

AD

Architectural Design December 1968. 7/6



nathan Miller and five other characters in search of the city

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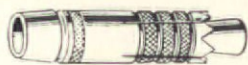
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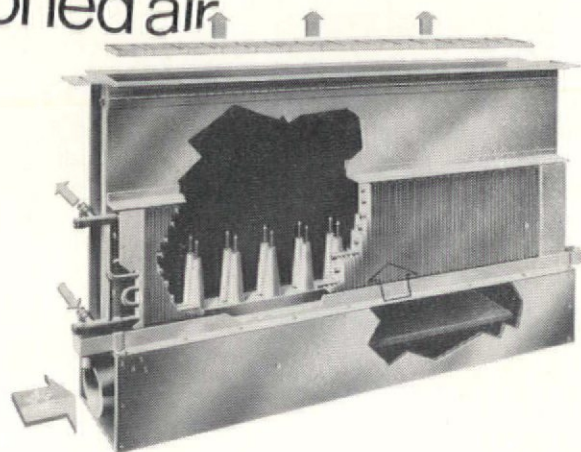
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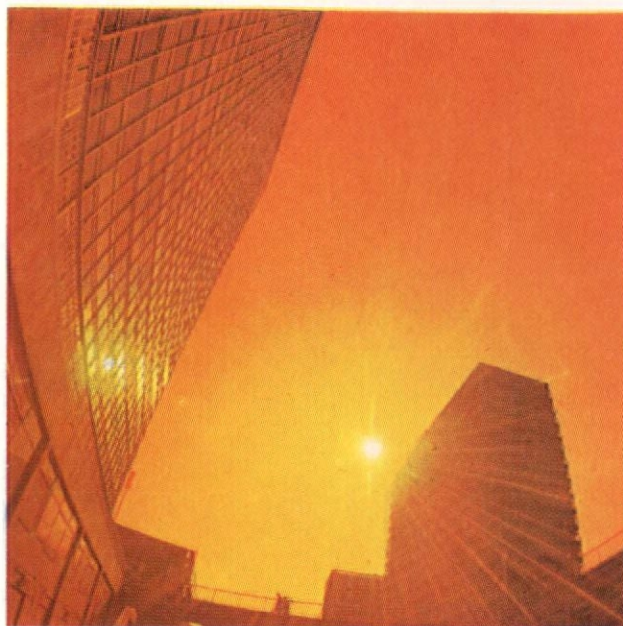
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To the architect and designer Pilkington Spectrafloat may well prove to be the most important glass development of the post-war years. The Pilkington development of Float glass revolutionised glassmaking. Now, Spectrafloat, a development of the Float process, provides the beginning of a major change in window design.

It is a glass which reduces the transmission of solar heat. It is a glass which cuts down sky and ground-reflected glare. It has a subtle colour effect. Like Float, it has a permanent fire-finished surface. And it costs very little more than clear Float glass.

In air-conditioned buildings it will reduce both the capital and running costs of the air-conditioning plant. In buildings without air-conditioning, Spectrafloat will make a real contribution to environment.

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.

**PILKINGTON
GLASS**

Pilkington Brothers Limited, St. Helens, Lancashire and area offices throughout the country.

Westnofa

Quantum Range

Quantum Range consists of seven chairs made from moulded plywood supported on steel frames.

All the shells can be supplied upholstered and most of them are also available in a variety of natural wood finishes. The shells can be mounted on swivel bases with or without castors and arms, or on leg frames, with or without arms and linking device.

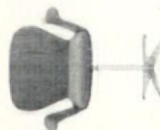
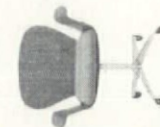
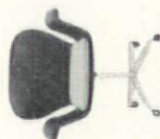
Each chair in Quantum Range is a distinct design on its own and can be used alone or in conjunction with the other chairs. The many models available give Quantum Range a high degree of flexibility as regards design, function and price. The components are to a large extent interchangeable.

Please write for a catalogue or see Quantum Range in our showrooms.

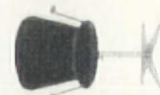
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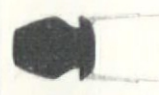
Forum



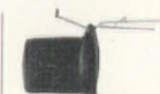
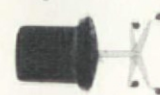
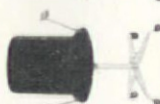
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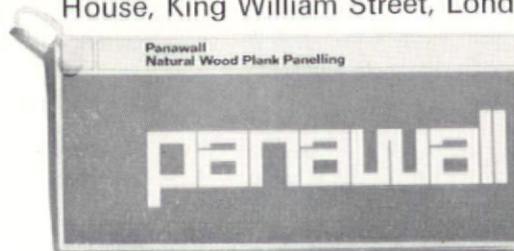
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(conforming to BS 476 Pt 1 1953)

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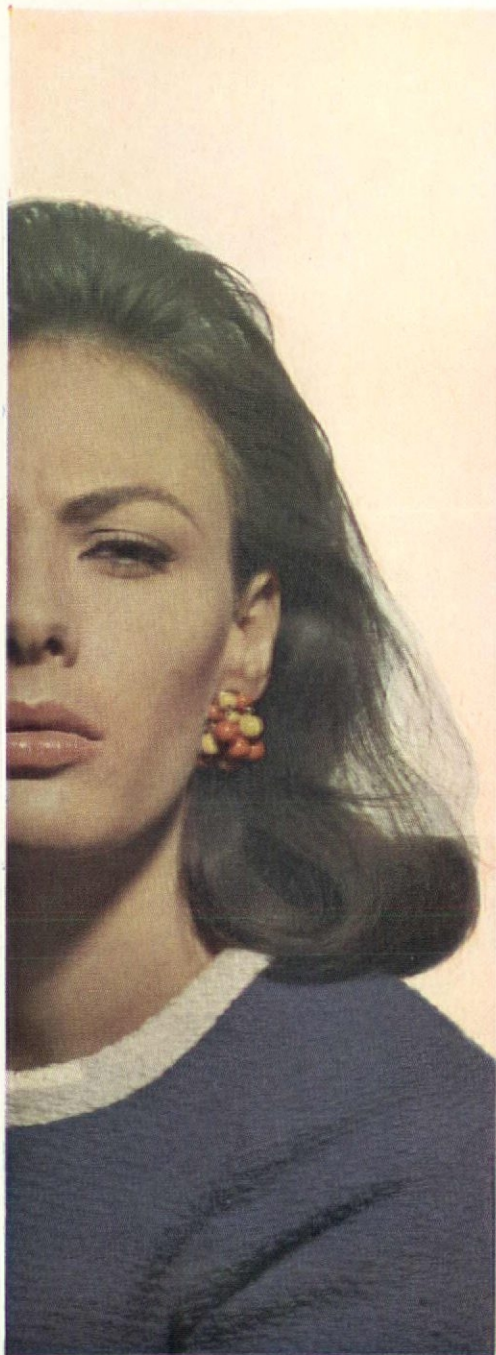
Panawall Natural Wood Plank Panelling can be seen at the Architectural Showroom, Surface Productions Limited, Adelaide House, King William Street, London EC4 Tel: 01-626 0550.



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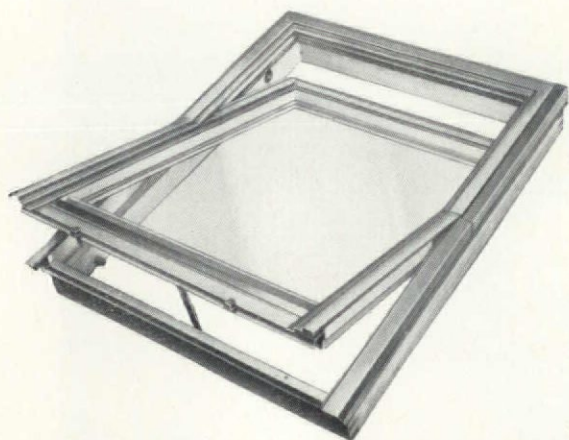
a new angle on roof windows



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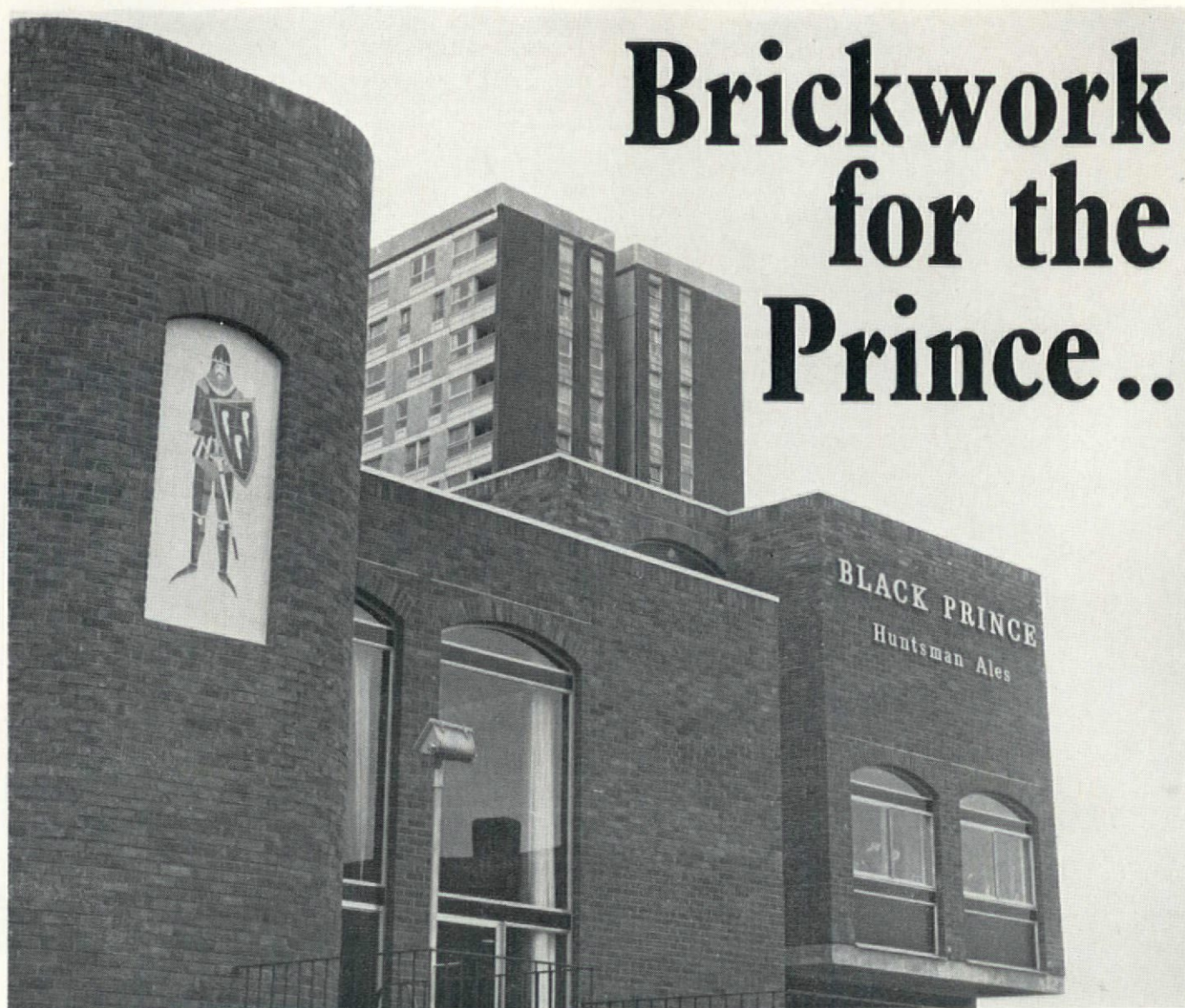
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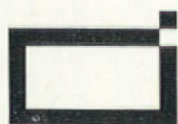
Public house, Portsmouth. Architects: W. H. Saunders & Son

Brickwork for the Prince..

... Black, Edward the, 1330-1376. Rides again Portsmouth 1968 thanks to Eldridge, Pope & Co Ltd, brewers. And to a few thousand loadbearing clay bricks cunningly deployed to form a single bar arranged on three levels. Edward would have admired the strategy. We do. Read all about it in the September issue of the Brick Bulletin.

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AD Competition

12/68

What, where, when, whom?

Answer

name of building or construction

address

date of construction

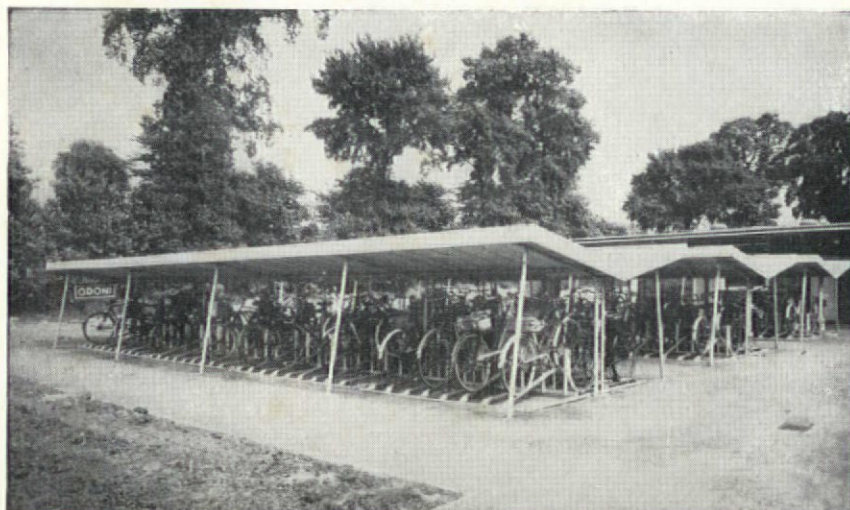
designer (if any)

Name of competitor

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Type TD2A-R-LR ODoni Tubular SHELTER (R.D.899573) with Type 5A Pedal Cycle Stands at Gable Hall School, Corringham, Essex.
Photo by courtesy of Messrs. Brown & Moulin, A/A.R.I.B.A., in Association with H. Conolly, C.B.E., F.R.I.B.A., County Architect, Essex County Council

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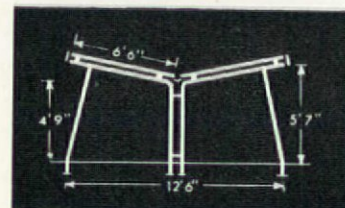
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TUBULAR STEEL SHELTERS

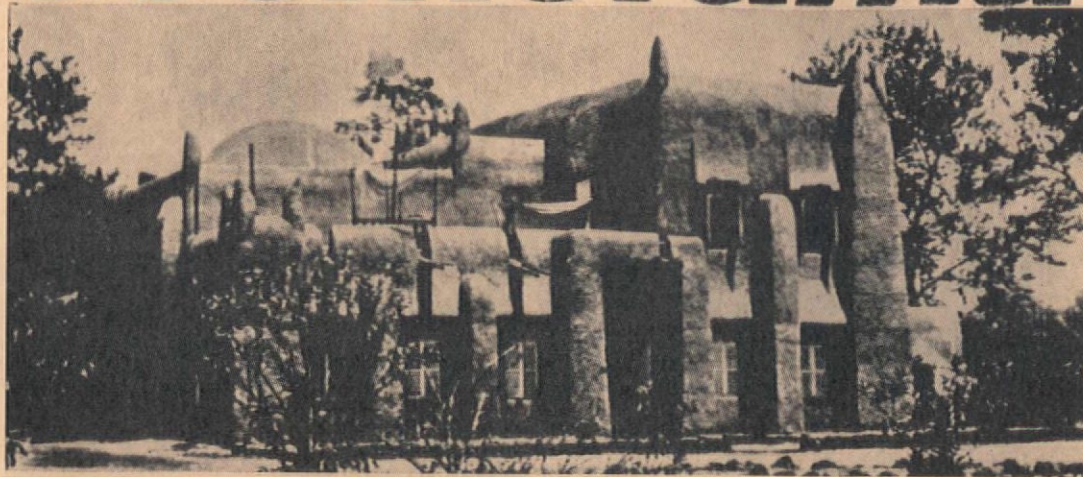
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What, Where, When, Whom

Name the building, address and date of construction. The author of the first correct solution opened in our office on the 25th of this month wins £5. Entry form page AD14. Mark envelope *Competition*.

The building illustrated in November was the Koopman de Wet house, 'Strand St., Capetown, built in 1799, now used as a museum.

Winner: A. Jennings

People

Jonathan Miller, doctor, comedian, writer, director, what-have-you guest editor of *Metaphoropolis* pages 570 to 604.

GREETINGS FOR CHRISTMAS & 1969

Next month: Primarily, the January issue is devoted to *AD's* Project Awards, but there is, in addition, an array of James Gowan's recent designs, commented upon by Robert Venturi and his wife, Denise Scott-Brown. Four of Moshe Safdie's new projects and one by Buckminster-Fuller are illustrated and Reyner Banham's provoking article "The home is not a house" is reprinted. To complete the number two earlier Project Awards, now built, are shown.

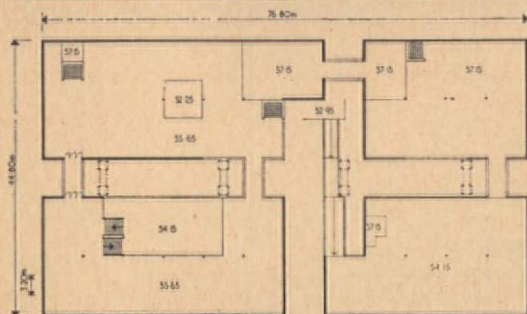
Briefly

Wilhelm Holzbauer (Vienna) has won the coveted Amsterdam town hall competition, with Bernardo Winkler (Germany) in second place, J. H. Maisonneuve (France) third, and G. G. Heydenrijk (Holland) fourth.

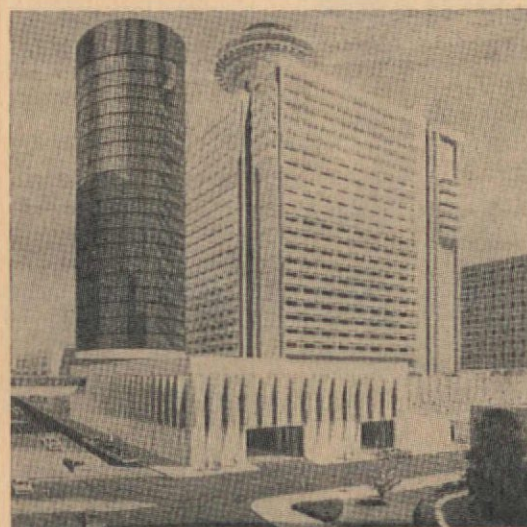
The Mancunian Way, the three-quarter-mile prestressed concrete elevated road designed by G. Maunsell and partners, has won the 1968 Concrete Society Award.

The *Conseil Maritime* meets from August 1st to 30th, 1969, on the Côte Bleue, 40 km west of Marseilles, 4 km west of Sausette-les-pins quarry beach. *Conseil M* lives in and by an edible city, the Mediterranean sea—no charge, no chief, no programme, no further information (if you really want it write to Rudolf Doernach, Stuttgart).

Six foreign architects have been invited by the Japanese to design exhibits for the main Theme Pavilion at Expo '70—Moshe Safdie, Christopher Alexander, Yona Friedman, Giancarlo di Carlo, Hans Hollein and the Archigram Group.



The British pavilion for Expo '70, designed by Powell and Moya, is, in principle, to be a suspended shed with elevated platforms internally. Though entry can be effected on all sides, there is to be a one-way circulation system through the exhibition. The design of the interior has not yet been released.



Dazzle

So dazzling has been the success of the Regency Hyatt House hotel in Atlanta, designed by John Portman (see AD 2/68, p. 90), that 200 bedrooms are to be added in the form of a bronze, glass sheathed silo. The core will be formed by three lifts in their shafts. Beneath the tower will be a new restaurant. *Progressive Architecture*, September 1968
Time, September 6th, 1968

At the RIBA on June 8th, 1968, Dr Richard Buckminster Fuller was presented with the Royal Gold Medal 1968 in recognition of his 'great contribution to architectural philosophy and engineering'.

Dr Fuller then delivered his Gold Medal Address, 'thinking aloud' some 16,500 words which were not subsequently published in the *RIBA Journal* (for the regrettable reasons stated on page 341/2 of their August issue), nor anywhere else as far as we can ascertain.

So we asked John Donat, who had access to the transcription as well as to the BBC's tape recordings, to prepare an abbreviated version for us, so as to ensure that Bucky's message reaches the wider audience which it deserves.

We hope that magazines in other countries will avail themselves of the opportunity to translate it and thus pass it on to a still wider circle of readers.

BUCKY'S GOLD

SPECIALIZATION

I am very fortunate in being an average healthy human being. The only reason this Award has taken place is that I have avoided the great overall education towards specialization. If anything is fundamentally unique to humanity it is man's general adaptability. When nature wants to develop a specialist she does, and if she wanted man to be a specialist she would very easily have designed him with one eye and a microscope attached. It is the ability to discover the principles of life and to adapt in one direction after another that is absolutely unique to human beings.

I am convinced that every child is born a genius and simply becomes de-geniused very rapidly through the misguided love of those who look after that young life. The drive of the child to apprehend and comprehend, to understand and be understood, is quite phenomenal; but we have become immersed in specialization, and all biological species that have become extinct have done so as a consequence of over-specialization.

I feel that the young people who seem to be uncooperative in the world of education, think with a very deep intuition that what they really have is in jeopardy. The need to cultivate comprehensive creative capabilities is the very essence of what they are intuitively asking for.

MALTHUS AND DARWIN

Man's great dilemma today is based on the working assumption of all political thinking—that Malthus and Darwin were right: that there is nowhere near enough to go round, and that only the fittest will survive. That there must eventually be an Armageddon to decide who is going to survive, which side is going to be a success. It has to be you or me.

It is only within the last two decades that scientists have discovered that it is quite possible now to make all the earth support all of humanity at a higher standard of living than any men have ever known. The intuitions of the young world have been alerted into a feeling of very proper apprehension that the old world is pre-occupied in ways inadequate in respect of the coming challenge: that man may be about to wipe himself off the face of the earth. The young world has not worked out ways in which to make man a success, though it is everywhere extraordinarily earnest and excited by the fact that it could be done.

THIRD PARENT

In 1965, in the United States, we had the world recognizing the feelings of the young world for the first time when the Berkeley students manifested their dubiousness regarding the way society was carrying on. The ones who were graduating in 1965 were born in the year of Hiroshima. They are the first generation to be brought up with television—they averaged 1000 hours of television a year. They've heard the television more than they've heard their own parents. Parents come home and say, 'Well, we had a hard time at our jobs today', they talk about very local things. The students go to the Third Parent, the television, and it tells them about the whole world, and their compassion is now for all of humanity. They're told by the Third Parent about all the inventions—that a nuclear-powered submarine went under the polar ice, we've photographed the other side of the moon—and this world information has convinced them that man can do anything he needs to do. They're convinced he needs to make his space-ship Earth work but that the older people are pre-occupied very, very locally.

BRAIN AND MIND

I take a piece of rope and tense it. The more I tense it the tauter it becomes—its girth is contracting, it's going into compression. Tension and compression always and only co-exist. Concave and convex always and only co-exist, proton and neutron always and only co-exist. With these three kinds of always and only co-existing phenomena, I'm going to develop the theory of functions: X stands for tension, concave and proton, Y stands for compression, convex and neutron. In the theory of functions, X and Y always and only co-exist. I concentrate this concept a little further and talk about relativity—one word inferring at least two variables to be related—or the word complementarity which involves two which complement one another. But relativity and complementarity are not quite the same; to be able to include both we invent the word universe.

Now I started by saying 'I take a piece of rope', but nobody said 'You don't have a piece of rope' because nothing I said contradicted any experience any human being has ever had with any piece of rope. This is called first degree generalization. In literature, generalization means covering too much ground too thinly; in science, it means discovering a principle which holds true in any special case experience with no exceptions.

It is a second degree generalization to discover always and only co-existing tension and compression, etc., and a third degree generalization to develop the theory of functions. It is a fourth degree generalization to develop the word relativity, and a fifth degree generalization to reach the word universe.

A dog can apply tension and compression to a piece of rope with the concave and convex surfaces of its teeth—but there is nothing in our experience to suggest that he has developed the theory of functions. The dog's brain is limited to dealing with each special case experience, but man's mind is unique—our minds represent our ability to discover the generalized principles operative in all special cases. Generalized principles weigh nothing—they are purely metaphysical. Brain is physical, mind is metaphysical and absolutely unique to human beings. We find then man as metaphysical becoming master of the physical through his ability to discover generalized principles. I'm quite confident that what we can do with our young world is to begin to develop this generalized capability much more effectively.

MAN'S ROLE IN UNIVERSE

Does man have a function in universe? Nuclear physicists have disclosed that every fundamental pattern in relation to the atomic nucleus, every energy behaviour, has its opposite: the neutron its proton, the electron its positron, etc. There is this fundamental complementarity. In physical experiments several centuries ago it was discovered that every local system loses energy, and scientists in our own era discovered that the energies are always accountable, they do not get out of the universe: energy is finite. However, all local systems are continually giving off energies in a very diffuse way that is considered disorderly—it's called by mathematicians the law of increase of the random element. So we have a physical universe becoming locally everywhere more and more disorderly. It must be inferred from what scientists have found out about fundamental structure, that there must be some complementarity to this coming apart in a disorderly way (which takes up more room—i.e. it's an expanding universe), and therefore there must be some phase of the universe where phenomena are contracting and becoming increasingly orderly.

All the stars which are observable represent that disorderly energy being given off, and if we look for some black body where energy may be collecting, we only find one that we really know anything about: our space-ship earth, which we discovered during the geophysical year to be collecting 100,000 tons of stardust daily. And we find life being regenerated on earth by impounding the energy through green vegetation on the land and algae in the sea by photosynthesis. This is an extraordinary process whereby beautiful molecules are built—the first transition from increasing disorderliness picked up as random radiation and suddenly put into orderly structures. All the biologicals produce beautiful orderly structures, and by far the most interesting to us is the human being, with his drive to apprehend and comprehend, to order and sort out and rearrange in more favourable ways—a fundamental drive towards what we call anti-entropy. And the human being has the capability I described of the mind over the brain. The brain is physical, it's weighable and it dies with the man. But what is unique to each life is its weightless metaphysical mind whose function is to apprehend, comprehend the physical disorder and bring it back towards order. We have Einstein as intellect, metaphysically taking the measure of the physical and writing the most extraordinarily economical equation that has ever been written— $E = mc^2$. There is nothing in our experience to suggest that this is reversible—that energy will ever write the equation of intellect. If human beings have this extraordinary metaphysical function in universe, they are absolutely essential to it—we are at the most exquisite point, the turn-round between physical disorder and something as perfect as the word 'universe' which is metaphysically conceived.

POINT OF NO RETURN

We find that when universe has an essential function and the probability of prospering and survival is poor, nature makes many many starts—so there are fantastic numbers of seeds launched into the winds, the majority of which never prosper. It's very probable, in view of the fact that man is essential to universe, that there must be fantastic numbers of other planets with other human beings aboard other spaceships—and whether this particular little crew on board spaceship earth will make good and survive is very very questionable.

However, into this situation is built an enormous safety factor, allowing man to make many many mistakes by trial and error—and many, many mistakes he has made. He is now polluting his water and his air, and the rate of pollution is so rapid that the amount of dust in the sky will reflect the radiation away so that not enough energy will be impounded to keep life going. That is within the really foreseeable future and the point of no return is close at hand.

That is why our young world is deeply intuitively aware that it has now learned enough and that we have enough information. I find young students around the world becoming extraordinarily inspired by the realization that through the development of competence, discovering those generalized principles and employing them in a fearless way, it is possible that we could not only have enough to go round to take care of all of humanity, but possible that man may be on the threshold of an entirely new kind of relationship to universe.

WAR GAME

The war game is working on the assumption of what is called 'drop dead'—one side must lose 100 per cent. In the concept of dualling we have the gradual development of bigger and bigger guns and we have a professional military to look after them while we get on with this year's crop, this year's production, business and so forth. To coordinate them we have elected politicians—and they're working for the next election. We find society becoming inherently short-sighted, leaving all the long-distance thinking to the military—watching out for that awful moment when you're going to have to have a show-down. The military—looking far ahead—realized that science was able to give them higher and higher hitting power, and they said: 'When it comes to war, the man with the greatest hitting power that goes the greatest distance in the shortest time most accurately, will win.' So scientists were taken on almost exclusively for the purpose of getting ready for the next war.

Science has come to the point where completely unfamiliar technology has to be employed which costs fabulous amounts, and society immediately says, 'We can't possibly afford it.' The military says: 'Afford it or die.' So we have society going forward in this very blind way, taking on enormous advances in technology, almost exclusively under the auspices of the great emergency.

Now we are coming into an entirely new moment because we've developed hitting power of atomic magnitude and something strange has happened—it has become clear to the Russian High Command and the United States High Command that you couldn't use the biggest guns because *both sides would lose*; and the game of war was to have only one side lose.

VIETNAM

What has been going on in Vietnam is an experimental warfare between Russia and the United States. They couldn't have experimental warfare directly with one another because there would be no way of disengaging, so they came in by finding two other parties who seemingly had a quarrel, to find out how you could conduct warfare without using the

big guns. You work in other directions—in the direction of subversion, of exploitation, of 'anything goes'—you try to destroy the other man's reputation with the rest of the world and his own confidence in himself. The Russians have exploited a very great fallacy of the Western World in the cold war, a very great weakness, which is its free press. With a free press any trouble (like the young world manifesting its apprehension about the way older people are running things) can be greatly amplified—but with their controlled press you can't get trouble amplified. The Russians are tending to be by far the most successful because everyone says the Americans are fighting the Vietcong but no-one says the Russians are fighting the Vietnamese.

POLITICS

I am transcendent to all political thinking. I am utterly convinced that the world can be made to work and I'm convinced that all the politicians of both sides have really an extraordinary sense of responsibility to their people. I don't question their integrity as human beings; I'm sorry for them, however, because nothing in their particular art can ever help man to be a success.

MORE WITH LESS

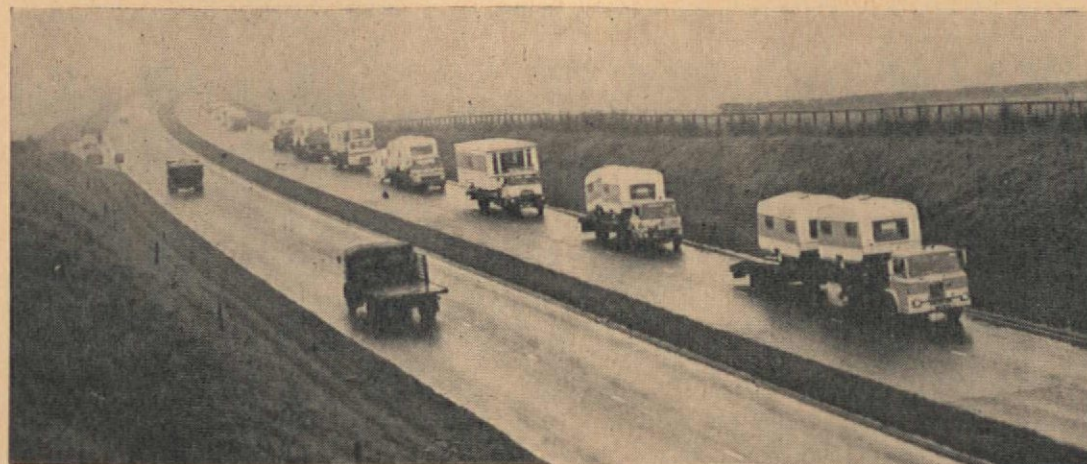
Between 1900 and today, we have gone from less than 1 per cent of humanity to 46 per cent enjoying a higher standard of living than any monarch—despite the fact that the metals for each world-man were continually decreasing, so you couldn't say we had done it by exploiting more resources—it was done by doing more with less. One quarter-ton communication satellite is outperforming the trans-oceanic communication capability of 175,000 tons of copper cable. This is the more-with-lessing.

Architects suffer unnecessary apprehensions that people are not going to like something. If we really attend to the problem in the most economical way—not just the product but how it gets there and what are the first things that need to be attended to—when we get the right solution it will be intuitively acceptable to society. The amount of the electro-magnetic spectrum that you and I see is only one millionth of the great reality, 99.99 per cent of important things affecting humanity are not contactable by our senses, but in the world of architecture we are very over-emphatic about that tiny little sensorial area.

YOUNG WORLD

I am really extraordinarily confident, because I do see so much of the young world catching on to the kind of patterns I am trying to relay to you. I don't find the young world fundamentally negative at all—it's tremendously exploitable, doing things that are seemingly negative, getting bored and not really knowing where it's going, at least having the fun of being in protest. But there are one thousand and one reasons for that protest—deep intuitions that the old world is locally pre-occupied through no fault of its own.

I would like to say to the young world, in taking up the great initiative that they are going to do, that they must be extraordinarily appreciative of everything that has gone before. Just because older people aren't using the right tools doesn't mean that there wasn't an extraordinary contribution. Nothing is as great to me as the dictionary. Every time I'm in trouble, if I've got a dollar I'm going out to buy a dictionary. How could it be that there was enough experience of human beings, and enough communication between them, to finally develop those extraordinary words? And most of them are generalized words that represent a great memorialization of man having discovered those principles. I would say to the young world—remember your dictionary, and respect every phase of evolution, every step by step—and all the great love that has gone from the old life into the new.



Caravanning

The International Caravan and Camping exhibition held this year at Earl's Court (November 6th-16th) was, as usual, an unlovely display. There were no slick capsules suitable for insertion into visionary megastructures, no prototypes for the architecture of the future. Yet the light and gimcrack boxes that were once called caravans but are now clearly conceived of as mobile homes—even fixed homes—still have an allure for the architect. Primarily they are cheap—extraordinarily cheap. They are ready-made and ready for immediate delivery. In addition they are popular; they are examples of self-conscious design intended for and appreciated by a wide variety of people. Guilt-laden architects, designing endless rows of houses and towering blocks of flats that are not one bit admired by their occupants might do well to visit this exhibition on which are shown living units that, restricted though they might be in area, are yet thought highly desirable by the people who live in them. And standardized and mass-produced though they are, they are susceptible of a great degree of personalization. No two caravans seem quite the same when set up on site.

Hoversprite

Though the general tendency has been for the caravan to become bigger and bigger and increasingly less mobile, a 14 ft 'hovervan', developed by Sprite Ltd. in collaboration with Hoverquipment (Dan Reece) Ltd., was also shown at Earl's Court (right). Still somewhat rudimentary in design, its successor might serve one day to take holidaymakers across the channel and down the roads of France to the beaches of the Mediterranean.

Rights

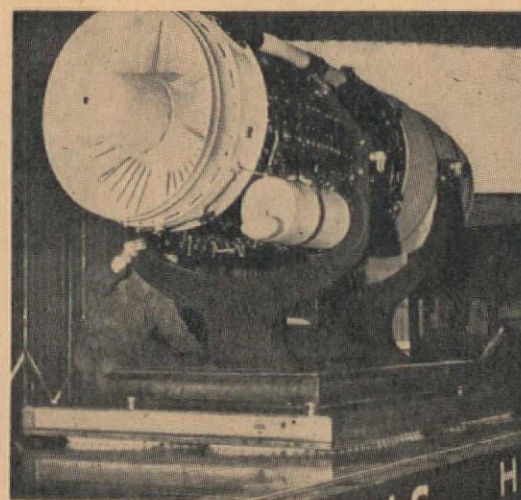
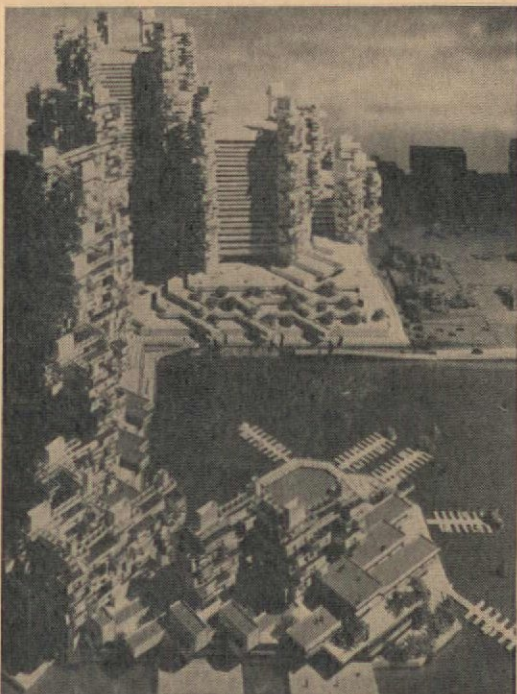
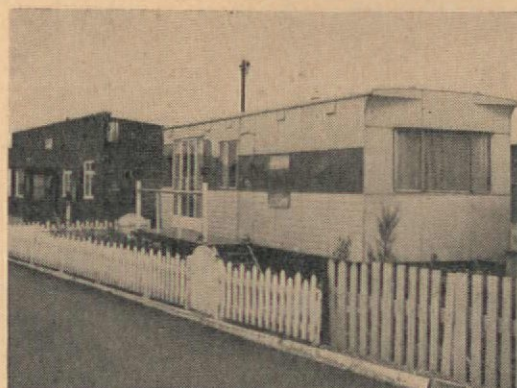
Government recognition of the caravan dwellers' rights has come at last—Mr Eric Lubbock's Caravan Sites Act 1968, comes into operation this year.* Security of tenure and protection from harassment, similar to that enjoyed under the Rent Act by people living in permanent dwellings, is to be given to caravan dwellers. In addition, local authorities are warned not to drive gypsies out of their areas (gypsies being defined not by race but as persons of nomadic habit of life); instead provision is to be made for all such nomads.

*See 'Caravan sites act, 1968', Circular 49/68 (MoHLG), Circular 42/68 (Welsh Office).

Renewal

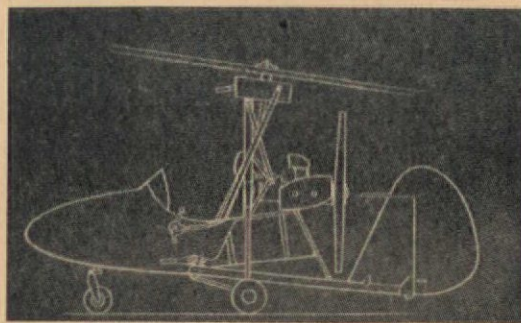
Paul Rudolph, staking a claim to up-to-date thinking, has designed a mammoth complex (right) for Lower Manhattan, into which 4050 mobile home units—without chassis, wheels or brakes—will be plugged.

Architectural Record, April 1968



Hover pallet

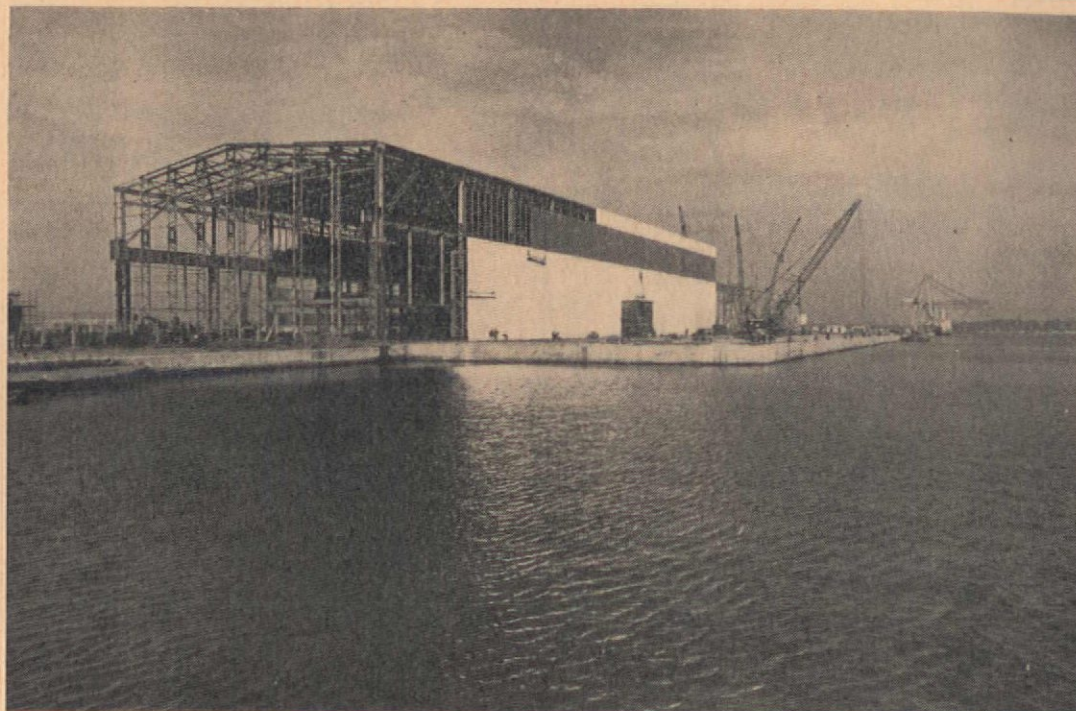
A 'hover pallet', developed by the National Research Development Corporation and the National Physical Laboratory, is to be manufactured and sold under licence by Hovair Products Ltd., Wisbech, Cambridgeshire. Designed to carry loads from 5 cwt up to 40 tons, the timber-framed hover pallets will have a maximum lift of four inches and will be able to negotiate obstacles up to two inches high. To create better stability four pad units are used on the larger pallets, such as that shown here transporting a piece of heavy machinery.



