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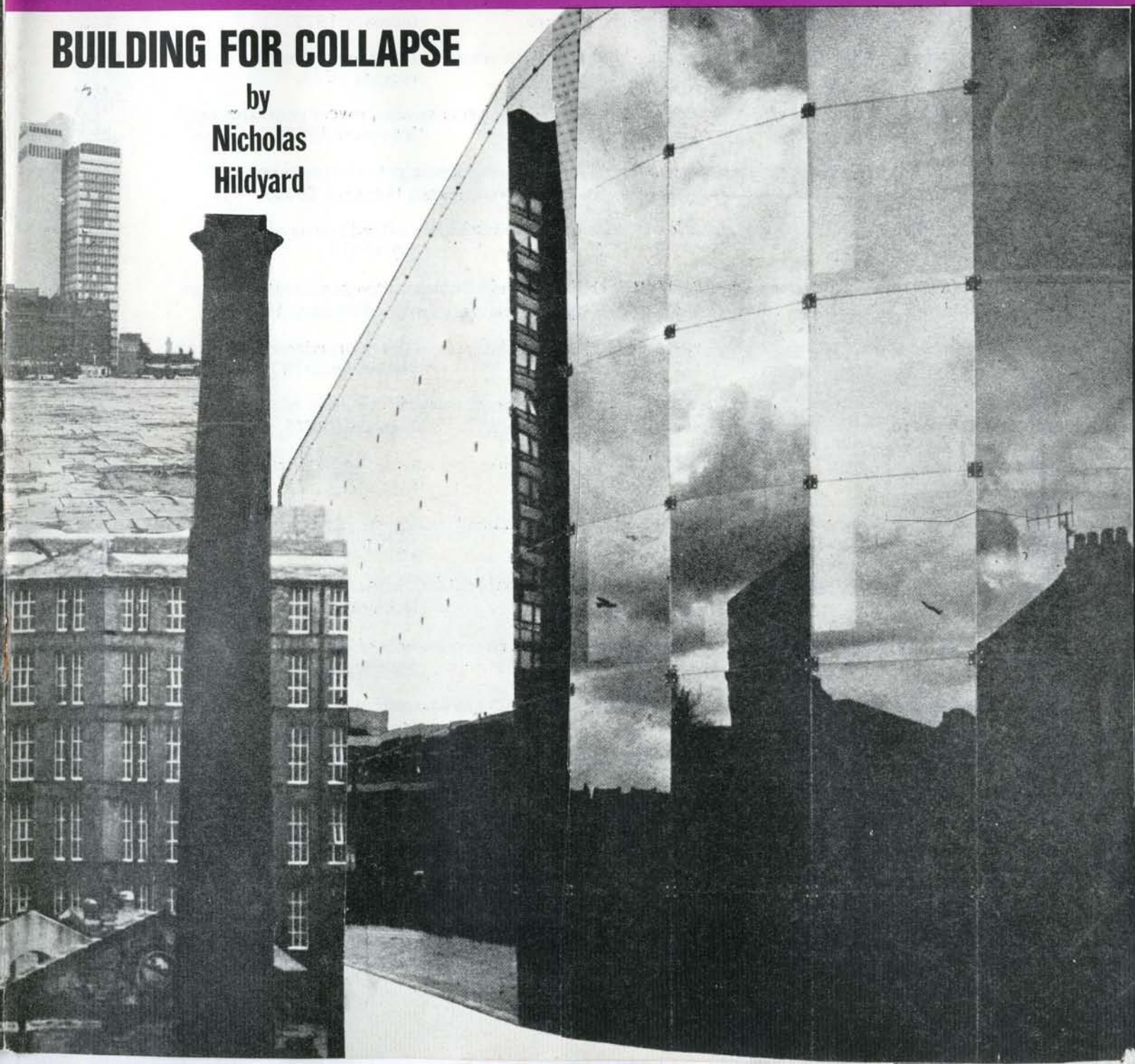
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Planning For Starvation

A New Ecological College

BUILDING FOR COLLAPSE

by
Nicholas
Hildyard



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In this issue

Vol. 7. No. 2. March 1977

EDITORIAL

Edward Goldsmith	Planning For Starvation	42
------------------	-------------------------	----

FEATURE ARTICLES

Nicholas Hildyard	Building For Collapse	46
-------------------	-----------------------	----

Following the war architects and planners lost a golden opportunity to improve our bombed cities. Why did they fail? What was wrong with their dreams?

Graham Carey and Peter Abbs	Proposal for a New Ecological College	54
-----------------------------------	---------------------------------------	----

Our present educational establishments are inappropriate as training grounds for the citizens of the post industrial age.

David Pedley.	Parliamentary Lobbying	61
---------------	------------------------	----

Francis Sandbach	Has This Act Any Teeth?	62
------------------	-------------------------	----

The Control of Pollution Act 1974 is on the Statute Book, but only those sections that require little or no public expenditure have been implemented.

Nicholas Gould	NOTEBOOK	67
----------------	----------	----

	Ecology Party Newsletter	45
--	--------------------------	----

	This Month's Authors	69
--	----------------------	----

	BOOKS	70
--	-------	----

	LETTERS	75
--	---------	----

	Classified Advertising	Inside Back Cover
--	------------------------	-------------------

This Month's Cover: Victoria Hutchings.

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Editorial

PLANNING FOR STARVATION

Our society is ideologically committed to economic growth which involves methodically substituting a new organisation of matter, the technosphere or world of human artefacts for the biosphere or world of living things, of which we are an integral part.

This process must give rise to a set of closely related side-effects, including pollution, resource depletion, social disintegration and the loss of agricultural land to erosion and urbanization, all of which are but symptoms of biospheric contraction and deterioration.

What people still fail to understand is that these side-effects are inevitable, and that all the politicians, planners, technologists and scientists in the world cannot prevent them. The fact is — and this is one of the realities we are most loth to face — we cannot have our cake and eat it.

Thus 'OECD has stated that Europe must choose between clean air and economic growth. *It cannot have both.*

The Countryside Commission has recently implied that if we want trees — outside Forestry Commission plantations and in the grounds of the few remaining stately homes — then we cannot have modern agriculture.

Nor can we have modern agriculture, as the Nature Conservancy states quite explicitly in its annual report for 1977, if we want any wild-life at all to survive in these islands.

The Second Land Utilization Survey, however, presents us with a still more frightening choice: If economic growth continues, then by the year 2157, it is not just *modern* agriculture that we will have to give up, but *agriculture of any type whatsoever*; for by then, it will not only be the trees and the wildlife that will have disappeared, but the land itself, all of which will either have been built on or transformed into wasteland, derelict land or 'tended space'.

Alice Coleman*, who is largely responsible for this survey, is busy writing and lecturing about its implications to any audience she can muster. Needless to say, our politicians are far too concerned with such really

important issues as equal pay for women and the nationalisation of the ship repairing industry, to worry about the fact that soon there will be no food for Britain's seventy million people. Perhaps their expert advisers — the Zukermans, Mellanbys, Baloghs and company — have not told them that cabbages do not grow too well on cement, or for that matter, on wasteland, derelict land or 'tended space'. Perhaps they have yet again been reassured of man's limitless ingenuity and of the infinite capacity of science and technology to solve any problem, however insoluble it may appear to the ignorant layman.

Firstly it appears that since 1933, when the late Sir Dudley Stamp's first Land Survey was published, England and Wales have lost 1,250 thousand acres of farmland to urbanisation. This works out at 30,000 acres a year, which some might well regard as tolerable. However the figure is deceptive for a number of reasons. First of all during the war the amount of agricultural land *increased*, and it was only fifteen years after the end of the war, that it was reduced from its 1939 level. The net loss was therefore the result of our activities in the remaining fifteen years, which resulted in the annual loss of 60,000 acres a year, not 30,000.

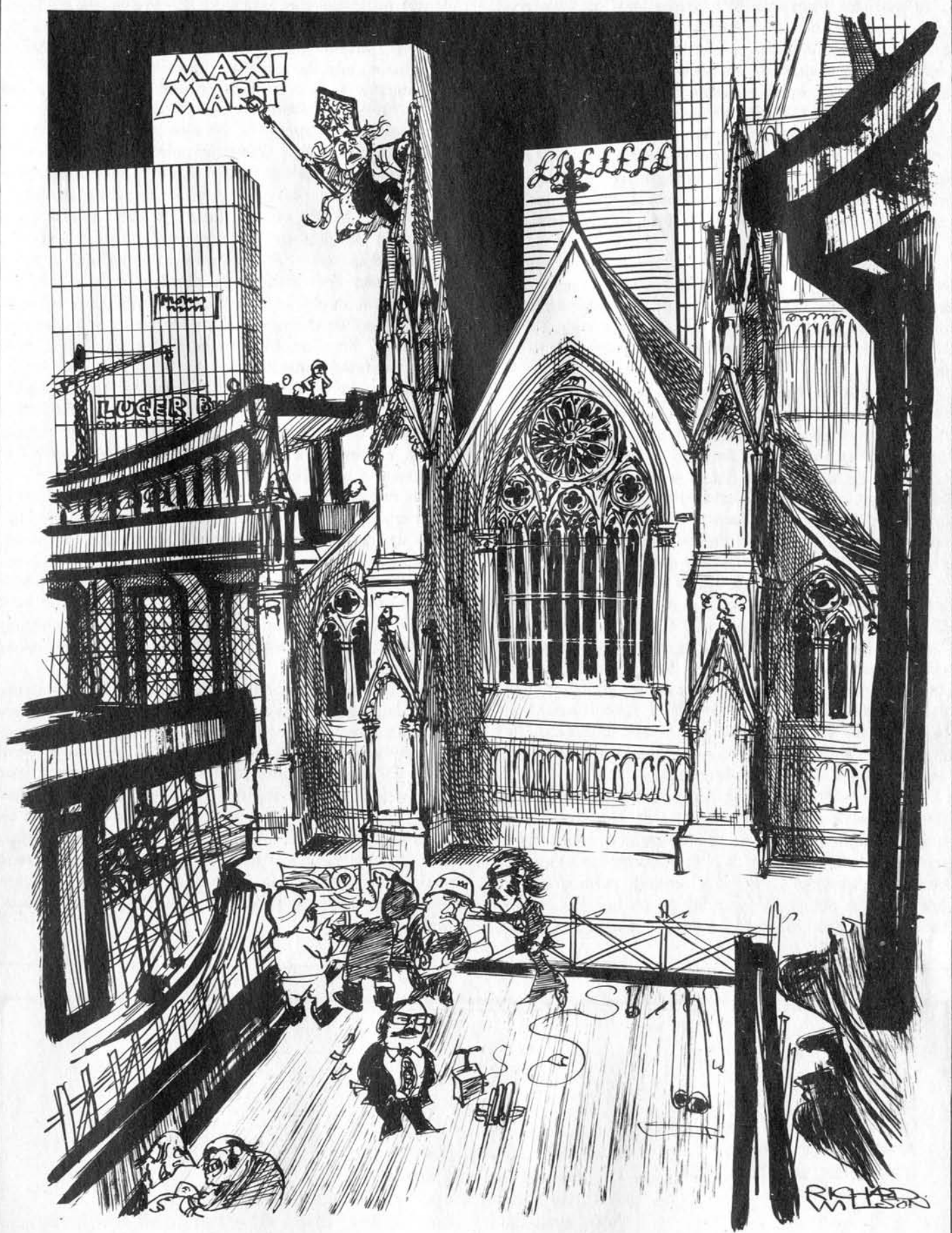
Meanwhile let us look at the salient features of Alice Coleman's report.

Secondly the rate of farmland loss has increased in recent years, and according to Alice Coleman "may accelerate still more with the emphasis on greenfield sites for acquisition under the Community Land Act". This suggests that at the present time the annual rate of loss is well in excess of 60,000 acres. Sources outside this report suggest in fact that it may be above one hundred thousand acres a year.

Thirdly these 1,250,000 acres represent the *net* loss of agricultural land. A great deal more was in fact taken, but this was largely replaced by 'up-grading' scrubland to farmland.

Thus between 1933 and 1972, in the Kyloe Hills of Northumberland, the area classified as 'farmscape' went up from 67.7 to 75.5 per cent, and that classified as 'marginal fringe' from 11.7 to 13.1 per cent, whilst that classified as 'wildscape' fell, during the same period, from 20.6 to 10.2 per cent.

* Alice Coleman: 'Is Planning Really Necessary?'
The Geographical Journal Vol: 142. Part 3.
November 1976.



"JUMP IF YOU LIKE, YOUR GRACE, BUT THE JUNCTION OF THE M56 AND A930 STILL COMES THROUGH THE VESTRY"

In this way fourth or fifth grade land has replaced high quality land — a fact that is not reflected in official figures. What is more there is not much wild-scape left, and when we run out the net annual loss of agricultural land will rise correspondingly.

The figure of 1,250,000 acres is deceptive for another reason: our remaining farmland has been hideously fragmented by anarchic urban growth so that it is exposed to trespass and to damage by vandals (for instance at New Addington boys from a housing estate climbed into an adjacent field and cut the tails off all the cows).

According to Alice Coleman, at least 22 per cent of our agricultural land is now affected in this way. This has led to the reduction of yields and, as reflected in the increase in 'wasteland' in and around towns, to the abandonment of much otherwise good agricultural land.

These trends were already apparant to Sir Dudley Stamp in 1933. In fact it was largely in order to reverse them that our present massive planning apparatus was set up. That they have become so much more pronounced during the last decades is a clear indication that planners, like politicians, serve little purpose but to accommodate and hence to accentuate socio-economic trends however undesirable they may be — and in this case undesirable they certainly are.

Let us see just how so much agricultural land has been, and is being, used up. For her survey Alice Coleman examined an area of 850 square miles of the Thames Estuary which provided a fine example of curent land use. It appears that for every unit of land used for providing homes and shops, *six* have been used for factories, *sixteen* for roads, *fifteen* have been turned into 'tended space' i.e. lawns, gardens, play areas etc., and nine have become derelict while *sixty-one* have been turned into wasteland.

To use up fifteen times more land for 'tended space' than for settlements proper seems perfectly ludicrous, but it presumably reflects the misguided architectural trends of today, with high-rise buildings interspersed among motorways and badly tended, rubbish-strewn lawns. It is obviously scandalous to use up sixteen times more land for roads than for housing, and this

clearly indicates the extent of the pressures on Local Councils and the Department of the Environment by that iniquitous organisation The British Roads Federation, and the motor-car industry in general.

To create 70 units of derelict land and wasteland for every unit of housing provided does require some explanation. It appears to be due partly to mammoth incompetence. Alice Coleman points out that during the period she studied for her survey, almost as much demolition took place (36 units) as actual building (37 units). Much of the land cleared in this way remained derelict or was eventually up-graded into wasteland or scrub. Socio-economic pressures to build new houses near factories and shopping centres (so that people could best fulfil their functions as consumers and producers) led to houses being situated elsewhere than on the available derelict land. Also much wasteland was created, as we have seen, by the abandonment of farmland that ceased to be viable because of its proximity to urban areas — a tendency accentuated by incompetent planning, which maximized rather than minimised the interface between 'townscape' and 'farmscape'.

The counter-productiveness of our planning effort is even more apparent when one considers where the land used up in this way came from. Ten units, it appears, were derived from abandoned mines, which is reasonable enough; fourteen from woodland and heath, which is less justifiable, since Britain has only 8 per cent woodland, (less than any other European country except Ireland) and worst of all 84 units from improved farmland.

As Alice Coleman points out the whole of our housing programme could have been built on pre-existing derelict land. It could also have been built many times over on pre-existing wasteland. This could only have been done if the constraints preventing our planners from observing their original brief had been purely physical ones. As we know, however, they were subject to all sorts of other pressures — those that, in different ways must inevitably lead them to accommodate disastrous socio-economic trends associated with the ultimate phases of the process of economic growth and social disintegration.

CODICIL

Nitrogen to oxygen
In Moscow and Washington,
And twenty million
Imbeciles; in Manchester.

Rutherford carcinogen
In Cavendish and Berkeley,
And twenty million
Megawatts; in Manchester;
Dial-a-hope plutonium
In Cumberland and Anglesey,
And regulated
Autocrats at Manchester.

Timothy Townsend

Open Letter

As Editor of the Ecology Party newsletter I have just acquired the unenviable task of re-opening an E.P. section in these pages. "Unenviable" because I feel I must explain the disappearance of such a section over the past ten months. Perhaps my best way is to be honest and say simply "rotten organisation". This may not be an advertisement for a new party struggling to gain credibility but it does show a degree of honesty uncommon in politics.

Fortunately honesty is not the only thing the party has to crow about. It entered local elections last May with six candidates, of whom two were elected. A third will be moving to a fresh Ward this May leaving the Ecology ticket in his old Ward to the Liberal who stood against him last year.

In November the party contested the Walsall North by-election, where the organisation was remarkably good, using help from all over the country to run a campaign in an area where we had no local support initially. The very low vote for us, however, indicated that the concept itself was dubious; as far as the national media were concerned we weren't there at all.

These two campaigns well illustrate the major area of controversy in the party currently. The old struggle between Left and Right, which did take up a lot of effort at one time, has faded to the background with the realisation that there must be a genuine commitment to compromise if ecological considerations are to have the priority they so desperately need. Arguments now centre on the right strategy for success, with what might be called "fliers" and "diggers" at the extremes. The "fliers" believe in a rapid take-off of the party starting from one or several well-organised by-elections with plenty of press releases. They foresee a mushroom-type rapid growth of the party in a world where ecological considerations are becoming more important almost by the day.

