Ancient Buildings. 55, Great Ormond Street, W.C.1. Holborn 2646
TCPA	Town and Country Planning Association. 28, King Street, Covent Garden, W.C.2. Temple Bar 5006
TDA	Timber Development Association. 21, College Hill, E.C.4. City 4771
TPI	Town Planning Institute. 18, Ashley Place, S.W.1. Victoria 8815
TTF	Timber Trades Federation. 75, Cannon Street, E.C.4. City 5040
WDC	War Damage Commission. 6, Carlton House Terrace, S.W.1. Whitehall 4341
ZDA	Zinc Development Association. 34, Berkeley Square, W.1. Grosvenor 6636

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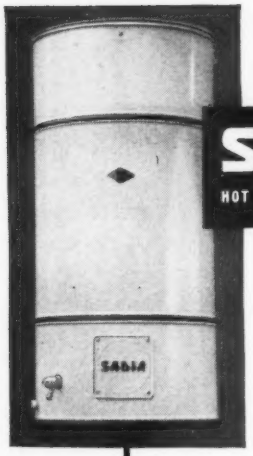
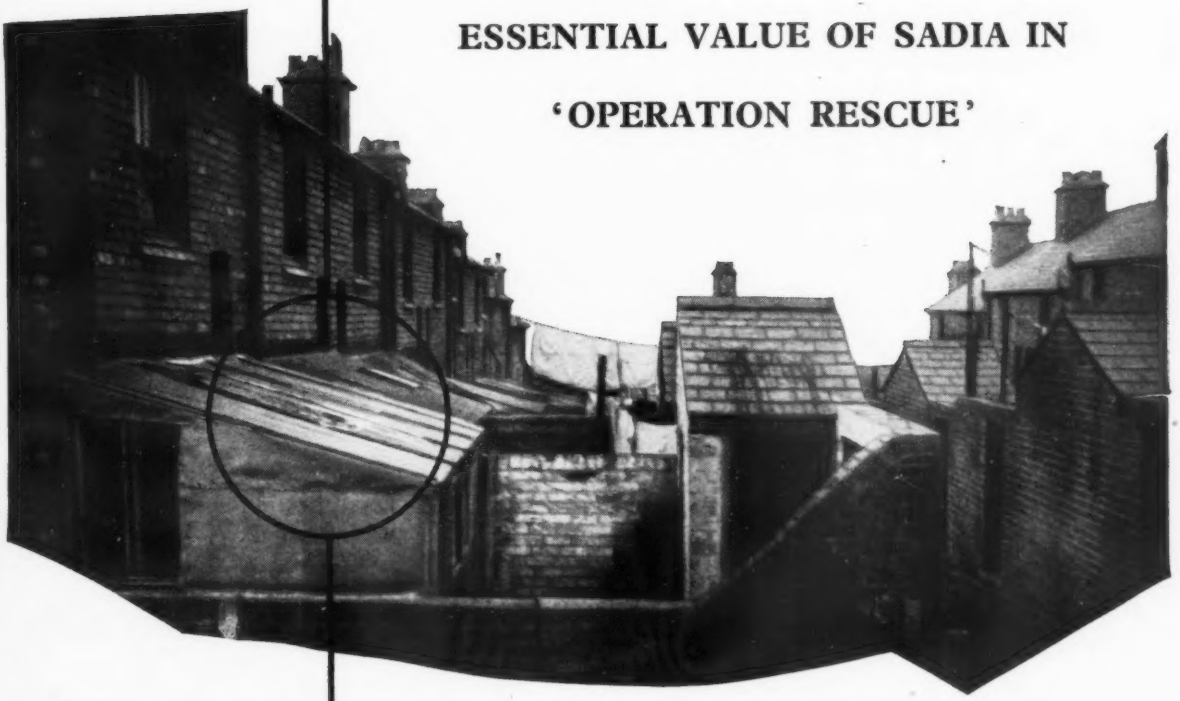
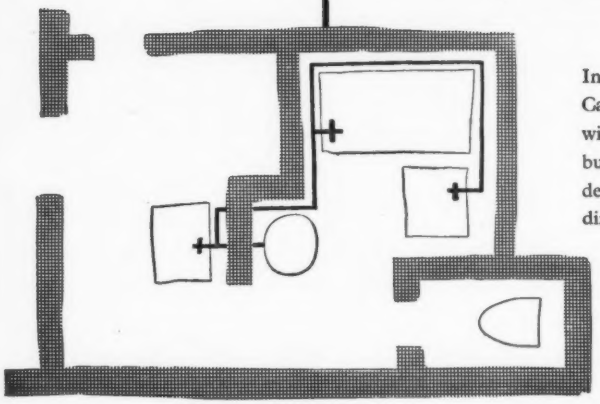
ILFORD

RMOUTH



ESSENTIAL VALUE OF SADIA IN 'OPERATION RESCUE'





In the rehabilitation scheme being carried out by Bangor, Caernarvonshire, Borough Council, 34 houses in Treflan and Minafon will have a scullery, bathroom and W.C. added to each by building ground-floor extensions at the back. These additions were designed in the City Surveyor's Department, Bangor, under the direction of Mr Cyril Richard, B.Sc., A.R.I.C.S, M.Inst.Mun.E.

In this project, qualifying as it does for an improvement grant under the Housing Act of 1949 and known as 'Operation Rescue', a Sadia cistern type water heater of 20 gallon capacity will be installed in each house. The Sadia cistern type were decided upon because it is so very simple and economical to connect them to the existing mains services. Furthermore, as many of the tenants are old or infirm, it was essential to install a system free from any risk of accident resulting from mishandling or negligence.

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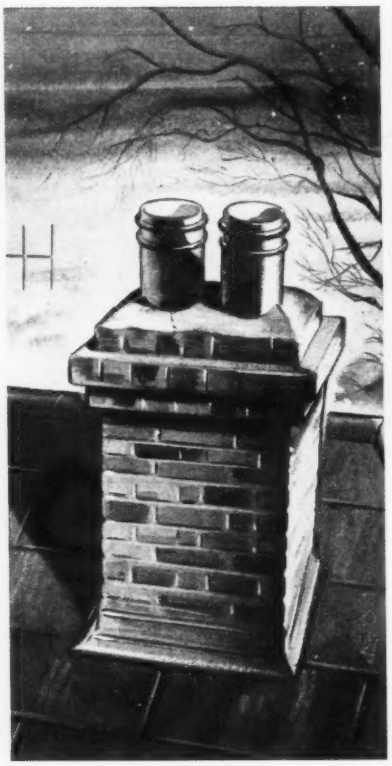

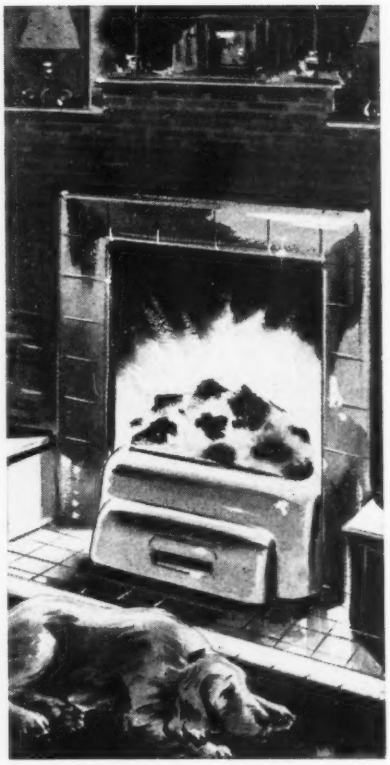

WE MAY perhaps be pardoned for turning the phrase for our headline, because it is true. Flavel smokeless fuel fires satisfy both the smoke abatement requirements of public authorities and the traditional British love of a friendly, open fire. This is why public bodies throughout the country are continually specifying Flavel smokeless fuel fires for new development schemes. These fires provide constant heat (controllable over a wide temperature range) and they burn for hours without being touched. Heat is delivered at near-floor level so that the whole room is warmed and practically no heat is wasted—and they are very economical on fuel.

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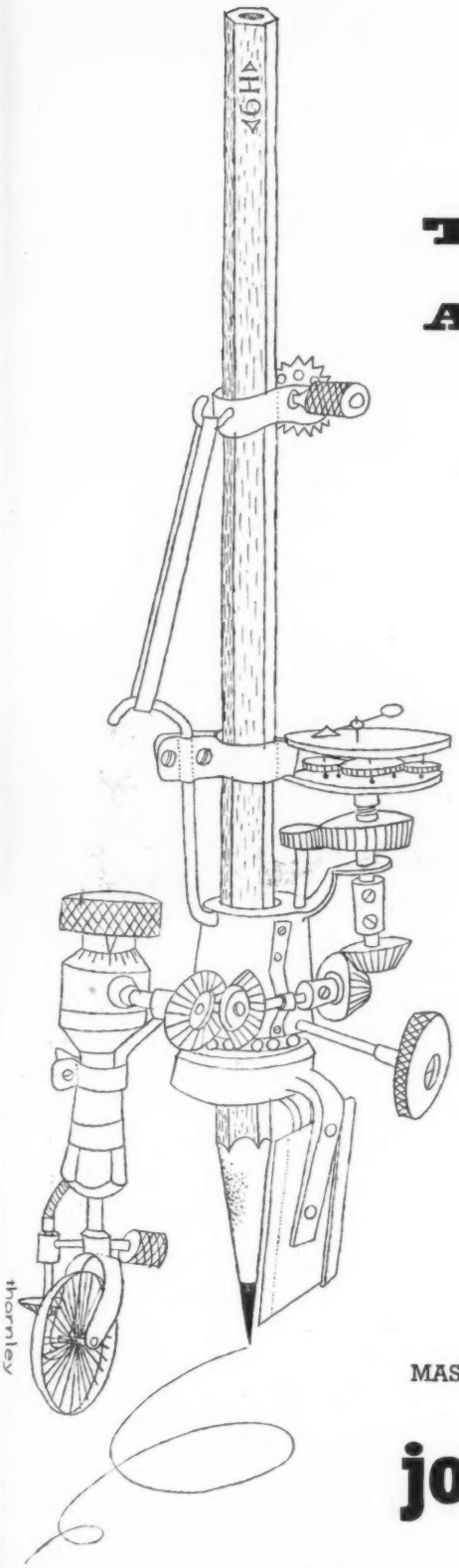