Autogyro

Early next year a revised version of Wing Commander K. H. Wallis' intriguing autogyro is to be tested. If successful this will be the simplest, safest and cheapest device yet made to permit man to fly with a modicum of the freedom and manoeuvrability of a bird. Take-off will require only 100 yards, cruising speed will be over 100 m.p.h., flying time will be up to two hours. But the real advantage is that this type of machine cannot stall; should the engine fail it can land in less than 100 yards. The rotor does not depend on engine power, except for the spin-up before take-off. In flight the rotor is turned by the pressure of air on the blades, and so develops enough lift, at a low forward speed, to keep it from sinking and, at higher speeds, to allow it to climb. If the propeller's engine stops, the autogyro still develops lift while gliding, and a slow landing (at 20 m.p.h.) can be made.

New Scientist, October 3rd, 1968
Flight, March 31st, 1966



Containerscape, phase II

The second phase of the container revolution at Tilbury Dock is at hand; the flatscape (see AD 11/68, p. 510) is no longer to be quite so flat. The 2000 containers at the new Overseas Containers (OCL) terminal

are to be stacked five high and are to be kept under cover 1—a protection for refrigerated containers from both the heat of the sun and bad weather. The techniques of handling, however, are to be more sophisticated than before. Two ASEA stack cranes of 45 ton capacity will stack containers on the quayside; a 45-

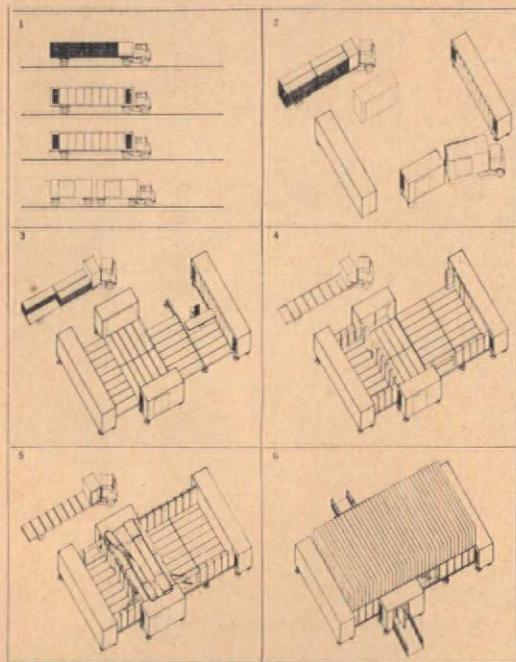
ton quay crane will load and discharge the ships. Containers for loading will be moved on six special trailers between the stack and the quay crane which will, in one cycle, unload incoming containers and load export containers into the ship. The precise control and coordination of the sequence, making possible a 48-hour turnaround, will be ensured by the use of a Honeywell DDP/516 computer. So intense and complex is the organization that only a computer could deal sufficiently swiftly with the decision-making process.

For example, the first containers to be unloaded in Australia must be the last to be loaded on to the ship at Tilbury. Moreover, the containers will weigh different amounts, yet must be loaded so that the stability of the ship is not impaired—either when she first leaves the terminal or after she sheds part of her load at intermediate ports on her route.

Prior to a ship arriving at Tilbury, schedules of the movement of import and export containers will be entered into the computer. It will be programmed to plan the unloading and loading of the ship, the container stack layout, and the reception and despatch of containers to and from centres throughout the UK. It will send instructions to the crane operators via uhf radio links. Messages will appear on displays in the crane cabin, while the operator will use a keyboard to confirm container movements.

Details of road vehicles arriving at the terminal will be transmitted to the computer by teletype and the drivers will be issued with identity badges. The drivers will then be directed to the correct waiting, unloading or loading points by inserting their badges in automatic reading machines located around the terminal.

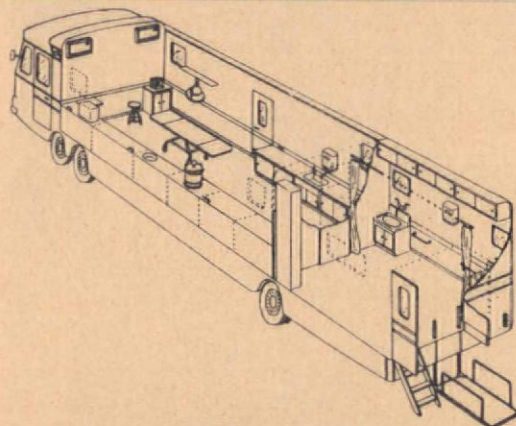
Financial Times, September 23rd, 1968



Mobile exhibition

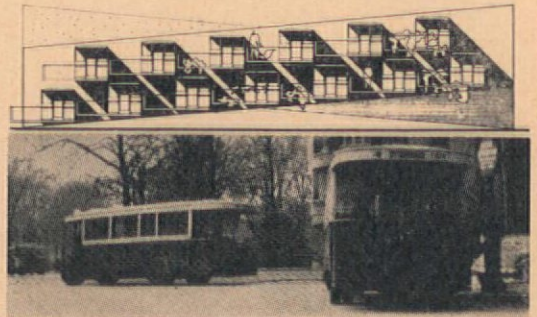
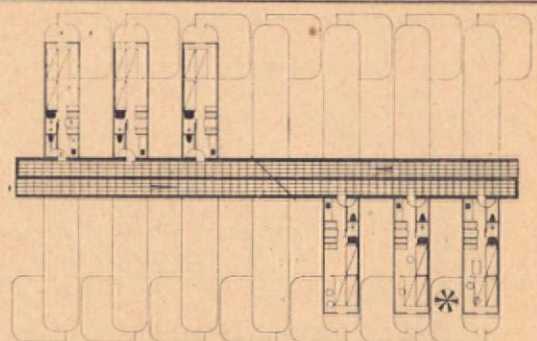
Chermayeff and Geismar Associates have prepared a design for a travelling exhibition that is made up of four trucks 1, that are unloaded on site, the trailers being set on jacks 2. Beams and floor panels are then set in position 3, display units set up 4, and covered over by an inflatable vinyl roof 5, 6. Mechanical and electrical equipment is housed in the ends of the two long trailers.

Architectural and Engineering News, September 1968



Mobile operating theatre

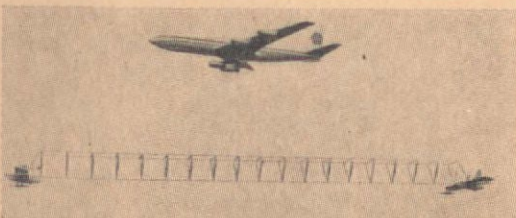
Mobile operating theatre (35ft x 8ft 2in), made by Pilchers (Merton) Ltd., of Burgess Hill, Sussex, mounted on a Bedford 19ft 3in wheelbase chassis. Electrical power is supplied by two 4kW 230v 50 cycle 1 phase AC generators (air cooled) connected to a 230v mains supply. Water for sinks, basins and water heaters is pumped from two 75 gal tanks fitted below the floor.



Bandwaggoning

The old buses of Paris are up for sale—at real knock-down prices. Guy Roffier has proposed an 'architecture of the ready-made' (Duchamp inspired)—a holiday village made up of converted buses. But so primly is the whole to be organized and to accord with the tenets of stylish architecture that the spirit of the enterprise is entirely dissipated.

L'Architecture d'Aujourd'hui, September 1968



Sign of the times

The Camco V, the world's longest aircraft (115 metres) and also, probably, the slowest (cruising speed 84km/h), shown alongside a Boeing 707. This curious flying frame, being built by the Slingsby Aircraft Co. of Kirkbymoorside, Yorkshire, is intended for advertising displays. Illuminated signs will flash three-word phrases at the rate of 90 words per minute.

Science Journal, November 1968

Light hope

Gyorgy Kepes has designed the new building for his Centre for Advanced Visual Studies at MIT—the artistic and scientific exploration will, in the main, take the form of lighting studies.

Architectural and Engineering News, June 1968

Evolutionary planning

Chris Abel

Most architects and planners feel obliged to claim a potential for 'growth' and 'adaptability' in their projects. If such claims often appear contradictory it is for the lack of an adequate body of theory against which they may be measured.

Fortunately this is unlikely to remain the case for long. The inroads that operational research¹ is making into social systems² suggests that urban planning will eventually be dragged, albeit kicking and screaming, into the realm of the sciences. The objectives will then include a set of models that will both account for and predict the behaviour of urban systems. It can be argued that when such models do mature they will share many of their basic premises with those laws relating to all evolutionary systems—urban systems will then join the general class of 'living' systems. They will, in other words, relate to a *biological model*.

Biological analogies are not new to planning theory. But the more authentic generality lent to them by *general systems theory*³ and *Cybernetics*⁴ now merits their closer attention. Both branches of theory are very much concerned with problems of evolution and adaptive behaviour in the biological system. The one in its description of changes in structure and form during growth, the other in its role as the legitimate science of control functions.

Two much-discussed urban archetypes might usefully be compared through the biological model. The first derives from the decentralized and fragmented pattern of growth typical of urbanization in most highly industrialized countries. The second is that of the 'megastructure' city. Their selection also affords reference to a distinction commonly made between an urban form that is 'planned' and one that is 'unplanned'.

The forces that combine to produce the 'unplanned' city form stem from fundamental changes in technology, income levels, family status and consumer taste—changes compounded by an ever-increasing mobility of population. The result is a patchwork of farms and built-up areas strung together with a tenuous network of roads.

In spite of the almost universal development of this pattern it is only recently that planners are beginning to think of it as a tenable aim⁵. If a plan for dispersion can now be regarded as a positive strategy the meaning of planning is inevitably in question.

Understanding of such a pattern of growth can only be properly arrived at through analysis of the urban system as a whole. It is at this level of macroscopic behaviour where the biological model affords insights into the changes wrought during a system's growth.

Consideration of the conurbation as a living system forces us to think of planning in terms of the cybernetic concept of the 'self-organizing system'⁶. We know for instance, that all living systems exhibit adaptive behaviour. That is, they possess an ability to react to their environments (broadly defined as the set of all objects and events containing a system that change or are changed by the system's behaviour) in such a way that is favourable, in some sense, to the continued operation of the system. A self-organizing system maintains its existence through a continual interaction with its environment. Changes within the system or in the larger world invoke an automatic response aimed at restoring a favourable balance, or *homeostasis*, between internal and external conditions. In a living system, this point of equilibrium will change as the organization of the system evolves. The very act of evolving entails irreversible changes in the system and its environment. These changes must in turn be accounted for if the system is to survive. The process is cyclic; the living system progresses ever further from an original condition.

The points to be noted are both the spontaneity of the adaptive process, and its inherent complexity.

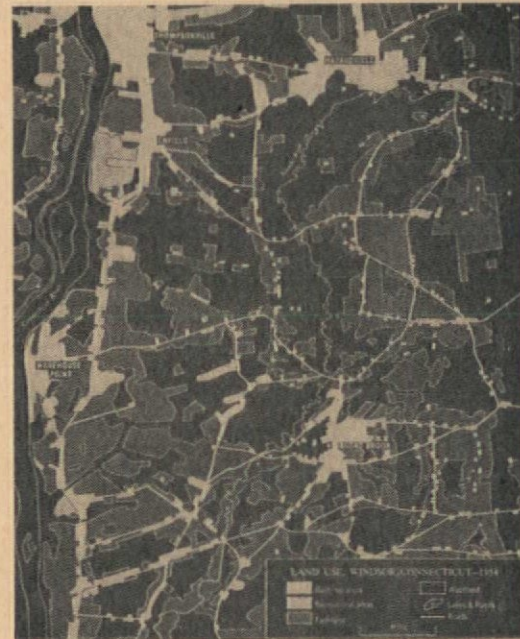
Spontaneous adaptation has been recognized in Mason Haire's studies of the growth of industrial organizations⁷. Haire traced the quantitative relationships over a period of time between different groups of employees. One group was concerned primarily with the firm's internal functions and another with mediating between the organization and the outside world. He found that in a number of firms of widely differing



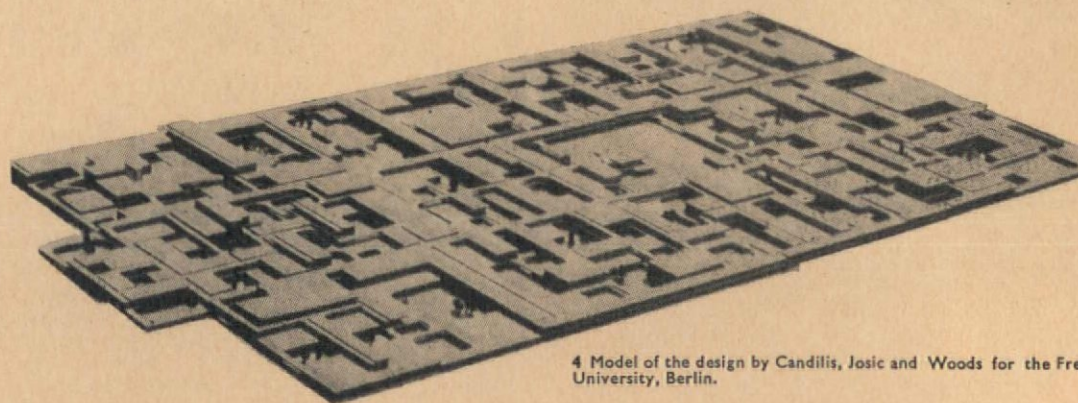
1 An array of the additive and mobile elements that typify rapid change



2 Aerial view of Lucca



3 Land use map of Windsor, Connecticut, showing the scattered form of a built-up 'megalopolis'



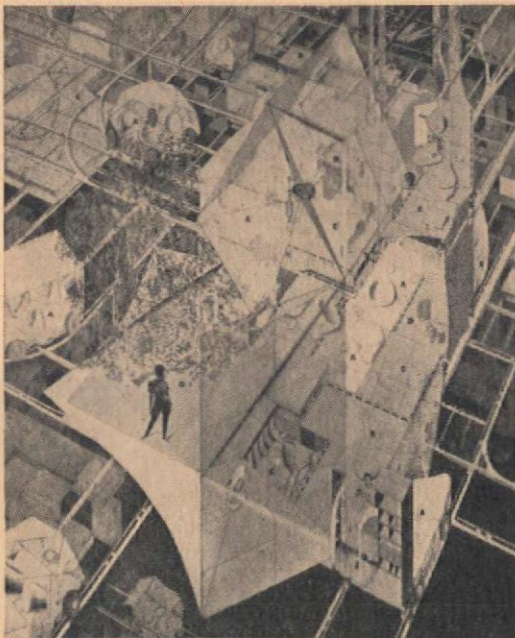
4 Model of the design by Candilis, Josic and Woods for the Free University, Berlin.

characteristics the relationship between these groups was a constant ratio. The implication is that there is an optimum structure for social organisms belonging to a very broad category.

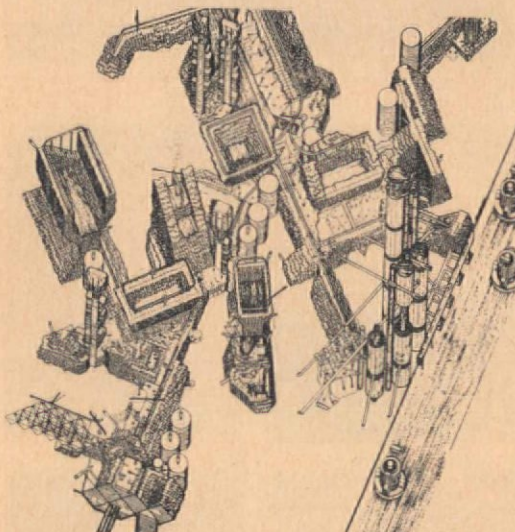
While Haire's findings are of interest in themselves their relevance lies in the fact that the optimum was not planned for. The management were totally unaware of the relationship, indicating the existence of a natural order that revealed itself only in retrospect.

The complexity of this behaviour is emphasized in Stafford Beer's description of the cybernetic system⁸

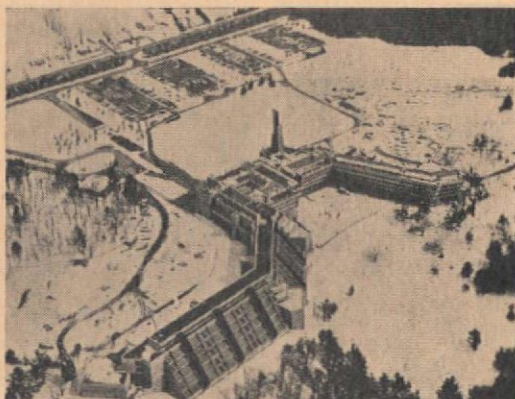
(to which category the biological system belongs): 'A cybernetic system is recognizable by three outstanding characteristics. It is exceedingly complex; to the point where its interconnectivity is indefinable in detail. It is exceedingly probabilistic; to the point where its structure though complex becomes undifferentiated, and every trajectory is equiprobable. It is unreal to suppose that any such system can be controlled by the imposition of rules from outside; because the system by definition defies analysis, and therefore no start can be applied by which the adequacy of the rules may be judged. The third



5 Michael Webb's Drive-in house (see AD 11/66 p. 573), conceived as a unit within an expanding megastructure. The driven containers travel horizontally or vertically—obviating the need for lifts or travelators—along tracks that double as structure.



6 Peter Cook, Plug-in city, 1964



7 John Andrews, Scarborough College, Toronto, 1965 (AD 4/67 p. 178)

characteristic of a cybernetic system is, therefore, that the fundamental organization it displays is generated from within: it is self-organizing. Adaptation in a living system is, in effect, beyond the control of any anticipatory planning agency. The evolutionary process is at once too subtle, and too random, to allow for anything like full coordination.

The successful outcome of such evolution is, however, entirely dependent on the system choosing an objective which is consistent with the norms established by its environment. In this respect the degree of in-

tegration (or 'connectivity') is crucial. The industrial organization will depend, like any other social organism, on the compatibility of its members and their objectives. In the larger, more heterogeneous urban system, a large degree of segregation may be necessary for the elements to interact as a system at all. The differences in objectives that pluralism entails necessitate a level of autonomy for different social groups. Segregation or dispersion of its elements may also make the system, as a whole, more resistant to trauma.

The need for segregation of subsystems is underlined for the reason that the other side of the coin doubtless needs no emphasis. If taken too far, segregation can result in a subsystem becoming so specialized to a particular environment that it ceases to become adaptive should that environment change. The long term survival of the whole system can then be threatened.

These two factors, the establishment of compatible objectives and the connections or amount of communication in a system, are therefore closely inter-related. Processes leading to autonomy or integration may be compromised according to the degree of standardization of goals. These different processes can occur simultaneously and go on indefinitely so that the system can exist in a kind of steady state. The behaviour is analogous to anabolism (building up of complex organic substances) and catabolism (breaking down of complex organic substances) in the human body.

This two-way process can be identified in urban systems in changes in the mode of integration according to the rate of growth. As growth accelerates so the level at which the interdependence of subsystems occurs has changed. From a slow cycle of change: local integration and regional independence symbolized by the mediaeval city 2—to a rapid cycle of change: local independence and regional integration, symbolized by the scattered conurbation and its extensive communications systems 3. The net effect, as in any evolutionary system, is a marked trend towards increasing heterogeneity and complexity.

It is when we view the dispersed conurbation as a self-organizing system that the analyses of Herbert Gans⁹ acquire significance. Gans claims that the objectives implicit in the suburban pattern have that consistency with the prevailing norms that we have pointed out as essential to an evolving system. To Gans's evidence we can also add the concept of 'territoriality'¹⁰ and its revelation of the imperative need underlying this quest for a few square feet of independence. Seen in this light dispersion is the product of the urban system's own regulative processes. The conurbation is evolving its appropriate form of integration through the same kind of natural homeostat that directed the structure of the industrial organizations Mason Haire described.

The organization of the dispersed pattern is apparent in the nature of the individual components. In terms of built form, changes in the urban pattern mirror the level of constraint that each artefact imposes on any other. In progressing from the closed system of terrace and street, through the detached suburban dwelling to the mobile home, the number of constraints have steadily fallen. The additive and mobile forms that now flood every aspect of our lives are inseparable from an urban structure that facilitates a maximum play of both its choice of components and the activities that link them together 1.

If the mode of integration of the urban system is appropriate to both short term goals and long term survival then that system can be said to work. Whether it is regarded as 'planned' or 'unplanned' is irrelevant in terms of these evolutionary criteria. The distinction is no more than an arbitrary convenience for differentiating between what the planner believes he has influenced and what he regrets he has not.

Against the natural urban form we must set the so-called 'planned' concept of the 'megastructure' city. The principal features of the concept are by now familiar. They include an articulated framework into which are placed a variety of elements. The supporting structure doubles as a servicing and circulation system. All elements are closely integrated with and dependent on the 'megastructure'. The appearance is that of a

high density, multi-level complex; the form is an 'all-in-one' structure.

In analysing such designs one must remember that they were, paradoxically, intended to satisfy the ideal of adaptability. Yet the essence of the idea is interdependence between the different elements. The constraints that the form imposes are such as to exclude any radical innovation. In Mike Webb's 'drive-in housing' 5 for example, the total integration of structure, tracks, and mobile units would not permit the introduction of any major element not designed for the original system. Any such change would threaten the validity of the whole structure.

Josic, Candilis and Wood's extension to Berlin Free University 4 has the distinction of being the nearest thing to the 'megastructure' concept that is actually under construction. It is widely regarded as a model for the 'flexible city of the future'. All the elements are again grouped into a close-packed complex—a tidy island form not unlike the mediaeval city. Any changes the system does permit must, however, be severely limited by the overlapping of such a mixture of activities, all of which are disciplined by the same constraints. It is difficult to see how the system can renew itself without serious disruption to its cohesive organization.

The ideal underlying such proposals may be highlighted by a comparison between Archigram's 'Plug-in City' 6 and Scarborough College at Toronto (also merited as a prototype city structure), by John Andrews 7. In spite of the obvious differences in technology they make remarkably similar impressions. Both are characterized by a closely integrated or cohesive ordering of a system of multifarious activities. In both cases the image is a thoroughly coherent one.

It is this desire for coherence that negates the planners' efforts to come to terms with adaptive systems. A living system, by the very nature of its self-organizing properties, will inevitably defeat any such 'imposition of rules'. The necessity to compromise the system as circumstances change means that the urban system can never attain the controlled form that is the planner's ideal.

In proposing a cohesive structure, advocates of the megastructure have ignored the lesson of dispersion. In the fragmented conurbation, cohesion is provided, not between local elements as in the megastructure, but at the regional level. The merging of institutions and the growing of new links through communication and data networks is a part of the evolution toward greater complexity. While local independence between subsystems allows for the redistribution of activities, the regional urban system as a whole is becoming more integrated, matching uncertainty in the environment with an equivalent uncertainty in its internal organization. This mode of integration is a reversal of the organization of the earlier city forms from which the megastructure derives. The progression may appear 'chaotic' to the planner and visionary with his tidier conception of urban form, but it is the more legitimate expression of the evolutionary process.

The urban system's natural homeostatic behaviour is in this instance a more reliable guide to an appropriate urban form than the planner's model. If the planner is to be effective then he must be tuned to this natural order. An evolutionary approach to planning would by definition be concerned with the establishment and maintenance of goals and modes of integration that are compatible with the whole conurbation viewed as a living organism. If the planner is efficient in this role he will make due allowance for that adaptive behaviour he cannot himself hope to specify.

Notes

¹ The application of scientific method to the problems of organizational control by interdisciplinary teams interested in the performance of whole systems.

² O. Helmer, *Social Technology*, Basic Books, N.Y., 1966.

³ L. von Bertalanffy, 'General Systems Theory: A New Approach to the Unity of Science,' *Human Biology*, Vol. 23, 1951. J. G. Miller, 'Living Systems,' *Behavioural Science*, Vol. 10, 1965.

⁴ W. R. Ashby, *An Introduction to Cybernetics*, London, 1961.

⁵ More for the informed layman is: S. Beer, *Cybernetics and Management*, English Universities Press, 1967.

⁶ L. March, 'Homes Beyond the Fringe,' *RIBA Journal*, August, 1967.

⁷ H. von Foerster, and G. W. Zopf, eds., *Principles of Self-organization*, N.Y.: Pergamon Press, 1962.

⁸ M. Haire, 'Biological Models and Empirical Histories of the Growth of Organizations,' in M. Haire, ed., *Modern Organization Theory*, Wiley & Sons: N.Y., 1959.

⁹ S. Beer, 'Toward the Cybernetic Factory,' in H. von Foerster and G. W. Zopf, eds., op cit.

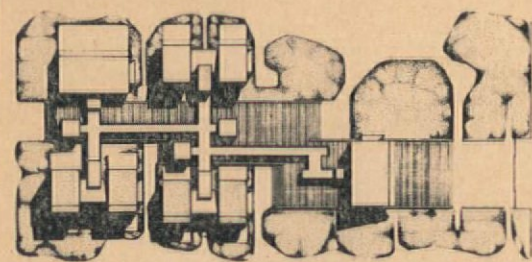
¹⁰ H. J. Gans, *The Levittowners*, Pantheon Books, N.Y., 1967.

¹¹ E. T. Hall, 'Territorial Needs and Limits,' AD 11/66.

¹² Re: Ashby's Law of Requisite Variety, W. R. Ashby, op cit.

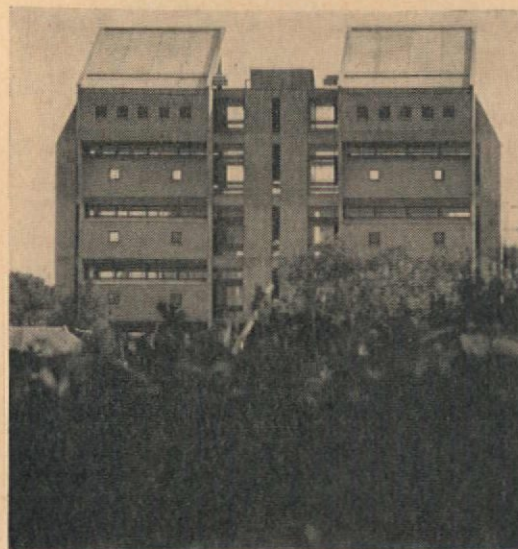
Metabolic practice

That dismaying and disturbing dichotomy between theory and performance that is so dominant an aspect of nineteenth century architectural activity seems no less prevalent in our own century. Pugin's buildings were only faint reflections of his theories (even allowing for the special meaning we have since given to such words as 'function'). Ruskin could give no form to his ideas. Even Viollet-le-Duc, that great rationalist theorist, dared only late in life to suggest in two or three ungainly images what form his ideal architecture might take. For the rest his designs and executed works were assiduously suppressed, lest they might temper the impact of the theories. Le Corbusier's buildings are not convincing exemplars of his stated beliefs. Nor can Louis Kahn's buildings be said to match his prose. Now it is the occasion to assess the performance of those darlings of the early sixties, the Metabolists, against their early intellectual proclamations. Some have already found them wanting. Last

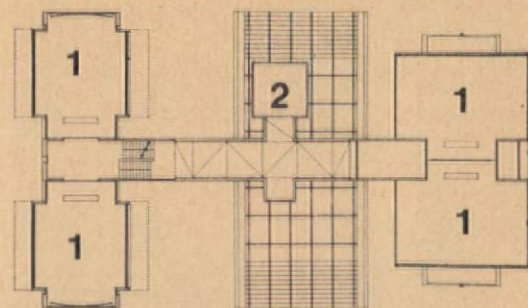


1

October Kenneth Frampton commented on Arata Isozaki's Fukuoka Mutual Bank in Oita (AD 10/68, p. 447). Here the development of this same architect's theme or a Megacity is illustrated (see below), together with four examples of his extraordinarily varied output—the first phase of the Iwata Gakuen High School 1-4, N's Residence (1960) 5-7, the Prefectural library (1966) 8-9 and the Fukuoka Mutual Bank (1967) 11—all in Oita. His aim, it appears, is monumental diversity.



2



Key: 1 classrooms 2 toilets



4

The lumbered image

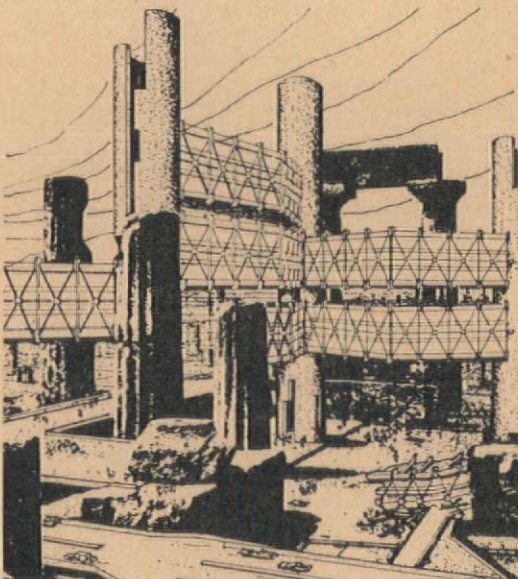
Arata Isozaki's sketch for a spatial city 1 more than any other single project, might be said to have launched the Japanese Metabolists on their way to fame. Architects in the West were rendered almost insensible with emotion. In France Yona Friedman had already sketched out his *Paris spatial*, but Paul Maymont and others soon had their Megacities on the drawing board—and in the magazines. Peter Cook presented his variations in Archigram. Since then students throughout the world have so effectively adjusted, transformed and contorted these prototypes that the hideous nature of the proposals is at last becoming apparent. Not that the Megacity is anything new. Leonardo da Vinci's town planning projects may be adduced as an early essay in the genre; though architects of the sixties are unlikely to have looked further back than the early years of the century, when Sant' Elia was drawing his dynamic visions of the cities of the future or when Le Corbusier presented his modified and more prosaic (and far more deadly) design for the giant city in the Voisin Plan (1925).

Yet, for all its visionary quality, Isozaki's sketch seemed to have a new realism that made it more immediately applicable than the earlier Utopian notions. The slender concrete support and service towers were linked by lattice-work bridges that sailed lightly and loftily over tumbled Doric columns. The columns represented the old towns; the concrete pylons and lattices the new cities. It seemed thus, that wondrous new Megacities could be created high above old towns, avoiding all the disagreeable complexities of usage, land ownership and bureaucracy. Vested interests could be elegantly by-passed.

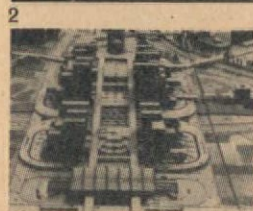
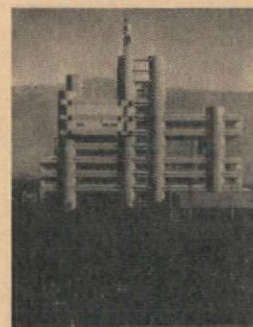
But, like many seminal ideas, the Megacity has proved inelegant in practice. The first Japanese interpretations are of a most lumbering awkwardness. The Yamanashi Communications Centre 2 (AD 1/67, p. 3, 5/67, p. 209), designed by Kenzo Tange and his team (of which Arata Isozaki was a member) is a wretched and ungainly affair. Their Shizuoka tower¹ in Tokyo 3 has already been named a folly—but then it was probably not meant to be taken seriously.

Tange's early proposals for the rebuilding of Skopje² 4 (AD, 66/1 p. 3, 66/12 p. 584) have been so denatured 6 as to render them an inept parody of the original—and this despite his most earnest and assiduous efforts to convince the Yugoslav authorities of the correctness of his Megacity studies (during the height

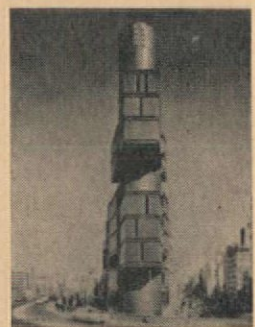
of the redesigning, for instance, Tange travelled three times a month to Skopje, spending no less than 30 hours on the journey each way). When built, under the auspices of the Yugoslavs, the new Skopje will no doubt be little different from any other new town in that country. The overweening architectural rhetoric of Tange's Dentsu complex 5 has in practice turned out to be nothing more sinister or disagreeable than a single twelve-storey building³ 7. Its Megacity pretensions are with difficulty to be discerned. Even in Japan, it seems, the Megacity cannot get effectively off the ground. Yet there are indications that it has been accepted as a tenable pattern for the rebuilding of cities—Professor Takayama has recently completed a library for the Chuo University, Tokyo⁴ 8, with massive service towers and bridging units apparently placed at random, that is intended to provide a model for the redevelopment of the adjoining area 10. The section through this building 9 shows that whatever the aspiration, the nature of the building is commonplace enough and that the Megacity overtones are a matter of surface modulation only. Similarly Masato Otaka's much lauded 'Artificial land platform' at Sakaide⁵ 11, is no more a Megacity model than any other housing scheme built on a first floor deck. It is only a variant on the use of pilotis.



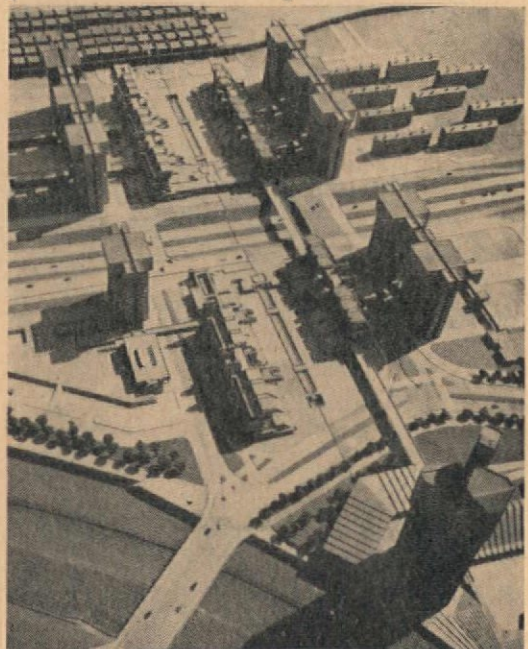
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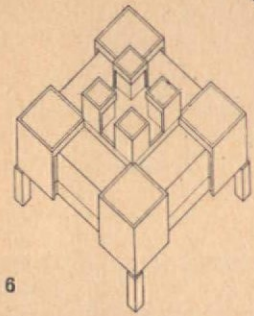
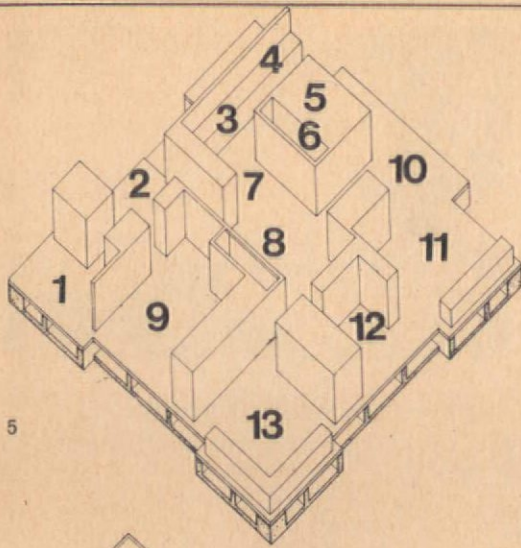
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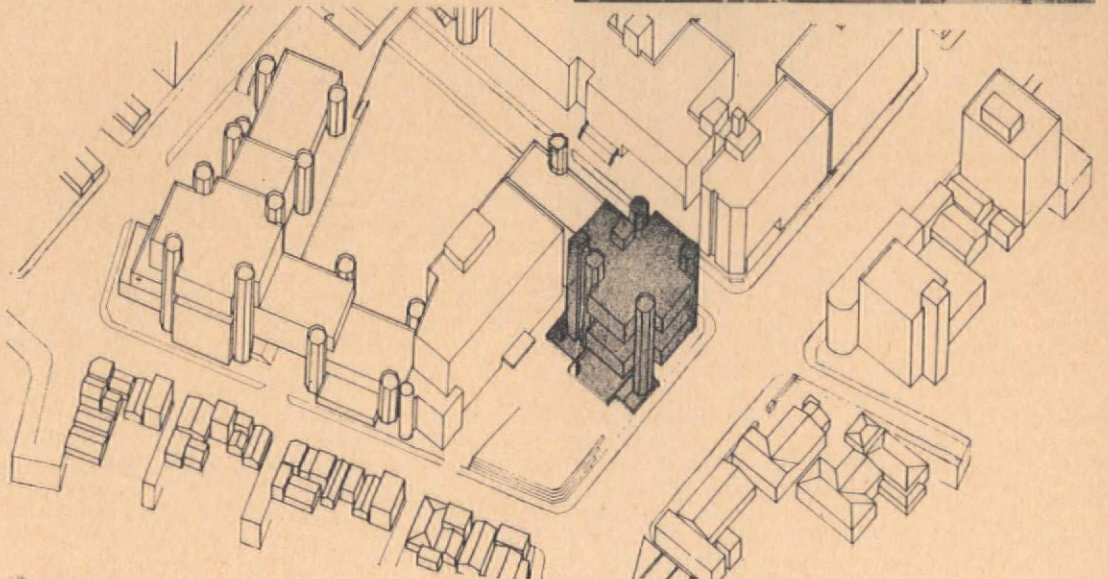
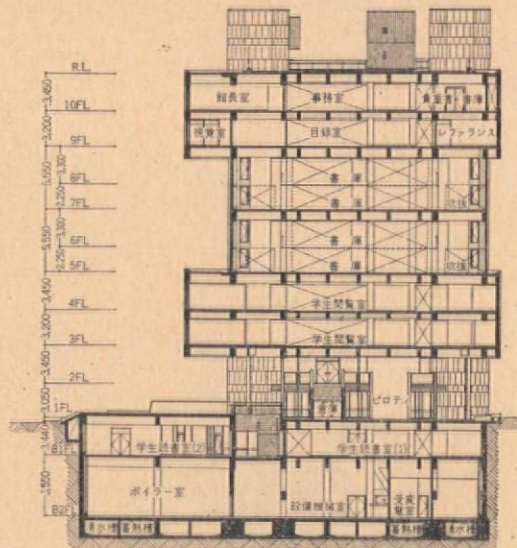
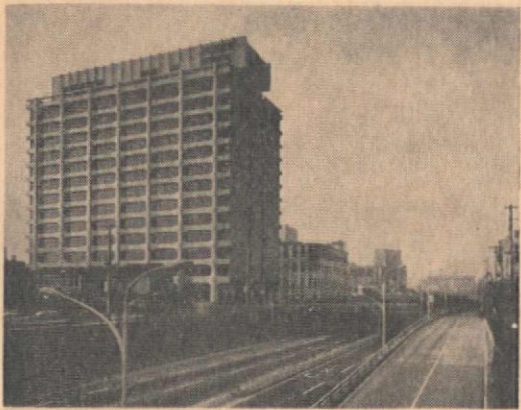
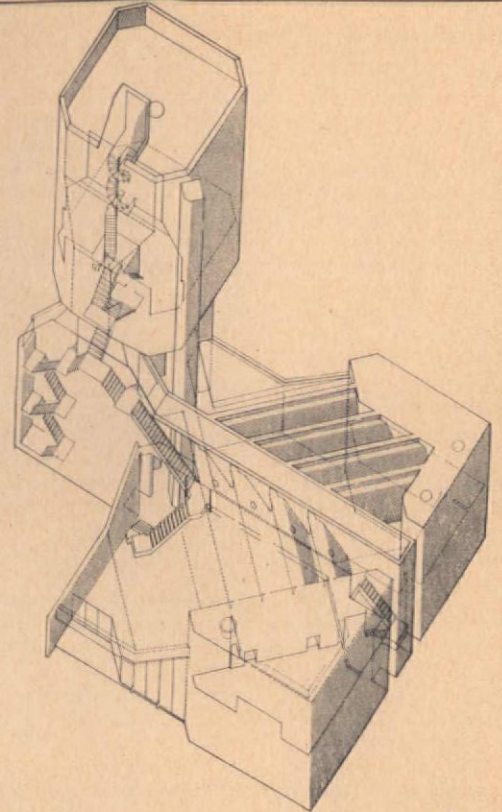
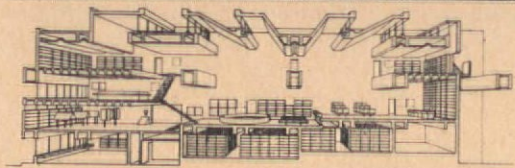
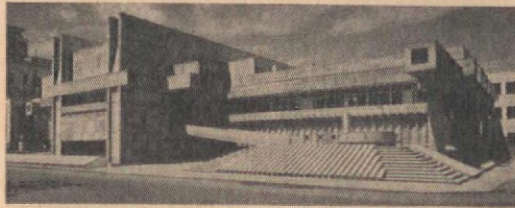
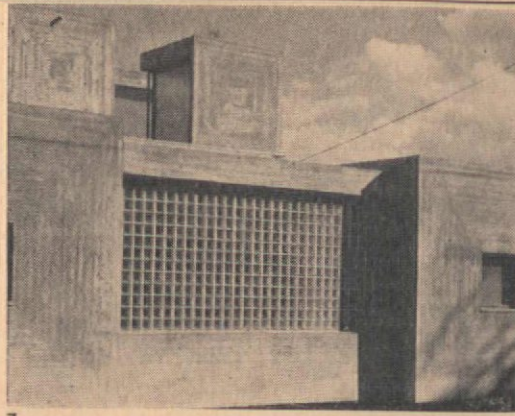
5



6



- Key
- 1 maid's room
 - 2 entrance
 - 3 kitchen
 - 4 utility
 - 5 toilet
 - 6 duct
 - 7 dining
 - 8 living
 - 9 drawing room
 - 10 dressing
 - 11 bed room
 - 12 study
 - 13 daughters bedroom



8
 Japan Architect, April 1968
 Kenchiku Bunka, April 1967, Japan Architect, May 1967
 Kenchiku Bunka, April 1967, January 1968
 Japan Architect, May 1967, April 1968
 Kenchiku Bunka, June 1967, Japan Architect, September 1967
 Bauen + Wohnen September 1968
 Japan Architect, August 1968, Kenchiku Bunka, March 1968

Button-down future

The year 2000

Herman Kahn and A. J. Weiner, Macmillan & Co. 63s.
Can we predict the future?