"Diggers" point out that in reality nothing grows that fast; a mushroom may appear to, but only if one ignores the long period in which root-fibres are spreading unseen below the ground. This group therefore see the slow building up of solid local party infrastructures as essential. Local elections are seen as the ideal medium for achieving this, and in this strategy the candidates who get elected are a bonus rather than the immediate object of the exercise.

In practice, of course, both groups work together on whatever campaign is on. And the present focus of attention is the County Council elections in May. These occur all over the country, so there is ample opportunity for everyone who wishes to do something without moving out of their own locality. At the moment a dozen people are committed to stand, and though this is double last year's figure we would like to see very many more.

If you think you can help in any way please get in touch. There is little doubt that you have the ability; none of last year's candidates had any previous political experience, but fared no worse for it. In fact, local election campaigns are very simple. And even if you have convinced yourself that you are not candidate material you are almost certainly able to do the jobs that underly all political power in this country — folding and delivering leaflets.

Think about it. Our World is at stake.

To
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Please:
☐ Send further details about the party
☐ Send Manifesto (60p)
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tick
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Note:

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Name:
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BUILDING FOR COLLAPSE

by **Nicholas Hildyard**

The state of the building industry today reflects the disjunctions that exist between the real world and the ideal world of the planners, the architects and the builders. Expedience and expense, lack of skill and pride, too little imagination and above all a failure to comprehend the overwhelming importance of traditional communities have contributed to material collapse and social disaster.



Building the house that Jack built was, by all accounts, a fairly uncomplicated affair. Not for him the piles of steel girders, bags of cement, lorries, drills, mixers, drawing boards and other paraphernalia that clutter up the modern building site; he just set his mind to it, went ahead and built. He didn't even ask planning permission. When he had finished, he had a house stamped with his own personality, his own requirements, and his own taste which he could be fairly certain would not fall down before his great grandchildren's great grandchildren died.

Building the high-rise flat that Tom, Dick, Harry, Murphy, a team of environmental scientists, three urban planners, several clerks of the works, two prefabrication factories, eight volumes of the codes of practice, and four firms of architects built, and which Liz and John, along with a host of others, are forced to live in, does not make for such happy reading — one reason, perhaps, why it has never been made into a nursery rhyme.

After 1945 our modern team of Jacks saw themselves as the vanguard of a new movement that would abolish the slum, make the word 'tenement' obsolete, and banish forever the outside lavatory. Theirs was the task of building upon the rubble left in the wake of the blitz, of constructing the beautifully landscaped and meticulously planned cities that were to replace the squalor of Victorian Britain. It was an ideal that was very much in keeping with those heady Aneurin Bevan days that saw the initiation of the National Health Service, and the setting up of the Welfare State; today, however, it rings a very hollow note. Their vision has never materialised; in their fervour they have produced a new squalor that is neither planned nor beautiful, and which lacks the intimacy of earlier cities.

Despite the proliferation of planning authorities, city after city is swallowed up in uncontrolled urban sprawl; Birmingham slithers into Walsall into Wolverhampton into Coventry — to form a concrete slab twenty miles square — a pre-stressed kingdom of factories, motorways, car cemeteries, box-like houses, and derelict land. Town

centres have been pulled down to make way for the shopping precinct, the multi-storey car park, and the latest extension to the town hall; what is put up in their place is generally loathed and, to add insult to injury, is quite likely to fall down. So much double-think, so many vested interests have gone into the drafting of the planning acts that it now seems easier to pull down a house in the name of modernity than to conserve one in the name of common sense.

Small wonder then, that *The Ecologist*¹ recently asked whether it was 'Hitler's Bombs or Urban Councils' that had done most to destroy the cultural heritage of Great Britain; small wonder that the phrase 'legal vandals' is increasingly being bandied around to describe urban planners and their entourage of contractors, sub-contractors and Poulsons; small wonder also that architects are indulging in a great deal of soul-searching — one cynic even described reading the RIBA journal as being like eavesdropping on a confession box. The time has surely come to take stock of the problems facing the building industry, and to ask what has happened to make one of Britain's most self-confident giants so meek and unsure of itself, so utterly bemused as to its future. Is the cause of the present crisis simply mismanagement? Or is it the predictable result of having turned a trade into an industry? Is it possible that industrial building concerns cannot work?

Falling Down

In May 1968, a gas explosion in a block of flats momentarily wrested the headlines from the political upheavals in France. The name of the building was Ronan Point, and the explosion resulted in the instantaneous collapse of the whole of one of its wings, the death of four people, and repair work costing £100 million to safeguard buildings of a similar design.²

In November 1965, three of eight cooling towers at Ferry Bridge power station collapsed during severe westerly winds; the first tumbled down at 10.30 in the morning, the second ten minutes later, and the third forty minutes after that. In each case, it took only a minute or so for a seemingly sound building to be

reduced to a pile of rubble.²

These are only two of many recent building failures; they are the ones that happen to have caught the headlines, but, as the late Geoff Scott points out, 'they are only the tip of a gigantic iceberg' — the true proportions of which emerge as one reads his book *Building Disasters and Failures*.²

Despite extreme reluctance on the part of local and central government to supply him with information, Scott has assembled a plethora of examples of the types of failure that are occurring, and of the designs that are most suspect. When all the figures have been added up, he estimates that there are between 50 and 60 thousand buildings which will need to be strengthened because they have been built with the notorious High Aluminium Cement (HAC); between 100 and 200 thousand buildings that will need serious remedial work over the next ten years; and that the total bill at the end of it could well exceed £25,000 million (at present prices) — a sum that makes Healey's latest loan from the IMF seem like pocket money for a two year old.³

That these figures are probably conservative is still more disturbing. Take, for example, his calculation of the number of buildings affected by HAC; the true figure can only be known if architects and contractors are prepared to say when HAC has been used. Scott points out, however, that they are extremely reluctant to do so, partly because they fear that they may be held liable, partly because records have been lost, and partly because many of the firms have gone out of business, and are therefore not available to provide the information. Given that these buildings cannot possibly be repaired (we just do not know where they are), and given that even the government admits that 'no HAC structure can be guaranteed safe in the long term'² it would seem only a matter of time before we have a spate of crumbling buildings on our hands. In addition to these 'unknown' buildings, government policy has exempted buildings under four storeys high from repair work². The logic of this move is somewhat obscure; if a building is unsafe because it contains HAC (or for that

matter any other dangerous material) then its height would seem to be irrelevant. The result of not carrying out appropriate repairs will be the same whether the building is fifty storeys high or one; given time, it will fall down. This is a horrifying prospect. Imagine the chaos, not to mention the human suffering, that would be caused by a building collapsing (possibly with a domino effect on those around it) in a busy London street; the deaths, the maimings, the shock and the devastation are too terrifying to contemplate.

Human Error?

Ask anybody in the building industry to account for this crop of failures, and two tired scapegoats are sure to emerge in explanation; the materials used and the design of the buildings — or more specifically a combination of both. The blame is laid on that most illusive of targets: human error. If things have gone wrong, it is because people have 'miscalculated', because certain properties of the materials have been 'overlooked'; because certain factors were not 'appreciated'; because of mismanagement; because of misunderstandings; and so on.

It would be naive to deny that bad design is a factor in building failures, it would be equally misleading to single it out as the sole cause for them; it gives the mistaken impression that the problems that have arisen are simply pitfalls that can be avoided with experience. Inaction is thus justified by diverting attention away from the deeper, more intractable causes of these disasters. Consider, for example, the John Hancock Tower in Boston, Mass. Set in the historic Black Bay, its massive monolithic structure is covered by 13 acres of glass which mirrors the surrounding nineteenth century buildings, reflecting their image at different angles and in different lights. It is an extremely clever building (some would even say beautiful), but this has not prevented it from running into considerable problems. In 1973, sixteen huge units of double pane glass broke during a storm, and scattered fragments onto the pavement below. Later forty-nine more

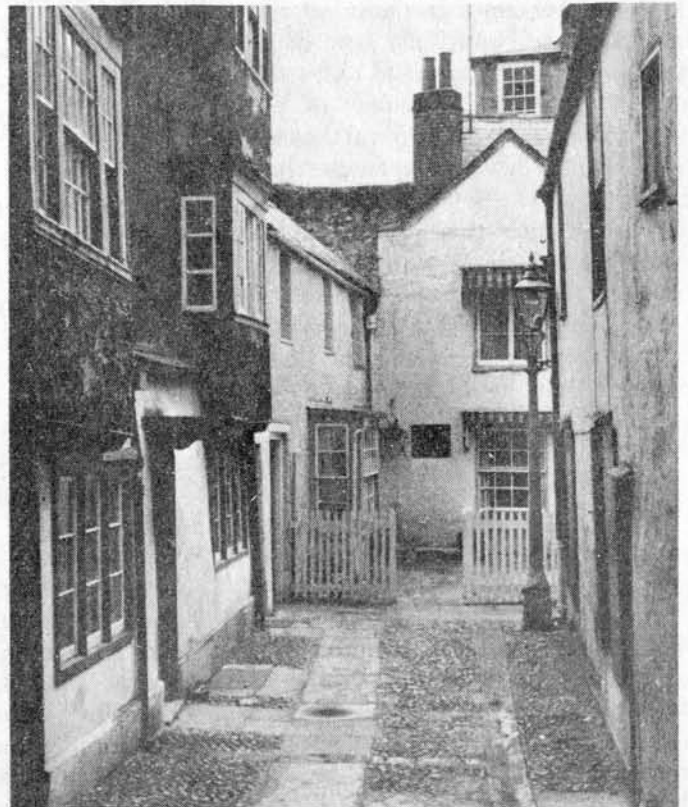
units gave way, sending glass cascading to the ground, shattering other windows in the process and ultimately forcing the owners to replace all the windows in the building — all thirteen acres of them. The dangers of particles of glass raining down on passers-by, from anything up to 60 storeys above, are obvious; less so the possibility (about which fears were expressed at the time) that at some point the vicious down-drafts outside the walls might suck people out of the building to death below.⁴

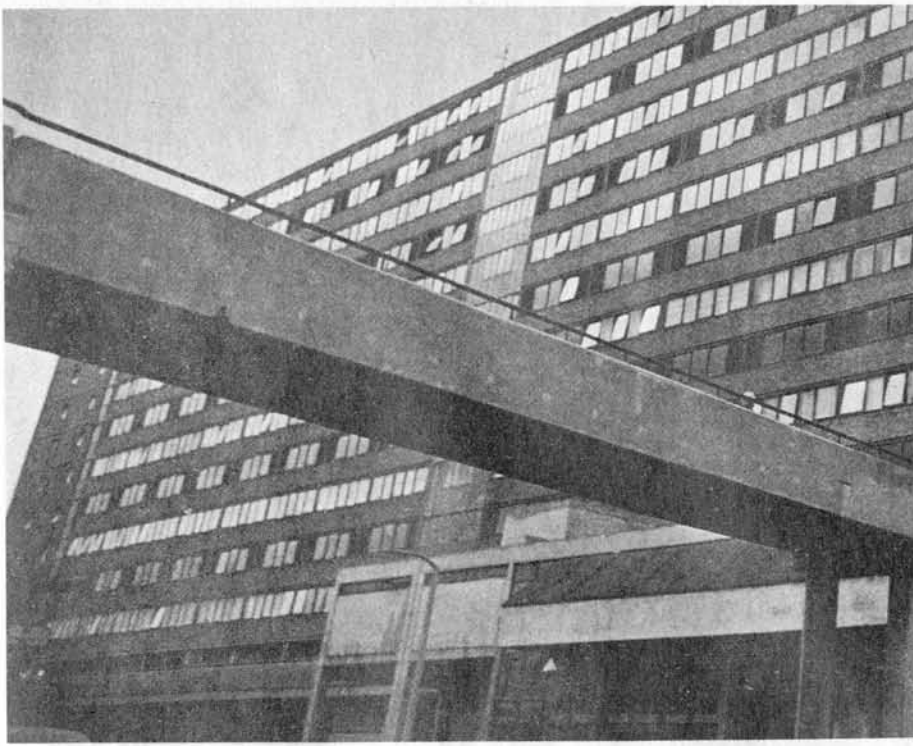
If breaking glass were the only problem facing the John Hancock Tower, we might put it down to bad design, misuse of materials, and faulty judgement. But this is not all. In fact two 300-pound shock absorbers have had to be installed, at a cost of 3m dollars, to lessen the reaction of the building to high winds; changes in the water table, brought about by the construction of the tower, have caused a nearby church to tilt and crack; real fears have been voiced that if another high-rise building were put up, the wind pattern would be so drastically altered that the whole tower would come crumbling down; and the structure has had to be strengthened by inserting 1500 tons of steel along its horizontal axis.⁴

True to form, the official explanation for these setbacks played on the theme of human error; 'tall buildings', explained Edwin Zatz, the company's chairman, 'all involve some state-of-the-art work. This involves new technologies or working at the advanced ends of science . . . We had an absolutely reputable crew on here. Everybody from the architect through the contractor, subcontractors, suppliers and so on were people of high reputation. And all it proves is that even people of high reputation can make errors when they're building skyscrapers.'⁴

The question whether architects should be allowed to dabble in 'state-of-the-art' work that may result in the deaths of many people is not even considered. It is not surprising either; by introducing the 'human factor' into their explanations the experts have made their failures appear as *unpredictable hazards* — regrettable but outside the realm of morality. Needless to say architectural theory is also absolved from blame.

If we subject the problems facing the building industry to a more careful analysis, however, a very different picture emerges. Far from being unpredictable hazards, they can be seen to be the inevitable result of





the very organisation of the industry itself. These are not difficulties that can be ironed out 'next time round', or pitfalls that can be avoided by the observance of minor changes. They are fundamental weaknesses that will occur again and again unless radical changes are made. This is because the construction industry appears to be suffering from a series of disjunctions between what is possible in the real world and what is dreamed of by the theoreticians. Let us take a look at some of these.

Disjunction: The Theory and Practice of Prefabrication

For a long time, many architects, particularly in the US, have been advocating the idea of mass-produced housing. It was a plan which, if fully adopted, would have revolutionized the building business; prefabrication factories would turn out units that could be assembled rapidly to satisfy the needs of a fast growing population — and at (supposedly) a fraction of the cost of a conventionally built house.

The industrialisation of building has, however, proved a monumental failure. 'The building industry around the world', writes Peter Blake, Chairman of Education at Boston Architectural Centre, 'is littered with the graveyards of heroic would-be prefabricators — and their equally heroic public and private

backers — who believed in all the theories and were demolished by the facts.⁵ The facts are quite simple. In the first place prefabricated buildings, despite claims to the contrary, cost more than conventionally built ones. Blake estimates that a school he built would have exceeded the allotted budget by some 25-50% if it had been pre-fabricated, and adds that 'everything in the building (with the exception of a few plastic skylights and a few essential utilities) could have been constructed better and cheaper almost a hundred years earlier'.⁵

Secondly, no true programme of prefabrication can emerge until the building industry agrees to standardize all the component parts it needs. This is, of course, unlikely to happen in a society as committed to free enterprise as is ours. To capture and secure a healthy market for his products, a manufacturer has not only to make them stand out (which means making them as different as possible) but also to induce his customers to buy only his range of goods; the most common way of doing this is to design them so that they cannot be used in conjunction with those of another manufacturer. As Blake puts it, 'the highly individualistic character of a free enterprise society resists standardisation at every turn. Henry Ford may have said about his model T that "they can have it in

any colour so long as it's black"', but his heirs seem to have found the market for black cars rather restricted outside the confines of the mortuary trade'⁵. The result is that the components coming out of a prefabrication factory are about as 'interchangeable as ink blots'.

Thirdly, the cult of the assembly line which the building business has been practising since the days of Gropius is addressing the problems of a bygone age; a past era of cheap plentiful resources. Today, Gropius' notion of Kleenex architecture — the idea that houses might become as mobile and as disposable as cars is an anachronistic fantasy. The real need today is to build houses that last — we can barely afford our housing stock as it is — and it would be economic suicide to introduce a system that meant having to replace buildings every two or three years, at a cost of £20,000 a throw.

Fourthly, and perhaps most important of all, prefabrication has proved socially disastrous; people don't like living in prefabricated buildings. They like and need some degree of individuality in their homes. Their houses reflect their status, their job, their personality — all the things that are important in their lives. Look at any mass housing project, and the one thing that will be immediately noticeable is that each owner has gone out of his way to make his own house different; he has grown geraniums in his garden, painted his window frames a different colour from his neighbour's, put in a new front door, a brass door-knocker, a special bell — anything to make his house a home, rather than a box designed to satisfy the theoretical whims of an architect.

Disjunction 2: Energy

One might have thought that after experiencing 'brown outs' in New York, a worldwide energy crisis in 1973, and other less newsworthy reminders of what happens when our power supplies fail, that it would be impossible for anyone to ignore the problem of energy — particularly when they are designing buildings for the future. Incredibly, however, architects, according to Gerald Foley, 'have totally ignored the issue'⁶; apart from a few notable exceptions, they continue blithely to design

buildings as if energy was still cheap, likely to get cheaper, and still plentiful in its present form.

