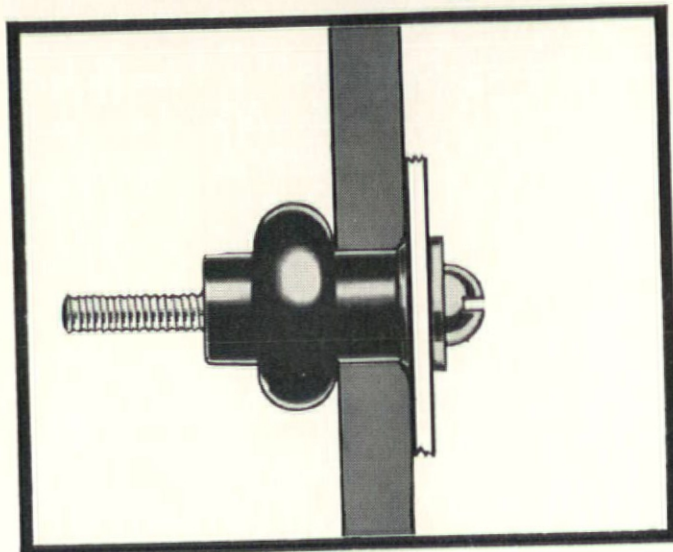
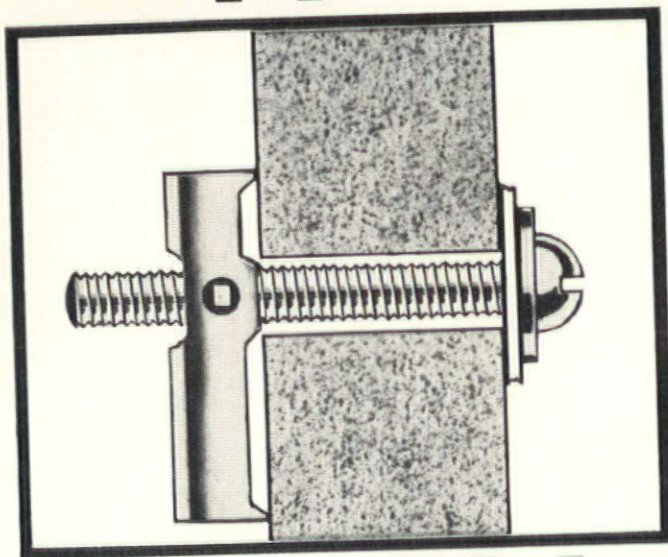


AD

Mo·bile, a. Movable, not fixed, free to move; (of person or mind) easily, too easily, changing; (of troops) that may be easily moved from place to place. So **mo·bi·lity**

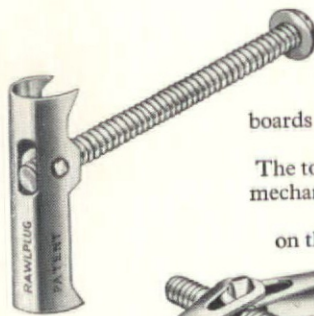
Rawlplug cavity fixings support you through



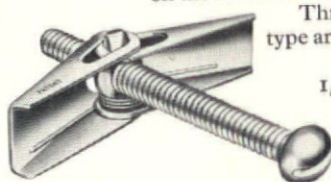
...thick and thin.

Rawlplug Cavity Fixing devices provide a secure anchorage for metal thread screws in thick, thin, hollow or friable materials where it is difficult or impossible to use conventional fixings. A simple trial will convince you that these devices meet a very prevalent need in the world of diverse proprietary building materials today.

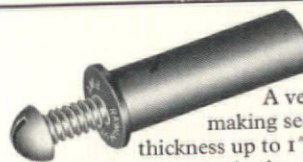
RAWLPLUG TOGGLES



All-metal fixings; particularly useful for walls and ceilings of lath and plaster, or where building boards or ceiling panels are mounted with a cavity behind them. The toggle operates either by spring mechanism or the pull of gravity and provides the locking device on the reverse side of the material.



Three sizes of each type are available with 1/8", 3/16" or 1/4" metal thread screws.

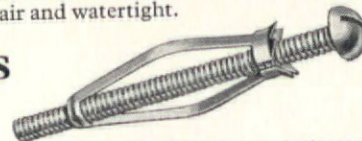


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A very adaptable and useful device for making secure fixings to materials of varying thickness up to 1". They are particularly suitable for glass, sheet metal, plastics, plywood, asbestos and proprietary building materials. As the screw is tightened the Rawlnut is drawn up into a solid collar on the reverse side of the material completely locking the hole, making it air and watertight.

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This device makes a permanent tapped insert into plywood, asbestos, insulating board, hardboard and plaster-board. Screws can be inserted and withdrawn at will. An ideal use is in providing fixing points in-situ in prefabricated building sections. There are three sizes for 1/8", 3/16" and 1/4" metal thread screws.



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B999

Letters

The Dow Chemical Company

Sir, The Dow Chemical Company are the manufacturers of Napalm as you will see if you care to read the 'stop-it' leaflet. Architects strive for the creation of a better environment *not* its destruction. I further consider that, apart from the moral issue, advertisements of this character in a professional magazine are an affront to the intelligence of its readers. I have therefore cancelled my order for your magazine.

Roy Hunt

Sir, Dow makes Napalm. Dow's success in the past few years has been a direct result of its massive output of this, perhaps the most evil of weapons of war.

Thus surely it would not be too much of a loss if your consciences get the better of your desire for advertising revenue. It may be an obtuse argument but the money you receive from Dow most probably is calculable in lives ended or just tortured by this all consuming inflammable glue. *Martin Hall, London*

The problem of privacy in the year 2000 (AD 5/68, p.204)
Sir, I find the reported views of Professor Kalven regarding privacy very odd.

A feeling of privacy has nothing to do with being or not being observed. Being observed by a cow or by a baby will not disturb privacy.

It is a possibility of being confronted, however indirectly, with somebody's interpretation of our action that we find disturbing.

In this respect it is not the totalitarian government which is the biggest enemy, but religion and the family.

The fact that you are not able to say to God: 'It is none of Thy business, it is my private affair' places an unbearable burden on the faithful.

For those who were not inclined to choose sainthood the problem was solved by the privacy of a sin and a reunion on confession in the Catholic Church. Reformed churches failed to solve the problem producing alternatives of a hypocritically puritanical behaviour or hypocritical religion with a tolerant behaviour.

In our private sins the God's ever-present company is not invited, it is often conveniently forgotten, and He is relegated to a role of a Peeping Tom. Provided we can trust Him that He will not throw our action unexpectedly back into our face, we can live on with a mild sense of shame and guilt constantly disturbing our privacy.

In case of family the company is not that constant but more disturbing, since their compassion and ability to forgive and forget is far from ideal, and you may be sure that your very private behaviour will be commented on; after all they care about you.

Of course you can always find an absolute privacy in your bathroom and your lavatory, but this somewhat limits the range of your private activities.

It appears to me that we live in a society where activities are so strongly divided into private and public and, except for love-making, few of the worthwhile activities are private that we have very little to lose.

Of course some people may prefer to be bullied by members of their families, neighbours, pillars of society and commercial interests rather than by a state. A question of personal taste—to me it matters little. *J. Nekanda-Trepka—May 1968*

Twilight areas (AD 6/68, p.253)

Sir, It was interesting to read Mr. Theo Crosby's note.

The basic rules for improving environment need to be plugged. They are essential and indivisible. Nevertheless architects and planners tend to alienate themselves from people by the use of such godlike phrases—'Mix people from different social classes'—'Mix the races'.

Surely the aim is to 'provide conditions to enable people of different social classes and races to mix'. Perhaps Mr. Crosby would be prepared to accept this amendment.

S. A. G. Cook Camden Borough Architect

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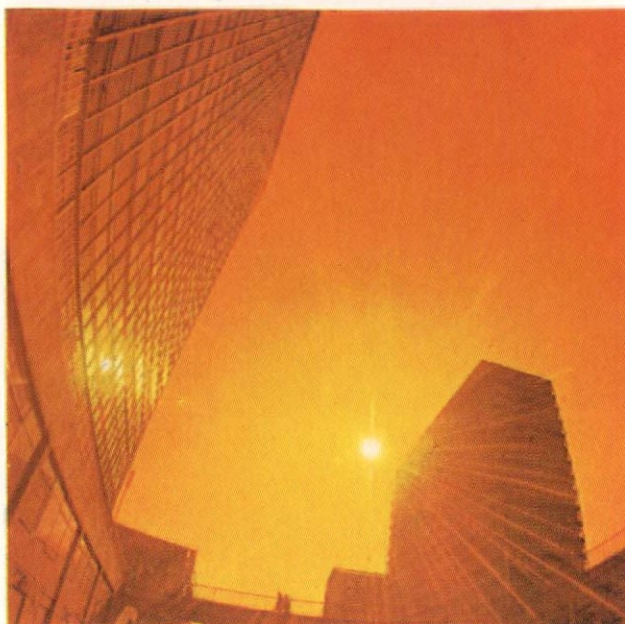


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Properties: Pilkington intend to market eventually a range of Spectrafloat glasses, with different transmission characteristics and colours. Initially one glass is being made: Spectrafloat 50/67 (Bronze) — 50% light and 67% total solar heat transmission.

Light: As the above figures show, Spectrafloat will reduce the amount of natural light reaching the interior of a building, but not as significantly as the figures might appear to indicate. Thus, assuming ordinary clear Float glass provides natural illumination in a room up to 20 ft. from the window, the use of Spectrafloat 50/67 only reduces this distance to 16 ft. There will, of course, be a need to pay special attention to the design of artificial lighting.

Glare: Spectrafloat will temper sky glare and ground-reflected glare, giving more comfortable internal visual

conditions. Like any transparent glass, it will not combat direct glare from the sun.

View: Perception of the view is little affected. The eye quickly adapts to the colour of the glass.

Double Glazing and Toughening: If advice is needed on any processing, including Double Glazing and Toughening, your Pilkington representative should be consulted.

For further information: If you have a project where you might consider the use of Spectrafloat, the Pilkington Technical Advisory Service is equipped to give the specialist advice necessary, and can be consulted through your nearest Pilkington area office or representative who will supply technical literature and show you samples on request.

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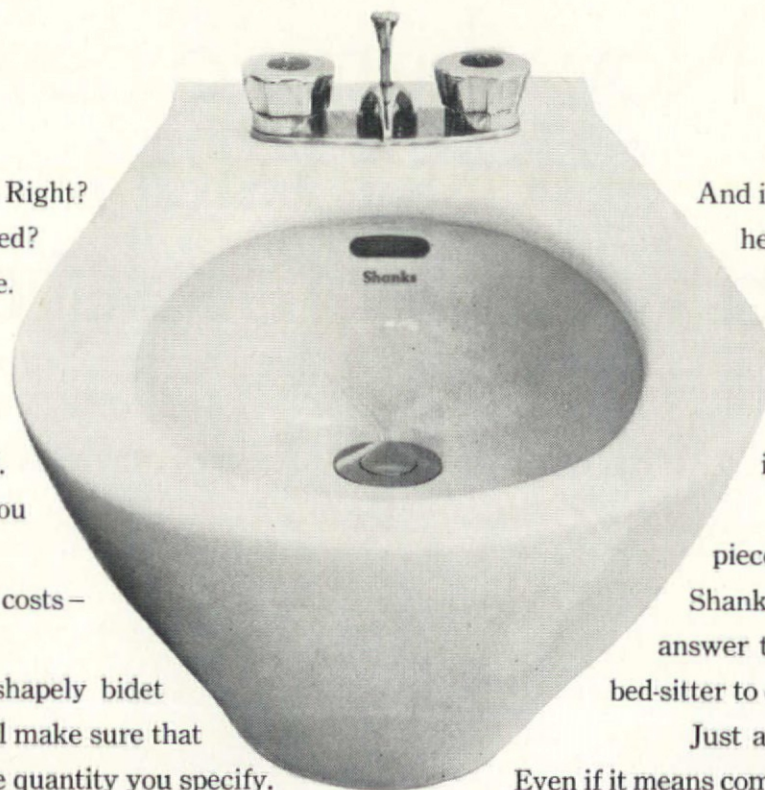
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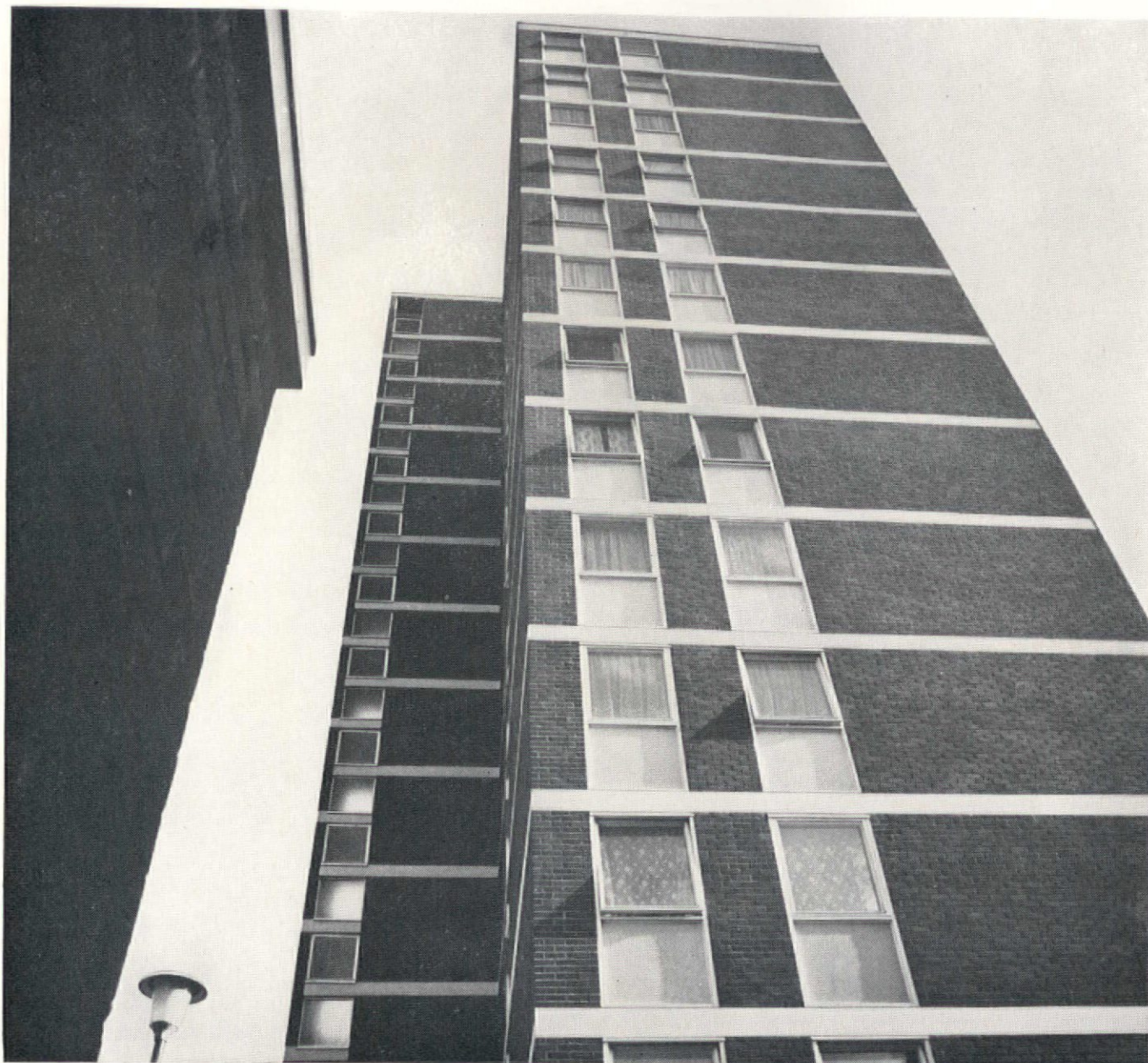


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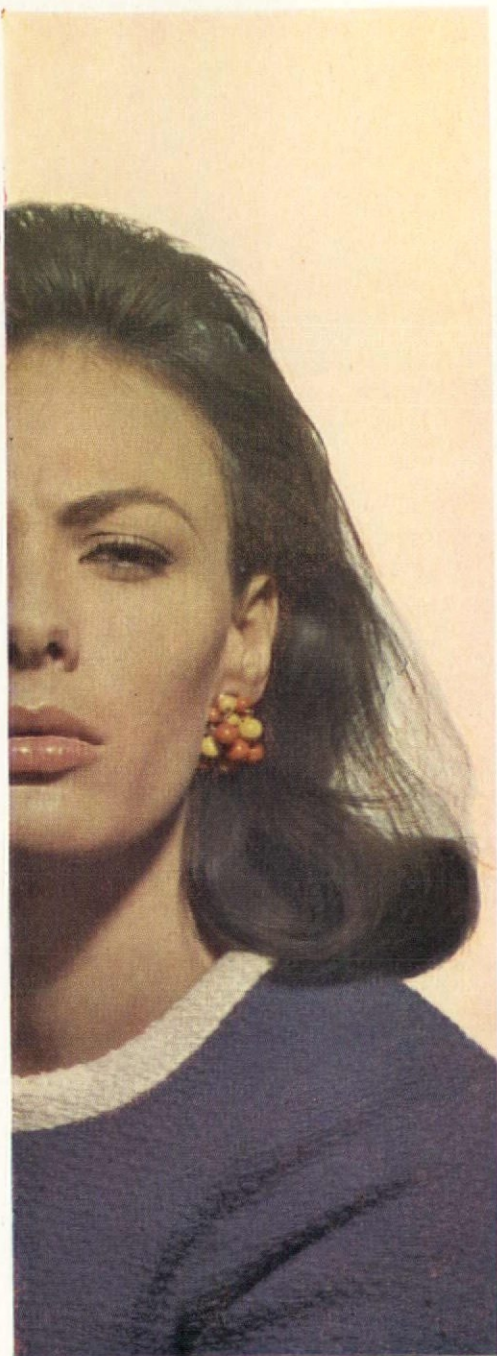
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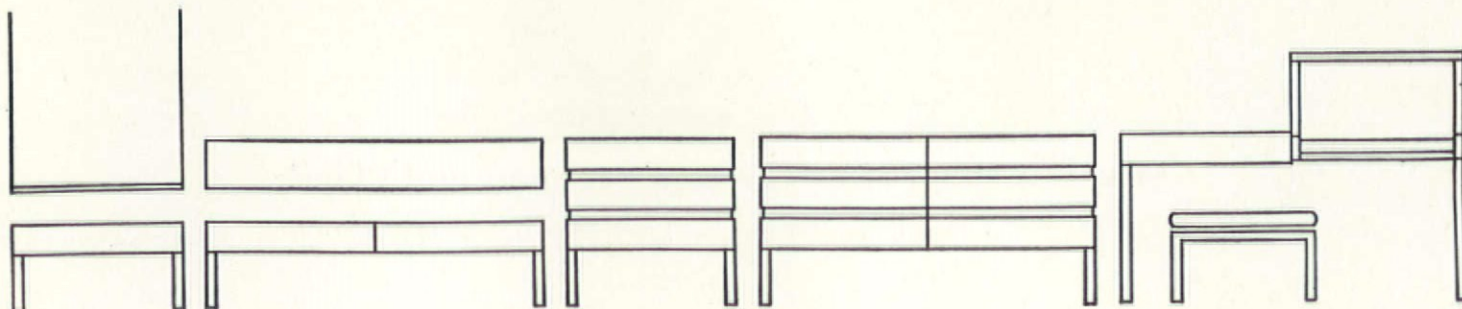
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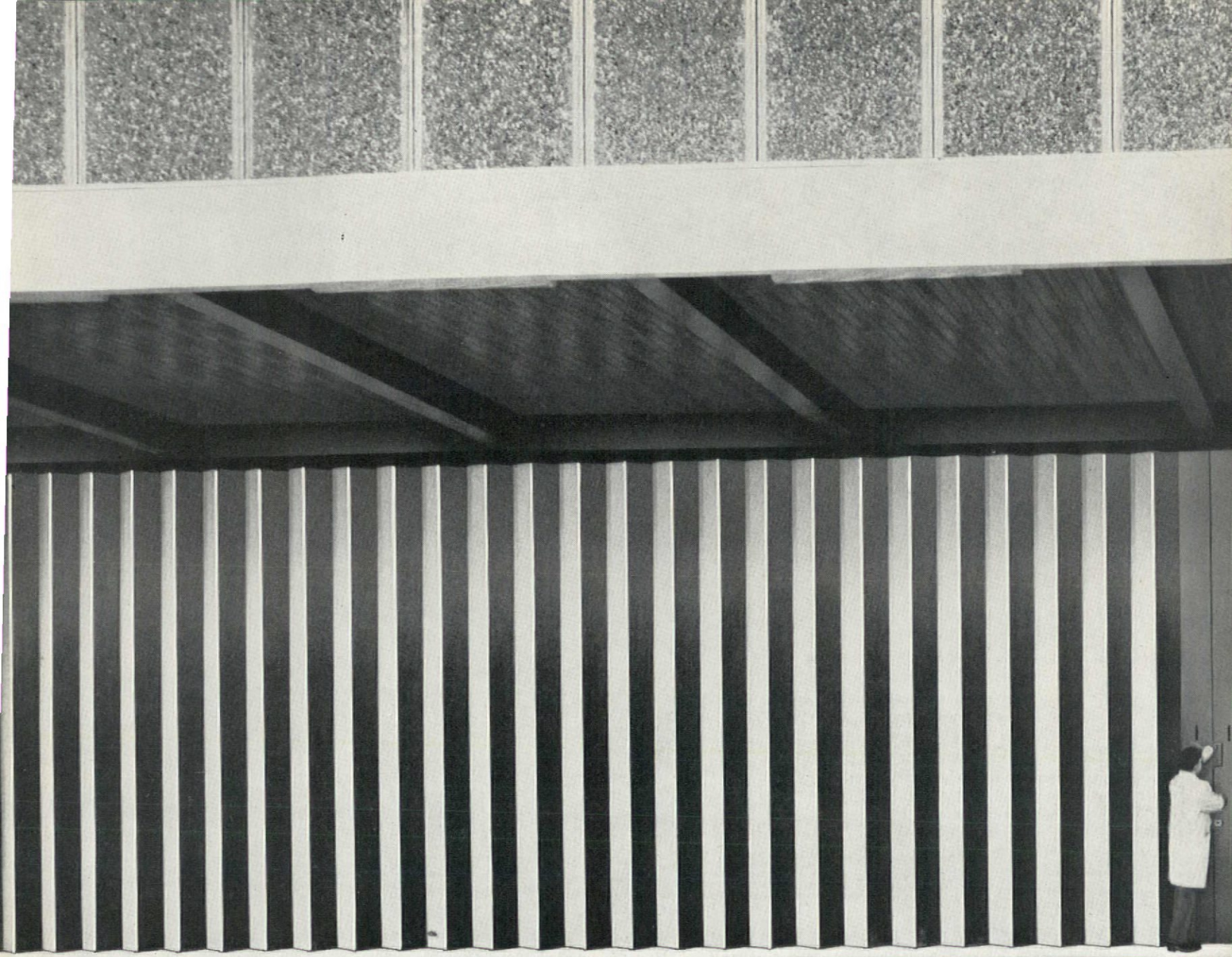
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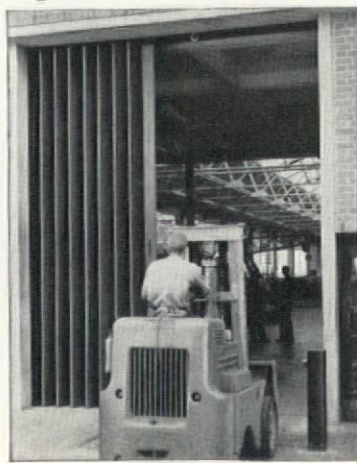
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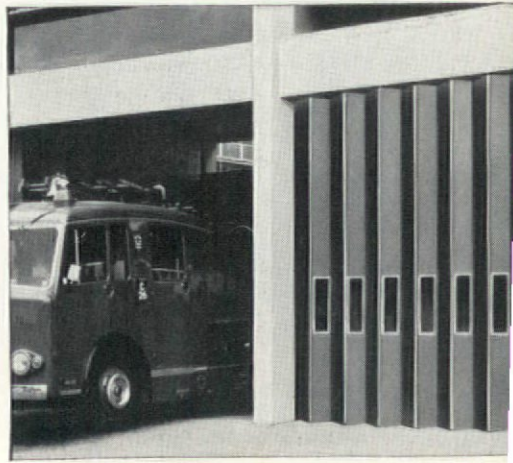
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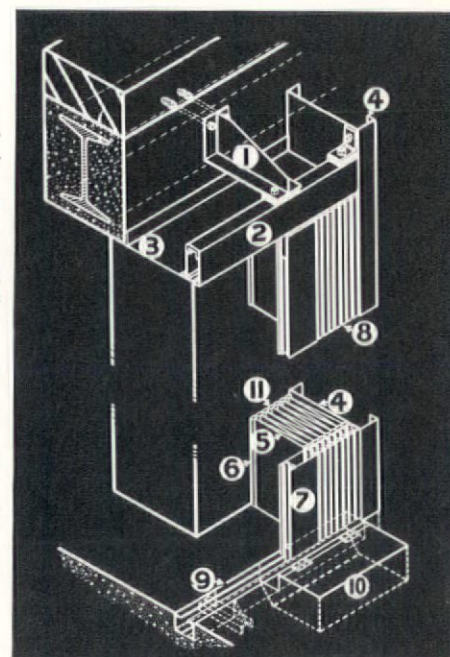
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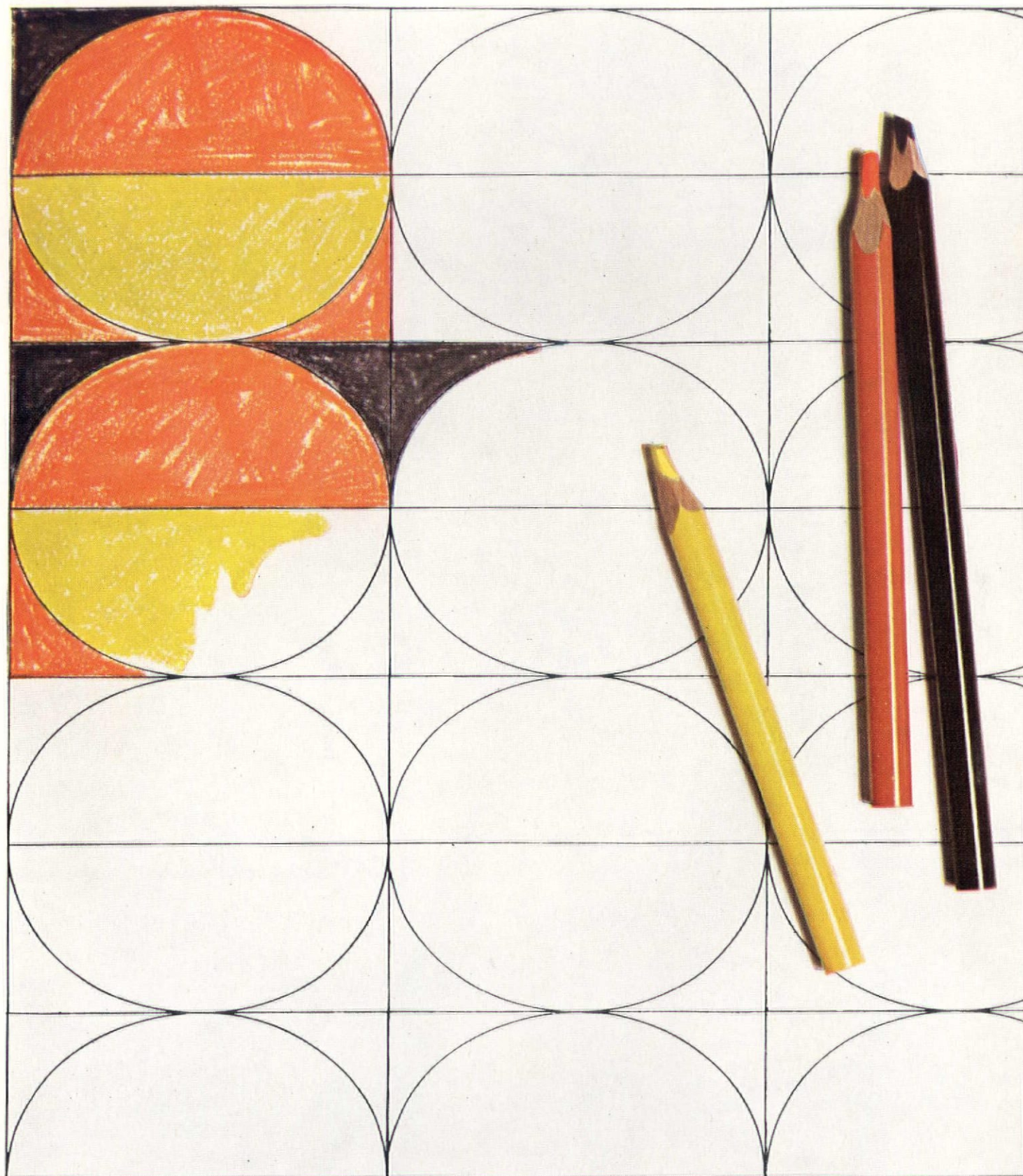
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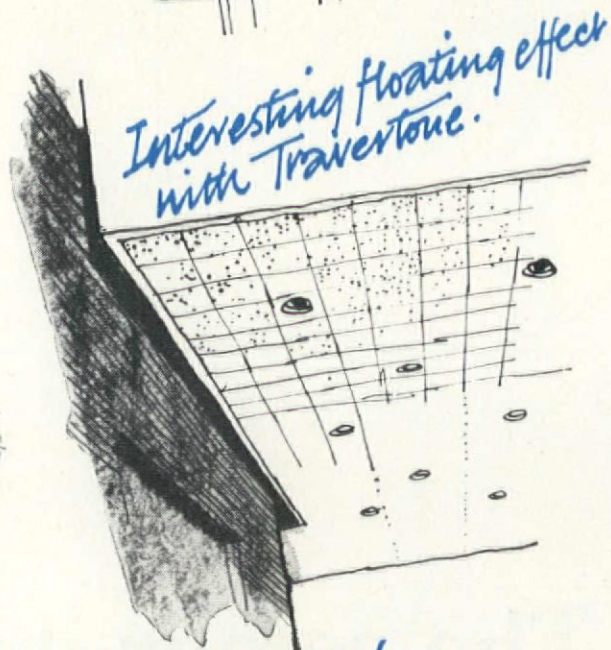
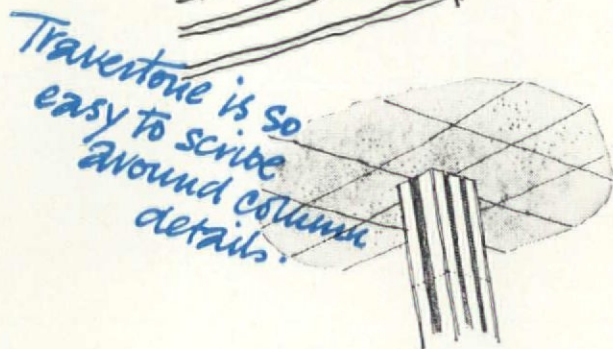
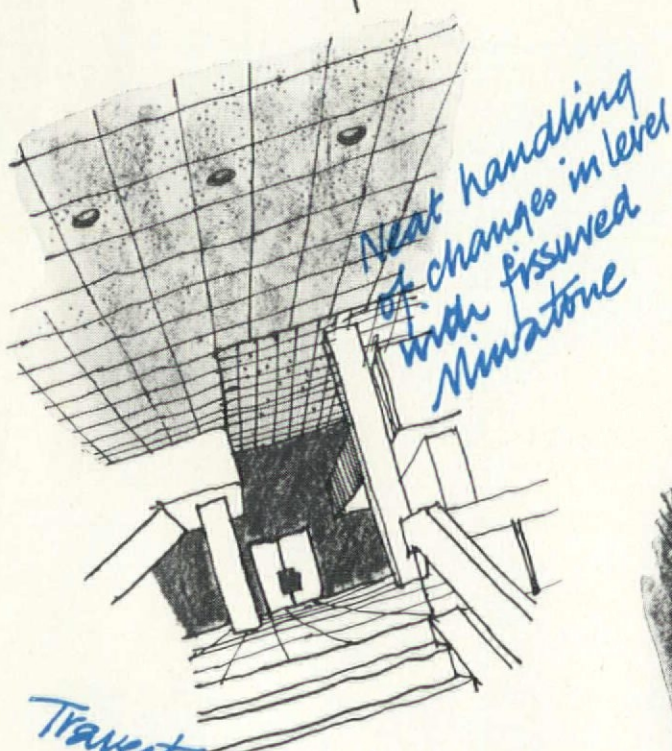
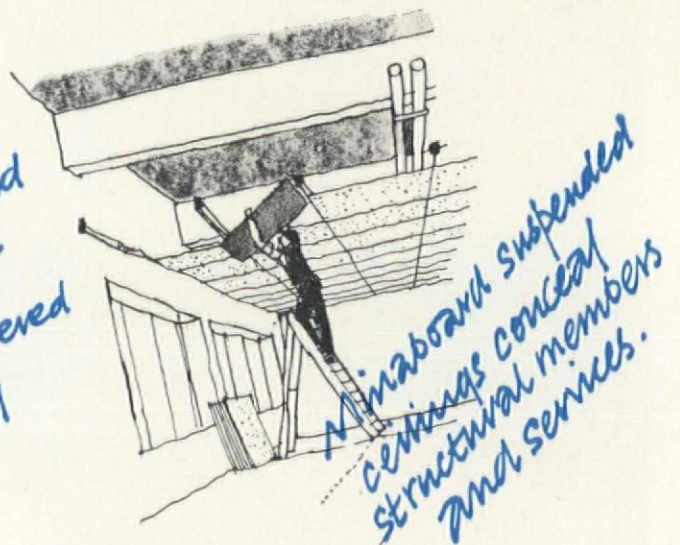
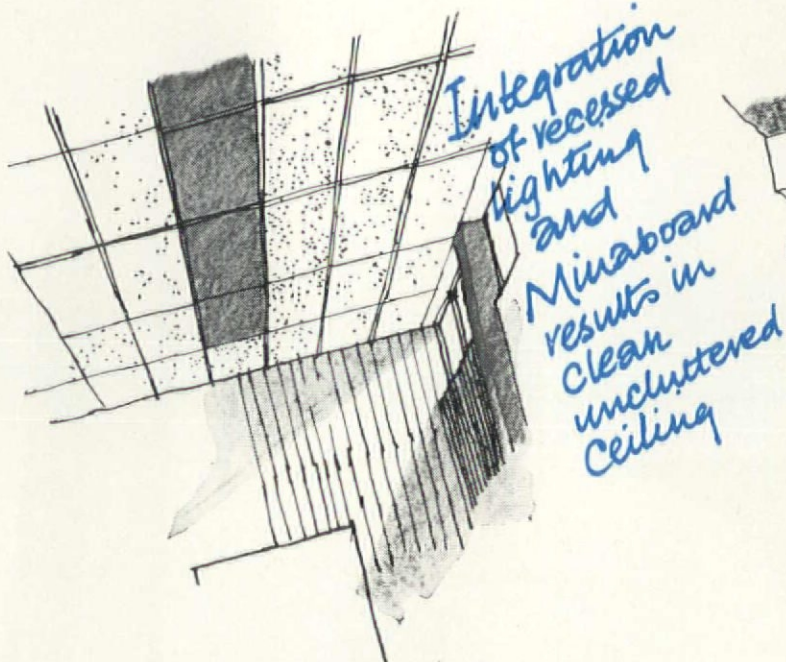
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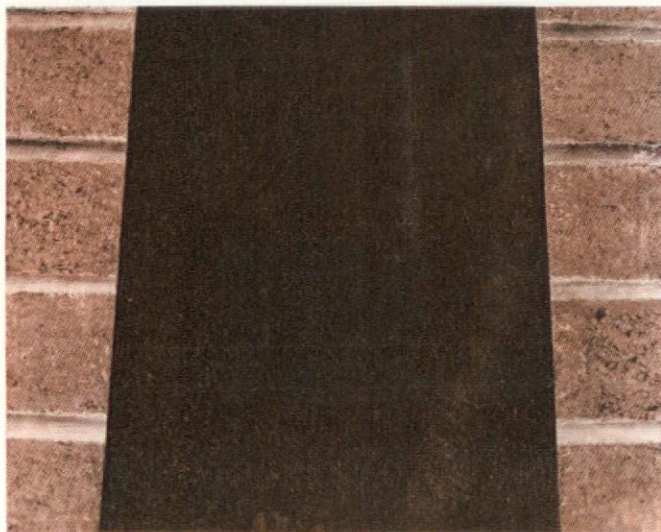
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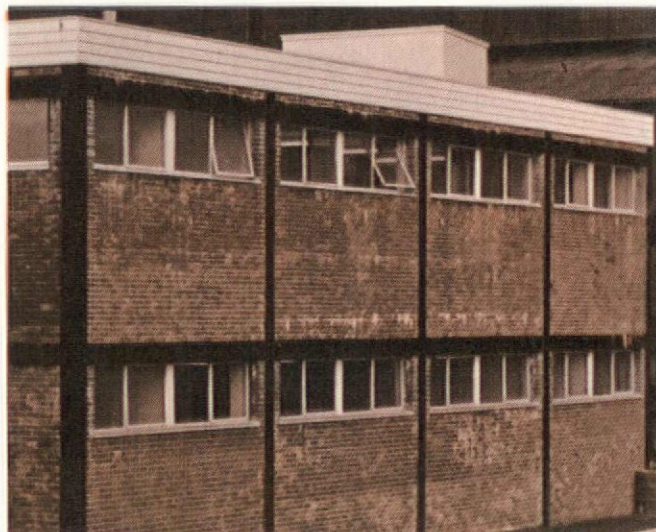
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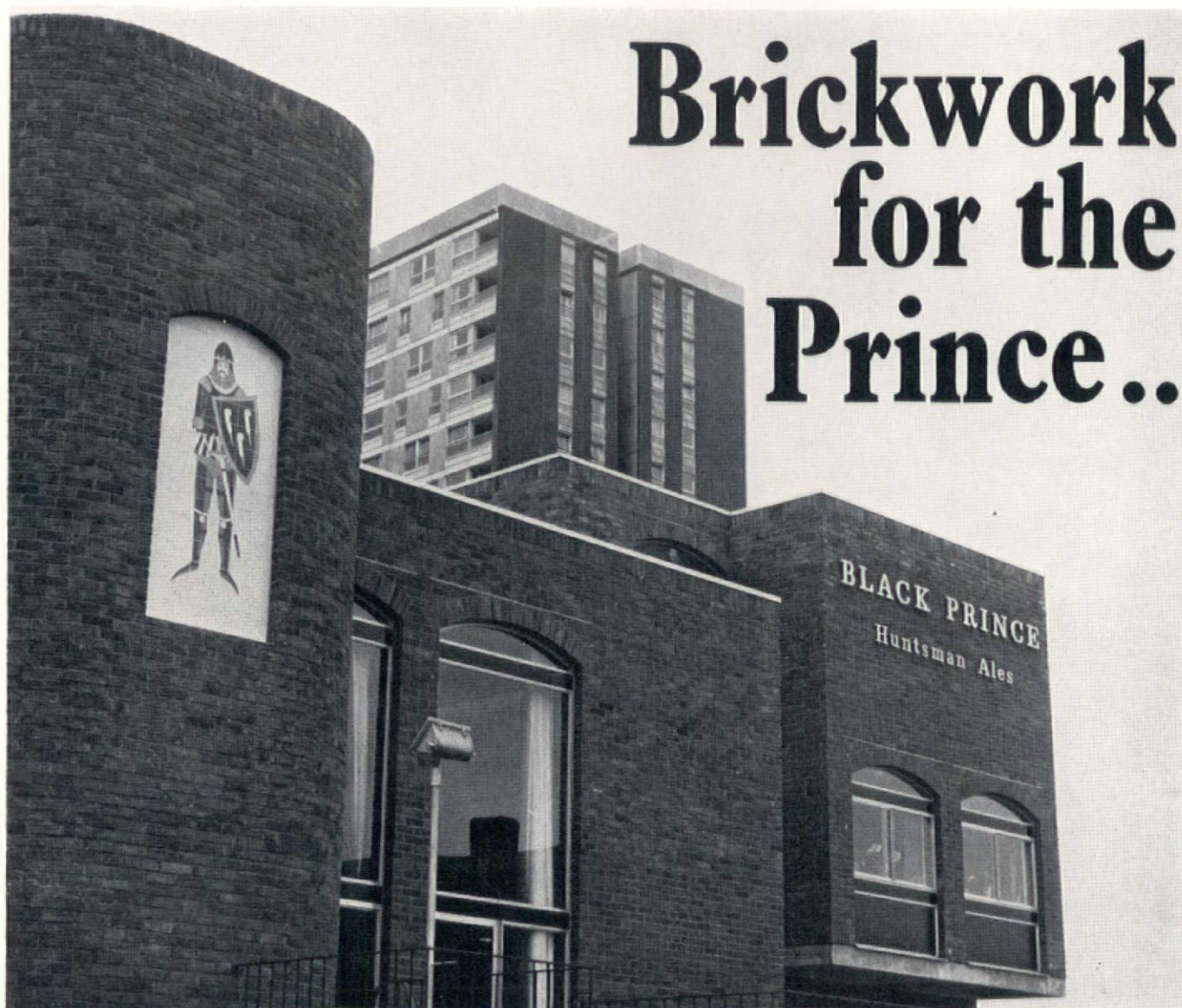
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Canteen was erected under the supervision of the Authority's Director of Engineering, Mr. G. A. Wilson C.B.E., M.Eng., C.Eng., M.I.C.E.



Dept AD92



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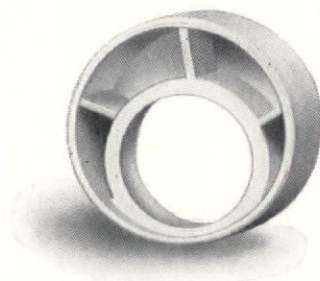


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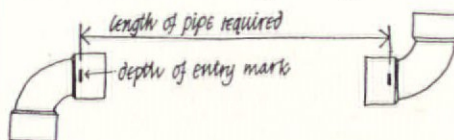


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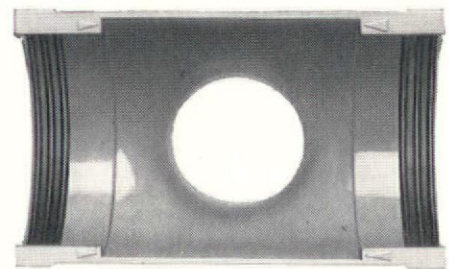


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Please quote Ref:RV/622/AD

AD Competition

9/68

What, where, when, whom?

Answer

name of building or construction

address

date of construction

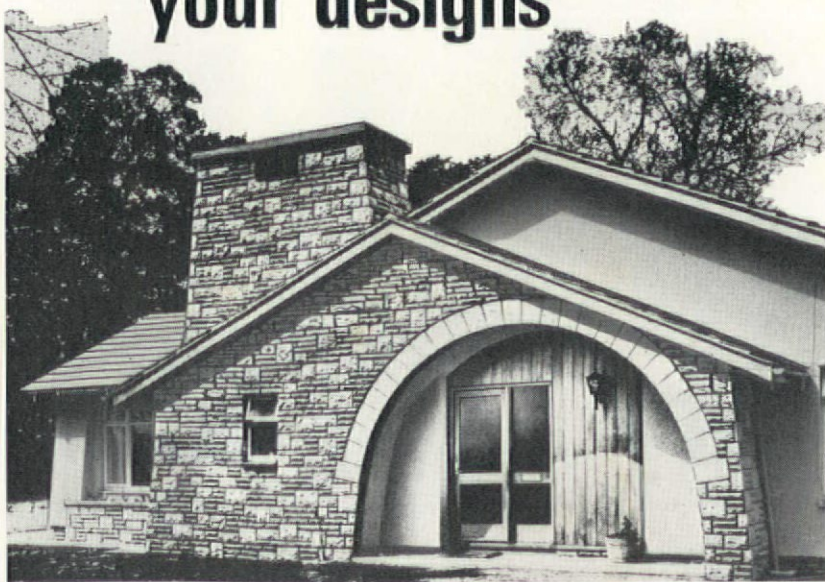
designer (if any)

Name of competitor

Address

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cosmorama

What Where When Whom

The first correct answer to this month's problem picture opened in our office on the 20th of this month will be rewarded with a £5 prize.

Entry form page AD 18. Mark envelopes *Competition*.