+ service

TOOLS FOR ARCHITECTS

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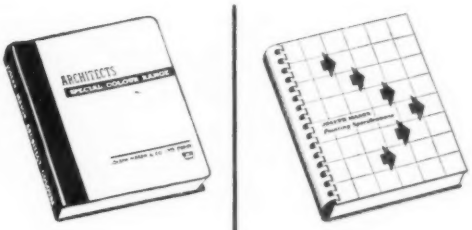

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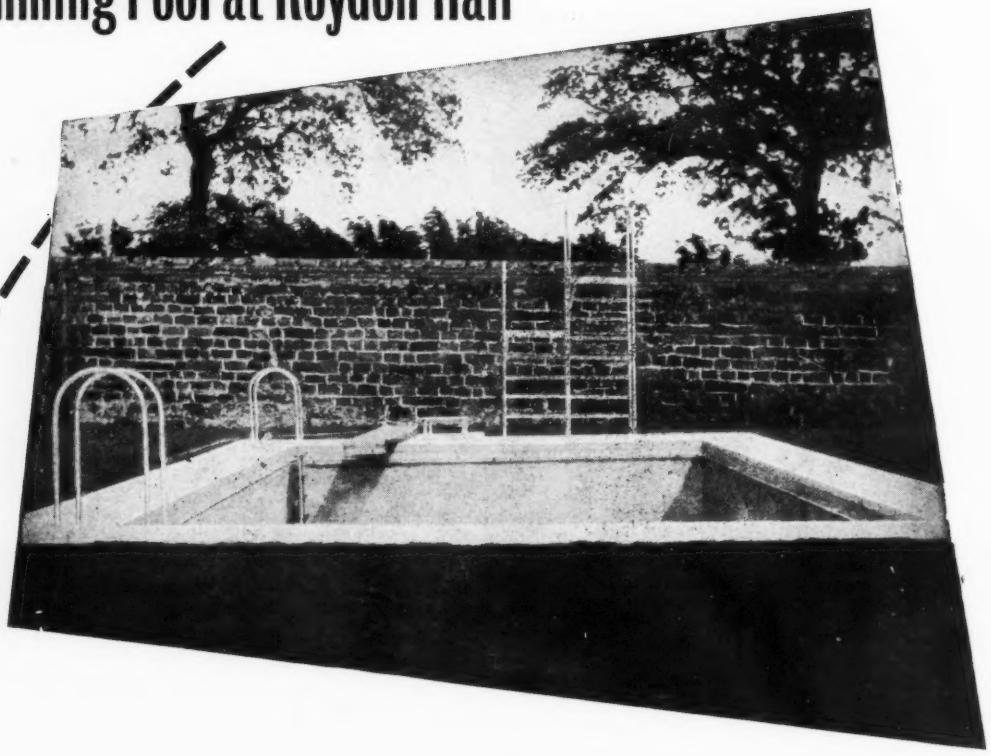
Swimming Pool at Roydon Hall



In the lovely grounds at Roydon Hall, Norfolk, a swimming pool has been constructed for John Alley, Esq., J.P. The pool is 34 ft. long and 20 ft. wide, one end being 3 ft. 6 ins. deep increasing in the middle to 8 ft. and decreasing at the other end to 6 ft.

'PUDLO' Brand Waterproofer was specified to render the walls and floor waterproof, the bath having been built of brickwork with an ordinary non-waterproofed concrete floor 15 ins. thick composed of 4. 2. 1.

The Waterproofing was effected by means of an internal lining of waterproofed cement and sand composed as follows :— 2 parts of coarse washed sand, 1 part of Portland cement, 5 lbs. 'PUDLO' Brand Powder, to each 100 lbs. of cement.

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THE ARCHITECTS' JOURNAL

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OPPORTUNITIES FOR INITIATIVE

ASTRAGAL learns of interesting vacancies open at two of the more go-ahead provincial offices which should appeal to those anxious to take on development work. Donald Gibson at Nottingham is looking for someone to work in liaison with the MOE's development group in order to gain experience to be applied to the Nottinghamshire schools programme, and Arthur Ling at Coventry is seeking someone who can lead the new development and cost study group which he is forming. These positions are welcome indications that the centres for new ideas will no longer be largely London based, and that architectural progress is slowly but surely becoming nation wide. And even international—judging by the facilities for study offered to British architects by the University of Pennsylvania in the often-neglected and underestimated art of landscape.

*

The faculty is headed by Ian McHarg, the professor of land and city planning at Pennsylvania, who quickly gained a reputation over here for his work with the Department of Health for Scotland. An excellent article on landscape costs, based on his experience with the department, is due to appear shortly in the Journal. The lecturers and visiting critics at Pennsylvania include such names as Lewis Mumford, Stanislawa Nowicki and Philip Johnson, so perhaps it is not surprising that some of the graduates of this much-needed course have gone on to work with no less than Le Corbusier, Alfred Roth and other giants.

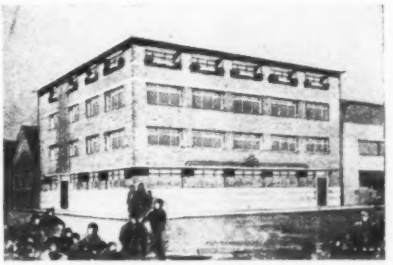
EDITORIAL CHANGES

Architects will be sorry to learn that Eric Bird is giving up the editorship of the RIBA *Journal*. He has done a great deal to make that journal the worthy publication it is, and it now most accurately reflects the profession and the policies of the Royal Institute. Eric Bird is an extremely popular and endearing figure in the architectural world, and ASTRAGAL learns that the profession will still be able to keep in touch with him as he is taking on a very responsible position in the Building Centre, details of which will no doubt be made public shortly.

The successor to Bird comes from the same stable as he did, no less a source of sound journalism than the *Architect and Building News*. The editor of that newspaper, Noel Musgrave, is a most suitable candidate to take over from Eric Bird, and the RIBA's finance and house committee are to be congratulated on their sound and quickly made choice. He is an extremely likeable and kindly fellow, and ASTRAGAL, for one, greatly regrets his disappearance as a competitor in the field of weekly journalism.

ANOTHER JOB FOR THE STOICS

As a footnote to the proposed architectural disasters at Stowe, on which ASTRAGAL commented last week, here, without comment, is the building which



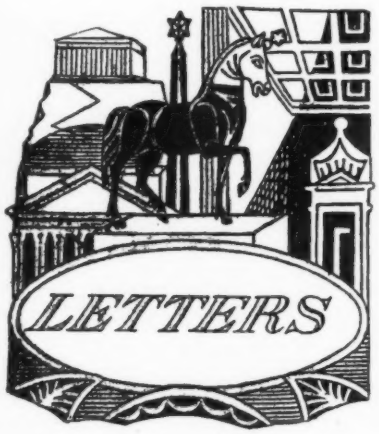
is to house that praiseworthy Stoic venture, the Pineapple Club for Boys in Marylebone. Architect? Kenneth Cross, currently a vice-president and, it is rumoured, favoured in certain quarters as the next president of the RIBA.

ASTRAGAL

THE PRINTING TRADE DISPUTE. We very much regret that owing to the dispute in the printing trade the editorial pages of the JOURNAL *have again been reduced. We are also sorry that some readers may receive their copies later than usual*

The Editors

At a lunch given to the technical press, K. C. F. Foster, newly elected president of the LMBA gave his view that the greatest contribution to better productivity lay in more careful preparation before the start of building operations. Longer preparation times, he said, could mean shorter contract times. He supported the further development of architect : builder collaboration, provided there were competition, suggesting that the builder might be selected on the basis of tenders for a partially developed scheme, the successful tenderer collaborating with the architect on the detailed working out of the project. He thought that unless the present arrangement of architect and builder working separately became more efficient, we should see an increase in the number of organisations providing an "all in" design and construction service. On education Mr. Foster said that he hoped for a common primary training from which students would branch out into contracting, architecture or surveying and he welcomed the idea that architects should work in builders' offices and builders in architects' offices. The JOURNAL applauds these progressive sentiments.



Outrage

SIR,—The creeping defacement of town and country is recognized by most architects. Individual architects, bound by professional etiquette, are unwilling to publicly deplore specific cases. Surely this is an opportunity for the local societies to undertake useful work by constructive criticism of outstanding instances of bad planning and lack of planning.

A. RODERICK MALES.

Lancs.

Subtopia

SIR,—I am amused at the atmosphere of light hearted despair which is creeping into the JOURNAL but I do not agree with it at all.

Subtopia is upon us because the *bona-fide* architect is beyond the reach of the "little man." We must come out to meet him, not half way, but all the way by making our services financially within his reach *but* we cannot do this until the Government co-operates by legislation saying that no plan shall be passed unless it has been prepared by an architect.