Take the energy requirements of a modern glass-tower office block in London; the thermal insulation provided by glass walls is so small (five times as much heat escapes through glass walls as through a cavity one) that it has to be heated throughout the winter. In summer on the other hand there is a greenhouse effect — the light coming in is converted to infra-red radiation and unless the building is constantly cooled by air conditioning, the heat build-up will be so great that the temperature on a summer's day may well reach 100°F.⁴ To reduce glare, the glass must be tinted, making constant lighting necessary — particularly if (as is often the case) the office is laid out on a deep-plan design. In other words, if the building is to be tolerable to work in (and the secretaries are not to freeze in winter, dehydrate in summer or go blind), massive inputs of energy are necessary. The same applies on a smaller scale to less grandiose buildings; 35% of all energy used in the West goes in heating our water and our houses.⁷

If substantial savings could be made in the servicing of buildings, they could also be made in their construction. Andrew MacKillop estimates, for instance, 'that it is entirely feasible to produce a housing unit at an energy cost 70% below that of conventional units, with only marginal changes of internal specification. Bricks used today, such as the London Stocks type, have typical load failure rates of 600 lbs/sq. inch. Yet a 10% soil cement block, produced by hand with a block-making ram, can give performance of up to about 900 lbs/sq. inch, and thus can permit buildings to three storeys height with safety and durability. Whilst a brick requires an input of about 0.2 kWh/brick, the soil cement block requires under 0.5 kWh/block of similar size . . . The use of hand labour for producing rammed earth walling, and systematic simplification of materials, can produce viable housing units at an energy cost some 92% lower than at present'.⁷

In a world in which energy was cheap and inexhaustible, energy intensive building would not matter.



But we do not live in such a world — nor can we plan for one, unless we radically change our source of energy. The time when modern buildings simply become uneconomic to run, and even to construct, may not be that far away. Regrettably the small changes in design and materials, which would so dramatically reduce our energy requirements, are unlikely to be put into practice whilst architects continue to live in the cloud cuckoo-land of cheap energy. Once again, the real world and the world of the architect have parted company.

Disjunction 3: Drawing Board and Navy

In theory, HAC is perfectly safe, provided one obeys the rules, applies the codes of practice, and mixes it correctly with the right water cement ratio². The same applies to Calcium Chloride (which incidentally Scott considers potentially more lethal than HAC), and to most other modern building materials. If we lived in an ideal world, in which each navy received technical training, was constantly supervised, was conscientious enough to monitor water/cement ratios, and took the time to check temperatures during the curing process, then HAC

buildings might not have presented the problems that they have. Unfortunately we do not live in such an ideal world; we cannot expect the site operative to interpret complicated equations that even the experts cannot bring themselves to agree upon; we cannot possibly ensure that the instructions are carried out 100% of the time. The truth is, according to Scott, that 'the gap between the man at the drawing board and the site operative is now so wide as to be unbelievable, and this is one of the contributory factors to the many incidents of structural failure now occurring on a nationwide scale'.²

According to Scott, the present system of training has so separated the architect from the actual job of building that few have had practical on-site experience; they may well be extremely well qualified, extremely capable, extremely original, but they are technocrats, not builders. It is, for instance, common for trainee contract managers to receive only six weeks on site before they are given the responsibility of site management; nor is it obligatory for architects to work on a building site as part of their course, and many graduates are taking up key positions in the industry without any

practical experience whatsoever⁸.

Without this experience, how can the architect know the constraints that the realities of building places upon his design? How do engineers ensure proper supervision if they themselves could not do the job? How can mutual respect develop between the labourer and the technocrat?

Disjunction 4: Craftsmanship

Great architects like Wren and Vanburgh were probably no more experienced in building techniques than their modern counterparts, but they had one immense advantage — they could rely on skilled craftsmen to carry out and correct their work. This the modern architect cannot do; pride in one's work, and craftsmanship have all but disappeared from the large modern building site. 'Compared with the fifties' writes Scott, 'quality control and practical site supervision are now virtually non-existent. Where have the old brigade of "nuts and bolts". Clerks of the Works, gone? I remember the days when the Clerk of the Works checked every rivet in the building, took slump tests and cubes of concrete two or three times a day, examined aggregate for excessive silt content and condemned it. He stayed on site, checked the bricks in hot weather and made sure you soaked them . . . The bowler hatted man of that era was respected by every man on the site. But he's gone and sadly, "gone" probably means gone forever'².

The terrible irony of this is that with the development of increasingly sophisticated building techniques, more and more reliance must inevitably be placed on the skills of the people who have to operate them; but can we be sure the skills are there?

The results of the decline in skills, in careful work, and in craftsmanship can be disastrous; an extra shovel of this or that cement, an extra gallon of water put in when nobody is looking can literally make the difference between a building being sound or unsound. Cases where materials that make the job easier are put into the mix without the knowledge of the supervising engineer are not unknown; workers at the Cadbury-Schweppes factory in

North London, for instance, used Calcium Chloride (which if used in excess can corrode the high tensile stressing wires within concrete beams) without instructions to do so.²

Without proper supervision and skill, the modern building can never be safe. Too much relies on a meticulous attention to detail. Gerald Foley may charge those that lament the decline of craftsmanship with "misplaced romanticism", but surely when it may entail the collapse of extremely tall buildings, one ought to demand that the materials used be consistent with the skills available? If this means rediscovering tried methods which are simpler, then this is the direction in which the industry *must* move. Those who have reservations should ask whether they have the right to jeopardise the lives of those they are supposed to be serving, simply for the sake of being modern and avant-garde.

Unless radical changes are made in the industry, the death knell of excellence seems assured — at least on the big sites (happily in small family businesses honest craftsmen who take pride in their work can still be found). Too many factors combine to make industrialised building and craftsmanship incompatible. For quality to prevail, the site worker must be motivated to put quality first; today this motivation is actively discouraged. In an industry where the sole goal of production is increased output, and where all the emphasis is placed on how quickly and how cheaply one can build, the worker is not paid for the quality of his work, but for the amount he does. Craftsmanship has simply been written out of the *modern* building industry; it is deemed uneconomic.

One can fully appreciate, then, the attitude of the site worker who 'adds more water to the mix to save time-consuming vibrations when the amount of money in his hip pocket on a Friday night depends on the volume of concrete he pours'². The choice for the building industry has become a very simple one; better built houses or more houses — but not both.

This is, however, only part of the equation that explains the decline of skill and of craftsmanship. The apprenticeship system, once the backbone of the craft industries, is rapidly breaking down; fewer and

fewer people are prepared to undergo a vigorous, long and poorly paid training when they can start work immediately without being penalised for inexperience. In 1974, only 10,000 trade apprentices entered the building industry (that is 1% of the total workforce) — and this despite the length of the training now being a fraction of what it was fifteen odd years ago.

Yet the value of serving an apprenticeship cannot be underestimated; it encourages the pride, the meticulous attention to detail, the self discipline that characterises excellence. No traditional master would allow his protégés to turn out mediocre work; if quality meant time-consuming, laborious effort, then nothing less would suffice. Above all, the apprenticeship system initiates a man into a specialised and select brotherhood; it gives him a status, and an interest in maintaining the basis of that status — the respect accorded to his profession. It is through the apprenticeship system that a trade both attains excellence, and ensures that it will be handed down from one generation to the next. Once lost, the knowledge the trade possesses is difficult (if not impossible) to regain.

Disjunction 5: Social Systems and Planning

Next we come to an area that has proved a veritable minefield for modern architectural theories; sadly few architects have managed to negotiate their way through it. However clever their designs may be their understanding of the forces that generate a community seems pitifully small. One would be hard pressed to name a single housing project of the last thirty years that has proved a long term social success. From the moment that the 'notices to leave' are served on those who are to be rehoused, the slow and often painful death of their community is sealed⁹. By the time that the bulldozers actually move in the social will of the people has been sapped; they are dejected, demoralised and resigned to being told what to do by the council — without any form of comeback. Their community has been shattered, and its resuscitation depends to a large extent on the layout and design of their new estate. Sadly, when it comes to

trying to design for a sense of community, much of architectural thinking, has, as Gerald Foley puts it, been 'muddled, woolly, and naive'. He gave one example; a student of his had designed an octagonal city, complete with octagonal buildings. When asked why he had chosen such a bizarre shape, he simply wrote with a great flourish across the top of the drawing, 'Octagonals create ccommunity'⁶.

This may be a frivolous example, but if it is any indication of the type of 'insight' that will mould the shape of houses to come, then we may have a great deal to worry about. Luckily, nothing quite so avant-garde has been foisted upon us. Even so, the layout of housing estates across the country has not proved very successful. Since the war, the emphasis has generally been on open spaces, wide streets, and open plan interiors; such designs are unfortunately death to the sense of community, for they foster the very forces that lead to the fragmentation of social relations. Take the example of Wybourne estate in Sheffield. Gladstone describes the social problems encountered there in some detail: 'Wybourne has almost no facilities. There are two or three shops and schools but little else. There is a lot of open space, but it is not arranged in such a way that people can use it. The large worn verges between the houses and the road are a no man's land for which neither tenants nor council want to take responsibility. Relationships do not develop there because there is no place for them to develop, no corner shops for example. People complain that they do not know their neighbours even after thirty years . . . That all the property is housing and all of one age means that there is no variety of use and no variety of population. In a less one-dimensional environment there will be people who act as focal points for the community, who have a particular view of it or perform particular services, a doctor or a storekeeper or a local decorator. These people are as it were common property and their property is a common meeting ground. Through them and their shops or waiting rooms a criss-cross of relationships builds up that gives people . . . confidence in the place. But the council could not

build corner shops, or allow people to establish services or businesses. Their priority is to build more houses'¹⁰.

One thing is overwhelmingly apparent: Wybourne could not by any stretch of imagination be called a community. Its plight, however, is by no means as desperate as that of many other estates up and down the country; neighbours may not seem as friendly as they used to be back in 'the old days' but at least they are not distrusted, let alone feared. The same could not be said of neighbours in many parts of New York, nor (if Gladstone is to be believed) of those new estates in many parts of Teeside. 'Almost all of those I talked to on St. Hilda's', he writes, 'were afraid of their neighbours. The distrust seemed to characterise other Teeside housing estates, particularly the large outlying ones of Middlesbrough and Stockton. In a deep way, the combination of the industrial and political situation seems to have de-cultured people. There is no sense that people belong to a secure or compassionate world'¹⁰.

This is a truly horrifying condition of society, and it is evident that something, somewhere has gone very wrong indeed. It would be absurd to place all the blame on the planners and architects who designed the estates or chose the areas for demolition. Rural migration, the whole tenor of life in a mass industrialised society, the encroachments of the market economy — all have proved extremely powerful forces in the erosion and slow death of the sense of community. Life in a megalopolis is so geared to speed, efficiency and mobility, that it is almost impossible for the dense network of social relations that characterise a community to emerge. The bed-sitter commuting society simply does not foster such tight knit personal relationships; it fosters their fragmentation¹¹. There is quite simply no premium placed on communal behaviour; in the city it does not pay. Under such conditions, even the most apparently resilient community will succumb to the pressures of disintegration. Take for example the case of the Chinese Americans (though Pakistani or Jewish ghettos would serve equally well); it was

always thought that the family bonds and the social structure of these groups was so durable that they would not break down, and would remain culturally intact. Not so. The truth is that the dynamic of urbanism as we know it makes inevitable the syndrome of violence, alienation, high crime rates and delinquency that we associate with our cities. Once they have grown too big, these problems are unavoidable — a thesis that is well discussed by Wirth, Morgan and others¹².

Be this as it may, architects and planners cannot be allowed entirely off the hook; theirs is an eminently social profession, and they have singularly failed to deliver the social goods. They cannot pass the buck wholly onto forces outside their control; they helped to trigger them off, and cannot now dissociate themselves from their inevitable consequences. The principles on which the majority of their designs have been based have not only failed to achieve social cohesion, they have actually militated against it. Scant attention has been paid to anything but the most trivial social considerations; hours of wrangling take place over the most suitable site for the local bus stop, whilst plans that one can predict will be social disasters are passed without a murmur.

Take the design of Milton Keynes. Hailed as the city of the 21st century, it will, when finished, have all the mod cons that any self-respecting city of the future could be expected to have. Cable television will be installed in each house, enabling each householder to play video tapes of his choosing, and the system, if connected to the telephone, will mean that one can actually see the person one is speaking to, ultimately making possible the local broadcasters dream — visual phone-ins. A leisure centre is to be built, complete with a wave pool (a sort of artificial beach), and, if the money is available (a big 'if' incidentally), a computer centre where the public 'can educate themselves through entertainment' by playing Buckminster Fuller's World Game. Not least there are rows and rows of box-like houses where the twenty-first century citizen is already beginning to live. (Commenting on the aesthetics of these houses, Gerald

Foley told me; 'if the people really do like them, they shouldn't.' One cannot help but agree.) The whole city is planned on a grid pattern, with different activities being contained in different squares. Work belongs to the industrial estate; play to the playground; leisure to the leisure centre; sleeping and eating to the housing estate; shopping to the shopping centre; growing old to the old peoples' home; being ill and dying to the hospital; being rich to one area; and being poor to another.

How asks Alain Hervé, editor of *Le Sauvage*, can one expect a city subjected to such gross classification of space to flourish as a community?¹³ For, as he rightly points out, it is only when the whole spectrum of classes, ages, occupations, and activities are concentrated into one localised area that the tight mesh of relationships, which form the basis of a community, can develop. Dissect the community, and like a dissected body, it eventually dies. Instead of one community, one gets a series of disjointed, fluid, and highly unstable groupings — in reality no more than the network of friends and acquaintances surrounding any one individual; his workmates, his pub friends, his shopping friends and so on. Needless to say, the only common denominator uniting these disparate and diffuse networks is the individual upon whom they are focused. Without him, they are likely to break up. By fragmenting activities, one quite simply fragments social relations.

'So what?' many would ask. What is wrong with fragmented social relations? Do they not give the individual the freedom to choose his own friends, instead of having them imposed upon him by an all powerful community? Surely what the citizen of today needs is more choice in his interactions — not a return to the gossip-ridden restrictive life of a small community? Ought one not to be tearing down the garden fence? This might be so if the effects of tearing it down were not proving so disastrous. Far from generating freedom, the open society has bred anonymity and alienation. Moreover it was inevitable that it would do so; follow through the dynamic of fragment-

ation to its logical conclusions, and these deleterious effects are seen to be unavoidable. Briefly for such relations to emerge, the emphasis must change from socially ascribed statuses and roles (on the basis of age, sex, skills, trade and so on) to personally negotiated ones. The individual must build up his own circle of friends, and to stand out he must manipulate them so that his position becomes clearly defined, and his prestige is assured. He must earn his status. If he doesn't — then he will be submerged in the uniform world of the masses. Ultimately only the most opportunistic, Machiavellian figures will make it — the

The industrialisation of building has proved a monumental failure . . . one would be hard pressed to name a single housing project of the last thirty years that has proved a long-term social success

world becomes the world of the bigshots. The isolation of the individual, the pitting of man against man, may bring a freedom of sorts — but is it anything more than the freedom to be alienated, to produce a society, which Engles, commenting on this very process, described as being based on 'barbarous indifference, unfeeling isolation, and hard egotism'?¹⁴

The continuation of designs that encourage this fragmentation shows just how out of touch the architectural and planning world has become with the everyday wishes of the rest of us. For it is abundantly clear that people desperately want that sense of belonging that accompanies life in a small community. They want to find their roots. They want that sense of belonging, which cannot be quantified, of sharing, of liking, and being a part of the fabric of life in a particular area. To deny this and actually produce designs that stifle it, from a dogmatic adherence to a particular theory of urban planning, is to cause social suicide, quite apart from showing a barbarous indifference to the feelings of those people whom the planner is supposed to serve. Suffice it to say that the

solution to the architectural side of the problem lies in adopting designs which are the antithesis of those planners have been using. Instead of expanses of lawn and concrete, there should be narrow streets, maximising social contact. As Peter Blake writes; 'What the city needs is not wide open spaces, but tightly structured spaces full of shops, restaurants, markets and all the rest. The one sure way to kill cities is to turn their ground floors into great spacious expanses of nothing. This is not a rhetorical statement; 6th Avenue, New York, whose upper reaches consists almost entirely of glass towers on pilotis, with lots of empty space at ground level, is one of the most dangerous avenues in Manhattan. I know — I live just around the corner. And before those pristine diagrams were constructed the avenue was full of shops, restaurants, bars and movie houses that stayed open most of the night — and nobody was stabbed. Now the place is an architectural gem, more or less — and a human disaster area'.¹⁵

Disjunction 6: Beauty and The Beast

One might have expected the emergence of the professional architect — the man whose job it is to bring art into design — to have created a beautiful awe inspiring environment. Not so; from the moment it became a profession, architecture seems to have been, almost universally, characterised by excess, by an urge to shock, and by an obsession with originality. Not surprising, then, that even in the 1890s Sir Reginald Blomfield was urging his colleagues to 'break with professionalism and refuse any longer to prostitute architecture', whilst Sir Thomas Graham Jackson commented that 'Time was when ugly building was not. In those days there were no architects as we know them; or rather anybody who had to do with building was an architect'.¹⁶ Compare the Georgian square, the Tudor cottage, or the medieval village to the modern housing estate, and one can see what they meant.

Ugliness in itself would be of little consequence if people did not care about the aesthetics of their immediate environment — and particularly of their homes. They quite

clearly do, however; one may not be able to measure the value that we place on beauty in our surroundings, but one cannot doubt that it plays a tremendously important part in our lives. Go into any house in the country, and consider what it is that gives it that 'lived in' feeling; invariably it will be the little keepsakes, the ornaments, the lighting, the curtains — in fact the bits and pieces that the owners have used to try and make their houses beautiful and personal.