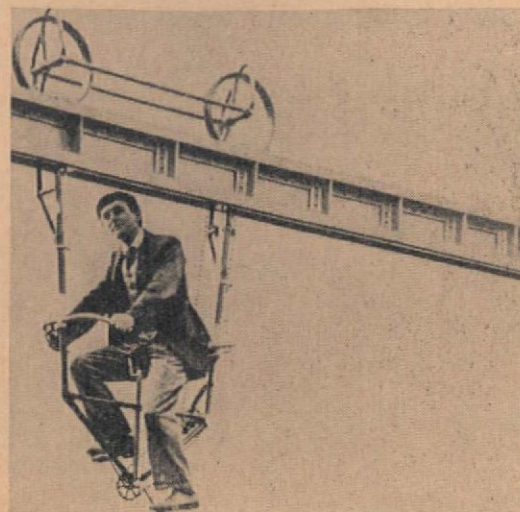
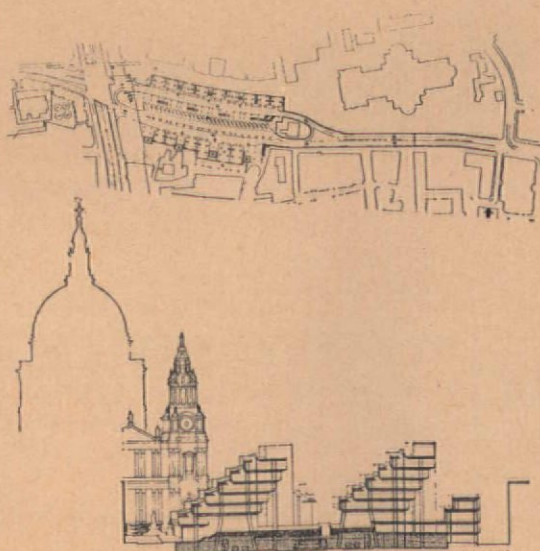


There was one correct answer to the August quiz. The building shown was Grauman's Chinese Theatre, 6925 Hollywood, built in 1927 by Meyer and Holler. It is one of 146 intriguing illustrations taken from the catalogue of David Gebhard and Harlette Von Breton's exhibition *Architecture in California 1868-1968*, held at the Art Galleries, University of California, Santa Barbara, earlier this year.

Winner: Margaret Richardson

Traffic-free

St Paul's precinct has been redeveloped, largely in accordance with the recommendations of Lord Holford. The results are not distinguished. To the east is a medley of insipid building, to the north is the Paternoster development, a series of rectangular blocks interspersed with windswept and little used plazas; to the west is a controversially obstructive, building. The area to the south-west, lying along Ludgate Hill and over Carter Lane, is now the subject of a new proposal. Ludgate Hill is to be restricted to pedestrians. The main volume of traffic that now swirls around the south side of the cathedral is to be diverted to a new route, decked over, lying roughly on the line of Carter Lane. This route will incorporate parking bays for the private motorist, and more important, bays for no less than thirty coaches. Above are to be two ranges of



Brian Richards

Guest editor of the feature on MOBILITY (pages 403 to 438) is seen here riding a cycle which was an early prototype for the Wuppertal monorail.

Photo: Sandra Lousada

Project Awards 1969 juror

On the yellow PA form inserted after page 442 we have inadvertently given the wrong first name for one of the jurors, Mr. Stanley Woolf, ARICS, AIHM, Principal Development Officer in the GLC's Housing Department. We apologise for any trouble which may have been caused by this mistake.

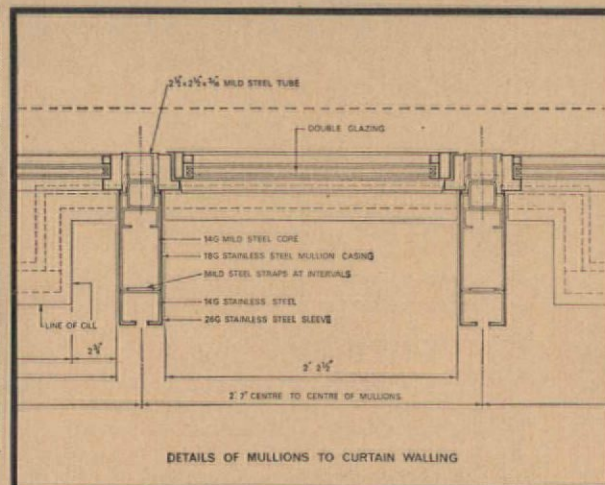
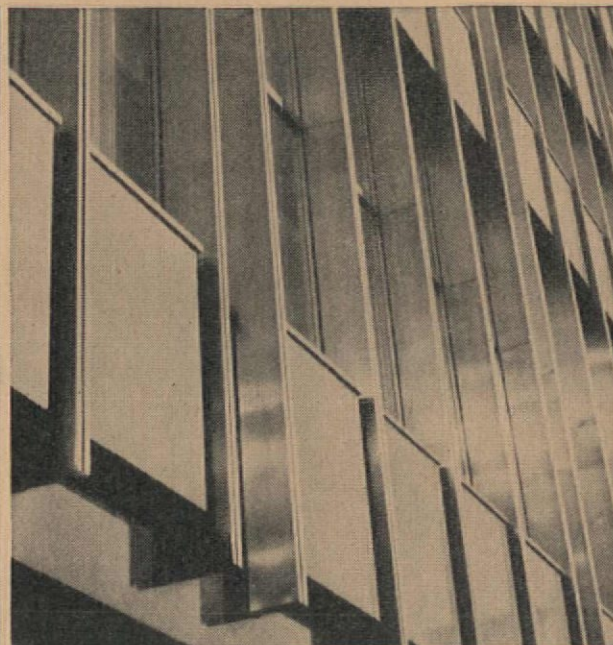
stepped back office blocks, ingeniously designed to permit no sunlight to penetrate. Lord Holford first proposed that these be residential buildings, which might have helped them to turn the City into something more than a 9-to-5 environment. But the City is the abode of Mammon. So offices they are to be. St Paul's is to be yet more determinedly isolated from a living city.

The area already redeveloped around St Paul's should have acted as an awful warning. There is little enough life or movement in the area as it is. The plazas of the Paternoster development are so deftly cut off from the area surrounding St Paul's that they are rarely visited. The shops are unlet (below). The only time they are frequented is on a sunny day, and then only at lunchtime. Yet the pattern of segregation has been remorselessly pursued. The traffic will now be taken off Ludgate Hill (apart from service trucks and ceremonial processions) so that a further tract will be laid waste. Surely someone, someday will realize that town dwellers have come to need the traffic around them as a feature of their urbanity.



Next month:

The October issue is to be a bumper number. The main attractions will be James Stirling's completed Cambridge History Faculty and project for a hostel for Queen's College, Oxford. The Smithsons also present a new Oxford hostel, that for St Hilda's. In addition, we offer an appraisal by Michael Levey of the new Hayward Art Gallery and that by Powell and Moya for Christ Church, Oxford. A London hostel and bathroom tower by Farrell and Grimshaw is featured; and Peter Cook writes on the latest Russian visionaries.



Architects: T. P. Bennett & Son in association with Kenneth Kiersey ARIBA Group architects for the Bank of Ireland. Contractors: McLaughlin & Harvey Limited. Stainless steel fabricators: Culford Art Metal Company Limited.

'Silver Fox' Mullions— aesthetic and practical to a high degree

The new Bank of Ireland building in Belfast is a first class example of how stainless steel adds to the overall effectiveness of the design. The stainless steel mullions blend easily with the older building beside the Bank, and for sheer practicality the equally-spaced lipped channels of the mullions take the wheels of the window cleaner's cradle, thus making his job much safer. When it comes to maintenance, all that stainless

steel needs is an occasional wash down and it will look like new. Please write to the Marketing Department for information on the application of stainless steel to architecture.



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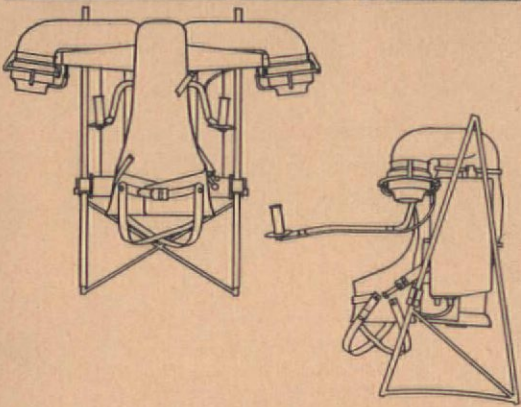


F569

Moving with the times

Bell Aerosystems' Rocket Belt (AD 11/67, p. 527) could stay in the air for only 21 seconds; its successor, the Jet Flying Belt evidently has longer staying power, as it is recommended for use in riot control, rescue operations and traffic surveillance, though its actual performance is not specified.

The Jet Belt is powered by a small bypass turbo-jet engine, with low fuel consumption. Strapped to the back, it is controlled by motor-cycle-type handgrips,



giving various degrees of thrust and deflection to the nozzles. Operators can fly backward, forward and sideways, rotate on a vertical axis or hover. A radio communications system is built into the belt.

Bell Aerosystems, Buffalo, New York

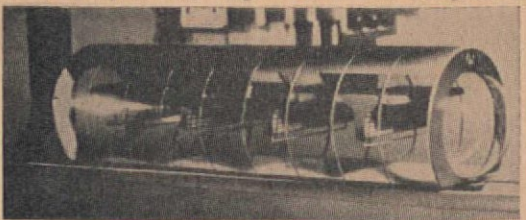
For Cazenave, manufacturers of motor-scooters, Roger Tallon has designed a new minimal car *La Bulle*, into



which you can be indiscriminately bundled, to be trundled around towns at a reasonable speed, powered by an electric motor.

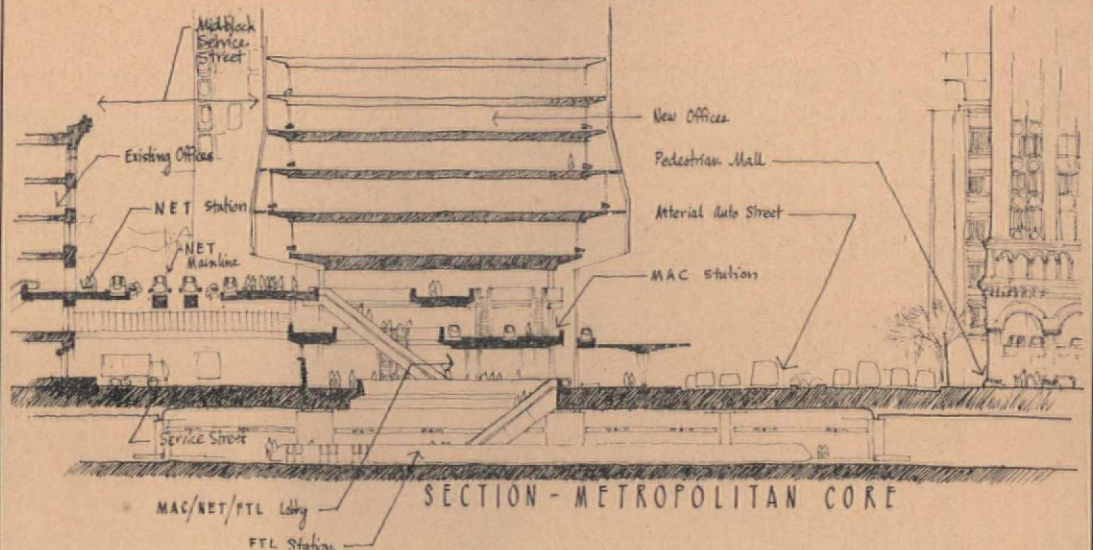
Vogue (France), July-August 1968

For Maurice Barthalon, designer of one of the French hovertrains, *Urba IV* (being developed at the Ecole Centrale Lyonnaise) Roger Tallon has designed a



monocoque car, which should reduce its weight to between 40 and 70 per cent of that of the equivalent railway carriage.

Design 235



Drive or driven?

Brian Richards

A programme of research into methods of solving the whole problem of urban transport, sponsored by the US Department of Housing and Urban Development (HUD) is now being presented to Congress as a summary report, *Tomorrow's transportation: new systems for the urban future*, with a recommendation that one billion dollars be made available for further research and development in the next five years.

Certain institutions investigated innovations, which could be applied with advantage to existing systems, such as methods of giving buses priority to other road users. Stanford Research Institute studied new systems of transport which, if development were started now, could be operating in 5-15 years' time. Their study recommends five basic systems of hardware: (1) Conveyor systems for short trips within major activity centres (MAC). (2) Small cars for short-term hire (PAS). (3) Dial-a-bus systems, both for use in residential areas. (4) The auto-taxi system (see p. 440), which could develop into a dual-mode Starrcar system (NET). (5)

High-speed, small-scale rail systems for longer distance travel but medium capacity (FTL).

All these systems, except the last, have been around as ideas, for some time, and some are under development. However, this study is the first official one of its kind to bring them all together and assess their economic potential and practicality. A high degree of use is assumed (from 40 per cent upwards in the journey to work) which may be optimistic without restraints being placed on car usage. Drawings show clearly how a range of such systems could be integrated together (above) and into a new or existing city. Multi-cored cities, with low-density residential areas are accepted as a likely future pattern, but it is suggested that easy mobility within them should be available to everyone, car-owning or not.

The Report emphasizes effectively that a new range of transport hardware, designed specifically to meet actual needs should, and could be developed. Only in the time-lag is it pessimistic, for if such systems are truly practicable—and only live experiment can show this—then planning decisions being made now could allow room for their integration as soon as they become operational.

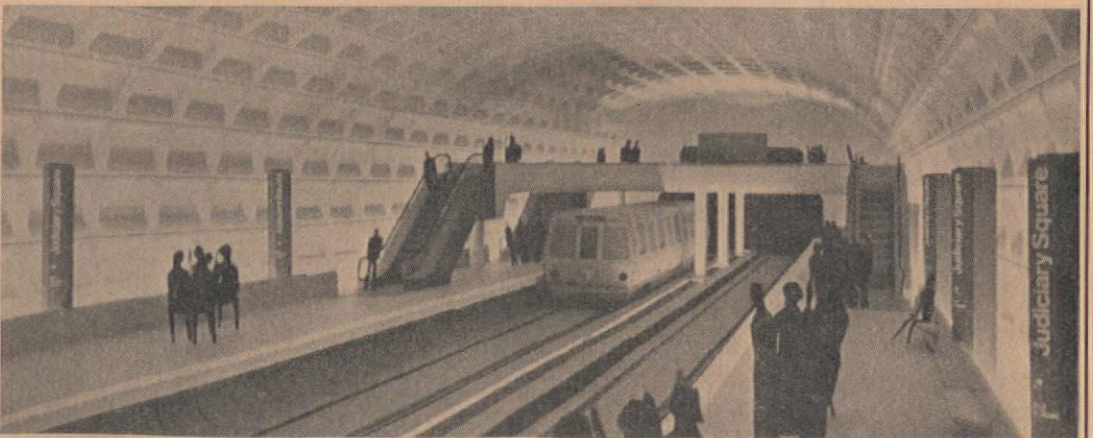
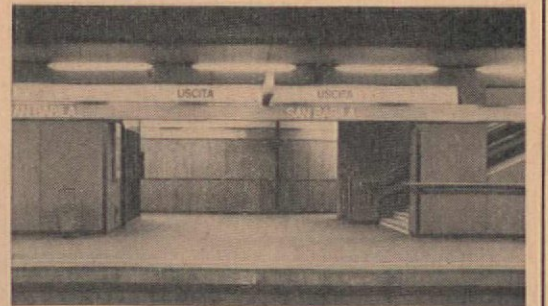
Underground

Washington

Mock-up of the basic station design, by Harry Weese and Associates, for the new Metro system to be built in Washington. The graphics are by Unimark. Industrial Design 15/3 1968

Milan

The first of the Metro stations designed for the Milan network by Franco Albini and Franca Helg. Graphics (some of which are reminiscent of those at London Airport) are by Bob Noorda. Forum Jan.-Feb. 1968



VICTORIA LINE

There is an exhibition at London's Design Centre until the beginning of October, showing the planning, design and construction of London's new underground railway line.

EIGHT RIBA ARCHITECTURE AWARDS 1968

North-east regional airport, Woolston (Yorke Rosenberg

Wardall), Grant & Reckitt Hall, The Lawns, Cottingham (Gillespie Kidd & Coia), Wallasey Grammar School, Wirral; and Churchill College, Cambridge (both Richard Sheppard, Robson and Partners), Cavendish and Ancaster Halls of Residence (Williamson, Faulkner Brown & Partners), Andover Town Development, Area II (GLC Architects' Department), St Paul's Cathedral Choir School (Architects' Co-Partnership), Edinburgh University Library (Sir Basil Spence, Glover & Ferguson).



The 'Earl Haig' at Hounslow. Architect: J. C. G. Sharman, ARIBA. Installation by Lamertons (Contracts) Ltd.

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AD/9/68 ®



Hans Hollein, Denis Compton, Misha Black and Reyner Banham at Aspen. Photo Berko.

Nuts and bolts at Aspen

Hans Hollein

It was the 18th International Design Conference in Aspen and, as things go which have happened eighteen times before much has been said already or was said for the eighteenth time. But Aspen is a beautiful place and the people are friendly, and it would be worthwhile to visit even if you had to discuss the best way to polish shoes—so why not discuss design.

Design is important, and to find out more about the state of design, its definitions, intentions and problems—on this and the other side of the Atlantic—Reyner Banham was made programme chairman. He set out by buying a Western outfit complete with cowboy hat and by saying (in his introductory speech):

'What was in my mind when I began to put together this programme was something that I have noticed in many of the conferences I have attended: that much of the most stimulating and enlightening interchange took place not on the platform but in other places, outside the published programme when conferees informally discussed the business of their profession.'

'If politics is the art of the possible, so is design, perhaps to an even greater degree. Designers, architects and planners are, in a phrase current in England at the moment, among the world's proud doers; their pride is in getting things to happen, their pleasure is in seeing business done. To me as an academic and journalist, their professional discussions were always fascinating—but also baffling, because designers themselves seemed to be vaguely ashamed of them. Rather that they ought to be talking about something else. The subjects, the topics which design conferences are officially called together to discuss are never "how to get it done" or "how to make it happen", but "why aren't we worrying more about the state of the world" or "the impending doom of Western civilization".'

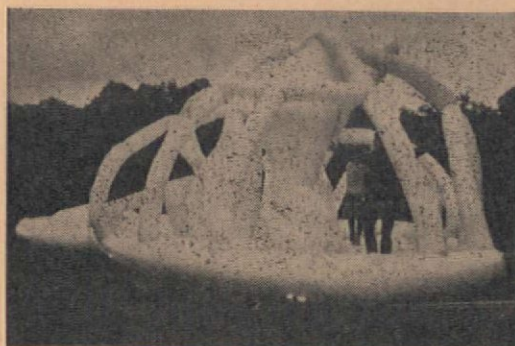
'Recently, I have noticed the beginnings of a swing against this trend. A number of people told me that they hoped this Aspen conference would be more down to earth. This chimed in well with my own desire to hear good professional talk up here on the platform.'

In a brilliant terminal discourse, Jivan Tabibian summed it all up—the dialectic approach versus the pragmatic. Roughly, this dividing line could also be drawn between America and Europe, or more to the point between the Anglo-Saxon and the Latin-Continental world; but it was also established at the talks and the conference that more common trends united these continents than set them apart. Dividing lines run rather between generations or establishmentarians and newcomers.

David Gebhard pinpointed specific characteristics of today's design attitudes, by defining some background imagery and thoughts serving as guidelines to (US) design as Buck Rogers, Streamlining, Flying Saucers, Batman and Superman, etc., resulting in an obsession with symbols, with little thought to broader social consequences. The fact is packaging is more important than function. Dick Latham and Misha Black (attacked by the students in the seminars as members of the Establishment) tried to itemize designers—With-it men, In-men, Technic-men, Out-men, Exit-men.

Other contributors were Irving Grossman (Canada), Eisenman (NYC) and John Allpass (Denmark)—who made some of the most sensible and sensitive remarks of the conference—and Francois Dallegret (Montreal), who baffled some of the audience with a beautiful disorganized presentation of his work, like cars which do not run, superscale toys, 'le drug' and pictures of himself. The present author gave a marathon-performance, showing a range of work from early projects, the aluminium candle-shop, to his latest

environmental control media—pills, sprays and eye-glasses. Dennis Crompton moderated the perfected Archigram-show only slightly—a three-screen slide and movie presentation of the group's drawings.



Hardy

Whilst other students have been rioting for the right to participate under the heavy glare of world publicity, students from Bournemouth College of Art have been pulling off a quiet takeover. Theirs is a classic example of how students can design and execute from start to finish, a live project when given the chance.

The Thomas Hardy Festival Committee decided to allow the students at the School of Architecture to compete in the design of an exhibition building. The committee chose the entry by Matt Andrews and John Lambon and gave them free reign. Their building shown here, was the main structure containing other interpretations of Hardy from other college departments.

Photo George Basilier Bryant

HfG, Ulm

The independence and continued existence of the Hochschule für Gestaltung, Ulm, are in danger because of lack of finance. The Bundestag has cut the 200,000 DM subsidy and the Landtag of Baden-Württemberg has not been prepared to make good this loss. The Geschwister Scholl-Stiftung has thus decided to dissolve itself as from 30th September, 1968, and to give notice to the staff.

The Minister of Culture of Baden-Württemberg has spoken in favour of the continuance of the HfG, but the Landtag has recommended an amalgamation of the HfG and the Ulm School of Engineering. This suggestion has been rejected both by the staff and students of the HfG.

In this critical situation, people, organizations and firms have united to further the work of the HfG and to support it financially. On 26th March, 1968, they formed the *Society for the Furtherance of the HfG, Ulm*.

Anyone wishing to support this organization is asked to write to the Gesellschaft zur Förderung der Hochschule für Gestaltung Ulm e.V., 1 Vorsitzender Prof. Lothar Götz, Universität Stuttgart 7000 Stuttgart, Keplerstrasse 11.

Grand Prix

In a fantasia of finance, promotion and prestige the newly elected mayor of Cannes, M. Bonhomme, has lent his support to an organization—Grand Prix International d'Urbanisme et d'Architecture (in part government financed, but in greater part financed by industry)—that aims to instigate a grand competition in two stages and in two parts. The organizers want a new architecture; they want both a new industrialized architectural system and a design for rebuilding a town centre. Selected competitors (lucky chaps) will be invited to Cannes next March to discuss their projects. The judges invited to make the awards—ranging from Mies van der Rohe to Oscar Niemeyer (their acceptances are not yet announced)—give one little confidence that anything new or rarefied in the way of architecture will result from the enterprise.

Enquiries 48 bis Avenue Kléber, F75-Paris 16e applications for entry to competition before September 30th.

Computer graphics

Roy Landau

The first International Symposium in Britain on Computer Graphics was held in July at Brunel University, organized by the Computer Science department.

Over the past five years a new computer graphic potential has been developing. It began in the MIT's Lincoln laboratories with Ivan Sutherland's thesis, 'Sketchpad' in which a computer could accept information directly from a user through drawings on a cathode ray tube. The drawings could be made and manipulated at the cathode ray tube terminal.

But to be able to 'feed-in' and 'retrieve' information through visual displays has opened up new computer possibilities ranging from general purpose visual displays of words and numbers (examinable with greater speed and efficiency and less effort than a paper tape printed with the equivalent information) through to complex graphic projections, 3-dimensional graphics and now current experiments with holography.

The scope of graphic applications is increasing as disciplines recognize the new possibilities and as the techniques come within economic range. Two US contributors, C. Machover (Information Displays Inc) and S. Matsa (IBM), discussed their applications and features. Current applications include computer-aided design, aircraft and automotive engineering, management information, hospital records, library reference matter, process control, computer-aided education, pattern recognition, construction layouts, etc. Forms of display now produced commercially (in Britain and the US) can be classified as: (1) passive output displays (printers, plotters, drafting machines); (2) interactive input/output consoles (generally based on cathode ray tube displays). Displays can be 'Alpha-numeric (characters only) or fully graphic. The latter allow for drawing points and vectors, and some units are capable of rotating the display in three-dimensional space. Displays can be small screen (more usual) or large screen (costly).

Techniques for producing more economical graphic systems were discussed by Murray Ruben (Digital Equipment Corporation). Factors such as length of transmission path, size of bandwidth, local or central information storage, are determining new hardware which within 'a few years' should cut computer graphic display systems to 25 per cent of their current cost. The problem of the running cost of computer time in an architectural application, was raised by P. E. Walter (West Sussex County Council). The County Department recognizes that as 'a lot of design time is thinking time', at the present stage in their computer programme they find it necessary that 'a reasonably hardened plan shape must be produced by the designer before the display unit is used'.

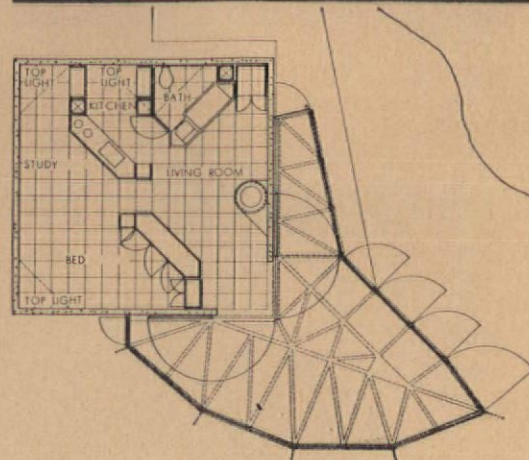
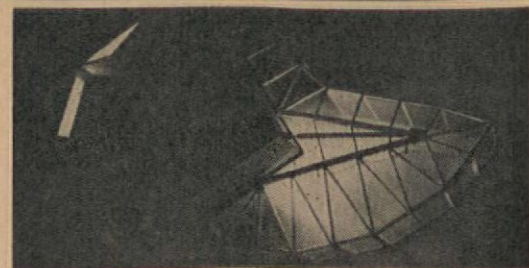
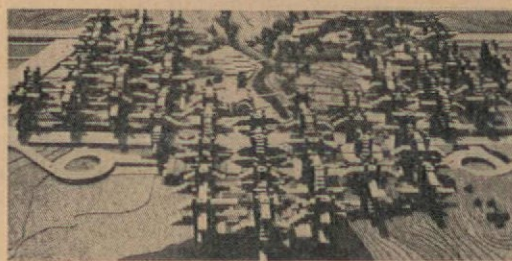
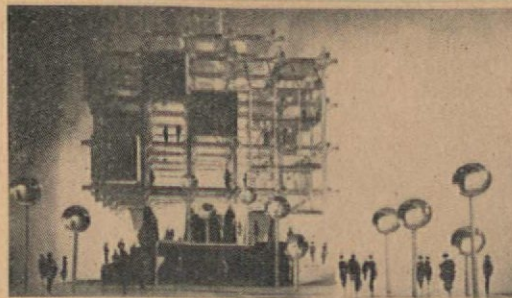
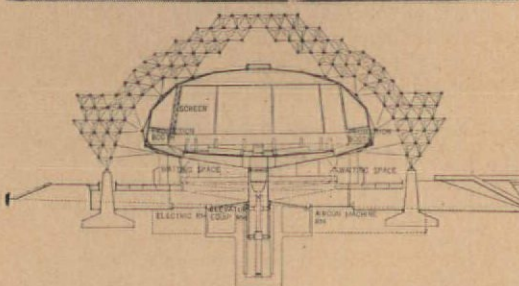
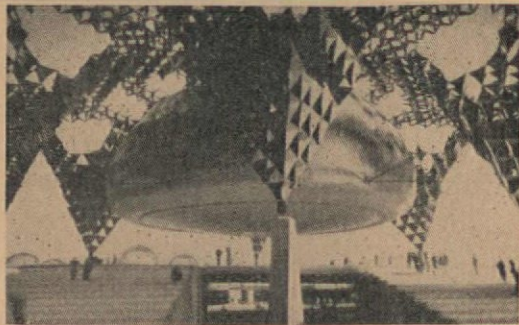
Developments are fulfilling Norbert Wiener's prediction that the computer is a tool which possesses characteristics enabling it best to handle problems of a highly particular and precise form, whereas the human is a more imprecise operator with different capacities, especially those for scanning, theorizing and generalization. These two areas are complementary, so that the greater the capacity for interchange between man and machine the more satisfactory will be the end product.

The art of computers, or computer art

David Usborne

Sooner or later every scientific enterprise comes to a fork in the road. Scientists must then decide which of two paths to follow. The dilemma that must be faced is: how shall we conceive of what we do? Should we think of what we do in terms of substances and entities—for example, elements, compounds, living things, mental illnesses, and so forth? Or should we think of it in terms of processes and activities—for example, Brownian movement, oxidation, or communication? We need not consider the dilemma in the abstract, other than to note that these two modes of conceptualization represent a developmental sequence in the evolution of scientific thought. Entity-thinking has always preceded process-thinking. Physics, chemistry, and certain branches of biology have long ago supplemented substantive conceptualizations by process-theories. Psychiatry has not. [Thomas S. Szasz 'The Myth of Mental Illness' 1961]

For 'psychiatry' read 'Art'. This quotation illuminates one of the most interesting aspects of the



Doing-your-thing

Japan Architect (June 1968), has proclaimed a new generation of Japanese architects; a variegated gathering of talents, born between 1926 and 1938, who appear to have little in common (not even the first flush of youth), unless it be that they look for inspiration not to Metabolists but to both Cedric Price and the Archigram Group and the image makers of the West. Unaccountably Noriaki Kurokawa (b. 1934), whose Takara Beautilion 3 and Toshiba IHI pavilion 1, 2 for Osaka are illustrated, is included amongst the newcomers. As a wayward and idiosyncratic Metabolist who has already established himself most successfully as a practising architect, he is scarcely eligible for the role of revolutionary rebel. The editors were presumably unwilling to forego the opportunity of publishing two of his latest projects. What the newcomers might be said to have in common—though the conventions of translation from the Japanese make the printed texts treacherous as evidence—is a determination to disregard the accepted traditions of relating spaces and composing forms. 'Architecture' is at a discount. The built form is only of minor importance; it is, indeed, irrelevant. The emphasis is on the degree and variety of the activity stimulated or made possible by the built environment. The architect is expected to create neither a monument nor a work of

art, he is expected to provide stimulus in the form of information so that each individual can fashion an environment of his own choosing. Understandably, audio-visual techniques assume a new importance.

Not all the projects illustrated—and they are all projects—are designed to this specification; Minoru Takeyama (b. 1934), illustrates a design for Espoo 4 that is as rigid, limited and limiting as Le Corbusier's Voisin plan for Paris of 1925; while Ren Suzuki (b. 1926) and Shota Majima (b. 1926)—the oldest of the new generation—plead for a spontaneous approach to architecture, but give it form in a well serviced structural framework into which interchangeable living-pods can be inserted at will 5. There is flexibility of a kind here, but it is of a restricted kind and firmly controlled by the architects.

More redolent of the new do-what-you-will humanity is the 'bubble space' proposed by Makoto Suzuki (b. ± 1936)—a clean, bright and well-lit free space that can be built at random onto an existing dwelling 6, 7 or in isolation. Its purpose is, specifically, not, specified; no pre-conceived notions of behaviour are attached to it. It has the role, somewhat, and the

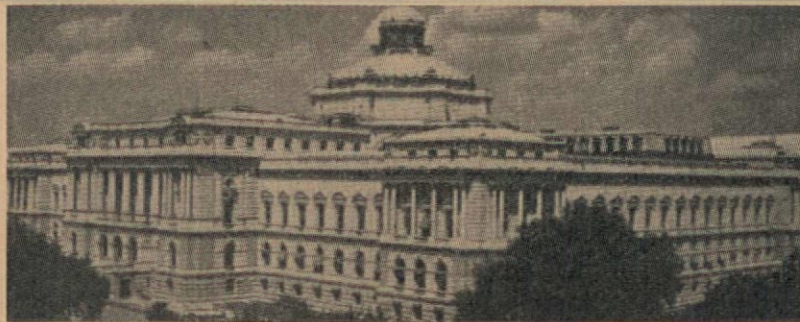
appearance of the Victorian conservatory in which people felt free to indulge themselves.

More elaborate is the Induction House 8 by Hiroshi Hara (b. 1936)—elaborate, that is, in the extent to which it relies on electronic media. The design is simple enough; all machine and space-age imagery have been consciously eschewed. The form is as anonymous as possible. But the workings are highly complex. For Hara believes that so active and mobile have we become that we no longer have the time and opportunity to build up the associations and relationships vital to humanity. These must, therefore, be induced by electronic devices. The Induction House is thus made up of a collection of self controlled learning cells in which one can enlarge both one's experience and acquaintanceship by electronic means. With the information supplied, one will fashion in the mind an environment of one's own choice. Electronics, not architecture, is to be the determinant of form. Thus, on the larger scale, the city is to be thought of not as a built environment, but as a field of stimulation and experience, of phenomena and happenings. In comparison, the designs of Takamitsu Azuma

<Computer art

strained relationship between Science and Art explored by the ICA exhibition 'Cybernetic Serendipity' (see page 394). Art is traditionally concerned with entities, objects of beauty, paintings, sculpture, etc. Science and in particular Cybernetics is concerned with processes, the way things happen. There is thus an ambiguity in the exhibition concerning the proper subject of our attention and admiration. Is a computer drawing of a telephone more or less interesting than the program used to draw it? Many of the statements of the artists involved in computer graphics, quoted in the Studio International 'catalogue' show this uncertainty of allegiance. They are frequently less interested in the drawings than in the program used to produce them. It is as though they were not quite sure which was the real work of art.

From this point of view the most significant object in the exhibition is Stafford Beer's SAM (Stochastic Analogue Machine) a device for simulating the interaction of random events originally designed for the study of flow problems in a steelworks. Although presented in the exhibition as an object or piece of sculpture, its real interest is in its function as a simulator of events. It symbolizes the computer's ability, if fed with enough information to run ahead of time, to predict and control events. The interest of computers is in the processes whereby they operate and the processes that they control. It seems perverse that a device that is licenced and tested for four dimensions in other fields should here be limited to two dimensions by the narrowing of our definitions of Art.



Like the trustees of the British Museum, officials of the largest library in the world, the Library of Congress, Washington, DC, have been thwarted recently in their building programme; squabbles over design having held up congressional appropriations for the Madison Memorial extension. But the complex problems of handling and retrieving vast information there contained, in any case, cannot be solved by normal architectural means—automation is the first tentative solution.

Automated Congress

Roy Landau

In 1961 the Library of Congress commissioned a major study 'to survey the possibilities of automating the organization, storage and retrieval of information in a large research library'.

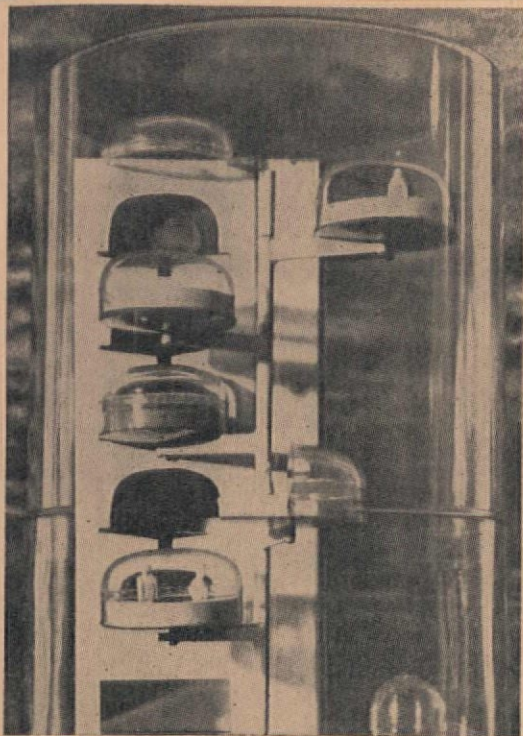
By the late fifties the appropriateness of automated techniques to the Library of Congress had been under discussion by its internal committees, and the terms of reference for the 1961 research enterprise were clearly committed to the view that automation would be expected to result not merely in a streamlining of existing resources but of radical exchange.

The report was completed in 1963 and published under the title of *Automation and the Library of Congress*.¹ It was a short, carefully argued document providing evidence and basic data of critical impor-

tance to any decisions made on the future of the American research library facility, in a way that the Parry Report² should have done for an equivalent system in Britain, but never did.

The report noted the constantly increasing library research facility demands, the growing amount of material to be processed, and the comparatively diminishing capacity of existing libraries to accommodate the new needs by conventional methods. It discussed the requirements of the Library of Congress system, the feasibility of automated solutions, then sketched a proposal, considered its consequences, and produced a costing exercise.

The report concluded: 1. That automation would increase the adaptability of the library to further change and offer greater flexibility for unpredictable future library developments. 2. That automation would encourage and accelerate library service capacity, it



(b. 1933) and Takefumi Aida (b. 1937) must seem somewhat prosaic, though they are clearly conceived to the same ends.

Aida, with less emphasis on the electronics, offers a giant recreation building 9, 10—not unlike Noriaki Kurokawa's *Dreamland* (AD 6/68, p. 251)—made up of a series of 'non-purposeful spaces' (though the purpose of each is clearly marked on the plan) which relies on irregular and impromptu effects of planning and arrangement to provide stimulus for the user. Contingency is the theme of the design.

Azuma proposes a giant all-happening space 11, 12 in which the form, though assertive enough (not unlike Nana), is said to be of little import. The aim once again is that users should create their own environment and define their own identities in the selection of particular items of information from the vast amounts available to them in such all-happening electronic hives—statistics, chemical formulae, simulated sensations, the news from Vietnam and dolly-rocking all become grist for environment building and thus, for architecture. The architect is, at best, a filter; at worst a brain-washer.

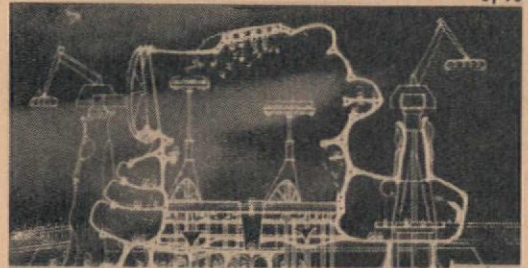
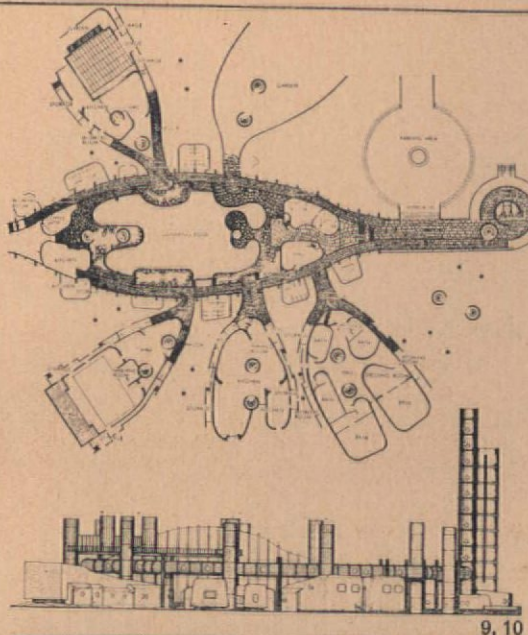
would make libraries easier to use (and thus also increase the researchers' capacity). 3. That automation of bibliographic processing, catalogue searching and document retrieval were technically and economically feasible. 4. That automation would reduce the cost-to-performance ratio. (A cost study based on actual and estimated prices showed that by 1972 the cumulative cost for automating the central bibliography of the Library of Congress would be compatible with the costs for continuing the current manual system.) 5. That automated retrieval of book content, on a large scale, was not yet feasible.

The principal claims of this report were the improvements that automation would offer in speed, reliability, efficiency, accuracy and economy of effort.

But if the potential of libraries could be radically changed by automated information transfer, what possible physical changes were implicit in the new techniques?

In 1966-67 the Library of Congress produced its brief for its first 'computer oriented' library extension.³ At present the Library of Congress holds 54 million items in two 'Washington D.C. style' buildings which jointly occupy 1,300,000 square feet of floor space. These buildings are of a type in which necessary modifications are 'relatively inefficient or uncomfortable, or in some cases uneconomical in their use of space'.⁴

The idea for the new James Madison Memorial Library Building appears to have been conceived largely in response to the 'modification' problem. It is to be provided with flexible partitioning within open horizontal spaces, provisioned with vertical access



11, 12

shafts to take services and a complete mechanical handling system, the building to be wired to accommodate all predictable information transfer equipment.

But this city centre building presents a peculiarly limited (and limiting) interpretation of an information transfer capability: a capability which automation theorists are well able to characterize but which 'architectural consultants' seem either unwilling or unable to recognize.

It would be a mistake to consider the James Madison Memorial Library as a model with universal applicability. Its costly and rigid centralization runs counter to its information transfer potential. Under a more optimized information system, the future capacity for small or large, new or old component library units would be assessable (and write-offable) over predicted life spans, but would play specific (and constantly updated) roles within a network of linkages.

It is to be hoped that the Dainton Committee which is sitting at present to consider the future of the central libraries in Britain, will point out to the Minister of Education the inadequacies of the new Washington D.C. solution.

An answer more relevant to the needs of an automated future library research facility in this country must be simpler than the James Madison Memorial Library approach, and cheaper too.

³ *Automation and the Library of Congress. A survey sponsored by the Council on Library Resources Inc., Library of Congress, Washington 1963.*
⁴ *Report of the Committee on Libraries, H.M.S.O. 1967 (Parry Report)*
⁵ *Library of Congress James Madison Memorial Building. Preliminary Program statement. Part I. Library of Congress 1966; Program Statement Part II, 1967. Ibid: pt I p. 18.*

The Time House

Martin Pawley

Designers often believe that they can produce designs from which subjective factors have been totally excised. In the case of automobiles, for instance, where it is not uncommon for over a million identical units to be produced, it could be assumed that the combination of a ruthlessly objective brief with strictly limited conditions of use would provide a wholly functional product sterilized against subjective infection. The result is far from the case: within a week of purchase the vast majority of automobiles are personalized by one means or another. A vast accessory industry exists for just this purpose with innumerable permutations of gadgetry to differentiate individual means of transport. No sooner is function crowned than myth, image and fantasy usurp the throne. If the designer cannot express his subjectivity the lack is made good by the user: if neither knows how to associate with the object, the seller or advertiser finds a way. Consider the following example:

An old-age pensioner sits in a squalid room; all around him his furniture is arranged, Edwardian veneered cabinets, tortuously carved tables, high backed chairs. Amongst the furniture is further bric-à-brac in the form of vases, prints and photographs in frames. All these possessions represent the 'object evidence' of the pensioner's life, for his relations are all dead and he is alone, using the collection as a barricade against the increasingly cold and hostile world without. His mementoes are living proof of the reality of his former life.

Not far away, in a contract furnished office sits a development architect. He is studying some drawings: on one of the drawings the very house in which the pensioner is huddled is ringed in red. The architect is planning the erection of a multi-storey office building on a site of which a part is at present occupied by the pensioner's tenement; he summons his secretary. . .

Here is one designer, equipped with technical, legal and economic expertise and a brief drawn from the uncompromising facts of commercial life, marshalling his resources to carry out a clear and ruthless plan. Opposite him is a desperate individual in a shrinking world, staking the very meaning of his existence on the effort of externalization which has transformed mere furniture into the contents of life. Neither of these characters would acknowledge that they were at opposite ends of a single scale. One would see the other as a threat, the other, if he acknowledged his presence at all, would see his counterpart as a nuisance. They do not see themselves—or each other—as exponents of the binary condition of consciousness, for in effect they are the same person.

Because of this blindness, today's environmental designers are committed for the most part to the obliteration of their subjectivities in becoming the agents of an authoritarian, organizational technology that refuses responsibility for the violence done to human consciousness by its mechanisms. They are utopians in the tradition of More, Fourier and Verne.¹

This utopianism is exactly what separates designer object from the designer subject—the development architect from the pensioner. The designer's idea of the dwelling is a mélange of functional fabrications; the more closely he looks into it the larger mirror image he sees. Until he can move beyond this convention into a deeper acceptance of the experience of environment, he must remain incapable of moving the act of dwelling back into the realms of action and meaning where it really belongs. The conception of the meaning and purpose of environment in the minds of most contemporary designers is a convention unrelated to their experience of it: a convention which enables them to see the world in a different way to the way in which they feel it.

Naked figures watching TV

'The smiling credit manager you spoke to this morning is a piece of company apparatus like the filing cabinet from which he extracts the card that is you; his human appearance is a disguise and his real name isn't Brown but Agent F-362.'

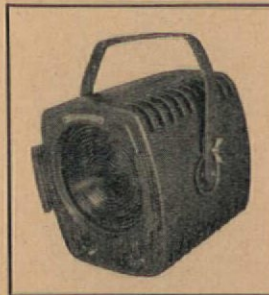
¹ This parallel was developed by Robert Boguslaw into a book entitled *The New Utopians. A study of system design and social change* (Prentice-Hall, 1965).



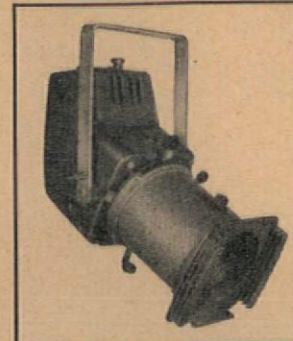
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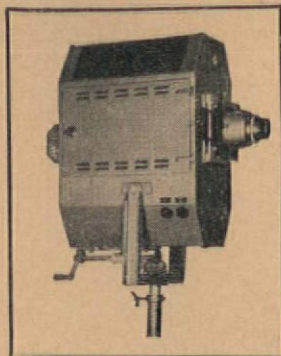
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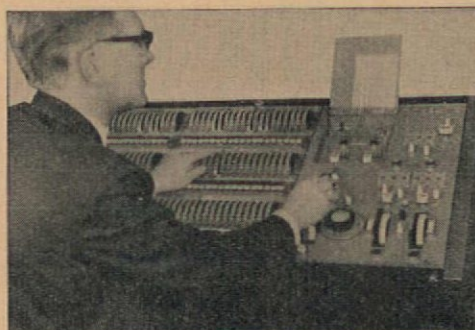


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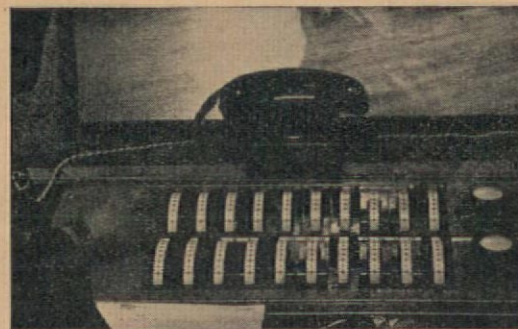


4000 WATT
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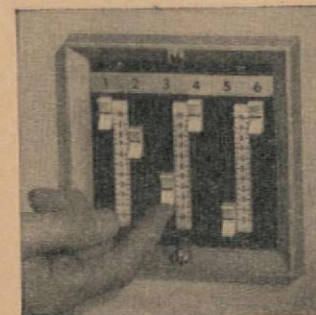
The latest Strand control is the IDM (Instant Dimmer Memory) System which is now going into the London Coliseum. This can provide 250 presets with recording and playback facilities on all channels.