The case for prediction relies on how much residue of the present will remain in any given future; how much our present actions and policies will qualify the state of things 30 years hence; how well our present concepts of reality and our attitudes will survive the colossal changes that the future promises.

Without some such fixes it is difficult to decide whether predictive or prophetic techniques are more useful.

In fairness to Kahn and Weiner, their book does not set out to predict the future definitively, but rather to set up a framework for speculation. It is an application of certain heuristic methods that they have evolved. It is quite proper and perhaps obvious that the heuristic approach, the tentative suck-it-and-see approach should be employed, since with the ever increasing factors affecting change it would be absurd to rely on techniques that aimed at a static equilibrium, utopian or otherwise, for a future world. The problem will increasingly be one of evolving operational, cybernetic techniques for maintaining a dynamic equilibrium, constantly open and responsive to feed-back, new information from the situation, rather than an algorithmic rule book for progress. It is not a question of progress, but of comprehending the potential of any evolving situation.

The technique of the book is to identify and extrapolate a 'basic long term multifold trend' of thirteen factors over the next thirty years. While many of the inclusions are intelligent and uncontroversial, population growth, increasing capability for mass destruction, increasing tempo of change, etc., the psycho-sociological inclusions are more worrying. Evolving attitudes are defined, as increasingly sensate (after Sorokin) that is, empirical, this-worldly, secular, humanistic, pragmatic, utilitarian, contractual, epicurean and with a trend towards bourgeois bureaucratic élites. It seems obvious—and current events support this—that in a condition of increasing tempo of change, the one position most openly under attack is the traditionally conservative bourgeois position. It is difficult to conceive of new bourgeois élites establishing themselves and surviving these conditions. The choice of sensate is equally questionable. The imminent impingement of advanced technology on our lives raises questions not only of a utilitarian nature but of a moral, even metaphysical nature, and it is difficult to see how useful sensate attitudes will be in this situation. Perhaps this is just one point where the Hippies are ahead of Kahn and Weiner. These faults probably stem from the basis of choice for their terminology.

Throughout the book there is a certain reverence for current philosophies of history, and because of this, the dubious foundations of these philosophies appear time and again. The major pitfall is that the philosophers are all derived from a knowledge of specifically European development. There is a feeling of over-dependence on historical European sociological factors, perhaps not too closely related to our present position—an odd conviction that we have been there before, wherever it may be. Considerable reference is made to Roman and Greek societies as possible futures. The assumption is that all developing countries will follow a European pattern of development. This has the effect of foreclosing on several interesting alternatives for speculation. For instance, it is not inconceivable that an underdeveloped country such as New Guinea may in a rapid phase of evolution completely by-pass what happened to Europe in the nineteenth century—the means definitely exist. This would hardly produce a sensate bourgeois élitist society. There is a feeling in the book that all societies are like Redskins before the Bill Custer of Technology, yet I believe technology to be much less linear in application. It is interesting that anthropologists such as Margaret Mead and Edmund Carpenter are increasingly able to comment on our emerging post-industrial societies—perhaps because anthropology is the history of both the past and future and as such becomes increasingly relevant. Not unrelated to this is the most remarkable omission from the multifold trend list—there is no mention of the colossal, increas-

ing growth in communications. This area is, however, investigated in the technology review section. But the sociological implications, apart from the old 1985 threat to privacy are very sketchily suggested. This coyne conditions the whole book. It lacks the directness of *Understanding Media*, and one can detect an antagonism to McLuhan's views throughout.

The other major qualification on the validity of the predictions—but obviously a necessary one—is the contention that there will be no new major invention in the next thirty years, rather development and new application of means that already exist in some form.

The standard world and its canonical variations evolved by these methods has the air of a National Plan about it, but as has been said before, this is not the prime content of the book but is 'a norm for comparison and disagreement.'

In the final chapter, there is a commentary on how policy decisions may go wrong, means by which this can be mitigated, and criteria for any future orientated research. This is by far the most satisfactory part of the book, and redefines its quite modest aims, that is to 'stimulate and stretch the imagination and improve the perspective' and to act as an aid to our muddling through.

Despite the book's many impressive demonstrations of intelligence, once the hypnotic trance is broken, there remains a sense of myopia. This may stem from the shakiness of one of the implicit bases of the work—that there is a lack of value judgments in qualifying predictions. For instance, there is an illuminating explanation of the Black Muslims' evolution to present day American Middle Class norms yet this is a class where values are open to change. Most Hippies are middle class in origin. This latter group also is, rather strangely, commented on at greatest length—in the section on twenty-first century nightmares.

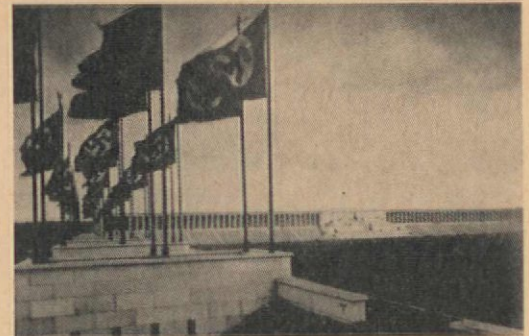
Likewise, the Communist/Capitalist carve-up seems remarkably survival prone, despite signs in Czechoslovakia and Chicago that a universal antagonism is replacing this division—namely the forces requiring change against conservatism. The family as the basic unit of society seems much harder than Edmund Leach has suggested, perhaps it is at its safest deep in the heart of New England. The authors incline to the validity of a future in a button-down shirt.

One marked failing is any attempt to quantify what rate of change society can sustain. The concept of institutionalizing innovation is suggested, but a full discussion of how this is affected is not included. One is aware at the moment of the widening gap between what is socio-technologically possible and what we actually have, one suspects that this gap has recently become critical. The most common neurosis among large elements in both America and the USSR seems to be a pessimistic conservatism that has no alternative to offer, but reacts to all events with the theme 'whatever it is—stop it'. The previously postulated antagonism between those requiring change and the homeostatic factors in society may be the essence of a new form of world war in the late industrial societies, which takes no account of nationality; a much cooler, low-level violent form of warfare.

Similarly, alternatives to the family are not investigated, for instance Gary Snyder's concept of tribe or examples from anthropology. The authors are singularly insensitive to the variety of phenomena associated with a new religiosity emerging in America among the young; it is anything but sensate. There is no conjecture on whether enormously increased exposure to information may not cause subtle mutations of the human species, on whether a perceptual change will occur to make new sense—to help structure this mass of gratuitous information. This is what may be happening to the young in industrial societies and would radically qualify what happens in the future. There is no recognition that with a very high level of communication human organisms, individually and universally are in some way self organizing. As with the family, no alternatives are suggested to central government.

The fact is that all present political theories merely supply bread to people; in a world of assured wealth they become irrelevant. When man is for the first time freed collectively from economic strictures we would approach that state Keynes feared and Marx would make the beginning of history.

Fred Scott



Zeppelinfeld, Nuremberg by Albert Speer.

Architecture without people

Architecture and politics in Germany 1918–1945

Barbara Miller Lane, Harvard University Press.
Oxford University Press. £7 2s. 6d. net.

'The New Man is no longer a man, he is a "geometric animal". He needs no dwelling, no home, only a "machine for living in". This man is not an individual, not a personality, but a collective entity, a piece of mass man. And therefore they build "housing developments", apartment blocks of desolate uniformity, in which everything is standardized'.

Like a whodunit cheater reading the last page first, this reviewer sprang immediately for the pages covering 1933–45 only to discover that it is Mrs Lane's thesis that the Nazi period derived its conception of aesthetic and planning control as a political weapon from the activist pioneers of the twenties who, with different goals in mind, generated a polemical context in which discussion of art or architecture was inseparable from heated dispute about their social meaning. Nazi architecture in effect did not exist in isolation from the architecture of the Weimar republic—it merely carried forward the 'debate' and by means of legislative controls and harassment 'discouraged' the more outspokenly socialist modernists.

Viewed in this light, the Nazi identification of Bauhaus Modernism with *Kultur Bolschewismus* was not an irrational 'act of faith' (as for instance was the blaming of the Jews for the depression), but the logical outcome of ten years' political in-fighting with the revolutionary politics of the Weimar modernists.

The book is unilluminating as regards the ebb and flow of great reputations; eager Bauhaus-skeleton-rattlers will be disappointed to see Hannes Meyer's tenure of office dismissed briefly and smoothly as 'politically turbulent'. Similarly disappointing is the book's lack of reference to the civil (and military) engineering aspect of Nazi environmental control, which although outside the strict terms of reference of the title, helps to explain the apparently small amount of architectural work carried out between 1933 and 1945.

In fact through her honest refusal to depict Nazi architecture as the mind-bending means used by the Svengali Hitler to reduce the German masses to servile obedience, Mrs Lane lines up behind A. J. P. Taylor, whose *Causes of the Second World War* depicted Hitler as a German statesman (in the grand tradition of Bismarck and Stresemann), rather than evil genius.

This attitude, which might be termed the anticlimactic view of the Third Reich, explains otherwise confusing evidence such as the coexistence of the Neo-classic Zeppelinfeld, Olympic Stadium, House of German Art and other *Führerbauten*, with the romantic *Ordensburg*, the functional *Luftwaffe* buildings and the folk-architecture of *Hitler Jugend* hostels and model villages.

From this standpoint one is tempted to view the fate of the architecture of traumatic Germany merely as a spectacular facet of the fate of the architecture of the institutionalized western world. The development controls enforced by the Nazis after 1933 were scarcely less effective in restricting the growth of the new architecture than was the passage of the Town and Country Planning Acts in this country. The dehumanizing monumentality of the Zeppelinfeld is scarcely less dehumanizing than the Lincoln Memorial Centre or any one of a dozen other major developments in Europe and America since 1945.

The quotation from the *Völkischer Beobachter* for

February 2nd, 1933 which heads this review is indistinguishable from the 1918 quotation from H. P. Berlage which ends it—as are both of them from the spirit of the press outcry over the Ronan Point catastrophe of this year.

As Professor Hayek wrote in *The Road to Serfdom* (1943), 'National socialism was only one half nationalism—the other half was socialism'; or as David Greene put it many years later, 'Its all the same.'—When you leave out the people.

'The labourers see in the monotony which they fear in the rows upon rows of identical, bigger and smaller houses, an onslaught upon their individuality, their liberty and their dignity as human beings. And now the housing development—once even drastically characterized in a revolutionary journal as "one uniform, one feed, one fold"—suggests a cellular prison.'

Rupert Spade

Dazzling construction

The other Taj Mahal. What happened to the Sydney opera house?

John Yeomans. 222 pp. Longmans, Green and Co., London. 42s. 0d.

There can be few buildings which have had three books written about them before they have been half finished. This book, the third about Sydney opera house, is undoubtedly the best. John Yeomans has obviously spent a good deal of time researching, and consequently the book is less superficial than its predecessors. It sets out how the whole idea started, it gives a good deal of authentic background to the competition, it attempts to describe the scheme and the changes which have taken place since, and it describes some of the personalities and their interaction upon one another. Yeomans is a journalist and his book is readable without being technically very profound.

He obviously suffers from the opera house syndrome—he loves his city and is quite certain that the opera house will be a great success—a romantic notion held despite the incompleteness of the building and its design. Sydney opera house may well become one of the world's great buildings or it could be an architectural fiasco—it is by no means certain which it is going to be. His romanticism also encompasses the layman's understanding of the architect's omniscience so that Utzon, who on page 4, had never done a start-to-finish design and supervision of any project larger than a housing settlement, can later provide a 'dazzling constructional answer' to building what must be one of the most complex structures ever. This sounds too good to be true but many will eagerly swallow this. I won't. I was there.

G. J. Zunz

Heavyweight cumuli

The language of architecture

Niels Luning Prak. Mouton & Co. £3 15s. 0d.

Within the uninspired dust jacket of this book, the discerning will discover a novel approach to theory in architecture which should widely influence the trend of nebulous cumuli which currently passes for architectural criticism.

Professor Prak has evolved a concise, lucid criterion for the evaluation of buildings; his critical formulae ranging through formal and symbolic aesthetics, socio-psychological interpretation, analysis governing space, construction, function, structure. The roots of emotion in arts in which to quote 'the interaction between context and symbol is a circular process'.

The amalgam of these concepts, connecting the historical classification of form to the attitude that works of art symbolize the concept of the psychology of emotion, gives greater meaning and life to the examples defined. Although only nine buildings are dissected, each having plan, sections and interior and exterior photographs, with historical context, his technique is applied through the range of mediaeval, renaissance, baroque, victorian romantic and modern. The outstanding examples are the analysis of the Pazzi Chapel and New Westminster Palace.

Although not written in his mother tongue, the minor mis-spellings seem irrelevant. Though in part controversial, Professor Prak has cast an illuminating glow; a contribution to the theory of architecture which no school can ignore.

John Killick

Three for the shelf

Primo annual

Art Directors Club. Milano. Published/Edited by Paolo Bellasche Roberto Bossi, Centro di Piazza de 'Mozzi 1 r, Florence. \$17.

Modern publicity 38 1968-69

Editor Felix Gluck. Studio Vista, London. 70s.

World graphic design

Selected by Felix Gluck. Studio Vista, London. 90s.

These three books are for the graphic designer's collection. The *Primo annual* being basically a handbook on the work of Italian art directors, designers and photographers. *Modern publicity 38* a collection of recent international advertising, editorial and television design, and the *World graphic design* a source book of 'commercial' design from 1918 to 1968.

The *Primo annual* is well laid out. The standard of work presented ranges from excellent to mediocre. The best efforts are direct mail inserts for fashion, textiles and furniture. The biggest contribution comes from the firm La Rinascente (art director and copy writer Adrianna Botti) and the standard of photography and typography is very high indeed. But the design of advertisements, booklets and magazine covers are very dated and most have a 1960 look about them. It is strange that the bulk of the work presented is so poorly designed because as industrial designers no one in the world can touch the Italians for the styling and elegance to be found in their cars, domestic appliances and furniture. The book does include (unlike American and other European graphic design annuals) exhibition and window displays, which is a job graphic designers are sometimes employed to do.

There is little one can say about *Modern publicity 38* as it covers such a wide range of work and ideas. It shows current trends in typefaces, photography and illustration. The last of these categories has, over the past two to three years, been used in ways never before imagined. Work from Push Pin Studios (Milton Glaser, Seymour Chwast), Paul Dowis, Alan Aldridge, Alain Le Foll and many others have more impact and ideas than a lot of photography that is used. Illustrations used for film credits, such as the memorable sequence half-way through 'Charge of the Light Brigade'—animated and drawn by Richard Williams—in fact, if seen in context with the film says more than Mr Tony Richardson's feeble attempts to show the stupidity of Victorian politics and the final blunder of the 'charge'. Incidentally these credits appear also in Mr Gluck's other book *World graphic design* and so do quite a lot of other designs, which for me is a bit like buying a 'single' and then finding its on the L.P. But nevertheless it is a good book of its kind and the early 1918-30 sections are marvellous, especially the designs for things like Cadbury's chocolate, Chesterfield cigarettes, and LNER. It shows how nasty was the 1950-60 period, especially the examples from Great Britain. The 1960-68 section has the usual work from Fletcher/Forbes/Gill, Doyle Dane Bernbach (Volkswagen ads) etc. I think the book works like a historical scrapbook and I do not mean that in a derogatory way.

Dave Chaston



Marcel Duchamp Traveller's folding item 1917.

Pop without colour

Pop art—object and image

Christopher Finch. Studio Vista, London. 12s. 6d.

This paperback is chiefly a collection of photographs of paintings, sculpture, objects, etc., from the pop art

world. Finch suggests the term be understood as 'a very general term describing a tendency that has built up over a long period . . . deliberately built . . . around vernacular imagery'. The book's emphasis is 'the use made by artists of the everyday object and the photographic image'. There are 126 plates reproducing material from Duchamp onward; 123 in black and white and three in colour. Apart from Paolozzi and Duchamp, both expatriates anyway, the range of artists discussed is limited to the US and Britain. The more subjective evaluations in the text vary widely in their acceptability; some ring true whereas others seem to be just clever ideas forced to fit a situation in which they rest uneasily.

The introduction of 'language game' analysis of painters' intentions, for example, has an initial attractiveness but it finally takes on a forced quality until in discussing Caulfield's 'sculpture in a landscape', Finch insists that what is surely a purely visual ambiguity constitutes a 'mild linguistic ambiguity'. The book is more valuable for its illustrations than for its text.

Evan Parker

Publications Received

Eero Saarinen on his work

Eero Saarinen. Edited by Aline B. Saarinen. 118 pp. Yale University Press, London, WC1. 157s. and \$17.50.

Forecast and plan for the greater Glasgow area. Volume II

Greater Glasgow Transportation Study Steering Committee. 120 pp. Corporation of Glasgow. £3 5s.

Art deco of the 20s and 30s

Bevis Hillier. 168 pp. Studio Vista, London. 12s. 6d. (hardback 25s.).

New communities: one alternative.

New Communities Project—Harvard Graduate School of Design. Harvard University, Cambridge, Mass, USA.

Road research 1967. Annual report of the Road Research Laboratory

M.O.T. Road Research Laboratory. 230 pp. HMSO, London. £1.

Bauen Seit 1900 in Berlin

Rolf Rave and Hans-Joachim Knöfel. Kiepert KG Buchandlung, Berlin. DM14.80.

Metropolitan cathedral of Christ the King, Liverpool
Sir Frederick Gibberd. 161 pp. Architectural Press, London. 45s. 0d.

The city and the way of life. Prospects for development of systems and types of public building

G. Gradov. Central Scientific Research & Experimental Project, Institute for Public Buildings, Moscow, USSR.

Into the twenties. Style and design, 1909-1929

Giulia Veronesi. 367 pp. Thames and Hudson, London. £4 4s. 0d.

Works of Hans Jorg Mayer. Exhibition at Haag Gemeentemuseum. October-November 1968

Editions Hansjörg Mayer, Germany.

RIBA Drawing Series

(Country Life Books)

Georgian country houses. John Harris.

Victorian churches. Peter Howell.

Stage designs. Wynne Jeudwine

Garden buildings. Alistair Rowan.

Monuments of commerce. Nicholas Taylor.

The Greek revival. J. Mordant Crook.

Royal buildings. Howard Colvin

Indian architecture and the British. Mildred Archer.

64 pp. each. Country Life Books—Hamlyn Publishing Group Ltd., Feltham, Middx. 10s. 6d. each (paperbacks).

A history of architecture in Italy

T. W. West. 230 pp. University of London Press Ltd., London. 35s. 0d.

Neo-Classicism

Hugh Honour. 221 pp. Penguin Books, Middlesex. 12s. 0d.

Buckingham Palace

John Harris, Geoffrey de Bellaigue, Oliver Millar. 320 pp. Thomas Nelson, London. 8 gns.

Urban Structure. Architects' Year Book, Vol. 12.

Ed. David Lewis. 282 pp. Elek Books, London. 6 gns.

R.I.B.A. Directory of Practices. 1968-9

Royal Institute of British Architects, London. 8 gns. (non-members).

Exhibitions

Till December 29	London	Charles Rennie Mackintosh	Victoria and Albert Museum
December 3 to 22	Oxford	Inflatable furniture	Museum of Modern Art
December 7 to January 26	London	Fluorescent Chrysanthemum	ICA
January 27 to February 8	London	Interfurn 69	Earls Court
February	London	Schindler	Inf. RIBA
February 24 to 28	London	Carpex 69	Earls Court
March	London	Belgian exhibition	COID
March 5 to 16	S. Paolo	British trade fair	International Pavilion, Ibirapuera Park
April	London	Lutyens centenary	Inf. RIBA
April 22 to 30	London	International Engineering & Marine	Olympia
April 22 to 26	Glasgow	Envirex (environmental engineering)	Kelvin Hall (Inf. Lintex, 224 Grand Buildings, Trafalgar Square, London, WC2)
May 13 to 16	London	Decor International	Empire Hall, Olympia
June 11 to 15	Cologne	INTERZUM, Woodworking & furniture & furnishing materials & accessories	Inf. Post box 140, Cologne
May 21 to June 21	London	Export print	Design Centre
June 18 to 27	London	International plastics exhibition	Olympia
July to September	Rimini	International design biennale	Inf. Sec. Gen. 47040 Verucchio, Italy
September 23 to 26	London	1) Dust control & aircleaning 2) Filtration & equipment	Olympia
November 12 to 25	London	International building exhibition	Olympia (Inf. 11 Manchester Sq., London W1M 5AB)
1970			
January 24 to Feb 1	Hanover	Constructa 1970	Hanover Fairground (Inf. Schenkers Ltd, Royal London House, 13 Finsbury Square, London EC2)
March 15 to September 13	Osaka, Japan	EXPO 70	
October 7 to 15	Utrecht	Transport equipment	Croeselaan site

Conferences

January 2 to 4	Lancaster University	Design of physics buildings	Inf. RIBA
February	Roorkee (UP), India	Environmental physics as applied to buildings in tropics	Inf. Central Building Research Institute, Roorkee (UP), India
February 25	London	Computer aided building design	Inf. RIBA
March 10 to 16	Cannes	1st International encounter 'Building and Humanism'	Inf. Grand Prix International d'Urbanisme et d'Architecture 48 Bis, Avenue Kléber, Paris 16e
March 24 to 28	Southampton	Road noise & environmental planning	Inf. British Road Federation, 26 Manchester Sq., London W1
March 19 to 22	Belfast	Regional planning—Ireland 1969	Inf. TPI, RIAI, Royal Society of Ulster, ILA, etc.
March 26 to 27	Nottingham University	Air conditioning system design for buildings	Inf. RIBA
April 21 to 25	Southampton	International conference on structure, solid mechanics & engineering design	Inf. Concrete Society, Terminal House, Grosvenor Gardens, London SW1
May 13 to 14		RIBA spring congress	Inf. RIBA
May 15 to 16	London	TPI annual conference	Inf. TPI, 26 Portland Pl, London W1N 4BE
May 17 to 23	Amsterdam	6th International congress of the Bureau International du Béton Manufacture (BIBM)	Inf. British Precast Concrete Federation, 9 Catherine Place, London SW1
May 19 to 23	Stockholm	International conference of Commercial Planning	Association International d'Urbanisme et Commerce, 61 rue Montroyer, Brussels 4.
June	Amsterdam	6th Congress of International Prestressed Concrete Bureau	Inf. Simons, Bd A. Reyers, Brussels 4
July 2 to 6	York University	RIBA annual conference	Inf. RIBA, 66 Portland Pl., London W1
September 10 to 21	Nottingham	Town and country planning school	Inf. TPI, 28 Portland Pl., London, W1N 4BE
September 10 to 12	London	6th ICSID congress	Inf. Congress Secretariat, 12 Carlton House, Terr., London SW1
September 23 to 26	London	1) Dust control & air cleaning 2) Filtration & equipment	Inf. 1 Katharine Street, Croydon, CR9 1LB
October 19 to 25	Buenos Aires, Argentina	10th UIA congress	Inf. UIA Secretary, RIBA, London
October 27 to 28	Mar del Plata, Argentina	Third meeting of planners, within UIA	Inf. Argentine Federation of Architectural Societies, 942 Montevideo, Buenos Aires
October	Paris	Conference of IFI (International Federation of Interior Designers)	Inf. IFI Secretary, van Nijenrodeweg 892, Amsternam 11, Netherlands

Competitions and awards

Applications now	British innovations in engineering, technology, or application of physical sciences £25,000 and gold medal	Inf. MacRoberts Trust, Council of Engineering Institutions, 2 Little Smith Street, London, S.W.1
Entries December 2 to 20	British posters exhibited anywhere during 1968 Diplomas	Inf. Council of Industrial Design
Applications by December 16	Kirkwood Dodds scholarship for studies related to use of concrete Prize, 3 months travel	Inf. Concrete Society Ltd, Terminal House, Grosvenor Gdns, London, SW1
Nominations by January 31	RIBA architecture awards Medallions & diplomas	Inf. RIBA (Judith Strong, Ex. 204), 66 Portland Place, London W1N 4AD
Entries by January 15	TV centre for Tunis 1st prize 10,000 dinars	Inf. Secretariat d'Etat aux Travaux Publics et à l'Habitat de Tunisie Tunis
Nominations by February 3	RS Reynolds awards 1969 \$25,000 award	Inf. British Aluminium Co. Ltd., Norfolk Hse, St James' Sq, S.W.1. or from the RIBA (Miss K. Hall)
Entries by February 14	Hotel reception area and a bedroom unit in 1975 Prizes £350, £150, £100	Inf. Foughal, Co. Cork, Ireland, or M. Duck, Pressaids Ltd, 5 New Bridge Street, London, E.C.4
Entries by March 31	Caravan design (Ralph Yablon Award) Prizes £750, £150, £100	Inf. NCC Caravan Competition, Exhibition Dept., Temple House, Temple Avenue, London E.C.4
Entries by March 31	Guy Bigwood award: essay on Land Commission Prize 150 guineas	Inf. Sec. of Chartered Auctioneers' & Estate Agents' Institute, 29 Lincoln's Inn Fields, London, W.C.2.
Entries April 18	Dunlopillo: 1) all-foam piece of furniture; 2) all-plastics bed; 3) passenger transport seat 1st prizes £200 each, plus £350 for best one	Inf. Pauline Kettlewell, D. Design Award, Dunlop Co. Ltd., Pannal, Harrogate
Entries by April 30, 1969	International organisations HQ (IAEA & UNIDO), and conference centre for Vienna 1st Prize; 2, 300,000 Austrian shillings. Eight other prizes	ZIVILTECHNIKERTEAM für den internationalen Wettbewerb, Amtssitz Internationaler Organisationen und Konferenzzentrum in Wien. Architekten: Appel-Fleischer-Lintl-Schwanner, Marc Aurelstrasse 2a/30, A-1010 Wien, Austria
Entries by July 1	How to automate coding for the Netherlands' Giro	Inf. Director-General of PTT, 12 Kortenaer-Kade, The Hague Netherlands
Entries by July 15	Como tourist and holiday centre 20 million Italian lire for 3 prizes	Inf. Dott. Federico Nappi, via Parini 16, Como, Italy

Competition results

Old people's flats, Sponsor, Fellowship Houses Trust	£750 to A. Clayton & C. Ellis and contract to build, £500 to T. B. Bush & Ptners, £250 to T. Ford
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Study tours

February 3 weeks	Brazil	From England via Zurich (£390)	Inf. Moxley, Jenner & Ptners, 7 King Street, Bristol, BS1 4EJ
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METAPHOROPOLIS

Guest editor Jonathan Miller

My main purpose in this collection was to try and gather together a series of articles which showed how the image of the city has flourished as an imaginative metaphor.

Taken at their face value, cities are simply engines of social convenience; centres of commerce, government, comfort, and defence. But almost as soon as they were invented, they spawned a phantom version of themselves; an imaginative doppel-ganger that lived an independent life in the imagination of the human species at large. In other words they stood for something. They became polyvalent symbols, for ideas that had only an indirect relationship to the practical purposes for which cities were created in the first place. Today in fact, cities represent the paradigm of social organization, and the main problems of human destiny are intimately tied up with

the darkening fate of these peculiar structures. By the time this magazine appears the USA tragedy will have developed very much according to what happens in the teeming Megalopolises of the North. And it's in the city streets of Paris, London and possibly Prague that we will see the first dramatic resolutions of mid-twentieth-century politics.

Architects and town planners only know half of it. The physical arrangements of the city may iron out the dangerous irregularities of the seasons; they may insulate us from the blind caprices of nature; but technical ingenuity creates as many hazards as it eliminates. Uncertainty and chance are abolished at one end only to be re-created in a different, often more malignant form, at the other. Heating, paving, lighting, food and shelter may seal us off from the unpredictable

hazards of deluge, drought, famine and freezes; but the social situations which are an entailment of such conveniences, create the new dangers of riot, restlessness, crime and madness; and all the wilder excesses of civilized anomie.

The hope that the city might have represented an escape from natural chaos—that it might have been a model of order and regularity, is suggested by the idea which Frances Yates deals with in *Architecture and Memory* (page 573). There is a grandiose pathos in the idea that the city and its buildings could provide a mnemonic metaphor. For in order that a model could stand as a mnemonic one would need to presuppose that this model itself conformed to the highest possible standards of immutable regularity. If we use a doggerel rhyme to remember the

Apartment houses,
Queen's, New York
At a certain point the
artifice of the city
begins to approach
the desolate
anonymity of nature
itself

Don Hunstein *New York*, 1962



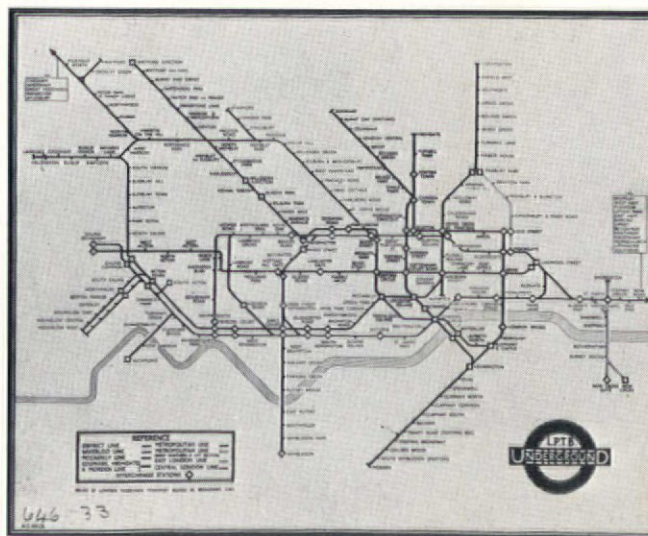
Roman city, Pavia
The lunar fossils of
human dwelling seen
at great distances, both
in time and space, lose
all their human
meanings

Lewis Mumford *The City in History*, 1961

Arles.
Mediaeval
city built
within
the shell of
a Roman
amphi-
theatre
The city as
a hermit
crab—a
new form
creeps in to
occupy the
shell of a
superseded
structure



Shopping Mall.
Cumbernauld
Man withdraws
from nature and
creates a totally
synthetic environ-
ment away from
wind and weather
Photo: Bryan and Shear



The
London
Under-
ground
When
cities
become
too com-
plicated
they lose
memora-
bility and
the in-
habitants
need
special
ciphers
to find
their way
around

gender of French nouns, the effectiveness of the device relies on the unchanging repeatability of the rhyme that we have learnt. Now however, with the symptoms of confusion, decay and upheaval at each street corner, the image of the city is perhaps the *last* model to which we might refer in trying to give ourselves a symbol of the unchanging order of the universe.

If the city itself was once a metaphorical map of the universe, we now need maps to remind us of the layout of the city. If more pages had been available I would have invited several contributions on the subject of city maps. At what stage of urban complexity do the inhabitants of a city need a graphic model in order to guide their movements about this grand artifice of their own making? What are the limits of civic memorability? How do we internalize the detailed anatomy of our own habitat? In the primitive city, an inhabitant could have stood in any part of it and he could have known without having to refer to a chart, exactly where everything was. The entire urban space was articulated within a coherent imaginative whole. Now however, the city seems as large and as complicated as the universe itself. It's a huge cluttered cosmos, organized here and there into highly structured familiar neighbourhoods—personal solar systems—but monstrously confused and

sickeningly extended at large. Lord Kelvin once said that he couldn't hope to understand anything until he had made a model of it. But in the city we have made a model, and instead of creating enlightenment it has made a mystery, as large as the one it was designed to eliminate. Look down on London from Primrose Hill at night. The vast pulsing anonymity of its extended inhabited darkness is as mysterious and unknown as the Matto Grosso. Artifice, when it grows large enough, is even more impenetrable than outer space. The distant lights of Greenwich seem as remote as those stars which are vanishing from our gaze at the edges of the physical universe. They are light years away from where we are standing. Who knows, perhaps that distant Blackheath winking in the darkness no longer exists—perhaps it's already defunct—its lights just reaching us a million years after its remote abrupt extinction? For the one thing that must have struck the inhabitants of the mediaeval city say, was the simple simultaneity of all its events. A procession on one side of the town was in earshot of a listener standing on the other and in many ways sound is the most convincing human standard of immediacy. In a great modern city we seem, from wherever we are standing, to occupy merely the apex of a time cone and the present is only taking place at the point where we ourselves are. Sloping away from

us, distant objects seem not just more remote *in space*, but older in time, and perhaps even extinct; until out on the edges of urban visibility, we can just make out the retreating galaxies of ancient suburbs. If it wasn't for phones in fact, we would stand in relationship to the edges of our own city, in exactly the same sort of relationship that we now stand to the edges of our physical universe. News would take so long to travel that history would already have moved on a long way by the time we heard what was happening. As it is there is a strange asynchrony, between the scattered inhabitants of the modern Metropolis; and the pedestrians of the city centre seem to be a different *time* species altogether, from the householder living out on the city limits. Eric Hobsbawm hints at this (page 578) in the emphasis he lays upon city transport in relation to the urban riot.

But of course the phone restores simultaneity and binds the inhabitant of an otherwise extended city into a single plane of time. But we pay a heavy price for the advantage. That dial is a very dangerous instrument. It's a roulette wheel which can easily throw up combinations of mutually anonymous speakers. It creates the possibility of dialogues in limbo and this is a situation which the inhabitants of a mediaeval city could not have imagined. Obscene confidences that express the most intimate wishes of the caller can be

Primrose Hill *The retreating galaxies of distant suburbs stem from the centre of the expanding city*



spilled directly into the ear of a total stranger; without any of the risks of direct personal contact. Dialogues which are conducted face to face are not just simultaneous; they are set in a social scene of some sort. Other people are all around and the participants in the conversation can both see and be seen. The telephone conversation however takes place in a spaceless non-social void. The partners in such a dialogue are infinitely near to and at the same time infinitely far from each other. The phone seems at certain times to put us in contact with the wicked subconscious of the city as a whole. When an obscene caller rings it's as if you were speaking not to an individual but to a medium uttering on behalf of a collective lust.

Perhaps it is in the Metropolis of the 20th century that we have finally realized the City of the Wicked dealt with by D. P. Walker (page 589). Right here in London or in the slums of New York we already have penal colonies that anticipate and even create the crimes for which distant Siberias were once devised. Perhaps the creation and punishment of wickedness are one and the same thing. The misery of being poor in a large modern city is the penalty which punishes the crime which it actually provokes.

In the nineteenth century criminologists like Lombroso could speak of L'Homme Criminel, as if he were a separate genetic

species incorrigibly committed to evil. This was a very reassuring idea since it segregated those with a capacity for crime and gave us the illusion that we could recognize the criminal, long in advance of his acts, simply by measuring his skull and fitting his face to certain physiognomic prototypes. If criminals were recognizably distinct like this our own virtue was somehow assured by contrast. However even in the nineteenth century novelists like Dickens had begun to see that environment could generate crime particularly if the environment was anything like the London which Doré came to England to draw. You only have to look at the engravings of Doré to see how the modern industrial city was almost bound to create more crimes than any of the phrenologist's cranial bumps might do. The city became a metaphor of hell. But it was an anti-hell however generating the crimes for which it was itself a punishment. The city then was a secular inferno in which crime and punishment were confused in a single episode of turbulent misery. Francis Haskell shows (page 600) how London became the sovereign metaphor of this notion.

But at the same time if the city became a metaphor for wrong-doing and its punishment it also became the great image of fantasy and insanity. Once again Dickens is the master of this insight. His London is full of people deranged by the alienations of the great city.

People pursuing self-destructive obsessions. It was no longer possible to think of Bedlam as something set apart from the city. The street and the alleyway were the wards of this extended asylum and of course as the surrealists began to realize at the turn of the century the visual images provided by the city were often stranger and more florid than the fantasies of its maddest inhabitants. Just look at the glazed solitude of Chirico's Ferrara with overheated trains panting behind black walls on the edge of some infinitely delayed departure. The city is a huge portfolio of visual paradox and in Tony Earnshaw's aphorisms (p. 597) we see how the wheel has come full circle and how the artifice of the original city has now become an artifice within an artifice—a stage set for an urban reality that has never actually been realized. The citizen as actor. The townscape as scenery. A huge Pirandellian farce—six million characters in search of an absconded author. □

Day after day, such travellers crept past, but always, as she thought, in one direction—always towards the town. Swallowed up in one phase or other of its immensity, towards which they seemed impelled by a desperate fascination, they never returned. Food for the hospitals, the churchyards, the prisons, the river, fever, madness, vice, and death—they passed on to the monster, roaring in the distance, and were lost.

Charles Dickens, *Dombey and Son*

The electric roulette *The phone restores simultaneity to inhabitants of the expanding universe. But there are risks involved*



ARCHITECTURE AND

Frances A. Yates

Architecture may seem the most materially real of all the works of man. It uses solid materials, heavy and lasting, in comparison with the fleeting words of poetry or the fading designs of painting. Nevertheless, great architecture carries with it a sense of immateriality. The discoveries of Isaac Newton used to arouse wonder, not only for themselves but because of the vast scope of the mind which could reflect in itself the architecture of the universe; the mind of an architect has the capacity of seeing in imagination his full design before it is executed. Renaissance theorists dwelt on this theme of the immateriality of architecture. In the first chapter of his book *De re aedificatoria*, Leone Battista Alberti emphasizes that a building exists first in the mind of the architect who designs it, this design being not only prior to, but superior to, the building as actually executed.

If a building has an immaterial existence in the mind of the architect before it is built, it has also many immaterial existences in the memories of those who have seen it. The mystery of memory grows ever more mysterious as one ponders the fact that Salisbury Cathedral exists not only materially in Salisbury but immaterially in countless memories. Perhaps buildings lend themselves more readily to visual memorization than other classes of objects. 'I remember, I remember, the house where I was born.' The sharp memories of children for every corner of the houses they have known live on in later life. Patterns of streets in cities once familiar to us survive indelibly as we traverse them again in dreams. I have now frequently the experience of seeing vividly what used to be there when I look at what is now there, seeing the late Victorian pub with its bit of garden living on behind the office block and car park. Possibly architectural memory which depends on detail will die out as buildings and cities grow more uniform and air travel blurs the distinctions between places. If so, this will be something that has happened before. Architectural memories were in ancient times of a precision, vividness, and extent impossible for us to conceive, but as the conditions of life changed in the changing centuries, the fantastic powers of mnemonic visualization once available to man were gradually eroded.

The Roman orators made deliberate use of architectural memory as an aid to memorizing



their speeches. This classical mnemonic consisted in fixing in memory a series of places, usually places in a building, or buildings, or in the streets of a city. The orator could use his own house as a memory system, moving through the places in it in memory in exactly the order in which they occurred. To these memorized places he fixed, in imagination, signs or images chosen to remind him of the points of his speech. Quintilian describes the process.