It is a sad thought that England is being ruined by well meaning and hard working Englishmen, but an even sadder one that no one, not even our parent body, can compose a sufficiently convincing case to make the Government give architects a fair chance to save what is left of this "green and pleasant land," it would at least finally resolve our inferiority complex one way or the other and at best it would rescue England from the stranglehold of her sturdy tradesmen who have not been taught the meaning of Town Planning or Architecture. (Long live the millions we spend on our schools.)

The problem is a fantastically difficult one to solve but it can be solved if the government is made aware of the fact that architectural control over all building (garden sheds, telegraph poles, advertisements, and prefabricated garages, included) would bring into the arena the only section of the community trained for the purpose of producing buildings fit to live with.

I sometimes wonder what we should do with this great opportunity if it were thrown at us as it may be one day and at present I foresee muddle and panic—how awful it is to think that there is no one preparing the way for us just in case the government took a chance on we architects and said to us, through the RIBA—"We will give you legal control over all building—now get on with it and see what you can do." The whole body of British architects could, with able leadership, assess the problem and devise a method of making services available for the sketch plan and working drawings of all buildings large and small, but until a Committee considers the problem and puts its findings at the disposal of the government, how can we expect to be given the control we seek and its natural outcome the gradual attack on "Subtopia" and its replacement with the easy and graceful growth of our towns to a prearranged size and plan?

J. E. JACKSON.

Kent.

Replies to Basil Spence

SIR,—Basil Spence, in his reply to Henry-Russell Hitchcock's criticism of Coventry Cathedral, is right in maintaining that in all great architecture, whenever it is built, there are certain constants, and it does not matter if 500 years from now Coventry Cathedral was rebuilt in 1925 or 1955. Obviously by relating Coventry Cathedral to 1925, Hitchcock implied that it lacks these constants and shows the crudity of architectural form similar to that of the early 20th century when the modern idiom started to take shape.

The "golden English compromise" is probably good in politics, but it does not pay in plastic art. Coventry Cathedral will be attacked by the "traditional" camp represented by Professor Richardson for being *modern*, and it will be criticized by the opposite camp for *not being modern enough*. It will definitely impress the architectural students, particularly in the lower years.

Basil Spence related his Coventry Cathedral to the Parthenon; therefore I hope to be excused for comparing it with another work of genius, the church at Ronchamps by Le Corbusier, the first truly modern church built in this century. Here the historical idiom is completely abandoned and a profound religious atmosphere by means of pure architecture achieved—a masterpiece of the highest order created by an architect who is a universal plastic artist.

In a country where in the schools of architecture "working drawings" are the main subject and the problem of architectural form is almost ignored, where even Basil Spence puts the cost of window cleaning as one of the main problems in the design of a cathedral—it is possible to achieve quite a high average standard of utilitarian buildings, but impossible to create a truly monumental architecture like the Rome station or Ronchamps church. Therefore there is no wonder that an air-

port would remind one of a suburban cottage on a large scale and a cathedral a modernistic "Odeon" cinema.

London. W. K. SMIGIELSKI.

SIR,—The Parthenon could have been built at no other moment in history. It was the flowering achievement of long husbandry, which reached its peak of perfection at that one significant moment. Later, and things happened more slowly then, the fruit from this source became over-ripe, and to assume that the Parthenon would have been as great, had it been conceived at any other time, is false reasoning.

And so it is with all great works of art.

There are certain constants relevant to all great architecture, as Basil Spence says, but they are constants of values and principles, which are influenced by variables such as time, place, climate, geology, sociology, religion, etc.

A work of art must be assessed in its context. Brunelleschi's Dome at Florence was a wonderful feat, though not by today's engineering standards. The values which make St. Peter's a great building in Rome, would make it a folly in the Sahara.

Professor Russell Hitchcock could have had this in mind, when he said that Coventry Cathedral was 30 years too late. It was not a criticism of old-fashioned technology, but of out-dated sociology.

Basil Spence is being less than just to himself in decrying the virtue of being up-to-date. Nothing of significance has ever emerged from "neo-cum-outmoded" forms. It is the challenge of tomorrow that produces the vital work of today. Unless this fact is accepted and the urgency of progress felt, one is as good as dead.

We are too close in time to judge the long-term significance of American technology, but clinging to familiar values, while letting the other fellow make the running, is not the spirit which adds great new chapters to history. If this is an age of technology and anonymity in the arts, the individual is in danger of getting trapped up some backwater, like the bird which flew in ever decreasing circles, with disastrous and painful results.

The arts demand progress or stagnation. There is no middle course. Who, other than the President of the Royal Academy (who apparently finds the cubic pill too angular to swallow) would wish to stay progress and rest forever in the golden age of his choice?

I suggest that the failure of church architecture to inspire "spearhead design" is the fault of the church. If the much discussed and hoped for religious revival developed, it would stimulate the designer to new vitality. I feel that the Smithsons' design failed only in this respect, that the lead came from them and not the church.

One final point about concrete in town atmospheres; the concrete of Perret's church at Le Raincy is now as mellow as any masonry.

DENNIS BERRY.

London.

More Competitions

SIR,—The notification made recently about an international competition for the design of a concert hall for New South Wales leads me to think that it would be a very good example to follow in this country. We have, over past years, received much inspiration from work carried out in this country by architects from other countries, and I would particularly refer to the concert hall at Bexhill designed by Eric Mendelsohn. Exhibitions organised by the RIBA and other authorities have done a great deal to inform the profession about the great works being carried out in other countries, and I think one or two competitions for major building projects, run on international lines, could very much assist to forward the cause of modern architecture.

Sunderland STANLEY MILBURN.

Stoicism

SIR,—As an old Stoic and an architectural student I would like to express agreement with ASTRAGAL regarding his remarks concerning the new memorial hall at Stowe. It is rather unfortunate that building undertaken during the school's tenure has not helped the original layout. Initially the school was in a fairly bad taste of repair, a state which has not been overcome as far as some of the temples, etc., are concerned. The school grew up on the centralization system with all the school's necessities being within easy reach of one another; hence the bulk of new building grew up added on to, or close, to the original main block in weak pseudo styles. The one reasonable building of the period, Sir Robert Lorimer's chapel, loses much from its setting. No attention was paid to the original layout of Kent and Capability Brown which could have been expanded. I feel that the pseudo style for the memorial hall should be abandoned and that it should be built in the best contemporary manner and sited in a position which would do justice to itself and enrich the original planning.

There should not be any clashing of periods when the individual is of its best. Whether one admires or not the gothic temple it has been sited so as not to contrast directly with its classical brothers. I hope that sense will prevail, as Stowe is amongst the finest of the landscaped estates.

M. MOORBY.

Newcastle.

Steel v. Concrete

SIR,—May I be allowed to comment on your leader of December 8, although some weeks have since elapsed?

I am afraid that the question of steel versus reinforced concrete is complicated by the fact that so many people have an axe to grind. Let us be quite honest about it. There can be no doubt that it is in the national interest to use as little steel as possible, and it should be reserved for applications where it cannot be replaced by anything else.

I have no doubt that for multi-storey buildings reinforced concrete is also less expensive than steelwork, and unless a large number of storeys are to be constructed, well beyond what is visualised in this country, it is very often easier to deal with space in reinforced concrete than in steelwork. So it must be in the client's interest to use reinforced concrete rather than steel for most office buildings.

As far as construction time is concerned, I do not think there is now much difference between a steel building and a reinforced concrete one, particularly when an adequate amount of prestressed concrete is used. The architect and consulting engineer, however, both have a definite interest in using steelwork rather than reinforced concrete. It saves a great deal of trouble not to have to make decisions at an early stage, and in particular, to wait with fixing exact positions of holes, window fixings, etc., for as long as possible. It is quite possible to erect a whole steel frame and still be rather vague about these items. Even if the services have not been properly considered and errors have occurred, it is quite easy to remedy these with a steel frame. It is a different story altogether with a reinforced concrete frame, and particularly with precast and prestressed concrete, which are otherwise the economic answer to most problems. When employing such reinforced concrete frame it is necessary for the architect to spend a great amount of time and expense in the early stages, to define positions of services and fittings. This is why many architects prefer to deal with steelwork.

From a consulting engineer's point of view steelwork is even more advantageous. The amount of work necessary to prepare for a

reinforced concrete building is considerably greater—often twice as much as for a steel building. The fees are about the same (the percentage the consulting engineer gets for a reinforced concrete building is slightly higher, but as the cost is less the total fee is not really affected). It appears, therefore, that both for architects and engineers a great deal of public spirit is necessary if they are to choose reinforced concrete. There is no doubt that a great number of professional people today do appreciate that their own point of view is less important than that of the client and the nation as a whole, but is it right to expect such an attitude from everybody in two professions?

Just to make it clear that the sentiments expressed are not due to any prejudice against steelwork, I should like to point out that the converse of what I have described can also be true. There are hundreds of buildings of the long span, one-storey, type, which are carried out in reinforced concrete although steelwork would be less expensive, and I know of a number of instances where, in fact, the amount of steel required in a single construction would be considerably less than that used in reinforced concrete because there is so much less weight to be carried. Here, of course, the misuse of material is due to other reasons than those I have described, but the effect is unfortunately the same.

So may I summarize by saying there is a fairly clear dividing line today which indicates whether steel or reinforced concrete is preferable, and the national interest almost invariably coincides with that of the client. The professional man should take the trouble to acquaint himself with this dividing line, and design his buildings accordingly.

FELIX J. SAMUELY.

London.

Young Architects

SIR,—Being one of ASTRAGAL'S "young architects" (JOURNAL, January 12, "Undesirable Publicity"), I would suggest that he (ASTRAGAL) should not class us all as one. Why should a client certainly not go to what appears to be a young architect? Who says "it is doubtful if any of them (architects) could produce more than a variation on the stock plan for this amount?" (£2,500).