An economic 2-preset system, as this one supplied to a Northern Variety Club, has 20 channel levers and is installed at the rear of the auditorium with a clear view of the stage.



Strand make all sizes of preset controls. The Ten/20 shown here is portable with the variable load thyristor dimmers built in. No separate dimmer room is needed.



Strand also produce miniaturised electronic controls which can give infinite regulation of light intensities required for room lighting in restaurants, clubs and similar architectural lighting situations.

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<In these terms Harold Rosenberg² summarizes the Jeremiads of contemporary prophets of the American social scene. Their fears of dehumanization, role absorption and 'other-directed' behaviour, which are by now part of the intellectual currency of the western world, are closely related to reification—the objectivization of living things.

In this connection the contemporary designer occupies a curious position: he is the mixer of traditional prejudice with untested theory. The environments which are his creation were born of the marriage between the undigested, unintegrated body of experience that is the presence of the past, and the organizational concepts of production and distribution which are the presence of the future. The outcome of this marriage is an environment in which the roles of function, action and consciousness are hopelessly confused.

This is because contemporary designers do not know how to integrate the vast museum of stone, iron and yellowed paper into a world whose meanings must all be expressed functionally, in the applied scientific sense of tending towards the optimization of technique in some field or other.

For this reason we still build houses with room for servants when our real servants are electronic mechanisms. We call rooms after functions which once produced sweat but now rarely occasion a broken finger nail. In industry men serve and circle round assembly line monsters that will shortly operate far better without them. In this sense the operators, with their human demands have become an embarrassment to production.

Along with them most of the environmental spaces in our man made world have become temples to the dynamism of functions long since reduced to anachronistic double talk. Libraries have become microfilm, cinemas have become television, corridors telephones; travel arrival and departure with a shortening limbo between. All the functions of a house have imploded into a service core the diameter of a telegraph pole. Even the physical space required by its human occupants has been miniaturized to the point where the 'essential' capsule could be sunk to the bottom of the sea or shot to the moon.

A surprisingly large number of design-theorists are prepared to follow this kind of logic to its bitter conclusion. The architectural *avant garde* prepare to live in ergonomically designed plastic 'living pods', shifted periodically by crane from megastructure to megastructure, while futures-oriented writers like Reyner Banham actually portray naked figures hungrily round television sets in small, collapsible plastic domes.³ These latter-day nomads have long since abandoned the 'cultural wardrobe', and as their sun-bronzed fingers twitch from channel to channel their possible reflections on the monumental architectural environment from which they sprang are summarized for them in advance. 'It was', says Banham, 'a cultural solution to the problem of enclosure—apart from that it became obsolete'.⁴

The fantastic notion underlying this attitude—that electronic media are in some way interchangeable with history—springs from two basic origins. First, that as a result of the industrial revolution, nuclear weapons, antibiotics and technology, the historical continuum is broken and consequently 1968 man is utterly different from 1868 man or 1768 man. Second, that man is no greater than his role—which today is the satisfaction of his physical needs and desires by collaboration in the productive organization of his society.

The image of humanity which results from a ruthless application of these two determinants can be clearly seen every week on television. The puppet characters of Thunderbirds, Rocketship XL5 and Captain Scarlet are all perfect prototypes for the nubile, role-imprisoned futurists eagerly awaiting Banham's command to leap from the highest peaks of the present into the bottomless future—without their cultural parachutes. Curiously such delusory flights from place and history often end in the Portobello Road or the antique super-market.

The limitations of function

Functionalism was originally a morality for environment in that it sought to establish *correct conditions for use*



1

Camera Press

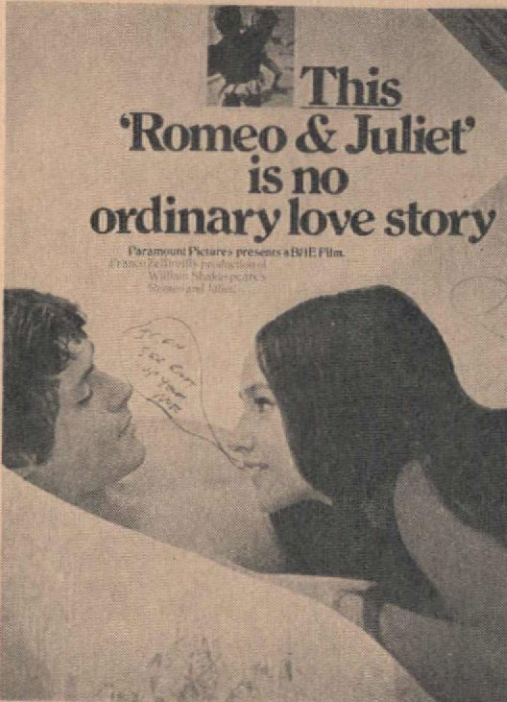


2

Camera Press



3



5

1, 2, 3, 4, 5 The subjectivization of objects is a part of the process of environmental modification which is a condition of being in the world. From the Suk tribesman of North West Kenya 1 to the 'Top Art' girl from San Francisco 2 the process of body distortion and decoration has always overshadowed functional aspects of dress.

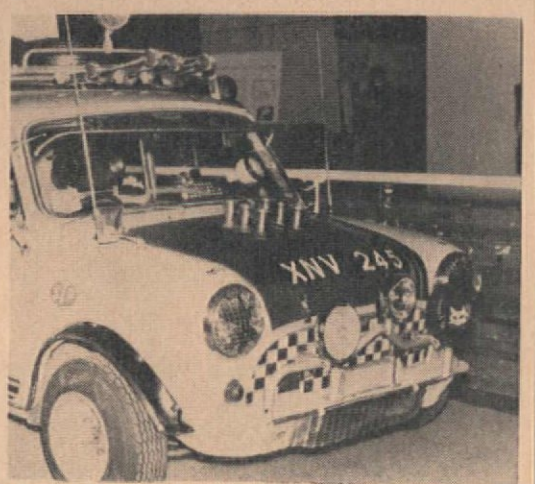
rather than usefulness itself. In doing so it had the effect of reducing action to configuration and consciousness to objective physical presence.

The manner in which this arcane doctrine—a relic of the positivism which in science crumbled long before the Second World War, and in philosophy collapsed shortly after it—has maintained itself in the face of daily proof of its inadequacy, is little short of miraculous. Faced with the constant modification of structures whose 'immutable' function changed overnight, the functional theorist was obliged to don an ill-fitting suit of clothes called flexibility. Every functional environment today is obliged to be able to become anything else—or nothing—instantly. Otherwise it is useless.

Despite this implicit acknowledgement of the relatively short life of any functional organization pattern, the method is still the basic design tool used for shaping our environment.

In the organization world—in office blocks, industrial facilities, military and scientific complexes, the presence of individuals is acknowledged only by reference to their functional roles. They are incorporated as elements in planning according to their administrative or productive place in the organization. They are provided with desks, chairs, typewriters, telephones, paper and pencils—a mass of impersonal, objective equipment within which they can only express their subjectivity by stealth and fantasy—by keeping novels in their desk drawers, or making personal calls in the lunch hour.

Functions at basis are objectivizations of human needs, and because human beings are more than



4

In the new world of technology, primitive animism has returned. No matter how ruthlessly the designer rationalizes his product, no matter how drastically the number of models is reduced, intimate personification and identification with objects continues. Georges Guynemey's aircraft 3, exhibited in Paris in 1917 after he had scored 19 victories, was worshipped. The 'Hot Car Champion, Boy Racer' 4 shows another extreme—the British version of the 'custom car'. The automobile world, with its 'Cooper S', titled minivans, 'G.T.'s and Batmobiles, is the graveyard of objective design theory. The defaced underground poster 5 is another aspect of the need to modify, personalize and transcend the sheer facticity of objects: to reject their intrinsically negative assumptions about the nature of individuals.

object-entities, these objectivizations are at best simplifications, at worst distortions of the possibilities of real men. The environmental designers' recognition of function or role instead of consciousness as the basis of such 'human engineering' as he attempts, is a contributory cause of the anxiety of meaninglessness which is a well documented neurosis of our time.

It is in the realm of the dwelling that functionalism becomes pernicious in the extreme. Primarily because it is impossible to functionally define the act of dwelling, which is a continuously evolving drama not a pattern conferred once and retained forever.

A man can 'function' in a certain sense six hundred feet beneath the surface of the sea in total blackness. He can 'survive' in a prison cell six feet square, an underground train, a space capsule or a pot hole, but he cannot *live* there—not unless he drastically truncates the possibilities of action and thought that consciousness confers upon him. To 'live' in such situations a man must accept the status of an object, as though the world were always in a state of warfare, famine or pestilence; as though life were a job.

Sociological techniques can never indicate more than that human beings survive in a relatively sociable form in certain environments. The outer limits of those environments must be determined by the sometimes 'unfunctional' demands of action and▷

² Harold Rosenberg, *The Tradition of the New*. McGraw-Hill 1965 Chapter 19. *The Organizational Fantasy*.

³ This does not seem too unfair a description of the concept Banham originated in his 'A Home is not a House', *Art in America*, April 1965.

⁴ Reyner Banham, *Folkestone Conference of Experimental Architecture*. June 1966.

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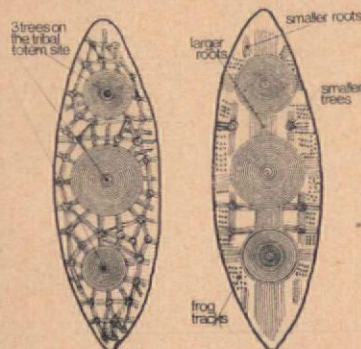
<consciousness—demands which the functional mode is committed to either castrate or ignore.

A measure of our loss of awareness of the importance of these demands is our endless obsession with the kind of environment we construct, instead of with the act of environmental creation itself. It is the creative act, whether carried out with pick and shovel or highly sensitive electronic system, which is of overriding importance.

The importance of context

Territoriality can today be considered as a primary instinctual drive, alongside sexual desire or the will to power. Recent research in the behavioural sciences suggests in fact that individual distance and private territory are invariables in all societies of living things, ensuring that internecine strife never overcomes the basic cohesion of any group.

The Best-Rubinstein experiment with planarian worms,⁵ which are among the most primitive forms of life still extant in the world, indicates that psychological characteristics normally associated only with higher animals and humans are already present in a highly developed form demanding the identity, stimulation and security which proceeds from the ownership of territory. While on the same theme, from an anthropological standpoint T.G.H. Strehlow describes the fanatical devotion of the Aranda people of the Australian interior to birthplace and ancestral home-site.⁶ Territoriality is thus a significant element in the



6 The Aranda people assemble visual evidence of the past in iconic terms as do civilized peoples; their 'churinga' are carved pieces of stone or wood representing the presence of individual ancestors. They 'prove' the existence of past time and confirm the duration of identification with place. T. G. H. Strehlow, *Aranda traditions*, Melbourne 1947.

relationship between being and environment from the bottom of the evolutionary scale to the top. Psychology and animal physiology also supply impressive proof of the significance of context, particularly in those areas where mental and behavioural disturbance can be related to environmental deprivation.

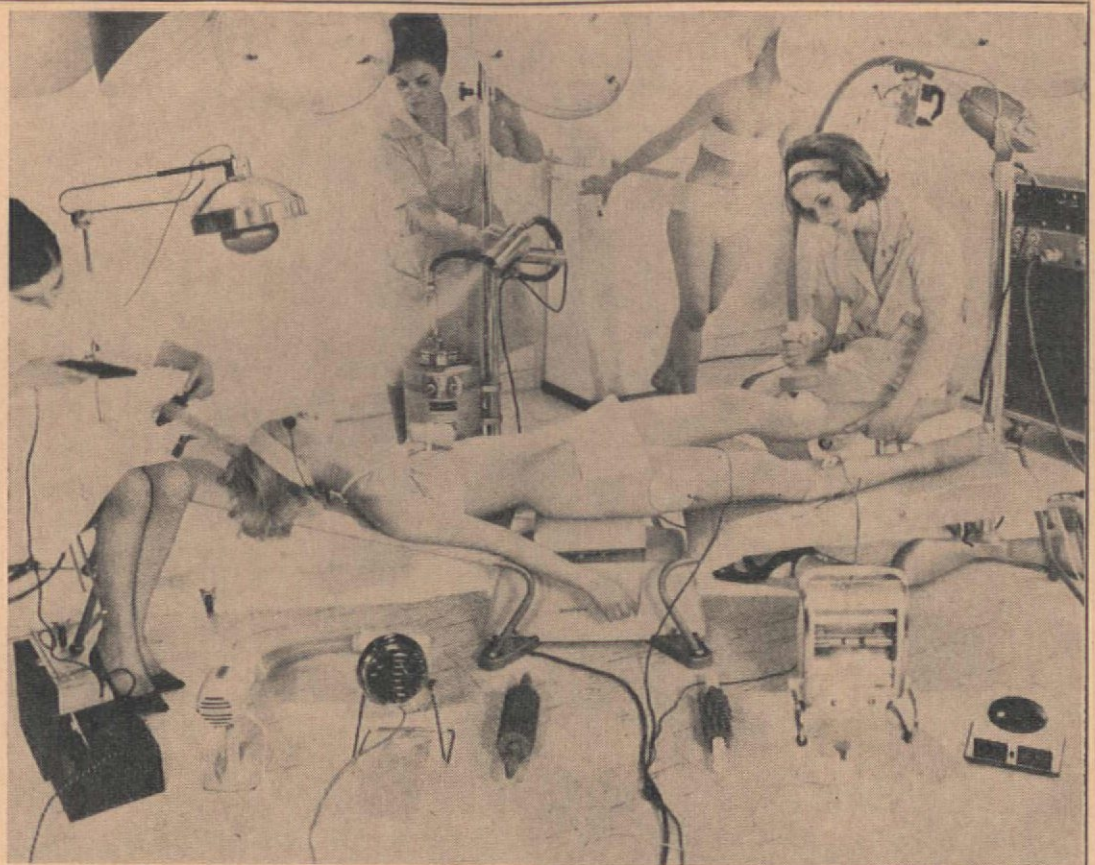
One particular scientific *idée fixe*, which greatly influenced Sigmund Freud, was that primates were obsessed with sex and it was this sexual attraction which held troops together. This conclusion was drawn entirely from extended observation of captive specimens and it was not until the field studies of the late 1930s that it could be conclusively proved that the role of sexuality had been greatly exaggerated by unnatural living conditions.

In human terms Goffman has shown that, in the context of the mental hospital, deprivation of meaningful context can make rational, though desperate, human behaviour seem to confirm insanity, when in reality it merely confirms deprivation.⁸

Searles⁷ cites many examples of schizophrenics whose loss of orientation stems in their own eyes from excessive movement and loss of personal possessions. The movement of the family from one town to another, the movement of the individual from one room to another in the family house, even the re-allocation of desks at a school or the seizure of a favourite chair. In all these cases Searles affirms that '... for such patients ... the loss of various elements of the non-human environment, elements which have become part of the person's body image, may be experienced as a mutilation of the body itself'.

The entire body of this scientific and clinical evidence suggests that in animals as well as humans, behaviour can only be understood in the context of the environment in which it takes place. This is because environment confers its own movements, contortions and vistas on to those who use it, becoming in the process effectively a part of the personality.

The social implications of this contention are



Camera Press

7 **Form follows conflict.** There is a form of environmental hazard which is capable of retreating from the object world into the world of fantasy even as the individual in his alienation retreats into it also. It expresses itself in a conflict of imagery between the external manifestations of individuality and its essence: between the projection of the self that can be seen and the subjectivity which is felt. I have termed this psychic variant of environmental hazard 'cereconflict'. Cere-

conflict is to the modern individual as natural hazard was to primitive man, in that its meaning is to be found in the changes which it brings about. Primitives developed speech and tool-making not to obliterate natural hazard but to conform to the behavioural demands it made on them. Similarly the processes of inner and outer change which result from cereconflict do not find their purpose in the eventual exhaustion of conflict, but in the stimulation, or acting out in projection, of the inner antinomy of consciousness itself.

readily visible in the stratification of status in terms of possessions, type and location of dwelling, and personal appearance. Also in the more intangible benefits which the long genealogy of an aristocratic family confers upon its descendants. The family home, in the case of many aristocratic families in Europe occupied for two or three hundred years by successive generations, offers a unique basis of stability as well as evidence of experience which is ordered in space and time. The human need for this sense of identification is illustrated most pathetically by institutional recidivism—the tendency for long hospitalized or imprisoned persons to be unable to establish themselves in the outside world and instead to seek re-entry to the cell or bed they know.

The deep-seated nature of the contextual impression and its presence as a major motivation in contemporary resistance to change and the rejection of 'consumer product' housing, has not been specifically recognized in architectural circles. Burnham Kelly points out that, 'The largest marketing problem is found in the fact that houses are not mere consumer goods, to be used and thrown away when they fall apart. They are the focus of the basic unit in our society.'⁸ This he explains by a discussion of current systems of house finance, all of which require the dwelling to be an asset whose durability is supposed to be at least match, if not exceed, the term of the loan with which it is purchased. This explanation only partially touches on the true value of the dwelling as 'the focus of the basic unit of our society'. Apart from its viability as a product, which is attested by its steadily appreciating value and potentially infinite life span, the traditional house represents territory in a way that its wheeled or prefabricated counterpart can never do. The language alone in which these rival concepts of dwelling are discussed leaves little doubt as to their relative value in this regard. The house is 'a castle', 'security', 'a home of our own'. The caravan or prefabricated dwelling is 'accommodation', 'emergency housing',

'temporary' or 'mobile'. The key factor in this comparison is the permanent status accorded a house in its relation to the ownership of land, and the non-status accorded the owner of a caravan who buys something to live in but nowhere to live.

This desire for permanence underlies the general hostility to redevelopment plans exhibited by the inhabitants of the areas to which they refer, the relatively large numbers of persons implacably opposed to even the surface appearance of the newer forms of environment, the plethora of organizations devoted to the preservation and reclamation of historic buildings and towns, and the large numbers of technologically aware individuals who prefer to live in the rehabilitated dwellings of a century or more ago. To these persons redevelopment is as destructive as it is creative. The old environments blotted out by the bulldozers are the physical context of human experience. What replaces them is generally pure form, unrelated to persons or to history.

The hostility that the public exhibits to consumer housing is thus as rationally based as its hostility to demolition and redevelopment. Neither of these concepts recognizes the importance of identification with place or known objects, and neither comprehends the significance of the kind of behavioural history that accompanies and stabilizes successive generational occupations of the same dwelling.

In a relatively little known book published in 1961, N. J. Habraken outlined these defects in both the >

⁵ The celebrated experiments with Planarian worms carried out between 1958 and 1961 by J. B. Best and I. Rubinstein in Washington. Quoted in Ardrey, Robert. *The Territorial Imperative*. London, Collins 1967.

⁶ *Essays on the social situation of mental patients and other inmates*. New York, Doubleday Anchor, 1961. Asylums, Goffman, Erving.

⁷ Harold F. Searles. *The Nonhuman Environment*. New York, International Universities Press 1960.

⁸ Burnham Kelly. *The Prefabrication of Houses*. London, Chapman & Hall 1951.

<redemption programme and the short-life dwelling.⁹ He also clearly enunciated the principle stated earlier—that it is in the action of changing and creating it that the individual confers meaning on his environment. Habraken saw the redevelopment process not only destroy existing environments to replace them with memoryless novelties, but also remove individual responsibility for the ordering of environmental space by rigidly establishing identical equipment and layout for hundreds of thousands of dwellings at a time.

The overriding factor with Habraken is an acute consciousness of the importance of continuity in time and place, which he attempts to achieve by means of support structures with a useful life of the order of bridges or dams; thus guaranteeing an unchanging overall environmental pattern in spite of changes in dwelling units.

Because he does not examine any means of retaining the evidence of the past within the dwelling unit itself, Habraken is committed to achieving continuity in the public realm. Consequently his major arguments are directed against the massive increase in bureaucratic environmental control that has taken place in this century under the guise of planning and organization, for it is from this direction that the greatest threat to formal stability comes.

For some reason he does not see any hope of a solution to this creeping paralysis of the creative will in the process of privatization with which the mass populations of western societies have greeted it. For him just as the problems of efficient communication, distribution of resources and maintenance of public order have called forth a massive volume of environmental legislation, so has the political progress of this century—towards equal distribution of wealth, higher living standards, social security and administrative populism—worked against the freedom of individuals to express their subjectivity in the outside world. The result has been an ingrowing privatization, facilitated by media and overpopulation, whereby individuals withdraw into their homes as a refuge from the dangerous exposure of public life.

This process, variously castigated as 'apathy', 'lack of initiative' and 'ignorance', is in fact a perfectly rational response to the confusing and destructive demands of an uncomprehending and largely unsuccessful environmental administration. Habraken's efforts to stabilize the rapidly evolving world of life sustaining systems are doomed before they begin. In this context change cannot be arrested—though this is the desperate dream of preservationists. All that can be done is to equip human space with mechanisms

capable of absorbing the evidence of time and change in order to mitigate the horror of change itself. By incorporating into each successive configuration the elements of all its predecessors, change could be separated from destruction, and loss and a continuum achieved in the private realm which is still to some extent legally and economically protected.

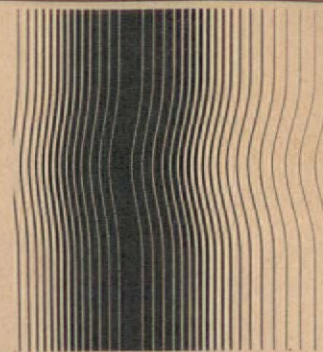
Recognition of the violence done to the concept of a continuous tradition of human identification with place by contemporary notions of mobility and obsolescence, is vital to the idea of context as a part of personality which was developed earlier. George Kubler¹⁰ suggests that to treat the dwelling as a finite object, subject to obsolescence, corresponds to a lifelong sequence of violent and discontinuous changes in time: alternate destruction and creation so complete as to resemble conditions reigning under bombardment, evacuation or earthquake.

Historical evidence seems to indicate that the design, use and retention of objects is an ACCUMULATIVE process like learning or growth. The design doctrine of functionalism on the other hand implies that it is a SELECTIVE process, whereby different conditions demand successive and radically different personality orientations.

The arrangement of objects

An individual populates his own dwelling with objects and information, some of iconic value, some purely functional, some sharing the characteristics of both. No outside observer could ever estimate the subjective value of these objects and messages according to an external scale of values, although in the least inventive and most conventional surroundings he might roughly approximate them. The subjective value of these objects resides not in themselves but in their interrelation, their sequence and their significance as extensions of the personality of their owner. In other words they are not really isolated objects but connected molecules in the atomic structure of the individuals' own consciousness. This factor alone is sufficient to demonstrate the absurdity of the separation between user and designer, and designer-object and designer-subject, that we observe today. It has been calculated that although a very high percentage of the perceived urban or suburban environment is man made, only about 5 per cent is planned in terms of its juxtapositions and sequences. The rest is a confusion of object-disorder, conforming to either random or subjective patterns.

The ideas and images of his own life that the individual entertains are for the most part expressed in this



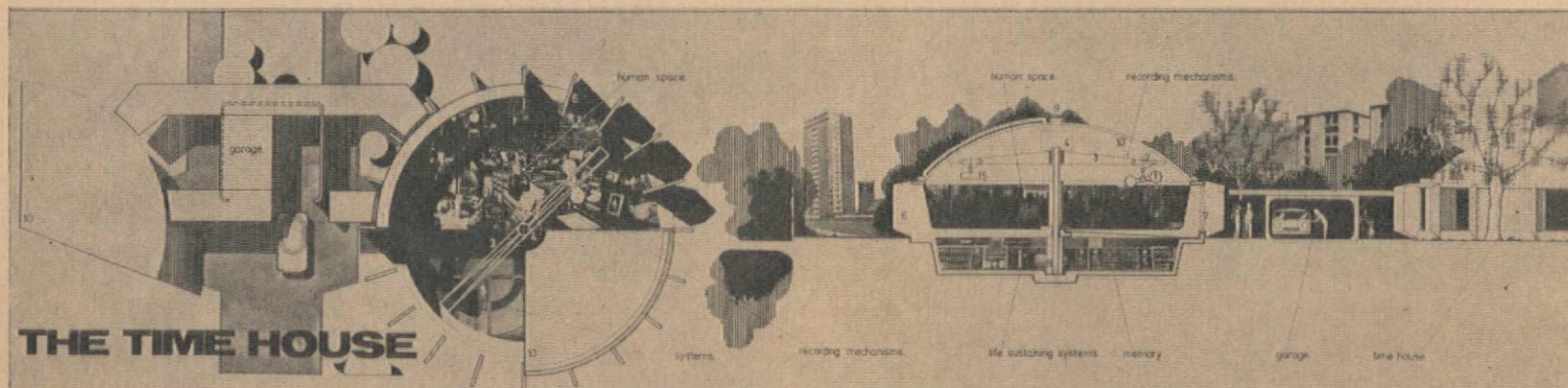
8 'The whole of human experience consists of replicas, gradually changing by minute alterations more than by abrupt leaps of invention.'

George Kubler.

latter world of subjective 'content', where the value system which links the object-evidence of these ideas and images is locked inside the sequential code of behaviour that first gave them meaning. This circuit is unbreakable, it can only be simulated by media, for in the human situation *ideas and images derive from and create content—even when external considerations totally determine form*. Thus value systems as well as ideas and images are expressed in the object world.

In a sense each individual lives in the same world as his fellows only by virtue of his, and their, relationships with the same objects. Either through their universality, as in the case of a cup of tea, or through their uniqueness, as in the case of their own bodies. Proof of this can be seen in any war situation when questions of identification and allegiance are settled by interrogation on matters of national or provincial shibboleth; or in art or entertainment where success often depends on the close observation and reproduction of key associations which link the performer to his or her audience. The 'situation' of these relationships, destined to be forever insoluble to the objective designer, is centred in the fate of the individual to feel and to observe simultaneously. His 'situation' is the relationship between the experience of being and the evidence of being; the relationship between behaviour, objects and time. It is here that Kubler's theory of replication is of vital importance for he demonstrates that behaviour can only be understood as experience when it is repeated, and that only varied repetitions can create a consciousness of time and change. 'Without change there is no history, without regularity there is no time.'¹⁰

⁹ N. J. Habraken. *De Draggers en de Mensen (Frameworks for Living)*. Scheltema & Holkema Ltd. Amsterdam 1961.
¹⁰ George Kubler. *The Shape of Time*. New York. Yale University Press 1962.



9 The Time House is intended to absorb the object-evidence of experience: to listen, see, smell, touch remember and replay. It is to be a neutral memory to externalize the crucial area of the man/object interface, a cybernetically controlled, instant recall system, with a storage capacity measured in centuries. Its mechanisms are intended to work automatically, unobtrusively and comprehensively. Nothing will escape its notice, everything will await recall. This process will give the occupant a new perspective on his existence, for the neutral objectivity of the recording mechanisms which surround him will provide an image totally different from the partial insights of any human observer. The messages he will receive will be discrete from his own recollections or those of other individuals. A good analogy is with the two channels of stereophonic record player: the pure objectivity of the non-human recording

mechanism combined with subjective recollection creates a third dimension in the portrayal of experience. Such a 'picture' is only just technically feasible today; the immense difficulties at a purely practical level—audio filtering to prevent blurring and distortion during conversations, camera movements and positions which are both concealed and still provide meaningful, recognizable images—all these still require considerable research and expertise not all of which is readily available. All that can be certain is that from many and disparate fields of research, from space technology, weapons development, cybernetics micro-data storage, time lapse photography, physiology and anthropology, methods and mechanisms have been developed which if integrated and modified could provide the entire technical matrix for the Time House.

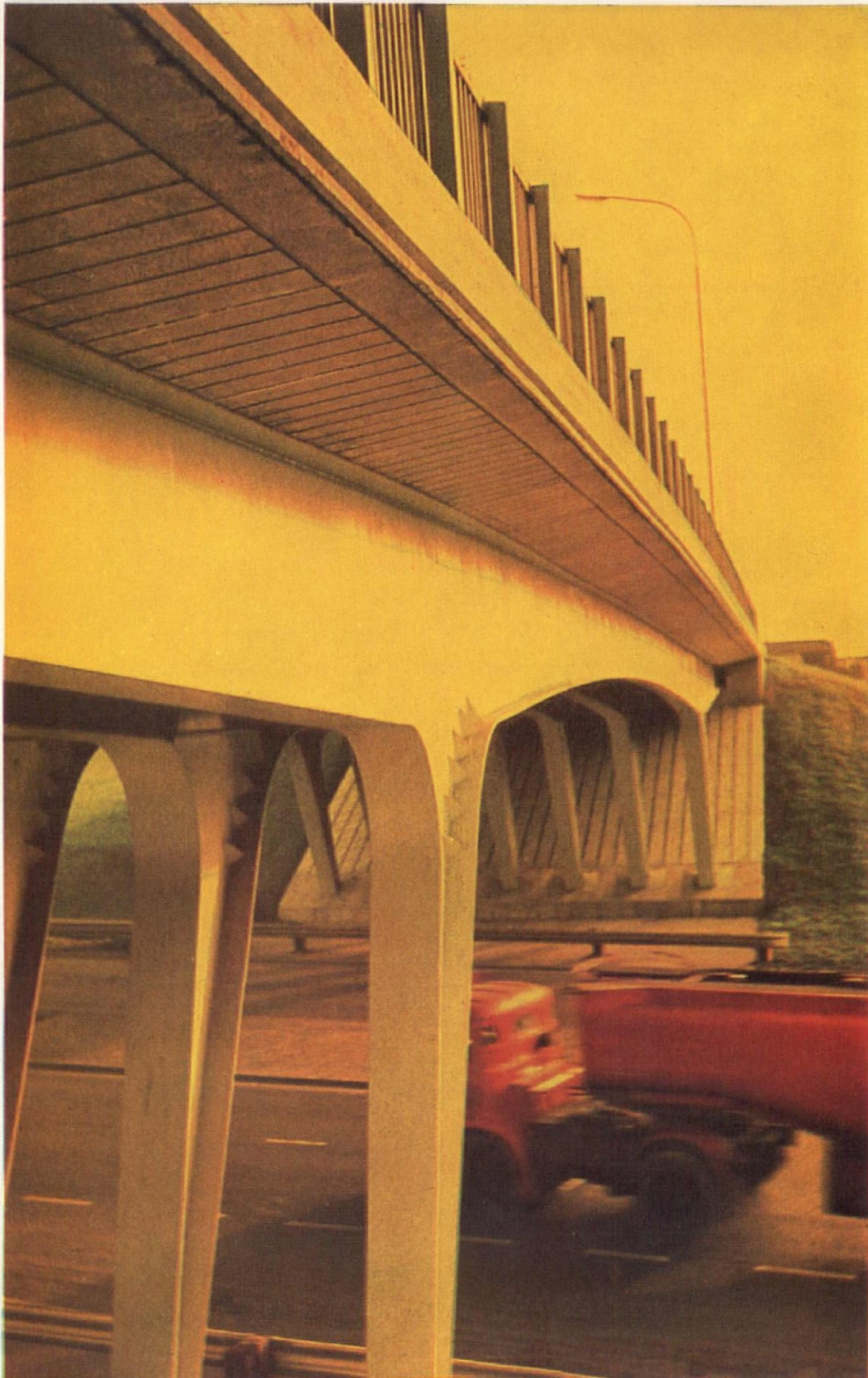
The Time House illustrated is a heavy concrete installa-

tion built for introspection and defence, like a bunker. It has a circular basement for mechanisms; pre-cast concrete floor and fin units (6) with motorized aluminium blinds (7) between, enclosing the living area, and a central pylon (8). Under the optically black aluminium/polyurethane sandwich dome (10) a silently rotating boom (3) carries a camera, microphone and sensor complex (1) which responds to impulses received from ammonia sensors installed throughout the house and continuously records the behaviour of the occupants. The video/audio recording, together with synchronized recordings of other environmental data are transferred to computer tape and stored in the basement memory to await recall in the reply room.

The boom control mechanism (4) automatically adjusts the elevation, depression, pan tilt mechanism (2) and compensates via the counterweight (5).



Design in Steel to keep traffic moving



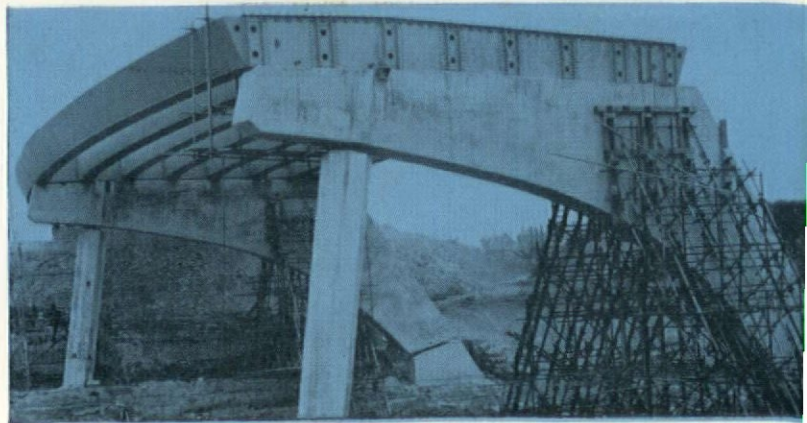
Modern structures in steel, new steels, advanced design and construction techniques, are helping to forge important new links in Britain's road network, and are contributing to our economic development by providing swift, cost-saving solutions to today's traffic problems.

British Steel Corporation



Lofthouse Motorway Interchange involves a complex of eight bridges, and forms the important intersection between M1 and the future Lancs-Yorks M62 motorway. One of its four interesting roundabout bridges is shown at right. These all have a composite deck containing eight curved steel box beams of trapezoidal section. Beams are friction-grip bolted at ends to steel cross-beams mounted on sliding bearings with longitudinal forged steel link connections between decks, stressed by Macalloy bars to the novel banana-shaped 3-hinge propped piers. These can take up two-dimensional movements due to the sharp 400-ft radius of bridge decks. Agent for MoT: County Council of West Riding of Yorkshire. Engineer: S Maynard Lovell. Main Contractors: A Monk & Co Ltd. Steelwork: Robert Watson and Co (Constructional Engineers) Ltd. Steel protective treatment by Metalife Ltd.

Main cover illustration:
Hall Lane Bridge, Upminster.



MOBILITY

Guest editor Brian Richards

Mobility is an aspect only of the wider field of communications. The unprecedented growth of car ownership in recent years and the resulting chaotic conditions in environment has led us to concentrate here on mobility alone and mobility in the restricted sense of movement within cities. Our first article (overleaf) celebrates the traffic of Los Angeles, where there are more cars per head of population than anywhere else and where there is more real hardship for those without cars. Public transport is certainly failing. The impossibility of providing for full car ownership without providing alternative means of transport is gradually being appreciated.

By way of contrast Stephen Mullin reports on Cumbernauld, the first British town to be designed for full car ownership.

The paper by Dr Pahl raises the question of the degree and importance which should be attached to planning for mobility. Is it not more important that places to shop and relax in should be near the home and within walking distance than the places to drive? Will increased leisure and communications (not to mention traffic congestion) prompt more families to spend weekends at home?

Such questions lead to a consideration of the quality of environment, and the cost of providing it, first raised in the Buchanan Report but still largely ignored; thus to an article by Alison Smithson concerned with an approach to designing for the car in existing towns.

Urban motorways in the American city (such as Boston) have often been responsible for its partial destruction, and their relevance in this issue is in the light of the proposal in London to spend £600,000,000 on an inner 8-lane motorway. Of particular interest are the studies shown for Baltimore in which the architects (Skidmore, Owings and Merrill) are involved at the start, working alongside traffic engineers instead of under them. However, in most cities today there is still a lack of clarity as to the actual role urban motorways should play. Do they simply tip more commuter cars into the city centre or are they built to reduce them, taking out through traffic, and used by essential vehicles, service trucks and express buses? Yet of all European cities engaged in construction of urban motorways and rapid transit, only in London are there plans to coordinate both under one authority.

Two articles discuss the role which public transport must be allowed to play if it is to succeed: the first stresses primarily the need for co-ordination between all the various authorities and particularly the city planners, at the start; the second the need for development of a wider range of hardware if it is to be really used by a largely car owning public.

Lastly the South Hampshire study is discussed, for it shows more clearly than any other the possibilities and advantages of establishing networks to relate land uses and transport.

What does one really ask of a mobile society in the future? . . . Not very much. Freedom of choice to move in a variety of ways, a wide range of decent places in which to live and work and play without necessarily relying on the car. Above all a safe, quiet environment served but not dominated by the car, or any other form of transport. The lessons learnt by the US are rarely absorbed in Europe, as the signs of deterioration by traffic in Florence, Paris or London show only too clearly. Can we really achieve sane environment in one go, and avoid messy in-between stages?

**Studies are now under way at the Texas Transportation Institute into finding out how buses can be given rights of way on freeways.*

UP THE DOWN RAMP

Warren Chalk (Archigram)

There's a little bit of VIP in all of Us. All those 'only-when-you-get-to-ride-in-a-millionaire's-car' things in a Plymouth. The Plymouth VIP. . . . And The Beat Goes On. . . .



This is Los Angeles, alluring city of the Angels. Los Angelinos instead of spreading their wings however, are doing their thing, out there on the freeways—'Widetracking', as the General Motors ads have it.

A strong case for LA affecting a whole generation of designers was made by Cedric Price, at a Victor Gruen lecture in 1962 at the Architectural Association. It was one of the first significant documented recognitions of Los Angeles as an alternative city prototype; an acknowledgement of suburbia and of the significance of the automobile. There is little point in raking over the fires of old controversies; of prolonging the argument for or against centralized cities or sprawled suburbias. It may not be an either/or situation, Los Angeles being what it is, neither city nor suburbia, but megasuburbia. All one can say is that it is a categorically different environment from European and American/European city patterns of the past—an extensive network of freeways and mobility patterns that has undermined and destroyed the concept of a single centre city, and given new value and multidirectional meaning to suburbia.

According to one observer, this is a city of illusion, 'anything may turn out to be anything else, and there is no way of knowing because nothing has a shape of its own. This is why Los Angeles has the best and the biggest signs in the world...without them, the orientation of Southern Californian man would be obscure; he would have no way of knowing where he is or who he is. Most people on the planet know who they are. And,

if by chance in doubt, a glance around them gives the answer. Not so the Los Angelino. If he is in a thatched Tahitian hut, he must ask himself, am I in the South Seas, Disneyland, or in a restaurant on La Cienega? Then he may discover he actually is in his chiropractor's waiting room, or at a local supermarket's pineapple sale.'

Los Angeles, in short, is an ephemeral experience of low key or non-architectural situations that have to be seen to be believed, lived in to be understood.

White Hat Special

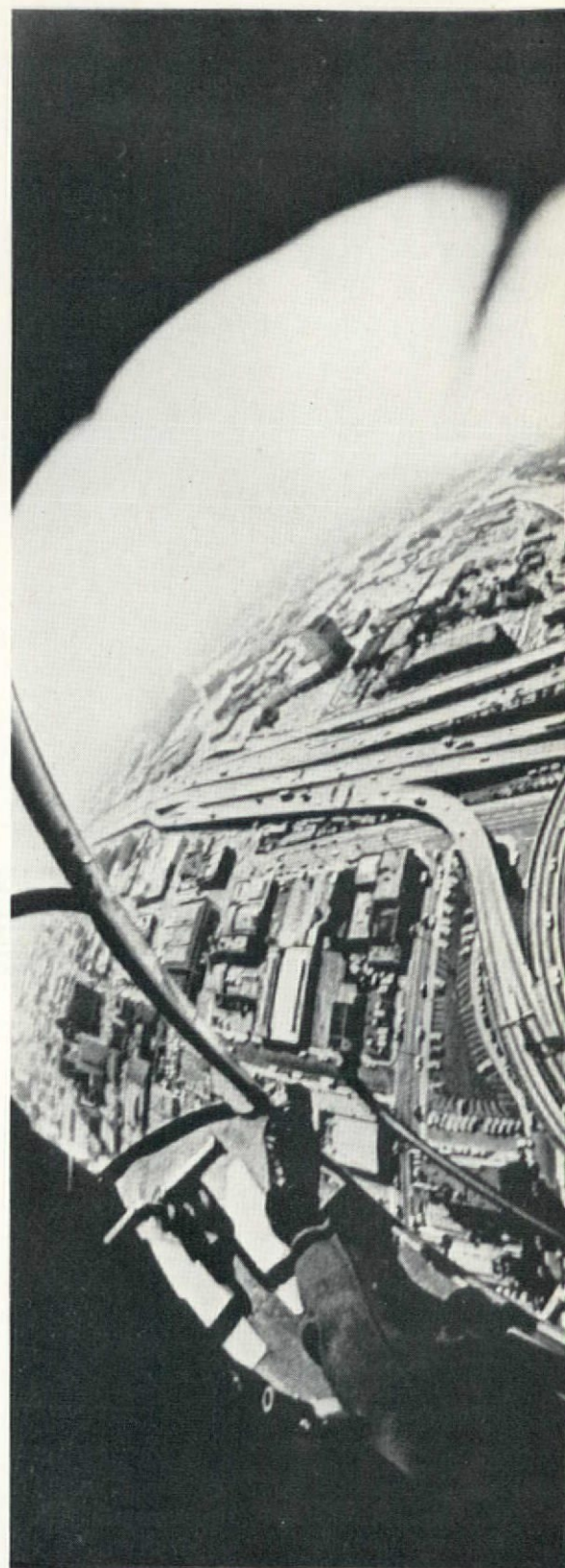
See Your Dodge Boys

Tell Them The Fever Girl Sent You

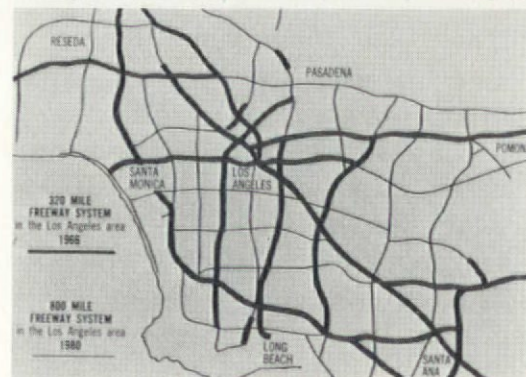
Dodge Fever

This is not a city for aesthetes or architects' architects, who, although they may deny it, arrive, grub around looking for Schindler houses, and pass on angry, bewildered or even hopefully feeling obsolete. This is no European black and white situation—high art and architecture on a pedestal. Here everything works, but nothing is more important than anything else, it's all the same. But if one has to single out one major coherent factor—significant city object—it would be those land piers, the freeways.

The effectiveness of the Southern Californian freeway system and its ability to handle the mounting volume of traffic is incredible. This is the most spread-eagled, and consequently, car-conscious city in the world, and its freeway system, designed to meet a very special demand, is the only system so far, that fills that need. There are



Helicopter air-watch pilots over Los Angeles relay warnings



800 miles of freeway are planned for Los Angeles in 1980; 1000 miles of motorway are planned for the whole of Britain.



of course, complaints—why with this super system should not traffic flow be more fluid and peak hour congestion overcome? What is forgotten, however, is that only 42 per cent of the projected 800-mile freeway system has so far been completed, handling 30 per cent of the weekday traffic. Between 1980 and 1985—the target date for completion—the LA freeways will be capable of handling 60 per cent of the total traffic.

One trouble seems to be that the excellence of the system heightens the LA obsession with the automobile, leading to frustrating congestion at peak hours. To alleviate this, 'Sig-Alert' broadcast warnings of obstructed routes, accidents, and pile-ups. Motorists may then select alternate routes to avoid trouble spots. Over radio station KGIL, helicopter air-watch pilots relay warnings of blockage on the freeways to drivers below. These whirlybirds, called Sky-Knights, not only control traffic, but have played a large role in reducing crime and maintaining order. In fact, the chopper may be the best police tool, since the LAPD radio prowler car.

Finally, however, responsibility lies in the hands of the driver. A recent Chrysler Corporation advertisement asks, 'Is your sixteen-year-old son a better driver than you?', and goes on to list ten points to better driving. More interesting is the fact that car dealers for the same corporation, since 1964, have loaned over 33,000 cars to more than 40 thousand high schools and colleges, free of charge, for driver education courses.

Not all Angelino's are good drivers. But Americans are, by European standards, very well disciplined and obedient to the lore of the freeway. 'Dig those crazy Los Angeles freeways!' reads the post card; and driving on them, negotiating intersections, with the essential pop music of the Charlie Tuna Show, or Wolfman Jack coming over strong on the radio, is an exhilarating, strangely enjoyable experience.

Amid the incredible press of new cars you realize that this is indeed an automobile culture. With forty yellow pages in the phone book devoted to the automobile, Los Angeles has reached the threshold of private personal mobility. In the downtown area alone over 66 per cent of all available land space is utilized by the automobile. This is Autopia, the mobile city. Freedom is a motor car. To hell with traffic engineers, architects and planners, the car is not just a means of transportation, it is a way of life. What is required, before a positive approach to the urban transportation dilemma can be found, is an unselfconscious responsibility to society, rather than a hidebound preconception.