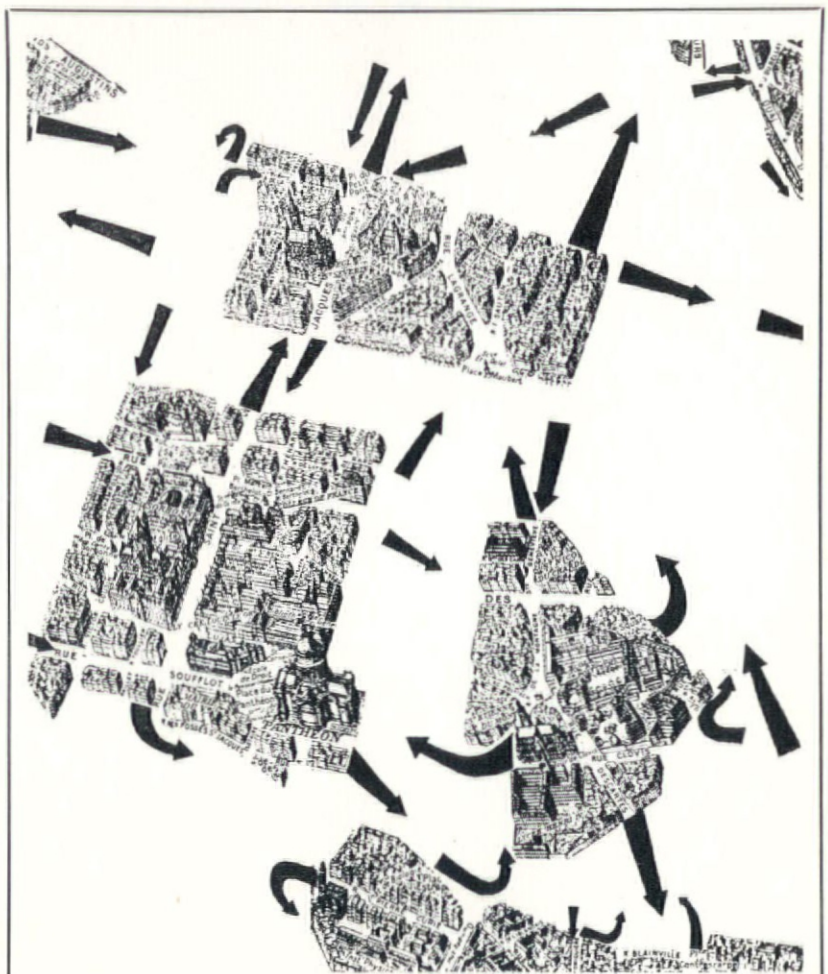
'Places are chosen, and marked with the utmost possible variety, as a spacious house divided into a number of rooms. Everything of note therein is diligently imprinted on the mind

... Then what has been written down, or thought of, is noted by a sign to remind of it ... let us suppose that the sign is drawn from navigation, as, for instance, an anchor, or from warfare as, for example, a weapon. These signs are then arranged as follows. The first notion is placed, as it were, in the forecourt; the second, let us say, in the atrium; the remainder are placed in order all round the impluvium, and committed not only to bedrooms and parlours but even to statues and the like. This done, when it is required to revive the memory, one begins from the first place to run through all, demanding what has been entrusted to them, of which one will be reminded by the image. What I have spoken of as being done in a

THE ART OF MEMORY



Road intersection
with instructions
*We can no longer
memorize our own
progress about the
city—complicated
mnemonics only help
up to a certain point.
Chaos follows one
reading error.*



Situationist map of Paris by Guy Debord

Psychological islands, entire to themselves, are formed within the confines of the city itself. They are quanta of civic memorability

house can also be done in public buildings, or on a long journey, or in going through a city.

The classical mnemonic is a trick which can be practised by anyone and which will work up to a point. Try moving round Trafalgar Square in imagination, placing signs to remind you of your next speech, on the National Gallery, on St Martin's-in-the-Fields, on the statue of Charles I, and so on. When you make your speech you move in imagination round the square drawing from the places the images to remind you of your points. The order of the places ensures that you remember the points in the right order. In the ages before printing, before writing

materials were plentiful, when books had to be memorized from scarce manuscript copies, the artificial memory, as it was called, was far more than an amusing trick. The trained memory was a necessity; through its techniques the memory was stored with masses of material. The extraordinary powers of inner visualization developed in the trained memories of the ancients are glimpsed in the rules for the artificial memory given in the anonymous rhetorical textbook known as the *Ad Herennium*. According to these rules, the places chosen for memorization must not be too large nor too small but of a suitable size to hold the images to be memorized on them.

They must not be too brightly lighted nor too dark but lighted in such a way as to show up the images. The intervals between the places should be of moderate extent. When one realizes that these rules are concerned with places visualized inwardly in memory, one is profoundly struck by the extraordinary precision of classical memories, the spacing and lighting in which can be regulated in this way.

The art of memory is said to have been invented by the Greek poet, Simonides of Ceos, who lived around 400 B.C. According to the story told by Cicero, Simonides was invited to a banquet at which he was to chant an ode in honour of his host, but he devoted

half the poem to praise of the twin gods, Castor and Pollux. Annoyed by this, the host would only pay him half the sum agreed upon for the poem. When the banquet was in full swing, a message was brought to Simonides that two young men were outside who wished to see him. He went out but could find no one. During his brief absence, the roof of the banqueting hall fell in, crushing the host and all the guests to death. The bodies were so mangled that the relatives who came to bury them could not identify them. But Simonides remembered the places at which they had been sitting before the fatal crash, from which he had been preserved by the invisible callers, Castor and Pollux, who paid in this way for their share in the poem; and this experience suggested to him the principles of the art of memory which uses *places* and *images*. The story is no doubt mythical, but it is certain that the art of memory was known in ancient Greece, and its 'invention' by Simonides is recorded in an inscription of about 264 B.C. The author of *Ad Herennium* is drawing, in his account of the art, on Greek sources now lost; his rules were drawn up for the use of Latin orators, and we know from Cicero's *De oratore*, in which he gives an abbreviated version of the memory rules, that Cicero himself used the art for the memorization of his speeches.

Amongst the rules for memory images given in the *Ad Herennium* there is one which states that human figures should be used as memory images and that these should be chosen for their dramatic and striking quality, very beautiful, very hideous, or comic; such figures will impress themselves on memory because of their surprising or unusual nature. Cicero himself repeats this rule for memory images and we have therefore to imagine the Roman orator's memory as populated with striking human images, placed on the architectural places which he has memorized. It is difficult for us to conceive of a built-up classical memory, furnished with thousands upon thousands of places with their images, though we know that the trained memories allowed of the performance of extraordinary memory feats.

The memory architecture changed with the changing styles of real architecture. The art was extremely important in the Middle Ages, when the practice of it was recommended as a part of the virtue of prudence by Thomas Aquinas and Albertus Magnus. These leading



Giotto, Charity, fresco in the Arena chapel, Padua

scholastics both repeat the classical memory rules in their theological *summae*, thus giving them the full sanction of the Church. Now were constructed in medieval memories vast

memory cathedrals to house the encyclopaedia of knowledge in Gothic memory architecture. Oratory had died out and so the art was no longer required for memorizing speeches, as in



Giotto, Envy, fresco in the Arena chapel, Padua

classical times, but it was adapted to other uses. The Middle Ages moralized the art and used it for memorizing edifying material. When this process of transformation is under-

stood, it becomes possible to recognize familiar medieval phenomena, such as rows of beautiful or hideous human figures representing virtues and vices sculptured or

painted on architectural places, as, in part, memory images, or designed to impress themselves on memory. Other iconographical influences of course go into the formation of such figures but the memory aspect of them is important. By making such figures surprising and striking, the artist is following the memory rule that dramatic human figures stay best in memory; by ranging them on architectural places he is following the rule that an order of architectural places preserves order in memory. The use of the art of memory, thus moralized, for remembering virtues and vices, and the paths to Heaven and Hell which they represent, explains why the scholastic moral theologians can recommend the use of the artificial memory as a part of the virtue of prudence. Manuals of devotion exist in which the pious medieval man is instructed how to choose his memory places and how to invent for himself his memory images. In artistically gifted persons, these inner memory buildings and their imagery, destined to pass away without a trace when the owner of the memory died, may sometimes have surpassed in artistic quality the real Gothic buildings decorated with edifying imagery. It was perhaps under the influence of the medieval cult of the moralized art of memory that Giotto painted his famous frescos of virtues and vices in the Arena Capella at Padua, figures which he has placed on architectural backgrounds, the lighting and spacing of which he has intensely visualized. The possibility even arises that one factor in Giotto's originality in making these figures stand out from their backgrounds may have been an intensive effort to form realistic architectural memory places, as advised in *Ad Herennium*. However this may be, Giotto's figures, strikingly beautiful or hideous and most carefully placed on their *loci*, certainly follow the prescriptions for the medieval art of memory.

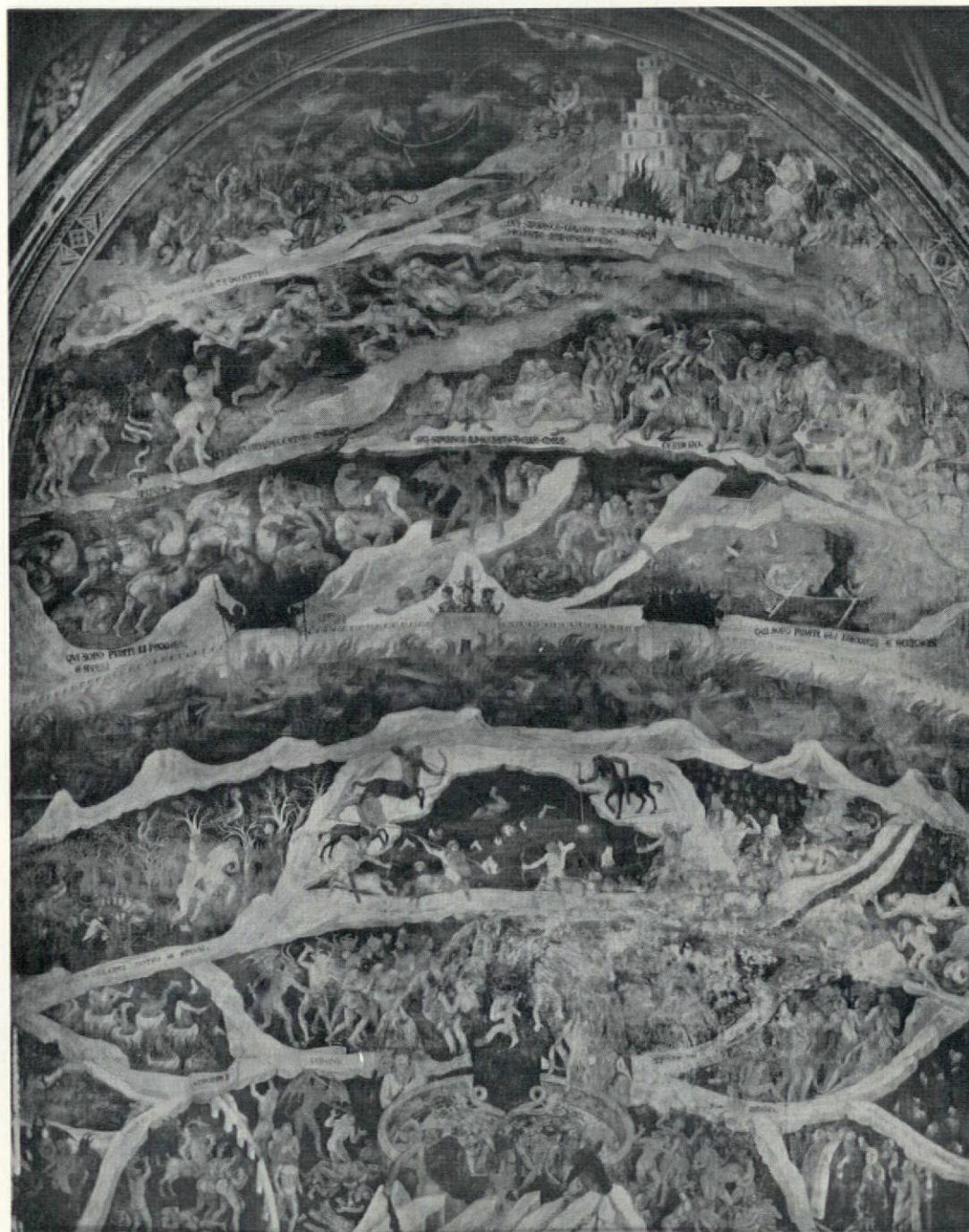
Moral memory systems could be expanded into encyclopaedic statements of the whole scheme of salvation. Johannes Romberch, the Dominican author of a sixteenth-century memory treatise, describes how the punishment of sins in Hell may be fixed in memory through images of the damned in (*see overleaf*). When Ludovico Dolce translated this treatise into Italian he added at this point that the inventions of Dante will help much for remembering Hell, and indeed (though this must not be overstressed) the whole scheme of

Dante's poem with its presentation of striking human images in the places of Hell, Purgatory, and Paradise, can be regarded as, in one of its aspects, a vast memory system.

The ordinary man, however, could use the principles of the art of memory for more mundane purposes. There are large numbers of memory treatises extant, both in manuscript and in print; they repeat the classical rules but add examples of uses of the art from which one can gain some idea of the fantastic memories which could be built up through it. Peter of Ravenna, a famous memory teacher, describes in his treatise published in the late fifteenth century how he goes round a church three or four times committing places in it to memory. He chooses his first place near the door; the next, five or six feet further in, and so on. He is using in churches the technique which Cicero had practised among the buildings of ancient Rome. He states that on his travels he never ceases to make new places in monasteries or churches, remembering through them histories, fables, sermons, and the whole of the canon law. The possession of a marvellous memory made a man famous, and stories would be told about him. It was said of a sixteenth-century preacher, Francesco Panigarola, that he used a hundred thousand places. The formation of memory places in a street in Florence is described in detail by a Dominican friar; each house is named as the place on which he memorized something. The same friar also describes how he goes round the church of Santa Maria Novella in Florence, imprinting its places on memory.

The art of memory exploited the principle of association. We all know how when we are trying to recall something it helps to feel back in memory to a place associated with it, and how the sight of a place will remind of thoughts we once had in that place or of a friend we once talked to there. By systematizing the natural principle of association the classical art of memory was, as it claimed, following nature. A new way of looking at ancient buildings is suggested by our knowledge of the history of the art of memory; we can see them as worn, not only by the passage of time, but by their close psychological involvement in countless memories down the ages.

The arrival of printing was eventually to destroy the memory buildings, for printing made possible the storage of knowledge in



Nardo di Cione, the places of Hell, fresco in Santa Maria Novella, Florence

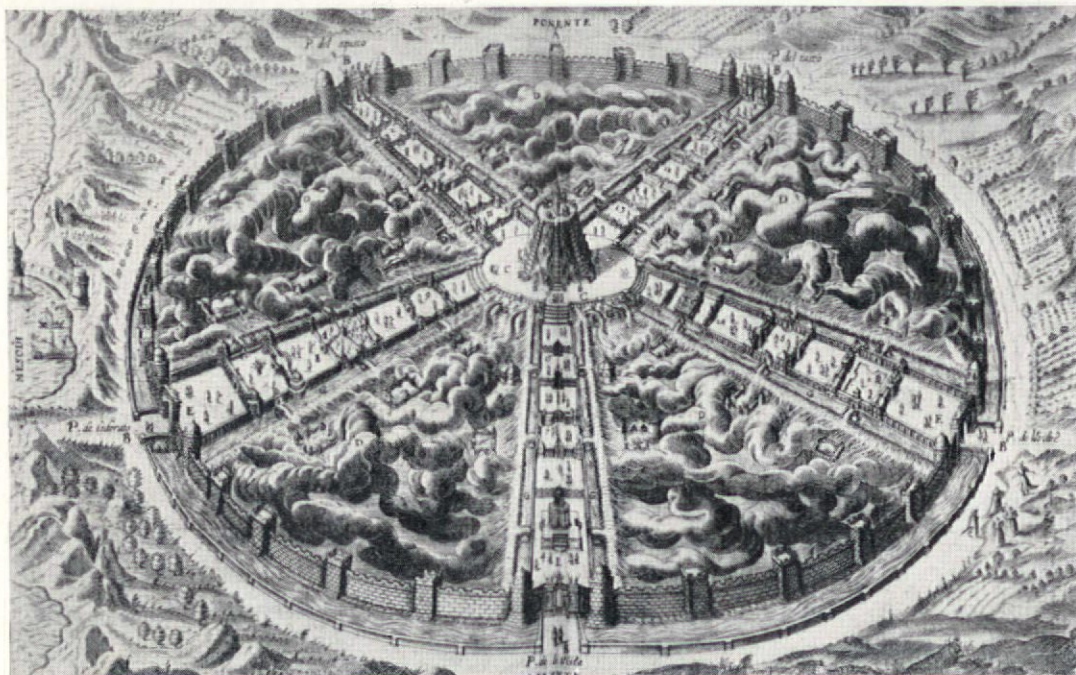
books for easy reference. The carefully spaced and lighted artificial memory whose possessor could wander through its streets and buildings, drawing from the places, the images to remind him of all that he had stored in his vast

inner treasure house, became a thing of the past, replaced by the printed page which need not be memorized, since easy access to books and writing materials made memorization on the old scale unnecessary.

Cambridge Rd. E11	E4 19
Cambridge Rd. E17	A8 18
Cambridge Rd. w4	C8 50
Cambridge Rd. w7	D8 85
Cambridge Rd. NW8	F1 89
Cambridge Rd. se20	B3 02
Cambridge Rd. sw11	D1 71
Cambridge Rd. sw13	A2 69
Cambridge Rd. sw20	A2 124
Cambridge Rd. Bark.	E2 49
Cambridge Rd. Bro.	E4 119
Cambridge Rd. Har.	A1 0
Cambridge Rd. Ilf.	A2 114
Cambridge Rd. King.	B3 122
Cambridge Rd. Mit.	C4 128
Cambridge Rd. N. Mal.	E4 123
Cambridge Rd. Rich.	B5 50
Cambridge Rd. Ted.	D4 79
Cambridge Rd. Twic.	F1 79

Smith V.D. 39 Bampton Av E17	01-527 7395
Smith V.D. 25 Ulundi Rd SE2	01-858 2954
Smith V.E. 7 Adamhill Rd SE26	01-829 9254
Smith V.E. 114 Alexander Rd SW6	01-624 9038
Smith V.E. 3116 Border Rd SE26	01-778 7569
Smith V.E. 20 Dillwyn Rd SE26	01-778 4460
Smith V.E. 48 Edinboro Rd SW16	01-785 5101
Smith V.E. 48 Elm Gars SE15	01-732 8531
Smith V.E. 10 Hattway Ho Gibbon Rd SE15	01-639 7001
Smith V.E. 31 Jervis Roy Ho Blair St E14	01-987 1000
Smith V.E. 6 Maxwell Ho Wornington Dr SW4	01-622 6243
Smith V.E. 20 Redoubt Clo R12	01-445 2038
Smith V.E. 114 Victoria Rd SW4	01-622 2170
Smith V.E. 105 Dallas Pk N3	01-346 8741
Smith V.E. 13 Taylor St W3	01-749 6049
Smith V.E. 8 Sloane St SW1	01-235 3585
Smith V.E. 294 High Rd E10	01-539 2532
Smith V.E. 113 Lyford Rd SW18	01-874 2734
Smith V.E. 115 Silbury Rd NW7	01-346 5631
Smith V.F. 70 Floris St E2	01-739 9953
Smith V.G. 26 Crown La Gdn SW16	01-670 5391
Smith V.G. 12 Gregory Rd	
Smith V.G. 18 Keet Ho Rd SE26	01-735 1091
Smith V.G. 16 Spaulding Ho Terham Rd SE4	01-778 2585
Smith V.G. 24 Weyford Rd W4	01-639 1723
Smith V.G. 24 Weyford Rd E5	01-394 4431
Smith V.H. 29 Dobson Clo NW6	01-806 2633
Smith V.H. 8 Edward Av E4	01-722 7311
Smith V.H. 5 Underhill Rd N4	01-827 0171
Smith V.I. 46 Fitzroy Rd NW1	01-340 2132
Smith V.I. 2 Alton Pde N16	01-722 5302
Smith V.I. 78 Carr Rd E17	01-254 3916
Smith V.I. 5 Fortis Ct Fortis G N10	01-852 4334
Smith V.I. 110 North View Rd N3	01-340 1054
Smith V.I. 65 Pollards Rd SW16	01-764 2547
Smith V.I. Lee Villa Primar Rd	
Smith V.I. 25 Forbes Ct	01-699 2990
Smith V.I. 113 Stamford Rd SE19	01-870 1253
Smith V.I. 90 Leatherford Rd E17	01-472 6410
	01-539 4345

Streets and inhabitants both seem to multiply beyond the point where each one can be uniquely named. Anonymous multiplicity runs wild



The city of truth, from Bartolommeo Delbene Civitas Veri, Paris, 1609

The art of memory was not, however, immediately killed by the spread of printing. The large numbers of printed memory treatises testify to its continuing popularity, and it underwent a strange new development under the influence of Renaissance Neoplatonism, with its Hermetic or magical core. One of the Hermetic treatises translated by Marsilio Ficino teaches that the reflection of the universe in memory is a religious exercise which should be diligently practised by the devout. In Venice in the sixteenth century, Giulio Camillo tried to apply these teachings in terms of the art of memory. He constructed a memory theatre; the rising grades of seats represented stages in the development of the cosmos, through stars and elements, the animal creation, to man and all his works. On the gangways between the seats he constructed arches covered with images which represented on these places the contents of the worlds of nature and of man. This very ambitious memory theatre was actually built in wood; no trace of this structure now survives but it is fully described in a book published in 1550. Camillo's memory theatre represents the transformation of memory architecture from Gothic to Neoclassical; and the use of the art of memory for the magical or Hermetic

attempt to reflect the universe within.

A rather more understandable and less mysterious architectural memory system is the *Civitas veri* designed by Bartolommeo Delbene, an Italian at the French court, about 1585 and published in 1607. The City of Truth (above) has five gates representing the five senses. It shows a plain whereon are the highways of the moral virtues built up across the cloudy swamps of the vices. The roads lead to a central acropolis on which are the temples of the intellectual virtues grouped round a flame which represents the heavenward direction of the personality. The City is the psyche, organized for moral and intellectual virtue; it owes much to illustrations in manuscripts of St Augustine's *City of God*, but expands these into detailed analyses of the virtues and vices as defined by Aristotle in the *Nicomachean Ethics*. In the buildings on the highways are human figures expressive of virtues and vices. The architectural settings are in French Renaissance style; the custom of placing moralized memory figures in such settings goes back to the Middle Ages.

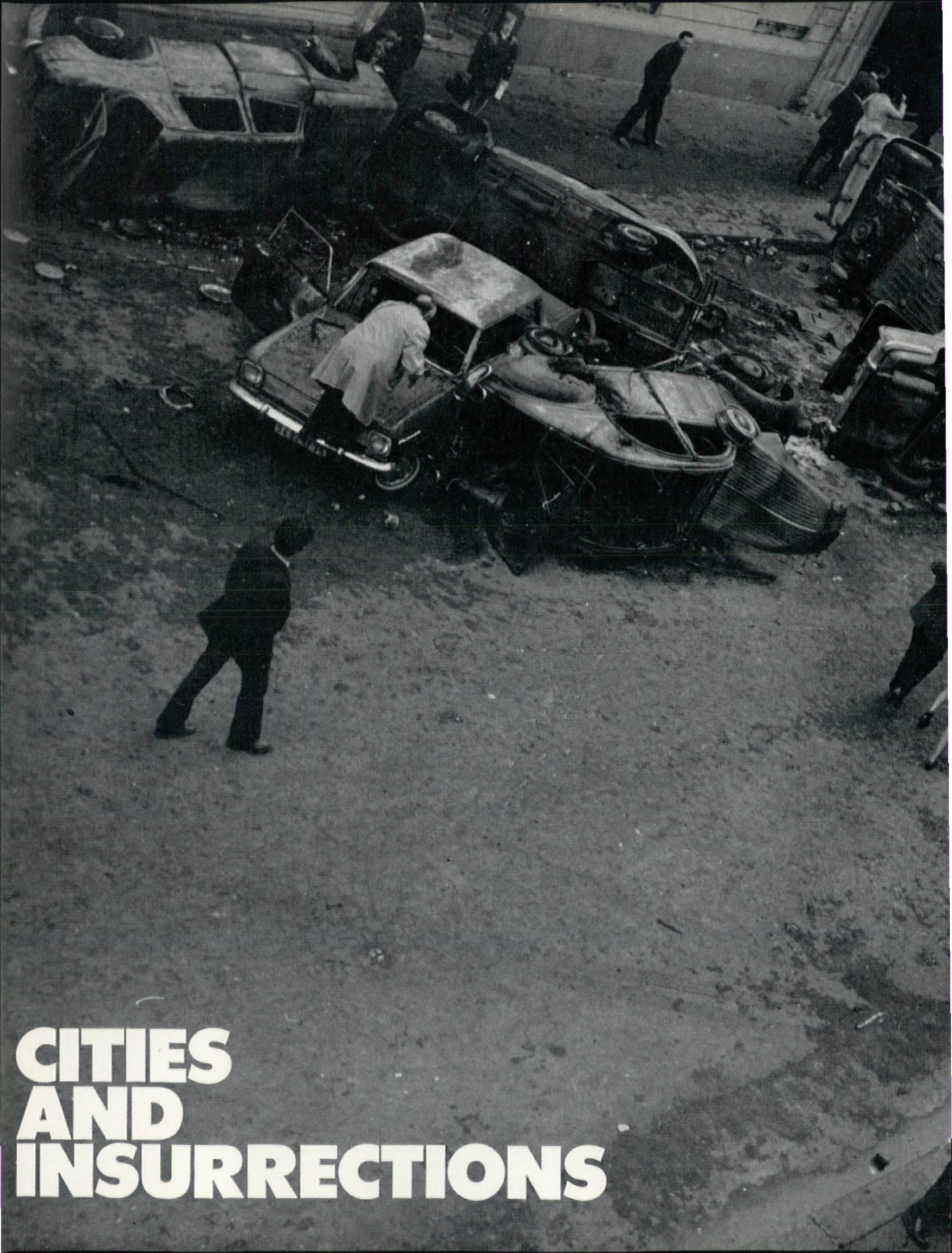
Delbene's City of Truth, which is fully explained in the poem which accompanies the illustrations, is of interest because it shows so clearly the link between allegory and memory.

It is a moral allegory in an architectural setting, yet its use of places and images is deliberately linked with the art of memory.

Campanella's *City of the Sun*, which he wrote in the early years of the seventeenth century when in prison in Naples, describes an ideal city. It was a round city arranged in seven concentric circles divided by walls along which the houses were built. In the centre, on the summit of a hill, was a great round temple; on the ceiling of its dome were depicted all the stars. The walls of the city were covered with representations of all animals and all the vegetable and mineral creation, and of all the arts and sciences of man, an effort similar in its scope to Camillo's Memory Theatre. And there is no doubt that Campanella intended his City to be a universal memory system; describing it, he says that he teaches 'local memory' through it, using the world as a book. The City of the Sun was a Utopia, setting forth the ideal government of the Solarian priests, yet at the same time it was also a memory system, an organization of the psyche using the principles and techniques of the art of memory. Once again we see the pervasive influence of the ancient art of memory on imaginative architecture.

The art of memory continued to be remembered all through the seventeenth century. In the eighteenth century it is still referred to, for example in the article on memory in Diderot's *Encyclopédie*, but it was losing the central place which it once had in the European tradition. In the nineteenth century it was almost forgotten. The fundamental changes brought about by printing gradually abolished the spatial and architectural memories of the past. Yet traces of the old habits survived in early printed books, in the schematic layout of material with memorization in view; this was a carrying over into the printed book of the schematic mnemonic layouts in medieval manuscripts. And the architectural frontispiece so often seen in old books is a survival of memory architecture, with its suggestion that the contents of the book may be imagined as lodged in the building shown on the front page.

In the ages during which the art of memory flourished there was a relationship between buildings and cities and the human beings who dwelt in them of a kind quite unfamiliar to us, and which may even have actually influenced architecture in ways still unexplored. □



CITIES AND INSURRECTIONS



CITIES AND INSURRECTIONS

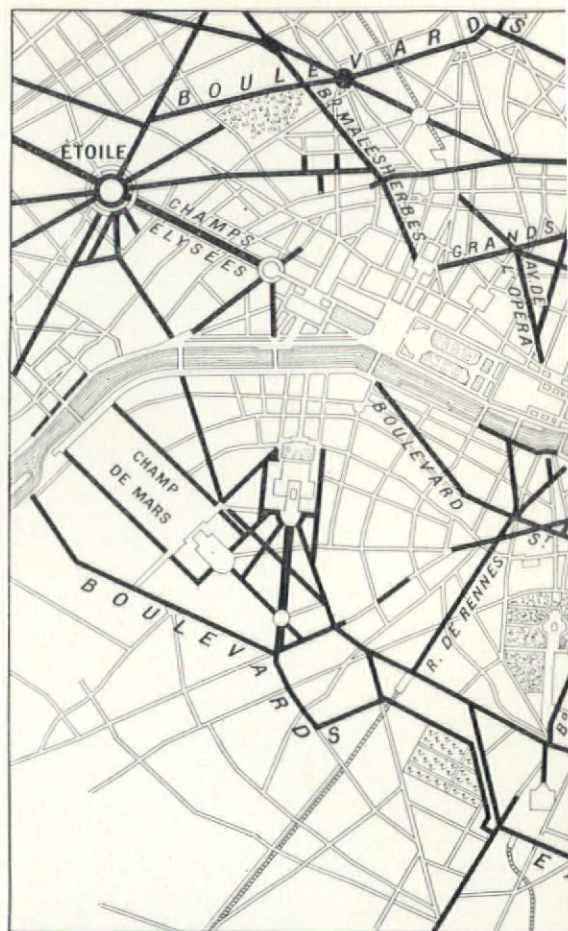
Eric Hobsbawm

riots or insurrections for a long time, or because there are institutional alternatives to them, such as systems of local government by popular election. There are, after all, few *continuously* riotous cities. Even Palermo, which probably holds the European record with 12 insurrections between 1512 and 1866, has had very long periods when its populace was relatively quiet. On the other hand, once the authorities decide to alter the urban structure because of political nervousness, the results are likely to be substantial and lasting, like the boulevards of Paris.

The effectiveness of riot or insurrection depends on three aspects of urban structure: how easily the poor can be mobilized, how vulnerable the centres of authority are to them, and how easily they may be suppressed. These are determined partly by sociological, partly by urbanistic, partly by technological factors, though the three cannot always be kept apart. For instance, experience shows that among forms of urban transport tramways, whether in Calcutta or Barcelona, are unusually convenient for rioters; partly because the raising of fares, which tends to affect all the poor simultaneously, is a very natural precipitant of trouble, partly because these large and track-bound vehicles, when burned or overturned, can block streets and disrupt traffic very easily. Buses do not seem to have played anything like as important a part in riots, underground railways appear to be entirely irrelevant to them (except for transporting rioters) and cars can at best be used as improvised roadblocks or barricades, and, to judge by recent experience in Paris, not very effective ones. Here the difference is purely technological.

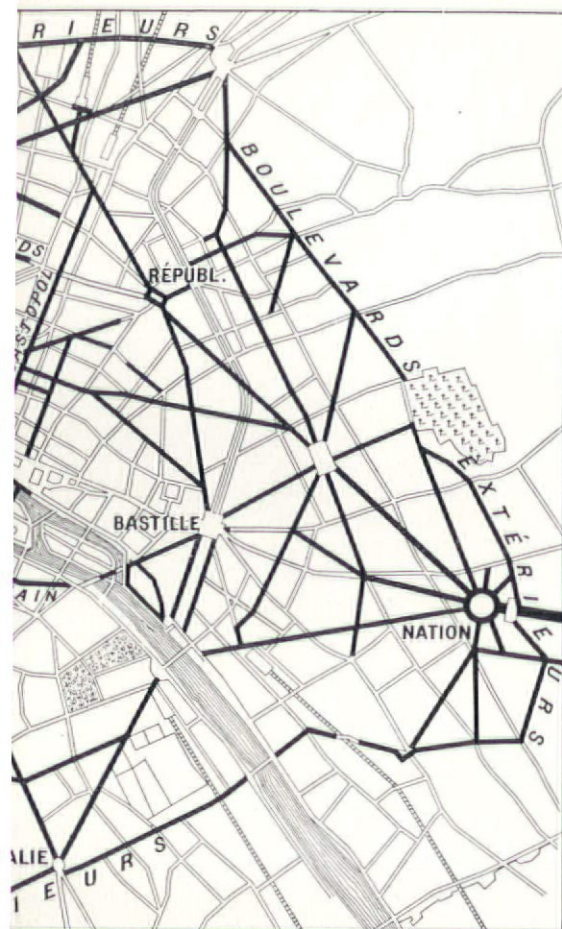
On the other hand, universities in the centre of cities are evidently more dangerous centres of potential riot than universities on the outskirts of towns or behind some green belt, a fact which is well-known to Latin-American governments. Concentrations of the poor are more dangerous when they occur in or near city centres, like the twentieth-century black ghettos in many North American cities, than when they occur in some relatively remote suburb, as in nineteenth-century Vienna. Here the difference is urbanistic and depends on the size of the city and the pattern of functional specialization within it. However, a centre of potential student unrest on the outskirts of town, like Nanterre in Paris, is nevertheless far more likely to create trouble in the central city than the Algerian shanty-towns in the same suburb, because students are more mobile, their social universe more metropolitan, than immigrant labourers. Here the difference is primarily sociological.

Suppose, then, we construct the ideal city for riot and insurrection. What will it be like? It ought to be densely populated and not too large in area; essentially still traversable on foot, though greater experience of rioting in fully motorized societies might modify this judgment. It should perhaps not be divided by a large river, not only because bridges are easily held by the police, but also because it is a familiar fact of geography or social psycho-



Whatever else a city may be, it is at the same time a place inhabited by a concentration of poor people and, in most cases, the locus of political power which affects their lives. Historically, one of the things city populations have done about this is to demonstrate, make riots or insurrections, or otherwise exert direct pressure on the authorities who happen to operate within their range. It does not much matter to the ordinary townsman that city power is sometimes only local, whereas at other times it may also be regional, national or even global. However, it does affect the calculations both of the authorities and of political movements designed to overthrow governments, whether or not the cities are capitals (or what amounts to the same thing, independent city states) or the headquarters of giant national or international corporations, for if they are, urban riots and insurrections can obviously have much wider implications than if the city authority is purely local.

The subject of this article is, how the structure of cities has affected popular movement of this sort, and conversely, what effect the fear of such movements has had on urban structure. The first point is of much more general significance than the second. Popular riot, insurrection or demonstration is an almost universal urban phenomenon, and as we now know, it occurs even in the affluent megalopolis of the late twentieth century industrial world. On the other hand the fear of such riot is intermittent. It may be taken for granted as a fact of urban existence, as in most pre-industrial cities, or as the kind of unrest which periodically flares up and subsides without producing any major effect on the structure of power. It may be underestimated, because there have not been any



(Pages 579/580) Paris riots, May 1968
Owners collecting their cars at dawn
Photo: Reporters Associés

(left) Haussman's re-development plan for Paris

The city secretes forces which threaten its own dissolution. In the middle of the nineteenth-century Hausman re-designed Paris in order to facilitate the movement of police and troops. Vistas which excite the tourist represent avenues of political menace for the inhabitant
Louis Réau *L'œuvre du Baron Haussmann* 1954

Boulevard St.Germain, May 1968
Photo: Paris Match

logy that the two banks of a river look away from each other, as anyone living in South London or on the Paris Left Bank can verify.

It's poor to be relatively homogeneous socially or racially, though of course we must remember that in pre-industrial cities or in the giant sumps of under-employment of the Third World today, what at first sight looks like a very heterogeneous 'population' may have considerable unity, as witness such familiar terms in history as 'the labouring poor', 'le menu peuple', or 'the mob'. It ought to be centripetal, that is to say, its various parts ought to be naturally oriented towards the central institutions of the city, the more centralized the better. The medieval city-republic which was the system of flows towards and away from the main assembly space, which might also be the main ritual centre (cathedral), the main market and the location of the government, was ideally suited to insurrection for this reason. The pattern of functional specialization and residential segregation ought to be fairly tight. Thus the pre-industrial pattern of suburbs, which was based on the exclusion from a sharply defined city of various undesirables—often necessary to city life—such as non-citizen immigrants, outcaste occupations or groups, etc., did not greatly disrupt the cohesion of the urban complex: Triana was entangled with Seville, as Shoreditch was with the City of London.





Vienna, combining as it did the patterns of civic and princely cities was a standing invitation to riot, for here palaces, the town houses of great nobles, markets, cathedrals, public squares and slums were intermingled, the rulers at the mercy of the mob

On the other hand, the nineteenth century pattern of suburbs, which surrounded an urban core with middle class residential suburbs and industrial quarters, generally developing at opposite ends of town from one another, affects urban cohesion very substantially. 'East End' and 'West End' are both physically and spiritually remote from each other. Those who live west of the Concorde in Paris belong to a different world from those who live east of the Republique. To go a little further out, the famous 'red belt' of working class suburbs which surrounds Paris was politically significant, but had no discernible insurrectionary importance. It simply did not belong to Paris any longer, nor indeed did it form a whole, except for geographers.¹

All these are considerations affecting the mobilization of the city poor, but not their political effectiveness. This naturally depends on the ease with which rioters and insurrectionaries can get close to the authorities, and how easily they can be dispersed. In the ideal insurrectionary city the authorities—the rich, the aristocracy, the government or local administration—will therefore be as intermingled with the central concentration of the poor as possible. The French king will reside in the Palais Royal or Louvre and not at Versailles, the Austrian Emperor in the Hofburg and not at Schoenbrunn. Preferably the authorities will be vulnerable. Rulers who brood over a hostile city for some isolated stronghold, like the fortress-prison of Montjuich over Barcelona, may intensify popular hostility, but are technically designed to withstand it. After all, the Bastille could almost certainly have held out if anyone in July 1789 had really thought that it would be attacked. Civic authorities are, of course, vul-

nerable almost by definition, since their political success depends on the belief that they represent the citizens and not some outside government or its agents. Hence perhaps the classical French tradition by which insurrectionaries make for the city hall rather than the royal or imperial palace and, as in 1848 and 1871, proclaim the provisional government there.

Local authorities therefore create relatively few problems for insurrectionaries (at least until they begin to practise town-planning). Of course, city development may shift the town hall from a central to a rather more remote location: nowadays it is a long way from the outer neighbourhoods of Brooklyn to New York's City Hall. On the other hand in capital cities the presence of governments, which tends to make riots effective, is offset by the special characteristics of towns in which princes or other self-important rulers are resident, and which have a built-in counter-insurgent bias. This arises both from the needs of state public relations and, perhaps to a lesser extent, of security.

Broadly speaking, in a civic town the role of the inhabitants in public activities is that of participants, in princely or government towns, of an admiring and applauding audience. The wide straight processional ways with their vistas of palace, cathedral or government building, the vast square in front of the official façade, preferably with a suitable balcony from which the multitudes may be blessed or addressed, perhaps the parade-ground or arena: these make up the ceremonial furniture of an imperial city. Since the Renaissance major western capitals and residences have been constructed or modified accordingly. The greater the desire of the ruler to impress or his *folie de grandeur*, the wider, straighter, more symmetrical his preferred layout. Few less suitable locations for spontaneous riot can be imagined than New Delhi, Washington, St Petersburg, or for that matter, the Mall and Buckingham Palace. It is not merely the division between a popular East and a middle-class and official West which has made the Champs Elysées the place where the official and military parade is held on 14th July, whereas the unofficial mass demonstration belongs to the triangle Bastille-Republique-Nation.

Such ceremonial sites imply a certain separation between rulers and subjects, a confrontation between a remote and awful majesty and pomp on one side, an applauding public on the other. It is the urban equivalent of the picture-frame stage, or better still, the opera, that characteristic invention of western absolute monarchy. Fortunately, for potential rioters, this is or was not the only relationship between rulers and subjects in capital cities. Often, indeed, it was the capital city itself which demonstrated the ruler's greatness, while its inhabitants, including the poorest, enjoyed a modest share of the benefits of his and its majesty. Rulers and ruled lived in a sort of symbiosis. In such circumstances the great ceremonial routes led through the middle of the towns as in Edinburgh or Prague. Palaces had no need to cut themselves

off from slums. The Vienna Hofburg, which presents a wide ceremonial space to the outside world (including the Viennese suburbs), has barely a yard or two of urban street and square between it and the old Inner City, to which it visibly belongs.