Imagine then what it means to someone to move into a council estate where he is told that he cannot put up pictures on the wall for six months until the plaster has dried; to be told that he cannot paint his door or his doorstep any colour other than that laid down in the regulations; to be surrounded not by elegance and charm, but by drab, tasteless uniformity, by shabbiness, and uncompromising anonymity. This is a soul destroying environment. One literally has to attack it to make it at all homely.

The truth is that whilst we all need our towns laid out, the only people who *should* decide what constitutes a good design, and what a bad one, are the people who will actually have to live in it, and try to create a community there.

But isn't this the *reductio ad absurdum* of anarchy? If beauty is in the eye of the beholder (as it seems to be), isn't it impossible to reach a consensus as to what is beautiful, what is a good design? Effectively wouldn't one just be letting the individual loose on his surroundings, giving him free reign to destroy its appearance by allowing him to indulge in his personal whims? Imagine the ugliness that would result: streets where all the colours clash; where alterations have been made that are out of character with the rest of the street; and so on. This wouldn't be beauty — it would be chaos.

Under present conditions it undoubtedly would be. But the degree to which uniformity of taste varies depends on the character of a society's social relations; if they are grossly fragmented, then taste too will be grossly fragmented, differing widely from person to person. Beauty indeed will be in the eye of the beholder. If they do not, taste

will to a greater extent be uniform; but it will be a uniformity generated from within the community, rather than imposed from without. Take for instance, the layout of settlements or the decoration of a house in a primitive tribe; they both reflect traditional patterns, which in turn reflect the structure of the society¹⁷. Status differences are built into the design of the house; this veranda is for young girls; this room for married women; this part of the house for guests; this part for cooking; this for religious duties; this for hanging certain meats; this for others; and so on. So also with the patterns used on furniture; the Persian carpets that fetch such high prices in our auction rooms, for instance, are all woven according to traditional patterns. Red must be used on this border; blue on that; this flower must be included if there is going to be a picture of a camel; that one if there is a leopard. To deviate too far from these norms is, in the eyes of the nomads, to sail too close to the unaesthetic wind. Closer to home the same degree of uniformity of taste is to be found in the English upper middle class home; not surprising really when there are so many covert rules as to what is 'U' or 'non U'. Yet this does not mean that there is no variety or that the houses are identical or do not bear the stamp of the owners' personalities. It simply means there is less leeway for eccentricity.

Solutions

It should be clear by now that the building industry has become totally incapable of putting up buildings that will last or settlements that will prove socially stable. It may be tempting to blame this on a single factor or a group of people (property speculators, inefficient ministers, the tendency to let political considerations over-ride social ones etc.) but this would be wholly misleading. It is not one particular section of the building industry that is at fault, nor is it just the structure of the industry. The disjunctions we have considered are symptoms of a far greater malaise — the failure of our society to observe the constraints of the real world, and its increasing incapacity to take decisions or propose policies that will solve the problems confronting it. This thesis is confirmed

if we look at other service industries; a critical examination of the record in the fields of health care, transport, energy or agriculture presents us with a similar catalogue of disjunctions, wrong decisions and superficial solutions. These have been well documented in the pages of *The Ecologist*. Indeed this month's editorial deals with an example of precisely this sort — the failure of planning authorities to implement any policies other than those that accommodate the trends they were set up to reverse. If the problems confronting us are to be tackled seriously, and Western society is to be redirected along the path towards stability, nothing less than a radical restructuring of our social, economic and political systems will suffice. In effect this entails entrusting important functions, such as building, to stable self-governing systems at different levels of organisation (the community, the family and so on), phasing out bureaucracy and decentralising, so that responsibility is restored to those that have the power to implement decisions.¹⁸ In other words to implement the proposals set out in *A Blueprint for Survival*. Unless steps are taken post haste towards this end, we can expect not only the collapse of our buildings, but, far more horrific, we can expect the collapse of our society.

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Worldwatch Papers

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Price £1.00 each post free from The Ecologist, 73 Molesworth St., Wadebridge, Cornwall PL27 7DS.

Proposal for a New Ecological College

by Graham Carey and Peter Abbs

Current educational trends concentrate on preparing our young people for an unreal technologically based future. The authors believe that communal responsibility, self-sufficiency and physical work are essential elements in training a generation who must be equipped to face the impending ecological crisis and thereafter to shaping the post-industrial age.

Examining the three major external threats to human life, the threat of nuclear war, of increasing population and of environmental pollution, Robert Heilbroner in *An Inquiry Into the Human Prospect* concluded:

*'Unlike the threats posed by population growth or war, there is an ultimate certitude about the problem of environmental deterioration that places it in a different category from the dangers we have previously examined. Nuclear attacks may be stabilized; but ultimately there is an absolute limit to the ability of the earth to support or tolerate the process of industrial activity, and there is reason to believe that we are now moving toward that limit very rapidly.'*¹

(our italics)

According to this analysis, and it is one that many ecologists confirm, the central challenge is to curb industrial production, and, therefore, the habits of consumption, on which urban life depends for its thin sense of identity. In the under-developed world, cities are doubling in size every ten years. People are deserting the countryside drawn by a

counterfeit image of material affluence — of cars, cosmetics, deep freezers, television sets, alcohol, and gadget upon gadget — an affluence which has become impossible because unsupportable. The multitudes cannot, even if it were desirable, live out the advertisements. The physical world is closing in on us. The ever-increasing demand for more has merely uncovered nature's finitude, those limits within which we exist.

The crisis before us demands qualities and values antithetical to those prevalent today. Habits of waste must be converted into habits of thrift; habits of mindless excavation into habits of mindful preservation; a life of neurotic consumption into a life of joyous frugality. Many have argued that such a conversion will not take place willingly, but through the cruel power of necessity, through war, devastation, plague and through the repressive regimes of military dictatorship. It would be foolish to be optimistic. Yet it would be inhuman not to fight for the decent path, not to hope that the conversion could happen through the channels of democracy, through the feelings of mutuality, through the

medium of the imagination.

We have considered elsewhere the psychological and cultural nature of the necessary transformation of man. We must now consider one further aspect, namely that of work and economics. The needs here would seem to be fourfold:

1. To restrict production to genuine needs.
2. To develop methods of production which do not require the massive use of non-renewable resources.
3. To develop forms of production which provide enjoyable occupation for the makers.
4. To keep the units of production relatively small in scale and democratic in structure and close to the surrounding community.

In this article we wish to explore the general educational implications of our position and its implications for the practical running of a new ecological college.

The Value of Work

Work, and by this we mean all those tasks essential to the creating of an abundant life, should be an integral concern of colleges and

schools. Our concern can no longer be to fit individuals into the existing order, for the technological meritocracy of mass society has released into its own blood-stream the poisons that will destroy it. For the majority of people, work has become nothing more than a passport to colour television and a deep-freeze. In our society, work has become that long period in which living is postponed, in which one waits for five o'clock, for Friday afternoon, for the summer holiday, for retirement, for an abstract wage-packet. Adolescents leave our schools largely unprepared for the experience of futility that awaits them as soon as they become employed, or, as likely, unemployed. Since birth they will have been fed with the ceaseless propaganda of the advertising trade, and during the last few years at school, been coaxed by careers advice of dubious merit. Most of the young will never have been given a chance to sense how work in itself can be wholly absorbing, infinitely satisfying and essential to the good life. Perhaps, then, it should become our aim, as teachers, to hold out to those destined for the typing pools, the production lines and the dole queues, a dignified alternative. Perhaps we should transmit to the young skills they can master, as well as a simple knowledge of how to make such basic products as bread, cheese, furniture, utensils and cloth. This cannot be dismissed as 'romantic' for it provides a wholly *practical training*. Nor does such training exist in a complete vacuum. There is, even now in the making, a series of serious experiments across Britain, exploring the possibilities of intermediate technology, of mixed organic farming, of small-scale industries based on local materials and needs. These fragile experiments prefigure the ecological society that will, sooner or later, with an uncertain movement, emerge out of the cracked shell of industrialism.

Because schools have failed to respond critically to the consumer-society, much of education is dedicated to tackling pseudo-problems, superficial problems invented by 'educationists' to keep children occupied. Schools are, quite simply, not aware of economics; they have become too detached from

fundamental life-sustaining activities. Life in school is not lived; it is, in the appropriate American jargon, 'simulated'. No wonder children gaze out of the windows dreamily waiting for the bell or, more defiantly, cut their names into the desks provided by the Welfare State.

By suggesting that schools are uneconomic, we do not mean to imply that schools must be regulated according to the dictates of a crude cost/benefit analysis. Far from it! By 'economic' we refer to that energy in man which creates what it genuinely needs and which sees that the common wealth (as defined by Ruskin) is fairly and lovingly distributed. Nor in advocating work as an integral part of the curriculum do we mean the production of ashtrays, scones, book-ends and pipe-racks. In schools today many girls do learn to cook and boys often make coffee tables, but these products and artefacts do not generally arise out of the actual daily needs of either the school or the surrounding community. The school meals are not arranged and cooked by the staff and pupils. Nor, to take another example, is the school furniture designed and made by the wood-work department (as has happened in Cuba).

Yet we have only to observe young children to see how much they desire to imitate the daily tasks of 'adult' life. Here, once again, we have to learn from Coleridge who claimed that: 'children are much less removed from men and women than generally imagined'. In the home, at the age of three or even younger — children want to wash up, use a pan and brush, dust, make cakes, make beds, lay the table, write, post letters, wash clothes and light fires. Outside they want to garden, cut and nail wood, build, pass tools, collect vegetables, feed chickens and collect eggs. Children who are allowed, with due care, to tackle these tasks, thereby develop skills and powers of co-ordination and have no need of so-called 'educational toys'. At the same time work provides a fitting means by which the child can enter into relationships with the adults about him. Through being allowed to work, the child discovers himself as an

indispensable member of the human community.

We should dispense with pseudo-problems in education and replace them with real tasks. This is not to deny the creative powers of phantasy and play in a child's life. Nor is it to undermine the intellectual and aesthetic strivings of the human mind. These are of crucial importance. What we are arguing is that imaginative and intellectual activities should be the essential concerns of a community which can support itself and is, therefore, strong and autonomous. We also want to insist that aesthetic and intellectual energies attend the making of a table or a dress, just as practical energies attend the making of a poem or a piece of sculpture. We are loath to make sharp divisions between 'pure arts' and 'applied arts' or, for that matter, between 'economies' and 'academies'. Our quest is for wholeness.

It is interesting to note here that, for a variety of reasons, both noble and ignoble, work has often been recognised, particularly during the 18th and 19th centuries, as a part of schooling. By most accounts the introduction of 'work' into the curriculum invariably led to an improvement in 'academic' performance. This was also the case with some of our antecedents. Karl Marx, who was so opposed to the exploitation of labour in the 19th century, yet believed that 'if the element of exploitation could be removed from it, then child labour ought to become an essential part of education'. After the Soviet Revolution a small group of teachers in Russia drew up an educational programme which stated: 'The personality shall remain as the highest value in the socialistic culture'. It went on to claim that the personality can only develop its natural inclination in a harmonious society of equals, whose actual solidarity of interests is based on a stable community. The school would thus be transformed into a:

'working commune based on self-activity, on productive labour for common use and adapted to local conditions. The school should not be opposed to life, but coinciding with it, and should endeavour to create a harmoniously developed human being'.²

To support such ideals is not to approve of the socialist Industrial State. Like Western society, Russia has also effaced local communities, 'liquidated' the peasantry, fostered meritocratic class distinctions, and betrayed, if it ever possessed, the concept of the good place and the good life. Like America and Europe, Russia imperialistically asserts values which are culturally blind, ecologically ignorant and spiritually impotent. State socialism and capitalism are rooted in the same materialist philosophy: it is not surprising they are so similar and have come to understand and reflect one another. Quite simply they are variations on the one exhausted theme of industrialism.

Gandhi also saw the educational value of labour and opened schools in India and South Africa based on the principle of self-reliance. He saw that it was wrong to run schools as 'charities' in which children learnt to waste or disregard things that others had made. He declared:

'I have made bold, even at the risk of losing all reputation for constructive ability, to suggest that education should be self-supporting. By education I mean an all-round drawing out of the best in the child and man — body, mind and spirit. Literacy is not the end of education, not even the beginning, it is only one of the means. I would begin the child's education by teaching it a useful handicraft and enabling it to produce from the moment it begins its training.'³

There is nothing utilitarian about Gandhi's proposal. It is not made by the materialist who would return us to 'solid objects', 'hard facts', 'market statistics' — it is made by one who sees education as a 'drawing out of the best' and comprehends that as a total process of 'body, mind and spirit'. Gandhi's assertion that literacy is *one* of the means of education and that craft and the creation of artefacts is equally important, has been affirmed by many other distinguished thinkers, prophets and artists. On one of those many occasions in which he discussed education, Albert Einstein said: 'I should demand the introduction of compulsory practical work. Every pupil must learn some handicraft.'⁴ The same has been

demanded by D.H. Lawrence, by Herbert Read, and before them by William Morris, John Ruskin and William Cobbett. A similar philosophy of work has also been propounded in America, in the works of, for example, Lewis Mumford, Paul Goodman, John Rice, John Dewey and Henry Thoreau. The principle has an impressive ancestry. Nor has it remained only a principle. In a number of places it has been converted into reality. The imaginative energy that clusters round a living principle has crystallised into social form.

In Denmark a new college, democratic and self-managing, has been recently established. According to one account:

'Students become self-reliant and self-disciplined by working with staff to plan their own work programmes. Decisions are taken jointly, often after long argument and discussion and everyone has to face the consequences of their own ideas or behaviour . . . As well as running the schools, the Tvind group also provide or run facilities which the student groups and others can use. These include a fully equipped bus and motor repair shop, and a printing workshop where the schools' textbooks, songbooks and pamphlets are produced. There are also, of course, all the normal things you would expect in a large school — a sports hall, library and music room.

One difference is that the staff and the present students have helped to build the place from scratch. They have worked on the foundations, the drains, the central heating and the wiring of buildings. They have planted trees, laid roads, put on roofs, done carpentry and painted. It gives them a great sense of identity with the school.

. . . At the moment the group are building the biggest windmill in the world to provide hot water and central heating for all their buildings and greenhouses. They are very popular locally and have had no difficulty in convincing the local authority to accept their ambitious plans. It is a scheme that is typical of the group and no more improbable

than their plans for transforming teacher-training seemed when they first put them forward a few years ago.'⁵

In North Vietnam there is emerging an education not unlike the one which Gandhi proposed and not unlike the one being pioneered in Denmark. One school at Hoa Binh, fifty miles west of Hanoi, is now completely self-supporting after twelve years of existence.

'In 1962, with the school hardly constructed, teachers and pupils reclaimed 400 hectares of land from the jungle and set up an industrial complex designed to process raw products: cassava, peanuts mangtang seeds, into flour, vermicelli, sauce, oil and alcohol. This is an excellent laboratory for practical exercises accompanying science lessons . . . it is actually a school organised according to a new formula; study combined with work. Its only goal is to train the young people and the cadres *to study well*. The production work, which serves to maintain the school and its staff and students, *makes theoretical studies more lively* and closely connects them to the realities of life.'⁶

In our own country Rudolph Steiner schools have long recognised the need for crafts and the direct production of food and other necessities. The Peredur Home School in Sussex, for example, is a supplier well known in the area, of excellent milk, yoghurt and bread, while at the same time it produces meat, eggs and vegetables for its own table. Good weaving, pottery and wood turning are also produced and bring in extra income. These opportunities are seized upon by the severely maladjusted children, who are justifiably proud of being so usefully employed.

One of the reasons why Karl Marx so rightly attacked the division of labour was that it caused the worker to regard the result of his toil as an alien thing, something over which he had no control and which therefore robbed him of the energy he had put into it. It is clear, he wrote,

'that the more the worker spends himself, the more powerful the alien objective world becomes

which he creates over against himself, the poorer he himself — his inner world — becomes, the less belongs to him as his own . . . He puts his life into the object but now his life no longer belongs to him but to the object'.⁷

In primitive societies from which we have so much to learn, and even the small village to this day, the artefact is admired for expressing the identity of its maker and often remains a treasured object within the community. Such creation confers dignity on the worker but it demands, at the same time, hours of absorbed labour and an integrated mass of knowledge. George Sturt, in *The Wheelwright's Shop* gives a sharp picture of the craftsman's experience:

'We got curiously intimate with the peculiar needs of the neighbourhood. In farm-waggon or dung-cart, barley-roller, plough, water-barrel or what not, the dimensions we chose, the curves we followed . . . were imposed upon us by the nature of the soil on this or that farm, the gradient of this or that hill, the temper of this or that customer or his choice perhaps of horse-flesh . . . What we had to do was to live up to the local wisdom of our kind; to follow the customs, and work to the measurements, which had been tested and corrected before our time, in every village shop across the county . . . The work was more of an art — a very fascinating art — than a science'.⁸

It was an art, moreover, that bound the maker into the community whose wants he served. Here again, we do well to remind ourselves that much work in traditional societies is not a solitary affair but a social event, accompanied by song, ritual and conversation. If we are told always of the 'hardness' of life in the old countryside let us not deny it (for why should life be 'easy'?) but let us simultaneously point to the sense of festivity which attended it and which we, alas, have long since lost. The Irish playwright, J.M. Synge, gives us one example in his book *The Aran Island* which he visited in 1907:

'Like all work that is done in common on the island, the

thatching is regarded as a sort of festival. From the moment the roof is taken in hand there is a whirl of laughter and talk till it is ended; and, as the man whose house is being covered is a host instead of an employer, he lays himself out to please the men who work with him.