What of the bungalow in the JOURNAL for January 26, by Mr. G. R. Binns? And I recently completed a house for a cost of approximately £2,200. This is certainly not a stock plan, and it does not claim to be brilliant, but something different *can* be done, with central heating, and by a young architect too!

R. H. HARDY,

Leics.

Ledbury Churchyard

SIR,—I share your annoyance at the destruction of those four magnificent lime trees which suited Ledbury churchyard so well.

Fortunately, the "memorial garden" scheme has been turned down. On January 24 the Parish Church Council unanimously decided that it "did not approve the use of the churchyard as a memorial garden." It is now the intention of the Church Council to take steps to beautify the churchyard.

Here is a great opportunity to plan for the next 200 years, and I think the way is open for any landscape consultants to advise.

JOHN P. FLETCHER.

London.

YORK

Conference on Office Management

During the week-end of January 6-10, a conference was held, under the auspices of the York Institute of Architectural Study, to consider the problem of architectural office management. The decision to hold the conference was made as a result of discussion at the RIBA conference at Harrogate last year. Apart from those who had been invited to read short papers, the members consisted of a small, representative body of principals, deputies, and group leaders from public and private offices.

The conclusion reached by the members was that architectural office management should be considered in two parts—office management and project management.

Office management, it was decided, required considerable investigation and research, the results should be widely published, students should be instructed in the broad principles, and post-graduated courses should be arranged if investigation showed it to be practicable.

Project management, it was claimed, required the collation of the large mass of existing material, and its development and adaptation to offices of various kinds. Students should be instructed in the basic principles and post-graduate courses should be arranged.

Papers were read by Dr. R. Bradbury, chief architect and director of housing, Liverpool; R. F. Lloyd-Jones, partner of Norman and Dawbarn; A. W. Glover and W. T. C. Walker, deputy county architects, West Riding; W. E. Marsden, private practice; J. Nisbet, quantity surveyor, and C. E. Wooster, architect, both of MOE Architects Branch; and F. H. Cordukes of the Office Management Association.

DR. RONALD BRADBURY, in presenting the opening paper of the conference, made a good case to show that unless architects could learn to control and manage their affairs with reliability and efficiency there was a serious danger of their work being carried out by industrial competitors. He pointed out that increased efficiency, meant more money earned (private architects) or more money saved (public architects). Because the architectural profession was becoming more complex control must, he believed, be more firm.

Dr. Bradbury analysed the architect's work and showed how management affected each part of it. The text-book definitions of good management were, he said, self evident; the problem lay in applying them to architectural practice.

The office, he said, should be a pyramid structure; the director should try to keep his finger on every job of any importance, but every member of the office should be encouraged to contribute all that he was able.

A. W. GLOVER AND W. T. C. WALKER, deputy county architect, West Riding, read papers and answered questions about the organization and method of operation of their office. The members of the conference paid a visit to their offices at Wakefield and found that they coped with a vast volume of work, of which about half went to private architects, and that they had an intricate and highly-developed organization and administrative machine.

The architectural establishment, they found, allows for sections of about twenty architects and assistants, but each section consists of about only twelve in fact. All work fed into the department is discussed at the top administrative and design level, and is earmarked for either private or staff architects. Where the job is to be done in the

office, outline sketch plans are prepared and approvals obtained at deputy level. The job then passes to a section for development of the design. It is considered that a design must be the product of one mind, and that all the work of one office should have a "family likeness," but that in the organization of this office there is plenty of scope for contributions from all members of the staff.

The offices are planned on American lines, with one large drawing office and an open sided gallery, overlooked by a large window from one of the administrative offices. In answer to a question, the County Architect, Mr. Bennet, said that there was no particular advantage in the arrangement and that if another office were to be built it would probably be different.

W. E. MARSDEN described his small practice (principal, two assistants, two pupils, and secretary) and spoke mostly about office procedure adopted. Paper work and procedure had been skilfully cut down and retailored to suit a small, intimate and specialized practice. Office organization presented no difficulties, but neither, it seemed, did staffing. Personnel management was considered of some importance, and the need was emphasized for the principal to know the background of each of the staff, and for all to understand their position and their prospects.

In discussion, the point was made that a middle-sized practice of about twenty staff was the most difficult to organize because the principal had to delegate work, but staff of the right calibre were not always available to such a practice. This point may also have significance in a larger field.

C. E. WOOSTER described the experimental programming of a project in its course through the office.

He opened by drawing attention to the technique of method study that industry uses to improve efficiency, and suggested that it was a valid technique to use in architectural project management, provided that the twin objectives of quality and efficiency were borne in mind. Efficiency and quality, he thought, could only come from an architectural team that was in a professionally healthy and expansive environment.

He defined a programme as the assessment of time and resources required to keep to a time-table. He pointed out that a pre-requisite of useful programming was an ability to control costs. He then analysed the work on one project and showed that it might consist of 40 to 50 separate tasks that could be planned to be done in a rational order to ensure smooth running. By estimating and rationing the time required for each task and planning the work carefully among members of the team available a total time for the project could be worked out. As the work on the project proceeded, time spent on each task could be recorded (small units of time such as ½ days should be used to give sensitivity), and periodic assessment of progress could be made. Where the time required was longer than that available, whether this was apparent at the beginning or only became so during the course of the job, there were only three possible courses: (*a*) more time; (*b*) more men or longer hours; (*c*) lower standards of design and/or less information on drawings. If the timing of output was to be controlled this fact must be firmly faced. Too often hope took the place of action.

Mr. Wooster showed a progress chart of a particular project that had been so controlled, involving four architects in work of about 650 man days for production of a design and complete set of working drawings and details. The chart showed how and when delays had occurred, and the effects of the corrective action that had been taken. In discussion it became apparent that the technique was most suitable for "one off" jobs, but that abbreviated versions could be used for the later numbers of a series. Private practitioners pointed out that there was great difficulty in obtaining the full brief from a "one off" client before the design was commenced, and that changes of mind might take place at any stage of the job. It also became clear that some public offices were so overloaded with work in relation to staff that every job was just a scramble, without a hope of the completion of a good set of drawings before the job started on the ground. Mr. Wooster suggested that where an architect could produce figures and records to show the amount of overload in quantitative terms rather than vague statements, other people were more easily convinced of the overload, and that once the work of an office was under control, productivity in terms of quantity or quality (or both) was bound to improve.

JAMES NISBET opened his talk on architectural management in relation to building costs by saying he thought job management was important because a builder judged an architect by his control of a job and reacted accordingly, and that control of costs was an important part of management because the reputation of the architectural profession depended upon it.

He then went on to review the various phases of the project and showed how cost could be affected at every point by neglect of suitable procedure. He showed that if an architect and QS could work in physical proximity, and if the QS could be introduced to the job at an early stage, even as early as briefing, the QS could give much more accurate cost advice than he was usually able to do, or was ever asked to do. He discussed the sources of cost information, and referred to the technique of cost planning, which relied on cost analysis. These methods, he said, were fully explained in the JOURNAL of July 28, 1955. He said that if the architect and QS jointly produced a cost plan (which is a guide to a reasonable distribution of money between elements), then during the design stage cost checks could be made by means of approximate quantities on each of the elements of the building, and designs could be modified When the speaker turned to Bills of Quantities he pointed out that while an architect might work on a project for several months, the Q.S. worked on it for several weeks, and the builder's estimator might work on it for only several days. It was therefore necessary for architects and quantity surveyors to pass on as much relevant and easily assimilable information as possible. Also, the Q.S. must be properly briefed. If the architect had worked out special ways of doing a job the Q.S. must be told so that the bills might express the architect's efforts. However, if the Q.S. has been working with the architect from the start, a full briefing would be unnecessary. Mr. Nisbet then discussed some of the details of project management that could have so profound an effect upon the smooth running, and therefore the cost, of a job, and gave most of the architects present plenty of food for thought.

During discussion the point was made that for the office that employ the private Q.S., close co-operation such as had been suggested was difficult to achieve. Moreover the question of fees for all the unusual work had to be borne in mind. A private practitioner replied that he thought that in the initial stages the architect was responsible for the estimates of cost and if the Q.S. was called in, the question of fees was a matter to be settled between them. Mr. Nisbet added that Q.S. customarily prepared estimates and advised on costs, and his suggestion did not depart in principle from that procedure; at the present time the Q.S. might have to spend time and money in preparing cost analyses and mastering the technique of cost planning, but this should be regarded as an investment in the future which would bring its own rewards.

F. H. CORDUKES described and answered questions about the organizational problems of Rowntrees offices at York, of which he is office manager. The staff numbers 800. The function of the office, he said, was to arrange the economical manufacture, distribution and sale of chocolate, and since the office was not directly productive it was a deadweight on the production side of the business, and efficiency was essential.

Mechanical aids to assist efficiency were discussed but the major consideration appeared to be personnel management. In such an office the person's position in the firm, his prospects and his security, are of greater interest to him than his work. From the first interview, through the selection and training department, day continuation school, training courses, promotion from inside, trade union membership, staff associations, negotiations of pay and conditions, welfare, pensions, and sick pay which in one case has been paid for 27 years and is continuing, every effort appears to be made to get the best out of the staff. There is a shortage of staff of the right calibre, but it has been found that by good training office machine operators can be made out of what is generally considered to be unsuitable material for office staff.

It is considered essential to try and pay according to the value of work being done, and although a few offices nearby pay slightly more, the matter is rarely a problem.

An office planning section (in other concerns often called O. & M.) consists of two university graduates, who keep the whole of the office system constantly under review.