This kind of town, combining as it did the patterns of civic and princely cities was a standing invitation to riot, for here palaces, the town houses of great nobles, markets, cathedrals, public squares and slums were intermingled, the rulers at the mercy of the mob. In time of trouble they could withdraw into their country residences, but that was all. Their only safeguard was to mobilize the respectable poor against the unrespectable after a successful insurrection, e.g. the artisans guilds against the 'mob', or the National Guard against the propertyless. Their only comfort was the knowledge that uncontrolled riot and insurrection rarely lasted long, and were even more rarely directed against the structure of established wealth and power. Still this was a substantial comfort. The King of Naples or the Duchess of Parma, not to mention the Pope, knew that if their subjects rioted, it was because they were unduly hungry and as a reminder to prince and nobility to do their duty, i.e. to provide enough food at fair prices on the market, enough jobs, handouts and public entertainment for their excessively modest needs. Their loyalty and piety scarcely wavered, and indeed when they made genuine revolutions (as in Naples in 1799) they were more likely to be in defence of Church and King against foreigners and the godless middle classes.

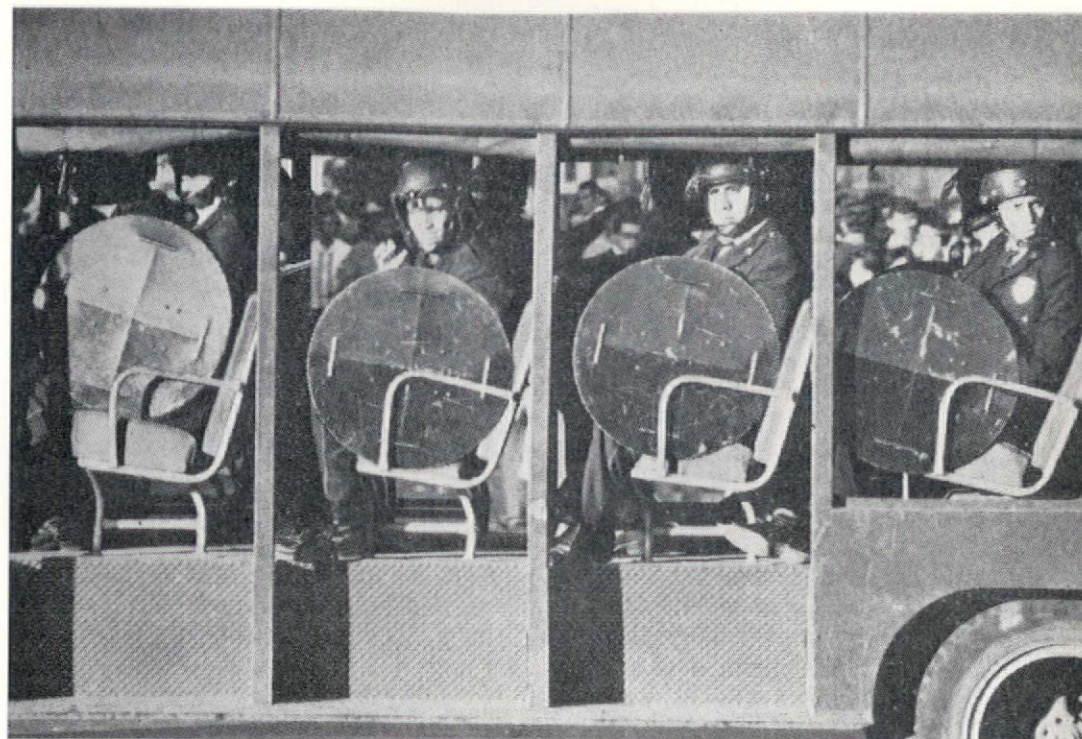
Hence the crucial importance in the history of urban public order, of the French Revolution of 1789-99, which established the modern equation between insurrection and social revolution. Any government naturally prefers to avoid riot and insurrection, as it prefers to keep the murder rate down, but in the absence of genuine revolutionary danger the authorities are not likely to lose their cool about it. Eighteenth-century England was a notoriously riotous nation, with a notoriously sketchy apparatus for maintaining public order. Not only smaller cities like Liverpool and Newcastle, but large parts of London itself might be in the hands of the riotous populace for days on end. Since nothing was at stake in such disorders except a certain amount of property, which a wealthy country could well afford to replace, the general view among the upper classes was phlegmatic, or even satisfied. Whig noblemen took pride in a state of liberty which deprived potential tyrants of the troops with which to suppress their subjects and the police with which to harry them. It was not until the French Revolution that a taste for multiplying barracks in towns developed, and not until the Radicals and Chartists of the first half of the nineteenth century that the virtues of a police-force outweighed those of English freedom. (Since grass-roots democracy could not always be relied on, the Metropolitan Police was put directly under the Home Office, where it still remains.)

Indeed, three main administrative methods

of countering riot and insurrection suggested themselves: systematic arrangements for deploying troops, the development of police forces (which barely existed in the modern form before the nineteenth century) and the rebuilding of cities in such a way as to minimize the chances of revolt. The first two of these had no major influence on the actual shape and structure of cities, though a study of the building and location of urban barracks in the nineteenth century might provide some interesting results, and so might a study of the distribution of police stations in urban neighbourhoods. The third affected the townscape very fundamentally, as in Paris and Vienna, cities in which it is known that the needs of counter-insurgency influenced urban reconstruction after the 1848 revolutions. In Paris the main military aim of this reconstruction seems to have been to open wide and straight boulevards along which artillery could fire, and troops advance, while at the same time—presumably—breaking up the main concentrations of potential insurgents in the popular quarters. In Vienna the reconstruction took the form mainly of two wide concentric ring roads, the inner ring (broadened by a belt of open spaces, parks and widely spaced public buildings) isolating the old city and palace from the (mainly middle class) inner suburbs, the outer ring isolating both from the (increasingly working class) outer suburbs.

Such reconstructions may or may not have made military sense. We do not know, since the kind of revolutions they were intended to dominate virtually died out in Western Europe after 1848. (Still, it is a fact that the main centres of popular resistance and barricade fighting in the Paris Commune of 1871, Montmartre-North-east Paris and the Left Bank, were isolated from each other and the rest of the town.) However, they certainly affected the calculations of potential insurrectionaries. In the socialist discussions of the 1880s the consensus of the military experts among revolutionaries, led by Engels, was that the old type of uprising now stood little chance, though there was some argument among them about the value of new technological devices such as the then rapidly developing high explosives (dynamite, etc.). At all events, barricades which had dominated insurrectionary tactics from 1830 and 1871 (they had not been seriously used in the great French Revolution of 1789–99) were now less fancied. Conversely, bombs of one kind or another became the favourite device of revolutionaries, though not Marxist ones, and not for genuinely insurrectionary purposes.

Urban reconstruction, however, had another and probably unintended effect on potential rebellions, for the new and wide avenues provided an ideal location for what became an increasingly important aspect of popular movements, the mass demonstration, or rather procession. The more systematic these rings and cartwheels of boulevards, the more effectively isolated these were from the surrounding inhabited area, the easier it became to turn such assemblies into ritual marches rather than preliminaries to riot. London,



Riot police in Mexico City transported by bus, 1968

which lacked them, has always had difficulty in avoiding incidental trouble during the concentration, or more usually the dispersal, of mass meetings held in Trafalgar Square. It is too near sensitive spots like Downing Street, or symbols of wealth and power like the Pall Mall clubs, whose windows the unemployed demonstrators smashed in the 1880s.

One can, of course, make too much of such primarily military factors in urban renewal. In any case they cannot be sharply distinguished from other changes in the nineteenth and twentieth century city which sharply diminished its riot-potential. Three of them are particularly relevant.

The first is sheer size, which reduces the city to an administrative abstraction, and a conglomerate of separate communities or districts. It became simply too big to riot as a unit. London, which still lacks so obvious a symbol of civic unity as the figure of a mayor (the Lord Mayor of the City of London is a ceremonial figure who has about as much relation to London as a town as has the Lord Chancellor), is an excellent example. It ceased to be a riotous city roughly between the time it grew from a million to two million inhabitants, i.e. in the first half of the nineteenth century. London Chartism, for instance, barely existed as a genuinely metropolitan phenomenon for more than a day or two on end. Its real strength lay in the 'localities' in which it was organized, i.e. in communities and neighbourhoods like Lambeth, Woolwich or Marylebone, whose relations with each other were at most loosely federal. Similarly, the radicals and activists of the late nineteenth century were essentially

locally based. Their most characteristic organization was the Metropolitan Radical Federation, essentially an alliance of working-men's clubs of purely local importance, in such neighbourhoods as had a tradition of radicalism—Chelsea, Hackney, Clerkenwell, Woolwich, etc. The familiar London tendency to build low, and therefore to sprawl, made distances between such centres of trouble too great for the spontaneous propagation of riots. How much contact would Battersea or Chelsea (then still a working-class area electing left-wing MPs) have with the turbulent East End of the 1889 Dock Striker? How much contact, for that matter, would there be between Whitechapel and Canning Town? In the nature of things the shapeless built-up areas which grew either out of the expansion of a big city or the merging of larger and smaller growing communities, and for which artificial names have had to be invented ('conurbation', 'Greater' London, Berlin or Tokyo) were not towns in the old sense, even when administratively unified from time to time.

The second is the growing pattern of functional segregation in the nineteenth and twentieth century city, that is to say, on the one hand, the development of specialized industrial, business, government and other centres or open spaces, on the other, the geographical separation of classes. Here again London was the pioneer, being a combination of three separate units—the government centre of Westminster, the merchant city of London, and the popular Southwark across the river. Up to a point the growth of this composite metropolis encouraged potential rioters. The northern and eastern edges of



West Berlin

The students of West Berlin are a rather effective body of rioters because the underground links the Free University, set in the gardens of Dahlem, with the town centre

the City of London and Southwark where the merchant community bordered on districts of workers, artisans and the port—all in their way equally disposed to riot, like the Spital-fields weavers or the Clerkenwell radicals—formed natural flash-points. These were the areas where several of the great eighteenth-century riots broke out. Westminster had its own population of artisans and miscellaneous poor, whom the proximity of King and Parliament and the accident of an unusually democratic franchise in this constituency, turned into a formidable pressure-group for several decades of the late eighteenth and nineteenth centuries. The area between City and Westminster, which was filled by an unusually dense accumulation of slums, inhabited by labourers, immigrants and the socially marginal (Drury Lane, Covent Garden, St Giles, Holborn), added to the ebullience of metropolitan public life.

However, as time went on the pattern simplified itself. The nineteenth century City ceased to be residential, and became increasingly a pure business district, while the port moved downstream, the city middle and lower-middle classes into more or less remote suburbs, leaving the East End an increasingly homogeneous zone of the poor. The northern and western borders of Westminster became increasingly upper and middle-class settlements, largely designed as such by landowners and speculative builders, thus pressing the centres of artisans, labourers and others inclined to radicalism and riot (Chelsea, Notting Hill, Paddington, Marylebone) onto a periphery increasingly remote from the rest of radical London. The slums between the two cities survived longest, but by the early twentieth century they had also been broken

into small patches by the urban renewal which has given London some of its gloomiest thoroughfares (Shaftesbury Avenue, Rosebery Avenue) as well as some of its most pompous ones (Kingsway, Aldwych), and an impressive accumulation of barrack-like tenements purporting to increase the happiness of the Drury Lane and Saffron Hill proletariat. Covent Garden and Soho (which elected communist local councillors in 1945) are perhaps the last relic of old-fashioned metropolitan turbulence in the centre of the town. By the late nineteenth century the potentially riotous London had already been broken up into peripheral segments of varying size (the huge and amorphous East End being the largest), surrounding a non-residential City and West End and a solid block of middle-class districts, and surrounded in turn by middle and lower-middle class outer suburbs.

Such patterns of segregation developed in most large and growing western cities from the early nineteenth century, though the parts of their historic centres which were not transformed into business or institutional districts, sometimes retained traces of their old structure, which may still be observed in the red-light quarters, as in Amsterdam. Twentieth-century working-class rehousing and planning for motor transport further disintegrated the city as a potential riot-centre. (The nineteenth century planning for railways had, if anything, the opposite effect, often creating socially mixed and marginal quarters around the new terminals.) The recent tendency to shift major urban services such as central markets from the centres to the outskirts of cities will no doubt disintegrate it further.

Is the urban riot and insurrection therefore doomed to disappear? Evidently not, for we have in recent years seen a marked recrudescence of this phenomenon in some of the most modern cities, though also a decline in some of the more traditional centres of such activities. The reasons are mainly social and political, but it may be worth looking briefly at the characteristics of modern urbanism which encourage it.

Modern mass transportation is one. Motor transport has so far contributed chiefly to the mobilization of that normally un-riotous group the middle class, through such devices as the motorized demonstration (Frenchmen and Algerians still remember the massed horns of reaction hooting *Al-gé-rie Francaise*) and that natural device of sabotage and passion, the traffic-jam. However, cars have been used by activists in North American riots, and disrupt police-action when on the move, while forming temporary barricades when stationary. Moreover, motor transport distributes the news of riots beyond the immediate area affected, since both private cars and buses have to be extensively re-routed.

Public transport, and especially underground railways which are once again being built in several big cities on a large scale, is more directly relevant. There is no better means of transport for moving large numbers of potential rioters rapidly over long distances than trains running at frequent intervals. This

is one reason why the West Berlin students are a rather effective body of rioters: the underground links the Free University set among the remote and spectacularly middle class villas and gardens of Dahlem, with the town centre.

More important than transport are two other factors: the increase in the number of buildings worth rioting against or occupying, and the development, in their vicinity, of accumulations of potential rioters. For while it is true that the headquarters of central and municipal government are increasingly remote from the riotous quarters, and the rich or noble rarely live in palaces in the town centres (apartments are both less vulnerable and more anonymous), sensitive institutions of other kinds have multiplied. There are the communications centres (telegraph, telephone, radio, television). The least experienced organizer of a military coup or insurrection knows all about their importance. There are the gigantic newspaper offices, fortunately so often concentrated in the older city centres, and providing admirable incidental material for barricades or cover against fires in the form of delivery trucks, newsprint and packages of papers. They were used for street-fighting purposes as long ago as 1919 in Berlin, though not very much since. There are, as we all know now, the universities. Though the general tendency to move these out of city centres has diminished their riot potential somewhat, there are enough academic precincts left in the middle of big towns to satisfy the activists. Besides, the explosion of higher education has filled the average university to bursting-point with thousands, or even tens of thousands, of marchers or fighters. There are, above all, the banks and large corporations, symbols and reality of the power structure, and increasingly concentrated in those massifs of plate-glass and concrete by which the traveller recognizes the centres of a proper late twentieth century city.

Theoretically these should be individually as much the object of attack by rioters as city halls or capitols, for IBM, Shell or General Motors carry at least as much weight as most governments. Banks have long been aware of their vulnerability, and in some Latin countries—Spain is a good example—their combination of symbolic architectural opulence and heavy fortification provides the nearest thing to those town-citadels in which feudal and feuding noblemen barricaded themselves in the Middle Ages. To see them under heavy police guard in times of tension is an instructive experience, though, in fact, the only champions of direct action who have been systematically attracted by them are unpolitical robbers and revolutionary 'expropriators'. But if we except such politically and economically negligible symbols of the American way of life as Hilton Hotels, and the occasional object of specialized hostility such as Dow Chemicals, riots have rarely aimed directly at any of the buildings of large corporations. Nor are they very vulnerable. It would take more than a few broken plate-glass windows or even the occupation of a few acres of office-space, to disrupt the

smooth operations of a modern oil company.

On the other hand collectively 'downtown' is vulnerable. The disruption of traffic, the closing of banks, the office staffs who cannot or will not turn up for work, the businessmen marooned in hotels with overloaded switchboards, or who cannot reach their destinations: all these can interfere very seriously with the activities of a city. Indeed, this came close to happening during the 1967 riots in Detroit. What is more, in cities developing on the North American pattern it is not unlikely to happen, sooner or later. For it is well-known

that the central areas of town, and their immediate surroundings, are being filled with the coloured poor as the comfortable whites move out. The ghettos lap round the city centres like dark and turbulent seas. It is this concentration of the most discontented and turbulent in the neighbourhood of a relatively few unusually sensitive urban centres which gives the militants of a smallish minority the political importance which black riots would certainly not have if the 10 or 15 per cent of the US population who are Negroes were more evenly distributed throughout



Watts, 1965

The riot of the streets, controlled and suppressed by remote planners with charts

Photos: Paris Match



the whole of that vast and complex country.

Still, even this revival of rioting in western cities is comparatively modest. An intelligent and cynical police-chief would probably regard all the troubles in western cities during recent years as minor disturbances, magnified by the hesitation or incompetence of the authorities and the effect of excessive publicity. With the exception of the Latin Quarter riots of May 1968 none of them looked as though they could, or were intended to, shake governments. Anyone who wishes to judge what a genuine old-style insurrection of the urban poor, or a serious armed rising, is and can achieve, must still go to the cities of the underdeveloped world: to Naples which rose against the Germans in 1943, to the Algerian Casbah in 1956 (excellent movies have been made about both these insurrections), to Bogotá in 1948, perhaps to Caracas, certainly to San Domingo in 1965.

The effectiveness of recent western city riots is due not so much to their actual activities of the rioters, as to their political context. In the ghettos of the USA they have demonstrated that black people are no longer prepared to accept their fate passively, and in doing so they have doubtless accelerated the development of black political consciousness and white fear; but they have never looked like a serious immediate threat to even the local power structure. In Paris they demonstrated the lability of an apparently firm and monolithic regime. (The actual fighting capacity of the insurrectionaries was never in fact tested, though their heroism is not in question: no more than two or three people were actually killed, and those almost certainly by accident.) Elsewhere the demonstrations and riots of students, though very

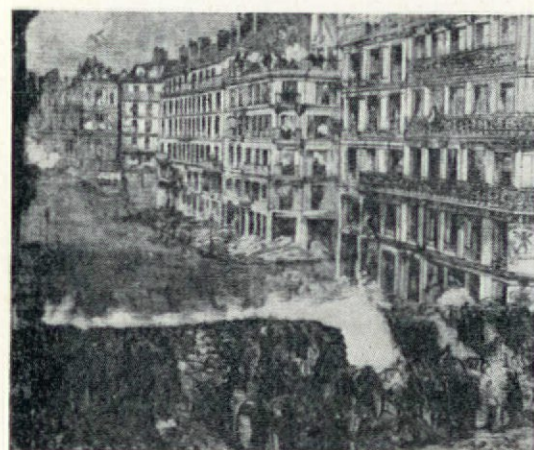


Photo: Weekend

The seat of riot in Paris in May 1968 was the area around the Rue Gay Lussac and the Rue Soufflot, in the centre of the map at the top. Neither the area nor the pattern of insurrection has changed much in the past hundred years. The two lithographs above show the barricades of 1871 in the Boulevard St Germain, the photographs alongside date from 1968



Photo: Weekend



Photo: Bryn Campbell, Observer



Photo: Reporters Associés

effective inside the universities, have been little more than a routine police problem outside them.

But this, of course, may be true of all urban riots, which is why the study of their relation to different types of towns is a comparatively unimportant exercise. Georgian Dublin does not lend itself easily to insurrection, and its population, which does, has not shown a great inclination to initiate or even to participate in uprisings. The Easter Rising took place there because it was a capital city, where the major national decisions are supposed to be made, and though it failed fairly quickly, it played an important part in the winning of Irish independence, because the nature of the Irish situation in 1917-21 allowed it to. Petrograd, built from scratch on a gigantic and geometrical plan, is singularly ill-suited to barricades or street-fighting, but the Russian Revolution began and succeeded there. Conversely, the proverbial



turbulence of Barcelona, the older parts of which are almost ideally suited to riot, rarely even looked like producing revolution. Catalan anarchism, with all its bomb-throwers, pistoleros, and enthusiasm for direct action, was until 1936 never more than a normal problem of public order to the authorities, so modest that the historian is amazed to find how few policemen were actually supposed (rather inefficiently) to ensure its protection.

Revolutions arise out of political situations, not because some cities are structurally suited to insurrection. Still, an urban riot or spontaneous uprising may be the starter which sets the engine of revolution going. That starter is more likely to function in cities which encourage or facilitate insurrection. A friend of mine, who happened to have commanded the 1944 insurrection against the Germans in the Latin Quarter of Paris, walked through the area on the morning after the Night of the Barricades, touched and

moved to see that young men who had not been born in 1944 had built several of their barricades in the same places as then. Or, the historian might add, the same places that had seen barricades in 1830, 1848 and 1871. It is not every city that lends itself so naturally to this exercise, or where, consequently, each generation of rebels remembers or rediscovers the battlefields of its predecessors. Thus in May 1968 the most serious confrontation occurred across the barricades of the Rue Gay Lussac and behind the Rue Soufflot. Almost a century earlier, in the Commune of 1971, the heroic Raoul Rigault commanded the barricades in that very area, was taken—in the same month of May—and killed by the Versailles. Not every city is like Paris. Its peculiarity may no longer be enough to revolutionize France, but the tradition and the environment are still strong enough to precipitate the nearest thing to a revolution in a developed western country. □

¹How far such working-class suburbs can be separated from the central city area and still remain a direct factor in insurrections is an interesting question. In Barcelona Sans, the great bastion of anarchism, played no important part in the revolution of 1936, while in Vienna Floridsdorf, an equally solid bastion of Socialism, could do little more than hold out in isolation when the rest of the city's insurrections had already been defeated in 1934.

PONEROPOLIS

D. P. Walker

In the Third Book of his *Essais* Montaigne mentions a city founded in Thrace by King Philip II of Macedon, who assembled there 'the most wicked and incorrigible men he could find'. Plutarch, in the *Moralia*, had casually referred to this city; and we know from Pliny's *Natural History* and the *Suidas* Lexicon that it may really have existed and was, suitably, called Poneropolis, a name which later, and quite understandably, the inhabitants changed to Philippopolis. Montaigne goes on to say that, in his opinion, these wholly evil men 'out of their very vices' made a political structure holding them together and formed a society no less stable and just than that of any other city. For he believed that the apparent order of human societies was due to sheer chance, just as, if you jumble together irregularly shaped bodies, they may happen to cohere into a fairly stable solid. The randomly formed structures of all societies necessarily involve injustice, since their laws have not been made according to any principles of justice, if indeed these exist, but have grown up by chance. But no attempt must be made to remedy any injustice, because these structures are very fragile, and any stable order is better than anarchy. Montaigne, quite consistently, does not explain the process whereby the evil men formed a social order, nor what forces, other than custom and habit, held it together after it was formed; but several thinkers, both earlier and later, who regarded all real cities as Poneropoleis, were not content with the blanket explanations of chance and inertia, and did attempt to explain how utterly sinful, selfish and ruthless men could institute and maintain a durable and prosperous society. I think it is worthwhile taking a short look at some of these attempts, because the tradition of Poneropolis has close connexions both with the tradition of Utopia and with ultra-conservative, *laissez-faire* political and economic theories.

An explanation of the formation and maintenance of the City of the Wicked can be gathered from the *Pensées* of Pascal, whose starting-point was Montaigne's destructive critique of human justice. The criminals began

by murdering and robbing each other, until a few of the strongest and craftiest had mastered the rest. It was then in the interest of this dominant minority that the state of chaotic war should cease; they therefore made laws to ensure the preservation of their own power and the continued subjection of the majority. Thus the only justice in this city was justice as defined by Thrasymachus in Plato's *Republic*: the advantage of the stronger. This is, of course, not a definition of justice but a denial of it, reducing it to an empty eulogistic word for power. Pascal, since he believes that all societies are Cities of the Wicked, demonstrates that this reduction of justice to power is inevitable. Justice without power is ineffective, since there are always wicked people who must be coerced into obeying the law:

One must therefore put together justice and power; and thus ensure that either what is just be powerful, or that what is powerful be just. Justice is subject to dispute; power is easily recognizable and without dispute. Thus it has not been possible to give power to justice, because power has contradicted justice and said that it was power that was just. And so, not being able to arrange that what is just be powerful, we have arranged that what is powerful be just.

That is to say, in less paradoxical terms, the basis of all laws is not justice, but power; as in Hobbes's *Leviathan*, the arbitrary decree of the rulers, i.e. the will of the most powerful, is identified with law. In another version of the same argument Pascal adds at the end: 'in order that there might be peace, which is the supreme good'.

That peace is the supreme good, and that it is the ultimate aim of all men, however wicked, Pascal may have learned from St Augustine's *City of God*. True peace, the peace of God, can reign only after the end of the world, when, the number of the elect having been made up, they will live eternally in the City of God, enjoying blissfully both the beatific vision and the spectacle of the torments of the damned. But there is also a kind of peace, here and now, in the Earthly City—the 'wicked peace'. This peace, though founded on pride and concupiscence, is still,



The city of the wicked was once a distant fiction.



Today our own cities create the wickedness they punish. To live in a ghetto slum is a penalty that anticipates the crime which it creates Photo: New York Times

however, a good, since it is useful to the elect during their short pilgrimage on this earth; and it is the chief goal of all human actions, however violent and bloody. Why do men fight wars? In order to gain victory over their enemies, and thus achieve a 'glorious peace'; *For they that perturb the peace they live in, do it not for hate of it, but to show their power in alteration of it. They would not annul it, but they would have it as they like.*

Bands of robbers must be at peace among themselves, in order to rob efficiently. Even if there were a criminal so strong and clever that he could successfully rob and murder without the help of others, yet on his own family he would enforce obedience and quietude.

And might he have the sway of a city or province in such sort as he has that of his house, he would put of his thievish nature, and put on a king's, albeit his covetousness and malice would remain unchanged. Thus you see that all men desire to have peace with such as they would have live according to their liking. For those against whom they wage war, they would make their own if they could; and if they conquer them they give them such laws as they like.

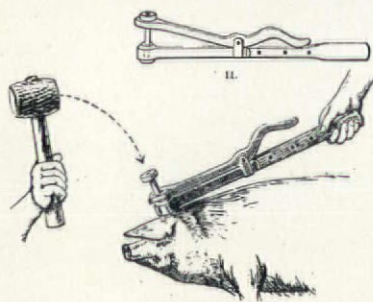
For both St Augustine and Pascal the peace and order of all earthly cities are begun and maintained by concupiscence. By concupiscence they meant all kinds of sinful love and desire, that is, any loves or desires which do not have God as their ultimate object; and these can be divided into three main classes: *For all that is of the world, the lust of the flesh, the lust of the eyes, and the pride of life, is not of the Father, but is of the world.* (I John, ii. 16) which Pascal interprets as the lust of feeling, the lust of knowing, the lust of dominating (*libido sentiendi, sciendi, dominandi*), and the greatest of these, for our present purposes, is the *libido dominandi*. Now, since the Fall, all men act entirely and solely out of concupiscence, except for the small minority of the elect, who, having been transformed by divine grace, are capable of sometimes acting out of charity. Human societies, then, consist largely of men who all wish to dominate each other with an insatiable *libido dominandi* and who therefore hate each other. But, by the successful domination of the few strongest, an order and peace is created, which it is in everyone's interest to maintain—'an order of concupiscence' which apes God's order of charity. Pascal writes: 'They have founded on, and drawn from, concupiscence admirable rules of government, morals and justice'; but:

All men naturally hate each other. Concupiscence has been used, as far as is possible, to serve the public good; but this is only a disguise, and a false image of charity; for at bottom it is only hatred.

It might be thought that Pascal had an abnormally sour and black view of human nature, and that it was this that led him to believe that all societies were necessarily Cities of the Wicked. Though this may to some extent be true, the main reason for this belief was that he had a very wide concept of wickedness or sin and a very narrow one of virtue or charity. In consequence, behaviour which most people, now and then, would consider admirable seemed to him sinful because it was, or might be, founded on

The idea of PONEROPOLIS depends on our knowing for sure, the difference between vice and virtue. We are less sure today. The industrialized slaughter of animals looks suspiciously like the mechanized butchery of men. The noble savage, enslaved, is transformed by the guilty imagination, into the vicious coloured criminal. The distinctions between prisons and cities become more blurred as more freedom is given to prisoners and less and less is enjoyed by the blameless citizen at large. Paradox upon paradox.

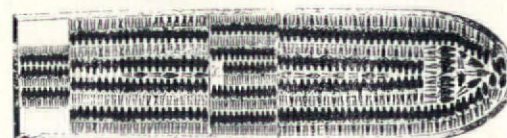
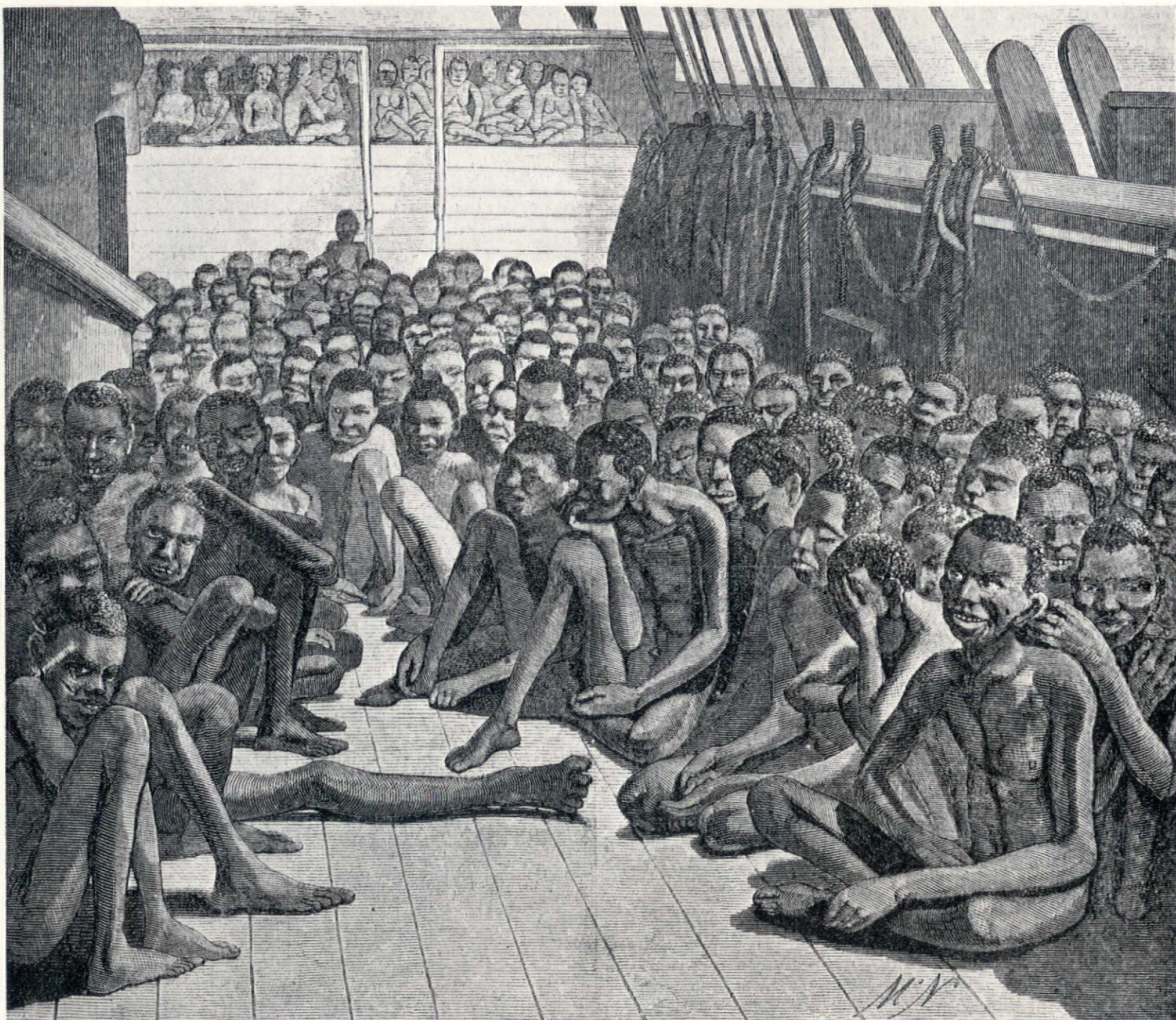
The hanging of witches, devil's disciples, during the purges of the middle ages



The wholesale slaughter of hogs, the application of the assembly line principle to death. Other variations, less gruesome, were the use of patent devices to avoid the spilling of blood. But mass consignment to

eternity, remained the aim. Even the killing and preparation of chickens, feathers and all, were amenable to the factory process. Here wax depilation is shown.

S. Giedion Mechanization takes command



'Not a square centimetre lost'—290 slaves slotted into a boat thirty yards long. The trip from Africa to America took five weeks, during which time they were allowed on deck for brief periods to breathe, though many of course died between decks of asphyxia. Others committed suicide by swallowing their tongues. One in five survived
 Illustrations: *Réalités* July/August 1968

Shinjuku interchange station, Tokyo. One million passengers pass through the station each day.

concupiscence. He was sincerely worried that his family or friends might love him too strongly, and thus give to a creature what is due to God alone; and he rebuked his elder sister for allowing her children to kiss her, because such caresses might lead them into impurity. Thus many of those bonds that hold men together and seem to us to make their cities not entirely wicked—family love, friendship, pity—were for Pascal founded on concupiscence, not charity, and hence sinful and damnable in the sight of God.

This narrow Augustinian, and ultimately Pauline, concept of true virtue or charity is certainly one source of the tradition of Poneropolis, but it is not the only one; for we find the tradition in very different kinds of Christian thought, and in thought that is not Christian at all.

When in the 1630s the Dutch poet Dirk Camphuysen, who was a Socinian (i.e. a remote ancestor of the Unitarians), was arguing against the eternity of hell, the strongest objection he had to meet was that, if the deterrent of eternal torment were removed, most men would behave without any moral restraint whatever and human society would collapse into an anarchical orgy. Camphuysen denied that this would occur, for the following reasons. Even evil-doers who are overtly criminal have some form of religion or superstition; yet this does not restrain them from any crime which they think profitable. What does restrain evil-doers is the fear of other men, that is, of social or legal punishments. Society is kept together, not by religiously based morals, nor indeed by any kind of morals, but by the wish of everyone who possesses anything, or hopes to do so, to enjoy his possessions in peace and security. There is no point in stealing, unless you can enjoy your ill-gotten gains in peace and quiet. Thus even a society of criminals can be stable, or a society of totally irreligious people, such as exists in Brazil.

Camphuysen's City of the Wicked has introduced an important element, which was missing from the other accounts we have looked at, and which is perhaps the most powerful factor that binds together evil men into a peaceful order; private property and the economic drives that go with it. But this element had already occupied a central place in Sir Thomas More's Poneropolis. After Raphaell Hythlodaye has given his description of Utopia, he ends by passionately and indignantly contrasting the justice of its communism with the ruthless exploitation of the poor in all real cities; and says finally:

Therefor when I consider and way in my mind all these commen wealthes, which now a dayes any where do flourish, so god helpe me, I can perceave nothing but a certein conspiracy of riche men procuringe their owne commodities under the name and title of the common wealth. They invent and devise all meanes and craftes, first how to kepe safely, without feare of losing, that they have unjustly gathered together, and next how to hire and abuse the worke and laboure of the poore for as little money as may be. These devises, when the riche men have decreed to be kept and observed under coloure of the

▷

Vistas of sickening dread and ennui—Giambattista Piranesi's vision of a fantastic prison (second state 1745) little different from the reality found by Henry Mayhew and the Prisoners' Friends at Clerkenwell in 1862

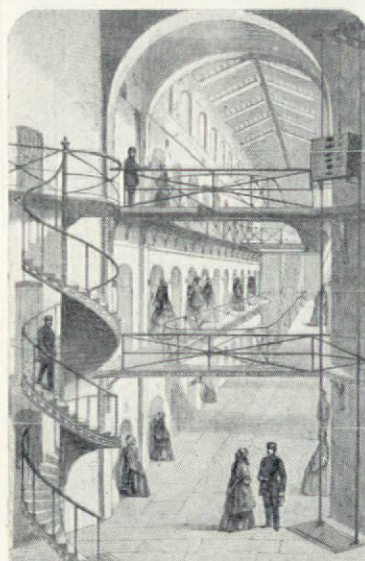


Illustration: H. Mayhew and J. Binny
The Criminal Prisons of London London 1862

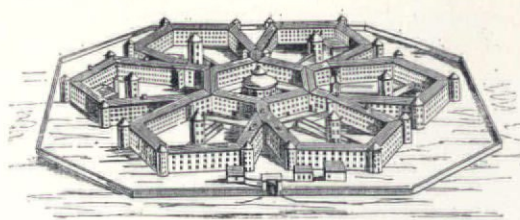


Photo: Syndication International

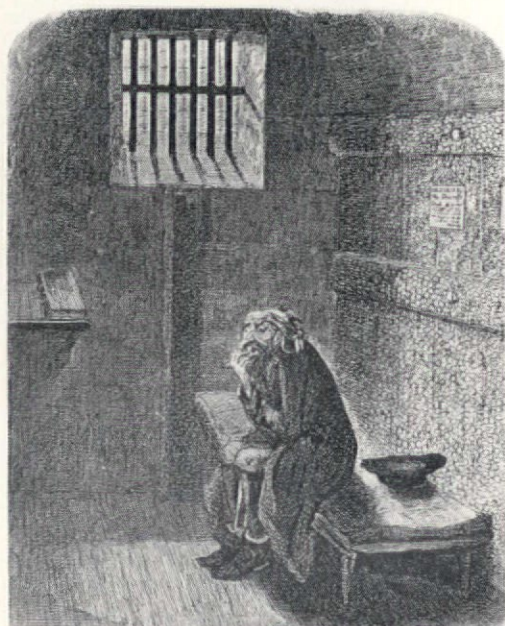
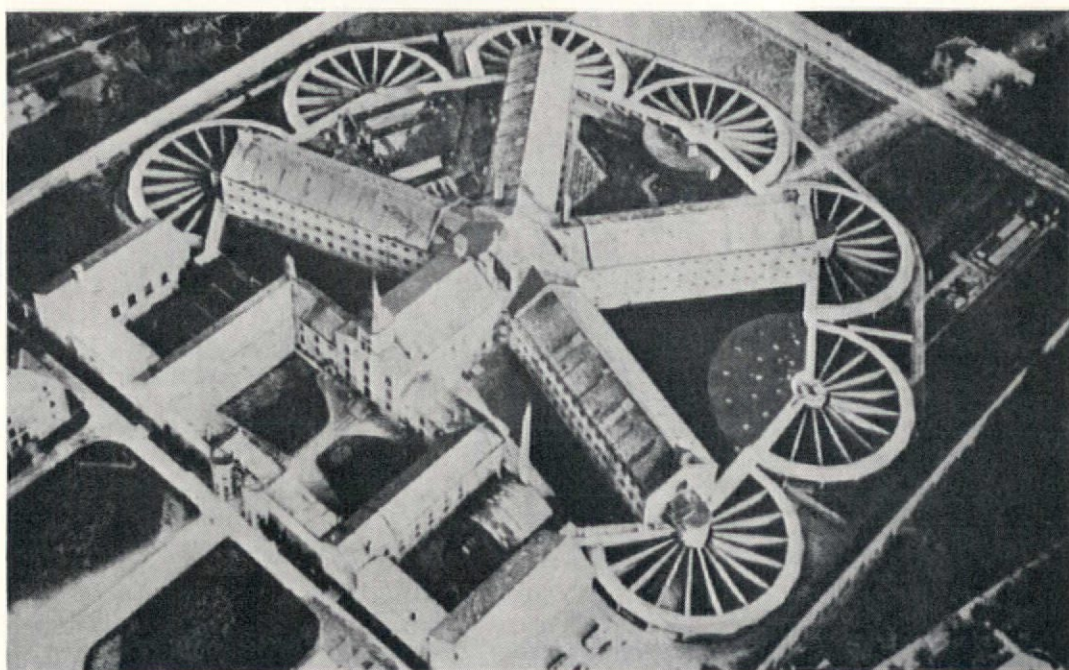
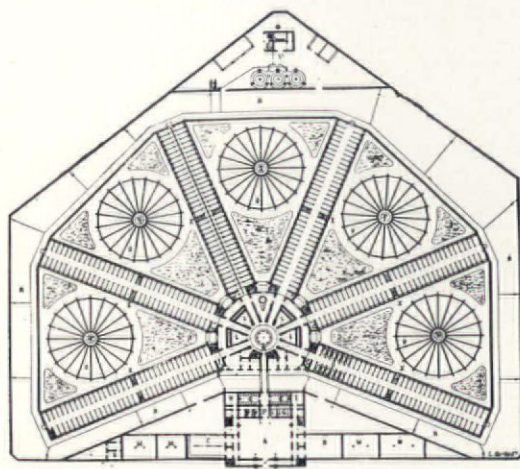
Photo: John Donat



Institutionalized dining
Whether within the confines of Dartmoor prison (above) or in the liberal environment of the Charles Morris hostel at Leeds University (right) the organizational pattern is very much the same.