Consumer choice demonstrates that the car in spite of its inadequacies, is the most efficient, adaptable piece of urban transport hardware so far devised. From the standpoint of the ultimate user, it cannot be equalled in performance. It is the strongest candidate for delivering the goods and the goodies. The car is, in turn, freedom, choice, mobility, status symbol, toy, sex symbol. It is also a myth and a God. In what other city are you a second class citizen unless you own

a motor car? Unfortunate people without wheels are forced to ride buses, but the system is slow and inadequate. In spite of Reyner Banhams' optimism, a bus ride across town can take hours. In a city measuring, from Malibu to San Diego, Santa Monica to San Bernardino, some 70 miles by 40 miles, walking is such an absurd proposition, that freeways are dreary stretches only for the car. And certain areas, such as Beverly Hills, have no sidewalks, and pedestrians run the risk of being picked up on vagrancy charges.

It Speaks Eloquently About You... Yet Barely Whispers...

Wherever Cadillac Goes, It makes Complimentary Remarks about Its Owner... Speaks Softly About His Determination To Drive Performing Luxury...

The car is a communications medium. Passing through the environment, it conveys a message, Regardless of how arbitrary as a communications device to the uncommitted observer, it exists strongly in the mind of the owner; a fetish, womblike comfort, phallic power and speed, satisfying the inherent gregarious nature of people to see and be seen. Wear your new car like a new suit of clothes. All the good things of life, instant door-to-door mobility, articulated obsolescence, mobile wardrobe, garbage can, air-conditioner, stereo and ashtray embody the car.

Customizing veteran Dene Jeffries, reduced to painting white rally stripes on a 'Boss Yellow' Camero, shrugs off the whole personalized Kandy-Apple metal flake thing of the early 60s, as just a passing fad. But three years after Tom Wolfe's *Kandy Colored Tangerine-Flake Streamlined Baby* first hit the book stands, a visit to the custom car show at the Anaheim stadium near Disneyland, dispels all doubt, closes the gap. It is still very much the same—noise, people, and a rock-and-roll band with mini-skirted teeny boppers clustered round the stand; and then there are the exhibits, the kicky hot-rods and customized cars. Unlike the shockproof design conscious paint jobs of Binder-Edwards and Vaughan, the Kandy Kolers are brash, belligerent, and wholly delightful; guaranteed to produce real cultural convulsions in most Europeans.

There is another side to this too. The Detroit stylists, conscious of the people's interest and involvement, have had to adjust their skirt lengths. Aware of changing trends, the swing is towards a more continental sports look. Mercury Cougar, Ford Mustang, Chevrolet Camero and Corvette, are all trend-changing, in spite of futile attempts by pressure groups to put the accent on safety. The number of imported sports cars in the showrooms along Wilshire is another indication; high powered swooshers... The GT's like Lamborghini's Miura V12, Toyota 2000, Jaguar XKE, and the New Porsche 911L. The city's wealth and opulence provides, in the luxury class, a situation second to none. Where else can one see three Rolls Royce parked in a Beverly Hills driveway? A real 'his', 'hers', and one for the maid shakedown. Conspicuous in this automobile environment are the intrinsic car oriented structures, the

Blockage on the freeways to the drivers below



This is Autopia, the mobile city. Freedom is a motor car. To hell with architecture and planning; the freeway is all.

immediate service satellites, garages, gas stations, body shops, automotive repair clinics, car washes, and driving schools. And the second generation drive-in parking structures, cinemas, banks, markets, stores, and even crematoria—the outward signs of a mobile society.

Detractors of the motor car in Los Angeles, may have a legitimate beef with smog as one of the visible signs of this Autopia. The fumes from the exhaust of four million cars held by inversion between a layer of cooled surface air coming in from the Pacific and a layer of hot air from the desert, give air pollution control officials a headache. There is talk of gas rationing, and laws stipulate that new cars have anti-smog devices. But they are about as efficient—and ease the conscience as effectively—as a filter cigarette.

Possibly, the car technologically is a low capability, high performance piece of turn-on. Along with the helicopter, transistor radio, and portable TV set, it is also one of the most significant urban toys. A model for the kind of instant feedback necessary to create a random responsive environment.

New symbols of new myths will have to be devised around the new modes of transportation if they are to succeed—to become acceptable and desirable in the mind of the public. Only then will the all-pervading myth of the automobile be dispelled and replaced permanently and irrevocably.

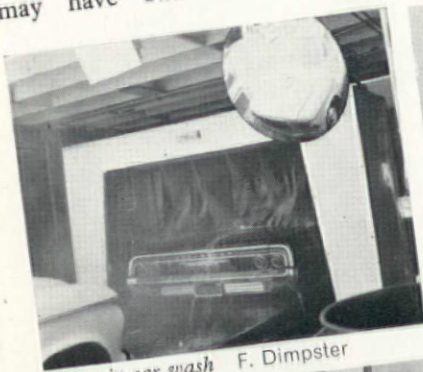
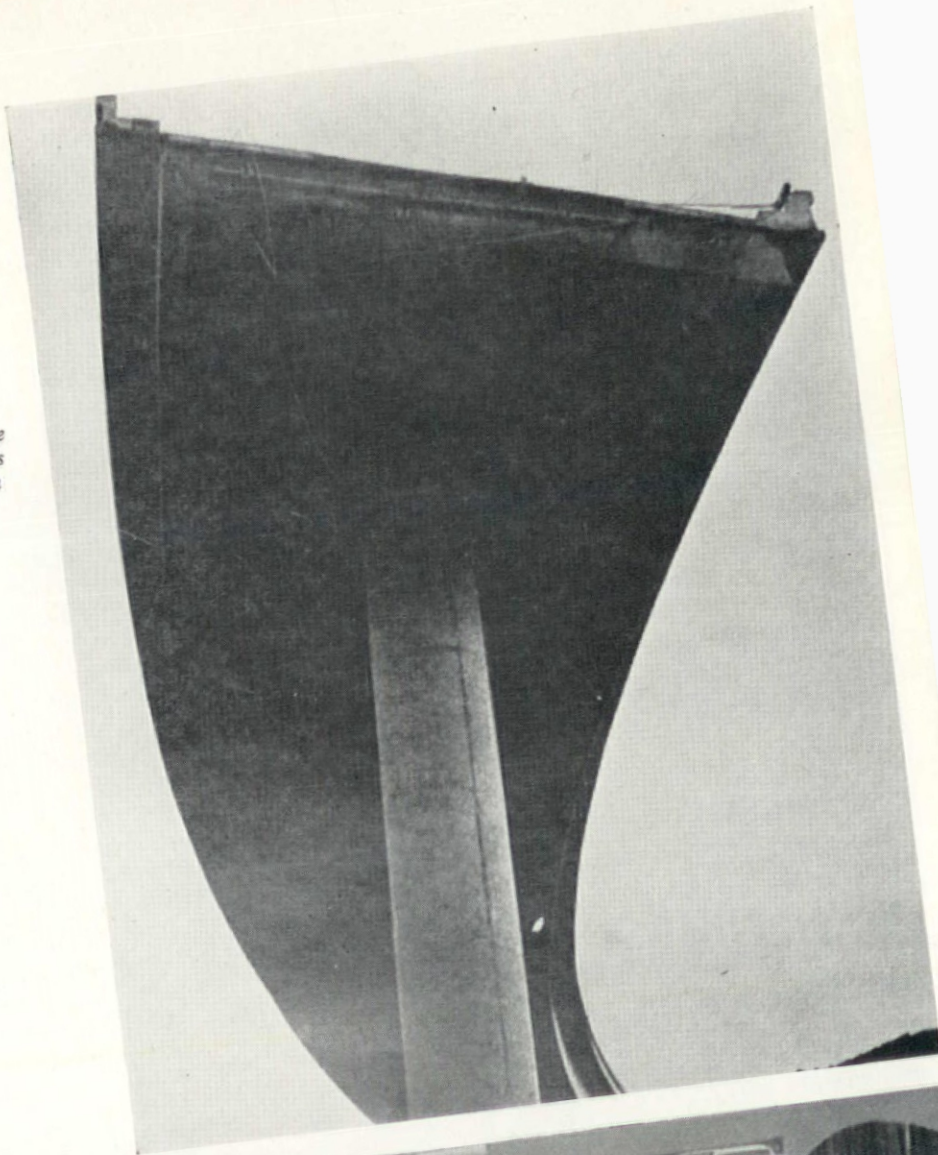
It is possible that Los Angeles was at its peak as a new city prototype in the fifties and may have outlived its usefulness. The

Where do you go from here?

Freeway inter-sections in the Los Angeles area are often constructed with connections not yet intended for use.

The gaps in between represent areas of the city that are still too expensive to be readily bought up—or are still under negotiation. A gentle way of bringing down the value of the disputed property is to build such a connection and to leave it thus, hovering overhead.

Photo: LA Times



Drive-in car wash F. Dimpster



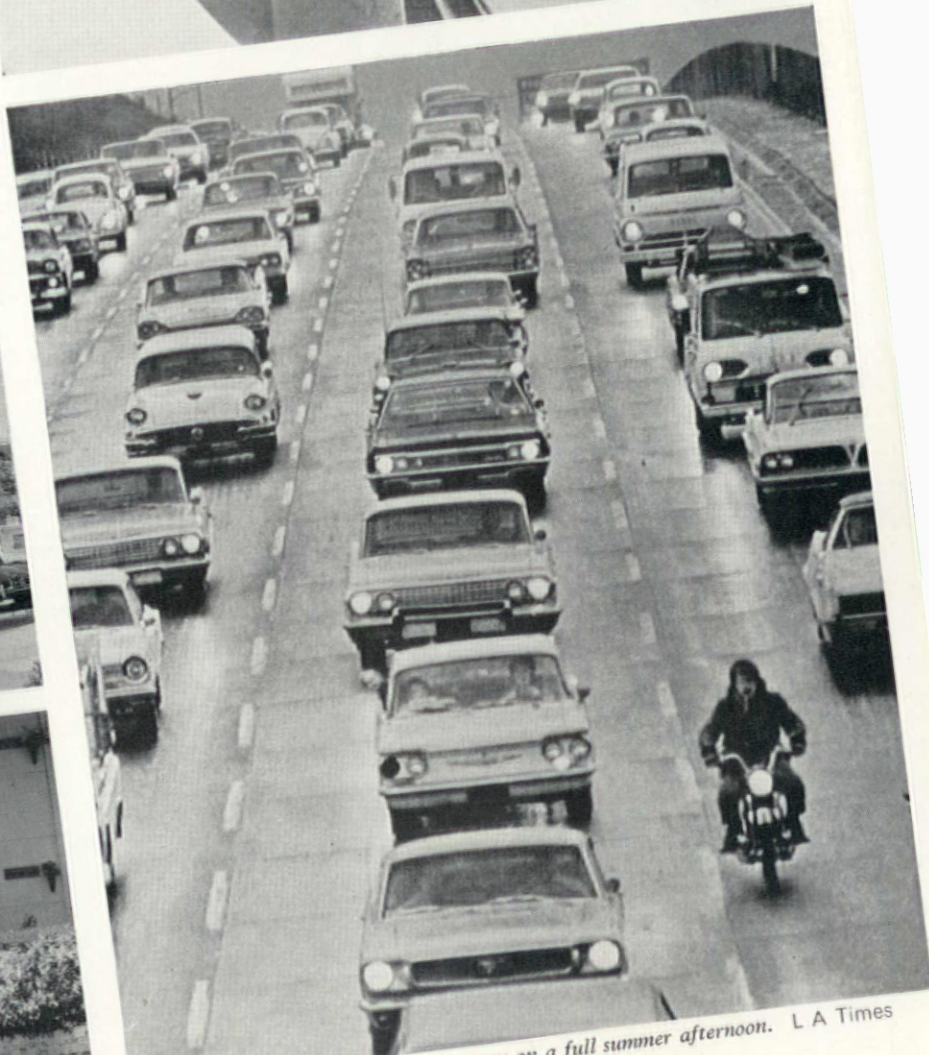
Drive-in restaurant F. Dimpster



Drive-thru restaurant F. Dimpster



Drive-in mortuary F. Dimpster



Smog on a Los Angeles freeway at 3 pm on a full summer afternoon. L A Times



Conspicuous in the automobile environment of Los Angeles are the car-orientated structures, in particular vast space-consuming parking lots, such as that surrounding the Dodgers Stadium, 1000 Elysian Park Avenue, shown left. This and thirty-one other automobile deserts are superbly recorded and commemorated in *Thirty-four parking lots* (1967) published by Edward Ruscha, with photographs by Art Alanis. One of them, *The Beeline Gas station*, Holbrook, Arizona, is from another of Edward Ruscha's publications in honour of the automobile environment—*Twenty-six gasoline stations* (1962).



system of values over the last fifteen years that it represents is due for reappraisal. It is alarming the way local planners are trying to shape the future of the city on patterns of the past—struggling up the down ramp with archaic preconceptions for building up central areas with simulation New York, Chicago high-rise, or introducing projects for rapid transit down the Wilshire corridor. Neither of which are as revolutionary or remedial as the experts would have us believe.

We need to tear away the layers of professionalism; change the rules of the game; alter the context in such a way as to recharge the whole organizational value structure.

People have perceived the world and responded to it, usually, not through their own potentialities, but through a limited spectrum, made functional by external stimulation. Hopefully we may enter a phase where man learns to play games with the new hard and soft ware at his disposal.

Right now, the Angelino 'Widetracking' indicates a try-it-and-see attitude, reflecting a total rejection of any tight-up scene—heedless of the criticism accompanying any innovation. Curiosity working through self imposed spectrums reveals the symbolic power of LA and its motor cars.

A sign on the freeway signaling an off-ramp evokes a simultaneous succession of customized responses. Similarly the car symbolizes a life style difficult to ignore.

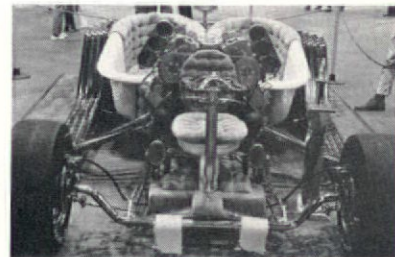
Consumer excitement generated by a better alternative, characteristic of the space age, blows the mind.



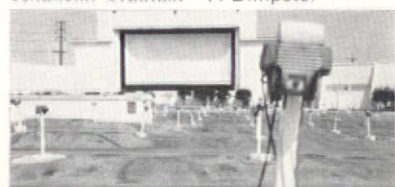
Brash and delightful Kandy Kolors cars—with matching accessories—are shown at the Anaheim stadium.



A UCLA campus garage, parking for 2600 cars F. Dimpster



Customized 'bathroom' car at the Anaheim Stadium F. Dimpster



Drive-in cinema F. Dimpster



General Motor's advertisement for a Pontiac car—a toy, a plaything, a sex symbol

Alterations likely in inclement weather— (12 noon) The

DAY TRIPPER

Two legs good: four wheels bad

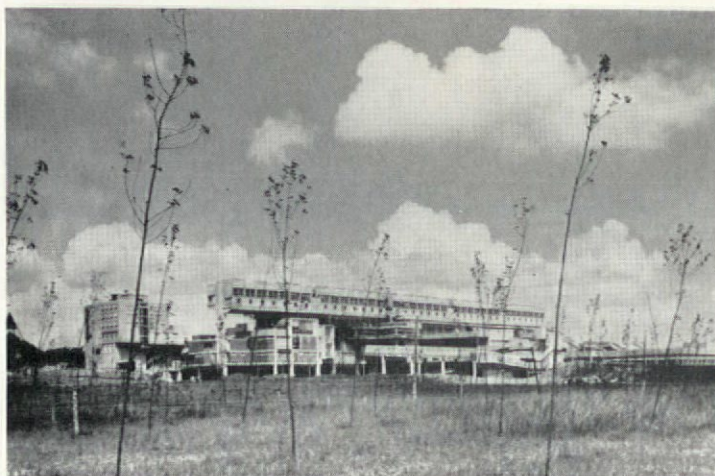
Cumbernauld is a consummate visual confidence trick. It's big. Those steep hillsides may give an illusion of compactness, but that's all. They also make it a real old slog up to the centre 2: by necessity Saturday morning shopping is a family affair—one to trundle the pushchair and one to actually carry the kid on the way up. It's details like this that make you uneasy about Cumbernauld from the start. There are others. I suppose I arrived with Cumbernauld at its best: a fine Saturday morning in late May with the shoppers crowding in from all over town. Even so, there was what Clacton would call a 'bracing' breeze, and it didn't need much imagination to see what the equivalent situation would be in midwinter.

But here is this (nominally) enclosed town centre with all the approach routes running through a *cordon sanitaire* of windswept greenery 1. Here is a metropolitan microcosm in concrete where the essential sinews of multilevel movement—the lifts—are apparently so fragile operationally that children under 14 are expressly debarred from using them 3. Here, above all, is the street where I live, in shrinko, miraculously transferred to the flight deck of a concrete aircraft carrier. The sense of *déjà vu* is overwhelming. The least appealing features of urban life are faithfully reproduced. Beer bottle trolleys rumble along the penthouse access gallery in a storage/servicing foul-up caused, apparently, by a last-minute change of use on the northern penthouse range. And the view from that gallery 4 is an exact replica of that from my own back windows: corrugated PVC, asbestos and Vent-Axias.

These are random grouches. But they do illustrate, symptomatically, Cumbernauld's basic flaw. On every level, it seems, existing movement/enclosure systems have been reproduced at such a scale or at such a frequency that their drawbacks have been intensified and their advantages rendered null. This eclectic approach makes it impossible, for example, to raise a taxi or a cigarette machine in the centre, whilst neglecting to provide the warm, draughtproof environment which might render those needs less pressing. It is an approach which glorifies the pedestrian, yet omits to provide him with protection from the weather 5; which compresses the Radburn system into a road network of such serpentine complexity that children can and do play with safety among the crawling cars; which shrinks private gardens into non-existence (as in the much photographed Seafar section 6), yet forces the householder to walk many times the distance to his automobile than would obtain in a normal suburban residence. And again

'My wife won't walk to the centre when the weather's bad: she'd rather go by bus to Glasgow for the shopping.'

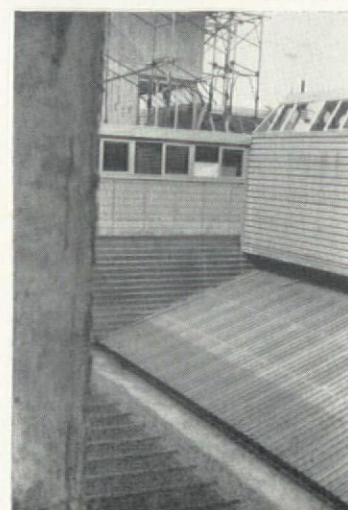
'You'll find that we all operate as parish churches, whatever the denomination. It's just too tedious to go by car, what with the ins and outs, and most people prefer to walk. We were asked to plan for 70 cars: we got it down to 50, then 30. Now we find we get a maximum of six cars for a full congregation.'



John Donat



2



4



3



5

John Donat

Royal Party will drive up the southern pedestrian approach

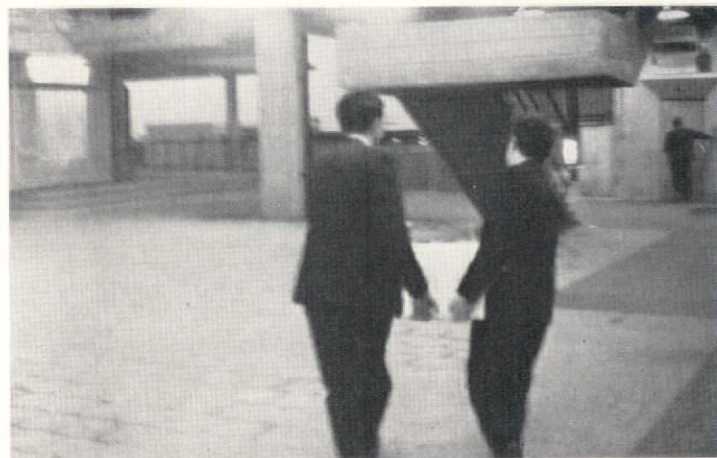
A comment on Cumbernauld at population 24,000 (46,000 to go), by Stephen Mullin, a non-driving 24-hour pedestrian user of an existing city centre (London). He spent 28 hours in Cumbernauld.

(From The Royal Visit to Cumbernauld: an official programme.)



John Donat

6



7



8



9

and again one returns to the concept of the central multipurpose spine as the primary distortion factor.

Cumbernauld drinks and goes home

It's not Cumbernauld's fault that it happens to be in Scotland. But at 10 p.m. the Golden Eagle, the Kestrel and the Falcon all close, and that is it, as far as Cumbernauld Town Centre is concerned ⁷. On the upper terrace the Abatone fish bar keeps going till eleven. After that the centre is deserted, except for a few drunken stragglers weaving their way down the centre of the spine motorway ⁸. (After all, it's the best lit route out of the centre, and there's scarcely a car to be seen, except for the odd learner driver practising U-turns round the *piloti*). The window shoppers on their way home are gone by ten-thirty ⁹: beyond that the only sign of activity is round the telephone booths. If anything can restore one's faith in the idealism of the younger generation, it's the sight of Cumbernauld's teeny-boppers spending their last sixpences in an attempt to find out where the action is. It could have been in Glasgow. But the last bus left there at ten, and it's a rough city to be stranded in and have to phone the parents. There might have been a dance in Kildrum. If so, it'll be a month before there's another. Above all, there's nowhere big enough and warm enough to do anything in. The discothèque on the top level is too small for dancing. Like the bowling alley next door it's part of the north side penthouse rethink: a slice off a very restrictive length of salami. The bowling wasn't open when I was there: the lanes had been pretty rough and the patrons had taken it out on the leatherette. But there was a market, all right, for the discothèque: Sunday morning and the kids were waiting there half an hour before opening time. At least they were under cover.

It's not good enough, and it needn't have happened that way. The problem is not peculiar to Cumbernauld—it hits us Levittowners just as hard—but it's not insuperable either. Granted that for those too young, too old or too infirm to drive, the automobile cannot provide the easy way out. Granted that in a new and isolated community the working-up phases are bound to be difficult. But if these are the problems, why not forget about self-contained towns as such? Why not phase in flexible, localized enclosures as housing construction proceeds?

But Cumbernauld works on the Hook fallacy, that the traditional areas of choice which the city provides remain constant, whatever the population level. In other words, if you slice the cake, everyone gets a nibble at the cherry in the middle, disregarding the

'There's not many folk come in from outside to shop. You haven't the space for Woolworths and that. And it's all too small.'

'You want to get a scene
going here, poetry
readings.'
'Well we had the children's
theatre.'
'Well that's an advance,
that's cultural therapy!'

fact that without a cake to start off with there's no justification for the cherry. Couple this attitude with a prolonged building programme and a rigid architectural framework and you really get the worst of both worlds—generalized facilities incapable of the switch to the specialized needs of the burgeoning minority groups which a larger population will bring.

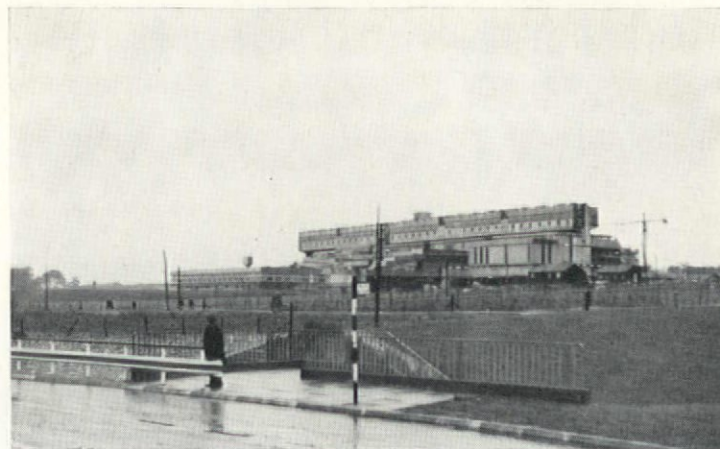
The crux of the problem lies in an assumption that all shared facilities form a uniform set, whatever the age, sex or personal peculiarities of the user; that all of them will possess a similar degree of particularization, and that all will benefit from mutual juxtaposition. On the contrary, there is surely a definite correlation between the speed, comfort, frequency and format of various movement systems and the relative degrees of specialization they can service. To bring the restaurant-in-the-converted-farmhouse, the drive-in supermarket and the corner store together in one concentrated blob not only confuses the issue on catchment areas, but cripples the very effectiveness of the movement systems on which they rely. In this respect, Cumbernauld Town Centre is not just irrelevant, but positively dangerous.

The man/machine interface

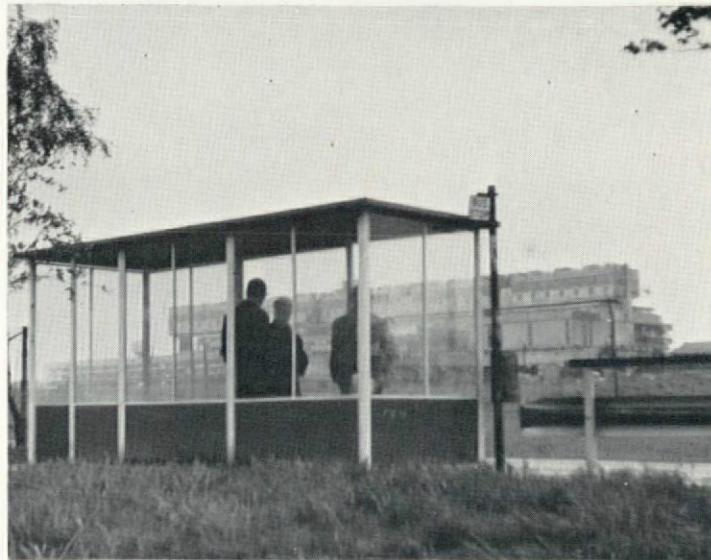
Saturday morning was fine and bright. Sunday morning and the mist closed down over Cumbernauld like an old army blanket. I walked down from the centre to the station on the southern boundary. In a way, it was a hypothetical exercise, since no trains run on Sunday, but the weather's the same, trains or no trains. And when that wind gets going, beating a cold needle spray into your face, you forget it's a south facing slope and you don't linger on those ramps and terraces a moment longer than you need. If you happen to want a bus that goes anti-clockwise on the loop distributor, then you're really in trouble, as they haven't built any shelters on that side 10. In fact, as the buses run at half-hour intervals (hourly on Sunday) you simply can't use the service on an impromptu basis—my test for a reasonable public transport system.

The most interesting feature of Cumbernauld's (fairly) rapid transit system is the staggering lack of thought that has been put into the matter of getting off a bus. Boarding is a simple problem, and Cumbernauld handles it deftly enough. The branching streams of pedestrian movement are funnelled together at underpass points, turned up the slope to the roads, and inserted into a one-way baffle shelter 11. But a busload of passengers alighting at a stop turns the whole system upside down. They immediately become a branching crowd again, making a bee-line for the destination in hand. Catch them going through that baffle 12. Catch them, indeed, going down the slope, under the road and up again when they can walk straight across the road and no nonsense. And they do, and the map of accident blackspots shows an alarming correlation with just these crisis areas. Just like the dear old Tottenham Court Road, London.

The situation is equally bad in the town centre. Here there's no shelter at all, just an



10



11



12

John Donat



13



14



15



John Donat

16

oily wind tunnel. It seems fantastic that one should emerge from a moderately warm and comfortable motorized capsule into a (nominally) sheltered area through a force nine gale 13. All right, so I'm exaggerating. But it *feels* like that, going up the ramp (no lift, no escalator). And the solution would not have been impossibly expensive—a yardage of corrugated PVC could easily do the trick. What is it that makes architects sensitive only to the visual sector out of the whole range of human sensory response? Too much Chandigarh, too little meteorology? Whatever the answer, Cumbernauld carries on the fine old puritan tradition that man should make visible atonement for the sinful pleasures of the internal combustion engine.

But to return to the railway station. It's scarcely a transport interchange; in fact it's just an ordinary rural railway station. Which is odd, since it's presumably about the only bit of working equipment that was on the site originally. There's the usual open bus shelter, the usual wrecked cars lining a dirt track to the road and the usual sprint across a busy highway to a windswept path on the other side. Presumably some sort of underpass will eventually be built. Presumably there might even be some sort of covered way to the bus stop 14. But I'm pretty sure that one will never be able to walk from the train to a parked car without catching the wet on the way, and that seems rather rum for a town which was planned for the motor age.

Of course, these examples are by no means peculiar to Cumbernauld. But they do illustrate the extraordinary compartmentalization which we still apply to various movement systems. What is the Jekyll and Hyde change which overtakes the pedestrian when he enters his automobile? Do his shoes suddenly become less susceptible to puddles, his body less sensitive to wind? Why do the pedestrian encumbrances for which Cumbernauld so solicitously provides — fractious children, wheeled shopping baskets—so mysteriously disappear when he has to negotiate a flight of steps and heavy self-closing doors on his return to the parking lot? Perhaps such traumatic experiences are an inevitable consequence of the old English vice of compromise.

For in Cumbernauld one can see with unusual clarity the results of a misplaced attempt to combine widely differing movement systems, each with their own speed and location scale, into a closed cycle of finite size which takes no account of the time-lag between inception and completion. The town is too dense for localized automobile transit, yet too dispersed to provide for adequate weather protection for those on foot. It is too large for cross-town pedestrian movement, yet too small to support a continuous use public transport system. It has the seeds of an impossibly high price for both present and future generations. For the one, millennialist self-sacrifice: for the other, an embarrassing degree of forbearance for the inaccurate predictions of its predecessors. And Cumbernauld has remarkably little slack for corrective procedures on both accounts.

'I wouldn't mind living in East Kilbride: it's a pleasure to drive around that town'.

IS THE MOBILE SOCIETY A MYTH?

R. E. Pahl

This article first appeared in *New Society* 11.1.68

Planners, architects and all those concerned with the built environment are now familiar with one vision of city-region living in the twenty-first century. In this vision, the home is seen as a sort of base to which mobile metropolitan men, women and children return after a day's work at school, office or factory, generally sited 'an easy half-hour's drive' down a scenic motorway.

This diffuse and dispersed activity pattern is said to be a logical result of the projection of present trends. Weekly shopping is described as 'an expedition' and needs father to lead it. Education, too, involves more travelling. The reorganization of secondary education very often means larger schools in central places and more children travelling in school buses, perhaps from the age of eight or nine. Colleges of further education, regional colleges of technology and the new polytechnics all draw in young people from large catchment areas. Students commute from home or lodgings every day: Clacton, Morecambe and Herne Bay become student dormitories for the winter.

The journey to play is also an accepted part of our culture. The petroleum companies are selling the countryside hard, with maps and guides for getaway people 1, 2. Speed is sold as a commodity and speed without a destination sells less well: the pirate radio stations used to urge their presumably youthful audience to drive out to various events, happenings and places: simply to be present was important. The outer metropolitan region is becoming part of London's playground. The weekend is the time of the 'go to' and the lack of 'go to's' is a frequent cause of complaint: 'It's all right for the teenagers but there's nowhere for me and my wife to go to.'

It is this kind of thinking which has led some people to believe that the hierarchy of central places which makes up our settlement pattern is outmoded. People do not live in 'places' any more—they live in a region. Small-scale (and by implication small-minded) planning, which conceived of clusters of new towns or garden cities of a mere 30,000, is a thing of the past. Now, it is asserted, we need grand regional strategies. To add six million people to the present 17 million in the south east by the end of the century would require ten new towns of 100,000 each and, given the speed at which we can build them, we would have to start building now. However, happily, some claim, we need not worry about that:

with a regional strategy for growth zones and growth corridors we can allow the 'natural processes' of growth and expansion to operate and still keep some agricultural land for people to drive past.

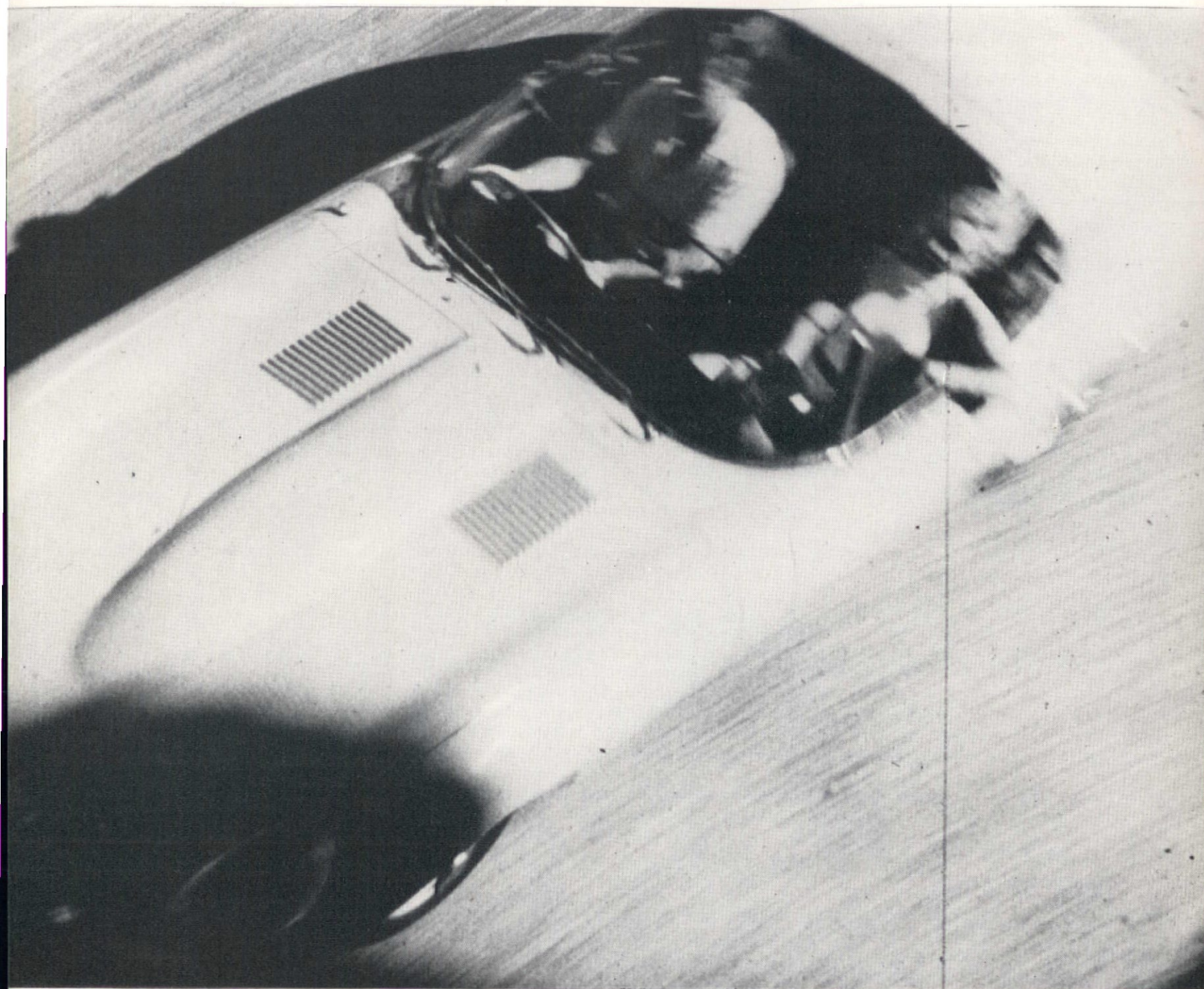
Finally, the Royal Commission on Local Government has received virtually unanimous evidence from government departments that much larger units of 250,000 people would make much better administrative sense. The social distinctions between rural and urban will disappear, some argue, as we become more accustomed to life in new mini-regions.

For the remainder of this article I want to examine this vision of the city region, this concept of a mobile society, primarily from a sociological point of view. Can it be true that a single technological innovation, the motor car, has changed our pattern of living so much that we can talk of a new *type* of society for which we need a new physical form, the metropolitan region? Are we indeed slaves to a technological determinism, or has the motor car freed us all from the restraints of community life? Are we right in saying there has been a collapse of the small-scale in the face of the large-scale? What sort of 'good life' do regional planners think they are creating for us? Do we even, in fact, question the goals and values of planners or of articulate sections of our society? Has the scope of planning decision-making reached a point where the implicit values and assumption of planners are helping to create uniformity?

The range in mobility potential between people living in the *same* place is enormous. There is a whole world of difference between the council estate wives, complaining about the inadequate bus service, and middle class wives in two-car households. Half an hour's drive in a car to the shops is thought by many middle class women to be a small price to pay for rural seclusion. However, the car-less woman on an overspill estate may find the half mile walk round to the shop, pushing one child in a pram and waiting for the inadequate wobbles of her determined toddler, an intolerable burden.

The Hampshire Village Survey showed that 78 per cent of the unskilled manual workers, and 61 per cent of the skilled manual workers did *not* have cars. Similarly two fifths of the village population did *not* leave the village even as often as once a week to shop. Too often figures for the mobile middle class are held to be representative for the population as a whole.





London Press Exchange Ltd.

The increased mobility of a section of the population leads to the increased isolation of those too poor to afford or too old to drive a car. Even relatively affluent middle class people who retire to a village find that insurance companies cause difficulties as increasing age and infirmity make them more reliant on the car and less able to drive it. As supermarkets flourish in the towns, village shops close, bus services decline and the mobility of the affluent accentuates the poverty and isolation of the less fortunate.

A very dangerous fallacy has arisen in recent years. This assumes that the expansion of residential areas in the outer London region is a result of consumer preference. 'Demand' and 'choice' are seen as interchangeable terms. The man who leaves home at 6.30 a.m. and returns at 9.10 p.m. each day is said to be doing it because he wants to. If he moonlights by taking a second job at weekends, so that he only sees his family for two hours on Sundays, it is

said that this too is because he wants to and because he can't cope with his leisure problem.

I think such arguments are pernicious. Young married couples in London with perhaps one or two children, earning up to perhaps £30 a week and wanting somewhere to live, have remarkably little choice. They can't find anywhere to rent (although surveys suggest 20 per cent of all homeseekers would prefer to); they are ineligible for or unable to get a council house; and so they are forced into a very narrow section of the housing market. An increase in family size, pressure from the landlord, the sheer misery of his wife or other such factors 'force' a man to leave the world of furnished and often shared accommodation in London to enter the debt-burdened world of home ownership in the outer metropolitan region.

Talking of 'mobile metropolitan man' and 'the emerging city' in terms of these new estates seems to me to be a joke in very bad

taste. Indeed, there are strong indications that a large proportion of such people are driven back to London, overwhelmed by the burden of debt that home-owning brings and the immobility of their life in the outer metropolitan region.

Other groups of new home owners include:

1. *Spiralists*: those who are employed in a large-scale organization, with a formal hierarchy of status, must move house when promotion within or between organizations involves a change in place of work. Such people, posted into the south east from other parts of the country, find these outer metropolitan estates convenient transit camps before they are obliged to move elsewhere. The differential cost of housing between the London region and elsewhere forces them to commute farther than they would like, in order to offset the decreased value of their available housing capital.

2. The retired: those who have saved up enough capital to have a house of their own but who need income to supplement their pension are obliged to seek a cheaper house in the outer metropolitan region. Very often the coast is too expensive for them and so they have to make do with a house in a row of semis inhabited by commuters' widows.

3. The upwardly mobile: the young professional or managerial type may find that the building societies look so favourably on him, due to his future earning capacity, that he is able to get an attractive mortgage early in his career when his actual earnings are still low. He may find himself on one of these new estates soon after his marriage as a temporary resting place before moving on into a more convenient home closer into London.

Class and the family's stage in career and life cycle are fundamental variables in determining mobility potential.

It is reasonably clear that those who actually *want* to be in the outer metropolitan region (either because of the place or the house or the general situation) are those who are most concerned to put down local roots in what they themselves decide to call a village, joining local clubs and getting generally involved in local activities. The more affluent middle class are prepared to subsidize the local village shops for the convenience and satisfaction of shopping in such a situation, while the working class are more likely to take buses into the towns to get cut-price groceries.

Thus, paradoxically, those who most value locality ties are very often those who have the most dispersed activity pattern. Those who can afford to be the most mobile are very often those to whom place matters most. I am afraid that people have inferred from a previous article of mine ('The Two-Class Village,' *New Society* February 27th, 1964) that one highly mobile group, which also takes part in local activities, is the typical element in the outer metropolitan region. The question which I think deserves to be discussed is whether the style of life of this privileged minority will become the aim and aspiration of the majority.

There has been very little research by sociologists and social psychologists on people's subjective awareness of a place and its importance to them. Many parents seem to think that moving house frequently can have adverse effects on children's education, and there is some evidence to show that they are right; even spiralists are reluctant to get promoted when children are taking important examinations. Very often the most mobile and most affluent send their children to boarding school. Indeed, this childhood experience may do much to undermine feelings of locality consciousness so that affluent spiralists can perpetuate themselves. However, the proportion of children who go to boarding school is never likely to be anything more than a significant minority.

But there is one specific piece of sociological analysis which I think has considerable bearing on this question of mobility and distinctive activity patterns. As a result of a survey of women's shopping behaviour, the American

sociologist, Gregory Stone, distinguished four types of consumer, based on their differing definition of the situation ('City shoppers and urban identification: observations on the social psychology of city life,' *American Journal of Sociology*, 1954 (pages 36-45). Stone's four types of consumer were:

1. Economic: a third of the sample were the ideal-type economic women. They simply wanted cheap, good-quality goods and efficient service.

2. Personalising: this type of consumer needed to be known in the shops. She liked to be known by name and formed friendly and personal attachments with the sales people. She wanted to be treated in a personal and friendly manner. This group comprised 28 per cent of the sample.

3. Ethical: eighteen per cent of the sample shopped where they felt they 'ought' to. They objected to the large chain store which was driving the little man out.

4. Apathetic: There was a remaining 17 per cent who just didn't like shopping and who didn't have sufficient interest in the matter to bother whether they were able to shop in a supermarket or a corner shop. (A final 4 per cent could not be put into any of the categories.)

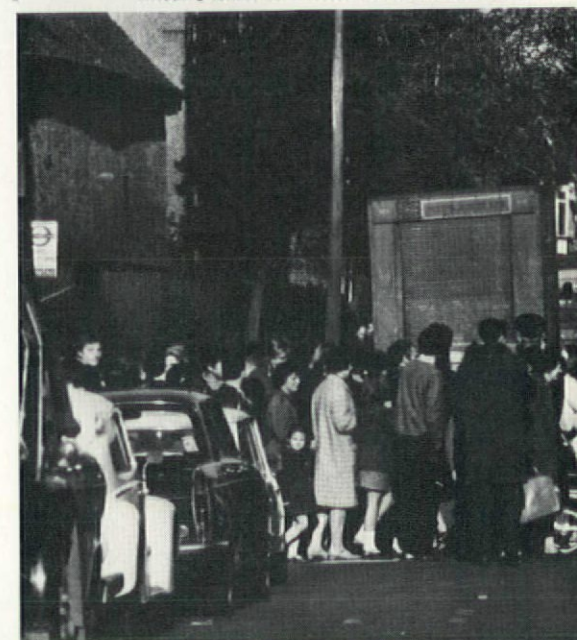
These conclusions illustrate clearly that we cannot judge what people want until we have discovered their definition of an existing situation. We cannot assume that all people will travel to the cut-price stores 3 or that the same consumer way of life will be considered equally desirable by all. In short, the social structure of society, by its very nature, gives rise to different styles of life and different definitions of the situation. The managing director and the man on the assembly line may each have a car and on a Sunday have the same mobility potential but that does not mean that they will use it in the same way.

However, to return to Stone's study: he is mainly interested in the personalizing and ethical consumers, and he seeks to isolate the variables associated with this form of locality-consciousness. (For example, one of his negative findings is that such people are not significantly differentiated by place of birth—it is not the village or small-town-bred woman who necessarily likes shopping locally.) He describes the *economic* consumers as young, socially mobile, lower middle class households with young children, who treat their present residence as something of a transit camp before moving on. The *personalizing* consumer is likely to be a newcomer, to be older and to have few or no children. She may seek friendly relations in the shops to compensate her for loss of friends elsewhere and is not expecting to leave her present home. The *ethical* consumer is likely to be of higher status and longer residence in the area. The deferential treatment from the shop assistants may be a reward such people are reluctant to forgo. *Apathetic* consumers are either downwardly mobile socially, or have been unsuccessfully upwardly mobile in attempts to leave the community.

Both the economic and personalizing orientations to consumer behaviour are typical of



3 Shopping towns, USA. Victor Gruen. Reinhold, 1960



5 Demonstration for pedestrian crossing



6 Coney Island beach



Turners Asbestos Cement Co. Ltd.



UPI



New York. Don Hunstein, Paul Hamlyn Ltd., 1962

newcomers to the area. The crucial intervening variables are aspiration, marginality and success. By this Stone means that those who see the local residential area as a short stopping place on their career up the social and economic ladder will be more strictly economic in their consumer behaviour. Newcomers more marginal in their social situation, without high social and economic aspirations, will have a more personalized consumer orientation. These latter consumers did not have local friends and were not joiners of clubs and organizations, yet subjectively the place was very important to them.

From this example it is clear that the psychological importance of the immediate locality cannot be determined without careful research. Furthermore, the crucial variables associated with social mobility and marginal status, while being matters of fundamental concern to the sociologist, may not have seemed relevant to the planner. Indeed, this particular case of shopping behaviour may make him despair: planners want to be able to predict the demand for services and potential activity patterns of newcomers in new estates for which they have given planning permission. Ideally, they would like a direct correlation between price of house and consumer behaviour. But clearly this is not a simple matter, though it might be possible to achieve better results if more sociological research were sponsored by planners.