THE GUEST EDITORS' FINAL COSTS ARTICLE

ARCHITECT—BUILDER CO-OPERATION

In some of our articles we discussed the contribution that architect, quantity surveyor and builder could make, each in his own sphere, to better organization and control of economy in building. Following this we examined a number of contractual procedures used for the design and erection of buildings. Our aim throughout was to consider and suggest practical changes and improvements that could lead to better value for money in building, to greater public confidence in the industry and the professions, and in the long run to enhanced architectural quality. But there is one approach to these objectives, which has been widely discussed since the war, which is the subject for this, our last article: architect-builder co-operation. By this title we mean the design and erection of a building by a unified group combining all the skills at present separately co-ordinated by the architect and the builder. This must be distinguished from the negotiated contract, often employed for a different purpose, e.g., where there is a preference for a particular builder. Co-operation may imply a negotiated contract but a negotiated contract does not necessarily involve co-operation. No other major industry separates designer and producer, and it is surprising therefore that the idea has not been more often adopted in building. The need for co-operation is evident; for instance, to the architect attempting to design a method of construction that avoids the use of scaffolding. Without the builder at his elbow he cannot be certain that his ideas are feasible, or whether some problem not evident to him but obvious to the builder will not require scaffolding after all. It is evident to the builder who could advise the architect not to specify work requiring tradesmen who were particularly scarce. Numerous illustrations like these, of the potentialities of co-operation, could be given.

What are the difficulties that prevent a more widespread adoption of what appears to be normal procedure in other industries? If it were more widely employed, what could it achieve that cannot be achieved by more orthodox procedures? These are the questions which, in this article, we attempt to examine, if not to answer.

The Advantages of Co-operation

Architect-builder co-operation would aim to achieve, on behalf of the building owner:

A shorter building time. The site operations phase, which is considerably more expensive to the client, could be shortened by more detailed, realistic and thorough design and preparation, which is less expensive, for the client incurs only professional fees.

A greater economy in building and site operations in that the man-hours of operatives and supervisors could ultimately be more productive by the avoidance of delays and variations, and in the long run give the building owner better value for money.

Better design because the builder's advice and knowledge *could* provide a more realistic context for the architect's creative skill.

These aims could be achieved if builder and architect worked together from the start. The possible ways in which the architect's creative skill and the builder's practical knowledge could merge are these:

1. The erection methods to be used can be worked out at the same time as the methods of construction are being designed and the materials chosen. Thus the design and detailing could be produced to give the most economical sequence of site operations, and could be suited to the builder's resources

and experience. The appropriateness of unfamiliar methods or materials for any particular use can be assessed with greater confidence than if the architect worked alone.

2. The costs of different proposals can be discussed with the builder before final drawings are made. This can allow much better control of cost, and avoid those occasions when the architect commits the client to an unnecessarily expensive job, without realising it. Work can be more accurately priced than with normal tendering because the builder has full knowledge of the details of the work.

3. The builder can have more time than with orthodox procedure, to plan his work and co-ordinate it with his other contracts, well before the starting date. He can earmark in advance the staff he needs and order any materials that are in short supply.

4. The builder can assist in the selection of sub-contractors and suppliers. This allows him to co-ordinate their work with his own, and enables him to take full responsibility for them.

5. There is a greater chance, with the builder at the architect's elbow, that the design can be completed in full detail so that builder and sub-contractors know exactly what is to be done before work starts.

6. The quantity surveyor can prepare the quantities and schedules in a form appropriate to the builder's methods and organization. Re-measurement can be eliminated and variations reduced to a minimum.

Few will doubt that these advantages are desirable or that many are possible, but they will not all be achieved at once. In the immediate future we can look for shorter construction periods, but before procedures can be evolved that fulfil *all* that is expected of architect-builder co-operation, many difficulties will have to be faced and overcome.

Problems of Co-operation

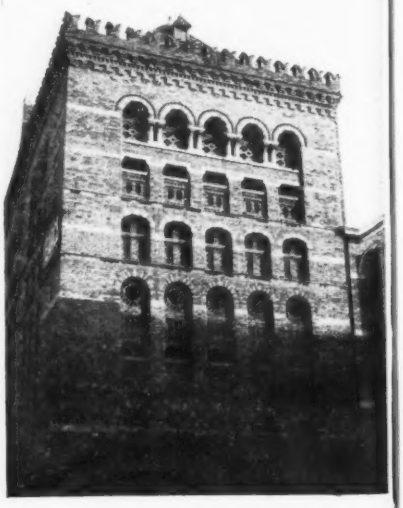
The most important of these is a very deep-rooted one. Builder and architect have worked in isolation from each other for so long that they understand very little of each other's problems and points of view. Under present procedure the builder is not expected to make suggestions or to comment in any way on the architect's drawings or specifications, nor to put forward ideas for improving the work. He has been trained for many years to carry out instructions faithfully, attributing anything unusual to the whim of the architect. This tradition has resulted in lack of a critical faculty on the builder's part. The architect has been cushioned from the financial impacts of his decisions by the quantity surveyor, and the builder will say that the architect does not think in terms of the economics of building and cannot appreciate the risks and chances of a business undertaking. These opinions should be read, not as accusations, but as evidence of what each has to learn from the other.

In the past, architectural education has emphasized the architect's role as artist, as one concerned *primarily* with the appearance of buildings. But now, growing specialization of building techniques requires him to be a co-ordinator of many skills. If his creative role is to be realized through the integration of those skills, he must become an efficient organizer—a task which calls for special training in administration techniques and a management approach. Future architectural education should take account of this change in the architect's role. Correspondingly, the role of technical adviser will be a new one for the builder. Builders are so accustomed to fit their site methods to a pre-determined design, that the unfamiliar opportunity of fitting design to site methods may not at first be fully grasped. Progress will be more fruitful if the architect, instead of expecting the builder to give advice at irregular intervals as information becomes available, calls regular meetings of the group and submitted definite proposals including estimates of time and cost. Another problem is that the builder's knowledge and information is spread among his various departments—estimating, contract planning, plant and buying departments. It would obviously be more effective if these were co-ordinated through one responsible technical adviser. Probably only the more progressive firms would be able to provide an advice service on these lines at first.

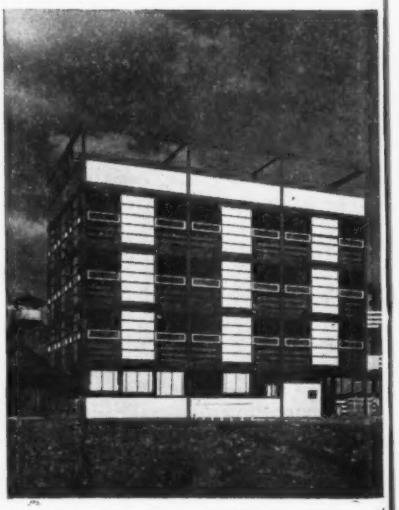
Management and Control

If architect and builder are to co-ordinate the work of a team of consultants and sub-contractors, who is to lead and who is to take responsibility for major decisions affecting the economy, cost and contract time of the project? We have no conclusive answer to these questions, for they may be interpreted in more than one way. But we set out below what seem the significant factors and give two possible views of the matter—on which we should welcome readers' opinions.

In normal procedure, responsibilities to the building owner are divided—the architect is responsible for the inherent economy of the design and forms of construction, but not for total cost or contract time. These the successful builder must decide in tendering, and assume responsibility for, when signing the contract. But the builder's decisions are—in part—dependent on the architect, for his price depends, in the main, on the design and types of construction. His ability to meet the cost and time targets contracted for also depends, partly, on the architect—in the matter of timely instructions, absence of variations and his relations with nominated sub-contractors. Thus the three factors that are of prime importance to the building owner, economy, cost and contract time, are interdependent; but neither architect nor builder is solely responsible for them all. This is why the clause covering damages in the standard form of contract can often be by-passed and why time and cost targets are often exceeded in practice. If building owners are to accept architect-builder co-operation with confidence, they must be assured that the design is economically fitted to their requirements and that the agreed targets for cost and contract time will be met. Ideally, whoever takes responsibility for giving this assurance, should (a) be the leader of the

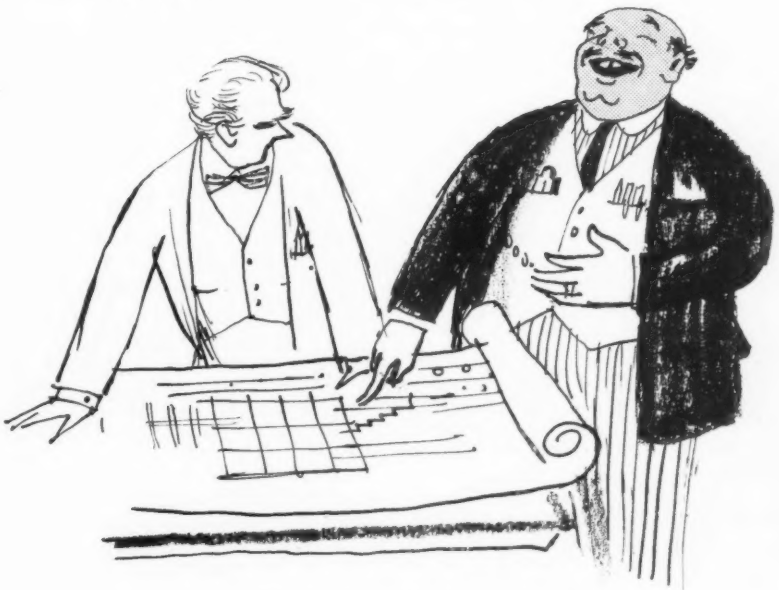


Above: Architect-builder co-operation in the 1820's Tavistock Square, designed and built by the Cubitts Below: A warehouse built in the 1860's and one built in 1955. Building techniques have utterly changed in 100 years, but the contractual relationships of architect and builder have remained much the same.