The day our own house was thatched the large table was taken into the kitchen from my room, and high teas were given every few hours. Most of the people who came along the road turned down into the kitchen for a few minutes, and the talking was incessant!'⁹

In such descriptions, and this must stand for many, we discern a society in which the arts of symbolisation are unconsciously cultivated; where life attains the order of ritual; where work, so essential to survival, is yet not a matter of 'killing time' but of employing it to enhance the life of all. 'The talking was incessant' — those badly housed and underprivileged peasants possessed 'a standard of living' which our industrialised proletariat have yet to dream of. Paradoxically such descriptions, even as they pull us back in time yet take us forward. They point to an alternative future. Furthermore, they show how the habit of remembering has become a subversive activity.

The Structure of a New College

In our college the students will be asked to pioneer a true form of democracy, a democracy which dispenses with artificial forms of hierarchy and which refuses to depend, like all state institutions of learning, on a hidden proletariat. The college will employ no servants to wait on the young at table, clean boots, make beds, dust rooms; no old women will scrub the stairs and corridors. We find the Oxbridge traditions in this respect quite offensive. How can the intelligent young, who still seem to move from Oxford and Cambridge into the B.B.C., the Civil Service, the Houses of Parliament, know what mutuality and community means when, even before their adolescent pimples have disappeared, they are waited upon like monarchs and popes?

When even as teenagers, they are taught an aristocratic division between leaders and led, between the imperious and the submissive? The practice of employing a proletariat, openly, as at Oxbridge or covertly, as elsewhere, perpetuates an ugly division between man and man, a division which no real democracy could tolerate. For this reason, staff and students in the new college will be expected to organise and regulate, as far as possible, their own domestic affairs.

Let us look a little more closely at the labour employed by the higher institutions of education. An existing college of education for 800 students — about half of whom are resident — employs the following 141 administrative and domestic staff: 1 bursar 1 deputy bursar, 5 domestic bursars and assistants, 21 secretaries, typists and clerks (including library staff), 1½ telephonists, 1 catering officer, 1 assistant catering officer, 11 cooks, 60 domestic cleaners, waitresses and dishwashers, 1 head gardener, 9 gardeners, 10 technicians (science, drama, art, maps, audio-visual aids, outdoor activities), 5 handymen or porters, 2 drivers, 2 painters, 2½ nurses, 2 security officers, 1 engineer, 3 assistant engineers and 1 lodging officer. Total 141.

Taking into account the number of students who reside out of college it is possible to arrive at a ratio of one non-teaching staff member to every four or five students. This is nearly two for every one member of the academic staff. This is not only costly but, on the educational principles we have visualised, absurd. Why shouldn't academic staff and students run their own library? Have the pleasure of attending the communal gardens? Have the responsibility of driving their own vehicles and organising their own equipment? And, finally, the burden of sweeping their own floors? Of these 141 administrative posts, we might only wish, at the outset, to keep half a dozen; we might, for example, need a bursar, a farmer (who would be a teaching member of staff) a cook (who would be closely connected to the Domestic Crafts and Ecology course) an engineer and secretary. All the rest of the work would be done by the members

of the college according to rotation and request, fairly established at the weekly domestic assembly.

The college would have its own farm, its own kitchen gardens and its own orchards. Not every student would be required to work on the farm or in the gardens (except perhaps at harvest time). A number of students, probably many of those studying the Ecology and Domestic Crafts course, would work at the farm on a regular basis and according to an agreed work-rotation. The college farm, as well as providing the main bulk of the food for the staff and students, would thus be part of a training course in organic farming.

Growth Towards Self-Reliance

For the college to achieve self-reliance students would need both theoretical and practical knowledge of many skills and processes including: bread making, the action of yeast, milling of cereals, brewing, distilling, food preservation by drying, salting, smoking, pickling etc.; manufacture of dairy products and allied animal husbandry, animals kept as an aid to art and science studies, natural energy sources, elementary building construction, printing of college journals, programmes etc.; pottery, wool carding, spinning, weaving dyeing etc.

Students and tutors would have to form groups to perform part of the total work load. But in a concentrated physical environment — a natural curiosity would tend to make everyone familiar with the work of everyone else. Tutors would work alongside students in many tasks, probably putting in less hours but not exploiting their status to avoid commitment. Task changes might be made at termly, half-termly, or yearly intervals or not at all. Changes might be made at any time by mutual agreement. In all matters it would be essential to make sure that definite responsibilities had been explicitly allocated.

In our antecedents — in, for example, the monastery, in the early years of Ruskin College, in Black Mountain College*, we can observe thriving examples of largely self-managing communities. They have worked in the past and there is no reason why they should not work again in the future. After the present phase of industrial civilisation has

passed away, a social order, resembling in certain economic respects, the monastic order, may well reappear. There can be little doubt that, as with science, we need to draw economics back into a wider framework of human reference. Economics cannot be divorced from the concept of communal need and the reality of the individual's conscience. In one sense our college would exist to assert that marriage, or rather, remarriage — for the Mediaeval world had seen and sanctioned the union of morality and economics. However, the terms and possibilities of that union will be, must be, profoundly different from those engendered by the great monasteries. It is within the enclave of the new college that those terms and possibilities must be tentatively formulated and not only formulated but celebrated.

In the relentless effort to articulate common purposes and shared values the meeting will be of crucial importance. The meeting is the regular coming together of a whole community with a sense of seriousness and dedication in all that matters to it. The meeting is the place where any issue relating to the practical and communal life of the college can be raised and openly discussed. More fundamentally still, it is the place where the fine art of communication — the art of speaking and of remaining silent, the art of encouraging individuals to overcome their self-doubt and shyness — is developed and refined. Walt Whitman claimed that democracy was a great word but one whose true meaning still slept within our imagination. In the regular college

meetings, we would wish to reawaken the true meaning of the word. We define democracy as *the participation of all in the affairs of the community*. No one would argue that that was an easy state to achieve but it is made infinitely less difficult in the context of the small self-reliant community created out of a sense of purpose and out of a critical response to its own age. In such a community the problems of everyday domestic life would provide the tangible subject-matter for common discussion, and out of the prolonged discussions a common pattern of references and assumptions would emerge, giving the college an intellectual and moral cohesion. We know that at Black Mountain College in critical periods the community meetings were as painful as they were long but at other quieter periods the same meetings fostered a rapt closeness and a warm unanimity of purpose. Such a unanimity, not denying conflict, and, indeed, often arrived at through conflict, our college through its regular meetings would seek to create. Democracy would thus become an intimate experience of all within the college, not an occasional event and a remote counting of numbers.

Out of such democracy, out of the experience of shared work, both practical and academic, both domestic and creative, meanings will develop. Out of meanings, ceremonies. In this way we may find again the old balance and the symbolic language of the arts come to express once more a common wisdom and a common discipline. The new theme for man's mind may begin in prose but it should culminate in poetry.

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From *Proposal for a New College* to be published this month by Heineman Educational Books. Price £1.50.

* *Ruskin College* was founded by an American philanthropist, Walter Vrooman. It was named after John Ruskin because the college was inspired by his social and political writings. The College began in 1899 drawing working men to study at Oxford for a period of one year or more. In 1920 Ruskin College was formally recognised by the state and given an annual grant. We consider the early days of most interest, because they record a fascinating attempt to create a living democratic community.

Black Mountain College was founded in 1933 by John Andrew Rice, a professor of classics, as a reaction against the rigid system of American universities. The first term began with nineteen students and six faculty members. It grew to be a most distinguished centre for new movement in the arts. Staff and students built many of their own buildings and ran their own farm. A long account of this experiment in education can be found in Martin Duberman's *Black Mountain College* (Wildwood House).

PARLIAMENTARY LOBBYING

Readers of *Wheels Within Wheels** will be familiar with the efforts made by the roads lobby, to influence Parliament, by employing a man specifically to be in the House promoting their cause. In fact he has other commissions from an assortment of pressure groups. Various animal welfare societies also consider it worth their while to have on their payroll a parliamentary lobbyist dealing solely with their interests, cossetting those M.P.s known for their concern with animal welfare, and trying to capture the sympathy of others.

But this is not the only function of the parliamentary lobbyist. Because he is at the centre of the machine, where the bills and statutory instruments are churned out; where EEC regulations, white papers, green papers, House-of-Commons questions, early day motions, and hardly anyone knows what else — are under discussion, he can the more easily and much more quickly make himself acquainted with new legislation that may affect the interests he represents. This is no small thing at a time when, for example, *The Endangered Species (Import and Export) Act 1976*, went through all its discussion stages in the House of Commons in two weeks. For lack of

such a facility Friends of the Earth failed, at a crucial stage, to oppose the *Mines (Working Facilities and Support) Act 1974*, which was counted out for lack of a Commons quorum, and was subsequently quietly reinstated when even the M.P.s who had opposed it believed it was gone for good.

The procedures of Parliament are quaint (if you like that kind of thing), stupid, complicated and undemocratic (if you don't), but as none of the 635 members appears to be able to persuade any of the others to clear up the mess caused by 600 years of standing orders, pressure groups will continue to suffer unless they keep a strict eye on the situation. M.P.s acknowledge that the conservation lobby is strong and growing stronger. In some areas its strength is direct and public, in others M.P.s are approached by local groups about matters concerning their own constituencies, where the Member's own image is at stake, but there is no consistent, across the spectrum lobbying.

Surely the time is now overdue for the conservation bodies to get together to appoint a Parliamentary lobbyist? Such a person could be kept busy by any one of the big organisations, but there is much to

be gained by combining to produce a uniform policy and approach and for the sharing of the expense of such an appointment between all the interested groups.

No doubt the erratic (and legally untenable) censure of the Charity Commissioners for 'political' activity, will worry some charities. And there will be conflicts of interest among some conservation groups and environmentalists (between the other conservationists and the canal restorers, for example) but these should be sufficiently rare not to constitute any grave problems. Spreading the field of interest would also spread the work load over the year. Overall the gain to all groups through a common centre of parliamentary information and activity could only strengthen and improve their ability to work together.

The European Environment Bureau is successfully influencing the European Commission, and keeps its members up to date on the activities of the Eurocrats. Surely it is unsatisfactory that our own governing body should remain so unencumbered?

David Pedley

* *Wheels Within Wheels* Mick Hamer, 1975. FoE £1.25, add 25p for postage. (9 Poland St., London W1V 3DG.)

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Has This Act Any Teeth?

by Francis Sandbach

A review of the 1974 Control of Pollution Act shows how easily the authorities can by-pass those parts that do not suit them. To date Part 2 of the Act, dealing with the control of water pollution remains unimplemented, while the increased right of public participation contained in the Act can be neutralised by clauses allowing for discretionary action where implementation is considered detrimental to industry.

The Control of Pollution Act 1974 came on to the statute book after an unprecedented campaign to deal with a range of pollution problems. One of the principal objectives of the Act was to make possible much greater public participation than had hitherto been the case. The press, the Royal Commission on Environmental Pollution, and weekly and monthly magazines such as *New Scientist*, *The Ecologist*, and *Social Audit* had all helped to expose the dangers inherent in the shielding of pollution control administration from the critical eye of the public. The problems of controlling carbon black, cement dust, detergents in rivers, the Bedfordshire brick fields and the asbestos dust of Acre Mill demonstrated the dangers of secrecy and ineffective enforcement of pollution control standards. The Control of Pollution Act, while making no dent into the Alkali and Clean Air Inspectorate's bastions of secrecy or into the Official Secrets Act which determined the clandestine operations of the Public Health Inspectorate, did offer some hope for more open administration of other areas of pollution control.

As is often the case, what was once a burning public issue is in danger of being swept under the

carpet, for although the Act is in the statute book only those sections that require little or no public expenditure have been implemented. Like most new legislation on pollution control during the last hundred years or so, a major part of the Act makes discretionary action possible and so is open to abuse if public opinion allows it. It is mainly these permissive parts of the Act that have been implemented to date. Virtually the whole of Part II of the Act, dealing with water pollution control, is as yet unimplemented and is likely to remain so unless the Government is awakened, especially in the light of the recent drought, to its folly. A review of the progress in implementing the Act will indicate just how important it is to continue to exert pressure on Government in order to achieve those rights of public participation that have been demanded in the past.

Waste Disposal Licences

Public pressure and concern about toxic waste disposal has led to the repeal of the notification system contained in the Deposit of Poisonous Wastes Act 1972 which had been hastily introduced to deal with fly tipping. A licensing system

has been introduced in its place. The disposal authorities (County Councils in England and District Councils in Wales) are responsible for issuing licenses regulating the disposal of all controlled wastes. The Act strengthens the hand of the local authority but only provides a small opportunity for public involvement in scrutinizing the proceedings. There are no provisions for holding a public inquiry into the issuing of such licenses although the disposal authority must consult the water authority and if there is a disagreement the proposal may be referred to the Secretary of State. The disposal authority will not be able to issue a license unless the use of land for waste disposal has been granted in accordance with the Town and Country Planning Act under which there are rights of appeal and public inquiry. Such concessions to public participation would seem to be a *fait accompli* and allow little opportunity for debate on the suitability of those sites for which planning permission has already been granted and whose use, and hence conditions of license, may change significantly in the future. However, some public scrutiny of the decisions taken will be possible, for the disposal authority has a duty

to maintain a register of licenses and the relevant resolutions which the public has a right to inspect. Theoretically therefore information will exist which could be used to expose weak administrations.

The waste disposal authority is encouraged by the Act to reclaim waste and where possible to use unrecyclable waste as a source of fuel to provide heat. Such heat may, for instance, be used to produce saleable electricity. These suggestions are non-obligatory and hence reclamation will still be controlled by market forces and the whims of disposal authorities. The section that might get us a fraction nearer to a recycling economy, that which gives the waste disposal authority a duty to carry out investigations and as a consequence produce comprehensive "waste disposal plans", has not been implemented because it would involve too much local government expenditure. This may seem incongruous, indeed outrageous, when one considers the degree of frivolous local government expenditure in the past; some purely wasteful and some designed to pander to the whims and caprices of an administration only interested in the short term. The decision becomes even harder to understand in the light of the importance attached to such measures in the Government's 1974 Green Paper, *War on Waste — A Policy for Reclamation*. It was this document that stressed the major role recycling could play in reducing our import bill for new materials, an issue that with the sinking pound is of vital importance today. Indeed, during the debate in the House of Lords on recycling and waste disposal, Lord Darling referred to the fact that reclamation measures saved some £2,000 million of raw materials every year and that at least £400 million could be added to this figure by further measures including the survey of waste disposal alternatives: when eventually the local authorities do become responsible for making waste disposal plans the public will have to be consulted but they will not, as in the case of Town and Contry plans, be subject to central government approval or local inquiry.

Noise Pollution

The third part of the Act is con-

cerned with noise pollution. Here we find improvements in both legal procedure and the possibility of introducing noise abatement zones in many ways similar to the smokeless zones introduced by the Clean Air Act of 1956. The Noise Abatement Act 1960 has been repealed and in its place a new system of statutory nuisance control introduced. The local authority may now issue an abatement notice demanding the control of noise under specified conditions. Previously the authority would have had to go to a magistrates' court if it was not complied with, so as to obtain an abatement order whose contravention only would amount to an offence. Now the onus has changed and a person served with an abatement notice has twenty-one days in which to appeal to the magistrates' court. If the appeal is not upheld or no appeal is made and if the conditions of the abatement notice are contravened, an offence is committed. As a consequence the abatement order part of the procedure is dropped. The new provisions also enable abatement notices to deal with nuisances that have ceased, but are likely to recur rather than just those that exist when the notice is served.

The scope for public action in obtaining an order from the magistrates' court remains and the immunity of the statutory undertaker is withdrawn, so allowing greater sanction on their possible irresponsibility. Scope for individual action is further enhanced by the fact that just one person's complaint may now be heard at the discretion of the magistrates' court. Previously private initiation of proceedings for the abatement of a noise nuisance was only possible if three or more persons, as occupiers of land or premises, lodged their objections.

The permissive part of the new noise pollution legislation deals with the creation of noise abatement zones. The local authority has a duty to inspect from time to time and to consider the creation of noise abatement zones. An order establishing such a zone must specify the class of premises to which it will apply as well as the maximum noise levels permitted. If objections are made to the order, the Secretary of State

may hold a local inquiry before confirming or rejecting the order. Once an order is confirmed the local authority has a responsibility to monitor noise levels from relevant premises and record these levels in a "noise level register" which is to be open to public inspection. The levels of noise can be further reduced by the serving of a "noise reduction order" on any premises within the noise abatement zone, a right of appeal being allowed to the magistrates' court. The importance of public access to the "noise level register" lies in the enforcement of abatement orders which can now be demanded by the public.

Air Pollution

The provisions for making information on pollution open to the public applies also to air pollution, for local authorities have been empowered to collect and publish information on discharges. This power is discretionary and the Secretary of State can also make regulations as to what information may be sought and made open to the public. Furthermore, local authorities will not be able to obtain, from works subject to the Alkali Act, information that is not currently being supplied to the inspector for the purposes of the Act, and may not obtain information from non-registered industries if this information is considered to be too costly to collect or likely to disclose trade secrets. The local authority would, however, if it felt it necessary, be able to enter non-registered premises and carry out its own measurements and record emissions. The local authority is also obliged to consult those responsible for air pollution as to how this information should be collected and made available to the public. Consequently, the public interest is very much dependent upon the discretion of industry, the alkali inspectorate and local authorities.