At a time when the avant-garde planners are talking about the collapse of community, local apathy, and the arrival of a so-called mobile mass society, specific, locality-based interest groups have boomed ⁵. Between 1957 and 1967 civic and amenity societies increased from 200 to 600. Total membership may not be much more than 130,000, but this number includes many of the most articulate and influential inhabitants of particular localities. There have been similar important increases in groups concerned with education (stimulated by the reorganization of secondary education on a local basis), patients' associations, housing associations, local consumers' groups and so on.

The energetic professional or managerial spiralist and his wife may be more ready to take part in a local interest group than to take part in local government. Such people bring into the locality their knowledge of other, perhaps more enlightened, local authorities and this helps to spread national standards at local level.

Clearly in the reorganization of local government some way of articulating together these locality centred groups would be desirable. In some respects they are more representative of local opinions and attitudes than the councillors who may simply be those who can afford the time and who have status in the local political parties. Thus there is a strong locality-consciousness, focused on particular interests, and often amongst the most mobile.

Planners and builder-developers may be forgiven for thinking primarily of job opportunities and communications to take the chief earner to work when making decisions in the

outer metropolitan region. I would certainly accept this to be the right order of priority. However, it is the chief earner's *wife* who actually lives in the outer metropolitan region day in and day out, and most of these women are certainly not mobile. Somehow, although each planning application is considered in relation to the future demands for community needs, the final result is that new estates are built around our small towns and villages with inadequate local shops, libraries, swimming pools and other community facilities.

It is possible that the sheer pressure for homes has allowed the builder-developer to dodge what some would claim to be his responsibilities to the locality. However, I would guess that the next 30 years will bring a change and that the private developer will increasingly concern himself with better site layout, landscaping and community facilities. Some hints of this are suggested in the plans for the new village at Bar Hill near Cambridge, or New Ash Green ⁴ in Kent. As the men are obliged to be mobile and the women become more important as decision-makers, more choice may mean more stability for the family home.

I believe that those who argue for an emerging city in the outer metropolitan region and who have described a new way of life based on mobility have overstated their case. They assume that some general trends which they say hold for a minority will become general for the majority. Furthermore, this concentration on broad regional trends and patterns has led to a neglect of the small-scale locality which, far from declining, may be increasing in importance. I hope that nothing I have said will detract from the enormous importance of a regional plan or strategy. However, I am concerned with the relationship between the small-scale—in which most people still live out most of their lives—and the large-scale, which provides the essential context for the small-scale elements.

It seems to me that it is in the sphere of recreation, and recreation alone, that planners are seeing what may be termed a mobile society. It is the demand for 'go to's' which is a new development which should be assessed and possibly planned for. A long journey to work is a necessary evil, not the product of a new city form which everyone necessarily wants. Recreational centres should be planned and developed with distinctive elements of the population in mind. Not only 'go to's' but 'way to's' should be conceived as a normal part of the planning process. ('Way to's' are scenic roads for travelling to 'go to's'.)

I am not certain whether the visionary commentators such as Peter Hall or J. R. James see the metropolitan region as being the result of natural evolution or whether it is a proposed solution to our planning problems. Whichever is the case, I am arguing that, although it is essential to have some grand regional strategy, we must not lose our heads. Mobility is limited by class, career and life cycle characteristics. Mobility will never destroy the importance of locality ⁶.

LOCAL CHARACTER

Common sense participation
reclamation and extension
a proposal by Alison Smithson

The most popular planning phrase of the moment is 'Citizen Participation'. No one knows what is meant by this. It may have no further intention than any socialist slogan. But here, it is suggested, there could be a meaning: in a world of professionals the one thing the citizen should be expert at is remembering the particular local flavour of his town, what he liked about it as a child, what he then wished for more of, or something the town lacked and children wished it had. The past memory is stressed here, because, as adolescent and adult, genuine wishes growing out of clean impressions and need become overlaid with competitiveness and self-doubt under the onslaught of the communications media.

To achieve again for towns that sense, now lost to many of them, of being essentially good places of residence, it seems clear that shops must follow where traffic can be catered for. Not the way round things are at present; traffic forced in to where a shop has fortuitously—or for reasons progress has now lost to us¹—become implanted in a town. A reversal of accepted practice (which deals with whatever traffic wants to go into any street) could become a means of rescuing towns from this onslaught of vehicles—to reclaim towns as good places in which people can safely reside.

This is, seemingly, to state the obvious—but nowhere has another organizational pattern of the functions of town been attempted. In new towns, shopping equals centre. In existing towns, traffic is brought to old shops by contortionist traffic schemes.² The tradition of shops-equals-centre, based on foot movement and pack animal delivery, is unquestioned—ludicrous may it seem to future generations—although now it is anything from cars to articulated trucks. ('Pedestrian' neatly de-localizes the townsman, leaving him characterless and faceless if he is lucky not to be lifeless.)

With today's different mobility, the town shop-place (shopping centre could continue to mislead us)—even the town's administrative unit—could be over the hills and far away from the town that becomes an everyday sweetly-working, quiet residential area.

A shopping area nearly always serves a hinterland, often now topped up by week-ends: the more efficient the shopping area proves, the larger grows this catchment area; starting a spiral which, if involving an enmeshed shopping centre, entirely destroys the existing road net and the existing texture of the town.³ Whereas a special shop-place, equally easily accessible from all over by today's means of transport, properly servicing the people, properly serviced itself,⁴ could become a live dynamic thing, renewing a piece of derelict industrial landscape.

Similarly—to make it less parochial—a town's administrative unit could perhaps be connected to other town and hinterland

welfare services—such as hospitals—it might even be found to benefit everyone were it sited with good communications to regional administration. The town is a place primarily serving the pattern of everyday residential life. The town's people should be freed from anything not directly concerned with this or any system having a capacity to clog the everyday intercommunication and flow of domestic lives.

Rule of thumb: reclamation of town centres through revival of local sensibilities.

Up to now all functions, local, regional, or national, have been funnelled through the best street in town, the high street, original location of the best quality stone or brick Georgian town houses.⁵ Even where only a fortieth of these houses of character remain, these, not the remaining economic life of larger, newer elements, should be the reference points of the reconditioned town. For the scale of these old houses is instinctively right; related to the roads built to serve them which, conversely, are all the old road structure of the town can support.

Large-scale building bulks—like old theatres, pubs from the heyday of boozing, originally pedestrian served—cannot now be allowed to receive their customers in tin mechanical boxes via the town roads. Nor can they be replaced or joined by national-scale commercial enterprises, bent on encouraging a greater, more constant flow of customers, all wanting to take tin mechanical boxes there and back through the town. Sensible or well proportioned access to domestic type spaces is one thing, constant coming and going of customer and service vehicles to a non-domestic concern demands quite another type of road network.⁶ Road as service road is only one of many possible functions. An old network of a town has to be read in the old way, as it was intended, as pleasant access to houses, immediate semi-public outdoor space, the outside of the front of the house, and so on. Specially suitable modern-scale-transport-serviced areas⁷ should be made statutory requirements to the carrying on of any commercial enterprise. These can be accommodated adjacent to new regional routes and transport systems. Everything incompatible with the town as a residential area should be eased out. Eased out by means of closing the streets⁸ to vehicles foreign to everyday movement of people about their town; walking, cycling, pushing prams, catching town buses or shared taxis.

This is a priority now for the reclaiming of our towns as places to reside. Most towns in England are historic, most were good places. Town traffic has to be geared again to the same capacity of the true⁹ road structure belonging to the domestic buildings. This moves us along the desired, path towards common sense apportioning of the day between work, travel, recovery and reason.

¹ Places like Gloucester seem to have lost all sense.

² Some notoriously large-scale traffic-road proposals are altogether out of proportion to their feasible share of the national budget on roads. This is not honest.

³ Certain market place spaces survive this so far, notably Richmond and Skipton, Yarm and Hawes; but all would benefit from recession of new shop fronts and muting of paint schemes.

⁴ *Architectural Design*, July 1966—'and by that is not meant the Victor Gruen type where all shoppers run the gauntlet of moving cars between parking lot and shops.'

⁵ *Architectural Design*, July 1966. 'Take Grantham—all that red brick Georgian with shops bashed into the bottom. We are being held to ransom by our shopkeepers. Streets built as domestic alleys are now carrying shoppers' cars, and anything from vans to the big articulated lorries yet to come. It is not poor dispossessed chain stores and little men . . . we are paying twice over, in lack of housing, then in unpleasantness, money and time, for traffic congestion, parking problems, servicing problems. Give the houses back: centred traffic ebb and flow would be eliminated.'

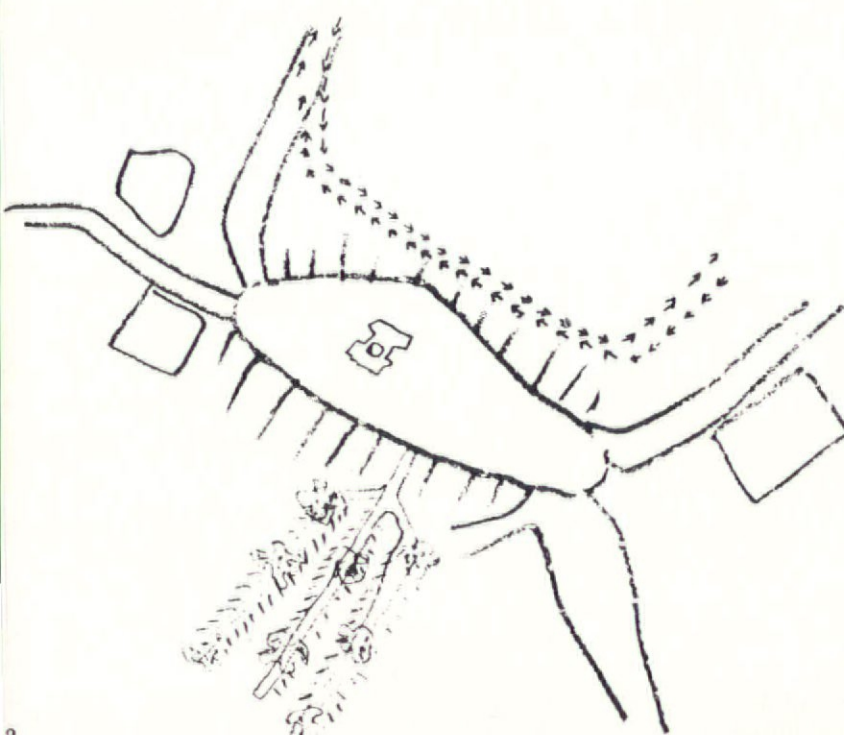
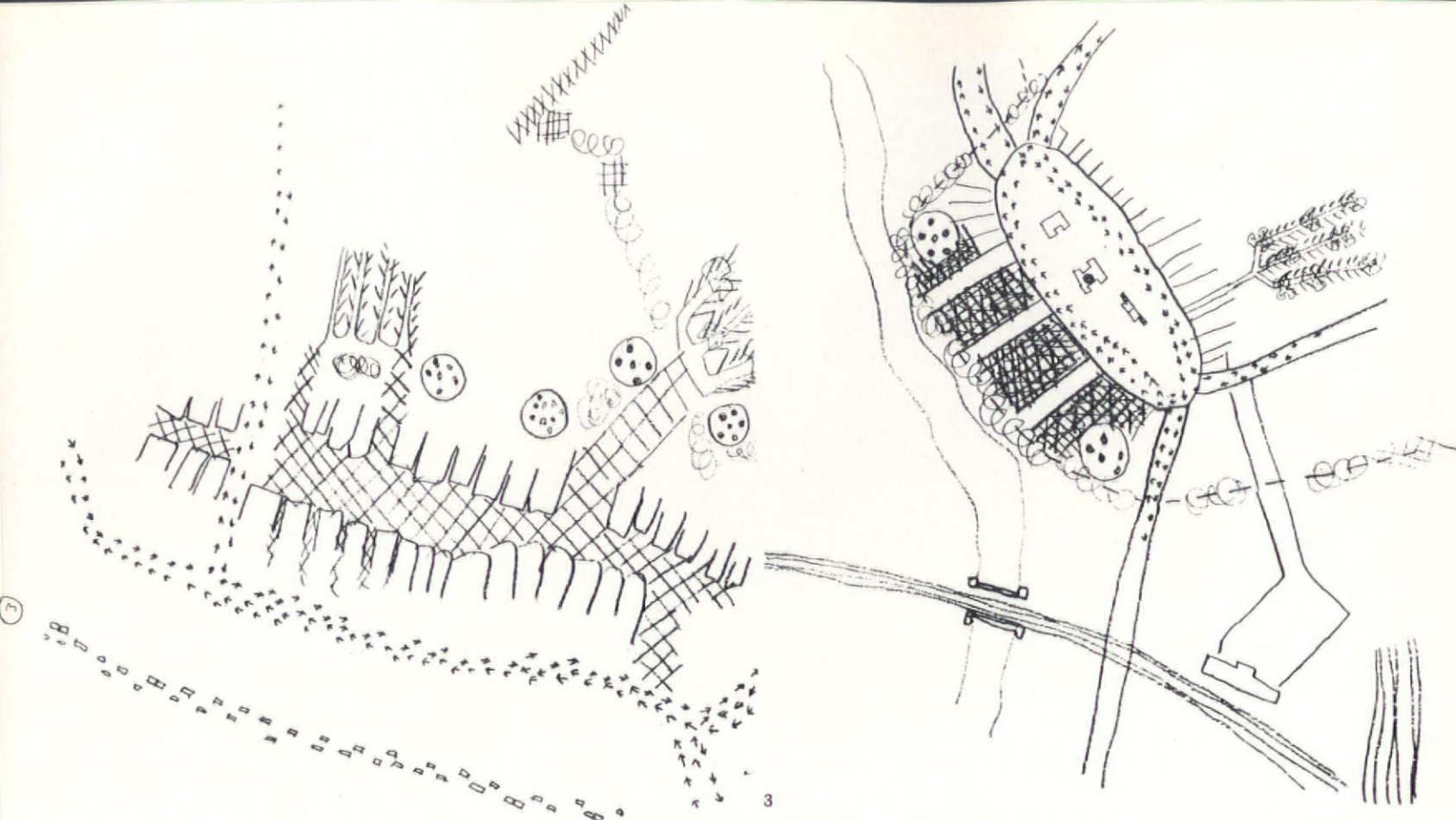
Stockton-on-Tees has been completely destroyed in the last 15 years by this process preceded by 'municipalization' every time. Shrewsbury, a re-build that probably should have been a de-build.

⁷ By specially serviced shopping area is not suggested Bull Ring Birmingham; all mixed up against the stalls, ones clothes impregnated with chip-smell, all access, car and pedestrian discharging precipitously onto major city roads. Nor the American musical palace. A more bourgeois—for want of a better image word—environment, encouraging the small shopkeeper to leave unsanitary house properties, properties unsuitable from the town's people's point of view. Simple functional premises easily maintained, sweetly serviced. Palletting, collective warehousing, all modern conditions at present available to large national concerns. This withdrawal of the major shopping activity generating its own strangling traffic is particularly important where an historic small town serves an increasingly interested hinterland; it is a matter of survival or destruction. Shop service and traffic cannot fit into an old, small network. The new shopping requirements are tearing apart the old town structure at considerable cost to each town and individual.

⁸ 'To march for Vietnam in Cambridge is a screaming steam-age immature political farce; whereas to sandbag a narrow pleasant street in Cambridge to keep cars out so that life can be lived freely there and re-experienced and de-stressed—then label it perhaps Good action here by students

Why not right action by Vietnamese?
—could actually start a movement to change the spirit of the world.' Team 10 Primer Preface, Autumn 1968, pub. Studio Vista.

⁹ Traffic should not be encouraged to flow too well and quickly through old main streets. Widening programmes emasculate our provincial towns and wipe away just those things that enable people to retain a vestige of idea about an untense un-Americanized life. Those qualities enhancing life giving its particular local smell are the odd buildings that do project, old town halls, statues of Queen Victoria.



- Key**
- path in greenway
 - old peoples' houses
 - reclaimed houses
 - pedestrian fingers in car park
 - town bus service
 - town traffic, two streets removed from high street
 - small shops; serviced at specified times or by trolley from a centralized warehouse

Detensioning a town by means of rational traffic movement

1 High street of a large historic town

To repeat the premise: traffic serves the people in a town, not the existing buildings, not the right to increase the scale of commercial use in the centre of old road networks. This premise still leaves us with the traffic that is domestic: the traditional weekly market, the true town event such as the Fair or Centenary. Transport for the weekly market is usually made up of small-scale units acting locally. No one minds the yearly circus arriving.

For these there are already practical better alternatives to the ripping out of the texture and municipalizing.

Parking could be formed in rotten areas, often only one street away from the high street, with pedestrian alleys passing to the market. To these pedestrian links emanating from the old centre, heading for car parks and simply continued as pedestrian connecting spines, could be attached housing for old people wishing to be central to their friends in the town. In addition such parking amid small trees would form breakwaters between old industrial housing areas and the high street needing to be reclaimed.

2 A small-scale high street, with the larger shops removed

In the small town market, too great to be adequately filled as a pedestrian area, people could retain the staccato stop/start town bus. Where a town market space is so small as to be better without staccato movement of buses, these could be behind the high street, perhaps on the opposite side to the pedestrian flow from car park, so as not to cut it. In a larger town, traffic might flow as far as five streets removed from a central area, if this is also contiguous with an historic or environmentally complete area, feeding parking to serve a pedestrian street network.

3 Provincial town with an established local market. Large scale shops are removed from the high street

Natural feature	every town has one such
or	area, very often backing
Fine old building	up the old town centre.
or	Clean up as one piece,
good group	something a day-tourist
or	or returning local boy
Old industrial area	would visit with pleasure.

A pedestrian enclave at this larger scale has to be more than fed by the old routes returned to pedestrians, it has to be actually charged by new growth points, such as specially sited bus stations or replenished railway spaces or old industrial waste spaces brought into multi-use as town connections, feeding a new system of circulation for the town's people.

FIVE YEARS AFTER

J. M. Thomson

It is five years since the submission of the Buchanan Report to the Minister of Transport. The Government (with the Opposition's support) promptly 'accepted' the Report in principle and launched it upon the public with a publicity effort of unusual brilliance. After five years, what has the Report achieved? How has it stood the test of time?

The Buchanan message

Although the Steering Committee which advised the Buchanan team made one recommendation—for Regional Development Agencies—and had it rejected by the Government, the report itself contained no explicit recommendations. Nevertheless, a good many proposals were implied. The report contained one broad message, supported by a number of more definite propositions. The broad message is summarized in the report (para. 444):

The broad message of our report is that there are absolute limits to the amount of traffic that can be accepted in towns, depending upon their size and density, but up to those limits, provided a civilized environment is to be retained or created, the level of vehicular accessibility a town can have depends on its readiness to accept and pay for the physical changes required. The choice is society's. But it will not be sensible, nor indeed for long be possible, for society to go on investing apparently unlimited sums in the purchase and running of motor vehicles without investing equivalent sums in the proper accommodation of the traffic that results.

This passage is in general terms. Its significance lies in the interpretation of expressions like 'civilized environment', 'equivalent sums' and 'proper accommodation'. These become clearer when one examines the report's main propositions, which (in the view of the writer) are as follows:

It is difficult to see any new method of movement coming along which will be seriously competitive on a big scale with the motor vehicle (para. 41).

Traffic can be divided into *essential* traffic (business and industry) and *optional* traffic (private pleasure and convenience).

Towns should be divided into a number of environmental areas separated by main roads carrying all through-traffic. The only traffic to enter an environmental area should be local traffic visiting the area. Segregation of traffic from pedestrians should be a major planning goal.

Within environmental areas there should be clearly defined *environmental standards* which would necessarily set a limit on the acceptable level of traffic.

In order to meet the demand for both unrestricted traffic movement and good environment large expenditure will be necessary.

Given a different financial policy, travel by public transport could be made relatively cheap, and this may prove to be the key to the problem in the long term (para. 457).

The emphasis placed on the words 'relatively cheap' imply that private transport might be made more expensive.

It is fairly clear that, although Buchanan confined himself to describing what he believed to be the choices before society, he hoped that society would choose to spend much larger sums of money than before on primary networks, to establish environmental areas in which high environmental standards were secured, and to impose restraints upon 'optional' traffic, by means of parking charges or any means necessary to keep down the level of traffic in environmental areas and to prevent congestion on the primary roads.

Buchanan's influence

Expenditure on urban roads has increased since the Buchanan Report but is still far below the level which seemed to be envisaged in the report. Many towns, however, are engaged on ambitious plans, even if there is no sign yet that the money will be forthcoming. A good many towns are planning broadly on Buchanan lines inasmuch as they are trying to designate environmental areas and are giving far more emphasis than before to the segregation of pedestrians.

In the larger cities, where the need is greatest, there seems to be less adherence to Buchanan principles, and in London there is as yet little indication that Buchanan has had much influence. The GLC motorway plans give the impression that environmental needs are respected only when they involve little or no extra expenditure. Good environment can rarely be had 'on the cheap'.

The idea that environmental standards could and should be clearly defined has met with virtually no response. Where can one find a town which has laid down the maximum traffic volumes or noise levels, street by street, which it considers acceptable? There is no enormous difficulty in setting such standards, if one is prepared to be arbitrary. The difficulty is that the authorities do not know how to enforce such standards or are scared to do so.

The need for traffic restraint has received a lot of attention during the last five years, possibly because Buchanan concluded that it is inescapable. It has become recognized that parking restrictions can provide a temporary, though inefficient, restraint on the volume of traffic and that, in the absence of any superior means of restraint, such restrictions are necessary. Meanwhile, road pricing meters are being developed for possible future use, although their practicability has yet to be established.

Undoubtedly the planning for traffic in towns is now nearer to Buchanan lines than it was five years ago. How far this change is due to the report is difficult to say. There was nothing really new in the report; indeed some parts of it revealed a surprising ignorance of up-to-date developments (e.g. treatment of road capacity, and comments on road pricing). Its great value was its educative effect, on the public, on politicians, and on some highway and planning departments. Public opinion was shaken out of the belief that the traffic problem could be solved simply by a more energetic roadbuilding programme. The man in the street was made to realize that he could not have unlimited use of the car without paying for it very dearly in terms of money or environment; and in large cities he could not have it at any price.

Post-Buchanan developments

The Buchanan Report is likely to go down in history as a valuable exercise in public relations. It was not intended to be an important contribution to the technical, as distinct from political, solution of the traffic problem. It did not try to say anything new, nor did it attempt to tackle the most difficult parts of the problem. Its purpose was 'to examine the implications' of current trends. Not sur-

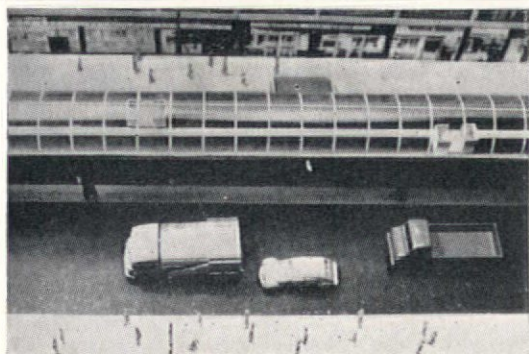
Before



There has been far more emphasis on pedestrian segregation since the Buchanan Report—especially in provincial towns. Photos show before and after scenes in a Norwich street converted into a pedestrian area. No special provision was made for the excluded traffic which was obliged to "find its own level". Similar experimental closure of streets to traffic has been tried in many countries, notably Germany and Denmark, with considerable success, and a 15-20% increase in business.

Photo 'Before', City Planning Office, Norwich. Photo 'After', The Guardian

After



Buchanan recommended research on travelator and similar systems. Photo shows model of 'continuous carriage' system being studied by B. Richards and J. M. Thomson for use in central areas.

Photo: Sandra Lonsada

prisingly, therefore, it raises many questions.

First, there are the methodological questions of how to analyse the traffic situation and its future development, and how to prepare and evaluate town plans. The techniques of the 'urban transportation study' have been considerably refined in recent years and their application in most large towns and cities has been a striking development. Although still far from perfect, the methods of studying traffic problems are far more scientific and enlightened than they were five years ago. The Buchanan Report illustrated these methods.

Secondly, there are the big economic questions. How much should we spend on urban motorways and the like? How should we restrain traffic? How much parking space should we provide, at what price, and on what conditions? How can we rationally compare environmental values with other values? How, if at all, should we compensate people who suffer from traffic intrusion? The Buchanan Report did not attempt to deal with such questions. Even on the question of traffic restraint, which it recognized as essential, it made no suggestions. The economic issues are fundamental to the traffic problem, and research into them has been undertaken during the past five years, by MoT, Smeed Panel, and others.

Thirdly, there are some big planning questions. Should we disperse certain activities? Granted the case for environmental areas, how big should they be? How far should we encourage staggered working and shopping hours? The Report treated towns as if they were more static than they really are.

Fourthly, there are questions of traffic management. To what extent can traffic management increase the effectiveness of existing networks? How should the traffic manager decide when it is permissible to divert traffic down residential streets? Given an environmental area, how should he protect it from through-traffic? The Buchanan Report largely ignored traffic management, except insofar as it affects environment.

Fifthly, there are technological questions. Does one accept Buchanan's examination of new technology and agree that no important new modes of transport are likely in towns? What are the possibilities of reducing noise and fumes at source? There is increasing interest in the part that technological development can play.

Finally, there are legislative questions. What levels of noise and fumes emission should be permitted? What sizes of commercial vehicles are tolerable in towns? What inducements might be given to encourage the use of minicars or electric vehicles? The report was inclined to assume that current regulations and tax structures were sacrosanct.

On many of the above questions work is going ahead. If the traffic problem is ever resolved, it will be through a combined assault on many fronts by research workers in numerous disciplines. The Buchanan Report has helped to establish the right climate of opinion in which such work can receive proper encouragement. Viewed in this way the Report may yet be regarded, historically, as a turning point.

URBAN MOTORWAY

The GLC's primary road network plan calls for £650 millions of motorway construction between 1971 and 1983; it holds gloomy prospects in store for London's environment which will be affected by some 40 miles of motorway construction. The traffic management schemes of the past few years and the few stretches of urban motorway already built or under construction are sad object lessons of the results that will be achieved if purely engineering considerations continue to dominate planning decisions. Both the elevated section of the M4 road 2, 3, 4 and the Western Avenue extension fail to reconcile engineering with amenity; in both examples, London's

planners appear to follow American freeway building practice which has paid scant regard to the effects of new motorway construction on adjacent urban areas 5, 6, 7, 8.

The great dilemma presented by motorways is that, although they can be demonstrated to be necessary, they are extremely formidable structures to incorporate in cities. In addition to extensive space demands, the urban motorway is by nature an inflexible structure and its function is often unrelated to the localities through which it passes. The problem is to design the urban motorway as a viable element of the city without damaging its urban environment.

The form that urban motorways can take can be varied to suit specific purposes and varying locations, in order to adapt them as far as possible to their surroundings. Various types of structure have evolved, largely through the variation of road level in relation to ground level. The vertical alignment of the roadway can vary from an elevated condition to an at-grade condition, or be designed within a cutting or a tunnel. Each motorway type can be evaluated according to various design criteria (both for motorway users and for those affected by the road) since each accrue positive values and benefits, and at the same time inherit certain disadvantages. A comparison



1. The great dilemma presented by motorways is that, although they can be demonstrated to be necessary, they are extremely formidable structures to incorporate in cities. The aptly named 'Skyway' expressway in San Francisco dominates surrounding city buildings
Michael Bry, *Architectural Forum*, October 1963



2



3



4

2, 3, 4. The M4 motorway in London highlights the problems of incorporating elevated motorways over existing rights-of-way. Demolition of buildings is largely avoided, but noisy, oppressive conditions exist for adjacent residents and pedestrians

DESIGN

Paul Buckhurst

of the varying motorway forms reveals the conflicts between the needs of traffic planning (affecting the road user) and the design requirements of the environment through which the road passes, affecting the local bystander, resident, or worker 9.

The function of the motorway will determine the engineering design criteria such as capacity, safety, speed and maintenance, leading to the specification for the geometric standards required for the roadway. However, the motorway is not unlike a piece of architecture in that scientifically determined limitations leave the designer considerable freedom to give the road a more refined and

unique expression, beyond the bare minima of utilitarian standards. To exploit this freedom it is important to establish the design objectives necessary to form a framework wherein possible alternatives of horizontal and vertical alignment, as well as the detailed design of the road, can be fully assessed. These design principles are:

Need for coordinated development

New motorways must be designed as part of a total community development, not unilaterally. They should be planned not only to minimize disruption to valued places or connections, but also to create new ones. The right-of-way and the adjacent land must be used to create new

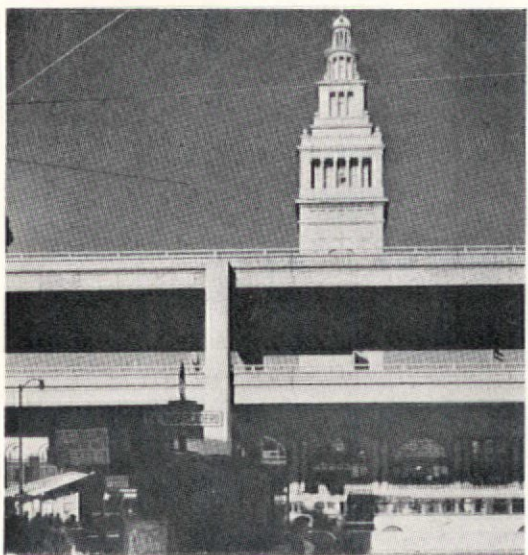
development which has values and purposes beyond that of transporting vehicles. Ultimately, it is the design of the environment of the motorway which counts for more than the road structure itself. If this is to be realized, then the public authorities concerned must ensure that urban renewal and motorway construction go hand in hand.

Route selection

Motorway building in urban areas inevitably means clearance of property and acquisition of land. Because of this new motorways must avoid fragmenting social neighbourhoods and areas of special character; routes should pass through the interstices of a mosaic of such



5



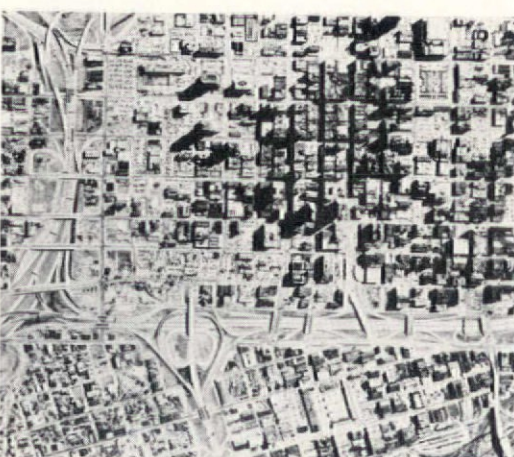
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5, 6. San Francisco's two-deck motorway imposing its huge scale before two city landmarks: views to the dome of the Civic Centre and the nearby harbour Ferry Building are largely obstructed by the two-deck freeway

(5) George Knights, *Architectural Forum*, October 1963
(6) Joern Gerds, *Architectural Forum*, October 1963



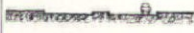


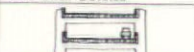


7



8

7, 8. The space demands of American freeways often involve large scale destruction of property, as well as impeding local access across the motorway right-of-way (8). Freeways encircling the central area of Fort Worth, and (7) the Van Ryan Expressway, Chicago, reputed to be the largest urban motorway in the world

(7) *Architects Journal*, September 1st, 1965, p. 463
(8) From: 'Freeways' by Lawrence Halprin. Reinhold Publishing Corporation, New York, 1966

Design Criteria	Local Residents and Workers					Road Users					
	reduce disruption to ground level uses	reduce width of right of way	reduce obstruction to cross views	reduce levels of noise	permit easy pedestrian access across road	potential use of air rights buildings	increase in driving comfort	ease of access to local streets	potential views from road	construction cost	benefits
Motorway Types											
 On Grade	×	×	✓	×	×	✓	✓	✓			✓
 On Embankment	×	×	×		×		✓		✓		✓
 One Deck Elevated	✓	×	✓		✓	×			✓		
 Two Deck Elevated	✓	✓			✓	×	×	×	✓		×
 Depressed	×	×		✓		✓	✓	✓	×		
 Tunnel	✓	✓	✓	✓	✓	✓	×	×	×		×

✓ advantage
× disadvantage

9. The effects of various urban motorway forms on selected design criteria highlight the conflicts between the criteria for local residents and workers affected by the motorway, and those for drivers and their passengers

areas. Alternatively, the motorway can be located alongside the existing horizontal barriers which in themselves form edges to neighbourhood areas—such as rivers, canals or railway tracks **11**.

Concentration of road structure

Motorways in towns must employ urban, not rural aesthetics in order to respect the existing geometry of streets and buildings. Concentration and condensation of the motorway structure is thus vital. A reduction in engineering design speeds (say 35 m.p.h. as against 65 m.p.h.) allows greater flexibility in the design of horizontal and vertical alignment; and steep gradients, short radius turns and a limited number of traffic lanes will allow a

closer fit between motorway and urban fabric.

A more complex articulation of motorway elements is needed than has usually been practised. Narrower right-of-way can be achieved by merely reducing the number of traffic lanes, or by the careful exploitation of vertical space, with stacked lanes either above or below the ground surface. Two deck motorways with the lower roadbed below grade and the upper deck elevated on structure would allow existing and local streets to continue across the motorway right-of-way at ground level **12**. In addition, areas required for interchanges and connections can be reduced by limiting traffic movement or design speeds.

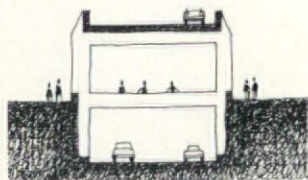
Integration with urban fabric

Since the quality and character of urban land-

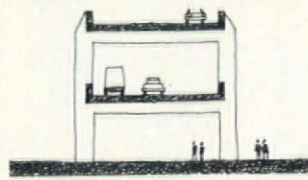
scape is essentially man-made, the motorway entering it must be adapted and designed so that it can be successfully integrated with the urban fabric surrounding it. Full integration of traffic and buildings demands a flexible and imaginative approach towards the use of motorway rights-of-way. Examples exist of buildings constructed over motorways **10**, **13**, and a section of the Central Station Bypass in Tokyo has been built on a structure designed to incorporate two levels of shopping and commercial facilities, with basements providing areas of covered parking **18**. Large structures combining traffic and other functions in a complex whole, or linear development projects of which the road is only one interlinked portion, would integrate highway and the city,



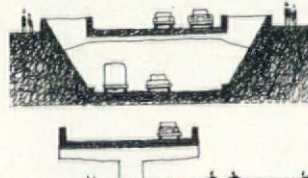
10. Continuous decking over the motorway is expensive and can produce unpleasant driving conditions for drivers. Freeway below the Prudential Centre, Boston



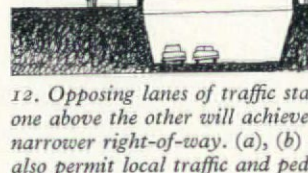
a



b



c



d

12. Opposing lanes of traffic stacked one above the other will achieve a narrower right-of-way. (a), (b) and (d) also permit local traffic and pedestrian access across the roadbed at ground level



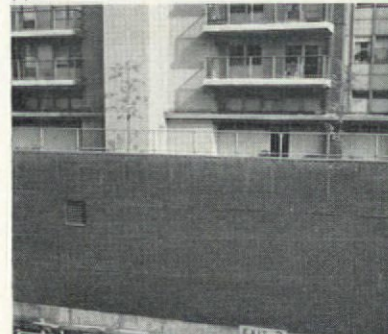
11. The motorway can with advantage be located alongside existing horizontal barriers which in themselves form edges to neighbourhood areas. The Turnpike in Boston, routed alongside railway tracks



13. The Port of New York's development over the George Washington Bridge approach provides a unique example of buildings functionally related to the freeway being successfully incorporated within the motorway structure—namely the Bus Terminus Building and associated car parking facilities Port of New York Authority (Forum), March 1967



14



15



16

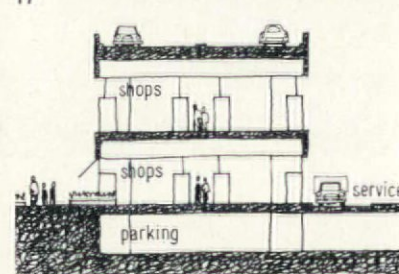


16

14, 15, 16. Not so successful are the four adjacent apartment blocks, spanning the motorway. Traffic noise and fumes produce unpleasant conditions for many of the lower-floor flats



17



18



19

17, 18, 19. Central Station Bypass, Tokyo. Commercial uses have been relocated within the road structure, and the elevated roadbed creates better conditions for pedestrians at ground level while offering good views for motorists

'Freeways': Lawrence Halprin

and ensure that the motorway was not simply a corridor through it 20-27.

Driving experience for road users

For the road user, the motorway must satisfy the primary criteria of providing safe and rapid movement through urban areas. Road design must also avoid causing undue stress to drivers by prolonged driving conditions or by sudden and extreme changes in the road environment—such as excessive glare or noise experienced in travel over bridges, in cuttings or through tunnels. In addition, the urban motorway should provide the traveller with a stimulating, coherent and developing visual experience. Views to major landmarks or to special groups of buildings provide a visual relationship between the driver and the impor-

tant elements of the city 28, marking the progress of the traveller and helping to clarify decision-making at intersections.

Conflicts occur within these listed design objectives, particularly between the criteria affecting local environment and those affecting the motorway user. Visual conflicts occur because for one group the motorway is a path of access, and for the other an alien barrier, with the views out and the views in radically different, both in viewpoint and dynamic quality. These differences lead to design quandaries, which can only be resolved by compromise or ingenuity in individual cases. They are made more acute by the technical demands of the motorway itself: continuity, inflexibility and large scale.

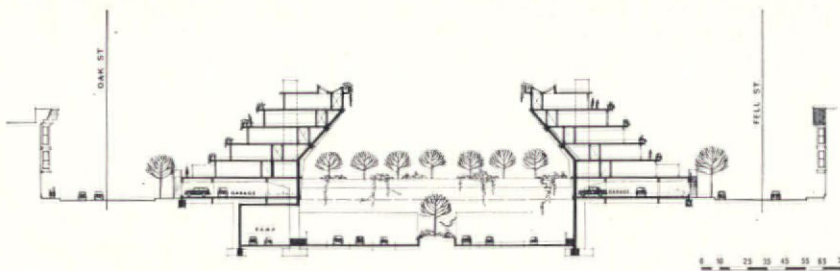
The problem must be tackled through comprehensive thinking and aesthetics. Comprehensive thinking means that the design solutions should be vested in planning and design authorities where the coordinator of the various disciplines involved can be successfully integrated. This would enable highway engineers, planners, architects, economists, graphic designers, and landscape architects to work together and arrive at the following alternative compromises:

Integration with local environment

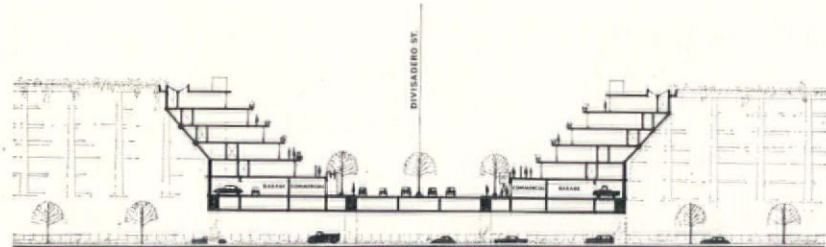
Restructuring the community to fit the motorway by means of new development 29, 30. The location of urban motorways through areas where land values are declining and where physical decay is prevalent provide the oppor-



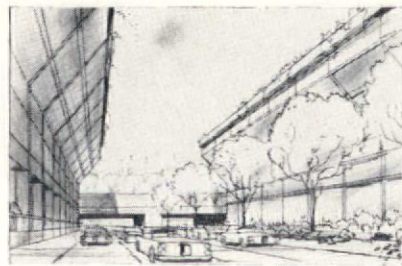
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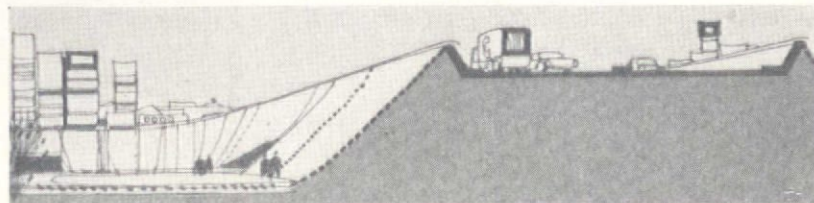
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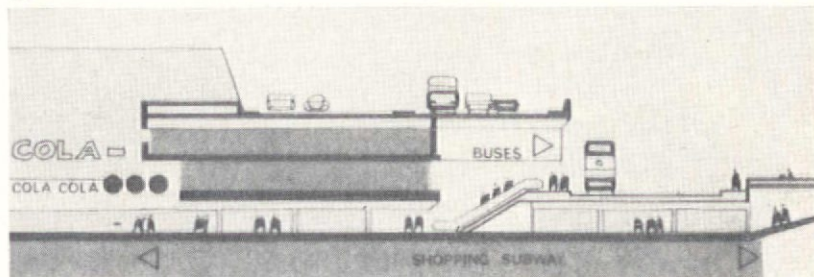
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20, 21, 22, 23. Proposals for Panhandle Freeway, San Francisco. The proposed freeway is depressed to avoid rupture to the local street system. The road is flanked by sloping walls, forming a structural wall to the terraced housing which is orientated away from the major road. The new residences front to existing streets and would shield the neighbourhood from the freeway. (20) Plan showing redevelopment of four city blocks; (21, 22) cross sections; (23) view along motorway.

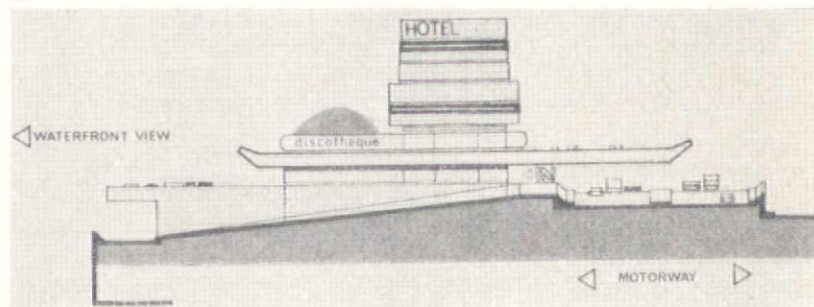
Burger & Coplans. Consultant architect; Donald Reay; consultant engineer, Eric Elsesser.



24

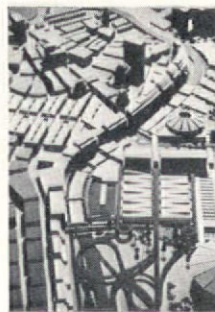


25



26

24, 25, 26. The design of the Inner Motorway for Liverpool by Shankland, Cox and Associates, proposes alternative methods for integrating the motorway with other developments; sketches show the road in (24) landscaped open space; (25) located above new shopping facilities; (26) located below pedestrian deck



27. The urban motorway designed as a new component of the urban fabric, combining traffic and other functions into a form of linear development, has yet to be realized. A project for redeveloping the Fort Point Channel area in Boston by M. Brammah and Karl Stevens proposes a spine of commercial and industrial buildings alongside and over the freeway. From 'Intracity', Harvard University 1965



28. New views from elevated motorways
From Building Research Station No. 3, 1967

tunity for large scale development of areas lying beyond the motorway corridor. Visual and physical integration with the motorway can also be realized through the use of air rights construction over or under the motorway. In either case the redevelopment of areas adjacent to the road right-of-way should be considered where changes in the value of the local amenities are such that environmental standards are irrevocably damaged.

Reducing motorway impacts

Restricting or adapting the motorway facility to reduce possible detrimental effects on local amenity values 31, 32. The technical demands of the motorway are not absolute; they can rest on value judgments such as the traffic design speed of the facility, which may be as modifiable as the visual form of the roadway. Although this may entail some sacrifice in the efficiency of the motorway, this must be weighed against the potential benefits to the

local community.

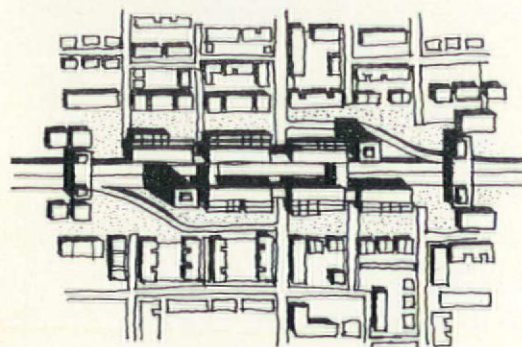
Subordination of local environment

Alternatively the motorway can be given a sense of permanence or belonging by designing it as the dominant structure of the urban area, and possibly providing the means for re-establishing coherence and order on a new metropolitan scale 33, 34, 35. The scale of the road is so huge and its visual direction so powerful that existing patterns within the neighbourhood must then be modified to respect the motorway form.

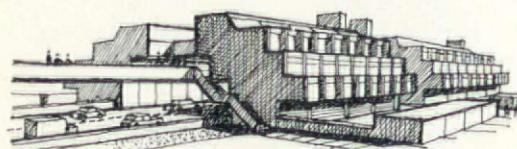
The compromises outlined above are primarily concerned with methods of integrating the motorway within the city environment. The problem can partly be dealt with on economic or scientific grounds; but ultimately the planner must deal with the social and visual values involved. Citizen opposition to a new motorway facility will seldom be on the grounds of efficiency unless direct financial

loss is incurred. The aesthetic judgments (on, say, nuisance and amenity) concern the designer who offers the only ground for valid decision; and it is the designer who must adapt the urban motorway as an integrated structure of beauty and so minimize the friction of the road with its social environment.