The architecture of restriction:
(Left) the Millbank penitentiary, built on the site of Jeremy Bentham's ill fated Panopticon (and no doubt inspired by it). Likewise designed on the principle of centralized surveillance were most of the other great prisons of the capitals of Europe: Mazas maison de détention (below left) the main prison of Copenhagen



The Minimal dwelling (Left) as conceived by George Cruikshank for Fagin and (above) the comfortable cell as provided by the Home Office on the Isle of Wight



Control for the citizen A still from the film 'Riot in cell-block 11'

Photo: National Film Archives



The freedom of the city
Mexican prostitutes photographed in Mexico
 1934 by *Henri Cartier-Bresson*
 Photo: Magnum



(Left) Failed escape
 Communist soldiers
 recovering the body
 of an East German
 shot while attempting
 to cross the Berlin
 wall
 Photo: *Esquire Christmas*
Crucible December 1963

(Right) Escape An
 Indian leaps off a
 quayside to his death
 Photo: *Black Star*



Another way out—murdered family, *Dixie*, 1966.
Photo: *True Detective Magazine*, October 1966



The city as a prison
A waiting helicopter in a deserted Alcatraz, Lee Marvin's escape route in *'Point Blank'*
Photo: MGM

comminaltie, that is to saye, also of the poore people, then they be made lawes.

More's City of the Wicked, owing to his emphasis on economic motives, differs from Pascal's or Montaigne's in that it is the vices of only the *rich*, and particularly their greed, that produce the stable, unjust order; the poor are in such a condition of powerless servitude that they really have no opportunity of being vicious. The same is true of Mandeville's Poneropolis, in so far as one can gather any coherent system from the silliness and confusion of his notorious *Fable of the Bees*. His main thesis is that a powerful and prosperous society is possible only among vicious men; 'Fraud, Luxury and Pride must live', for otherwise, as happened to the suddenly virtuous bees, our rich and thriving hive will shrink to a few poor families living virtuously in primitive frugality. It is particularly luxury that is necessary to a successful City of the Wicked; without the insatiable appetites of the vicious rich, commerce and industry would soon wither away. This presupposes that there is a large class of poor, easily exploitable people, who are driven to work by want and hunger; and this is why Mandeville wrote a long essay against Charity Schools, which might endanger the existence of such a class. Both Mandeville and his contemporary critics seem unaware of the obvious objection to his economic argument, namely, that his rich class consists either of parasites or of people, such as doctors and lawyers, doing unproductive work provided by the vices of the rich parasites, and that therefore the hive would be more prosperous if that class were abolished and the working poor allowed to consume a little more of the produce of their labour. But since Mandeville was quite satisfied with things as they were and content to live in a City of the Wicked, there was no reason why such an objection should come into his head. Even if he had considered the possibility of an economically more just society, he would still have maintained that such a society was founded on vice. For, like Pascal's and St Augustine's, his concept of virtue was so narrow that he was able to regard almost all human behaviour as vicious. But Mandeville's virtue was not Christian charity. It was a totally disinterested altruism, similar to Shaftesbury's moral ideal; but, unlike Shaftesbury, he did not, I think, hold it seriously, but merely used it as a means of classing all motives as vicious.

The belief that all real cities are Cities of the Wicked can then produce very different reactions. One may, like Montaigne, Pascal and St Augustine, give qualified approval to Poneropolis as being the best society that corrupt mankind can achieve, and, because any order is better than anarchy, advocate a resigned conservatism. Or one may, like Mandeville, give it positive approval and arrive at an even more extreme conservatism. Or finally one may, like Sir Thomas More, be so acutely aware of the misery and injustice of that city that one proposes a Utopian reform, a reform that is necessarily total and revolutionary since the existing city is wholly wicked. □

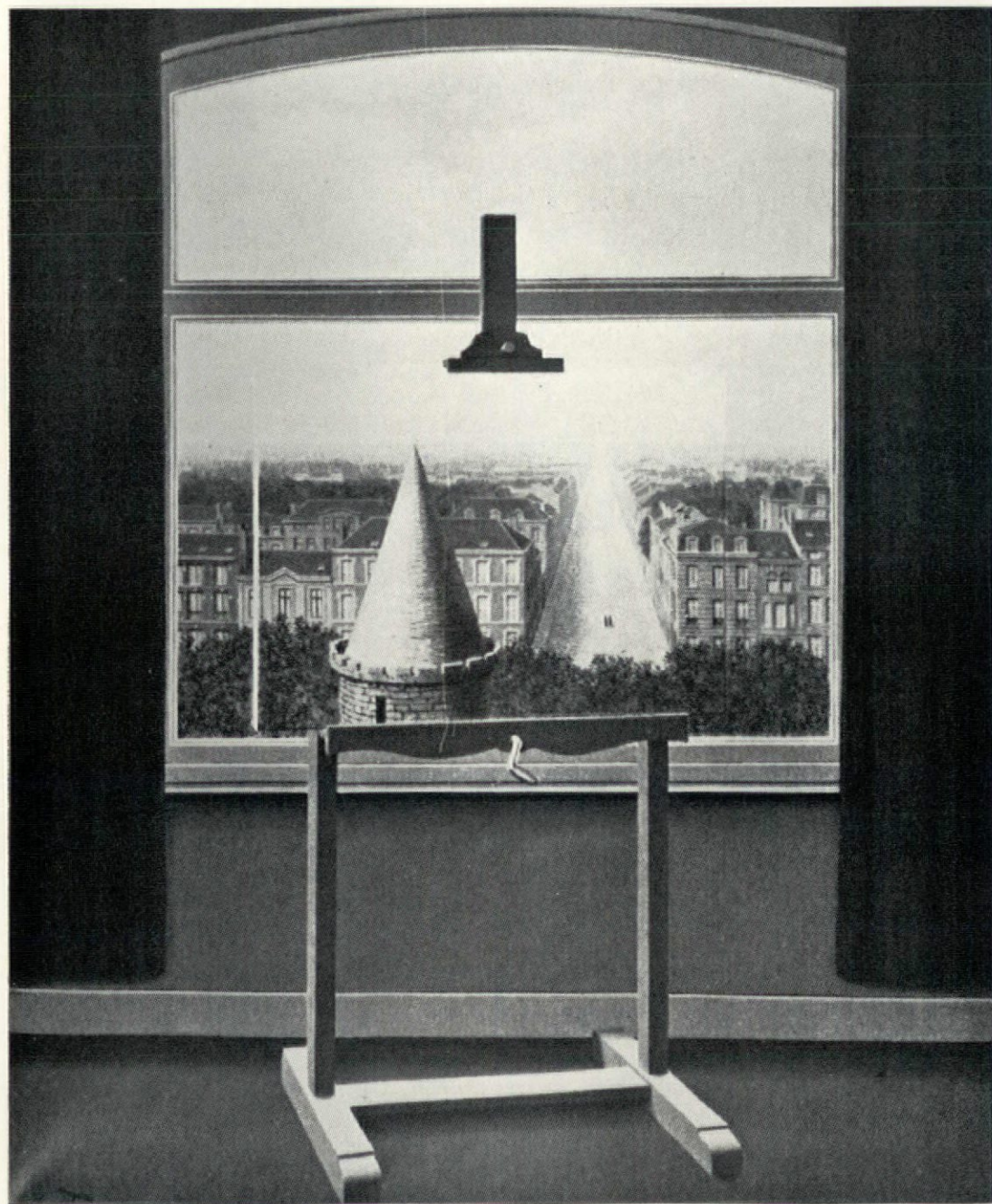
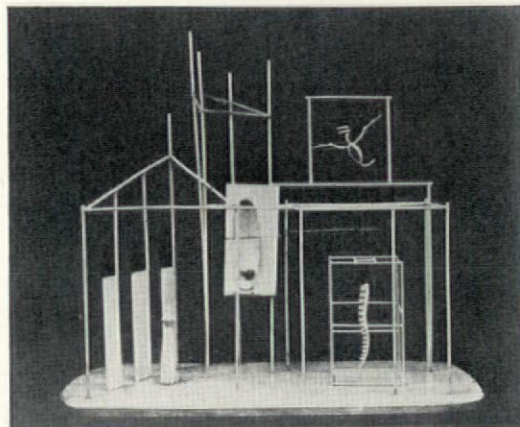
SURREALISM IN THE CITY

Anthony Earnshaw

(Right) Giacometti, *The palace at 4 a.m.* 1933

(Below) René Magritte 'Les Promenades d'Euclide'

Photo: Patrick Waldberg René Magritte Brussels 1965



The surrealist himself is virtually unemployable. Within an ace of being invisible, yet in a certain light the only visible one, he moves freely, stealthily, through the system of secret passages that crisscross his city.

Consider a large public building, perhaps the passenger concourse of a railway station. As people circulate, attending to their business, they move along functional but unmarked tracks—to the booking office, the bookstall, the toilets, the trains.

It is possible to outwit this purposeful world. One need only take a few paces to one side in order to enter into another mysterious facet of the same place, the domain of dark corners and neglect. There, sounds are subdued, people remote; one assumes the role of a sinister watcher, quite invisible to the world. The world is a playground, a setting for the Game, the Grand Conspiracy.

Reality is unreal; it is not what we are led to believe. On the contrary, it is a skilfully contrived piece of hoodwinkery, a sham perpetrated upon the Duped—those whom the Conspirators deliberately mislead.

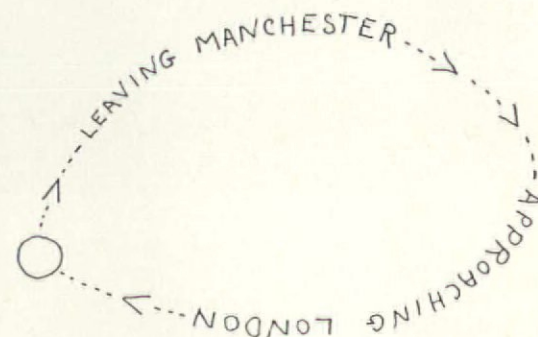
The nature of the conspiracy is inexplicable. Although by oblique reference it is variously and separately hinted that, for example, reality is an artwork that has got out of hand, with the Conspirators, boorish dilettanti, trying to botch up the mess, and that, the world is a farm, and we some kind of crop. (The Conspirators are husbandmen.)

Or again reality is a grand-scale Hollywood set. A potboiler horror-film is being put in the can for release to an unknown audience. While we, the actors, are living-out Tuesday, stagehands are at work preparing for our occupation of Wednesday.

History is a fabrication devised as part of the Conspiracy. The world began a short time ago—just before we were born.

The population of the world is small, no more than the sum total of the people we have seen at any one time. Furthermore, at least half of them are Conspirators.

Geography, too, is Conspiratorial sleight-of-hand. There is an ill-defined tract of land and a nebulous stretch of water—nothing more is necessary. There is but one city. If we, the Dupes, travel from what we think of as 'Manchester' to what we think of as 'London' . . . this is what happens . . .



Upon our arrival in 'London' the scene-shifters have made certain necessary changes to the make-shift urbscape. The Dupes are at all times marshalled and guided to where the action is taking place.

If, by some mismanagement, one of the Dupes

steps out of line, the whole structure of the grand deception is threatened with disaster. Only to glance over the shoulder at the wrong moment is sufficient. It may mean that beyond the far end of a Manchester sidestreet a glimpse of St Paul's Cathedral arrests the disbelieving eye.

For the surrealist, and for those who like myself have been enthralled by the spirit of surrealism, reality will always contain every possible and every impossible thing.

For the surrealist, knowledge of the possible is hard-won, filched from under the very nose of social inertia.

It is a standard Monday morning; the time seventeen minutes to nine. At this hour, can there be a place more unemployed, more remotely faint than a city park? Or, for that matter, The Palace at 4 a.m.?

Bereft of both purpose and content, they skulk, sided into a corner. A pencil-scribbled outline would be more solid, the faded past-times of yesterday more real.

Of course, it is not every city that boasts a Palace. On the other hand, most places have, tucked away in their centre, a Town Hall.



(Left) *The scene shifters*

(Below) *Boat moored in the sandpit at Stargard, Poland*

Photo: Projekt 1 1968



(Above) *Perspective of Marcel Brewer's curious proposal for building an 800 foot tower on Grand Central Station, New York*

Photo: Forum, July-August 1968

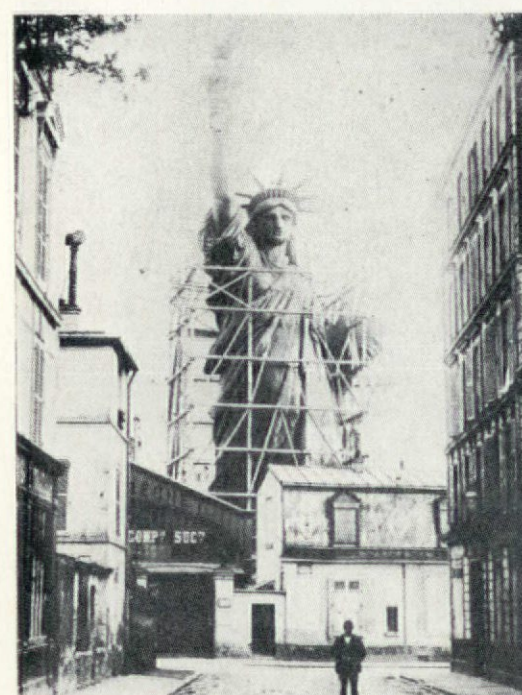
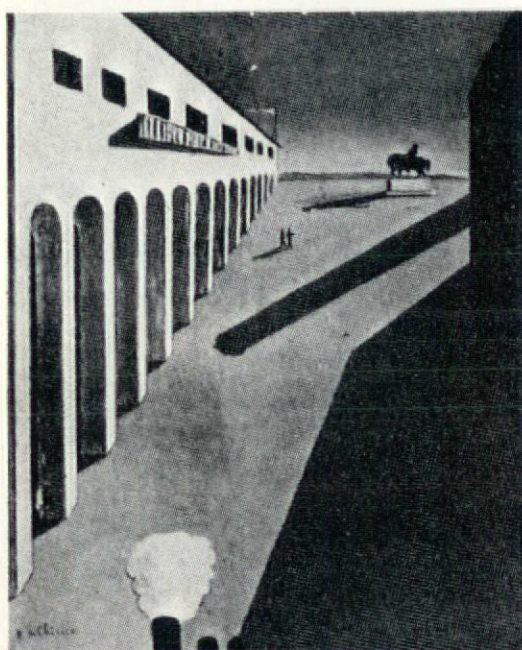
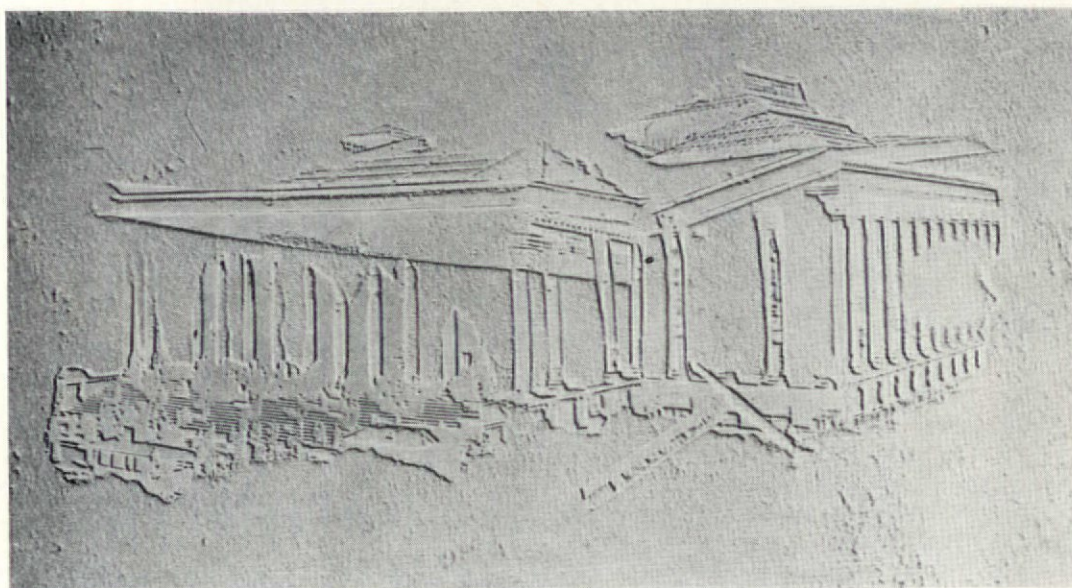
(Left) *William Marlow 'Capriccio: St Paul's and a Venetian canal'*

Photo: The Tate Gallery, London

(Right) Raoul Ubac; *Fossil of the Stock Exchange, Paris* 1937

(Below right) *Vision of St Pancras Hotel from Pentonville Road* by John O'Connor, 1881
Photo: The London Museum

(Below) G. de Chirico, *La partenza del poeta*, 1914
Photo: Massino Carrà *Metafisica* 1968



Trial erection of the Statue of Liberty at the end of the rue Alfred de Viguy, Paris

Photo: Collection Sirot

The surrealist is for ever *on strike* against the heavy burden of the world. Adamant in his opposition to the concept of reassurance and the comforts of aestheticism, he remains in charge of those shifting territories best known to himself.

Like the evidence he gathers—the few artefacts, charts, postcards from an unusual resort—and for which he alone is responsible, the surrealist is unclassifiable. He is the instigator of folly, and the guardian of trophies snatched from a dangerous enemy.

The concept of something which does not belong anywhere is fraught with terror. That 'something' would terrorize the world, the ultimate Medusa, a rent in the fabric of reality, of utility only to the forearmed as a doorway into Elsewhere and the fulfilment of the promise of humanist spirituality.

For the surrealist, art is only meaningful if it extends the frontiers of experience.

Cast-off and rejected material, industrial bric-a-brac, forgotten things, incomprehensible fragments found on derelict land—such unemployables hover in the interstices of reality, marking time, awaiting the spiritual perusal that will restore their validity.

For André Breton and his companions,

Paris was a woman. It follows that *my home-city* is a slattern. . . .

There can be no surrealist city. Such a place would be an inescapable labyrinth through which the citizenry could pass in valedictory parade once only. Thereafter they would be compelled to change it entirely.

It was in the late nineteen-forties that, enamoured of surrealism, I came to see my home-city—Leeds—in a new light. Restless, and not knowing what to do, I spent my Saturday evenings walking. . . . seeking, I suppose, some avenue of astonishment. (Occasionally I was in the company of another, but most frequently alone.)

These walks were in fact elaborate games. From some arbitrary starting-point, I would walk to the other side of town using, as far as possible, only backstreets and side-roads—secret passageways of yet another species.

Again, other evenings were spent tram-riding. I boarded and alighted from trams at random for two or three hours. It was my custom to carry a book to read on these swaying, nocturnal journeys.

It was only later that I learnt that the (actual) surrealists had engaged in very similar activities in Paris in the 1920's. □

DORE'S LONDON

Arcadia, for the Romantic imagination, must be peopled with criminals and hints of terror rather than with shepherd girls and the promise of innocent recreation, and for many of the great (and lesser) French Romantic artists of the nineteenth century—Géricault, Henry Monnier, Eugène Lami, Gavarni, Constantin Guys and Gustave Doré among them—the streets of London constituted a more sophisticated alternative to the Roman campagna with its picturesque bandits or the pashas and exotic tortures of the East. The sinister aspects of life in Paris were explored by countless writers, but it was the abject misery of London that specially impressed most of the French authors and artists who visited it—misery which they saw wherever they looked, and then pursued with insatiable fascination. This approach distinguishes their work from the more casual and detached curiosity of natives such as Hogarth, the pioneer in this field, or even Cruikshank, their contemporary, whom they much admired.

The historian who examines the illustrations of these Frenchmen in the hope of finding some overall picture of mid-century London is at once faced with serious difficulties: a thousand details will convince him of the essential accuracy of what has been recorded, and yet the principal feature that seems to characterize what was then the greatest commercial centre of the world is one that we associate largely with rural, and essentially feudal, communities: the rigid juxtaposition of extreme wealth and crippling poverty, with none of the intervening stages which even then must have been the lot of most of the city's inhabitants.

The London of the Romantics was a city of black and white in every sense of the term: it was recorded in etchings and wood engravings rather than in paintings, and it portrayed a universe of Manichean extremes with few transitions between a box at Covent Garden and starvation in a doss house. It is worth remembering that both Gavarni and Doré delighted in the contrasts between their frequent excursions into the life of the court and society and their expeditions into the East End.

To turn the pages of Doré's *London* is, even now, to conjure up for oneself the most inflammatory of revolutionary situations. Yet, for all the alarms, there was no revolution in nineteenth-century London while there were

plenty in Paris. Despite the terrible truths that are illustrated in these pages, truths that are familiar to us from so many sources from Blake to Morris, it is hard not to feel that artists from elsewhere tended to project onto the English capital many of their fears about life at home. Gavarni was in London when he heard, with the most profound distaste, of the upheavals of 1848—'Ah! vous prenez la populace pour le peuple! . . . C'est parce que je suis du peuple que je hais la populace . . .'; meanwhile Doré, who had just come to Paris for the first time, watched those upheavals with growing alarm. Later, as we will see, he was to complete his drawings of London after having been a horrified witness of the Commune from the vantage point of Versailles. The London revealed by these men was all too real, but it had about it also many of the properties of a myth.

It is tempting to look back with hindsight and see Doré's entire earlier life as a prelude for the elaboration of this myth: for it is he who has given it its most powerful embodiment. He was born in Strasbourg in 1832, the son of an engineer, but almost the only records that have come down to us about his father (who died in 1848) concern his disapproval of art as a career. Doré's mother, on the other hand, remained by far the most important figure in his life until her death in 1881—a shock from which he never recovered and survived by less than two years. 'Since I was born I had never ceased to live at the side of that tenderest, most devoted, and generous of mothers,' he wrote in reply to a letter of sympathy, and we learn from a friend that when he was well into his forties she 'followed every footstep of the illustrious son (as much a boy to her then as when he tripped home daily from the Lycée Charlemagne) . . .'. The brooding, Rembrandtesque portraits that he made of her are (to judge from photographs) his only real masterpieces in oils. His early biographers made discreet and mysterious references to forlorn passions and broken engagements, but there is much in his work and reported comments to suggest that he never felt at ease in the society of women or was ever seriously attracted by them. Everyone commented on his boyishness—Gautier described him as 'un gamin de génie'—and his moods tended to alternate with great suddenness from wild gaiety to nervous melancholia.

Almost immediately after his arrival in Paris he began to make a name for himself as

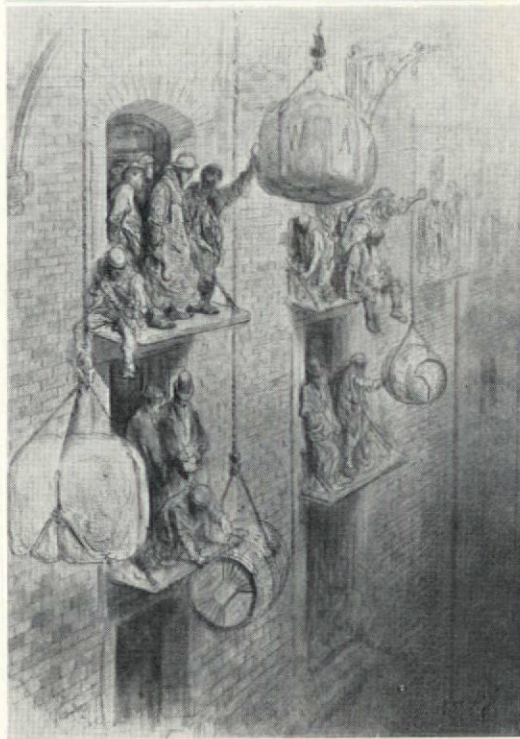
an illustrator for the popular magazines, and his first published book—a series of burlesque *Labours of Hercules*—appeared when he was 15. In this one can trace the influences of Daumier, Grandville and other popular artists of the day, and the first, unsteady, indications of that macabre fantasy which never left him. Doré was among the most prolific artists who have ever lived, and though the estimate of 40,000 drawings in fifteen years must be an exaggeration, even the contemporaries of Dumas and Balzac were amazed by his output. He was at one time considered to be the richest artist in France, and though he was by nature extravagant, it is obvious that work became an obsession for him, a means of evading loneliness and fears. 'The life of Gustave Doré was, on the whole, a very happy one; for his day-dreams never ceased, and he never lost the power of working them out, until he lay cold in death,' with this revealing phrase his closest friend began his biography: but those dreams were often nightmares. The list of volumes that he illustrated with such phenomenal success reads like some introductory course to the Great Masterpieces of the World: Balzac, Rabelais, Dante, Cervantes, Milton, La Fontaine, Ariosto, Tennyson, the Bible, and 'My Shakespeare! My Shakespeare!' he cried on his death-bed. 'I must get up quickly to finish it!' These were the peaks, but there were innumerable others. His imaginative fertility was prodigious, and though there is a close family resemblance between his treatment of the characters and episodes in all these dissimilar works he rarely repeated himself. But contemporary critics noted, often with disapproval, the grotesque pessimism that runs through them all. 'He was a caricaturist who seldom raised a laugh. Indescribable grimness and hardness appear in his comic drawings.' His essential timidity and childishness emerge in the enormous size of the figures he loved to draw. Again and again (and not merely when the story demanded it), they tower above us, gaunt, thin and ragged, like tramps who have terrified a little boy who has got lost on his way home from school. And often even they are dwarfed by the giant coiling serpents which seem to have haunted his imagination, so that even the roots and branches of his trees writhe and twist like claws ready to clutch at the unwary passer-by. For all his deficiencies as a draughtsman he was able to invest the standard imagery of Romanticism with the obsessive power generated by deeply felt personal fears.

The principal books illustrated by Doré have little in common beyond their 'sublimity', and, like the traditional clown who yearns to play Hamlet (or like that truly great artist and contemporary Daumier), he was dissatisfied with being an illustrator and caricaturist and wished to achieve immortality as a painter and sculptor. For all their obtuseness—and often for the wrong reasons—the French critics were able to recognize that he had no genius and little talent in these fields (though one of them compared him favourably to Michelangelo), and like other French failures he came to London where he enjoyed an overwhelming success—as is testified by a



*Le pauvre - dans le refuge
2. Le pauvre -
dans le lavoir*

1 Sketch by Doré of a poorhouse bath.



2 Warehousing in the city

Photo: V and A, London

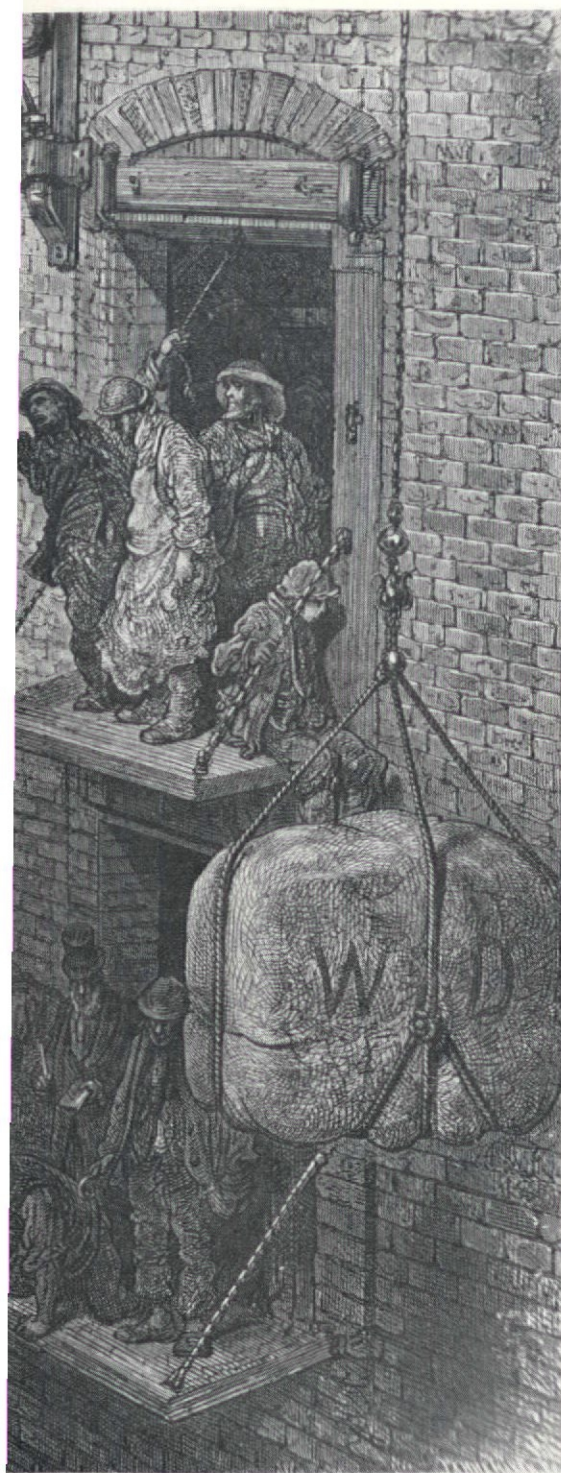
specially constituted Doré gallery to show his works. In second-hand bookshops one can still often come across hefty volumes of insensitive wood engravings after his would-be religious masterpieces: they are interesting only as testimonies to his unsuccessful longings to escape from a world of grovelling humanity to austere regions of colourless dignity.

'The work on London, which was the joint production of Gustave Doré and the present writer, was undertaken at the suggestion of the latter, when the artist was staying with him in Jermyn Street, and was busy establishing his gallery of paintings in Bond Street. The idea as described to Doré, was of far greater importance than that which was realized.' Thus the journalist Blanchard Jerrold begins his account of the joint venture, which seems



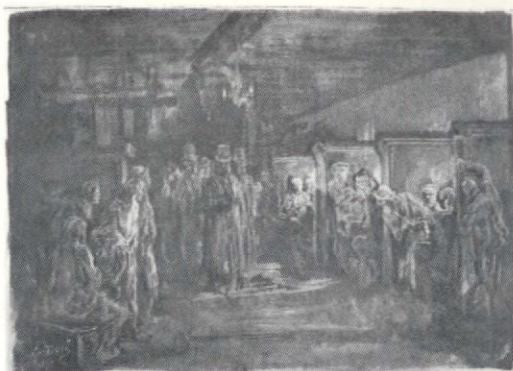
3 Warehousing in the city

to have been planned in the middle of 1868. In his biography of the artist Jerrold published the original outline of the intended volume, and it is very revealing of Doré's mentality to compare this with the book that eventually appeared. It was to have been a real encyclopaedia, including not only commercial statistics but also details of life in the city, the great shops and banks, the press, parliament and clergy, as well as excursions to Hampstead, Richmond and the residential suburbs. But from the first it was intended to differ from the ordinary run of books on a famous capital by concentrating on daily life rather than on monuments or cultural activities. Westminster Hall and Westminster Abbey are almost the only significant buildings singled out for treatment: there is no mention of the National Gallery or any other museum. And even in



outline the emphasis was strongly polarized between the very rich and, especially, the very poor. Out of 43 chapters ten were to cover 'La Saison à Londres' and related activities, while eighteen were to be devoted to 'Les Travailleurs de Londres; et les pauvres' and 'Comment vivent, et sont secouries ceux qui ne peuvent pas travailler. Les Charités de Londres: les Soup-kitchens, Refuges, Orphelinats, etc. Ceux qui ne veulent pas travailler. Les mendicants, voleurs: leurs garnis, thieves' kitchens, etc.'

It was characteristically with these 'eccentric quarters' (to use Jerrold's words) that Doré began, visiting Whitechapel, the docks, the night refuges, the opium dens; and accompanied by two policemen in plain clothes. In his published biography Jerrold points out repeatedly how 'bewildered and horrified'



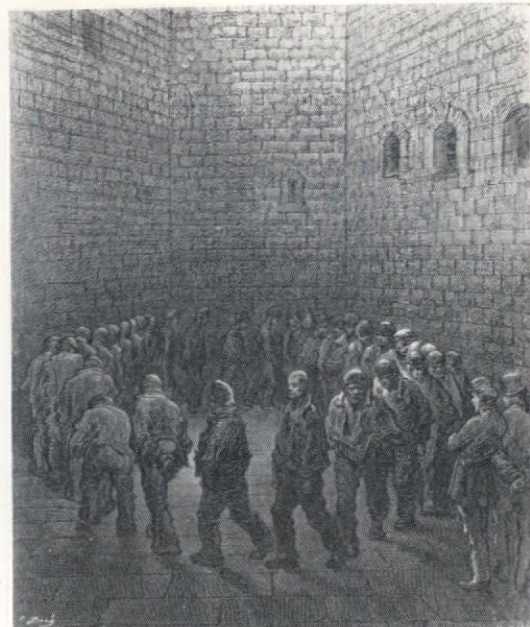
4 Sketch for 'Whitechapel and thereabouts', heading to Chapter XVIII

Photo: Hermitage, Leningrad

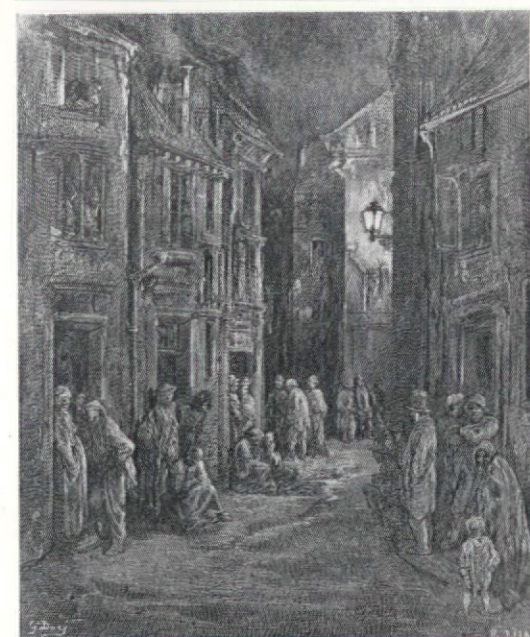


5 'Whitechapel and thereabouts'

Doré was by what he saw in the more gruesome slums; but William Michael Rossetti, in private notes made at the time, recorded merely that 'Sala has been escorting Doré through the *mauvais lieux* of London: Doré was much pleased with the squalid cellarshops in the Seven Dials district. He is an agreeable companion—the reverse of mealy-mouthed.' (*Rossetti Papers*, p. 319). Was it fear or a sense of intrusion that prevented him from making drawings on the spot? Whatever the cause, he only made the briefest of shorthand notes **1**, hiding his little book whenever a stranger appeared. He and Jerrold described themselves as 'pilgrims', and the word must serve to sum up an obsessed, but distant, fascination with the life around them—for it was a fascination that involved no contact, no conversation except with the escorting policemen, though doubtless matters were very different when, with paradoxically far less success, he recorded the gay garden parties at Holland House or the audiences at Covent Garden, in whose company he loved to bask. His method of work meant that he had to complete his drawings and turn them into finished compositions back in his studio, relying on his memory, which—as critics pointed out—was sometimes at fault: more important was the fact that his imagination had time to intensify his first impressions made on the spot, and the process could be carried still further when the drawings were being prepared for the block. Miss Millicent Rose (*Gustave Doré*, London 1946) has acutely pointed out how much more precarious are the positions of the men (and cataclysmic the general effect) in the published version of *Warehousing in the City* than in the drawing he made of the scene **2, 3**. Similarly, the lowering of the ceiling, and even the absence of the flaring gaslight, makes the illustration which



6 'Newgate, exercise yard'



7 Bluegate fields

heralds the chapter on Whitechapel even more oppressive than the original gouache **4, 5**. Though the drawings of some of his figures owes a good deal to those of the vastly superior Gavarni, what distinguishes Doré's treatment of London squalor lies just in this feeling of the oppressive. Gavarni's beggars live in a vacuum, but towering brick walls bear relentlessly down on the poor recorded by Doré—even the rich rarely see the sky because of the giant trees in their gardens—and he put this feeling to frightening effect in the most famous image that he ever produced, *Newgate Exercise Yard*, which was transformed by Van Gogh, in a mood of pessimism, in to a terrible symbol of the human condition as a whole **6**. In his illustrations of the masterpieces of earlier literature it was the phenomena of nature—craggy mountains, dark forests black storm clouds—that threatened man; in the *London* the identical sensation of terror is induced by rickety tenement houses, foggy alleys and smoky chimneys **7**—the title 'der industrialisierte Romantiker' given to him recently by a German writer (Konrad Farner,



8 Ludgate Hill

Gustave Doré, Dresden 1963), is an appropriate one. How closely fantasy and reality were related in his mind can be seen by the conspicuous similarities between *Ludgate Hill* (can it ever have been quite as crowded as this?) and a rather later drawing for the *Orlando Furioso* 8, 9.

Work on the *London* extended over a period of four years, and it is particularly sad that we do not know the exact stages of its development, because during the course of these years Doré underwent a traumatic experience. In 1870 he was on a visit to Paris when his return to London was prevented by the outbreak of war. He endured the siege ('I have witnessed many dramas and episodes of ruin, in which, despite the gloom of the theme, you would, I think, be interested. I could furnish you with many vivid scenes and descriptions to which you could add the colouring of romance . . .') and fled to Versailles—where he showed his infinite contempt for the politicians in a series of caricatures which were only published after his death—at the time of the Commune ('In

the whole history of the world, I don't think there is a parallel instance of so sanguinary a drama, and of such ruin.'). The poor, whose fortunes in London had so 'bewildered and horrified' or 'pleased' him (depending on whose evidence one chooses to rely), had shown that they could rise and occupy a great capital, and when in July 1871 he reluctantly resumed work on the drawings, Jerrold remarked the change that had come over him. 'His sensitiveness was now morbid . . . he was in a state of profound dejection, from which we could, with difficulty, rouse him at intervals.' His biographer reports one revealing episode. When they were presented to 'the strongest woman in Shadwell', 'That is not a type,' I said to Doré, as we turned away, 'but a monster.' 'She is the ideal of ferocious animalism—a hideous excrescence of civilization. The latent brute beast in humanity has burst out into this hideous spectacle. Yes, she is a type—of the wild human animal.' His general fears of women are here surely combined with memories of the *pétroleuses*—those

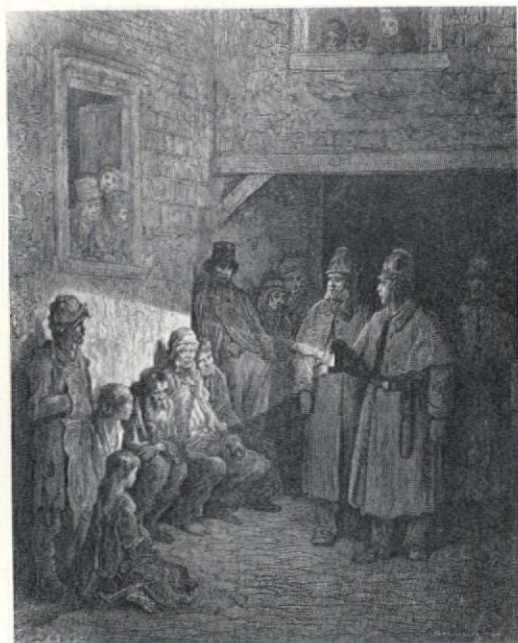


9 Illustration for *Orlando Furioso*, V, 82—Rinaldo se ne va tra gente, e gente

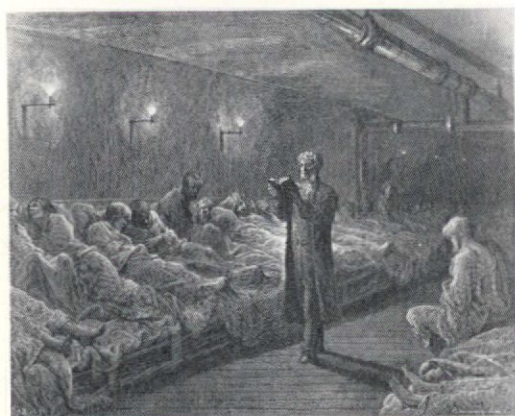
devilish termagants, much in the minds of the Versailles, who had deliberately set fire to bourgeois property. . . .

Yet though our inability to date the drawings precisely makes it impossible to say which of them were influenced by such fears, it is noticeable that Doré's poor are not usually threatening—except in so far as there are too many of them. On the contrary, they are so abject, so cringing, that one is tempted to feel that (desperate though we know their conditions to have been in reality) Doré has, so to speak, taken his revenge on them ¹⁰. Can the wretched ever have been quite so subdued as those that listen to the *Scripture Reader in a Night Refuge* ¹¹?—surely, to modern eyes, the most terrifying of all his terrifying images, and terrifying, like so many of the others, just because of the docility with which men are shown to face intolerable conditions. Here, indeed, are outcasts who know their place—and, in these circumstances, it is perfectly possible to sympathize with them, for there is no reason whatsoever to doubt his natural benevolence. One scene above all preoccupied him so much that 'he never appeared to tire of it', and recorded it in drawings, prints and paintings: a group of ragged women and children huddled together at midnight on London Bridge. In his drawings of this (though not in the illustration to his book) he placed above them a protective angel ¹². But this was the only comforting thought that he allowed himself.