Water Pollution

The most important part of the Act that has yet to be implemented is Part II of the Act that deals with the control of water pollution. Here significant new measures are to be introduced as well as changes that should allow extensive improvements in public participation. It is a

horrifying thought that many discharges from trade premises are uncontrolled. For example, in the Yorkshire Water Authority region, 44% of trade discharges are uncontrolled, which represents 28% of the total volume of trade effluent. The water authorities will still be able to allow consent discharges unconditionally, but the public will have new rights to comment on consent applications. If the opposition to them warrants it, the Secretary of State may "call in" the application for his determination.

Applications for consent will be required for a number of additional types of discharges. It will become an offence to discharge trade and sewage effluents without consent into coastal waters within the three mile territorial limit or indeed by pipeline beyond the three-mile limit. Underground waters specified by the water authority as being in use or expected to be used for any purpose will belatedly be protected. Control will also cover discharges from drains. The range of consent conditions that can be imposed will be extended so that not only can these apply to points of discharge, design and construction of outlet, nature, composition, temperature, volume and rate of discharge, but also to periods during which discharges may be made and requirements such as meters and apparatus for measuring and determining the quality of the discharges.

Incredible though it may sound, most consents up till now have been based upon principles set out in the eighth report of the Royal Commission in 1912. Even these have been relaxed in many cases with consent conditions geared more closely to the effluent that a treatment works is capable of producing at a particular time. There is widespread recognition today, however, that consents should be geared more to the use of the river for water supply and recreation.

The Severn-Trent Water Authority, in its 1974-75 Water Quality Report, stressed the importance of imposing higher standards when it said: "Many of the consents to discharge industrial effluent were issued some years ago and relate to circumstances which applied at that time and which may have changed subsequently. With the increasing re-use of water and the investigation

of new sources of supply other parameters are being considered in setting standards." Given the possibility of public comment or consent applications, there will be every chance that water authorities without the same determination to improve standards may through Government intervention be forced to do so.

Particulars of conditions under which discharges may be made and information gathered by the water authorities for enforcement of these consent conditions, while presently maintained in a register, will become open to public inspection. Although there will be some exceptions giving protection to discharges where there is a danger of disclosing trade secrets. This disclosure of detailed information will be a great step forward, as the Rivers Prevention of Pollution Act 1961 had made it a criminal offence for the water authorities to disclose information on pollution obtained in connection

with an application for consent or on the imposition of conditions, unless the disclosure was made with the consent of the person or persons producing the pollution. It is little wonder that this Act has been called a polluters' charter, for any attempts to bring pressure to bear on the polluters were frustrated by lack of information.

Unfortunately for the public interest, even when the Control of Pollution Act 1974 is implemented, details of samples taken for the purpose of monitoring by those responsible for discharging effluent, which may be a new condition of consent, will not be included on the register and hence not available for public scrutiny. Here the Act shows a disgraceful weakness and woeful lack of foresight. Moreover there is the danger that the water authorities will, for convenience and economy, pass on a major part of the monitoring responsibility to the dischargers of effluent. We should



then be at their mercy until some disaster sets in motion the slow moving machinery eventually creating new legislation which ought to be in force now.

The information actually disclosed on the registers will become very important in ensuring that the consent standards are enforced, as it will become possible for interested groups such as anglers' co-operatives, amenity organisations or even concerned individuals to bring private prosecutions without restriction. At the present time a very large proportion of consent conditions are being openly abused. The Severn-Trent Water Authority has, in its Water Quality 1973 and Water Quality 1974-75 Reports, disclosed where permission has been granted and individual cases where a breach has occurred. Despite some improvement in river quality standards in this region, which can be attributed mainly to improved sewage works, there has been no improvement in trade effluent during the period 1974-75. Furthermore, only 57.3% of trade effluents and 31.3% of sewage effluents were of "satisfactory" quality. There is a great deal of variation of compliance with consent standards. Nevertheless, much improvement is required in all water authority regions. The mere 50% of discharges from sewage works that passed the 80% compliance standard in the Thames Authority area, while representing a serious pollution problem, seem almost satisfactory in comparison with under 30% for the Wessex Water Authority and nearer 20% for the North West Water Authority. The situation in the North West illustrates dramatically the regional differences. When the authority came into existence in 1974 its average expenditure on sewerage and sewage treatment per head was £28 per annum, which compared with a national average of £43 per annum. Yet the North West with only 7% of England and Wales river mileage had 28% of all the grossly polluted mileage. The North West Water Authority also inherited a debt of £330m, the servicing of which swallowed up 40% of its current income, which came from the local authority.

Given a widespread non-compliance with consent conditions one

might expect the water authorities to bring large numbers of prosecutions. However, the number of prosecutions has been low. The Thames Water Authority, for example, investigated 802 cases of pollution in 1974-75 of which 106 were major incidents, but only six resulted in legal proceedings. Today and for the foreseeable future until implementation, the situation is such that prosecutions may only be brought by water authorities or with the consent of the Attorney-General. In other words the water authorities that are responsible for the sewage works, and hence are themselves the major offenders, are responsible for taking legal action against industry and in theory against themselves. It is little wonder that the water authorities cannot use prosecutions as a pollution deterrent.

The water authorities are responsible for the sewage works and hence are themselves the major offenders

The introduction of private prosecutions together with much more extensive fines, which would be possible under the new provisions, could provide a new and workable deterrent. As it is, re-organizations of the water services in April 1974, by taking away the prosecution powers of the semi-independent river authorities and transferring them to the regional water authorities, has made the problems of pollution regulation even more difficult.

The information on the register will also be of help in cases of common law brought by riparian owners and others with interests that give legal rights of action. In the case of water pollution, common law imposes very high standards so that any pollution gives grounds for damages or even an injunction. Unlike noise or air pollution, an action for nuisance resulting from water pollution may succeed without proof of actual damage. Thus the anglers' co-operative, for instance, with an already extensive record of successful common law actions, will in the future be guaranteed actionable information supplied on a plate.

The Protection of Environment Bill had originally set out to remove the existing common law rights, but a formidable alliance of peers from all parties argued that removal of the public rights of obtaining an injunction would take away a major instrument for the protection of rivers from pollution. On the basis of this argument, the clause in question was amended and not reintroduced in the Control of Pollution Act 1974 when this entered the statute book after a change of government.

In August 1975, after much delay, the government announced that economic considerations forced them to conclude that the implementation of the Control of Pollution Act 1974 in relation to the control of water pollution would have to be deferred. If the failure to implement those sections dealing with waste disposal plans can be considered a false economy then the failure to implement those sections dealing with water pollution can be considered to threaten our very existence. During the long hot summer attention has focussed upon the problems of water supply. An obvious strategy that should be highly favoured involves increased river regulation, not only to supply greater abstraction but also to transfer water within and between the regions. The principal vehicle for such transferences would be our river and canal system. If such a policy were to receive sufficient support, as was suggested in the last report of the Water Resources Board published in 1974, it would not only reduce the number of controversial reservoir projects but would also seem to be sensible in the light of an uncertain climate in the future. If the pattern of the previous five dry years continues, with rainfall down 13% on long term averages (1916-1956), then emphasis must be upon conservation of water.

Implications for the Future

Pollution control will become crucial in view of the need to make more use of rivers, especially because given the continuing drier climate one can expect proportionately less runoff water. For with a lower rainfall the amount of runoff water replenishing streams, rivers, aquifers, lakes and reservoirs decreases even more in percentage

terms because a greater percentage is lost as a result of evaporation and transpiration through plants. Already periods of dry weather have increased nitrate concentrations of some rivers in such a way as to threaten water supplies. In 1973 abstraction in the river Lee had to be curtailed due to such increases in nitrates.

Some of the rivers such as the Trent, the third longest river in England and Wales, and the Tees, have great potential for providing more water supplies in the future without having to build new reservoirs in the attractive upland regions. However, the Trent has been so badly polluted in the past that only a massive clean-up could remove those doubts as to its acceptability as a source of drinking water. If there is going to be anything approaching a national water grid there would have to be an extensive clean-up of our rivers and canals.

Although it is a matter of urgency to adopt a stronger river pollution control strategy, the situation in which we find ourselves is that a major piece of legislation that could be instrumental to this end has already been passed but has yet to

be implemented. Furthermore, controls on capital expenditure by water authorities allow them little possibility of improvement. In the early autumn, towards the end of the long summer drought, the Yorkshire Water Authority published a Water Quality Report for 1974-75 that hints at the disaster to come if there is not a swift change in Government policy. From the report it is clear that the rivers and canals in this region have deteriorated to a worse state than in 1972 despite some improvements in 1973. Thus 470.2 kilometers of rivers and 76.3 kilometers of canals were considered to be 'grossly polluted' in 1975. The figures for 1972 were 465.0 and 70.8 kilometers respectively. This deterioration in standards can be attributed to the fact that the number of 'satisfactory' sewage treatment works fell during 1974-75 from 274 to 108 and that the number of 'unsatisfactory' works increased from 262 to 415. The situation with regard to trade effluent discharges also became more unsatisfactory during the year 1974-75, for 38 previously 'satisfactory' trade effluents had become 'unsatisfactory' while only 16 discharges that had been 'unsatisfactory' one year previously had improved to a

'satisfactory' classification.

In the light of the deteriorating river system in the Yorkshire Water Authority region during 1974-75 one would not like to hazard a guess at what has happened in less progressive regions during this last year of more severe drought. Unfortunately, other water authorities have not published details of river pollution standards for 1974-75. The river pollution survey, which is in the process of being updated to 1975, will not have its findings published until the end of 1976 or the beginning of 1977. Meanwhile, one can only hope that environmental pressure groups and the press, preoccupied so much at the moment with other issues, will help to persuade the Government that we are in a deteriorating and potentially dangerous situation and that it is a matter of urgency to implement the Act. It will certainly be expensive, and there will be objections from firms and rate payers, who have to foot the bill, but the Government will be failing in its duty if it does not look after the vital interests of a general public which has perhaps for too long taken for granted an inexhaustible supply of good water at a nominal cost.

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Notebook

A Careless Mistake

Between two and four million people in the State of Michigan are still suffering from the after-effects of a single accident which took place four years ago. Symptoms range from skin disorders, digestive troubles and lung damage to loss of memory and impaired coordination. The full story of this extraordinary case has not yet been pieced together: but the way in which several million people were poisoned by mistake, and the slowness with which the truth has come out, would be funny if it were not so terrifying.

The poison responsible is polybrominated biphenyl (PBB), a chemical used for fire-proofing fabrics. The Michigan firm which was making the stuff in 1973 also produced an animal feed supplement; and by a mind-boggling piece of inefficiency a lorry-load of PBB got sent out to a farmers' cooperative and mixed into feed which was distributed throughout the State. The chemical then proceeded up the food chain, causing a mystery epidemic among livestock before coming to rest in the tissues of the human population.

When the facts came out, over a year after the original accident, Michigan's Public Health Department did tests on several hundred people living on affected farms, and found no serious symptoms to distinguish them from "control" individuals drawn from other environments. It now appears that the reason for this encouraging finding was that the controls were contaminated with PBB too. Later, more far-reaching tests have revealed the real extent of the damage. The medical picture, however, remains far from clear. PBB affects different people in different ways; it is difficult to separate its symptoms from those of other poisons present in the tissues of every normal modern man; and nobody knows what level of the stuff can be considered "safe". Since the same can be said of hundreds of other chemicals in everyday use, it is only the *scale* of the Michigan disaster which justifies regarding it as unique. Smaller accidents, let alone the sort of damage officially dismissed as "acceptable", presumably take place every day unnoticed. Poison two million people in one go, and that's news: poison a few every day, or the entire population by imperceptible degrees, and nobody but a few cranks will either know or care.

An Unsentimental Antivivisectionist

The anti-vivisection movement, despite the unshakeable moral validity of its position, has tended in the past to suffer from a doggie-pussy-bunny image which may have done a disservice to its cause. Today scientists are joining the right side and helping to redress the

intellectual balance. *ATLA* (Alternatives to Laboratory Animals) *Abstracts* is one of their main mouthpieces, and in a recent issue (December 1976) Dr. H. Hillman of Surrey University published a useful *Programme for Diminishing the Use of Animals in Teaching and Research*. He does not labour the moral point, stressing instead the fact that biological experiments are scientifically valuable in inverse proportion to the disturbance they cause in the subject. "The information of the highest validity is that derived from the study of . . . an animal in its natural environment unaffected by our instruments of measurement. Less valuable is that . . . in which our examining techniques affect the behaviour of the subject. It is even less worthwhile to study . . . an animal, for example, on a specialised diet, caged, anaesthetised, restrained, etc."

Dr. Hillman goes on to outline a four-point plan aimed at the ultimate abandonment of all experiments with animals in his own field, medical teaching and research. First, a programme of public education aimed at changing the present complacency towards unnecessary killing of animals. Secondly, reducing the use of animals in biological and medical education by substituting other teaching aids, and by reducing the examination boards' insistence on dissections by all biology students. Thirdly, using animals more efficiently: for instance, at present an animal may be killed in one laboratory for a retina, while an adjacent laboratory is killing another of the same species for a liver; it would be a simple matter to avoid waste of this kind. Finally, observations and experiments making use of human subjects, human body fluids and tissues, animals in their natural habitats, and plants or protozoa. I have given only the barest outline of Dr. Hillman's proposals: but his article deserves the widest possible circulation among all professional biologists to whom animals are something more than a handy piece of laboratory equipment.

Education For What?

John Rae, the chairman of the Headmasters' Conference, recently called for the setting up of a Royal Commission on Education. The questions he wants this Commission to consider are worth quoting in full, since they undoubtedly represent a viewpoint which will be increasingly rammed down our throats as Mr. Callaghan's "great debate" on education gets into its stride. "What knowledge, skills and insights is it essential for our children to learn if they and their country are to fulfil their potential? What exactly is the relationship between schooling and the nation's economic performance, and what are the implications

of this relationship for the curriculum? How do we preserve what is best in our tradition of independent scholarship while eliminating the snobbery that diverts so much intellectual energy into genteel occupations?"

Am I alone in finding this sort of talk frightening in its assumptions? Implicit in it seems to be the belief that economic criteria are the only ones that really matter (with other values as optional extras if funds permit), and that education is to be judged by its effect on the Gross National Product. The reference to children fulfilling their potential would carry more conviction were it not coupled with the potential of the country, viewed obviously in the crudest industrial or financial terms. And what are the "genteel occupations" which elicit a Philistine sneer from Dr. Rae? Music, perhaps? Literature? The visual arts? And any science which lacks obvious practical applications, such as zoology or astronomy? In short, at least half the things which make any human civilization worth preserving. It has been said of a classical education that it teaches one to despise the financial rewards which it disqualifies one from obtaining: but might not a nation educated with this end in view be better fitted to face the realities of the twenty-first century than the hard-headed and ambitious technocrats Dr. Rae seems to be hoping for?

Reptiles in Crisis . . .

For climatic reasons, Europe is not especially rich in reptile and amphibian species — about 100 reptiles and 40 amphibians are native somewhere in the continent. It now seems that only urgent action can prevent that total being halved in the near future. A recent study for the Council of Europe reveals that 47 species of reptile and 13 of amphibian are in "immediate danger of extinction", with a further 9 reptiles and 18 amphibians "threatened".

A major danger to many species is trade — for example, 400,000 tortoises were exported from a single country in 1971 alone, for sale as pets. (Perhaps one in ten of these animals may survive the first winter in captivity: and even this lucky few are almost certainly lost to the breeding stock of the species.) Frogs are particularly hard-hit by the demand from schools and laboratories: they are not easy animals to breed in captivity, and as a result the drain on the wild population runs into tens of millions annually. Amphibians are in any case particularly at risk due to the disappearance or pollution of so many ponds, ditches and marshes. It is from the destruction of habitat, as always, that the most serious threat arises.

A single case from Britain may serve to exemplify the problem. The sand lizard and smooth snake are virtually confined to mature dry heathland in southern England, where heather or ling (*Calluna vulgaris*) is the dominant vegetation. Such habitat is becoming increasingly rare. Much has been lost to housing or forestry: and last summer fires ravaged nearly half the remaining acreage. Nor is preserving heathland a simple matter of leaving well alone: heather is not the climax vegetation on such soils, and without proper management (traditionally by grazing, hand-cutting and controlled burning) it is replaced after a few years by bracken, birch, pine and other plants of little value

to the sand lizard and smooth snake. It is not a century since Thomas Hardy could describe Egdon Heath as "a face on which time makes but little impression". In much less than another century, without far-reaching conservation measures, all such areas, and the unique wildlife they maintain, are likely to be no more than a memory.

. . . But Some Help for the Birds

Though Europe's birds are proportionately in less danger than reptiles and amphibians, the actual number of species involved is far greater — in EEC countries alone, 400 species are threatened, and as many as 60 could soon be extinct in the region, including such spectacular favourites as the flamingo, white stork, golden eagle and peregrine falcon. In the nature of things, effective bird protection is a matter for international agreement; and this is high-lighted by recent publicity given to the mass slaughter of migratory birds in the Latin countries, especially Italy. Birds migrating from Africa to Northern Europe have to run the gauntlet of millions of trigger-happy Italians who are liable to blast off at anything with feathers. Swallows, buntings, larks, warblers and finches are among the main victims, and estimates of the annual toll range from 150 to 300 million birds. Italy at present has no laws protecting birds: but legislation is at last being drawn up. Moreover, the European Communities Commission is hoping to introduce common conservation measures throughout the EEC. These would not merely involve positive action to maintain the population of the 62 species listed as being in the greatest danger, but also establish a general system of legal protection for all wild birds other than recognised game species and a few notorious pests.