Adequate consideration of design criteria could lead to a whole new series of approaches in motorway design. Motorways need not necessarily be visually unpleasant—either for road users, local residents or pedestrians; they need not be single-purpose structures—but can instead be used for many ends, and they represent an important and as yet unrealized source of delight as well as utility. Urban motorways are used not by vehicles but by people, and the important conflicts are not between machines and pedestrians, as popular opinion will have it, but between different sets of people in different situations.□

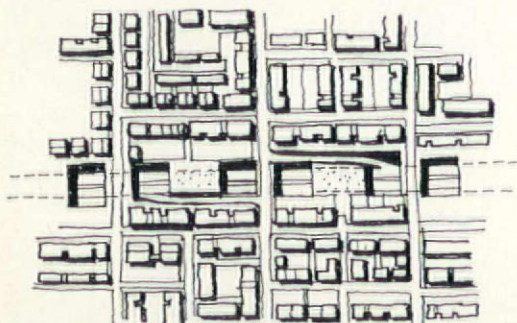


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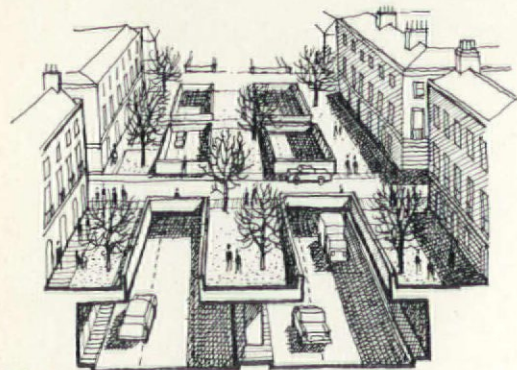


30

29, 30. Restructuring the motorway by means of new development, affecting urban areas adjacent to the road right-of-way

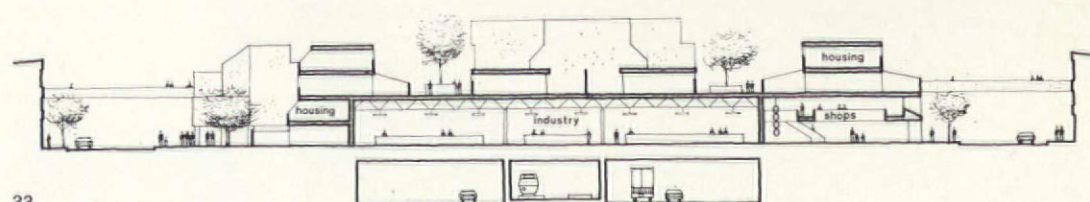


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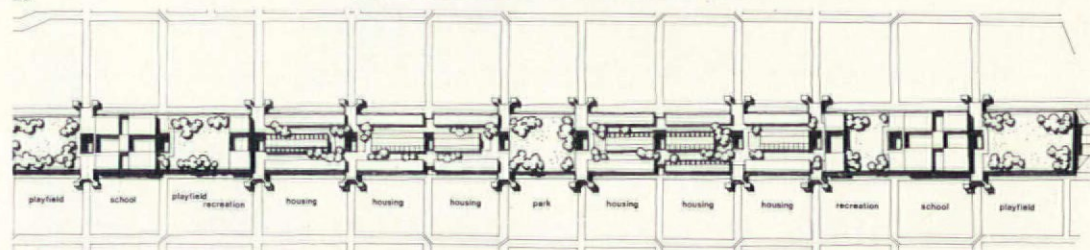


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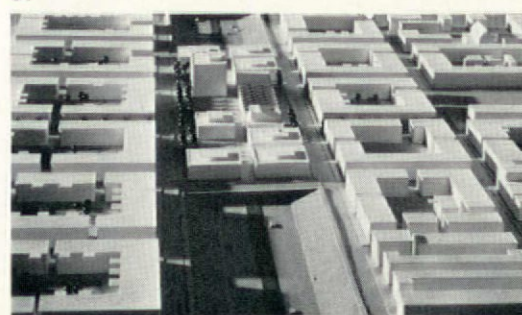
31, 32. Sub-ordinating the roadway to reduce the possible detrimental effects of motorway traffic on local amenity values



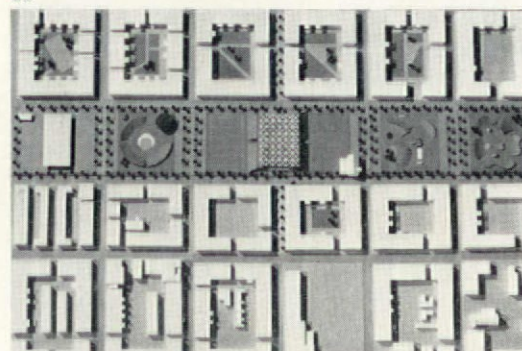
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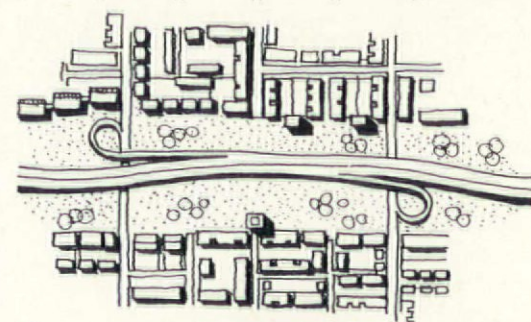


35



36

33, 34, 35, 36. Interim uses for land acquisition for a motorway corridor are prepared by Skidmore, Owings and Merrill, who are leading a team of engineers, transit consultants and planners preparing freeway proposals for Baltimore, USA. Recreation areas and playgrounds are proposed prior to actual motorway construction (36), providing urgently needed open space for the adjacent residential areas. After road construction redevelopment proposals over



37



38



39

the motorway include schools (35) or industrial, commercial and recreational facilities (33, 34, 35) 37, 38, 39. Designing the road as the dominant structure of the urban area, involving considerable modifications of the existing urban fabric. (37, 38) The motorway set within an open park; and (39) set adjacent to, but not obscured by, low horizontal buildings which allow the road to remain as the dominant visual factor

Are transit's full potentials for shaping cities, and for community benefits being realized?

William H. Liskamm

The research on which this article is based was made possible by a grant from the American Philosophical Society

THE TRANSIT PLANNING PROCESS

Given the problem of strangling vehicular circulation in urban areas, the world seems to have decided that relief lies in the construction of underground railways. Over forty of these systems are now in operation and more than twice that number are being planned. Six cities are at present building new systems, and most of the existing ones are being expanded. It has become the norm for cities of 500,000 or more, with expectations of continued growth and some confidence in securing the required capital, to be planning a rapid transit system.

The direct costs and disruption involved in these efforts and the resultant impact on the social, economic, political and physical environments of the communities are enormous. For example, some of the new systems now in construction, or in advanced planning, may reach total costs of one to two billion dollars each.

Due to the magnitude of these costs, and their significance to the future quality of urban life, it seems appropriate for all concerned to examine the characteristics of the process that has the responsibility for developing what the transportation press has labelled 'The second generation of rapid transit'.

Goals

The rapid transit industry is second only to the space exploration industry in its shortage of meaningful goals. These are, simply, to move lots of people in order to meet costs. The steadily decreasing number of passengers and greatly increasing deficits of most transit companies show that these are elusive goals. Originally the goal was to earn profits by

providing service for residents who lived out of the centre of the city. This meant a high capacity, fast and frequent service on its own right of way, separated from all other modes.* In the centres of the cities this usually resulted in locating the routes below ground.

The phenomenal rise in private car ownership since World War II and the resultant surface congestion at peak hours has spurred a new wave of activity in the field. The current goals of new rapid transit systems include attempts to relieve this pressure.

Ironically, it is precisely this choice of an attractive alternative mode, together with rising costs, that is causing what has been named the 'vicious cycle' of public transport. This cycle begins with the increase in private car ownership resulting in fewer passengers which produces lower revenue. With lower revenues transit operators have had to reduce the quality of their service, thereby causing more people to use their private cars.

This cycle has produced the paradoxical situation of transit operations requiring very sizeable subsidies in order to function, and yet continuing to justify new routes and station locations on the basis of predicted revenues alone. Since no choices in this area are completely viable financially this has resulted in selecting those requiring the least subsidy.

This method of designing public transport systems that are already heavily subsidized, on the basis of fare revenues alone must be questioned. Here we seem to be using the degree of subsidy as the principal criteria in decision-making without adequate goals to indicate the appropriateness of the subsidy.

*This has become the current definition of rapid transit.

Most of the major cities of the world are building or planning to build rapid transit systems connecting their major activity centres. Although the Duomo station in Milan provides direct access to the major node of the city, current thoughts are to provide better access elsewhere in the future so that development will be diverted away from this preservation area

Photo: Azienda Trasporti Municipali, Milan



Given a subsidized transportation system and a set of comprehensive goals including possible social, economic, environmental and other community benefits, our transportation systems could begin to realize their full potential as major contributors to the successful functioning of the community. At present these potentials for direct social benefits, for catalyzing new residential and commercial areas, for private development incentive, for the distribution and modulation of activities, for the improvement of land values, and for the general improvement of our urban environment are not included in transit planning.

Organization

Most transit companies retain the organization they had when they began as profit-making private companies. Generally, there is a board of directors, who set policy, a chief executive and his staff, and the various operating departments, usually with a chief officer in charge. Since the companies were, and still are, basically railroad companies, there is a predominance of transportation engineers on their staffs.

This organization concerns itself almost exclusively with the efficient operation of its trains, and with its increasing financial difficulties. It is currently employing techniques such as automated trains and signalling in order to reduce operating costs, while simultaneously increasing the capacity of its ageing infrastructure. It is not organized to

deal with the broader issues of public transport, nor is it interested in new ventures that may increase costs. In addition, even if it wanted to act more comprehensively, it usually has no jurisdiction over related issues, including parking policies, development controls, social programmes, and competing motor-way construction. Often rapid transit companies are separate from surface transport companies. In these cases it is not uncommon for them to compete directly along the same routes to the disadvantage of all. Clearly the responsibility for the organization, operation, and planning of the comprehensive transportation system for metropolitan areas cannot be achieved by the existing transit companies.

Unfortunately, due to historical and political precedent, the City Planning Departments have little control over the rapid transit companies. Many of the companies have been in existence for a very long time, and began as financially strong organizations, with large property holdings and considerable political influence. Over the years, although their financial situation has deteriorated, cities have become dependent on them, and they have maintained their political position.

It is in the political arena that most major transit decisions are made, due to the size of capital costs involved. Since the construction of a rapid transit line has usually been considered solely an engineering task (and this may be one of the major problems) the proposals by the transportation engineers of

the transit companies are usually accepted, as they have the technical experience behind them. Attempts by planning staffs to modify these proposals to integrate them better into the activities of the city are countered with warnings of greatly increased costs and of possible technical difficulties.

In an attempt to improve on the methods described above, and to provide some degree of coordination and planning on a more comprehensive level, a few cities have made organizational changes. Some, such as Stockholm and Hamburg, have placed the responsibility for the control of all public transport within the metropolitan region into one organization.

Although this is a major step forward, the problem remains of the lack of a sound means of coordinating roads and parking policies with public transport. In almost all cases this sector has been kept under the direct control of the political decision makers. Unfortunately, their understanding of the critical relationship between the two major systems has been limited. Lacking a clear transport policy, this has often resulted in the funding of new public transport systems simultaneously with major core area parking and roads facilities. The effect has been to increase even more the flow of cars attempting to reach the city centre, and losses for public transport.

In London, where most public transport has been under the control of one organization for some time, the Ministry of Transport



2



3

Well coordinated rapid transit can intensify development at stations as shown in this small shopping centre in West Berlin 2, and high rise residential area outside Stockholm 3

2 Berlin Verkehrs Betriebe. 3 AB Storstockholms Localtrafik



4



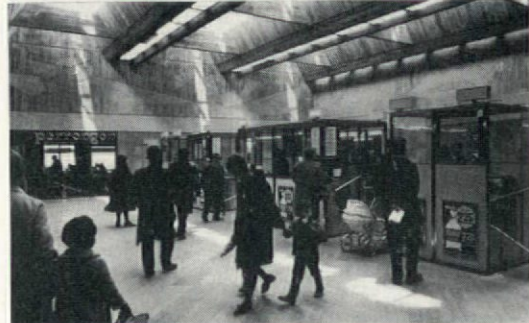
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If transit operators want to succeed in their competition with the private car, they must attend to the needs of their users. User experiences will have to be improved to eliminate the long circuitous walks down endless corridors and stairs. Transfers will have to be direct or the distance shortened by mechanical means 4. Means must be provided for the handling of prams, luggage, and other necessities 5

4, 5 AB Storstockholms Localtrafik



6



7

Much effort goes into the design of the stations as static pieces of architecture: Rotterdam 6, and Stockholm 7. Very little effort goes into the experience of moving through the construction that makes up the transit system.

6 Photo: Hans Katan
7 AB Storstockholms Localtrafik

recently announced it would place responsibility for all transportation, public and private, under the control of the Greater London Council.

Coordination

Today's transport user requires convenient service and interchange facilities if he is to deny himself the pleasure of driving his own car. This means a minimum distance or time between modes at transfer points, adequate escalators at all changes in level, and a pleasant environment. It does not mean long frightening tunnels with many stairways. All links must be direct.

Although everyone agrees on the need for coordination it remains elusive. It has depended in most cases, on the goodwill of all involved, and the results have been mixed.

In addition to the need for coordination of programmes and policies, including roads and parking, there are such practical matters as interchanges of all kinds, park/ride and kiss/ride facilities,* feeder roads, access into commercial areas, and pedestrian links. Usually these require coordination with and between city agencies, and in many cases coordinating groups that have been formed for this purpose. Unfortunately, these groups most often have no authority, and are successful only as long as they meet the wishes of their most powerful members.

Many transit systems are reaching out beyond the political limits of the city to serve commuters. The central city govern-

ment has no jurisdiction over adjoining communities, nor can it require funds from them for transit construction or operation. In most cases some form of regional organization has been established to resolve these matters. Again, this organization has not usually been given adequate authority.

Financial

Most transit companies receive subsidies. Exceptions are those in Lisbon, Barcelona and Madrid. The work day in these cities still includes the two-hour lunch. This permits most workers to go home for their lunch, and provides the companies with a second mid-day peak and additional revenues which, together with Saturday work days, has maintained their solvency. As more business firms switch to 'American hours' (45 minutes for lunch) these additional revenues are vanishing.

In most cases the government pays most or all construction costs, including tunnels and stations. Equipment and rolling stock is usually purchased by the transit companies with varying governmental credits and supports. Responsibility for meeting operating costs is most often the company's, and different schemes have been devised as to who pays financing costs and amortization.

Simply stated, the transit companies are at their worst financial condition just when the cities need them most. The current financial arrangements are probably transitory with the cities assuming more, and perhaps all, of the

costs as they urge the transportation companies to offer increased service.

User experience

For many passengers a trip on the local underground railway can be a grim experience. The ageing infrastructure of most systems, not renewed because of financial difficulties, is dirty, inconvenient, uncomfortable and unpleasant. Fortunately, humans seem to be very adaptable, and they use what is provided. It is interesting to contrast one's emotions upon entering an underground railway and say, an airliner. To me, the former is often depressing and the latter exhilarating even after repeated use. One wonders what the same aircraft would seem like 35 to 40 years later—the life of transit cars.

It is further interesting to contrast one's emotions and the dull expressions of one's fellow passengers, hurtling through the black void, with the experience when the train surfaces. After adjusting the eyes to daylight, emotions and expressions soar as routes, activities, landmarks, weather, topography, and seasons can be observed.

Clearly, routes at surface or above produce superior user-experiences more easily. However, the potential damage to community environment has discouraged most attempts at locating anything but submerged systems through built up areas.

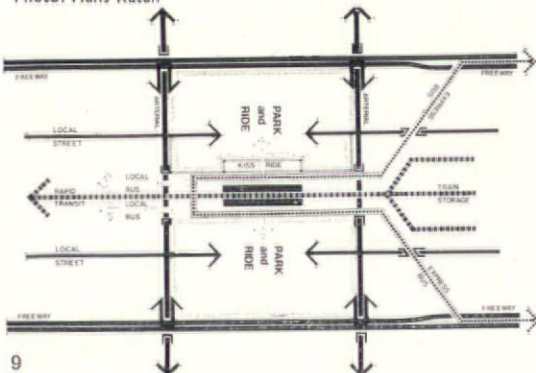
Impact

Having seen many of the existing transit



8
At surface or above surface, alignments provide for a pleasant journey for the transit user, but often diminish community environment and amenities. This example in Rotterdam affords a wonderful view of the harbour activities at all times of the day or year, but blocks residents' views

Photo: Hans Katán



9



10

Interchange facilities must be analysed to afford maximum convenience for transfer. Direct links must be provided to major vehicular expressways, and adequate, convenient parking facilities must be provided at strategic auto/transit intersections as shown in diagram 9, of the proposed terminus of one the rapid transit lines planned for Seattle, Washington. Stations must be coordinated with development programmes as in Rotterdam 10. The mezzanine area of this elevated station, protruding toward the undeveloped open space, will connect directly with a new shopping centre, whose shopping level will match the mezzanine level. Parking and serving will be below, at ground level. Bus ramps can be seen that permit buses to discharge passengers at the mezzanine level, and receive passengers at ground level. Generous use of escalators makes transfers simple and convenient

9 Okamoto/Liskamm 10 Aero-Camera

* Park/ride: Commuter leaves his car at parking facility and takes public transport to destination.
Kiss/ride: Commuter is brought to station in morning, (kissed goodbye!) and vehicle leaves station area. In the evening this process is reversed.



11
Most transit operators are installing automated equipment in an attempt to reduce operating costs while simultaneously increasing the capacity of their ageing systems
Photo: Aziendi Trasporti Municipali, Milan



12
Very few graphic designers are involved in the transit planning process, despite the critical need for user information. In Milan these signs were designed by the consultant architects, Franco Albini and Franca Helg
Photo: Aziendi Trasporti Municipali, Milan

systems there is little doubt in my mind about their power to help shape or reshape a community. Some examples of this impact include:

Greatly increased land values and more intense development at station areas.

Concentration of retail facilities and other activities.

The withering of the traditional main retail district of a capital city, in favour of a new district with good transit access.

Renewal of property at stations areas.

Redistribution of residents and the attraction of new residents to under-populated areas.

Satellite communities made possible by providing rapid links with the city centre.

New development diverted away from sacred preservation areas in historical cities.

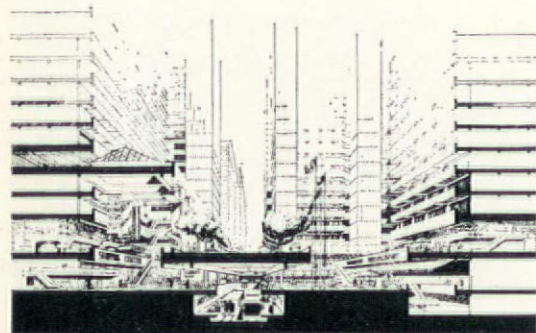
Changed income structure of a neighbourhood.

Barriers created between communities and community assets.

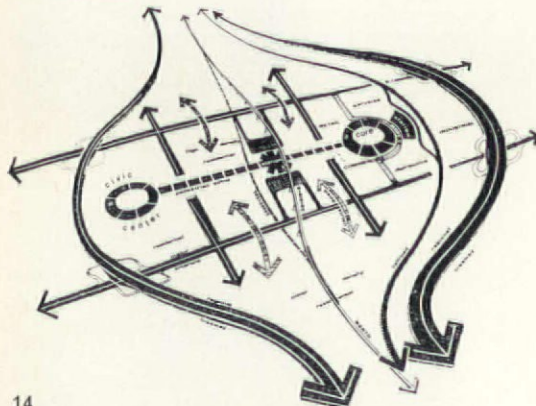
Improvement of a neighbourhood's desirability by providing good access to jobs, schools, and community services.

An alternative provided to the flow of private cars.

With increased understanding of transit's potentials we must discover means to make more rational use of them. At present these potentials act as unplanned side effects.



13
Section through proposed coordinated development along main downtown station in Seattle, Washington. The sides of the mezzanine have been opened to permit direct access to multi-storey commercial buildings, and to allow daylight to enter
Okamoto/Liskamm



14
Analysis of differing modes of circulation at a suburban station in the new rapid transit system in San Francisco. Analyses such as this are useful in evaluating alternative transit solutions in the light of the community's development objectives
Okamoto/Liskamm

Form typology

With a few exceptions, like the Moscow and Paris Metros, most rapid transit systems are radial in form. They have developed outwards from the city centres to reach outer communities. These routes became the generating force behind the development of continuous dense corridors radiating from the centre like spokes on a wheel. Some cities have managed to capitalize on this, and have controlled the use of the land between these corridors to provide green open spaces.

The radial form for a transit system assumes that most journeys are to and from the centre. It strongly emphasizes and supports the dominating position of the Central Business District. Since most offices are in the central area the white collar worker finds himself well provided for. However, the industrial or blue collar worker often finds his work place out of the centre of cities. His choices of journeys to work are limited. He can take rapid transit into the CBD and take another radial line out to his job, or he can take several circuitous, circumferential bus systems, or he can (and usually does, if possible) drive his car. The same obtains for the elderly, for the children, and all others who must rely on public transport, but whose destinations are not in the city centre.

Complete networks of efficient public transport, linking all activities and destinations, utilizing differing transit modes based on needs, must replace the existing radial

patterns. This is the only way that full accessibility and opportunities will be provided for all members of the community.

Equipment

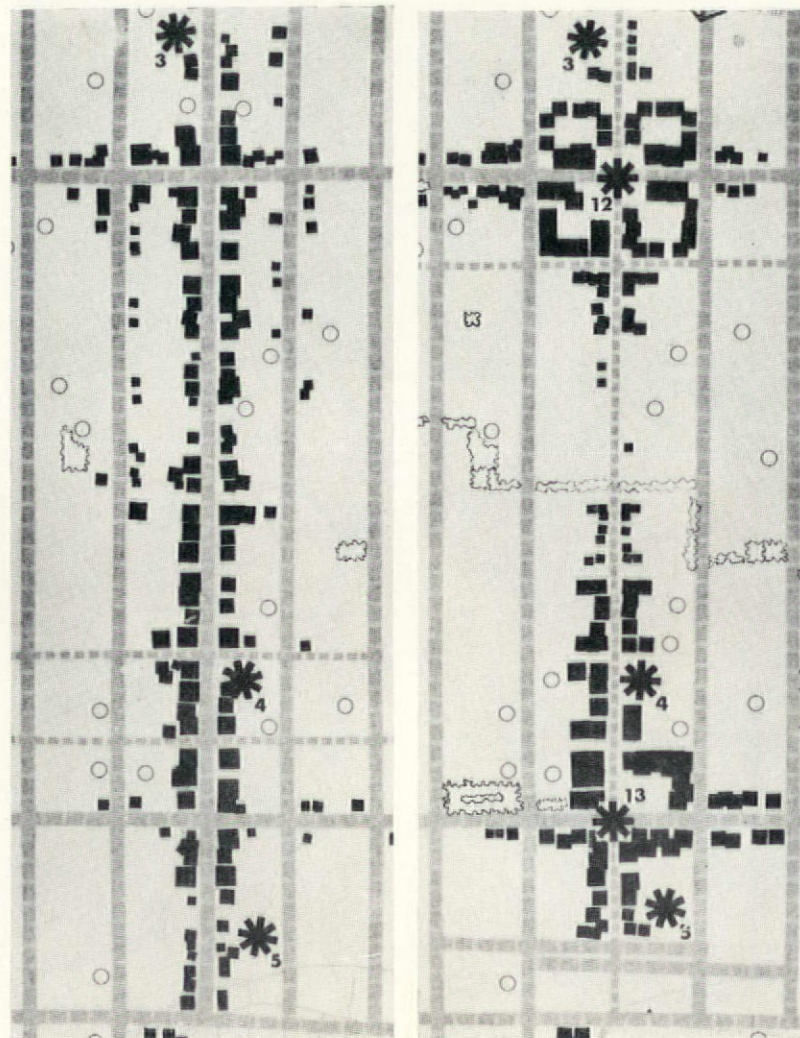
Industrial firms in many parts of the world seem to be engaged in a desperate race to be the first to produce the new equipment that will solve current transportation problems. They clearly see an enormous market if they succeed. However, most are seeking solutions without first identifying the performance standards that their equipment must meet.

In addition, most research and development efforts seem focused on the design of components rather than of a complete system.

The investment that existing transit companies have in their rolling stock and infrastructure makes it unlikely that they would discard all of it for the ideal new equipment if it is produced. This would indicate that an evolutionary process is more likely. New techniques and equipment may emerge as a result of situations where current methods cannot cope with specific problems. An area like Southern California, for example, where the population is so widely dispersed and collection systems difficult, may demand and produce new solutions.

Design professions

Apart from equipment design, the involvement of design professionals in the transit planning process is limited. Due to the major technical aspects of these efforts, engineers



Left: Diagrams showing the predicted impact of rapid transit on an area of San Francisco. The linear 'strip' retail development that exists 15, is expected to change to two retail clusters around the two stations 16

Okamoto/Liskamm

are usually in charge. Architects are given the responsibility for finishing the structural shell of stations, and, where required, at grade station buildings. Their tasks include finish materials, colours, lighting, graphics, and miscellaneous kiosks and benches. The architect's opportunities for design innovations are severely limited by his late admission into the process. Usually the structural shell has been approved before he enters the scene.

Some transit systems like Paris and San Francisco have engaged private architects to do this work. Most others have used staff architects from their organizations or city departments. In the United States private architects have been introduced into the planning process at various times. In San Francisco they began when the project had already been fairly well developed. In Washington, D.C., the architect was commissioned and began simultaneously with the engineer. In Seattle, a full design team including engineers, architects, urban designers, planners, economists, sociologists, graphic designers, public administrators, and others have been working together to develop the transportation system for that area.

Although graphics is such an important element in transportation, none of the systems engaged graphic designers. Some had their type-face and posters designed by a graphics artist many years ago and are continuing with these models.

None of the European systems worked with landscape architects. Where planting was

used it was laid by city departments. If future transportation systems are to be integrated into our environment and play a more active role it is clear that the current process of transit planning and realization requires a broader participation of all environmental design disciplines.

Summary

The characteristics described above are of the average situation. There are of course better systems, but also worse.

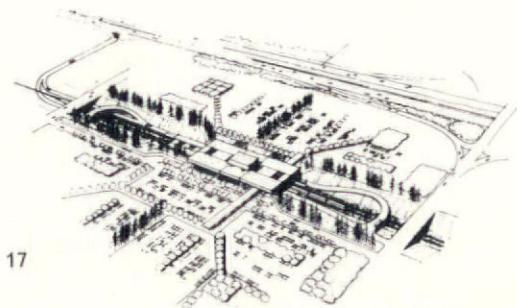
The pattern that develops from these characteristics is that most of the major cities of the world are investing or planning to invest very large amounts of capital, and to disrupt their activities for significant periods of time in order to build or expand an underground railway system. These efforts, although at an unusually large scale, are being conducted in a vacuum of comprehensive planning and coordination, and without adequate organizations for these tasks.

In addition, short range objectives are limiting broader community benefits possible with integrated transportation. The shortage of policies and goals in this area is producing some expedient solutions that attempt to serve main journey to work corridors, and to reduce the flow of private vehicles for this purpose. I can think of few other planning and construction projects of this magnitude that are approached with such limited programme criteria.

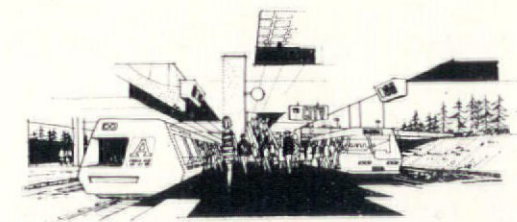
In the political sector the politics of

transportation are still not too well understood. It is here, however, that all major transportation decisions are made, although lacking appropriate policies for this purpose. The results have often been inconsistent, and have led to curious transport solutions.

Communities are, and should be, demanding to know precisely what the impact of major new projects, including transportation, will be on their environment. Simulation techniques are available that enable us to portray both the visual experience of movement along alternative transport routes, as well as the physical effects these alternatives will have upon the community. It is in this area that the environmental design professional can be an extremely valuable contributor. He can, with multi-disciplinary support, test various alternatives for their impact on the physical, economic and social well-being of the community, and communicate this information to afford opportunities for rational selection and decision making. He can also participate directly by helping to generate transportation proposals, with a comprehensive professional team including all required technical skills, that focus on the full realization of transports potentials for service and benefits. This new departure, of involving the entire spectrum of planning skills to what has been exclusively an engineering task, has begun in a few instances. We must try to broaden the use of this approach as the only reasonable one commensurate with the scale of the issues involved. □



17



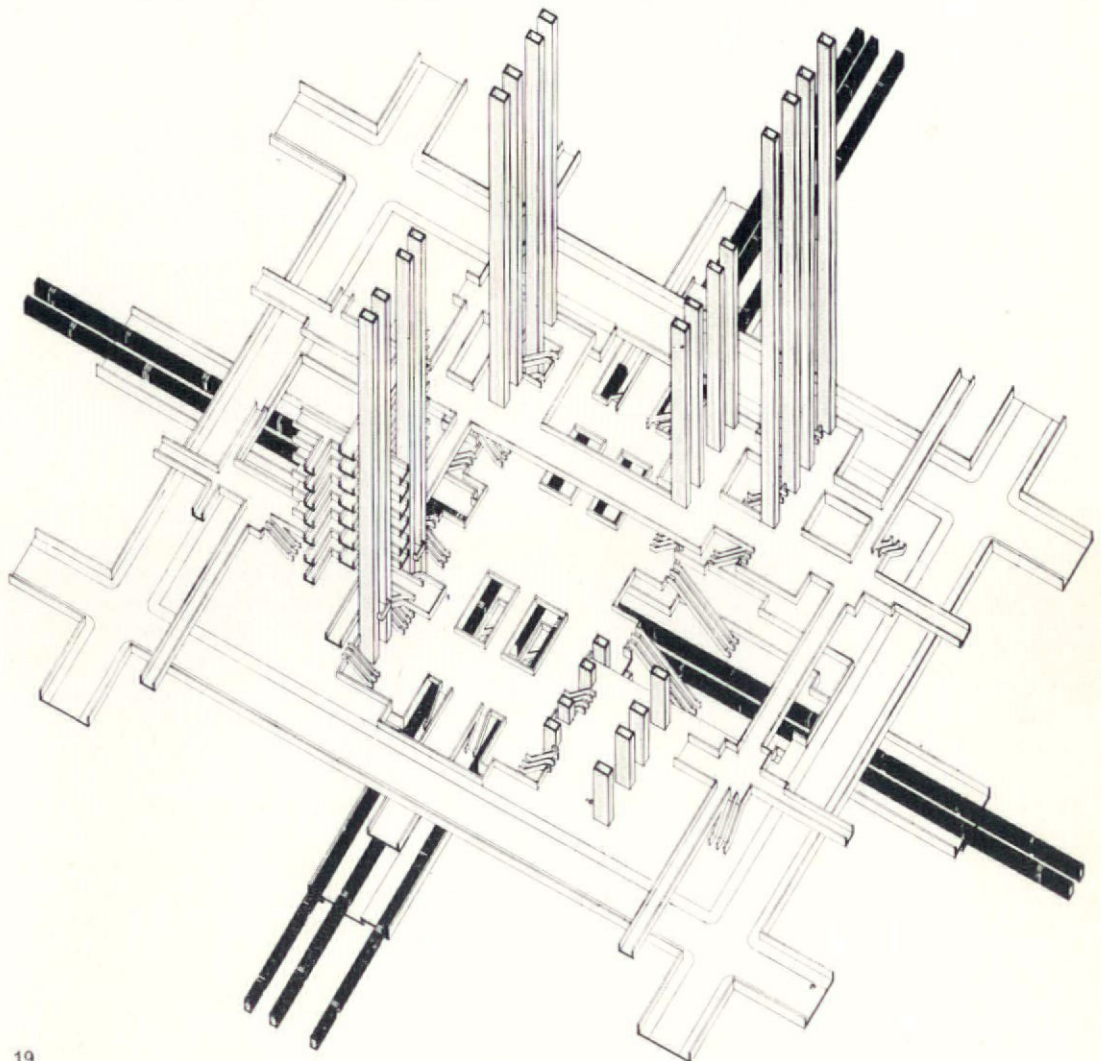
18

Sketch of the physical organization of the various circulation modes of the proposed rapid transit system for Seattle, Washington, 17, including direct expressway access, and park/ride and kiss/ride facilities, pedestrian links, and local and express bus access directly to station platform level 18

Okamoto-Liskamm

Right 'Access Tree' 19, developed by the Regional Plan Association of New York. Utilizing this system large-scale development would be concentrated at stations, producing variety in dense urban areas. The roots are the commuter trains and subways, the final delivery system of 77 per cent of the Manhattan central business district's two million workers. The trunks are high-speed elevators and escalators leading to the branches or office corridors and sidewalks. The large mezzanine and train stations are partially open to air and light

Urban design consultant: Rai Y. Okamoto

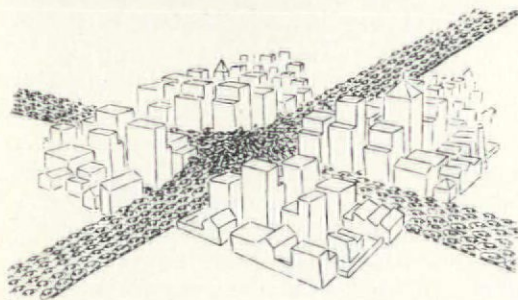


19

TRANSPORT TOMO

Brian Richards

Traffic in towns today means motorways, fly-overs and bridges—looming ever larger over their surroundings. Towns are disintegrating under the impact of traffic engineering. Architects are being left to build on the bits in between.



149



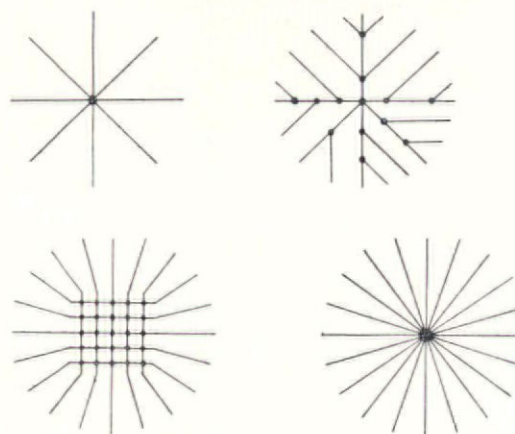
The population explosion, increasing affluence and desire for mobility are all factors contributing to the continuing growth of car ownership. A widespread belief exists however among planners and traffic engineers, not to mention politicians, that the car can remain with us, used in much the same way as today, until the end of this century and, because of this, the reconstruction of the city fabric, to allow for its greater use, is essential for its survival. 'Unless we do this,' we are warned, 'our cities are doomed, and only the prototype city, closely resembling Los Angeles will survive.'

There are some aspects of this mythology—for such it is—that require discussion. There is a growing awareness that designing cities around cars may not, and should not, be the only way. Not all people can drive or afford cars,

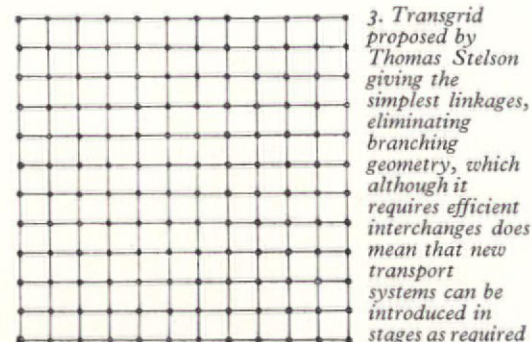
or are old enough to drive; many are too old; together these may number 25 per cent of the population or more. But even of those that can and like driving, many may, given free choice, prefer to do so for only certain journeys, partly dependent on how good the alternatives are. Few cities in the world are rich enough to provide for a decent built environment with anything like full car use, so that it is now generally recognized that an alternative to private car transport has to be provided—in the form of public transport. The role that this could play in the future is important. As architects and planners (being car owners), most of us are guilty of never having given public transport much serious thought, the car providing an ideal excuse for more stimulating imagery (traffic architecture) than that given by such archaic forms of public transport as the double-decker bus.



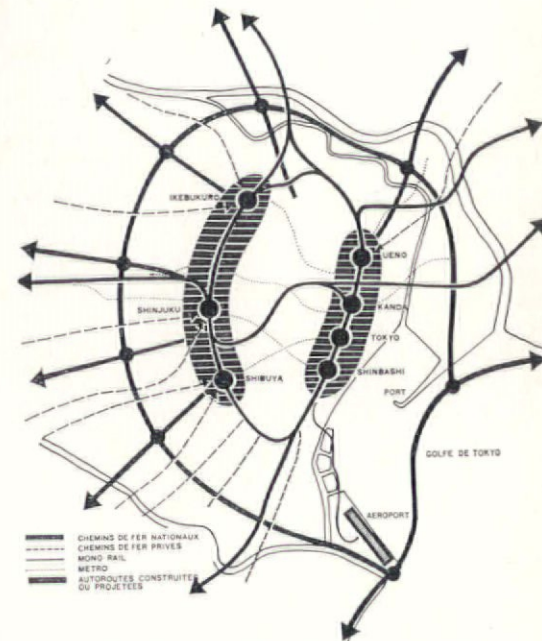
1. London railway and underground map showing lines radiating from the centre but few linkages for cross-city movements, which have to be made by bus or car on an increasingly overloaded road network



2. Grid superimposed on a radial network



3. Transgrid proposed by Thomas Stelson giving the simplest linkages, eliminating branching geometry, which although it requires efficient interchanges does mean that new transport systems can be introduced in stages as required



4. Map showing disposition of sub-centre interchanges, Tokyo, where new development tends to increase congestion, although reducing pressure on the city centre itself
l'Architecture d'Aujourd'hui



5. One million commuters pass through Shinjuku interchange station, Tokyo each day. Such a station, although well designed, raises the question of the wisdom of building high capacity systems compared with fine mesh lower capacity networks which would spread rather than concentrate pressures

Public transport

The network

Our existing cities are obliged to use still the inherited road and rail networks, often centuries old or at least 50 years old. Most railways are radial systems built for travel into city centres from peripheral residential areas and so unsuitable for cross-city trips. Road networks are often sufficient for these cross trips to be made; but motorway construction is often necessary in cities with large car usage, to counteract congestion. Such roads relieve pressure on central streets and may help to create new workplaces outside the centre. Transit planning, however, has a tendency to perpetuate existing 'maximum desire lines' of people, and so tends to increase pressures on the city centre rather than decrease them. The importance of new thinking about the

form ideal transport networks should take was put forward in a paper (presented in 1967 in Pittsburgh to the Second International Conference on Urban Transportation) by Professor Thomas Stelson, who suggested that a simplified grid could be laid across a city consisting of movement systems to serve public transport. Initially these might be existing roads, freed from other traffic, or existing railways, and on these could run shuttle buses or shuttle train services. As new technology developed, new systems would be added and interchange between each system would be excellent, the service being frequent; long waits occasioned by running to time being eliminated. The system being 'unconnected'—that is, having no branches—new links could be made as necessary and an eventual network on a half-mile grid covering a city could make any origin or destination only 5 or 10 minutes walk from a

station or stop. A network of this kind clearly avoids the inherent problem raised by existing rapid transit technology—that of justifying its high potential capacity (40-60,000 persons an hour) and correspondingly high capital cost—for rarely are such systems overloaded throughout their length, throughout the day. Lower capacity systems on fine mesh networks could give better service, making stations closer to homes and work places, spreading rather than increasing pressures and so avoiding the problem of handling people in present-day high-capacity systems (Tokyo Central handles 500,000 people in one day). Small scale networks would need to cost substantially less than present-day rapid transit systems to make them feasible and would require to be closely tied in with land uses, present and future. They could be a useful goal for a coordinated transport authority. >

Hardware—a limited vocabulary

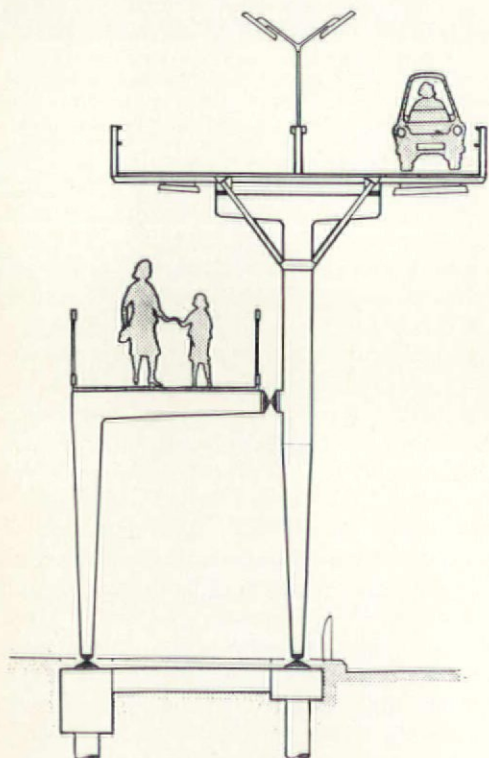
The range of present-day transport systems leaves much to be desired, the bus changing little in the last 30 years and the subway operating much as it did in the nineteenth century. Cars and taxis move and are used in an unchanging way, the only improvements being to roads rather than the vehicles. Innovations have been proposed for automatic highways and technically these are completely feasible today, probably quadrupling present highway capacity. Universal minicar use could treble road capacities, and innovation in



6. Bus map of central London, showing how a theoretically flexible system has, in fact, followed the main roads. Travel speeds at peak hours can be as low as 4 m.p.h., due to congestion



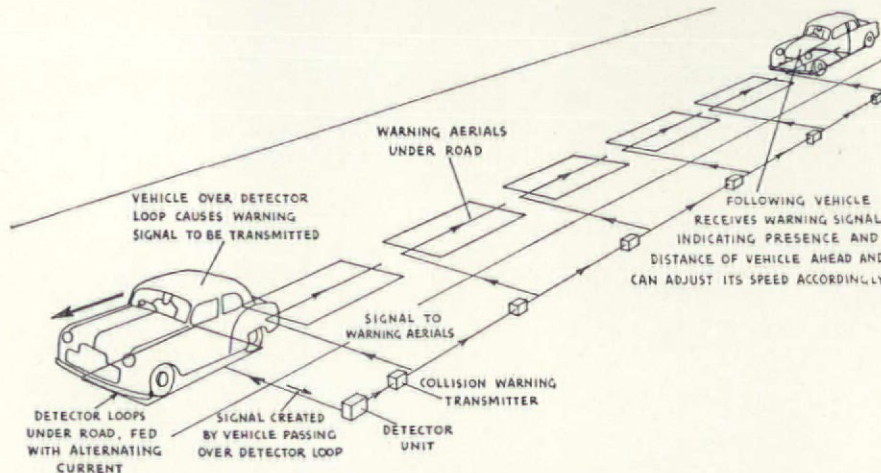
7. The Prince on the Tube, 1890. Operation of underground railways today are much the same as then. . .
History of London Transport



8. Small cars on specially segregated roads could treble road capacity, but in no way solve congestion in existing central areas
Cars for Cities

present car design is possible today, given government incentive for the industry to change; but it is doubtful whether either method would solve congestion problems—or merely increase them. Studies are under way at the Road Research Laboratory into methods of pricing roads which could greatly change present car use, the driver paying as he drives—more in congested areas, less in others—rather than an annual road tax. Of the studies into new systems of transport, two in the USA are important, although not revolutionary. A twenty-seater minibus system has undergone

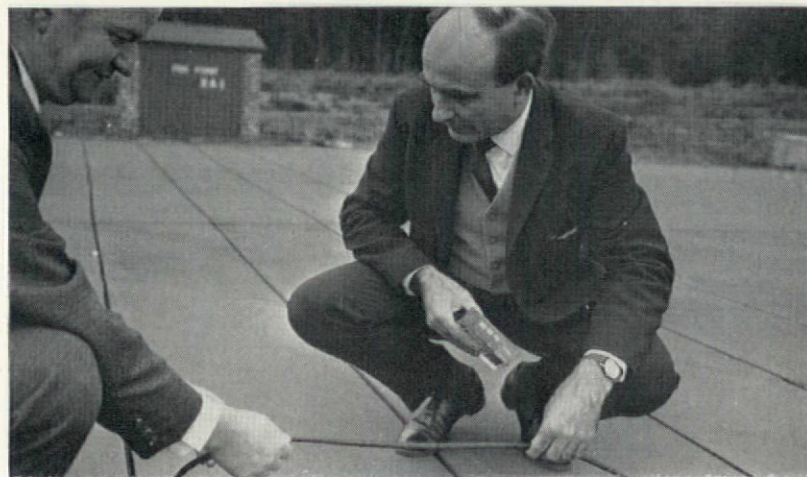
trials in Washington DC with success, carrying two million passengers in the first year—double that expected. Subsequent studies by the Road Research Laboratory have shown that small buses of this kind have great advantages (particularly for the passenger) compared with traditional large buses, giving shorter waiting and faster travelling time due to their greater manoeuvrability. Proposals have also been made in the USA to use such buses in low-density residential areas (where public transport is difficult to operate economically) directed under computer-radio control, to



9. Automatic highways and vehicles have been found technically feasible—at a price. Used by small, hired vehicles they could be useful, provided parking were kept peripheral to central areas
Research on Road Traffic, HMSO 1965



10, 11. Road pricing meters now under test at the Road Research Laboratory would require a motorist to 'pay as he drives'. The meter shown is actuated by passing over cables set at intervals in the road bed
Photos: Topix



pick up people *en route* like a taxi, at less cost.