...architectural education has emphasized the architect's rôle as artist...

team and (b) have effective control over the factors that determine whether or not the targets can be met. Can responsibility for this assurance rest with the architect throughout the job? Or should responsibility pass to the builder when site operations begin? Or should architect and builder share responsibility equally throughout? We discuss two possible views of this problem: The first assumes that one person—the architect—is team leader during the design phase, making the final decisions as to methods of construction, materials and choice of sub-contractors, in the light of advice from the builder and other team members. In the building operations phase he remains responsible to the client for interpreting the contract, for seeing that the design is completed in accordance with the specification and his instructions within the time stated by the builder in the contract documents. There is little difference between this and the usual procedure, but in the discussions leading to the builder's nomination there would have to be a general understanding that the builder will advise the architect, that the architect on his part will take heed of such advice during the design phase, and that during the building operations phase the architect will provide the instructions necessary for



...the builder is not expected... to comment in any way on the architect's drawings...

the builder to meet his contract obligations. Clearly the success of co-operation on this basis depends entirely on the integrity of both architect and builder, and their mutual confidence in each other.

Criticism of this approach to the problem is first, that responsibility for cost and time to the building owner does not rest clearly with one individual or a group of individuals, as it does with the "all-in" service (see AJ November 24, 1955); second, that the builder has little incentive, apart from maintenance of his reputation, to assist the architect; third, that if the time and cost targets are not met, both architect and builder in turn can deny responsibility.

If these criticisms are accepted, is it possible for the architect, quantity surveyor and builder to assume joint responsibility to the building owner for the successful outcome of the project—in much the same way as partners in any commercial or professional partnership? One would envisage that the architect and quantity surveyor, with the builder's advice, would undertake to design a building for a stated building cost; and the builder, with the help of architect and quantity surveyor, would undertake to execute the design for the same sum. Such an arrangement would, during the design phase, give the builder a greater incentive to advise the architect on methods of construction and other matters affecting construction time, and the contract sum. The architect, on his part, would have to ensure that acceptance of the builder's advice did not prejudice the proper functioning purpose and quality of the building. Under this arrangement the parties would, in the design phase, have to agree in all major decisions—on methods of construction, materials, choice of sub-contractors and cost. During the site operations phase responsibility for completing the job in the time and at the cost agreed (subject to wage and price fluctuations) rests solely with the builder. It is argued that this would cause the builder to insist on complete drawings and instructions before he started work on site, and on the virtual absence of variations during the contract. The architect would therefore no longer have the over-riding authority he now enjoys. If the building owner or the architect wished to make a variation, the builder would have to be consulted, and where necessary the time and cost targets would have to be revised and agreed by all, before the variation was sanctioned. The difference between this and the previous suggestion is that here the builder's ability to carry out his obligations to the client is strengthened by his say in the design and by his freedom from interference during site operations. This enhanced authority and greater responsibility of the builder gives him positive incentive to contribute to the economy of the design and thoroughness of the contract documents.

Criticism of the joint responsibility approach is that a disagreement between architect and builder during the design phase could lead to a deadlock which would be very unsatisfactory from the building owner's point of view; and that loss of the architect's customary authority during the site operations phase might be unacceptable to both client and architect. This problem again highlights the advantages of the "all-in service," where all these responsibilities rest with the company, not with its architect or builder representatives separately. But if architect-builder co-operation is to be employed in the future by independent architects, can a procedure be evolved that gives the benefits of the all-in service without its disadvantages, yet preserves the independent identities of both architect and builder?

We have discussed the problems of leadership and responsibility and indicated two different approaches to their solution. Since architect-builder co-operation is a relatively untried procedure—at least, in the way we discuss it here—it seems logical that more than one pattern of responsibility should be tried in practice before conclusions can be drawn or appropriate procedures devised.

Cost and Confidence

We have discussed the relative positions and responsibilities of the builder and the architect. But the building owner's main concern will be with cost. If he is to accept a co-operative procedure, he will want some assurance that it gives him value for money. Indeed public confidence in co-operation will depend upon adequate cost assurance more than anything else, especially since improved value for money is one of the aims of the method. At present, competitive tendering is thought to provide this assurance, but as we pointed out in a previous article, competitive procedure is often a façade concealing the fact that a substantial part—50 to 75 per cent.—is let without competition. If by adopting a co-operative procedure we withdraw the remaining 25 to 50 per cent. from competition, we must provide the building owner with some other assurance that prices charged are reasonable. This implies the need for a more sensitive and accurate costing system. At present, when there are very few co-operative contracts, the assurance to the client is given by the quantity surveyor who checks the builder's prices against competitive prices for comparable work. But he cannot be familiar with the detailed methods of computing prices adopted by individual builders, and this can give rise to disagreements. As we have pointed out before (AJ, November 10, 1955) there is a great need for objective cost data and this may be a prerequisite of any significant extension of architect-builder co-operation. From the builder's point of view, pricing is a matter of exact calculation only up to a point, for there are a large number of variables for which exact calculation cannot be made: Will the architect give timely instruction? How much should be allowed for delays and interruptions by sub-contractors? Will sufficient labour be available? What sort of builders is he competing with? To a certain extent the builder is "gambling" when he decides his tender figure and is influenced by "hunches" and intuition based on experience. Indeed this is regarded as being part of his business skill, appropriate when he is competing with others. But in a co-operative procedure many of these uncertainties are removed. The builder knows he will get the job, he can have a detailed knowledge of the work to be done, he has longer to prepare and dovetail the work in with his other contracts, and he can influence the choice of sub-contractors. The uncertainties of weather and labour are still there, but co-operation does make possible for familiar methods of construction, a more precise costing of the work.

Consideration of the costing method raises the question of the quantity surveyor's role in the team. In orthodox procedure, the quantity surveyor's main task is that of preparing the bill of quantities and documents for competitive tendering, checking tenders when received and preparing final accounts; his subsidiary tasks—valuing for payment and variations. Co-operation, however, renders his main task unnecessary. What should his contribution be? Clearly, at the preliminary design stage—when the architect's main job is to see how the client's needs and budget fit together—he should be the cost advisor. But the customary method—cubing—is hardly adequate. The surveyor would need to develop a more systematic and sensitive method of cost planning, which would allow the setting of cost targets for the main elements of the design, which should be calculated and agreed with both the architect and the builder. In the development phase (see AJ, June 30, 1955, "The Architect's Contribution," and October 13, 1955, "Programming for Architects" by C. Wooster), when methods of construction are being investigated, the quantity surveyor could take off such quantities as were necessary for builders and sub-contractors and agree with them the prices of alternative proposals, and the amount of the lump sum tender. In his role of economic advisor his knowledge should be used in deciding what alternative methods of construction would be worth investigation on the drawing board for the builder to price. The surveyor's cost analyses of past jobs would help him to show whether a steel or a concrete frame were more appropriate on grounds of cost. But the economies of different methods of handling concrete would be mainly a matter for the builder to investigate.

Apart from his role as economic advisor, he is obviously the right member of the team to prepare the quantities in a form suitable for contract planning. This also would call for a change in his methods, because the traditional bill is not wholly appropriate to the builder's purposes. For example, it would be an advantage to split the quantities according to the main phases of the programme of work. The surveyor could also prepare the sub-bills for sub-contractors to price, and could define the terms of sub-contract conditions so that the respective responsibilities of builder and sub-contractor were economically arranged and clearly laid down.

Appointment of the Builder and Sub-contractors

From the point of view of building owner and architect, one problem is that of appointing a builder whose organization, experience, resources and quality are appropriate to the project in hand. From the

... appreciate the risks and chances of a business undertaking...

point of view of the builder desiring nomination, the problem is to make his capabilities known to those who could use his services. Clearly, a good deal of the selection—as now—would be on reputation, or recommendation. But if the amount of co-operative work were to increase in the future, groups of architects and builders might work together rather in the way an architect now tends to go always to the same group of specialist sub-contractors. It is obvious that this form of association gives the advantage of groups of architects and builders getting to know each other's ways and methods, but there must always be room for change and the entry of new ideas. As a result of nomination specialists and sub-contractors now have a direct relationship with the architect. He nominates the major specialists whose work comprises a large proportion of the contract sum, very largely for the same reason that he would nominate the builder—to get technical co-operation and better integration of the work at design stage. It seems logical then that builder and sub-contractors should both be nominated on the same basis; except that the builder is the one who co-ordinates, pays and is ultimately responsible for the sub-contractor's work. With this responsibility he should have the right and authority to influence the choice of all sub-contractors and co-ordinate their work as if they were part of his own organization. Especially if his responsibility to the client for meeting time and cost targets is increased. The specialists and sub-contractors might feel that this is a threat to their present direct relationship with the architect. On the other hand they would know in advance which general contractor they were to work for, and would have the opportunity of refusing a nomination if they so wished.

...lack of a critical faculty on the builder's part...

Co-operation in Practice

The form of architect-builder co-operation in practice will depend very much on the contractual procedure to be adopted. If as in normal procedure today the architect is to bear the main responsibility to the client up to design stage and subsequently is to exercise his present duties as interpreter of the contract between client and builder, he will as at present be appointed first and will ask the client to nominate a quantity surveyor and a builder as soon as he has sketched out his first preliminary ideas. If some form of "joint responsibility" contract involving architect, builder and surveyor were established, it would be necessary, whoever was first approached by the client, for the others to be brought in immediately. In all cases a preliminary design and an approximate estimate is likely to be discussed with the client at an early stage, and—if the objects of architect-builder co-operation which we have discussed are to be achieved—the team will next develop the design, investigating methods of construction and consulting specialists as necessary until fairly firm conclusions about methods and costs for the main elements are established.