The *London* began to appear in parts in January 1872, and it was published as a book later in that year. Doré worked on its final stages with increasing distaste—he was partly concerned that it would prejudice the public against his paintings—and there were



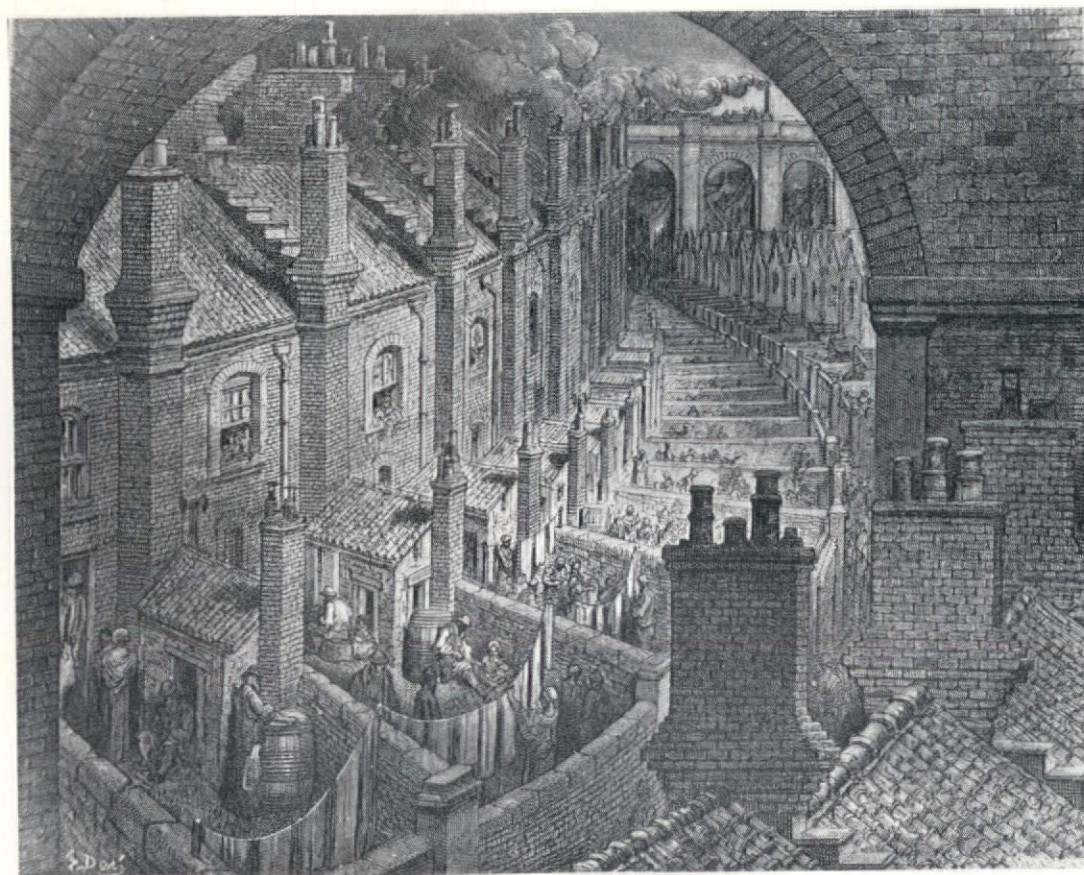
10 The Bull's Eye



11 Scripture reader in a night refuge



12 Sketch for outcasts at London Bridge



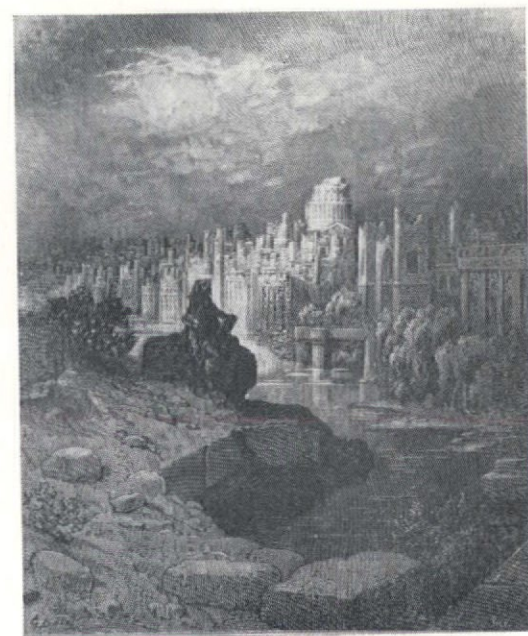
13 Over London by rail

so that they have now been dispersed.

repeated difficulties with the blockmakers and publishers. It was because of this that only twenty-one out of the projected forty-three chapters were written and that the more balanced picture of the city as a whole which had been intended was so seriously distorted. Even the climate added to the element of melodrama inherent in the treatment: while the sun never fails to shine on the rich, the East End is always seen by night or in the fog.

Gavarni had lost popularity because of his concentration on the seamy side of London, but Doré's work was well received, though there were criticisms of inaccuracies in the boat-race drawings and he was reproached for his failure to distinguish between the physiognomies of the English and the French. Yet he failed to sell the original set of drawings (for which, incidentally, he asked a £1,000), and eventually he gave them away to his friends

Jerrold's intolerably turgid prose, while acknowledging a debt to Dickens and to pioneers such as Knight and Mayhew, constantly stressed the accuracy and modernity of Doré's outlook, and it is certainly true that the magnificently powerful *London* projected by him will continue to haunt the imagination long after the last of the slums has vanished—meanwhile a train journey out of Liverpool Street is sufficient to demonstrate how vividly he has caught the essence of this grim district 13; though his scenes from high life contain none of the nostalgia or graceful charm of those by Lami or Gavarni, for his make-up lacked any trace of aristocratic sensitivity. But for all the horrible reality behind it, the vision is still that of the Romantics, who first 'discovered' London much earlier in the century. Nothing is more indicative of the doom-laden atmosphere which pervades the whole book than the eagerness with which Jerrold and Doré have seized on Macaulay's colourful aside on the Catholic Church—'And she may still exist in undiminished vigour when some traveller from New Zealand shall, in the midst of a vast solitude, take his stand on a broken arch of London Bridge to sketch the ruins of St Paul's'—and transformed it into an image worthy of Piranesi—or John Martin 14. The intense particularity of observation, the concentration on 'types', the eye that is so ready to be amazed or horrified—all these were soon to give way to an entirely new interpretation of life in a great town. Already the Impressionists were at work, recording, with careful neutrality, the anonymous bustle; soon Seurat would investigate the melancholy silence of the suburbs. Doré was terrified by crowds; a new generation was to shudder at isolation. □



14 The New Zealander



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.

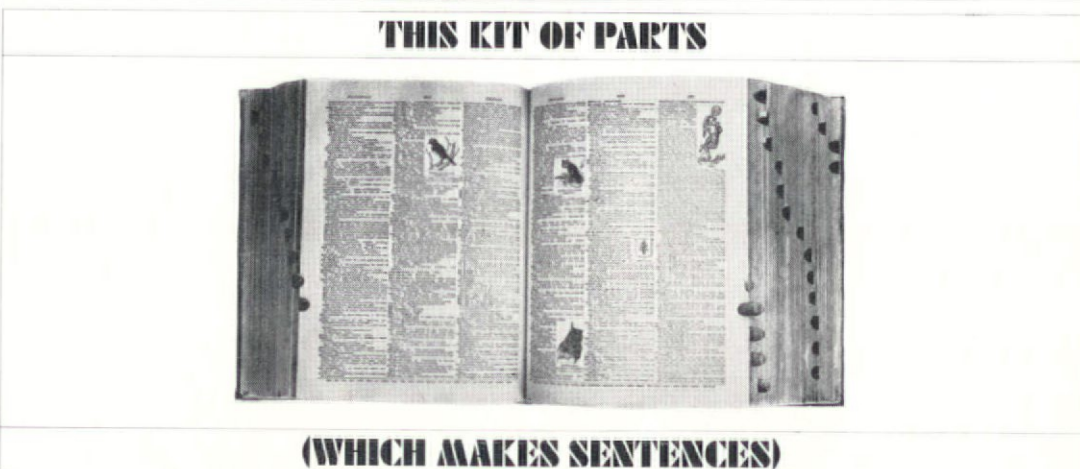
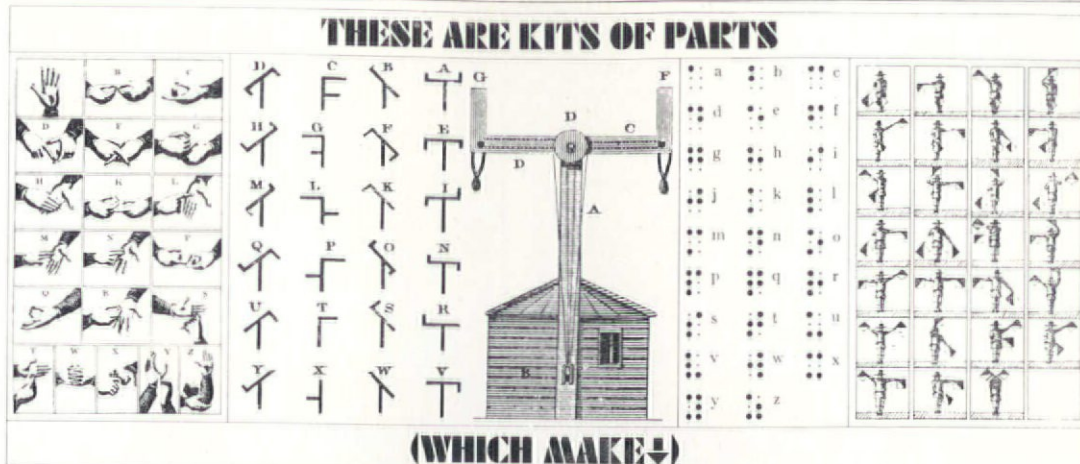
**a Leonard
thermostatic
shower**

SYSTEMS GENERATING SYSTEMS

Christopher Alexander

1. There are two ideas hidden in the word system: the idea of a *system as a whole* and the idea of a *generating system*.
2. A *system as a whole* is not an object but a way of looking at an object. It focuses on some holistic property which can only be understood as a product of interaction among parts.
3. A *generating system* is not a view of a single thing. It is a kit of parts, with rules about the way these parts may be combined.
4. Almost every 'system as a whole' is generated by a 'generating system.' If we wish to make things which function as 'wholes' we shall have to invent generating systems to create them.

In a properly functioning building, the building and the people in it, together form a whole: a social, human whole. The building systems which have so far been created do not in this sense generate wholes at all.



1. *There are two ideas hidden in the word system: the idea of a system as a whole and the idea of a generating system.*

The word system, like any technical word borrowed from common use, has many meanings and is imprecise. This lack of precision in a technical word might seem dangerous at first; in fact it is often helpful. It allows new ideas to flourish while still vague, it allows connections between these ideas to be explored, and it allows the ideas to be extended, instead of having them cut short by premature definition and precision.

The word 'system' is just such a word. It still has many meanings hidden in it. Among these meanings there are two central ones: the idea of a *system as a whole*, and the idea of a *generating system*.

These two views, though superficially similar, are logically quite different. In the

first case the word 'system' refers to a particular holistic view of a single thing. In the second case, the word 'system' does not refer to a single thing at all, but to a kit of parts and combinatory rules capable of generating many things.

2. *A system as a whole is not an object but a way of looking at an object. It focuses on some holistic phenomenon which can only be understood as a product of interaction among parts.*

Let us consider some examples of holistic phenomena which need to be viewed as systems.

The great depression is an obvious example of a holistic phenomenon. We cannot understand the depression, except as a result of interaction among rates of consumption, capital investment and savings: the interactions can be specified in the form of equations: if we

follow these equations through to their conclusion, we see that under certain conditions they must always lead to a depression.

The stability of a candle flame is another example of a holistic phenomenon. Why does it maintain approximately the same size and shape throughout its flickering? In this case, the 'parts' are flows of vapourized wax, oxygen, and burnt gases—the processes of combustion and diffusion give the interaction between these flows—and these interactions show us at what size and shape the flame will be approximately stable.

The strength of a rope is another example of a holistic property. This strength is a result of interaction among the individual strands, caused by the twisting of the rope: untwisted, the rope's strength is governed by the weakest strand; twisted, the strands act together and increase their strength.

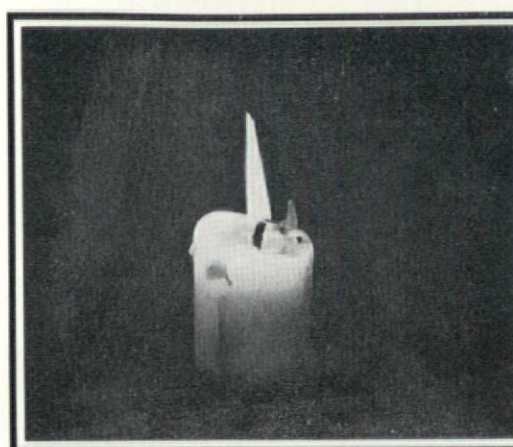
Another example of a holistic property, is the relation between input and output in any computer. In the toy computer called Thinka-dot, a ball dropped into one of three holes, comes out on one of two sides. The output side is not determined by the input hole, but by the input hole and the internal state of the machine, which is itself determined by the sequence of past inputs. In order to understand this behaviour, we must understand the machine as a whole, considering the past inputs and the internal states, as parts, and the way that different sequences of inputs and internal states create specific new internal states and outputs as interactions.

Another kind of holistic behaviour is that instability which occurs in objects that are very vulnerable to a change in one part: when one part changes, the other parts change also. We see this in the case of erosion: cutting down trees robs the soil of the roots which hold it together, so that wind and water can strip the soil of all remaining plants, and make a desert. We see it again in the death of the traditional farm: when the combine harvester replaced traditional harvesting, the entire balance of scale economies was destroyed, the little farms collapsed, and gave way to giant farms.

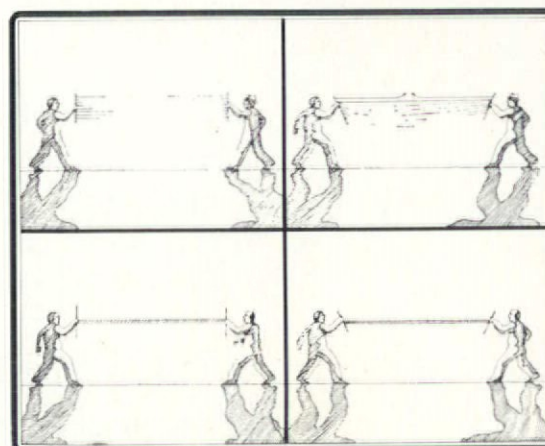
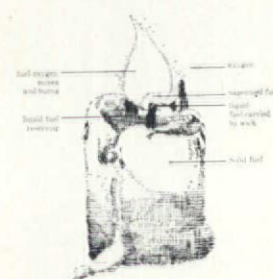
Let us summarize the content of these examples. In every case we are confronted with an object which displays some kind of behaviour which can only be understood as a product of interaction among parts within the object. We call this kind of behaviour, holistic behaviour.

The central point of the whole argument can be stated very simply. *The most important properties which anything can have are those properties that deal with its stability.* It is stability which gives a thing its essential character. The strength of an arch, the even burning of a flame, the growth of an animal, the balance of a forest ecology, the steady flow of a river, the economic security of a nation, the sanity of a human individual, the health of a society: these are all, in one way or another, concerned with stability.

Stability, no matter in which of its many forms, is a holistic property. It can only be understood as a product of interaction among



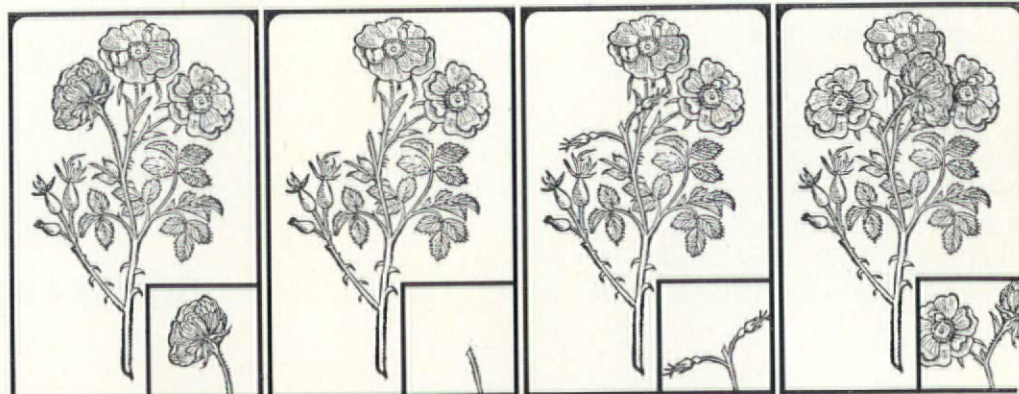
A candle flame maintains its steady size and shape because of the balance between the amounts of oxygen and fuel that are made available.



Twisting of the fibers makes them cooperate: Twisted, they act as a system.

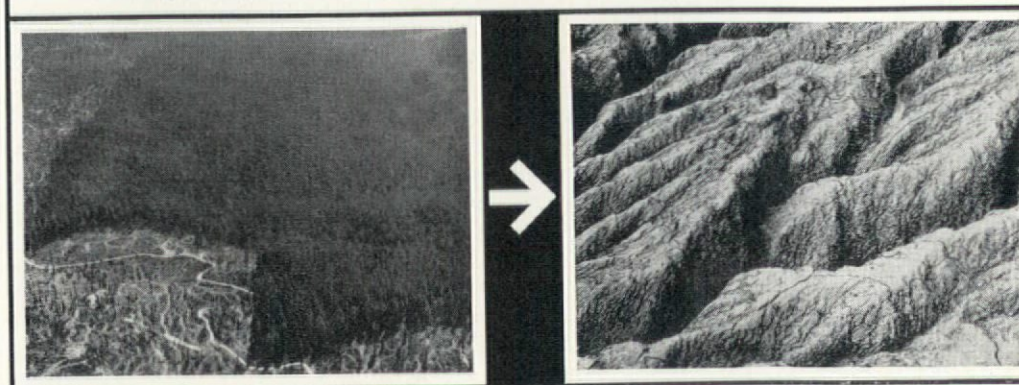


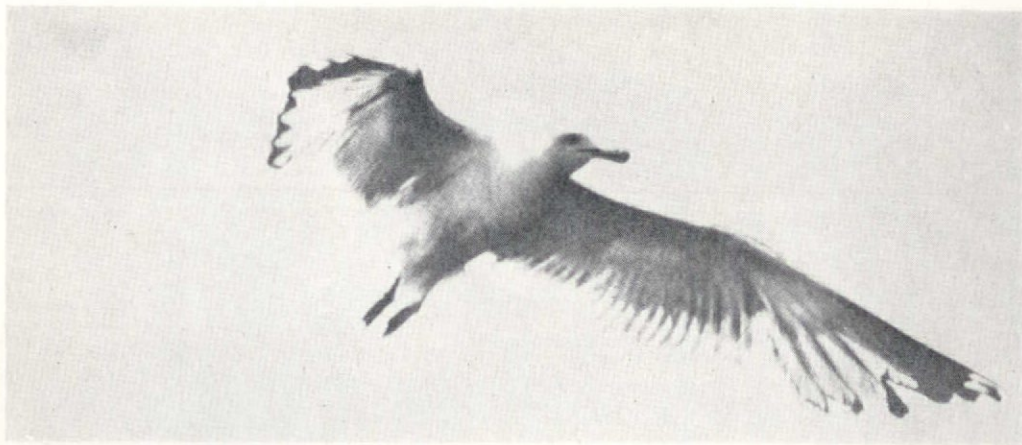
Some self-regulating systems, when they lose components, grow new components to maintain their equilibrium.



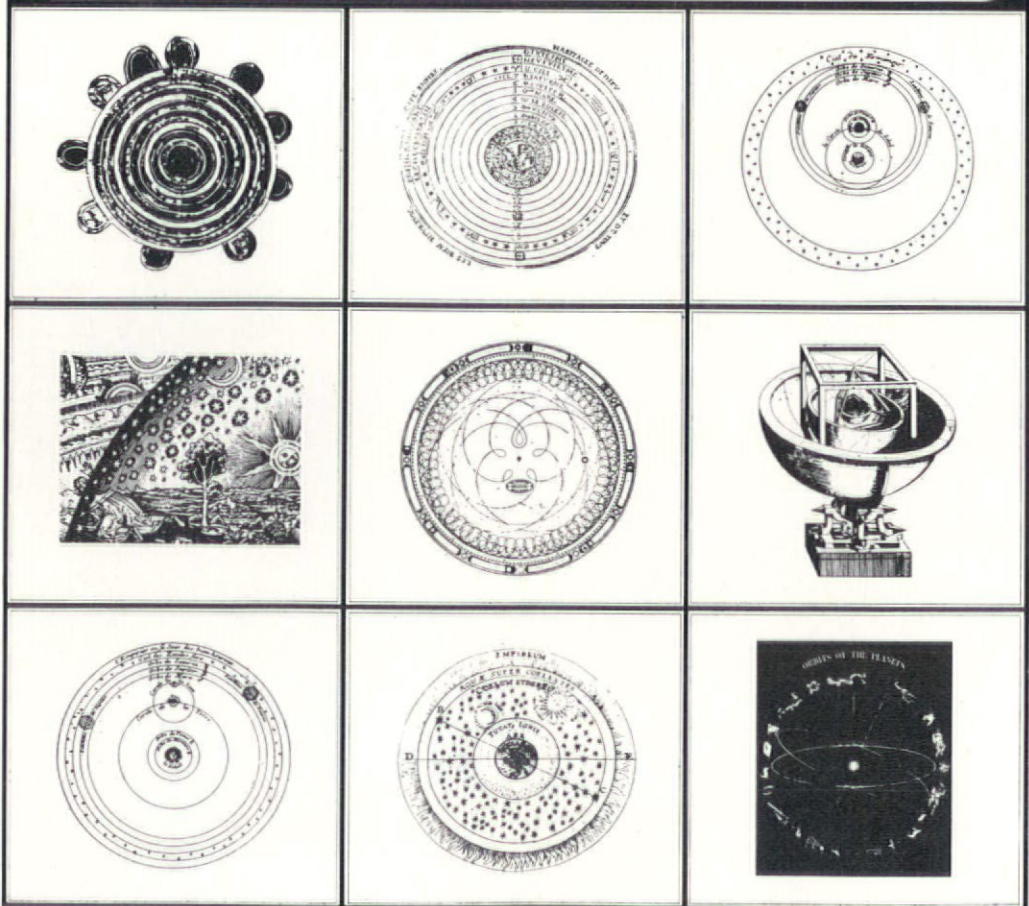
(a self-regulating system is a self-regulating system is a self-regulating system)

Change one part of the system and the rest of the system changes with it.





The ways in which man has viewed the solar system have resulted in many ideas about its structure. A single set of objects may be thought of as a system in a number of different ways.



parts. The essential character of anything whatever, since it must at heart be based on some kind of stability, must be understood as a product of interactions within the whole. When we view a thing in such a way as to reveal its character in holistic terms, we speak of it as a system.

In order to speak of something as a system, we must be able to state clearly: (1) the holistic behaviour which we are focusing on; (2) the parts within the thing, and the interactions among these parts, which cause the holistic behaviour we have defined; (3) the way in which this interaction, among these parts, causes the holistic behaviour defined.

If we can do these three, it means we have an abstract working model of the holistic behaviour in the thing. In this case, we may properly call the thing a system. If we cannot do these three, we have no model, and it is meaningless to call the thing a system. The idea of a system is synonymous with the idea of an abstract model of some specific holistic behaviour. We may speak of the economic system in a country, because we can construct a system of equations which reproduce important holistic phenomena like depressions or inflation. If we couldn't do this, it would be meaningless to speak of economic systems.

We must not use the word system, then, to refer to an object. A system is an abstraction. It is not a special kind of thing, but a special way of looking at a thing. It is a way of focusing attention on some particular holistic behaviour in a thing, which can only be understood as a product of interaction among the parts. Everything under the sun may be viewed as a system: a man smoking a cigarette may be viewed as a system; so may a leaf drifting in the wind; so may a brick; so may mankind on earth. But it only becomes a system if we abstract from it some special holistic property, which we cannot explain except in terms of interactions within the whole. Without a specific statement of what holistic behaviour we have in mind, what interactions among what parts cause this behaviour, and how they do so, calling a thing a system is no more than saying: 'This is a pretty complicated thing, and I don't understand it very well.'

The idea that a system is an abstraction, needs emphasis. Think of a flower as a system. If we want to understand the fact that the flower buds, and swells, and blooms—that we must certainly do by looking at the flower as a system. In this case it is the interaction among the parts, which creates the behaviour of the whole. But the same flower, has other properties which are not helped at all by thinking of the flower as a system: if it is used as a projectile, then its trajectory cannot be explained as a result of interactions among its parts: and if it is given as a gift, there is nothing that the flower does, no matter how complex the situation, that needs to be understood as a result of interactions among the flower's parts. The idea of a system is helpful only in understanding kinds of behaviour which result from interactions among parts.

Furthermore, even though we call a thing a system when we try to view it as a whole, this

does not mean that we ever really view the thing in its entirety.

When we look at an airline from a systems point of view, we may focus on its scheduling—and we shall learn that because the airline only has a limited number of aircraft, the schedule of a flight from New York to Chicago turns out to be dependent on the schedule of another flight from Minneapolis to Salt Lake City. In this instance, we are looking at the airline 'as a whole', because we are looking at the interactions among parts, but we are not concerned with the last button on the last mechanic's cap. The notion of 'whole' refers only to the breadth of vision, not to the inclusion of detail: it is still abstract.

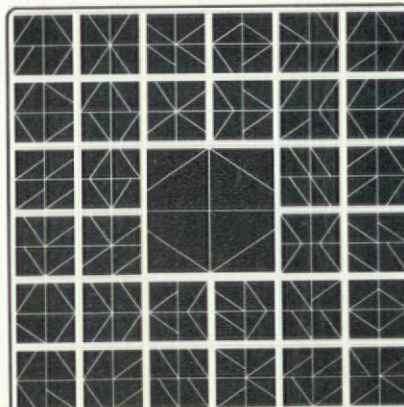
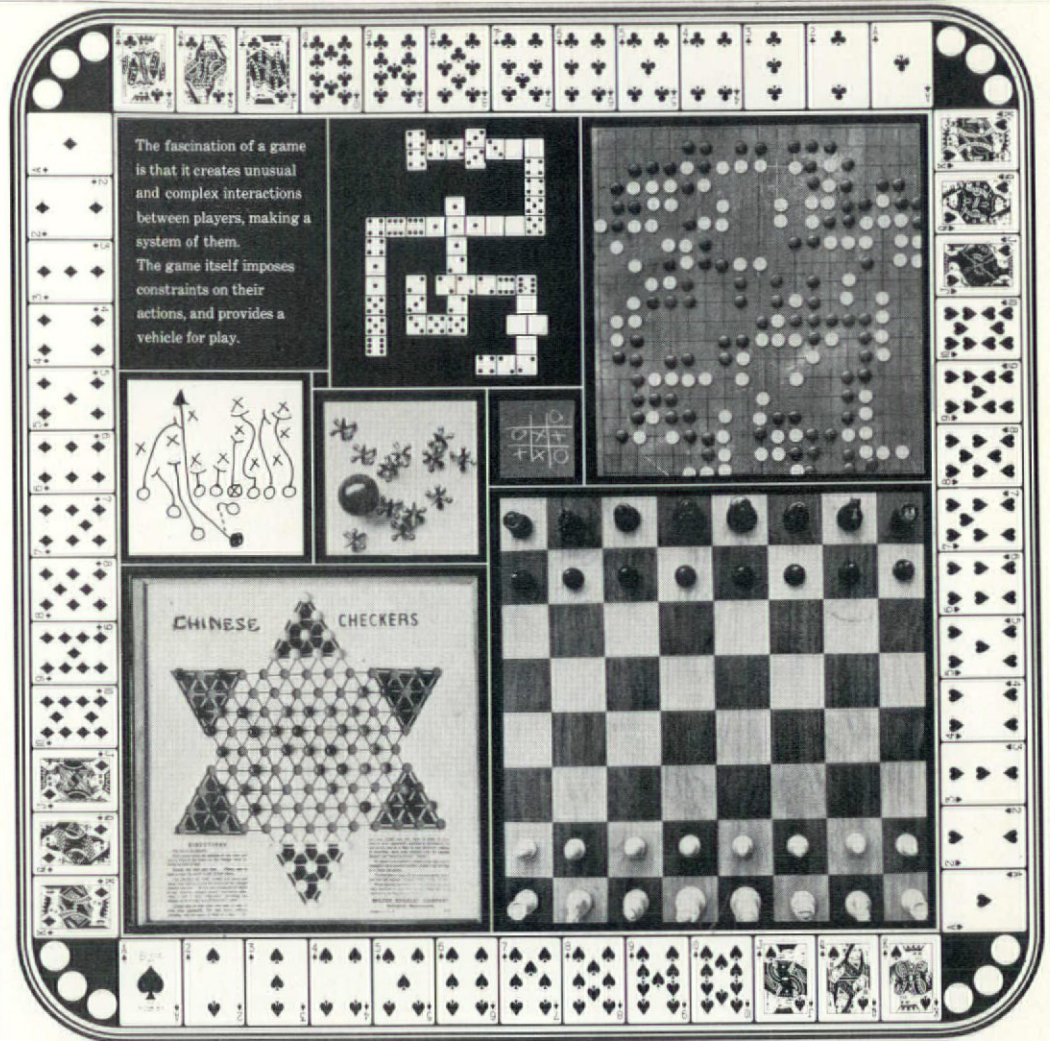
Most often common language obscures this very badly. When we speak of the solar system, or a hi-fi system, or an airline system or of a plumbing system, the words are used in such a way as to suggest that the 'system' is synonymous with the objects. But just occasionally the word is used correctly, even in common language. For instance, when we speak of the Ptolemaic system as opposed to the Copernican system, in each of the cases the word 'system' is used correctly: it refers to an abstract way of looking at the interaction among earth, planets, sun and stars—not to the objects themselves.

The discipline of abstraction has one drawback. Occasionally we are confronted with phenomena which are clearly the products of interactions—but the interactions are so complex that we cannot see them clearly, and we cannot make the effort of abstraction successfully. Take for instance, the baffling complexity of a seagull landing, or of an ecstatic, screaming, laughing girl. In these cases a too rigid insistence on the idea that a system is an abstract model, might easily lead us to abstract out some facile inessential system—at the cost of the wonder which is really there.

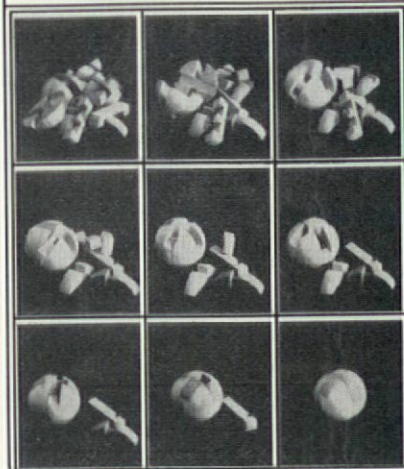
This is exactly what happens when a systems analyst looks at a building: he manages to describe the circulation, the acoustics, the heating and the load-bearing structure as systems—and fails to identify the most interesting human and social systems, because he can't describe them in explicit terms.

Thus there is a second lesson to be learned. The first lesson said: don't call a thing a system unless you can identify the abstract system you are talking about. The second lesson says: learn the first lesson, but don't let it railroad you into making facile abstractions.

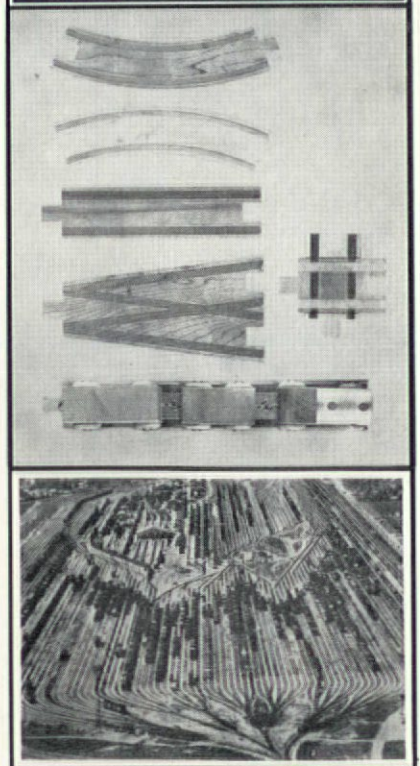
When we are confronted with a complex thing, we often begin with nothing more than a feeling or a 'sense' that it functions as a system. Driven by this feeling, we then try, painstakingly, to abstract out just that holistic behaviour which seems essential, and those interactions which cause the behaviour. This is an active process. It begins with feeling, and sensing, and only turns to thinking later. Start with some aspect of life so interwoven that you feel in your bones it must be a system, only you can't state it yet—and then, once you can feel it clearly, then try to pin the system down, by defining the holistic behaviour you are



Two Kits of Parts. (above) The rules of combination allow many arrangements of parts. (below) The rules of combination allow only one arrangement of parts.



A railroad switch-yard is (1) generated by a kit of parts which must be assembled according to a set of rules and (2) works as a system designed to make up and break down trains.





A self-regulating system maintains its equilibrium by making continual minor adjustments of its parts.

Every animal is generated by a set of chromosomes specific to that animal. Each chromosome is a linear arrangement of four bases (like a necklace which only uses four kinds of bead). The four bases are the same in every animal. The kits of parts formed by these four bases and their rules of combination indirectly generate every animal in existence.



discussing, and which interactions among which parts create it. But feel it clearly first, before you try to think it.

The systems point of view is not neutral. It will change your whole view of the world. It will lead you to realize that the most important characteristics of human individuals are products of their interactions with other people. It will lead you to realize that the life of nations—though these nations may seem self-sufficient—is produced by interactions in the whole world, and that they only get their strength from their position in this larger whole. It will lead you to see that the health of cities, is produced by interactions among interdependent parts, including houses, cafes, and theatres, yes, but also equally including slums and graveyards.

The system viewpoint is a modern, disciplined, version of the sense of wonder. It is that view of things which man takes when he becomes aware of oneness and wholeness in the world.

3. *A generating system is not a view of a single thing. It is a kit of parts, with rules about the way these parts may be combined.*

This is a different use of the word system from the first one. In colloquial English we often use the word system to mean 'a way to do something': that's what a betting system is; that's what the Montessori system is; that's what the democratic system is.

Each of these systems is, at heart, a system of rules. A betting system tells you how to place your bets, the Montessori system lays down rules to be followed by children and teachers in nursery school, the democratic system of government lays down certain rules about the nature of representation, the choice of representatives, and the conduct of elections. In all these cases, the rules are designed to generate things. A betting system supposedly generates winning bets, an educational system generates well educated pupils, the democratic system supposedly generates freedom and good government.

We may generalize the notion of a generative system. Such a system will usually consist of a kit of parts (or elements) together with rules for combining them to form allowable 'things'. The formal systems of mathematics are systems in this sense. The parts are numbers, variables, and signs like $+$ and $=$. The rules specify ways of combining these parts to form expressions, ways of forming expressions from other expressions, ways of forming true sentences from expressions, and ways of forming true sentences from other true sentences. The combinations of parts, generated by such a system, are the true sentences, hence theorems, of mathematics. Any combination of parts which is not formed according to the rules is either meaningless or false.

A generating system, in this sense, may have a very simple kit of parts, and very simple rules. Thus the system of triangles which may be put together to form a square, is a generating system. Its rules generate all the ways of putting these triangles together to form a square. It is typical of a system that the rules

rule out many combinations of the parts. Thus these triangles could be put together in an infinite variety of ways—but most of these ways are ruled out, because the outside perimeter is not a square, and this thing is not connected.

Another example of a generating system, is the system of language. Here we have rules at several different levels. At one level, the letters are the parts, and there are rules which govern the way that letters may be put together to form words. In English there could be no word beginning with Rx. The rules of phonology prohibit it. At another level, the words are themselves parts, and there are rules which govern the kinds of sentences which may be made from words.

Perhaps the most interesting and important generating system in the world, is the genetic system. Every animal in the animal kingdom is generated by a set of chromosomes specific to that animal. Each chromosome in turn is generated by four bases (like a necklace which uses only four kinds of bead). The four bases form a kit of parts which generates the chromosome. These chromosomes themselves provide the rules for building amino acids (another kit of parts), proteins from amino acids (another kit of parts), cells from proteins (another kit of parts) and then builds the animal from cells. The kit of parts formed by the four bases, and their rules of combination, indirectly generates every animal there is.

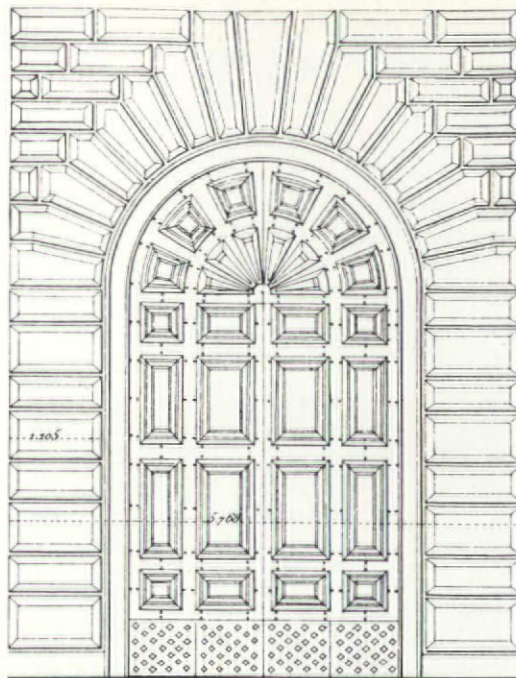
A building system is a generating system in this sense. It provides a kit of parts—columns, beams, panels, windows, doors—which must be put together according to certain rules.

4. Almost every 'system as a whole' is generated by a generating system. If we wish to make things which function as 'wholes' we shall have to invent generating systems to create them.

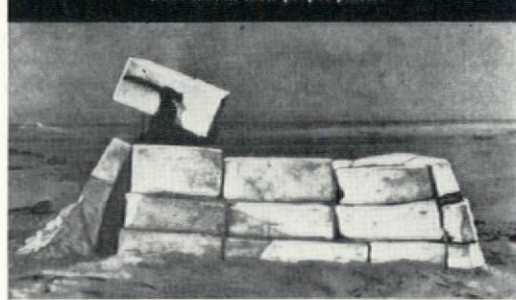
There is a relationship between the two ideas of system which have been defined. Almost every object with behaviour that depends on some 'system as a whole' within the object, is itself created by a generating system.

Take an obvious and simple case: a hi-fi system. Its purity of performance can only be understood as a product of the combined effect of all the various components, working as a whole. The same hi-fi system is also generated by a generating system: the kit of all the parts on the market, and the rules governing the electrical connections and impedance matching between these parts.

To take a more complicated case: the railroad switch-yard. It plainly functions as a whole. In order to understand it as a device for breaking up and making trains, we must focus on the sequence of switches, and on the fact that the length of track in front of the switches depends on the length of track behind the switches and on the length of trains. At the same time, the switch-yard is also plainly generated by a generating system. The pieces of track, switches, couplings, cars, together with the rules for putting them together, form a kit of parts which generates properly functioning switch-yards.



The system only stands as a whole when all the parts are there and in their proper places.



The most complicated case of all, and the clearest, is that of an animal. A landing seagull certainly needs to be seen as a system: so does almost everything else that seagulls do. At the same time, this seagull is created by a generating system: the genetic system. An animal is *both* something which needs to be seen holistically, and generated by a generating system.

The relationship between holistic systems and generating systems is easy to understand. If an object has some holistic property caused by interaction among parts—then it is clear that these particular parts and these particular interactions, will only come into being if the parts have very constrained relationships to one another. The object then, must be generated by some process which assembles parts according to certain constraints, chosen to ensure the proper interaction of these parts, when the system operates. This is exactly what a generating system is.

The generating system need not be con-

scious (as in the case of the switch-yard), nor even always explicit (as in the genetic case). Sometimes the processes which make up the generating systems are integral with the object being formed—thus the candle flame is generated by chemical processes which are the same as those processes which then maintain the system's equilibrium and make up the interacting parts, when we view the flame as a holistic system.

It is true then, that almost every 'system as a whole' is generated by a generating system. This axiom contains a remarkable lesson for designers. Man as a designer is concerned with the design and construction of objects which function as wholes. Most of the important properties a city needs to support life, for instance, are holistic properties.

Our architecture means this: to ensure the holistic system properties of buildings and cities, we must invent generating systems, whose parts and rules will create the necessary holistic system properties of their own accord.

This is a radical step in the conception of design. Most designers today think of themselves as the designers of objects. If we follow the argument presented here, we reach a very different conclusion. To make objects with complex holistic properties, it is necessary to invent generating systems which will generate objects with the required holistic properties. The designer becomes a designer of generating systems—each capable of generating many objects—rather than a designer of individual objects.