Although such small bus systems may give excellent service in heavy traffic, travel speeds can be very slow (in Washington average speed is 4 m.p.h.—just over walking speed); also man-power costs are now often 60 per cent of operating costs; so that development of automated systems segregated above or below traffic must come. In Britain today only one system is under detailed study, the automatic taxi* (closely resembling the US Teletrans system) in which small four-seater vehicles are entered at a station, operated only when re-

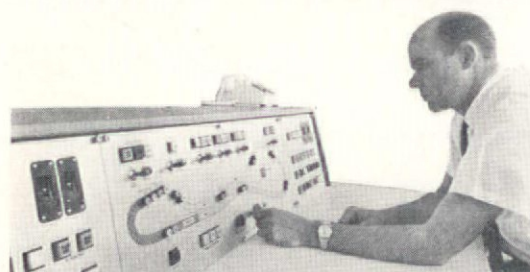
quired; the destination being reached without the passenger interchanging or stopping at intermediate stations. In the USA only one serious alternative to existing rapid transit has been developed—the Westinghouse 'Skybus' in which small rubber-tyred vehicles, requiring no guards or drivers, run on a track under computer operation for 24 hours a day. The system appears to have only two shortcomings; its cost (as costly as existing rapid transit) and its size (it is still too large to run elevated through a central area). But its interest lies in its resemblance to a lift in a building, requiring

no operators, with a high degree of safety. (Last year, of 500 million miles travelled by lifts in the USA only one person died.)

In one particular field, development is seriously lacking, in that of systems of movement for the 1-3 mile range. Shallow underground railways can give reasonable service but are costly to build and often offer infrequent service at off-peak periods. New systems would ideally, be cheap enough to allow extensive networks possible, small in scale and silent enough to make them acceptable overhead in any street except those of great



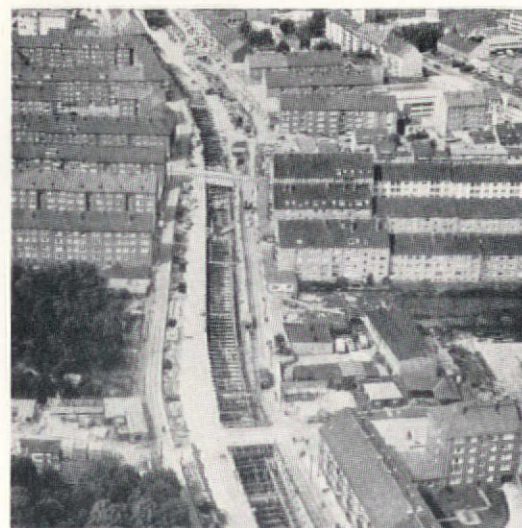
12. In the US radio-dispatched minibuses are to be used in low density residential areas, to pick up and drop passengers *en route* like a taxi, but at lower cost. The Washington trial service has carried two million passengers in the first year
Photo: US Information Service



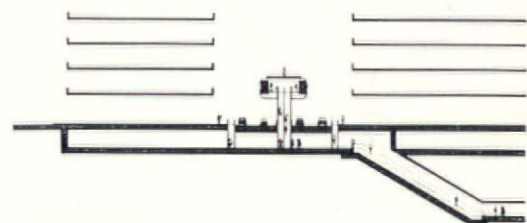
13, 14. The Westinghouse Skybus is the only serious alternative to compete with existing rapid transit systems. Carrying up to 20,000 persons per hour its capacity is still too high for most corridors in the US and its size too large to make it acceptable over streets in a central area. Its interest lies in its capability of running automatically under computer control, without crew



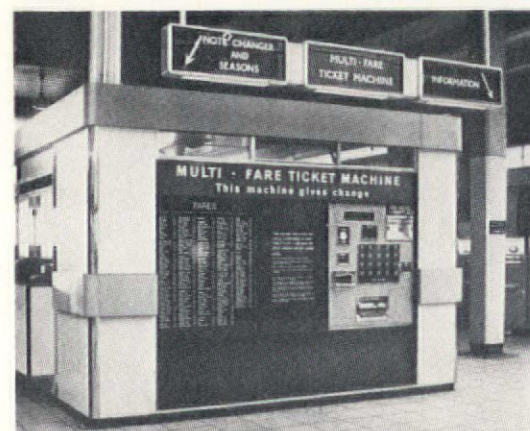
16. Washington minibus successfully uses flat 5 cent fare on the honour system, passengers leaving money in a box on entering



19. Existing rapid transit is too large and noisy to be acceptable when elevated in central areas. The alternative is costly tunneling, as in the open-cut tunnel shown here under construction
Stadtverkehr gestern heute morgen, Munich 1965



17, 18. Small, silent secondary movement systems having a capacity of 5000 people an hour in each direction, with no waiting, are possible. Later redevelopment could mean that they run within buildings. The section shows station connecting directly by escalator with the underground. The cost of the system is one fifth that of the Underground Project. B. Richards



15. Costly machines for money changing and issuing tickets point towards a need to simplify methods of paying for travel
Manchester Study



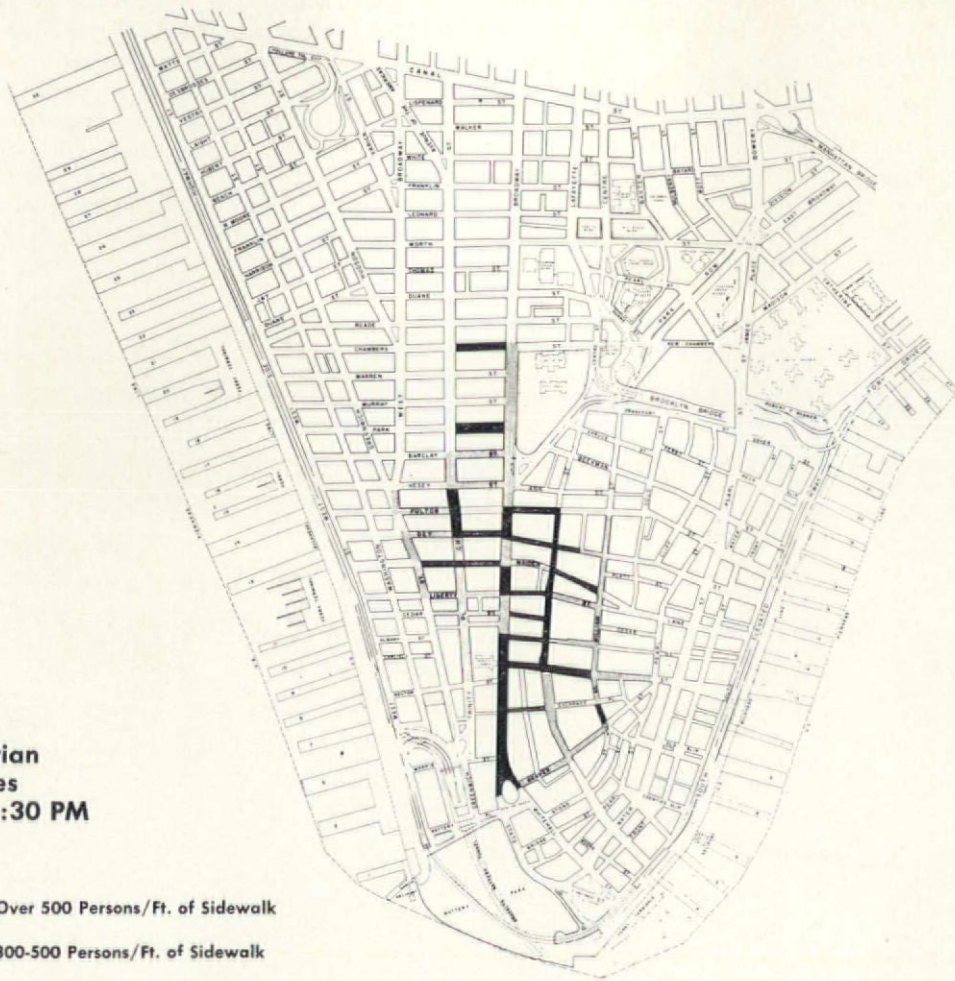
20. Periodic proposals are made to solve transport problems with the wrong system. Here is a monorail study, by the GLC Conservative Party, proposing a Safege system on Fleet Street

*See page 440

Pedestrian Densities 12:30-1:30 PM

Legend:

- Over 500 Persons/Ft. of Sidewalk
- 300-500 Persons/Ft. of Sidewalk
- 150-300 Persons/Ft. of Sidewalk
- Under 150 Persons/Ft. of Sidewalk



21. Pedestrian density studies, such as this for Lower Manhattan, are needed due to overdense development, and lack of pedestrian-vehicle segregation. Introduction of adequate systems of horizontal movement could encourage the spread of such development, decreasing pressures

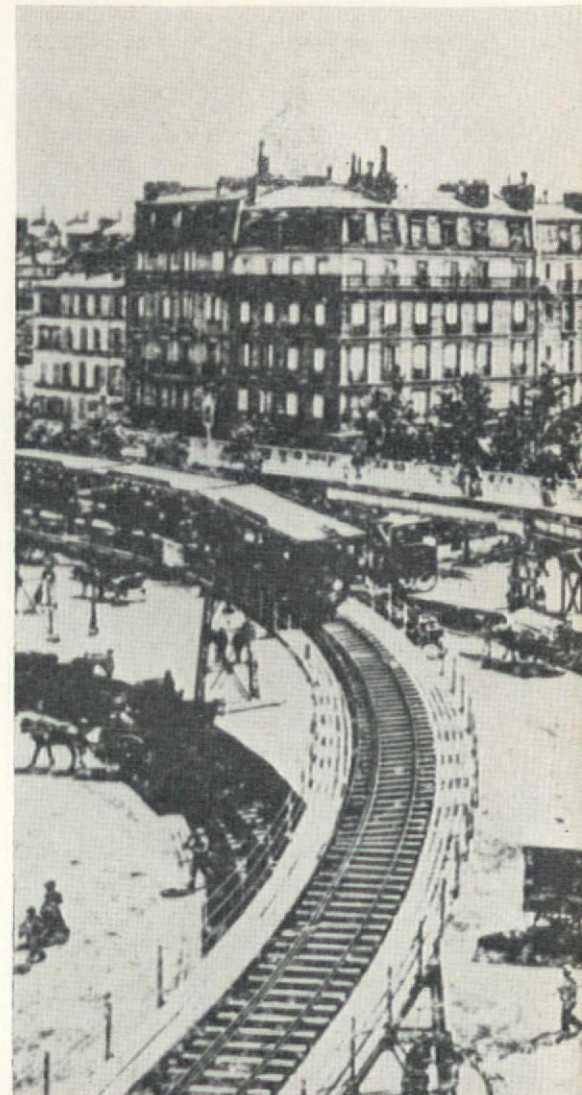
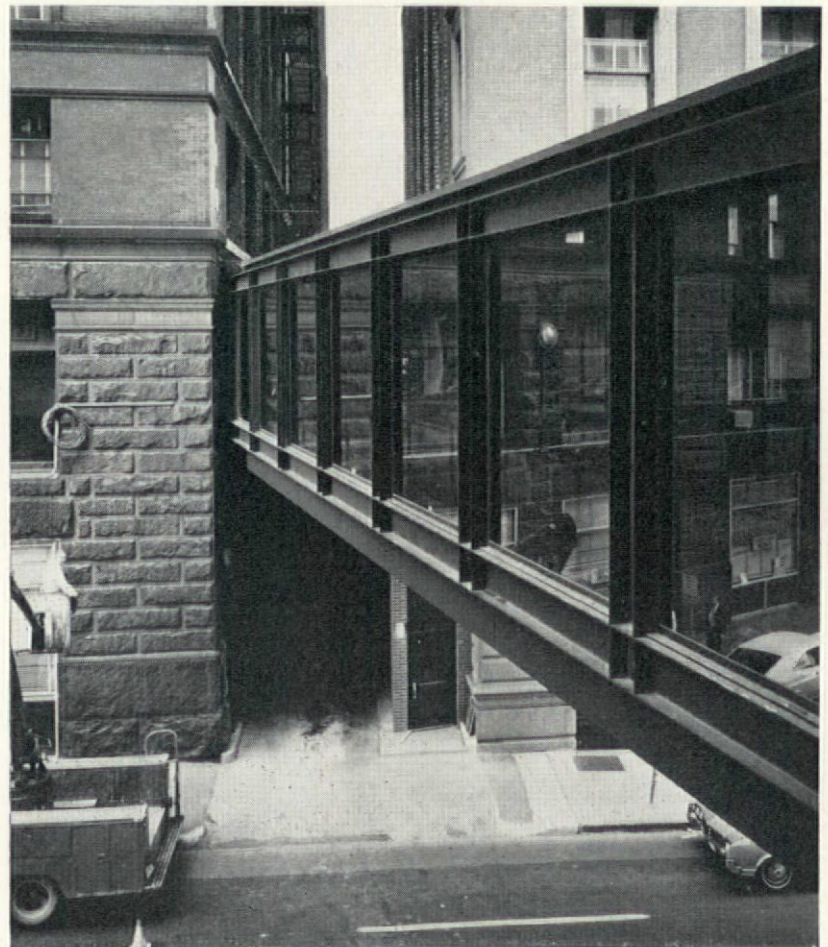
architectural significance. They need not be fast—8–15 m.p.h. is still double many existing travel speeds—but should be continuous rather than intermittent, requiring no waiting at boarding points. They would be routed to serve the needs of pedestrian movement within the city, requiring close analysis of these movements (the recently completed £600,000 London Traffic Survey tells us much about vehicle movement but nothing about the movement of pedestrians). The use of these systems could be widespread, varying from those of city business to shoppers' 'park and ride' trips. Motorways and vast parking silos are too often planned ludicrously close to city centres 'to be within walking distance' of shops. Alternatives must be found to help to solve this problem, cheap enough and enjoyable to ride on.

A serious lack of imaginative development and experiment exists too in providing good alternative methods of servicing cities. Off-peak servicing experiments are under way in London and have shown promising results, but in the future newer methods of handling goods may become economic and practicable. Containerization and new handling methods may lead to this.

The city section

The roles of politician, planner, transport authority and architect must of necessity come together if public transport is to assume any

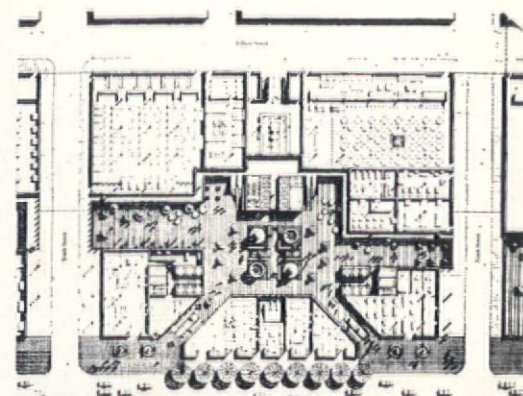
23, 24. Deck developments are convincing only when given a high degree of protection against weather as in the Skyway Concourse designed for St Paul, Minnesota, by Hammel Green and Abrahamson, Inc. The Skyway is strictly an upper level pedestrian walkway, and produces relatively few ill effects upon the ambient environment below. There are however, many mechanical systems—i.e. rapid transit—in which the amounts of noise, odour and dirt that are produced and the sunlight, views and air space that are eliminated becomes so oppressive that the tendency to separate the circulation level from the particular mechanical technology in the decision making must be questioned



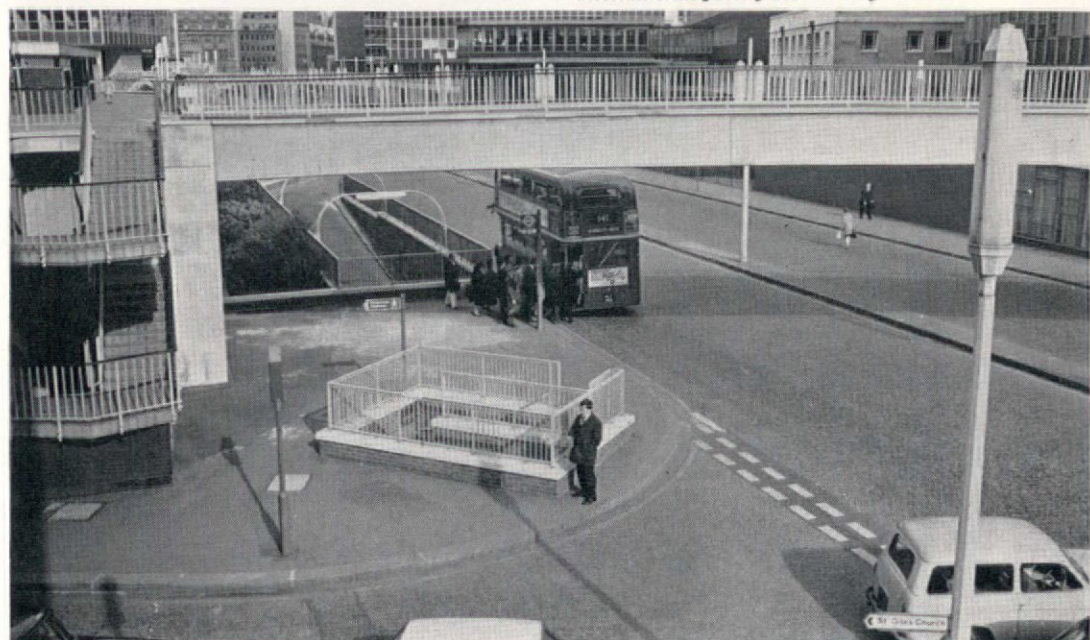
22. Development of transport systems was easier in the 19th Exhibition 1900, designed, tested and built in 2 years, carried



25. Proposal for Ludgate Circus; showing that overcrowded pavements and traffic congestion have long been with us



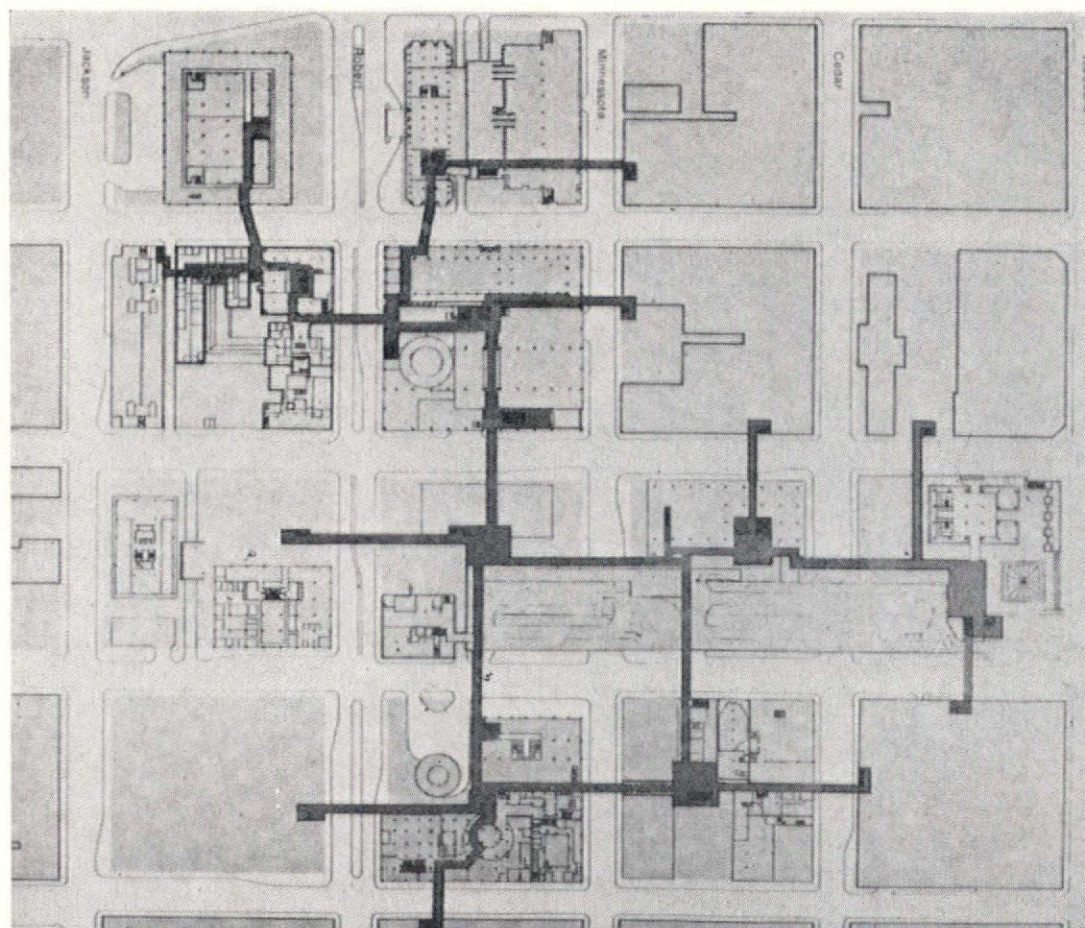
26. Underground pedestrian arcades like those proposed for Philadelphia, may require their own internal transport system as they extend



27. Large scale deck developments as in the Barbican, London, will not be used unless new transport systems are developed to serve them, and a high degree of weather protection afforded

Photo: Sandra Lousada

24. Proposed extent of Minnesota's St Paul Skyway network of bridges, interior nodes and corridors



24. Proposed extent of Minnesota's St Paul Skyway network of bridges, interior nodes and corridors

importance. Decisions may range from those of large-scale policy-decisions affecting the future disposition of land uses and how they are to be served by transport, down to detailed decisions regarding the selection of the best transport system and the physical level at which it is to run. A fundamental decision, for example, to place a transit system underground, will affect the lives of millions of travellers by a design decision regarding the physical level at which they are to move on foot, to work or to shop. Both at Philadelphia¹ and Montreal², underground stations closely integrated with the new buildings around them have determined, possibly for all time, the level at which future pedestrian movement will take place. Such decisions to put people underground may be no worse or better than a decision to put them at any other level—provided such a decision is reinforced with a correspondingly high degree of investment and a technical expertise to ensure light and air-conditioning of the spaces so formed. Only gradually is it being realized that deck development may be ineffective without heavy investment both in weather protection or mechanical means of changing level.

In all development, transport plays a key role and public transport must have excellence if it is to succeed in helping to improve the quality of urban life.

¹AD 3/68
²AD 7/67 and 1/68

NETWORK STRUCTURES

Notes on the South Hants sub-region—possible site for a new city of 1½ million inhabitants by Peter J. Hills

Report in *The Guardian*: July 11th, 1968.

Counter magnet

Mr Greenwood told the Commons that he accepted Professor Buchanan's assessment that major growth in the area was possible, and also the view that South Hampshire could be one of a series of counter magnets to London on the fringes of the South-east region. However, a new town development corporation would not be an appropriate administrative machine since much of the population growth would be the children of people already living in the area. He added:

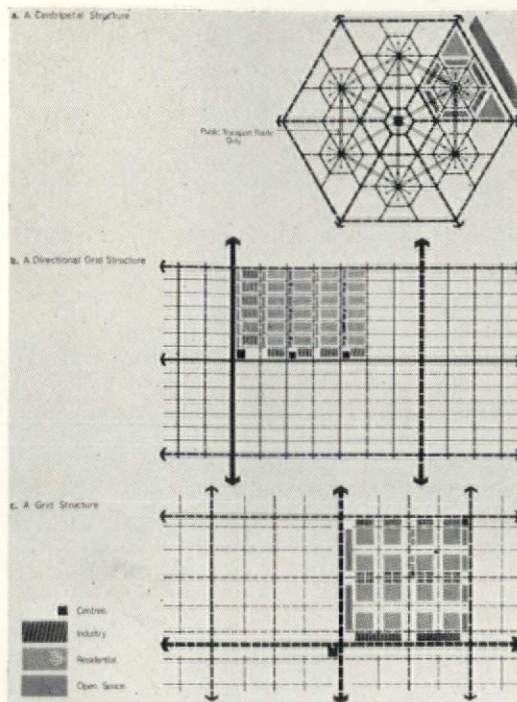
'I therefore welcome the decision of the three authorities to establish the necessary joint machinery to plan the area comprehensively, and to study the possibility of a planned intake of population—a step which could make a valuable contribution to the relief of overcrowding in London.'



The introduction to the Feasibility Report on the prospects of a Solent City* pointed to the 'possibilities of a new kind of metropolitan area' for people who 'may or may not be more affluent and more leisurely than we are today, but who are certain to be better educated'. One of the most important prerequisites for the educated man is freedom of choice without which he has nothing upon which to exercise his newly-acquired skills of judgment and discernment.

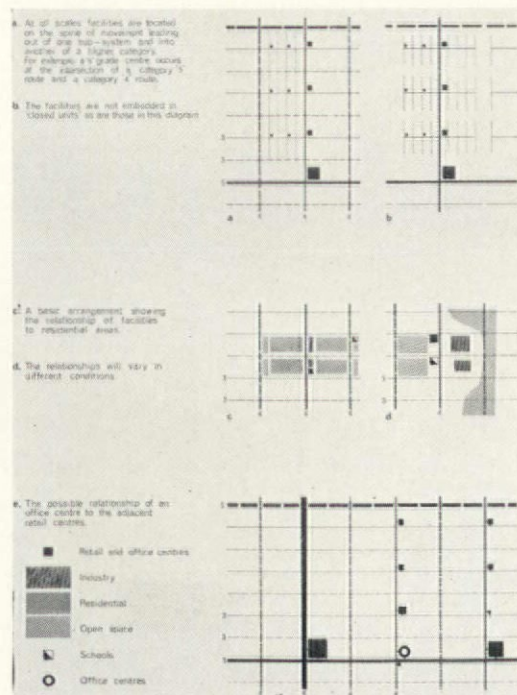
It only requires brief study of this 'generalized land-use' map of the sub-region as it exists today, to realize just how dependent each part of the development is upon its 'parent' town or village. The historical, cumulative process of peripheral suburban growth and scattered, haphazard rural development, each relying wholly upon the inadequacies of an inherited transport system, cannot hope to provide the degree of freedom in choice of location and destination that the present generation demands and that future generations will come to expect.

*South Hampshire Study, Colin Buchanan and Partners H.M.S.O. 1966



The search for an urban structure that maximizes freedom of choice

Much of the theoretical work undertaken in the South Hampshire Study was centred on this question: 'how can one devise an urban structure which will allow for the growth in population that is contemplated, accommodate the changes in land use and activity that are foreseeable, and yet provide vastly more freedom of choice than there exists in the area at present?' This involved consideration of the various characteristics of the three fundamental structural arrangements shown here; the assumption being that any structure one might dream up would always be a variant of one of the three basic alternatives.

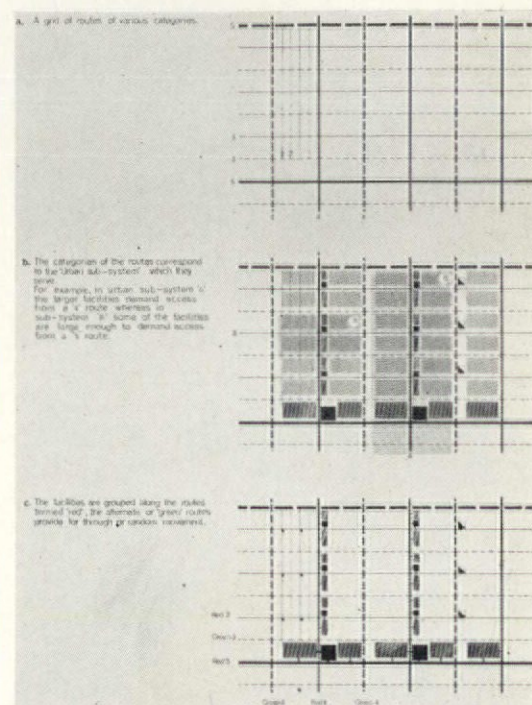


The 'preferred' structure—but is it ideal?

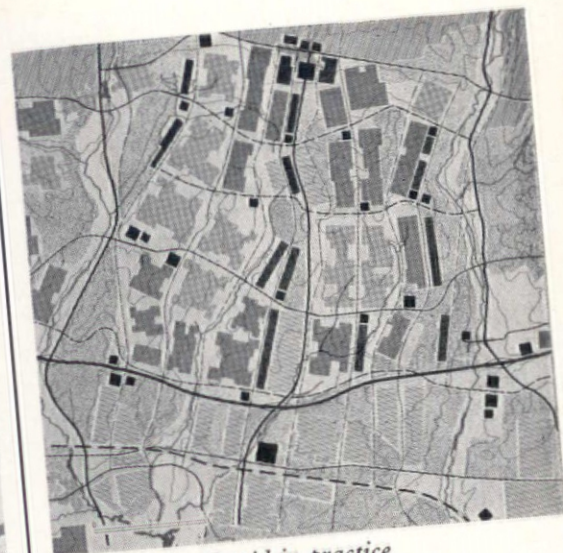
The conclusion that was reached as a result of this theoretical approach was that the biased or 'directional' grid was to be preferred. Of course, even going back now over the evidence

evinced for this conclusion and the arguments used, it is impossible to assert that this is the ideal structure; for so much depends upon the precise meaning, in practice, of freedom of choice in relation to an individual's decisions regarding location and destination.

For the first time, perhaps, some reasoned (and fairly compelling) arguments for a linear form of development were weighed, on the basis of common criteria, against those for more centre-orientated forms.

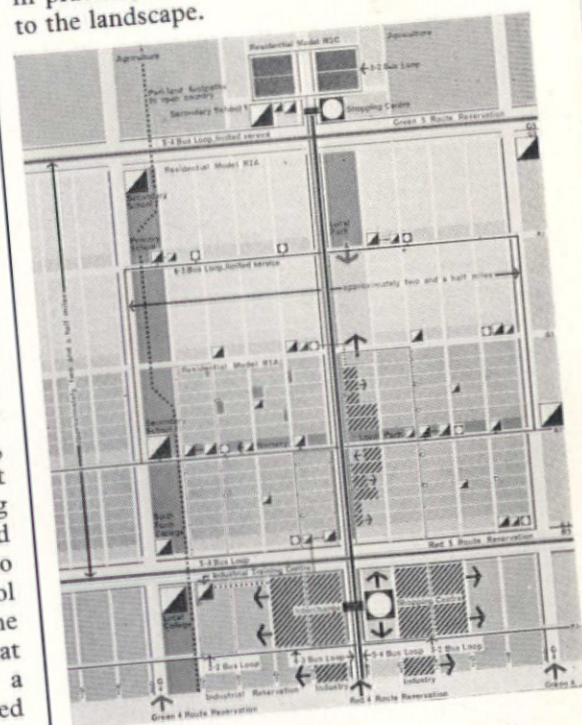


The diagrams above were intended to show how the various elements in the urban structure (or 'sub-systems' as they were called) would endeavour to locate within the framework provided by the directional grid. Whilst this is highly theoretical and would be subject to considerable distortion in practice, due to physical and economic constraints, it is nevertheless very interesting to note the profound effect that transport considerations have in determining location. Not only is accessibility viewed as the major determinant, whether it be to markets or retail outlets for a manufacturer or to workplaces, shops and schools for the ordinary citizen; but also an hierarchical structure is strongly reinforced by the directional grid.



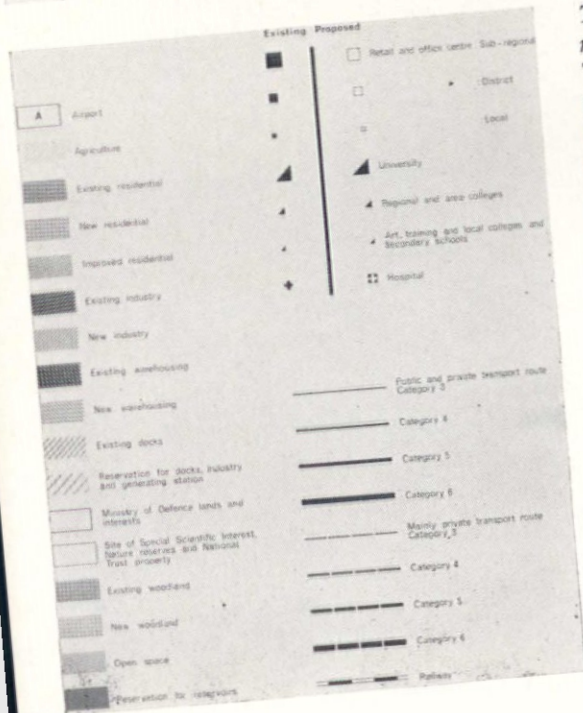
The directional grid in practice

The needs of each sub-region are very much as different as their physical and economic constraints and it is only really meaningful to pursue an idealized solution where the growth and change anticipated are significant in comparison to the constraints that exist. This is probably true in fewer cases than is generally supposed. At least in South Hampshire, the growth of the present population (800,000) could well be more than 120 per cent (possibly up to a total of 1,800,000) by the end of the century; but even so, the extent of existing urban development, and the presence of severe topographical obstacles and numerous fixed-points in the land-use pattern, would result in considerable distortion to the geometry of a directional grid when superimposed. The Report acknowledged this and it illustrated how a typical area might appear, in practice, when the grid has been 'bent-on' to the landscape.



A typical urban sub-system

The furthest the South Hampshire Study went towards defining the future land-use pattern for the emerging Solent City region was illustrated in the form of a typical urban sub-region, which demonstrates the inter-relationship between all the elements of land-use and of transport on an hierarchical basis.

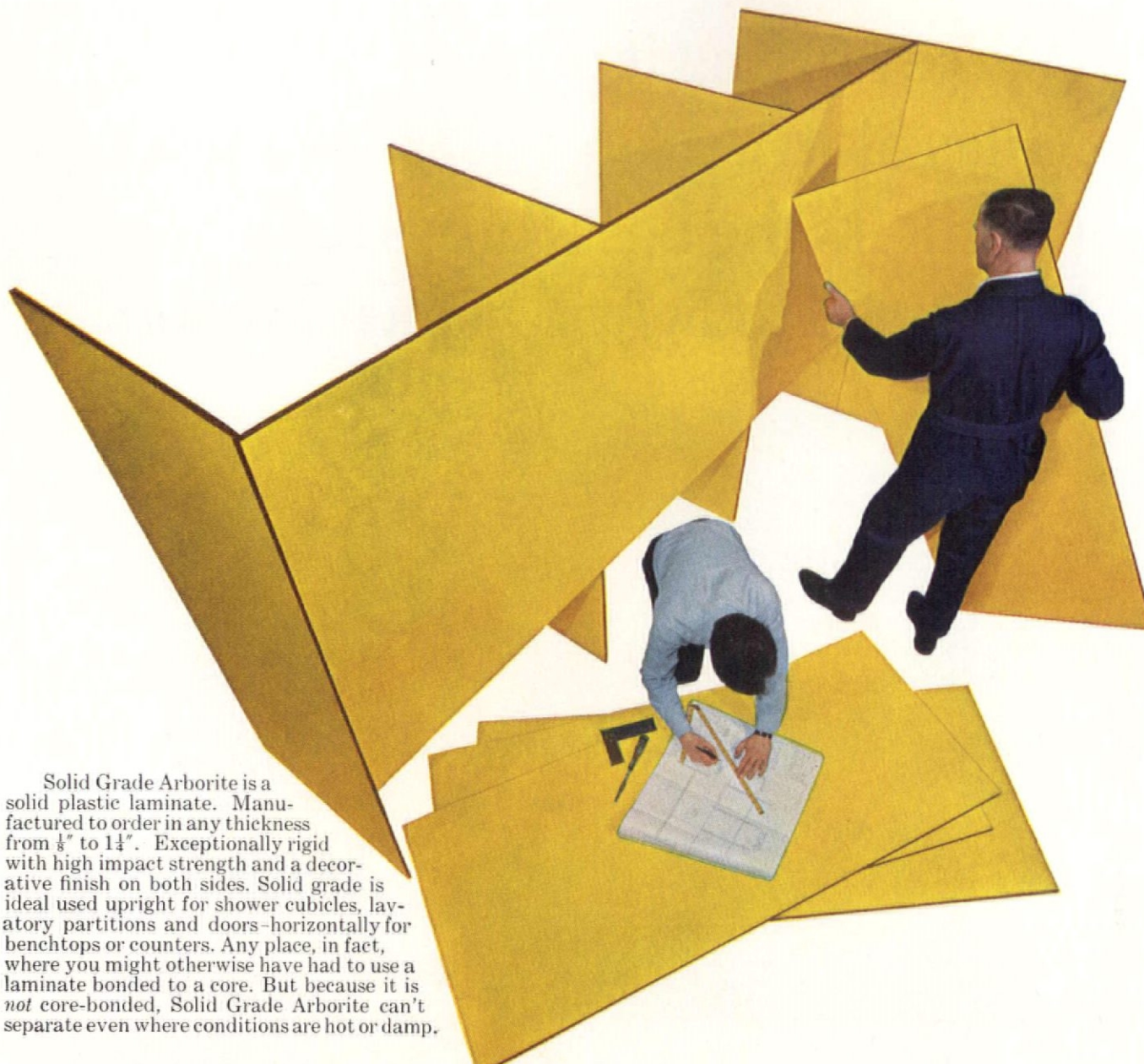


The suggested development of a directional grid network in the South Hampshire sub-region
The diagrams above illustrate how the preferred structure could develop gradually in the sub-region up to the end of the century, acting under the stimulus of new transport routes along the axis of the corridor joining the existing cities of Southampton and Portsmouth. Although it would be essential to retain existing techniques of planning control to inhibit development likely to disrupt the proposed land-use structure, the hope is that the grid (as it develops) would acquire a momentum of its own; it may be that the need for planning control, in the negative restrictive sense at least, would gradually diminish. If it were to be achieved, this would seem to be a highly desirable state of affairs; for it would represent a situation where the individual's best interests, as regards his choices of location and destination, coincided with those of community without either having to impose his will on the other.



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the end of the Automobile Age
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AD/13/1

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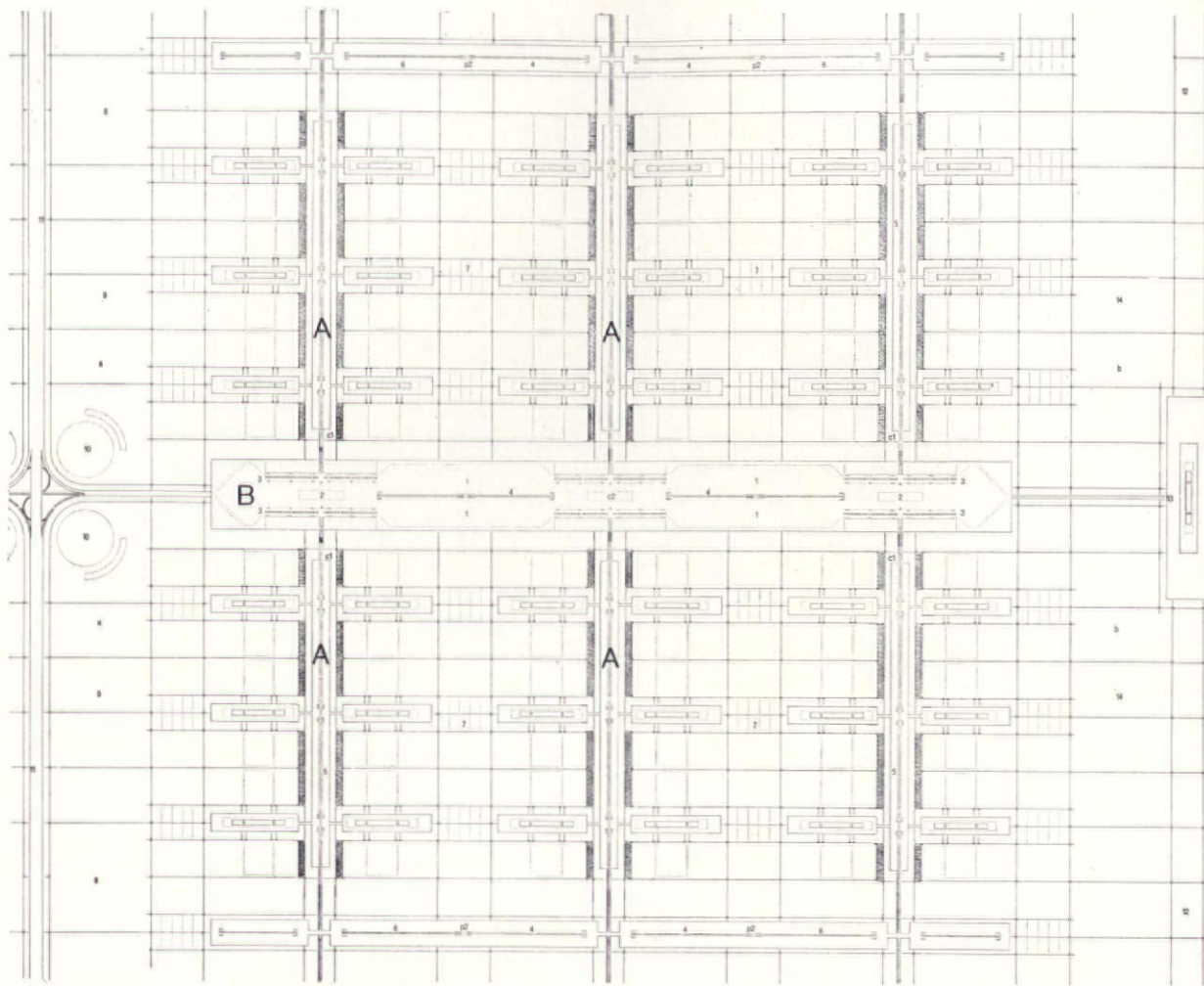
Lytespan Lighting Track by Rotaflex Concord

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AUTOMATIC TRANSPORT TOWN

An 'Integral City' project* by the Swiss architect Fritz Haller for a city, to be built up in stages, which can grow eventually to 61 million people. There are no roads in the city or motor vehicles. The transport system upon which all planning is based is an integrated transport system using automatic cars.



1 Ground plan of a section of the town (level 00).

A fast and slow moving conveyor belt within route buildings containing light industry and shops, connecting residential Unite blocks with neighbourhood centres.

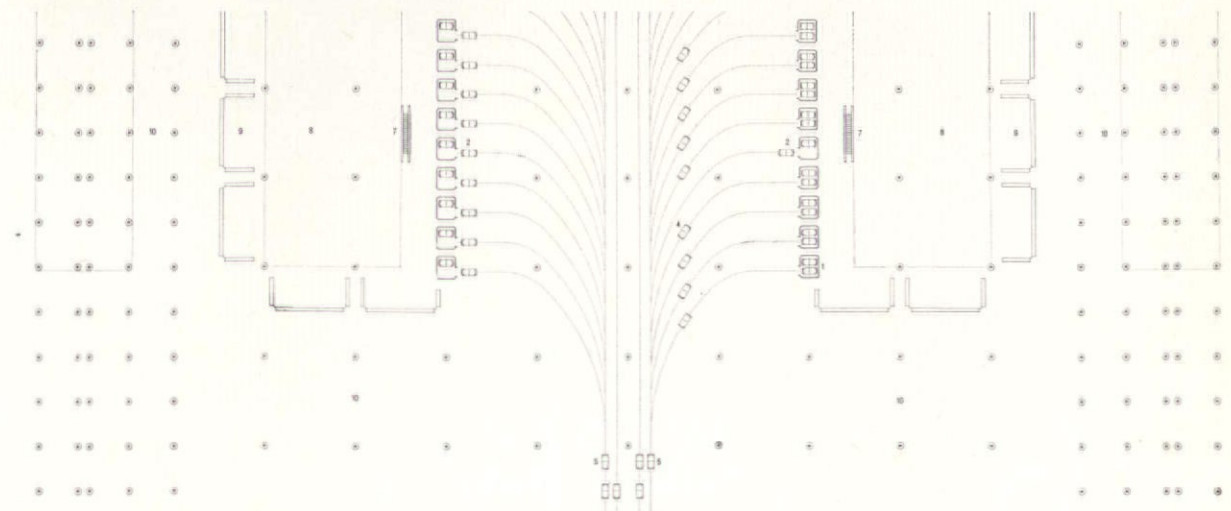
B. Interchange for automata cars parked vertically in paternoster racks. The cars are computer programmed to travel on insertion of a punched card, without stopping, to other centres. Goods are delivered likewise by automatic cars. The cars are similar to those of the Teletrans system (see p. 440) being developed for US airports.