As Others See Us

Kenneth Brecher is an anthropologist who lived for two years with an Indian tribe in central Brazil. The experience has given him a unique perspective on the peculiar habits of his own tribe. In *They'd Never Believe Me*, a five-part series on Radio 4 in January, he depicted in the form of imaginary dialogues the way in which his Indian friend Kwamuti might react to the British way of life. It was strangely unsettling to see our own culture through the eyes of this "primitive savage" — unsettling because the savage was evidently so much more sensitive, humane, reasonable and well-adjusted than ourselves. Indeed, the modern Britons emerged from Kwamuti's observations as a tribe with some very odd customs indeed — they have to employ others for such elementary tasks as obtaining their food or building their houses; they send away their children to be educated, and their old people to be cared for, by strangers; they do not greet their fellow tribesmen in the street, and often do not know the names or faces of their close neighbours. "If I told my people", Kwamuti ends each conversation in helpless bewilderment, "they'd never believe me." Perhaps they'd be right not to. Certainly the view that modern Western man is an aberration, a mutant who has lost some of the attributes of humanity, can seldom have been more persuasively expressed.

Nicholas Gould

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This Month's Authors

Nicholas Hildyard is a graduate of London University with a degree in anthropology. He is now a freelance journalist.

Graham Carey is senior lecturer in art at Bingley College, he is a potter and a keen opponent of extravagant motorway schemes.

Peter Abbs is a lecturer in education at Sussex University, editor of *Tract*, and author of *The Black Rainbow: Essays on the Breakdown of Culture* and *Root and Blossom: Essays on English Teaching*. The book from which the article in this issue is taken will be published shortly.

Francis Sandbach is a lecturer in Interdisciplinary Studies at the University of Kent. He has published articles in the field on environmental health, but is currently interested in the history of the environmental movement.

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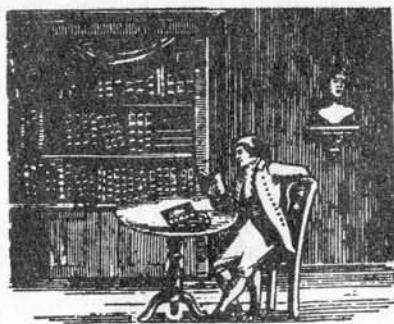
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Books

The Book Of The . . .

THE HOME OF MAN by Barbara Ward. Pelican Books. £1.

There are grave dangers in writing the principal background book to a major event and it is not quite fair to judge such a book long after the event itself has passed into history. On the other hand, it one wishes to be hypercritical, it is only then that the book can be subjected to the real test of its value. If it remains readable and relevant, not only has it passed, it has furnished proof of the most convincing kind that it has made a valuable contribution to the subject it discusses.

The Home of Man passes, and by a wide margin. As a book it is much more successful than *Only One Earth*, written as a collaboration between Barbara Ward and René Dubos for the 1972 Stockholm Conference, perhaps because the final writing has been in the hands of Barbara Ward alone. This book has a unity the earlier book lacked and while *Only One Earth* did (and perhaps could do) no more than rehearse arguments that had been aired widely for several years, *The Home of Man* develops ideas that I found original and stimulating, and insights that delighted me. It supports its ideas with a wealth of background information that never spills over to swamp the central theme.

The subject, of course, is urbanisation, and the condition of present and future "human settlements" — which is UN argot for villages, towns, cities and all larger agglomerations. The event for which it was written was the UN Habitat Conference and if, as I suspect, Habitat has been forgotten already, this book deserves to be remembered.

It is a powerful book, laced with an idealism that grows as the story develops through the six main parts into which it is divided, for it does not proceed from particular cases to broad generalisations so much as start with the briefest sketch of the whole broad picture and then, little by little, narrow the focus on to the essential problems and the proposed solutions.

We are taken first, and at break-neck speed, through the historical development of city cultures and so into the emergence of the cities of the twentieth century. So the focus narrows from cities in general to cities that we know, and it narrows again as the third part moves on to a more detailed discussion of approaches to planning and urban problems.

In a sense it is all groundwork for what follows, as the problems of creating and sustaining real, dynamic communities leads through considerations of transport and energy strategies which emphasize the need to make decisions about the kind of societies we wish to create, and their relative feasibility.

So, we must make decisions, a task at which we have not been notably successful or vigorous in the past. Many of the problems we face today arose from lack of forethought, although often this was compounded by bad, unimaginative planning. Nowhere are the problems more tragically evident than in the shanties (called by a different name in every continent, but present almost everywhere) that proliferate where outmoded systems of land tenure and inappropriate agricultural development drive human beings from the countryside to clutch at the straws offered by the cities. This is the subject of part four of the book and once we have faced it we never leave it, for the shanties are a product of poverty and poverty is a matter of relationships within and between nations, man made and by man soluble. The short fifth part deals with the economic and political models that cities may follow, and the final section moves entirely into Barbara Ward's own domain, development economics and the need to reform monetary and trading systems.

The book is optimistic. There is no

problem that cannot be solved, if only we can find the will to solve it, and under even the most desperate conditions life persists, sometimes tenuously but often exuberantly. Even the shanties are not hopeless, for they forge communities of real strength and vigour and there, as in so many other areas, the secret of good government may lie in providing the opportunity for people to improve their lot by themselves and in their own way.

In the end, though, the reforms that are needed amount to a major philosophical shift. We must recognise that the wealth of the west in the 1950s and 60s was based on ephemera: plentiful oil, cheap grain and confidence in the dollar. We must realise that unless we can become more mature, more responsible, more aware of our capacity to hurt others and be hurt by them, then, in Barbara Ward's own words, "in world terms, we have entered the equivalent of the nineteenth century's 'Hungry Forties'. The 'Angry Eighties' lie ahead".

Michael Allaby

Our Faustian Bargain

FACING UP TO NUCLEAR POWER edited by John Francis & Paul Abrecht. Saint Andrew Press, Edinburgh, 1976. £1.50.

NUCLEAR REACTORS — TO BREED OR NOT TO BREED edited by Professor J. Rotblat. Taylor and Francis, London, 1977. £1.00.

Ever since the big increases in hydrocarbon prices a number of countries have stated their determination to go nuclear. Consequently, people who before gave no more than a passing thought to nuclear power have awakened to its significance and have begun to voice concern. *Facing Up to Nuclear Power* and *Nuclear Reactors — to breed or not to breed* are two recent publications among the spate of books now available on the consequences of the peaceful uses of the atom. In many respects the two books are similar; each gives the proceedings of a conference in which the ethics of a greatly expanded nuclear power

programme were questioned and each contains papers from those within and outside the nuclear industry.

Facing Up to Nuclear Power is the product of a hearing on nuclear energy held in the mid-summer of 1975 at Sigtuna, Sweden, by the World Council of Churches. *Nuclear Reactors — to breed or not to breed*, on the other hand, gives the proceedings of a Pugwash Debate on Fast Breeder Reactors held in London on 28 September 1976.

Facing Up to Nuclear Power is a rather more discursive and fragmented book than the other, primarily because the conference speakers came from all over the world, and because the topic was more wide-ranging. At the same time, some of the participants, notably Roger L. Shinn and Gerard Siegwalt, set about identifying the moral dilemma posed not just by nuclear power but by the total fabric of the industrial society. Nuclear power for them is not necessarily the focal point of an evil that must be combatted; it is just the means to an end and it is the end that we must start questioning. As Shinn asks, "Will nuclear energy offer the possibilities of a better human existence, bringing opportunities to many which are now available only to a few? Or would human societies be better with a simplified life style, involving reduced consumption of industrial products and bringing people closer to each other and to nature?"

As happens so often with that kind of questioning no-one has the courage completely to eschew the industrial society and claim that we would be better off without it, or at any rate without a good deal of it. Certainly the World Council of Churches, in its conclusions to the conference, manages to stay comfortably balanced between the two possibilities of rejection or acceptance of nuclear power. "Is man playing God," the Council asks, "or is he grasping creative techniques which God intends him to use reasonably?" It seems to me that the Church has no wish to offend those participants, such as Arungu-Olende, K.T. Thomas and Jorge Sabato, from the less industrially developed parts of the world who would grasp nuclear power with

both hands should they see it as a means to improve the standard of living. We in the West, having already achieved a kind of industrial nightmare, are *ipso facto* more inclined to moralise and it is from the West that moralists such as Hannes Alven, Shinn and Siegwalt come.

Like Concorde, nuclear power has become a symbol of the industrial society, and to critics, the fight against nuclear power is a kind of last-ditch stand against the inexorable tumorous growth of industrial manufacture. Yet, as we find in both books, the dangers posed by nuclear power are so far largely hypothetical, less real to us than those we have brought on ourselves through the use of conventional forms of power. Will nuclear power necessarily bring about gross environmental damage if it becomes the major source of energy in the world?

In *Facing Up to Nuclear Power* Alvin Weinberg, ex-director of the Oak Ridge Nuclear establishment in Tennessee, explains what he considers will be some of the essential ingredients of a society that has become largely dependent on nuclear power for its energy. First, the standard of operation and engineering of the power plants will have to be maintained scrupulously even though there may be hundreds or even thousands of such plants in operation at any one time. Second, long-term radioactive waste repositories will necessitate not just a stable society but a kind of scientific priesthood to look after them. As for the possibilities of terrible nuclear accidents, Weinberg puts these and the effects of minute doses of radiation on human health into the category of 'trans-science', for it's beyond man's ability to measure them precisely. Despite his commitment to nuclear power, Weinberg is still able to see that man's decision whether to go nuclear or not is a moral one as well as economic. It is he who first described the use of nuclear power as a Faustian bargain.

Wolf Häfele, a German nuclear engineer, takes the argument a stage further and discusses 'hypotheticality', a term he has coined to express the problem of making judgements about situations of which man has no previous ex-

perience. What therefore should society accept as the additional radiation dose beyond the normal background as a result of the operation of nuclear power plants? How many lives are we prepared to sacrifice at the altar of atomic power? Can we in fact accept the death of any individual however theoretical?

As Häfele states, nuclear power scores hands down against other forms of power production in terms of actual impact on the environment, and whether it can or will bring about the terrible things depicted by its critics is as yet hypothetical. Thus Gofman and Tamplin, assuming that no threshold existed and even minute doses of radiation would bring about cancer on a linear basis, reckoned that a doubling of background radiation dose through nuclear power would cause 4000 additional cases of cancer each year in the United States. As it happens, today's nuclear power operation in the United States leads to a radiation emission which adds up to less than three per cent of natural background. On that basis nuclear power is leading to the deaths of 120 additional individuals each year in the United States. When similar Gofman-Tamplin type tests are applied to the health hazards of sulphur dioxide emissions from fossil-fuel plants then some 60,000 deaths each year can be attributed to that one source alone.

The reader is left to draw the conclusion that mankind is likely to be far better off using nuclear energy rather than fossil fuels. But the argument falls short, for energy is just the kick-off point for industrial processes with all their ramifications and interactions. The impact on human health is in fact rather savage. Today one in four people in the United States dies of cancer of which by far the greatest number are environmentally induced. Thus, should we accept the hypothesis that nuclear power can be kept clean, we have by no means eliminated the physical and chemical changes to our environment caused by energy-dependent industries.

Nuclear Reactors — to breed or not to breed deals specifically with the fast breeder reactor in Britain and consequently the different

speakers take up the thread of the argument in a rather more coherent and logical way than in the other book. Whereas every one of the authors, including Sir Brian Flowers of the Royal Commission of Nuclear Power and the Environment, seems to have accepted that the safety record of the nuclear industry in Britain has been good to date, they differ widely in their opinions about the fast breeder reactor. Aside from the uranium blanket from which the new fuel would be bred, the commercial fast breeder will contain several tons of pure plutonium, and it is the production of this from the spent fuel elements of thermal reactors that is the cause of anxiety. Indeed, should the reactor programme proceed as planned, by 1990 enough plutonium will be produced on a world-wide basis for the manufacture of 45,000 atom bombs. The diversion of plutonium from peaceful uses in electricity generation to weapon production is a very real possibility. Indeed the year 1977 began with the news that France was selling reprocessing technology to Pakistan, despite President Bhutto's avowed intention that Pakistan, like India, would have its own nuclear weapons. In an unstable world such as ours, an increasing number of countries are likely to strive for their own nuclear weapons, and if one wishes to know more about the dangers, then Dr. C. F. Barnaby's chapter does the job extremely well.

The present energy situation in Britain and the potential future of the fast breeder in providing Britain's needs once North Sea oil and gas dwindle, the safety of such reactors, the processing and reprocessing of fuel, and finally waste-management, are very clearly presented by nuclear experts. Taken together, the general thesis of these papers suggests that Britain will run short of primary energy towards the end of the century unless it opts for nuclear power, and that nuclear energy (leaving fusion aside) will not come up with the goods unless the fast breeder is used to breed plutonium from the otherwise unusable uranium-238 which comprises more than 99 per cent of natural uranium.

F. R. Farmer of the Atomic Energy

Authority gives some persuasive facts (we must accept his word for it) why breeder reactors are in some respects safer than thermal reactors even though they operate at much higher temperatures and use a fuel that would explode like an atom bomb should the core compact into a particular configuration. Naturally he believes such a possibility to be exceedingly remote. He concludes: "I said five years ago that the fast breeder reactors had special properties which, if understood and used correctly, might make it a safer reactor than the thermal reactors. I still believe that to be possible: I do not think we have yet reached the point of saying that it is so."

Such broad hints of caution in a statement by a recognised expert must be taken very seriously, and it is heartening that the Royal Commission should at least have called for a period of evaluation before any decision to go ahead with the commercial fast breeder is taken. From the Energy Secretary's hesitation with regard to a fast breeder reactor programme it is clear that some of the doubts are now part of government thinking.

Peter Bunyard

Which Way Shall We Go?

FOUR PAPERS ON THE 1976 CONSULTATION DOCUMENT ON TRANSPORT POLICY.

If more open government through greater public participation is to characterize a new phase in British democracy, then the Consultation Document (CD) on transport policy, which was published last spring as a green paper specifically in order to evoke replies from all interested groups among the public, was the appropriate subject to mark this new phase. The extent of public concern in the subject is shown by the number of responses received by the Government to the CD which is well over 1000.

What follows is the briefest review of only four of these replies to the CD. Many of the other responses would interest *Ecologist* readers. Some would provide a fascinating touchstone as to how environmentally aware various non-environmental organisations are. Pro-

environment positions may well be found in surprising places, as in the 12-page paper submitted by the Association of British Chambers of Commerce ("Transport Policy: Effect or Cause?" available from 6 Dean Farrar Street, London S.W.1). This gives firm support to maintaining the present rail network, castigates the Government for avoiding in the CD the fundamental issue in transport which is the geographical shaping of land use by transport infrastructure, and recommends a much less ambitious road programme than the CD. But the most interesting aspect of this response is the proposal that British Rail go in a small-is-beautiful direction: "if the railways were run with the local creative enthusiasm of a small or medium-sized business in the private sector, their present deficit, trackled line by line, town by town, station by station, should be substantially reduced and could even now be eliminated."

The Conservation Society's reply concentrates on the failure of the CD to consider transportation policy in terms of making the best use of resources, especially land and energy, and also suggests that current preoccupation with the car may not do much to better the human spirit. The basic 6-page submission is supplemented by seven appendices (available on request) which include two campaigning papers on the heavy lorry and lorry routing as well as John Tyme's full submission to the opening of the Winchester M3 motorway enquiry last June, which fully and excitingly summarises the legal, moral and constitutional matters he has been raising on behalf of the Society and anti-road fighters throughout the country for the last three years.