A final word of caution. As we have already seen, a building system is an example of a generating system. It is a kit of parts with rules of combination. But not every generating system necessarily creates objects with valuable holistic properties. The generating system which makes squares out of triangles is an example. It is a perfectly good generating system; yet the objects it produces do nothing: they have no holistic system properties whatever. In the same sense, those building systems which have so far been conceived, make buildings, but they do not make buildings with any really important holistic system properties. In a properly functioning building, the building and the people in it, together form a whole: a social, human whole. The building systems which have so far been created do not in this sense generate wholes at all. While it is inherent in the generating system of an animal that the finished animal will work as a whole, it is *not* inherent in any of today's building systems that the buildings they produce will work as social or human wholes. Creating building systems in the present sense is not enough. We need a new, more subtle kind of building system, which doesn't merely generate buildings, but generates buildings guaranteed to function as holistic systems in the social, human sense. □

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British Rail first called Bison



(Chief Civil Engineer, British Railways: W. F. Beatty, M.B.E. M.I.C.E. Regional Architect, British Railways: Roy L. Moorcroft, D.A. (MANC) A.R.I.B.A. General Contractors: Taylor Woodrow Construction Limited).

and had their timetable faithfully observed

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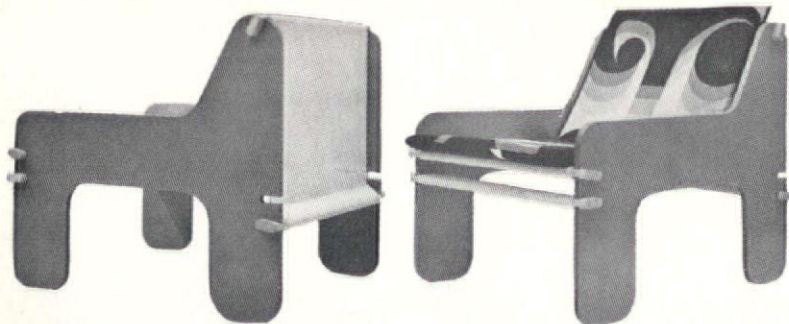
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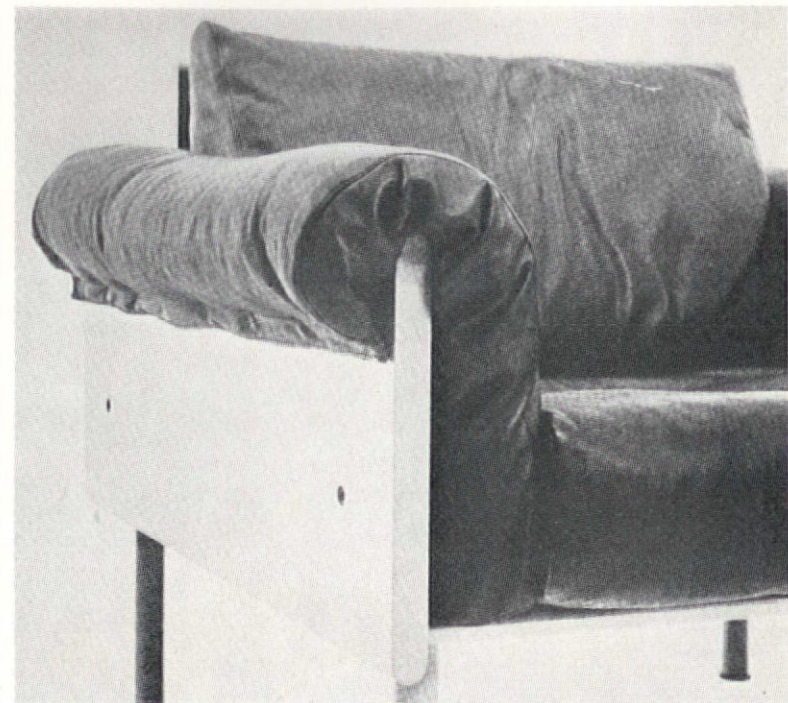
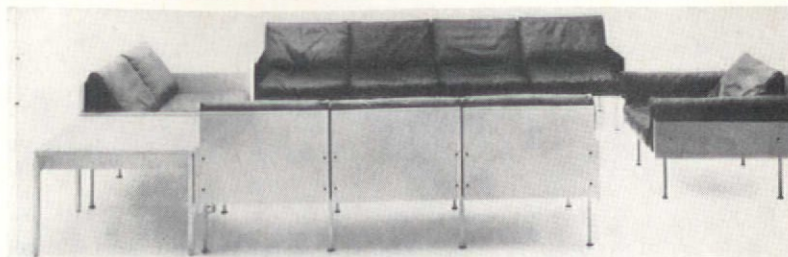
AD21/1



Club and Bg

Club is the name of a knock-down arm-chair and table set designed and made by Dieter Schempp of W. Germany, who uses canvas for the seat and back-rest, brightly painted ply for the sides, beech for the rails, and corduroy or cotton for the cushion covers. The *Bg* chairs and stool come from the same stable, in red lacquered wood with black lacquered discs and black leather down-filled cushions. The chairs cost about 370 DM in Germany.

Panoramast. 34/1, 7477 Tailfingen

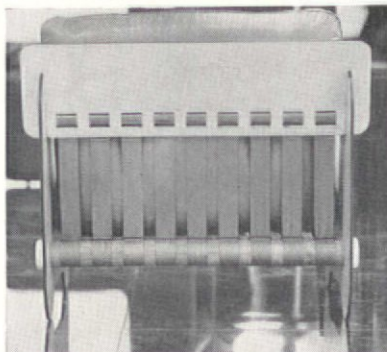
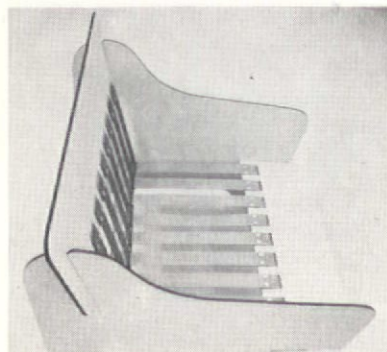
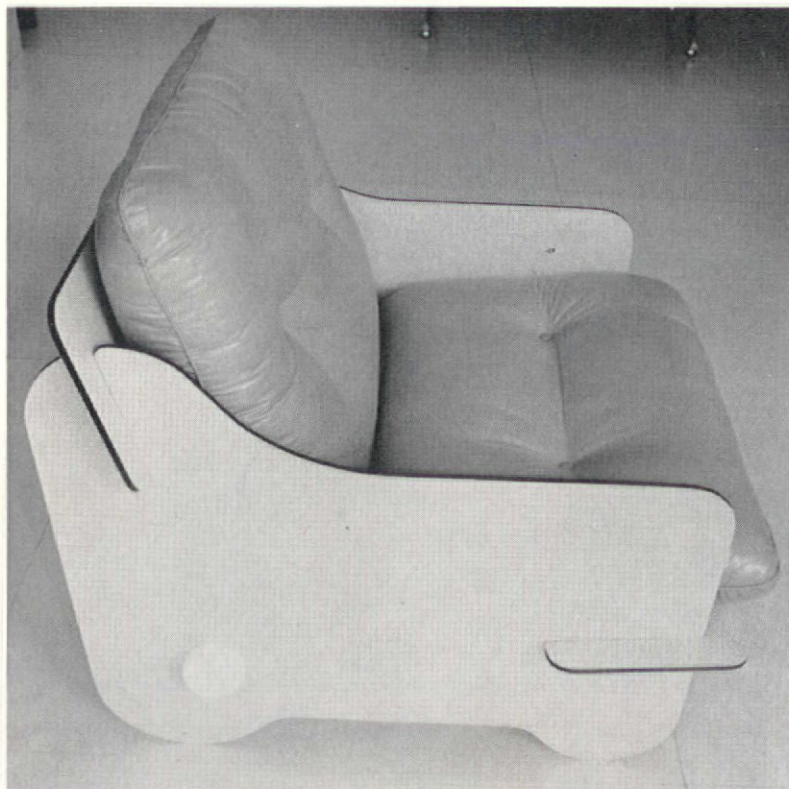


Zanotta

Solari, Lomazzi, d'Urbino and De Pas, the architects who designed Zanotta's famous 'Blow up' inflatable armchair

(AD, 6/68 p. 292) have used laminated plastic and hide for a knock-down arm-chair for the same firm.

via Fratelli Bandiera 33, 20035 Lissone, Milan



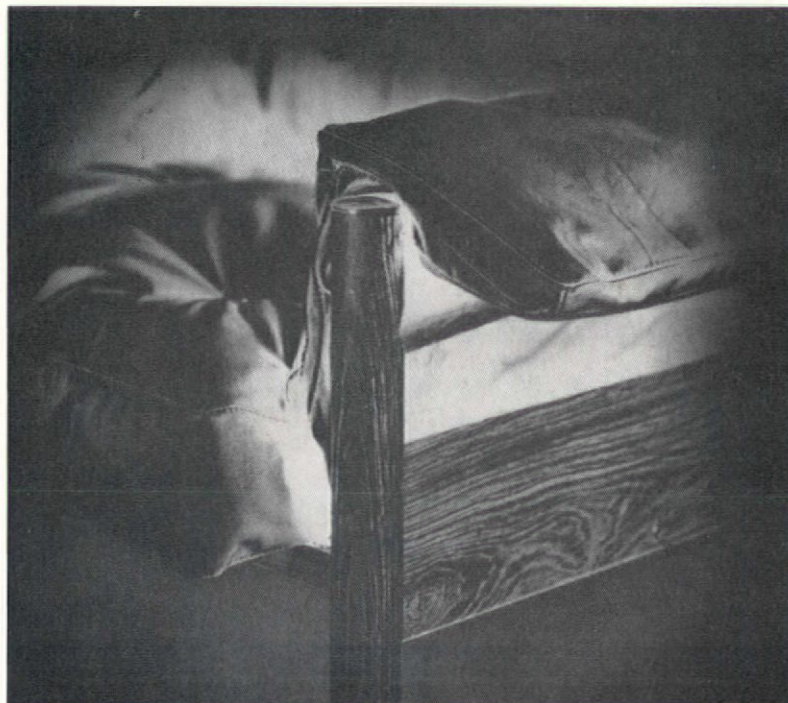
Soft arms

The Finnish Yrjö Kukkapuro's solution to KD provides luxurious comfort with down-filled hide cushions press-studded onto the wooden sides (mahogany, or lacquered red, white or black) which in turn bolt onto metal frames. *Ateljee* is the name of the series (above) and *Haimi Oy* are the manufacturers.

Haimi Oy, Kaivokatu 10D, Helsinki 10

It was Sergio Bernardes of Brazil who originated down-filled cushions over chair-arms, maybe as long as a decade ago. Carlo de Carlo followed in the mid-60's with the *Sella* chair (right and below) for Sormani.

via Maria Maddalena, 22060 Arosio, Como



Spud, Harry and Big Ben have a name for it.



The kids down on the new estate call their houses "wooden tops." But, as they've found out, the wooden tops won't crack, chip, rot, warp or bend.

Spud, Harry and Big Ben have been faced with Alcan Weatherboard. And Alcan Weatherboard is made from acrylic-coated aluminium coil.

Not that the kids know too much about that. But they do know how it feels to live on an attractive estate.

No more back alley hide-outs. And walls of graffiti that just wash clean.

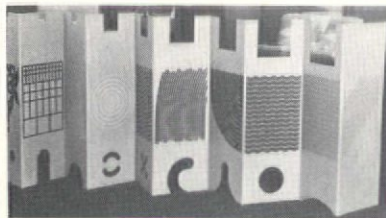


Alcan Weatherboard comes in white and grey and two sizes. There's a vertical fitting and a horizontal fitting. It clips together simply to give clean unbroken lines.

And all the maintenance it needs is an occasional hose down to keep it looking as good as new. (Even with Spud, Harry and Big Ben around.)

To find out more about Alcan Weatherboard write to:
Alcan Industries Limited,
Banbury, Oxon.





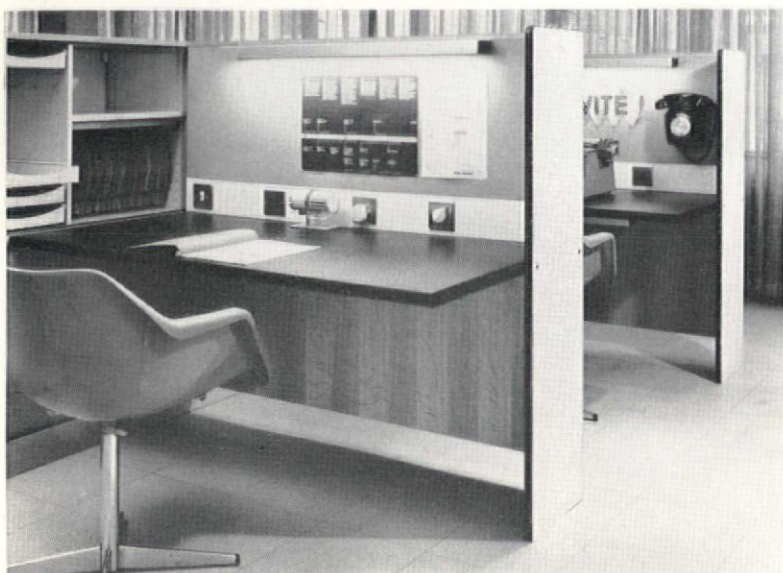
Danese

Danese is a remarkable firm in the centre of Milan, whose sole purpose is to make and sell interior art objects which



designers themselves want to create. (What about an English firm starting up on similar lines?). Naturally, Italy's best designers are involved.

Among their recent toys are Enzo Mari's slotted playing cards (shades of Eames) and child-high house/screen. Pzza S. Fedele 2, Milan



Partition-desking

A research project commissioned by Hille at the University of Manchester Institute of Science and Technology produced confidential recommendations on desk design which were taken into account in their new Partition-desking system designed by Alan Turville, for open plan landscaped offices.

Two basic components, a storage cabinet and a work top fixed to a vertical panel, form a private work-space for one person, a carrel, 5ft 4in by 6ft, 4ft 2in high.

In Partition-desking the easily accessible and visible storage is at the side of the user, away from the working surface. The storage units remove paper and objects from the horizontal plane to the vertical plane where access is simple. The space under the work top is clear, providing easy access and ample leg-room.

The dimensions of the system are based on a 32in module. The storage

units are 5ft 4in wide by 4ft 2in high by 1ft 8in deep. The work top for each carrel is 4ft 6in by 2ft 3in and 2ft 3in high. A fluorescent lighting fitting attached to the top of the panel lights each carrel individually.

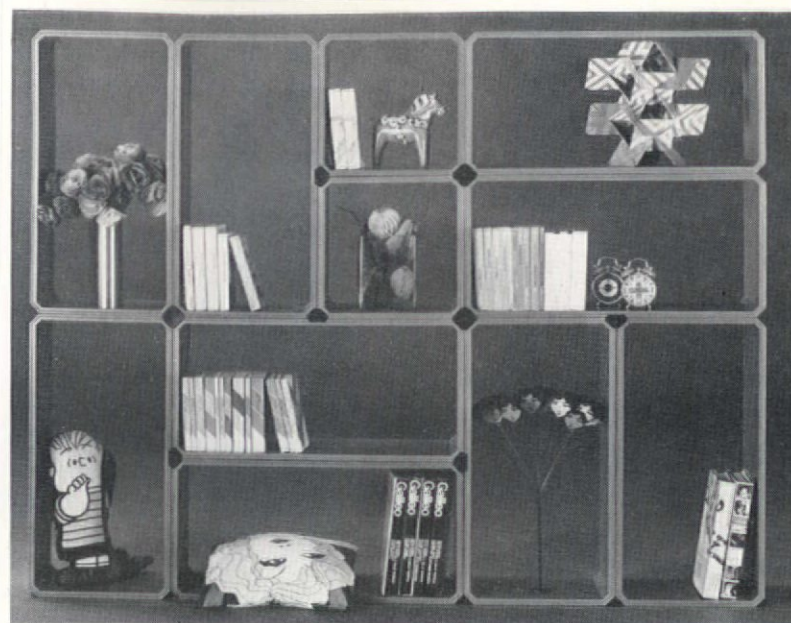
A services panel is provided for standard conduit boxes for power points and GPO and internal telephones.

The desking can be adjacent to a wall, or freestanding. The storage units themselves are also freestanding and are accessible from both sides.

Where a completely private office is required, or higher partitioning wanted, the desking can be used in conjunction with the freestanding version of the Hille wall storage system.

The wood used in the carrel is mahogany, teak or oak veneer. The work top is covered with black PVC cloth and the services and end panels are faced with white melamine.

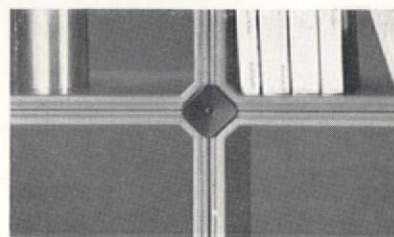
41 Albemarle Street, London, W.1



Prisma

Tecno's Prisma shelving designed by E. Vittoria consists of two types of unit, a 37.5cm square and a rectangle equal to two of the squares, open back and front, 26.5cm deep. The units are made of wood, enamelled red, white or black, with chamfered corners into which fit black anodized aluminium connectors, for use as and when required.

via Bigli 22, 20121 Milan

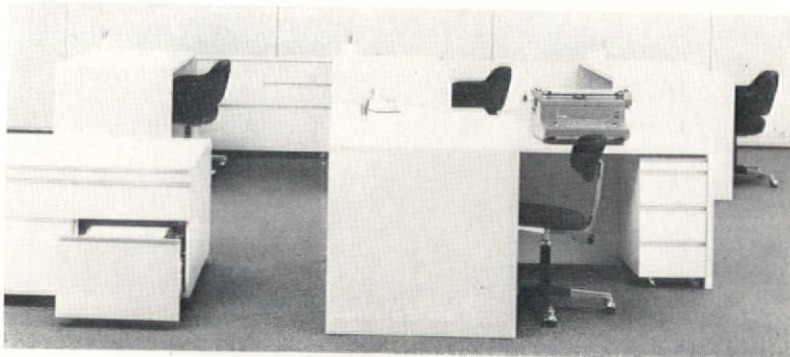


Modulo 3

Bob Noorda and Franco Mirenzio of the Milan office of Unimark International, are the designers of the new office furniture system which Casaluci has just launched. Called Modulo 3 (it is based on

a 3-dimensional module), and made in walnut or laminated plastic, it has KD tables whose panels are connected with an anodized aluminium joint. All the pedestal and cabinet units are mounted on castors.

Casaluci, via Santo Spirito 14, Milan



Runabout

The UK press referred to Mike Forrest's prototype four-seater City Car as a 'Micro Mini', it being only 6ft long, compared with the Mini's 10ft, the Fiat 500's 9ft 9in, and the Honda N360's 9ft 11in. (Its width is 2in less than the Mini, 2in more than Fiat, and 3in more than

the Honda.) Sitting space occupies the whole interior of the fibreglass box-shaped body.

Mr Forrest, an ex-RAF pilot training at Loughborough College of Education, started off with the idea of simplifying control by using a multi-purpose tiller incorporating steering, braking and throttling. Power is from a 750cc engine

under the floor, developing 17 b.h.p. and giving a top speed of about 50 m.p.h., with fuel consumption averaging about 40 m.p.g. Suspension is fully independent. The three-speed gearbox has a semi-automatic change.

The weight of the car is only 8cwt. The entire front and back ends form hinged doors giving easy access to two bucket

seats in front, and to a curved back-facing seat at the back. But woe betide anyone sitting inside if it has an end-on crash.

Development of the car took place in the Dept. of Creative Design at Loughborough's University of Transport Technology.

Photos Keystone



remember this name ...

ironduke

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- * Keynes College, University of Kent, Canterbury.
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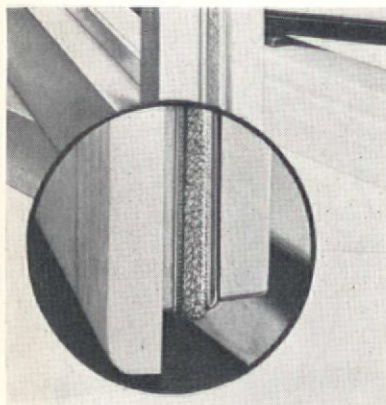
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DESIGNATION _____

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B

To obtain additional information about any of the items described below, circle their code numbers (O1, O2... etc.) on the Readers' Service Card inserted in this magazine.



O1 Weatherstripping

Grahams (Seacroft) Ltd., Ring Road, Leeds, 14

Combining the advantages of both a blade seal and pile weatherstripping, the Schlegel Spring Profile consists of a short dense pile integrally attached to an extruded leaf-shaped profile. The profile is pressed into a sawcut $\frac{5}{8}$ in wide and $\frac{3}{8}$ in deep, and flexes to fit tightly all around the window or door, accommodating manufacturing tolerances.

O2 Polyurethane finish

Torginol (UK) Ltd., Gloucester Trading Estate, Hucclecote, Gloucester

A new addition to the Torginol range of finishes overcomes the problems of discoloration normally experienced when polyurethane finishes are exposed to sunlight for prolonged periods. By using Torglaze C, it is claimed that completely white floors can be laid externally without fear of 'ambering'.

O3 Junction clip

Automatic Pressings Ltd., BAT Works, Halesowen, Worcestershire

The BAT Junction Clip is intended for dry wall construction and aims to provide maximum flexibility in prefabricated partition wall positioning. Used at 2ft intervals, the clips can also be fitted in place of noggins at wall junctions, or at contact points between ceilings and walls. Manufactured in electro-galvanized mild steel, the clips can be used with ordinary plasterboard nails.

O4 Woven carpet

Scandinavian Flooring Distributors Ltd., 15-19 Cavendish Place, London, W1

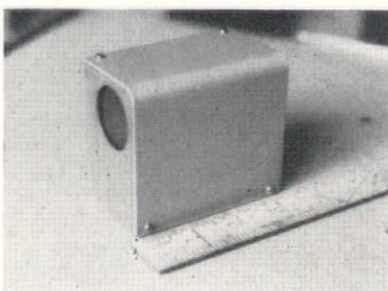
Colorips is a hardwearing woven carpet recommended for areas of heavy traffic where hard floorcoverings are normally specified but which would benefit aesthetically and acoustically from a tough carpeting. It is claimed that the tight pile reduces normal maintenance requirements to those associated with hard floors, occasional brushing and mopping. It is manufactured in Pelon in seven colours; light, medium and dark grey, gold, brown, red and blue. Price 43s 6d a square yard.

O5 Wafer-type speakers

Auriema Ltd., 23-31 King Street, London, W3

Employing a lightweight plastic acoustic panel supported by a shallow plastic frame, the unique construction of the Poly-Planar electromagnetic loudspeaker is claimed to provide a combination of characteristics not available from conventional cone speakers or equivalent designs. The unit can reproduce frequencies from 40 cps to 20 kcs and due

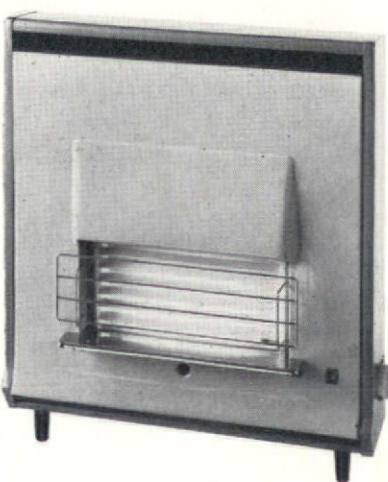
to the large effective radiating area a minimum of piston motion is required resulting in low distortion and high electromagnetic efficiency. The Poly-Planar is extremely thin, being approximately one-fifth the depth of an equivalent cone speaker handling the same power range. As an example, the model P20 which is equivalent to a 20W 12in woofer and tweeter combination, is $1\frac{1}{8}$ in thick, while the model P5, which is designed to replace the conventional 5W 6in cone speaker, is only $\frac{3}{8}$ in in depth. The design allows the speaker to be made impervious to extremes of temperature, humidity, shock and vibration, and permits the unit to be incorporated into structures or configurations having limited space and depth.



O6 Photo-electric equipment

Hird-Brown Ltd., Bolton, Lancs.

A new photo-electric device houses in one small enclosure a projector/receiver relay and amplifier, and is operated by retro-reflection. Only special discs of reflective material will operate the control, and these may be affixed to walls, machine parts, components or other objects. The device has an operating distance of 1in to 4ft, a total of 8ft out and back. Size: $3\frac{1}{2}$ in \times 3in \times 2in. Price: £38 10s including reflectite discs. The same firm has introduced a miniature photohead specifically designed for applications where limited space is available, with a $\frac{1}{8}$ in diameter lens, Size 1in \times $\frac{1}{2}$ in \times $\frac{3}{8}$ in. Prices: projector, £4 19s; receiver, £6 9s.



O7 Gas fire

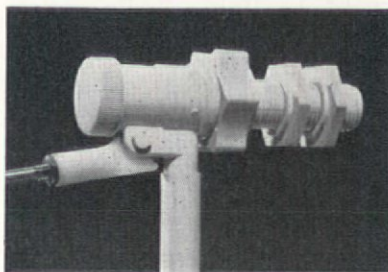
Radiation Gas Fires Ltd., Radiation House, North Circular Road, London, NW10

The Melody 510 room heater is rated at 17,000 Btu/hr, sufficient to heat a room

18ft \times 12ft \times 8ft. Colours: Hammered nickel case with fawn panel, or satin bronze case with parchment panel. Size approximately 25in high (23in without feet, for wall mounting). 21 $\frac{1}{2}$ in wide, 6 $\frac{1}{2}$ in forward projection. Price under £18.

O8 Woodgrain hardboard

Bowater Sales Co. Ltd., Building Products Division, 87 King's Avenue, London, SW4
Bowaters Flameguard hardboard is now available with a wood grain finish supported by a Class 1 Spread of Flame rating. The material is made in 8ft \times 4ft \times $\frac{1}{2}$ in sheets, in Knotty Pine, Light Walnut, Bleached Cherry and Burmese Teak.



O9 Plastics ball valve

Celanese Building Components Ltd., Avenue Works, Walthamstow Avenue, London, E4

The Series Ten ball valve is based on the original BS 1212 Portsmouth brass valve but is manufactured from a variety of plastics materials each selected for their own particular properties. Brass is used for the lever arm to eliminate the 'cold creep' inherent in plastics arms which gives rise to frequent adjustments. Water levels can be varied by minor adjustments to an adaptor on the arm. Both high and low pressure valves are available and are easy to interchange.



O10 Large ceiling panels

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

The Super 24 panel measures 6ft \times 4ft and consists of a galvanized mild steel perimeter frame to which are secured two separate detachable skins of a specially formulated PVC film. The film is opaque white, and therefore, transmits no light, but standard translucent panels may easily be incorporated in the ceiling design where required. Price approximately 4s 0d per square foot.

O11 Automatic garage doors

Stowgrand Ltd., 37 Oakdene Road, Peasmarsh, Guildford, Surrey

An automatic opener claimed to be adaptable for use with most garage doors

is now available. It consists of a chain drive operated by a small electric motor controlled by a key-switch fitted to a gatepost, wall or other surface that can easily be reached from the driving seat of the car. The electrical system operates on a low voltage circuit.



O12 Sanitary incinerator

Claudgen Ltd., Industrial Heating Division, Wembley Hill Estate, Wembley, Middlesex

The Sanfire Automator is claimed to be simple to operate, silent and fully automatic, incinerating completely without fumes or odour, leaving a germ-free residual ash. It can also deal with soiled bandages or dressings and small bundles of waste paper and documents. Direct linkage from the charging door to a mechanical timer switches on the 750W element for a pre-set period of 20 minutes. Re-use during this period automatically resets the time, so part-incineration is impossible. Price £35 15s.

O13 Composition wood/plastic building panels

J. F. Werz KG, 7141 Oberstenfeld bei Stuttgart, West Germany

A wood/plastic composition which can be sawn, screwed, nailed, drilled, etc., with conventional tools, can be used externally for facing panels. The finish is in teak, mahogany, larch, or a grey stone, and cut edges are waterproofed with a two-part compound matching the surfaces. Standard widths are 165mm (5ft 5in) and 205mm (6ft 9in), lengths up to 2-50 metres (8ft 2in).

O14 Adjustable mattress

Radium Latex, Postbus 1058, Maastricht, Holland

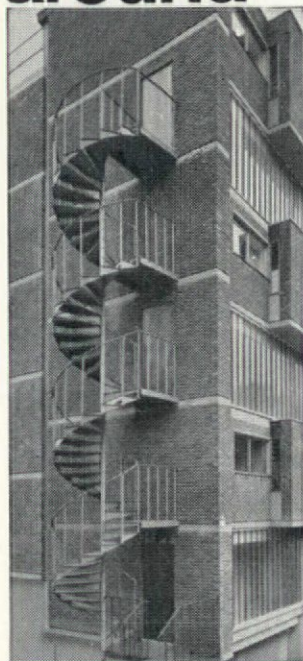
A 4in thick mattress is divided into two equal layers between which rubber elements, consisting of two rubber strips, are glued together. These form tubes which are fitted with valves and can be inflated independently. Any number of these elements can be inflated to provide either a hardened mattress all over, or to raise the mattress in certain places, a useful facility for sufferers from back trouble.

O15 Sliding track fittings

Swish Products Ltd., Tamworth, Staffs.

New addition to the Furni-glyde sliding track system include an end fixing adjustable slider allowing a door to be adjusted up or down when fixing, a rear face fixing performing a similar function on the back of the door, and a barbed pilot which can act as a bottom guide or as an inexpensive sliding door pull.

here are
Bigwood
getting
around



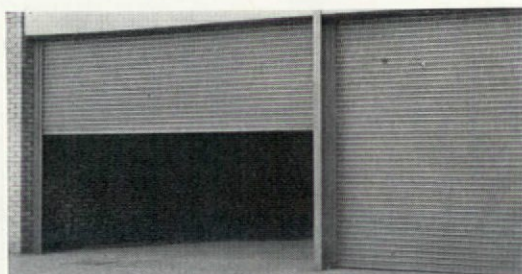
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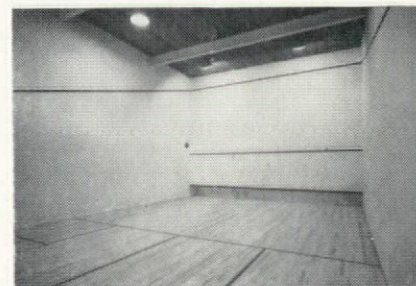
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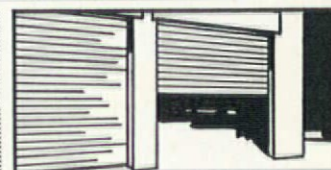
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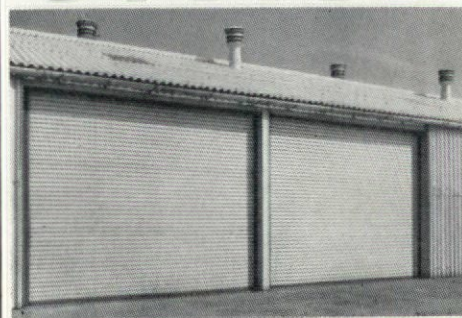
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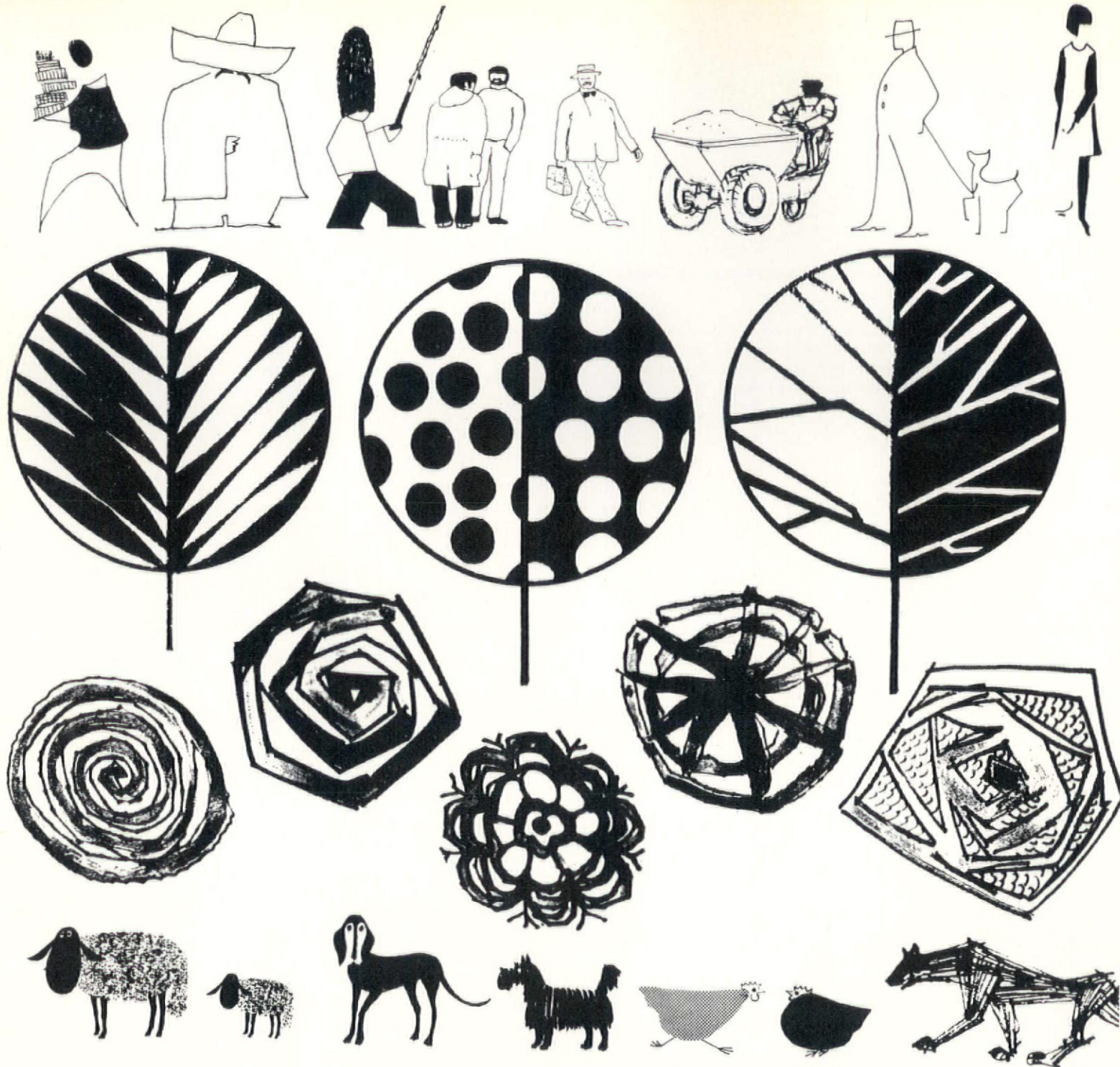
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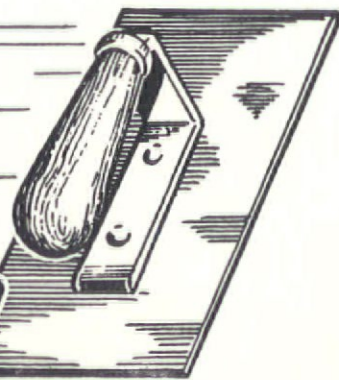
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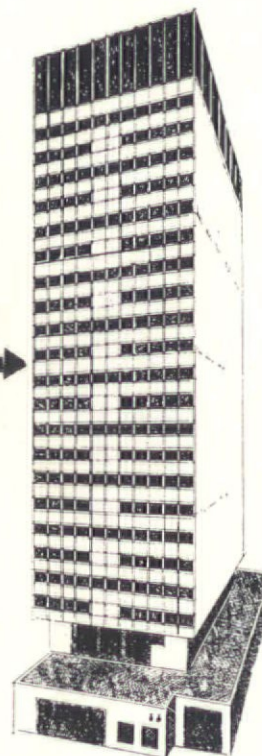
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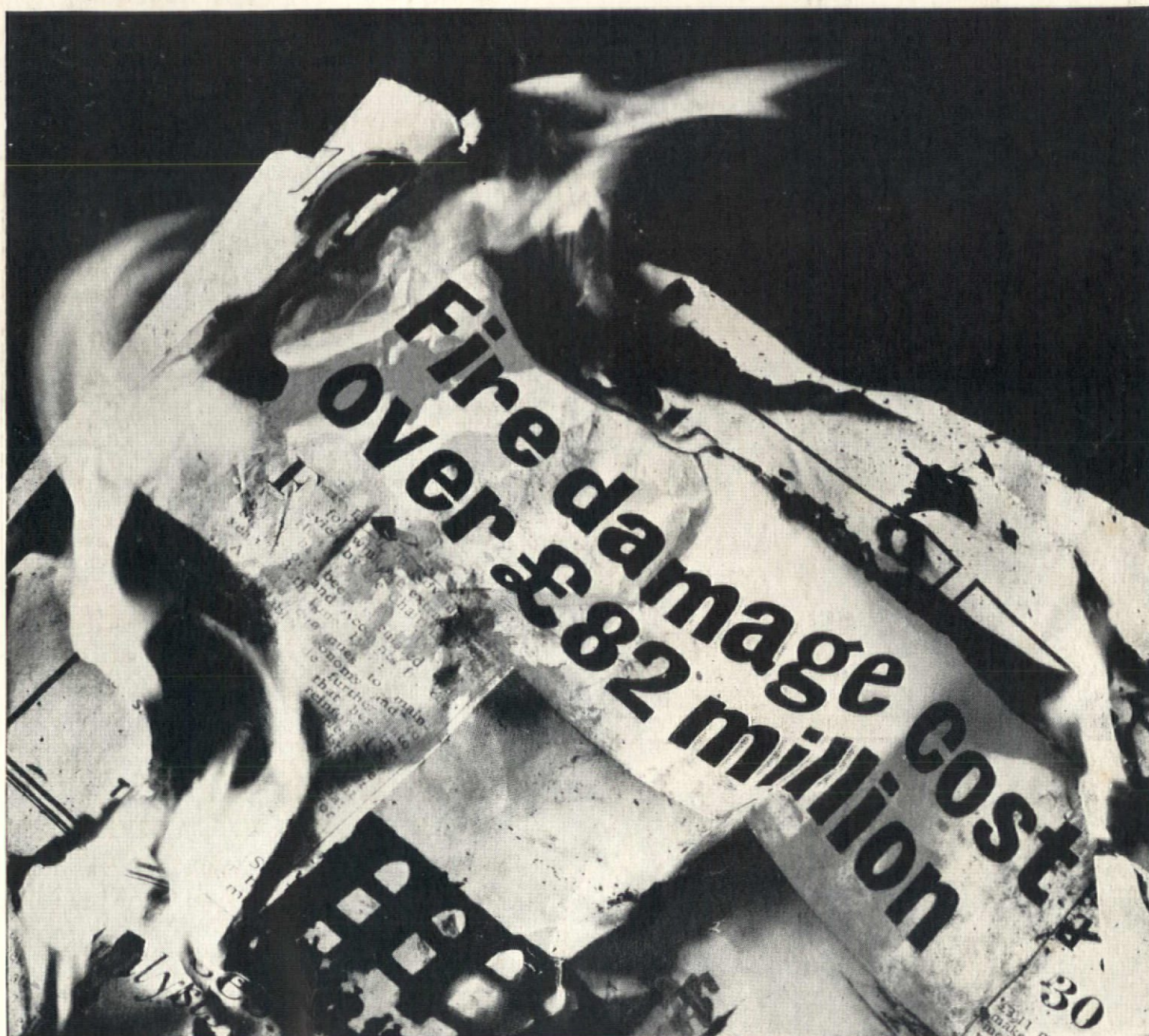
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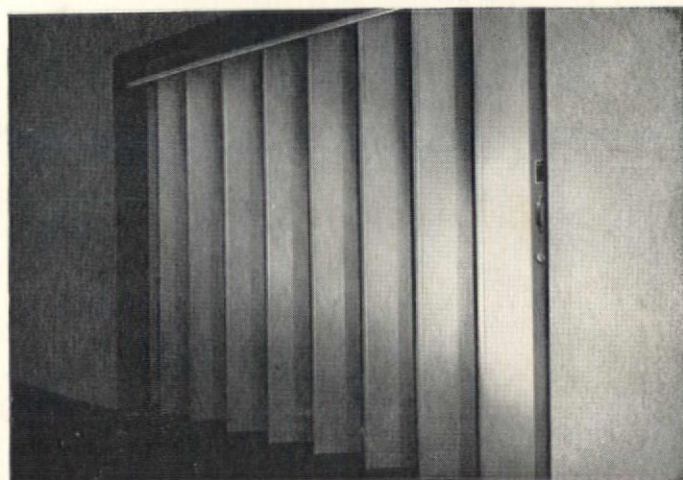




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