If the client wishes to abandon the project at this stage, the question arises as to whether the builder should be paid a fee comparable to the architect's fee for abandoned work. Payment of a fee might provide the builder with an incentive and—as we have mentioned in a previous article in relation to specialist (AJ, December 28, 1955)—it would leave the architect morally free to use the advice, if for any reason the builder wished to withdraw. On the other hand it can be argued that the expense of the builder's advice service corresponds to his tendering expenses in competitive procedure. The advice service might be more expensive but so also is competitive tendering. But the builder only gets about one in ten of tendered jobs—and this would probably compensate. If the client decides to go on with the project, working drawings are prepared, specialist contractors are appointed and the quantity surveyor takes off the quantities.

Conclusions

It is obvious that architect builder co-operation can take place in different ways—in the 'all-in service'; in long term arrangements between

builder and the building owner with a programme of work; and in the single commission from a private client. Again, contracts with the specific aim of developing new forms of construction might have to differ from contracts for normal work.

But the interaction of the architect's creative skill and the builder's practical knowledge – each assisting the other in the pursuit of a common aim on the building owner's behalf; this must remain the root idea of co-operation.

INFORMATION CENTRE

A digest of current information prepared by independent specialists ; printed so that readers may cut out items for filing and paste them up in classified order.

19.185 construction : roof
ROOF STRUCTURE

Steelwire span roofing, a novel design for hall building. EDA Digest 317. (Der Ingenieur, Austria, 1955. Vol. 1. pp. 4-5.) Light weight roof construction of interest to architects and engineers.

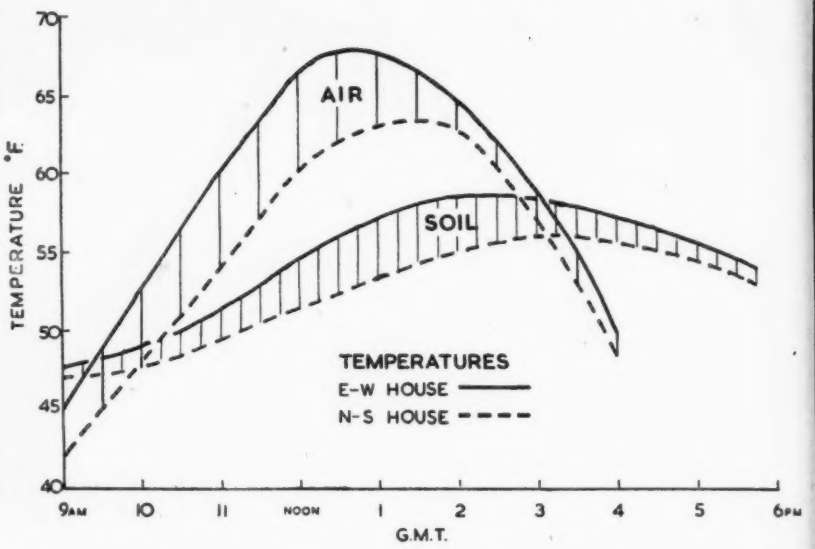
The steelwire-span roof has been developed in Austria for buildings which are long in relation to their width, such as hangars, factory workshops, and railway stations. It consists of roofing sheets supported on parallel stressed steel wires which run the length of the building. The wires are anchored at the ends and supported on cross members on which they are held down against uplift. The cross members can be of very light construction in view of the light weight of the roof and in Austria are spaced at about 30-ft. centres where there is a heavy snow load. In hot countries this could probably be increased to 60 to 70 ft. The end trusses are either separately propped or are jointed together by longitudinal members capable of taking the stressing thrust. The roof sheathing is attached directly to the steel wires and may consist of fibreboard, Heraklith, Fural and tar paper on a crushed glass basis. Advantages are the speed of erection, lower costs in getting the light materials to the site and cost savings due to using smaller cross-frame sizes.

28.21 construction: miscellaneous
GREENHOUSE DESIGN

Glasshouse Design and Management. W. J. C. Lawrence. (Journal Royal Horticultural Society. August, 1955.)

Although greenhouse design is a rather specialized subject, architects may sometimes need to be informed on main requirements. This is an excellent paper dealing with siting, shape, heating and ventilation, and very little with management. Solar radiation is a vital factor, especially in winter months and it has been found that an east-west orientation is far better than the traditional north-south. Good fitting ventilators are very important in reducing heat loss.

A useful paper.



This diagram shows the effect of orientation on glasshouse temperatures on a sunny winter day, 12th November. The higher temperature recorded in the east-west house implies that light intensity was also higher. Each of the two houses was in the middle of a group of houses; if they had been detached houses the temperature (and light) differences would have been still larger.

Announcements

Dennis W. Bell, A.R.I.B.A., has moved from 1, Redesdale Place, Blyth, to 53, Hertford Close, Eastfield, Scarborough, and has taken up an appointment as chief assistant architect to the Borough and Water Engineer, Scarborough.

The School of Architecture (University of Durham), King's College, Newcastle-upon-Tyne, is expanding its library of manufacturers' technical data and samples of building materials. Firms are invited to submit literature and samples.

Brightside Heating & Engineering Co. Ltd. have appointed P. Baverstock as manager of its Manchester Office at 40, Byrom Street, Deansgate, Manchester, 3.

A. W. Dean, chairman of the Southern Lime Association, has announced that the price of chalk lime for building purposes for delivery within the area covered by the Association will not be increased above the existing level during the period to June 30, 1956.

Haskel Robertson & Co. Ltd., Specialist Flooring Contractors, have moved their Administrative and Sales Offices to 19, Queen Street, Mayfair, W.1. (Tel.: GROsvenor 8764/5.) All enquiries, communications, etc., should be sent to this address. The address of the factory remains as before.

The following prize winners were not named in the list of prize winners printed in the JOURNAL of January 12.

The Tite Prize: a certificate and £100 was awarded to M. B. Everitt (student RIBA, Leicester School of Architecture) and a Certificate of Honourable Mention was awarded to Miss A. J. Ross (Aberdeen School of Architecture). The subject set was: "An Entrance Loggia to a Public Garden."

The Owen Jones Studentship: a certificate and £250 was awarded to K. A. Williams, DIPL. ARCH. A.R.I.B.A.

The Grissell Gold Medal and £35, awarded to Peter Robinson (student, RIBA, Dundee School of Architecture).

The RIBA Silver Medal for an Essay and £50: no award was made, but Certificates of Honourable Mention were awarded to P. W. T. Kilby (student, R.I.B.A., Manchester University School of Architecture) and M. J. Brown, D.A. (Edin) A.R.I.B.A.

The Rome Scholarship of Architecture, 1955: £400 p.a. for two or three years' study and research at the British School of Rome, awarded to J. C. Haskell, A.R.I.B.A.

The RIBA Silver Medal and £10 in books for students of Schools of Architecture recognized for exemption from the Final Examination 1955: Awarded to R. M. Rostron (Student RIBA, Liverpool School of Architecture, University of Liverpool).

A Certificate of Honourable Mention was awarded to William Gillitt (Student R.I.B.A., Architectural Association, School of Architecture).

The RIBA Bronze Medal and £10 in books for students of Schools of Architecture recognised for exemption from the Intermediate Examination, 1955: Awarded to M. J. B. de S. Calthrop (School of Architecture, Edinburgh College or Art).

A Certificate of Honorable Mention was awarded to William Jack (Aberdeen School of Architecture).

The Archibald Dawnay Scholarship Trust Prizes, 1955. Three prizes of the value of £60 each for the Advanced Study of Construction: Prizes awarded to J. R. A. Wilson (Student RIBA, Architectural Association School of Architecture). Alan Cotterell (Student RIBA, Birmingham School of Architecture). D. E. Thomas (Student RIBA, Liverpool School of Architecture, University of Liverpool).

The RIBA Henry Jarvis Studentship at the School of Architecture, The Architectural Association, 1955: £50. Awarded to K. R. Darby (Student RIBA).

The RIBA Howard Colis Travelling Studentship at The Architectural Association, 1955: £15 15s. Awarded to L. M. Belton.

The RIBA Donaldson Medal at the Bartlett School of Architecture, University of London, 1955: Awarded jointly to S. A. Hamilton-Fletcher, and P. C. Sugar (Student RIBA).

The RIBA Anderson and Webb Scholarship at the School of Architecture, Cambridge University: A Certificate and £70· 1955. Awarded to E. D. MacLeod.