The Friend's of the Earth's submission, "Getting Nowhere Fast", is a dense 90 pages (including appendices) of arguments, projections, correlations and graphs primarily for the specialist on most of the important subjects including safety, land use and energy. Refined arguments are provided to explain and then make the case against centralisation, e.g., against that of centralised industry as more efficient, cheap or productive: "As the cost of freight movements has fallen so

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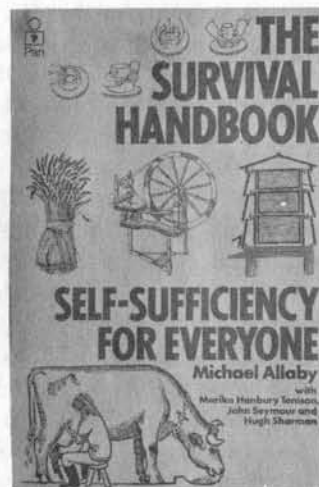
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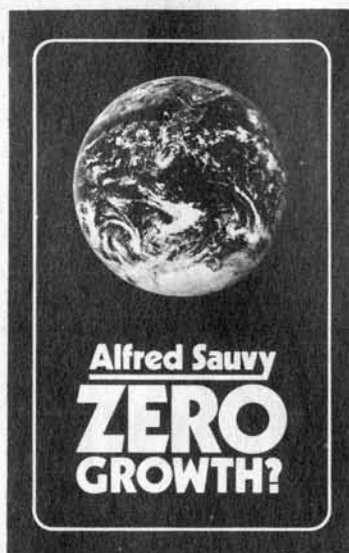
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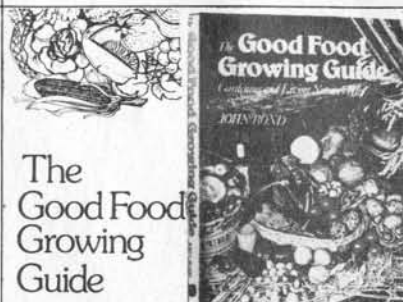
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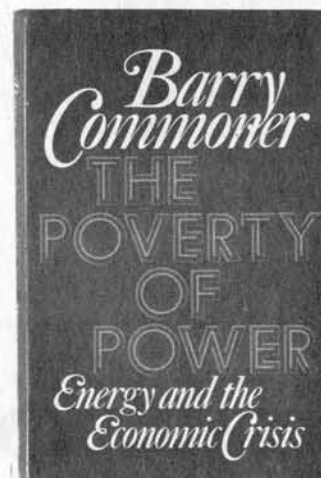
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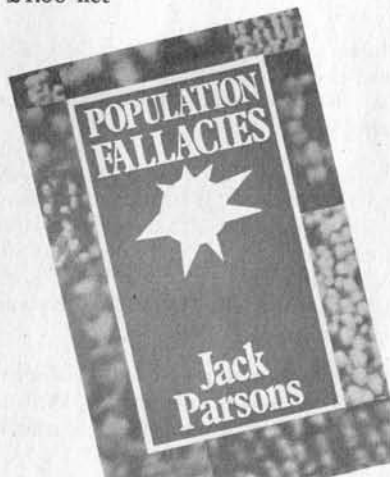


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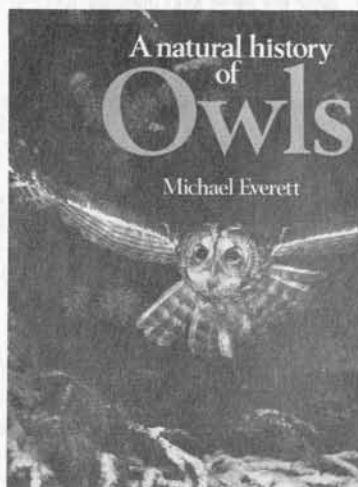
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firms have taken advantage of cheaper suburban land values and lower wage rates. This has helped to provide the opportunity to expand production to supply regional rather than local markets . . . (But) it should be noted that in the period 1965-75 tonnage produced did not increase at all, in fact it declined whilst ton-mileage increased substantially." Having projected existing and CD-sanctioned trends into the future, FoE recommend an alternative approach based on smaller-scale operations of every sort which are serviced, worked, shopped, schooled and produced by people from a much smaller area, because this would "require less movement per unit access", thereby avoiding the horrific consequences of the projected trends.

Transport 2000's 58-page response (which I partly wrote) also covers the range of issues the CD raises. It attempts to nail certain crucial political issues, particularly the enormous indirect subsidies given by the Government to company cars and the heavy lorry

about which the CD is less than candid and which treatment contrasts to the way in which the CD proposes to remove direct subsidies from many rail and bus services. The CD is also attacked for being devious about the Government's commitment to go on propping up the motor industry, felt to be the real reason for CD policies. Seven appendices include John Adams' most recent trenchant attack on government vehicle forecasting practice, figures on the true costs to the community of lorries, and the reproduction of an historic recent British Rail press release stating that capacity to be provided by the proposed Pudsey-Dishforth £100m road could be achieved at £½m investment in nearby rail facilities.

Pamela Johnson

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We are all environmentalists now but in 1952 when this book was first published it was justly described as 'the first of its kind to cover the vast panorama of human history from a strictly ecological point of view'.

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JOHN MURRAY

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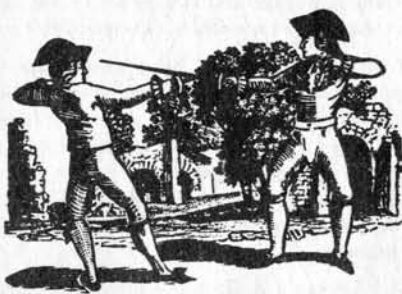
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course will include a visit to Mr. Sam Mayall's organic farm, and the commercial market garden at Weston Park, the Earl of Bradford's estate, also run on organic lines.

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For further details please contact the Shropshire Farm Institute or the Soil Association, Walnut Tree Manor, Haughley, Stowmarket, Suffolk. IP14 3RS. Tel: Haughley 235/6.



Letters

Over Refined Food and Arteriosclerosis

Dear Sir,

Congratulations on the excellent article on Bread and Health [*The Ecologist* Vol. 6 No. 9. Nov: 1976], by Dr. Ross Hall, which brings to light certain factors not mentioned by other workers in this field.

However, it needs to be completed by a reading of three books which are classics in this matter (for this reason I am surprised that Ross Hall did not cite them as part of his references). They are:- *Just Consequences*, edited by Robert Waller, (Charles Knight and Co. England); *The Saccharine Disease*, by T. L. Cleeve (Wright and Co. Bristol), and the famous TACC Report, *Bread*, Intermediate Publishing Co., P.O. Box 6, Kettering, Northants.

This subject interests me very much because at the moment we are working on a Project in our laboratory to find out the connection between these over-refined carbohydrates and arteriosclerosis, together with the reason why garlic extract can stop progress of this disease and sometimes even reverse it. The two themes are connected.

The preliminary results have been more than good — they show quite definitely that these refined carbohydrates are a positive danger to health, and that they could easily be the major cause of arteriosclerosis. The evidence all points that way.

It is also interesting to note that calcium propionate, which is used as a fungicide mixed with white flour, has no effect whatever on the toxins formed by certain types of fungi on and in badly stored grain. It may be a fungicide, but it is certainly not an anti-toxin agent, which is more important.

The real reason why the main cause of arteriosclerosis has not been pinned down so far is because the methods used have not been 'natural', as Ross Hall says in his article in another connection. Cholesterol deposits and other phospholipids have been blamed, without anyone asking the all-important question: Why are they deposited and not dealt with by the liver and other body organs, which are quite capable of dealing with twice as much of these substances as they receive through ordinary food? This is the real point at issue, and we hope to be able to clarify this once and for all, as the result of our experiments. The answer is a

simple one in words, but not so simple to prove in the laboratory. The refined carbohydrates, excessive in the blood stream, distract the body organs from their main task, the control of the phospholipids — and consequently these are left free to form deposits, since they cannot be excreted under those conditions.

Garlic extract is effective against this for two reasons: a) it cuts down the refined carbohydrates to size, and b) it reduces the deposit effect of the free phospholipids, especially cholesterol.

This is only a brief summary of the Project as a whole. Arteriosclerosis is one of the major diseases of our modern civilisation, and we are only now beginning to notice the effects of over half a century of bad feeding habits in which tinned foods have played a great part.

If we went back to 100% extraction flour and honey instead of white sugar, we would be better fed and cheaper. This is something I feel very strongly about, because it is a scandal — of the 75% extraction flour, for example, the extracted bran is sold at very high prices in chemists shops as Vitamin B complex, while at the same time most Governments insist nowadays that white bread should be 'enriched' with an additive of chemical Vitamin B complex, without realising that, in the course of baking, storing etc. such chemical Vitamin B. loses much of its power. We have calculated that from such enriched bread, only 2% or a little more, of the added Vitamin B complex is actually consumed. This is both absurd and a sin against true nutritional principles.

I mention all this because I think that *The Ecologist* should have a clear background from the scientific point of view on this subject of vital importance to our own health and also to the under-developed countries to which we are exporting these over-refined carbohydrates, in the form of aid.

Scientists if they tell the truth, and have no axe to grind (as so many have), will admit it freely. My recent articles on the use of medicines sold over the counter in chemists shops has been given wide publicity on Spanish TV, because now they realise that the State is spending more than it can afford on Public Health medical prescriptions which, in many cases, are entirely useless.

The way open for the future is obvious to many of us — preventative medicine and, above all, healthy and natural food. I am not a vegetarian, much less a crank on this; but when we know that there are cases of cancer of the vagina (unknown until recently) due to the eating of meat which has been produced by hormone injections used to fatten cattle, one begins to think that something is very wrong with our way of living and thinking.

The main difficulty is that most doctors are not biologists, and so do not really understand the implications of the medicines they prescribe. If you want to be scared, almost as though it were science fiction read *Drug Induced Blood Disorders* by G.C. Gruchy (Blackwell Scientific Publications) and you will see why I insist on this — and will go on insisting as long as I live.

Yours faithfully,
David Greenstock
Colegio de Ingleses, Valladolid, Spain

Medieval Nostalgia

Dear Sir,

Even quotations from Durkheim and Zimmern could not save Nicholas Hildyard's article 'An Ideal City', from looking like a glorious mixture of medieval nostalgia and wild speculation. It was astonishing to read the suggestion that the 'tribal' (which can mean a multitude of things) is somehow an especially 'natural' form of organisation. It seems to have been forgotten that the 'needs and aspirations' of man the individual are not fixed and immutable through time, but, to a considerable extent, change together with forms of organization. If the ecology movement is to draw strength from anthropological and historical studies, a more disciplined and critical approach is called for.

If the fluid society of Western cities has its pathology, so has the urban 'tribe'. In practice, the urban factions of medieval Italy were often too strong for their cities, blood feuds being as common as the more controlled competition exemplified by the Palio. This strife, as is extremely well known, encouraged the rise of the autocratic princes in the later Middle Ages. It was likewise on the wreck of the feuding communes of Medina that the Prophet Muhammad first-erected Islam, a colossal autocracy of the spirit. Perhaps the most important feature of Cleisthenes' reorganization of the Athenian tribes, not mentioned by Hildyard, was that it involved a deliberate mixing of residential and occupational groups, each new Tribe drawing its members equally from the coastland of Attica, the rural interior and the city of Athens. This bold move to reconcile 'intermediate associations' with the unity of the state might be of interest to modern African states confronted with the problem of the 'tribal' party.

Is it beyond our powers to construct a participant democracy without resorting to the ethics of the blood feud?

Yours faithfully,
James Urwick,
Madison, USA

How to Have a Free Subscription

Dear Sir,

I wish to take out a year's subscription to *The Ecologist* beginning with the January issue.

My subscription is, in a sense, being paid for by the detergent manufacturers. I have an automatic dishwasher, and have dutifully put in the recommended amount of 'finish' for every wash; since reading Barry Commoner's excellent *The Closing Circle* my wife and I have become much more conscious of the ecological menace of detergents, and decided to try using our machine without any detergent powder at all. It works perfectly, even for pretty messy dishes, the very hot water being clearly enough for most purposes. So I suppose we shall be saving about £15.00 a year on detergent powder, and are full of ecological self-satisfaction. No doubt most readers of *The Ecologist* know about this already, but you might nevertheless wish to pass on the tip.

Yours faithfully,
R.P.C. Mutter,
Chailey,
Lewes, Sussex.

Dear Sir,

I would like to clear a point made in the Vegetarian Debate summarised in your December issue. I said: "We shall have to learn vegan farming", not because this is the way the future must farm, but because farming without animals, from the exhausted prairie soils of the U.S. dustbowls, to the stockless section at Haughley, has been ecologically unsound. To return *nothing* to the soil, or use only chemical fertilisers, brings farming to a full stop, as the humus falls, and the fossil fertilisers run out with the fossil fuels.

Strict vegan farming is impossible, for both depend on the ton an acre of animal life, from bacteria to earthworms, in every fertile soil. Apples and other fruit depend on bees for pollination, yet honey is scorned by vegans as being of 'animal origin'. China has farmed successfully with the help of pigs, ducks, and the return of all human wastes to the soil, for more than forty centuries. We shall have to learn ways of farming organically, with the minimum energy and stock, for all the climates of the world.

In Japan, and many other countries, fish eating is essential. Without the Japanese fish catch, Japan would need 3.8 times her present arable acreage to grow vegetable protein. Fish farming (like comfrey growing) is one of the many answers, with the vegetarian Tilapia enormously efficient compared with the 50,000 lbs of phytoplankton it takes to grow 1 lb of tuna on the longest marine food chain. The fishmeal eaten by the suffering livestock in the factory farms of Europe and the USA totals 12 million tons a year, enough to solve the present world protein shortage, if it could be distributed according to need.

To farm the hillsides of the world and its rough pastures needs livestock. Furthermore, we shall need all the food we can grow, whether plant or animal, as the world population doubles by the year 2000, in India, Thailand and South America, even if by then we have stabilised it by sterilisation and birth control at a level we can support on our income from the sun, the sea and the soil. Vegans and vegetarians should think less about animals and more about human beings, and contribute more towards research into better sources of vegetable protein.

Yours faithfully,

Lawrence Hills,

Henry Doubleday Research Association, Essex.

Wanted . . . Conservative Ecologists

Dear Sir,

In your editorial in November you stated, correctly, that Ecology is a new, fast-growing political force. We have just seen, in the decision of the government to hold a public enquiry on Windscale, how potent this force is. It is not too much to claim that this is an historic moment — perhaps the beginning of the end for the nuclear establishment, which is now evidently rattled and confused by the public's deep unease.

With respect, however, I do not agree with you that the new political force can be effective

through exclusively Ecological parties. Whilst I agree entirely with the aims of the Ecology Party, and wish them nothing but success, I find it hard to imagine that they can ever compete with the diet of bread and circuses doled out by their traditional rivals. I am a Conservative. I have much more in common with my fellow anti-growth Ecologists (even those who belong to SERA) than with many members of my own party, committed as they are, at present, to the so-called 'creation of wealth'. However, I simply do not believe that the impending crisis provides sufficient time for a radical new party, however correct their doctrine may be, to acquire real political muscle — and nothing less will suffice for the massive task ahead. The only course left to Ecologists, I believe, is to infiltrate the mainstream of political parties and try to effect change from within. Losing deposits at by-elections (even with an unblemished conscience) is no answer.

If there are any other Conservative Party members who read your excellent magazine, I would be interested to hear from them with a view to establishing an Ecology group within our party. This will seem to many like trying to form a Vegetarian Club in a federation of butchers, but as time goes by I think more and more Conservatives will come to accept that Ecology offers the only solution.

Yours faithfully,

Richard D.B. Williams,

11, Church Road,

Portsmouth, Hants.

Reply To The Marxists

Dear Sir,

When I wrote my essay on Marxism and ecology, I did not expect that, if published, it would be received in silence by the Marxists. And the response from that quarter has been along the lines that I anticipated.

To deal thoroughly with all the points raised in all the letters of criticism received would require not just another essay, but a full-length book. I am, in fact, engaged in writing such a book, tentatively entitled *Groundwork of the Philosophy of History*, but as yet I have no publisher for it. (Since Marxism is now the vogue philosophy of the intellectual Establishment, it is very difficult to find editors and publishers who are willing to print serious philosophical critiques of basic Marxist arguments).

However, I would like to make one or two key points here.

First, it is gratifying to read Mike George's accusation that articles like mine are "dangerous." When a philosopher is called dangerous, he knows that he is on the right track. At least I am not cat's-cradling.

Mr. George is doubtful about the use I have made of the Second Law of Thermodynamics. If he looks at my article again, he will see that I have referred there to a major essay by Nicholas Georgescu-Roegen entitled "Energy and Economic Myths," (*The Ecologist* Vol. 5, Nos. 5 & 7). He will find it useful to study this essay in depth. I would also refer him to a Pelican paperback by Messrs. Angrist and Hepler, *Order and Chaos*, which is an introduction to thermodynamics for the layman. Here he will find, among other things, a brief discussion of the

historical implications of entropy. The conclusions of Angrist and Hepler are in line with the arguments of myself and Georgescu-Roegen.

True, some attempts have been made to dispute these conclusions, and to show that entropy does not mean what it appears to mean. Karl Popper's critique of Boltzmann constitutes one such attempt. However, I do not accept Popper's arguments, and shall be submitting them to an intensive critical examination in my *Groundwork*.

Mr. George's baffled comment on radical discontinuity will, again, be answered more thoroughly in the *Groundwork*. I should point out in this connection that I am not merely disputing the use made by Marx and Engels of Hegel's dialectical method: I am disputing the dialectical method itself. My own interpretation of history is organic, not dialectical. Thus my criticism of Marxism goes beyond Marxism, and is the most radical criticism of Hegel, as well as Marx, that has yet been made.

More general points: the response to my essay from the Marxists can be divided into two parts, thus: (i) *Marx did not say what I say he said, or did not mean what I say he meant*. I simply dispute this. There is such a consistent attitude towards technology, industrialism and progress expressed not just implicitly, but explicitly, in all the writings of Marx and Engels (who in many ways was a more systematic philosophical thinker than Marx), that attempts to pass Marx off as ecologically-minded do not hold water. Again, the detailed refutation of the neo-Marxists' misrepresentation of Marx cannot be given here, but it will be contained in my *Groundwork*.

(ii) *Marx was not a Marxist: therefore writings by modern neo-Marxists such as Gramsci, Fromm, et al, can be cited in defence of "Marxism" even if Marx himself can be shown to be anti-ecological*. When the Marxists are reduced to defending Marxism without Marx, their backs are really up against the wall. Once again space does not permit a full reply to these arguments, but those who lean on the periphery rather than the centre of the system must be at least subconsciously aware that the centre cannot support their faith. Before long the periphery will fail them, too.

One of my critics cites Fromm at great length in defence of Marxist psychology. I have not only read the work cited, but have prepared an essay refuting it, which at present remains unpublished.

I would like to conclude by thanking my critics for the interest they have shown in my work. Marxists as a whole I have always found to be very sincere, altruistically-minded people. In criticising the system of faith to which they adhere, I am not impugning the adherents themselves in any way.

Colin Fry,
Wadebridge,
Cornwall.

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