- 1 large space for supply and service centres: shopping centres, information, administration, health and entertainment
- 2 shopping centre and automatic transit system stations above the level 00, high-rise building, with offices, hotel, flats, etc.
- 3 paternoster vehicle storage
- 4 conveyor paths 0.8 m/sec (slow)
- 5 conveyor paths 0.8 m/sec (slow) and 1.6 m/sec (fast)
- 6 large spaces, divisible as recreation and work rooms for young people 12-20 years old, rooms for health and recreation, places for worship, etc., green spaces in e2
- 7 gymnasium and playing areas for the schools of p2
- 8 swimming pools
- 9 games areas (football, tennis, hockey, etc.)
- 10 sports stadium
- 11 automatic transit system
- 12 cemetery
- 13 hospital and clinic for 2000 patients
- 14 forests



2 Ground plan (level 01) and section of the automatic transit system interchange, corresponding to B on the upper plan.

- 1 paternosters vehicle storage
- 2 automatic cars departure stations
- 3 automatic cars in arrival stations
- 4 departing automatic cars on the starting tracks
- 5 departing automatic cars
- 6 arriving automatic cars
- 7 escalator to level 00
- 8 shopping centre
- 9 automats
- 10 utilities for levels 00
- 11 high-rise structure with work and living spaces for those who maintain the utilities in the large spaces below



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DESIGN

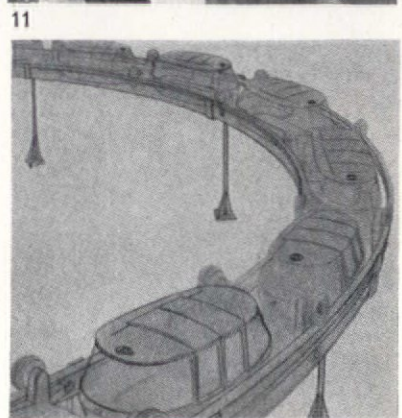
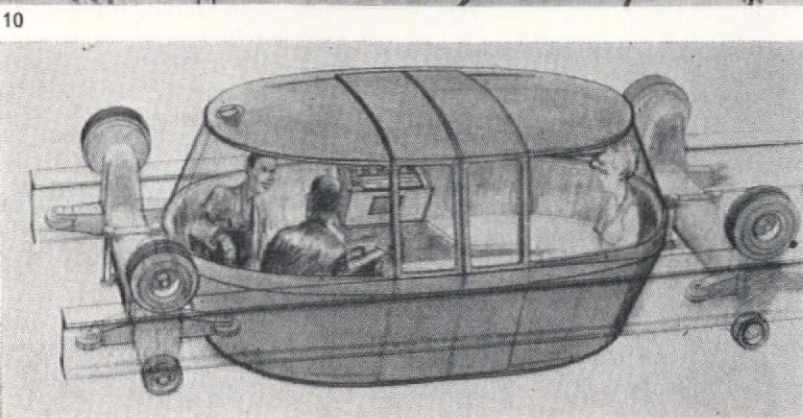
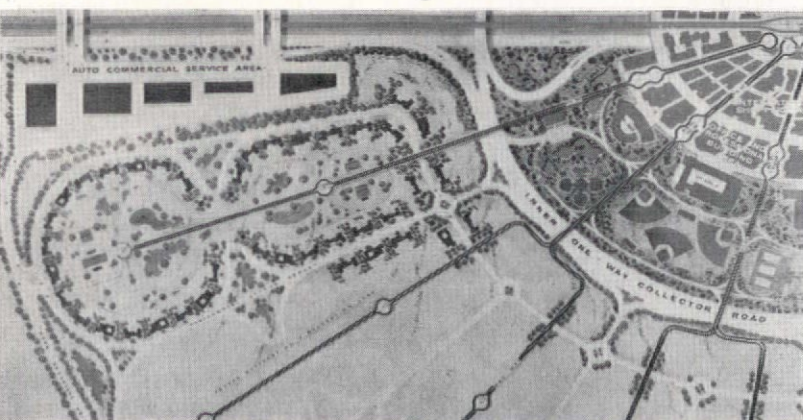
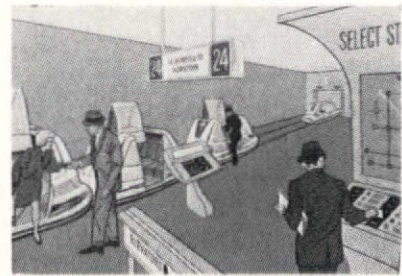
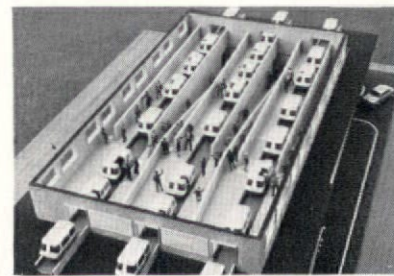
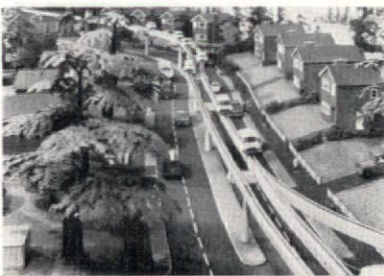
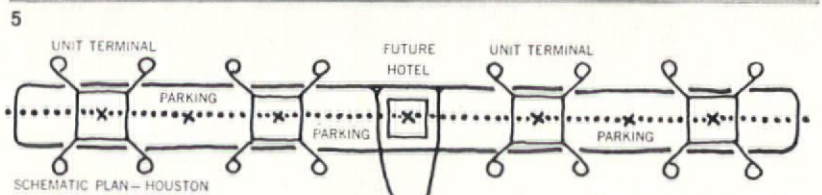
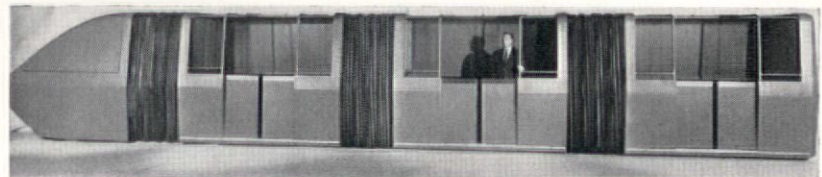
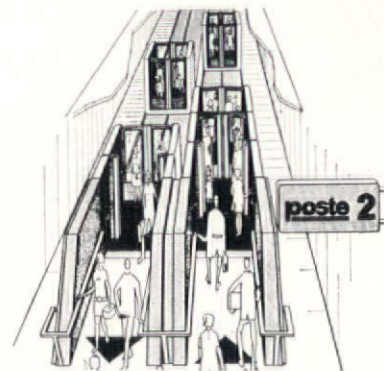
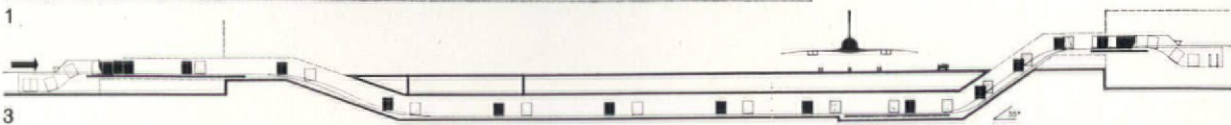
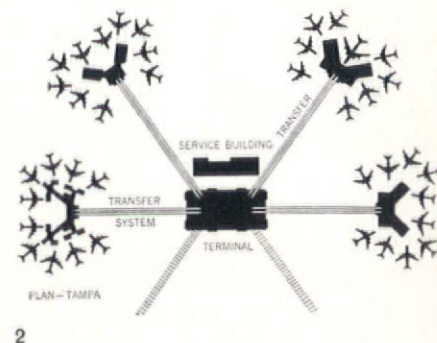
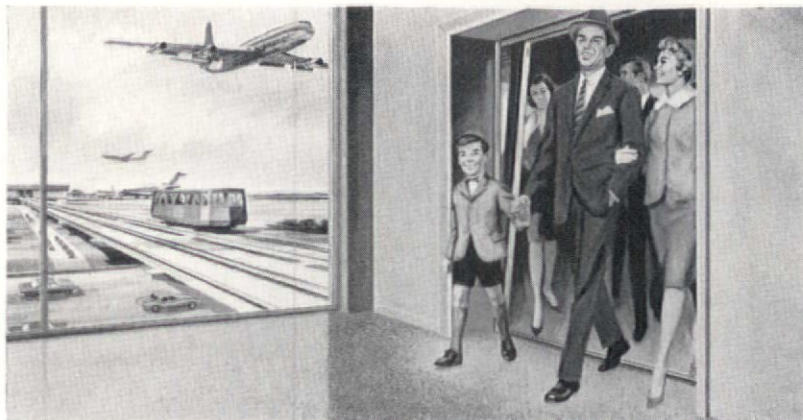
Mini-movement hardware

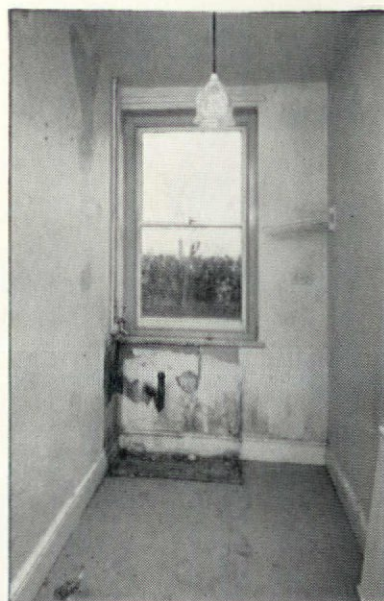
The range of mini-movement hardware is at last showing signs of responding to the potential demand. Development of some of the systems may take anything up to five years to be operational, partly on account of the trials which public authorities insist on before licensing the systems.

Initially through pressure of numbers they may first be tried at airports, but later many of them would be suitable for use in cities, for example between parking facilities and core areas. Two point to point systems are illustrated, one for Tampa Airport, Florida, by Westinghouse, uses two modified transit expressway systems with lift doors at the station platforms 1, 2. It carries 100 standing passengers 1000 feet to the terminal with a flow of 5000 people an hour. At Paris Nord a more advanced system, the Transveoyr 3, 4, designed by the Battelle Institute with Sud Aviation (Concorde builders), uses large escalator platforms, with folding doors at front and back, no waiting is required, the platforms travelling half a mile at 15 m.p.h. slowing at each end to the speed of an escalator. At Houston Airport 5, 6 a small-scale automatic train, 7ft 6in high, 5ft wide and 45ft long, will carry 1200 people an hour with no driver, and free of charge between parking lot and terminal buildings.

Development is under way in the UK of an automatic self-routing taxi 7, 8 by Brush which uses four-person vehicles, programmed by computer to run automatically without change between any 2 stations on insertion of a punched card as in the similar system developed by the Teletrans Corp. (USA) 9. Tracks are small enough to be of low cost, about £100,000 per single track mile. The scheme is being developed with NRDC and has the support of the Ministry of Transport.

Phase 2 of the Disney Epcot city 10 in Florida may use the Peplemover system 11 now under trial at Disneyland. Four-seat cabins run automatically at 7 m.p.h. on an elevated 6ft wide concrete guideway driven by electric motors at close intervals. Boarding is done from a continuously moving revolving platform approached centrally by conveyors. The system is shown in the plan radiating from the core area into residential areas, so that stations are within walking distance of each home, and parking can be reduced in the central area. The Dasha-veyor system consists of six-seater cabins 12, 13 which are electrically propelled and remote-controlled to slow down or accelerate to speeds of up to 80 m.p.h. A copper mine in Michigan uses five miles of the system enclosed within a tubular guideway, replacing the existing railway system.





Room for improvement?



Most homes have it, if only in a small way. And in this room there was plenty of scope — for the owner, for the designer, for the installer, for Leonard thermostatic showers.

Room for a shower...

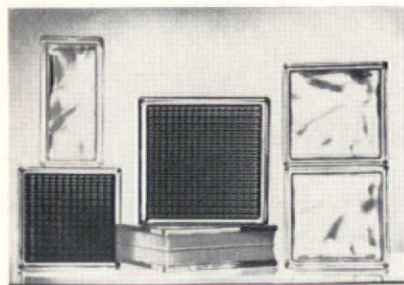
Every home can use a handy, hygienic shower-in-a-moment! Most homes can find unused space somewhere for what is virtually a second bathroom. And remember — in certain circumstances Local Authority grants are available.

This is the type of suggestion we have been making to the general public. They, in their thousands, have been writing to us or seeing us at exhibitions, showrooms, etc. If you would like to know what we have been telling them see us at The Shower Centre, 138 Theobalds Road, London, W.C.1, or write to The Shower Information Bureau, Whaddon Works, Cheltenham.

**a Leonard
thermostatic
shower**

ALEXANDER PIKE DEVELOPMENTS

To obtain additional information about any of the items described below, circle their code numbers (L1, L2 . . . etc.) on the Readers' Service Card inserted in this magazine.



L2 Glass blocks

Pilkington Brothers Ltd., St. Helens Lancashire

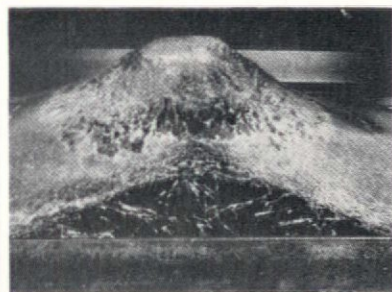
A new range of 'Insulight' glass blocks, in metric dimensions, includes for the first time coloured blocks in red, amber, blue and green. For the clear blocks, a new white glass will be used which eliminates green tint. Sizes 190mm and 240mm sq. 240mm x 115mm, all 80mm thick.



L3 Aluminium window

Heywood-Helliwell Limited, Bayhall Works, Huddersfield

The Swedish Elumin anodized aluminium window now manufactured under licence in this country is claimed to have more built-in design features than any other window on the market. A neoprene strip forms a thermal break between the inner and outer double glazing frames, reducing condensation. The airspace of 2½in provides heat and sound insulation. The inner double glazed unit can be completely detached, and the frames, which are reversible through 180°, open



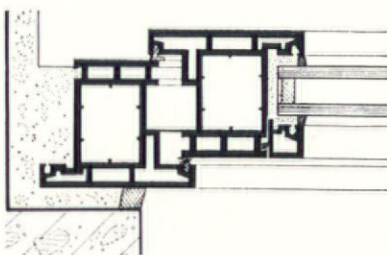
L1 Flexible glass

Glaverbel, Gilly, Rue de la Discipline, Brussels, Belgium

A new type of glass expected to have a considerable range of applications, has now been developed. The makers claim that the glass has strength and flexibility comparable with some types of steel and is very resistant to chipping. A sheet approximately 1ft square by 2mm thick is capable of supporting a 240lb man, and the glass is sufficiently flexible to allow a sheet 1ft wide by 3ft 4in long, 1mm thick, to be bent to a radius of 1ft. Known as VHRG, the material is expected to provide important developments in windscreen design. Laminated with a thin plastic interlayer it is more resistant to shattering by flying stones than normal windscreens nearly twice as thick. An additional advantage is that if a passenger is flung at the windscreen on impact, the flexible character of the glass enables it to act as a net, producing progressive deceleration and minimizing injury.

Laminated glass known as VHRG has a breaking strength 5-10 times that of ordinary laminated glass. When tested under conditions simulating a head impacting a windscreen the glass acted like a net receiving the head.

up for cleaning between the panes and to give access to the optional venetian blind. Available in any size up to 48sq. ft. No beads are required for glazing. The panes are simply slotted from the top into gaskets set in the frames, and held in place by the top member, which is screwed into position.



L4 Plastics window

Peters Metallbau KG., 2 Hamburg-Friedrichsgabe, Postfach 180

Utilizing two basic profiles for side-, bottom- and top-hung casements and for vertically and horizontally pivoting casements, the System Petal range employs all-plastics hollow extruded sections. The double-walled structure avoids 'cold bridging' and the hollow cores can be used to accommodate stiffening sections for very large window units. Claimed to be proof against chemical attack from atmospheric conditions and industrial waste gases. Available in white or grey.

L5 Digital clock

Fonadek International Ltd., Harborne, Birmingham, 17

The Model 601 displays date, day, hour and minute on moving cards, and fractions of a minute on the edge of a rotating wheel. The aluminium case has grey plastic end panels and a glass front, and incorporates a small neon light to illuminate the hour and minute sections. Size, 8½in long x 4in high x 3½in. Price £18 15s.

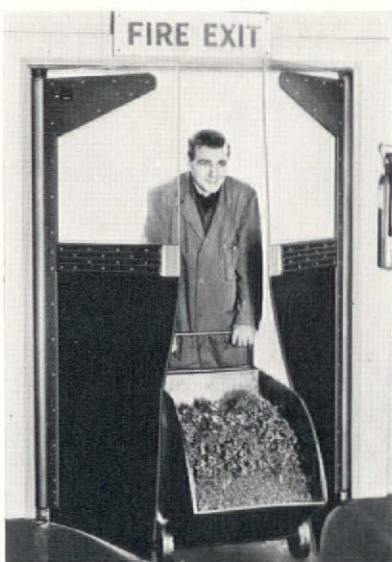
L6 Automatic filing system

Cotton and Associates Ltd., 25a Kensington Church Street, London, W8

The Catalog Rack is a power filing system which enables catalogues and looseleaf material to be brought to the operator at the touch of a button. It makes full use of the vertical space up to a 10ft ceiling by working on a principle



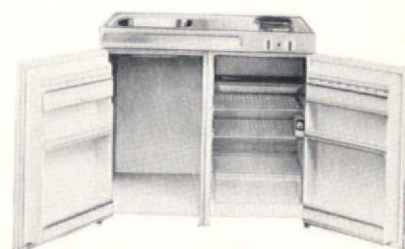
of rotating shelves. Catalogues are stored on sloped racks which keep the punched sheets in place yet allow for opening pages. Available with either 12, 14 or 16 trays of either 72in or 80in width. A unit occupying floor space 8ft wide by 3ft 9in deep will store 1280 file inches of material.



L7 Flexible door

William Newman & Sons Ltd., Hospital Street, Birmingham, 19

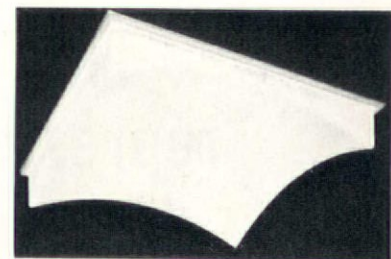
Neway Clearflex doors have an upper section of clear PVC and a lower section of heavy duty rubber or Neoprene. The exposed edges of the panels are protected by a stainless steel nosing. Suitable for openings up to 8ft 6in x 8ft.



L8 Combination kitchen unit

New Era Commercial Refrigeration Services Ltd., 124 Cricklewood Broadway, London, NW2

Suitable for installation in small flats and other dwellings where space is limited, the Beekay Mini Kitchen combines in one unit a refrigerator, hotplate, sink and storage cupboard. The stainless steel sink unit incorporates a bowl on one side and two hotplates on the other, sealed into the top. Beneath the sink top a white stove enamelled cabinet houses a 4.8 cubic foot refrigerator with a two-star freezer compartment, and a storage unit with a door identical to that provided for the refrigerator. Size approximately 3ft high, 3ft 3½in wide and 2ft deep. Price £104 9s 6d.



L9 Ceiling lighting panel

Isora Integrated Ceilings Limited, Buckingham Avenue West, Slough, Bucks.

The Minaret lighting panel is formed from rigid light-stabilized PVC .025in thick, and has an initial light transmission of 50 per cent. The dust covers have a transmission of 80 per cent. The PVC material is self-extinguishing and has been accepted as such under the 1965 building regulations. Size, 24in sq.

L10 Steel reinforced plastic sheet

Genie Chimique Industriel, 4 Rue Ficatier, 92 Courbevoie, France

Armaplex consists of an unplasticized PVC sheet on to which a perforated steel sheet is fixed by a hot pressing process. The resulting strength of the composite sheet is determined by the size of perforation. The material is claimed to have an expansion coefficient similar to that of steel and excellent mechanical characteristics.

L11 Fixing device

FEB (Great Britain) Ltd., Albany Road, Manchester, 21

The Febolt is a fixing bolt deriving grip from the outward expansion of a sleeve which is compressed by the tightening of a nut. It is said to be suitable for fixing in all types of soft and hard materials, and particularly applicable to cellular and lightweight construction. Sizes, ⅝in to 1½in diameter, 1in to 9in long.

L12 Wood wool roof decking

The Marley Tile Company, Storrington, Sussex

The Junior Long Span system is a new variation of the present Long Span system, employing 2in wood wool slabs instead of 3in, and suitable for spans up to 9ft instead of 12ft. Savings can be as great as 20 per cent. Both systems can be supplied pre-screeded and with various soffit finishes if required. ▷442

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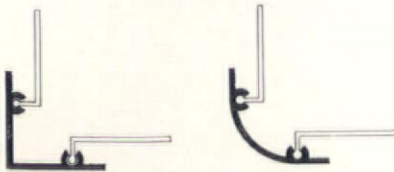
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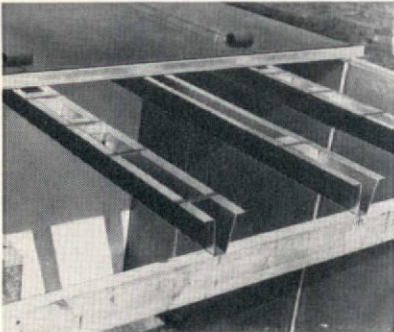
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DEVELOPMENTS



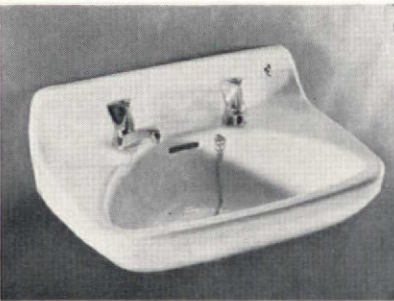
L13 Plaster corner protectors

James Booth Aluminium Ltd., Kitts Green, Birmingham, 33
Hygienatrim plaster corner protectors are manufactured in extruded aluminium and have invisible fixing brackets which can slide in slots on the back face of the corner. Square and quadrant corners are available.



L14 Roofing system

Stramit Limited, Eye, Suffolk
New Decaspan is a system employing galvanized pressed steel channels spanning up to 15ft, supporting Stramit Roofing grade or pre-weathered Deckfast slabs at 2ft centres. The slabs are secured by 4in nails driven into special blocks inserted into the channels. Guide price for quantities over 750sq. yds, excluding weathering, 28s 6d per sq. yd. for 10ft spans increasing to about 36s for 15ft spans.



L15 Wash basin

Ideal-Standard Limited, Hull, Yorks.
The Prima range of vitreous china basins is intended for schools and other institutions where hygienic design and ease of cleaning are important factors. Each basin in the range is provided with ample shelf space and an integral splashback. Prices 28in x 16in, £9 13s 0d; 20in x 16in, £5 5s 3d; 20in x 12in, £4 7s 9d.

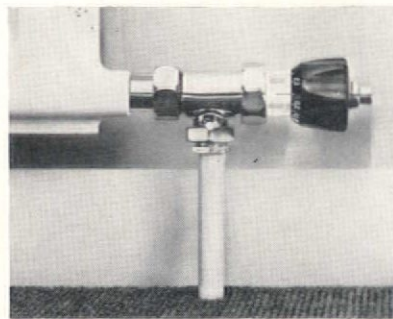
L16 Mixer taps

Supertron Limited, 19 Fosse Way, Ealing, London, W13
The German Grohe range of mixer taps are now available in this country. The makers claim that the design provides no clumsy branches and dirt traps over the basin, and that the non-rising spindle design has no ugly exposed surfaces to collect grime. Drip-free non-rotating washers are provided, together with double O ring seals.

L17 Built-in conduit

Falks Limited, 91 Farringdon Road, London, EC1
Claimed to be particularly suited for use in industrialized building systems where space for the electrical services is limited,

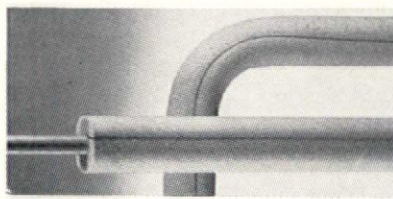
Hituf is a standard cable consisting of one, two, three or four cores, PVC insulated and PVC sheathed, but covered with an oversheath of specially hardened black unplasticized PVC. The cable can withstand rough handling yet is flexible enough to make up easily manageable coils. It is claimed that the conduit can be embedded direct in walls, buried underground even in waterlogged trenches.



L18 Thermostatic radiator valves

Temfix Engineering Company Ltd., Bainbridge House, Bainbridge Street, London, WC1

Two new types of valve have been added to the normal range to simplify installation in this country. They have the advantages that no bends are required between the valve and the radiator connection, and, because they are situated at low level there is less likelihood of the valve being influenced when curtains are drawn. All Temset valves are actuated by midjet thermostats containing a hydrocarbon wax. The opening of the valve is modulated by the variation of actual room temperature to the value at which the valve is set.



L19 Pipe lagging

Bekon-Bell Limited, Farnham Road, Slough, Bucks.

HD pipe lagging is a flame-retardant grade polyurethane foam in the form of a sleeve, which is slit along its length to ensure ease of application. Its flexibility provides a neat fit around the bends and tight contact with the pipe. For most applications no additional means of fixing is needed, but self-adhesive PVC tape may be used if required. Typical price for 3/4in lagging with 1in bore, 1s 7d per foot.

L20 Oil-fired boiler

Parca Heating Products, 90 Staines Road, Hounslow, Middlesex

The 200M boiler is rated at from 60,000/90,000 BThU per hour as standard, and at up to 120,000 BThU per hour by the fitting of simple and inexpensive turbulators. All tappings, as well as the flue outlet, are located on the top of the unit, simplifying installation and reducing the floor space occupied by the boiler when installed. Fully insulated against heat losses, the boiler has a clip-on detachable housing in plastic-coated steel. It is covered by a ten-year guarantee against corrosion of flue-way surfaces. Dimensions 54in high by 23in wide by 38in deep.

L21 Chromium plated plastics

Norman Hay Ltd., Harmondsworth, Creators Ltd., Woking, Surrey

New automatic plant for the nickel-chrome plating of plastics, now in operation, is believed to be the first of its kind in Europe. The capacity of the equipment is sufficient for the plating of 800,000 sq ft of plastics a year. A vital

part of the process is the preparation of the surface of the plastics material which is in itself non-conductive, by depositing traces of metal to give a conductive skin to promote deposition of nickel at a later stage. The material at present being supplied for chromium plating by Creators is ABS, but it is hoped to apply similar techniques to acrylics, polypropylene, phenolics and acetal resins.

L22 Liquid polyester resins

Cryplex Industries, 28-02 College Point Causeway, Flushing, New York, USA

The normal injection moulding process employs granular polyester resins which are heated to melting point and then forced into a mould under high pressure. The new liquid resins now available are liquid at room temperature, have low viscosity and therefore require less heat and pressure. They can be moulded at pressures as low as 5lb per sq in and temperatures as low as 170°F. These resins not only enable the cycle time for moulding to be reduced, but due to their low viscosity, they can be made to flow around the reinforcing fibres in the fabrication of GRP components.



L23 Floating swimming pool

Prat-Daniel, 24 rue du Plateau, 92-Rueil-Malmaison, France

A floating pool, to provide facilities for fresh water swimming in polluted rivers or at seashore situations, has been developed and successfully tested in France. It consists of a large rectangular fabric container attached to floats and filled with chlorinated water. The container is made of 840 denier nylon covered on the inside with Hypalon synthetic rubber to protect the inside of the pool from attack by chlorinated water. The outer surface, which may come in contact with polluted or salt water, has a covering of Neoprene synthetic rubber. Both these elastomers are supplied by Du Pont. A pool of this type was installed at Le Havre harbour last year.

L24 Building system design manual

A. H. Anderson Ltd., 235 Vauxhall Bridge Road, London, SW1

A comprehensive 40-page design manual contains all the information needed for the design and preparation of production drawings for the A75 system of component building, designed to metric dimensions. An excellent publication.

L25 Refuse compressors

Deva Division, The Hydraulic Engineering Co. Ltd., Chester

The Deva Refuse Compression system consists of a range of pneumatically operated machines exerting a ram force of 1 1/4 tons, which can reduce the volume of refuse by anything from one third to one twelfth, depending on its nature. Automatic and manually operated machines are available.

L26 Silent hydraulic drill

Montabert, 41 Rue Bataille, 69-Lyon 8e, France

The Hydroville hydraulic road drill is claimed to be ten times quieter in operation than the pneumatic type, and to have a power rating superior to that of a pneumatic drill of the same weight. The 6 h.p. diesel-hydraulic set is virtually silent in operation and a special device is said to eliminate the usual metallic noise produced by the tool.

L27 Building panels

William Mallinson and Sons, 130 Hackney Road, London, E2

Mallite SF and Mallite LR building panels are for high and low rise buildings respectively. The core material for each panel consists of densified flax-board with asbestos wood or hardboard faces. The panel thicknesses are 1 1/2in, 1 3/4in and 2 1/4in offering varying degrees of thermal insulation and sound reduction. Both types can be erected as single skin or double skin partitions, a sound reduction of approximately 30 dB being achieved on a 2 1/4in panel in a single skin. All panels are available in a variety of PVC finishes and decorative wood veneers.

L28 Acoustic insulation

Burgess Products Company, P.O. Box 11, Hinckley, Leics.

A range of modular interchangeable panels enables sound insulating screens and enclosures of any size to be rapidly assembled. The range incorporates doors, windows and ventilation, and is suitable for housing noisy machinery or providing quiet rooms in noisy environments. The panels are of steel and can be rapidly jointed or dismantled.

L29 Acoustic panelling

Langley London Limited, 163 Borough High Street, London, SE1

The Solclip system of acoustic panelling for ceilings and walls comprises rigid PVC units 39 1/2in wide and 10ft or 12ft long. The units are ribbed and perforated, fixed by clips to a T section support, and their performance can be improved by laying suitable absorbent material in the troughs provided by the ribs. Available in black and white as standard or blue and grey to special order.

L30 Wall coating

Metalife Ltd., Claro Road, Harrowgate, Yorks.

The Metalife CR system is a hard, abrasion-resistant, high gloss coating formulated to provide a high degree of chemical resistance and impermeability. The two-part mix consists of a metallized base and a solidifier, mixed in the proportion of three to one. It is claimed to have all the advantages of ceramic tiling plus the fact that being seamless it does not harbour bacteria or dirt.

L31 External venetian blinds

Hunter Douglas Limited (Venetian Blind Division), Wellington House, New Zealand Avenue, Walton-on-Thames, Surrey

An all-weather version of the Luxaflex venetian blind is now available, with slats constructed of heavy duty aluminium and side guides with perlon cables to withstand high winds. Operation can be by cord, crankrod or electric motor.

L32 Fabric finish paint

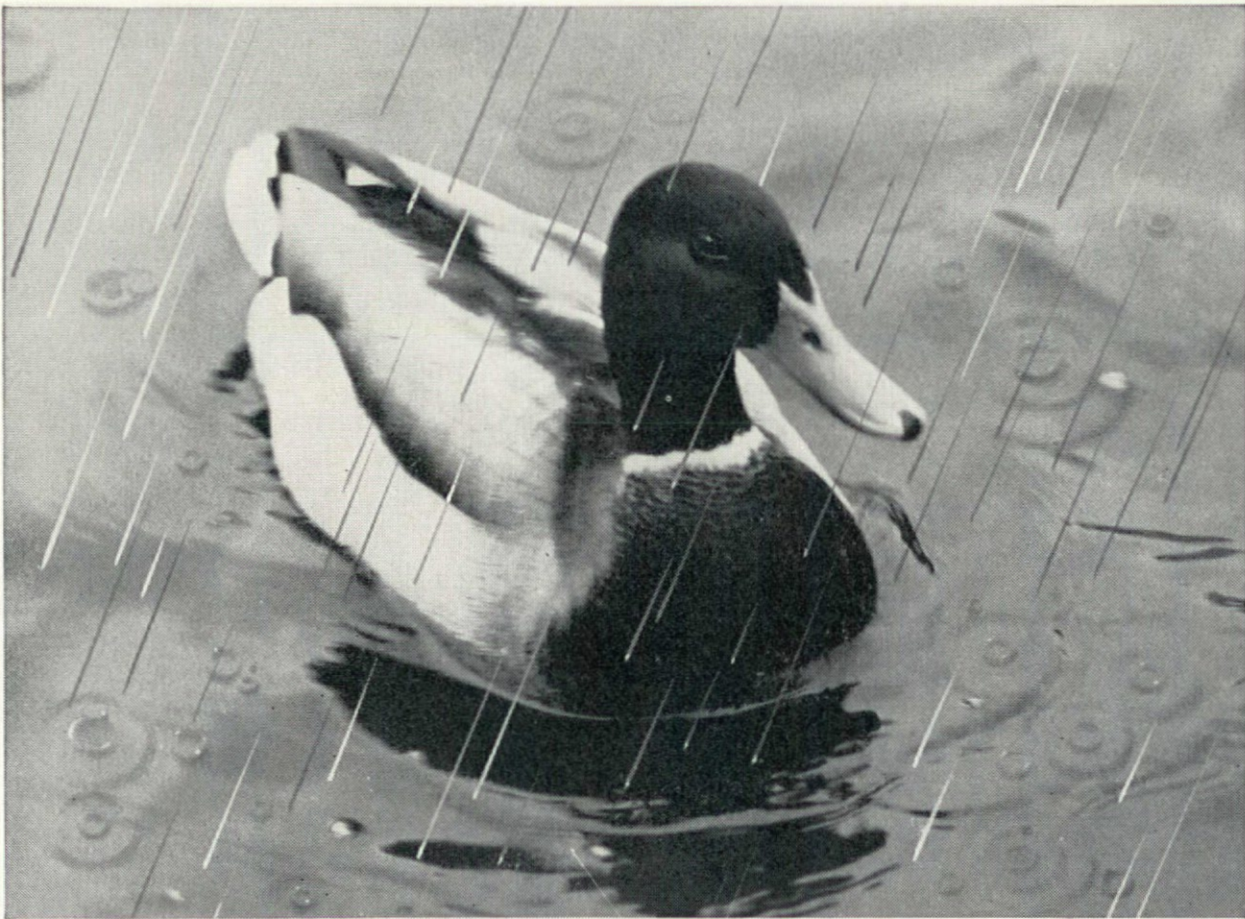
Croda Paints Limited, Luton, Beds.
Based on polyurethane resins, Crodatex paint has a textured vinyl fabric finish claimed to have excellent hardness and chemical-resistant properties. It is spray applied and requires stoving for 30 minutes at 120°C. It is claimed to be suitable for instrument casings, metal fabrications, heating appliances and general consumer durable products.

L33 Wood panelling

The Panawall Company Limited, Cross Bank Road, King's Lynn, Norfolk

Panawall natural hardwood plank panelling is now available in a grade which meets the Class 1 Spread of Flame Certificate requirements. This has been achieved by special preparation of the core material and improved glueing and bonding techniques, which ensure that the high finish of the veneer is not affected. The thickness of the core material has been increased from 4mm to 6mm and a new secret fixing clip has been developed which eliminates the need for battens and permits the panels to be fixed direct to masonry.

Try the Duck Test



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Thousands of architects and builders throughout the U.K. are specifying and using Roofmate* FR roofing insulation. Not surprising. Roofmate gives a really permanently insulated roof. How? A special extrusion process produces a rigid foam board with uniform closed cells and tough outer skins. This means Roofmate is unaffected by water from above—or water vapour from below. So it will remain dry and effective even when installed without a vapour barrier. It's so tough ice won't crack it. Snow can't harm it. It remains dimensionally stable throughout its life. And it withstands the abuse of normal roofing traffic during installation. It's easy to install—so it cuts labour and overall roof installation costs. Drastically. So—if you haven't already—try the duck test. Just post the coupon.



100 U.K. Schools

Low maintenance costs: 1,000,000 sq. ft. of Roofmate has already been installed on roofs of more than 100 schools built for local authorities. Routine maintenance is reduced to a minimum with Roofmate and building costs are also reduced because no vapour barrier is required.



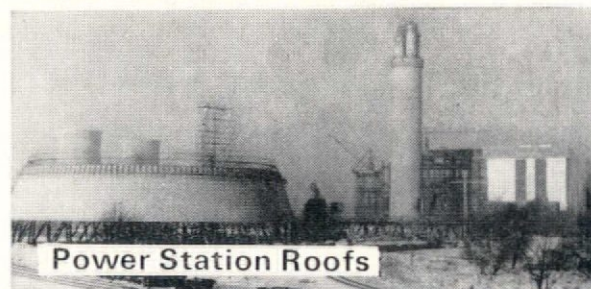
Barbican Redevelopment

Insulation of barrel vault roofs: of the 300,000 sq. ft. of Roofmate required for the Barbican redevelopment project in London a considerable quantity was used to insulate curved roof structures. The rigid boards are scored at regular intervals to fit the contour of the roof.



New G.P.O. Computer Centre

Constant environmental control: Roofmate was chosen for the insulation of a new G.P.O. Computer Centre at Derby to help ensure a damp-free atmosphere and precise temperature control for highly sophisticated electronic equipment.



Power Station Roofs

Roof traffic damage eliminated: Over 1,000,000 sq. ft. of Roofmate has been used on major power station projects in England, Scotland and Wales. Roofmate was principally chosen in each case because it is unaffected by moisture ingress caused by the abuse of severe roof traffic during construction.

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105 Wigmore Street, London, W.1.

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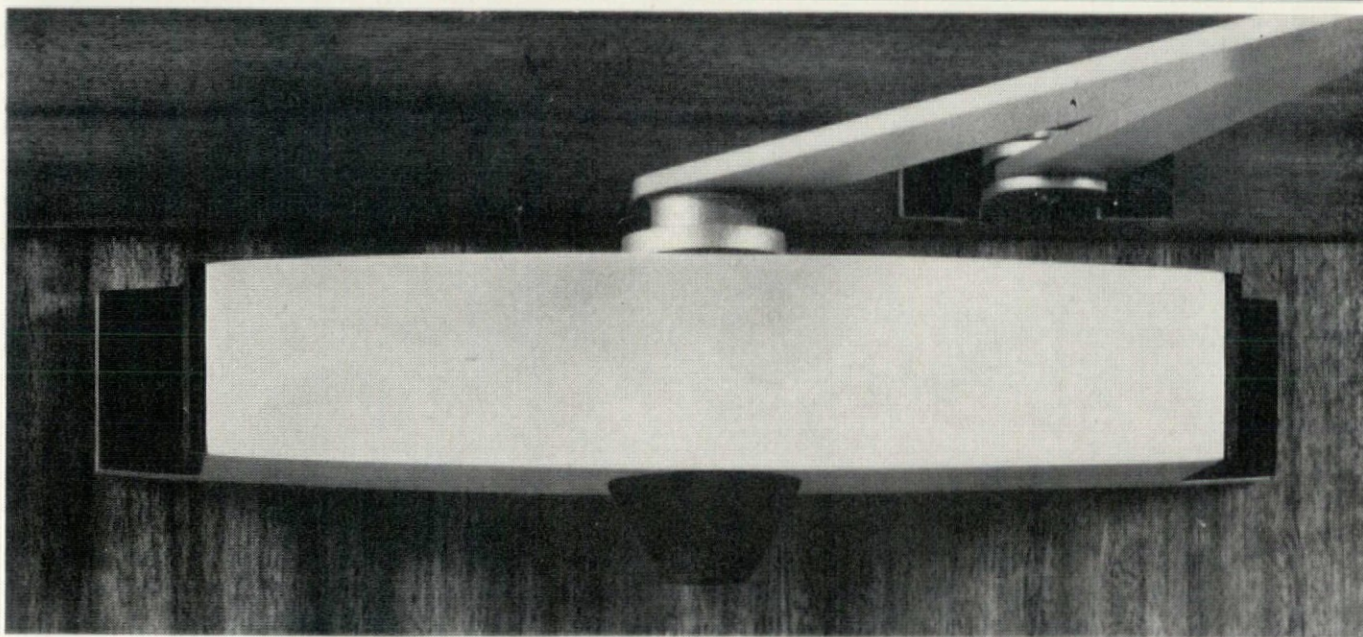
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Position/Company

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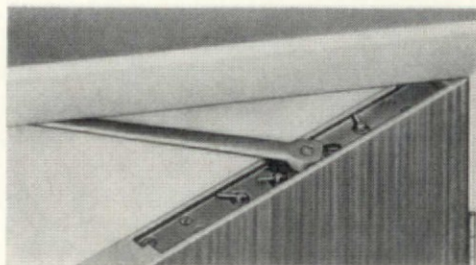


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Tastefully designed doors need tastefully designed door-closers. That's why there's a Briton 2000. Into this compact aluminium shell has been packed the power to close doors 7' high \times 2' 9" wide and up to 100 lb. in weight.

If you want your power out of sight, there's the Briton 507 (right).

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William Newman & Sons Ltd.,
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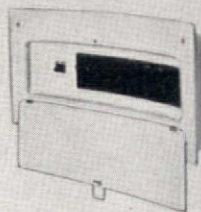


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Once upon a time there was an old fashioned house owner who didn't know or care much about overloading the electrical circuit of his home. After a fuse had "blown" he couldn't find any fuse wire so he fumbled around in the dark until he found a piece of thick wire, located the offending fuse carrier (at the sixth attempt) and mindlessly inserted the wire in the carrier... That night his house was burnt down. Sad but too often true.

Knowledgeable architects advise their clients to fit Quicklag-P Consumer Units - the modern way to protect domestic electrical circuits. Safe with thermal-magnetic tripping, compact with Miniature Circuit-Breakers and a built-in mains switch, foolproof with resetting at a flick of a switch and easy visual fault location. You may not be a fairy godmother but you can write for details of QUICKLAG CONSUMER UNITS and ensure that your clients *live happily ever after.*



This is the story of an electrical contractor who always needed 20 square feet of wall space to accommodate his electrical distribution equipment. Switches here, fuseboards there, ugly cables everywhere. The architect tore his hair to see such a mess in his lovely building. So he wrote to Chilton and got the electrician full details of the Protector range of Distribution Units which showed how versatile, compact and modern looking they are. It also showed him the four sizes of boards available to provide 12, 18, 24 or 36 single pole outlets for 2, 3 or 4 wire systems. The electrical contractor thought the architect was a wizard and the architect had a nice, neat, unobtrusive electrical installation. So everybody was happy.



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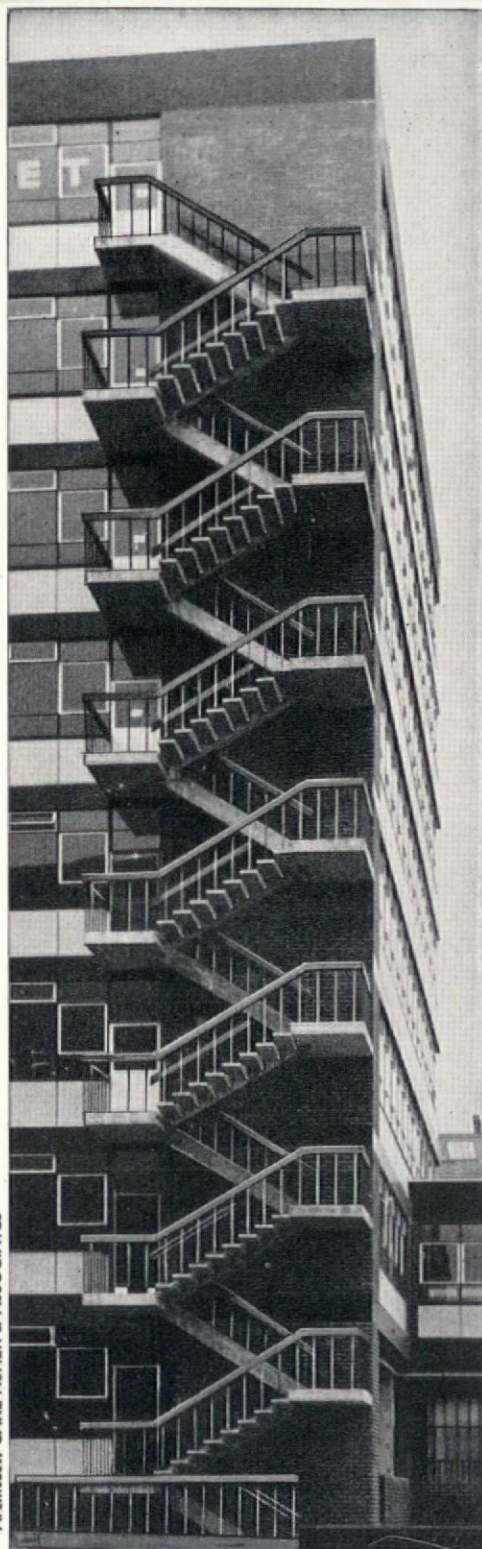


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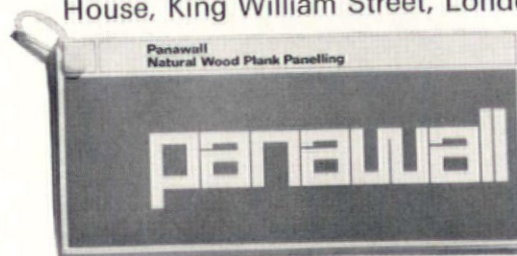
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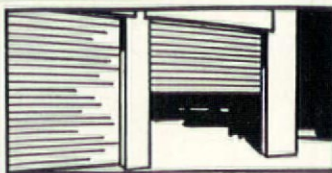


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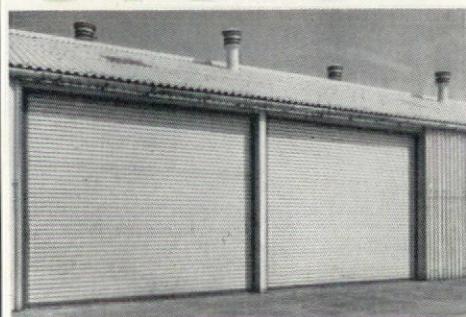
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	Dow Chemical Europe S.A.	38, 39
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	Gliksten Doors Ltd.	11
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	Iliffe Marketing Co. Ltd.,	49
	Lucas of London Ltd.	42
ASC, I, K, N, Q, T	Marley Tile Co. Ltd.	35, 37
ASC, F	National Federation of Clay Industries	19
[ASC, (30)]	Newman, William, & Sons Ltd.	40
	Opus 22 (The Stag Cabinet Co. Ltd.)	10
	Oxfam	44
	Panawall Co. Ltd., The	45
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	Rotaflex (G.B.) Ltd.	34
	Ranalah Gates Ltd.	43
	Rawlplug Co. Ltd.	2
ASC, F	Redland Bricks Ltd.	7
	Remploy Ltd.	44
ASC, L, (21), (26), (27)	Ruberoid Co. Ltd., The	21
	Shanks Ltd.	6
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	Stewarts & Lloyds Ltd.	9
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ASC, (66)	Thornborough & Son (Manchester) Ltd.	46
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	UAM/Cape Ltd.	4
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	West, A., & Partners Ltd.	46

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