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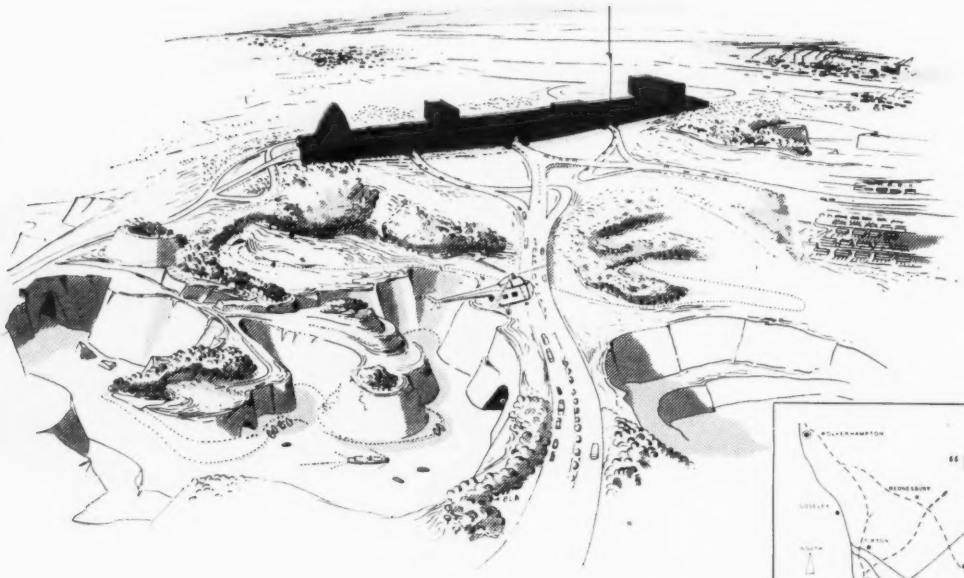
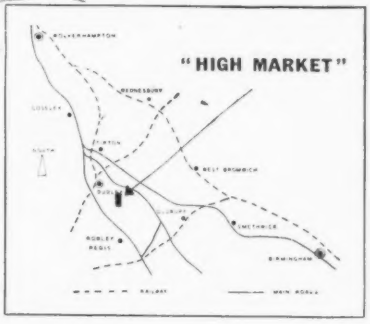
The Glass Age Development Committee

A committee of architects and engineers, convened by Pilkington Brothers Limited has made proposals for creating a large scale shopping centre in the Black Country area, and a preliminary survey of the project has already been published. The High Market Project has been designed under the direction of the Glass Age Development Committee, by Gordon and Eleanor Michell, A/A.R.I.B.A.





THE HIGH MARKET 2

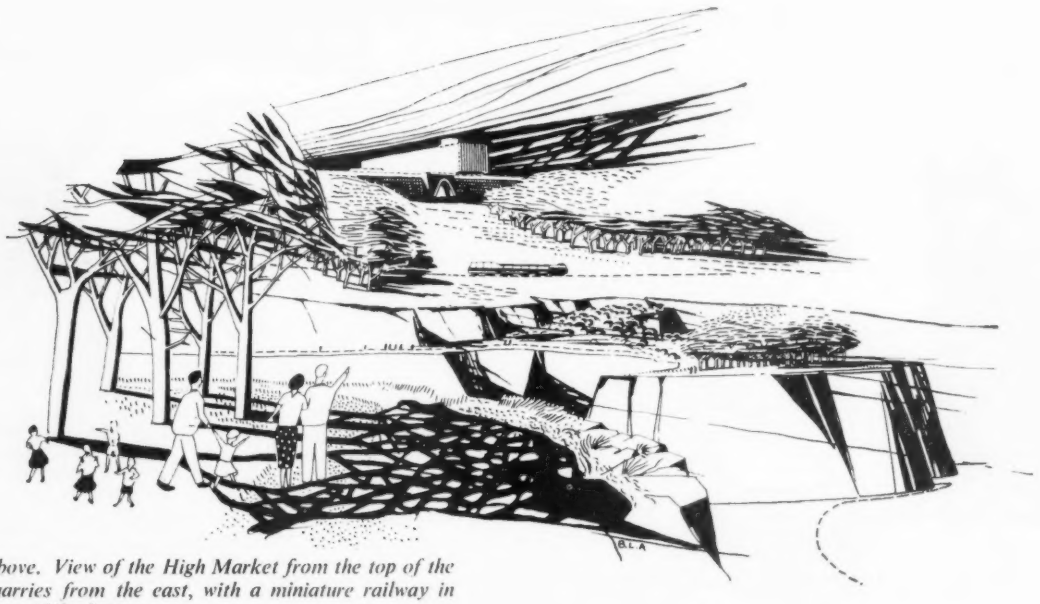
Locality and Approach

The High Market is intended to supplement existing shopping facilities for the populations of Birmingham, Wolverhampton, West Bromwich, Dudley, Walsall, Smethwick, Oldbury and the adjacent areas. It is sited on the high ground formed by Turner's Hill and Darby's Hill, and would be visible to the whole of the surrounding country.

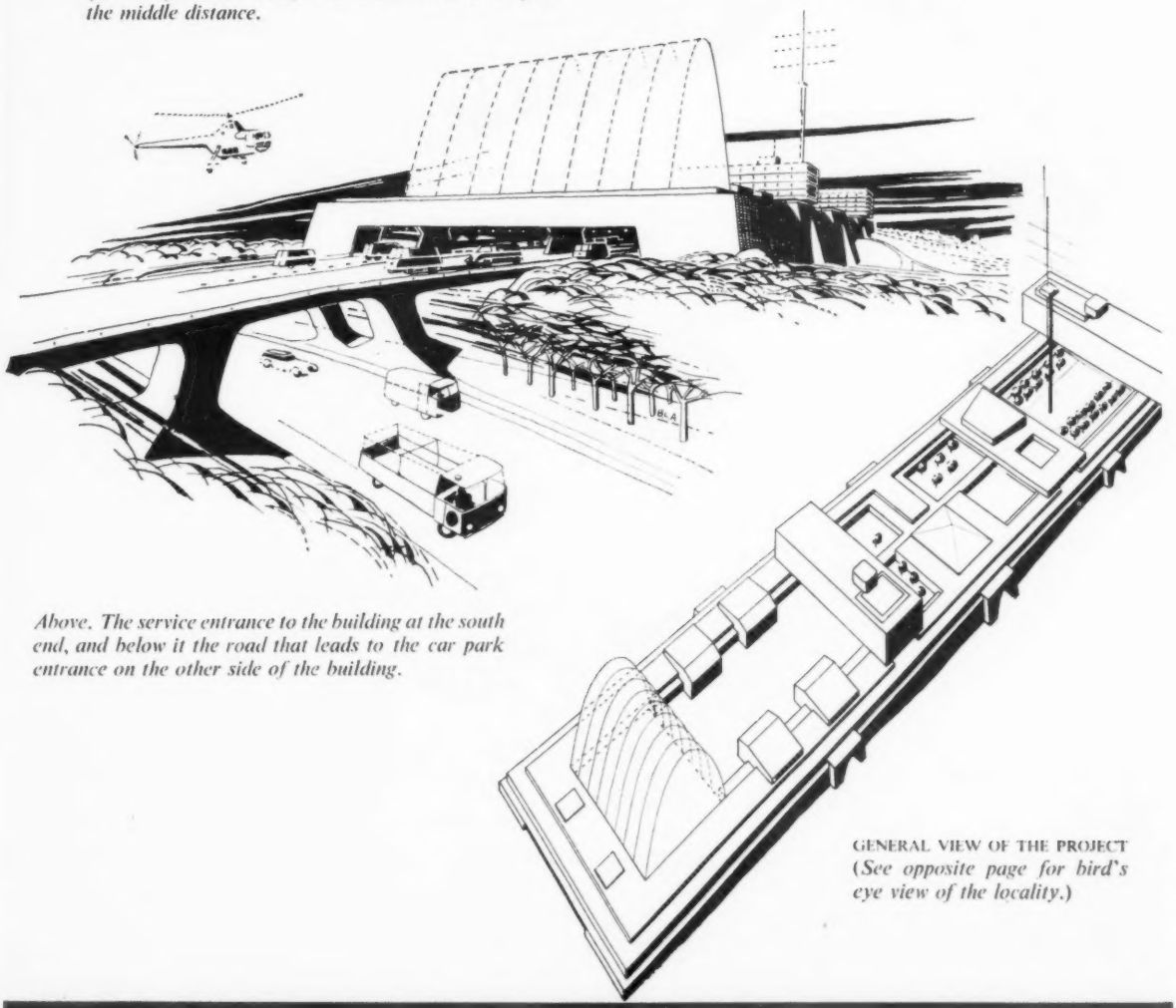
The bird's eye view of the area given above shows the drop in level between the two hill tops, which enables roads to be constructed on a natural ground level, to the two parking levels of High Market. These enlarged and modernised approach roads climb the hill between existing granite quarries. As these quarries become worked out they would be flooded and the edges planted. This area would be accessible by car, with car parks concealed in the lower quarries, and by a miniature railway, which would start from an underground station below the central car park entrance.

The existing golf course on the west side of the building would be retained and the rest of the plateau laid out for football, cricket and other games. Under this plateau the Netherton underground canal runs straight for $1\frac{3}{4}$ miles. This could be connected to the flooded quarries thus linking them with the whole canal system to the north of the building. Water for the boating lakes would be filtered — and kept fresh and moving by a pumping station.

Some details and a general view of the project are given on the opposite page.



Above. View of the High Market from the top of the quarries from the east, with a miniature railway in the middle distance.



Above. The service entrance to the building at the south end, and below it the road that leads to the car park entrance on the other side of the building.

GENERAL VIEW OF THE PROJECT
(*See opposite page for bird's eye view of the locality.*)

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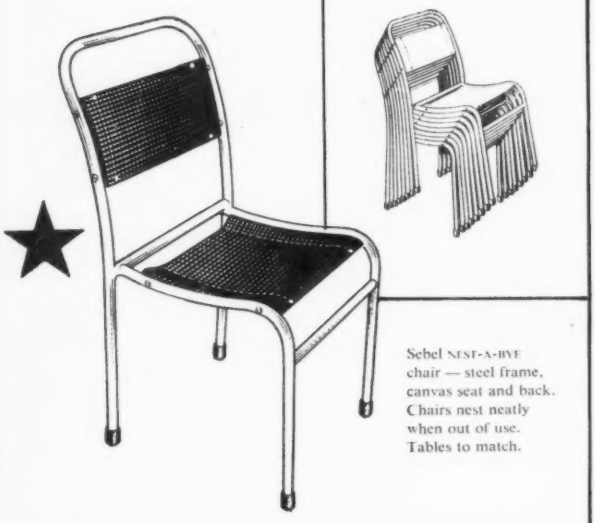

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