The

Ecologist

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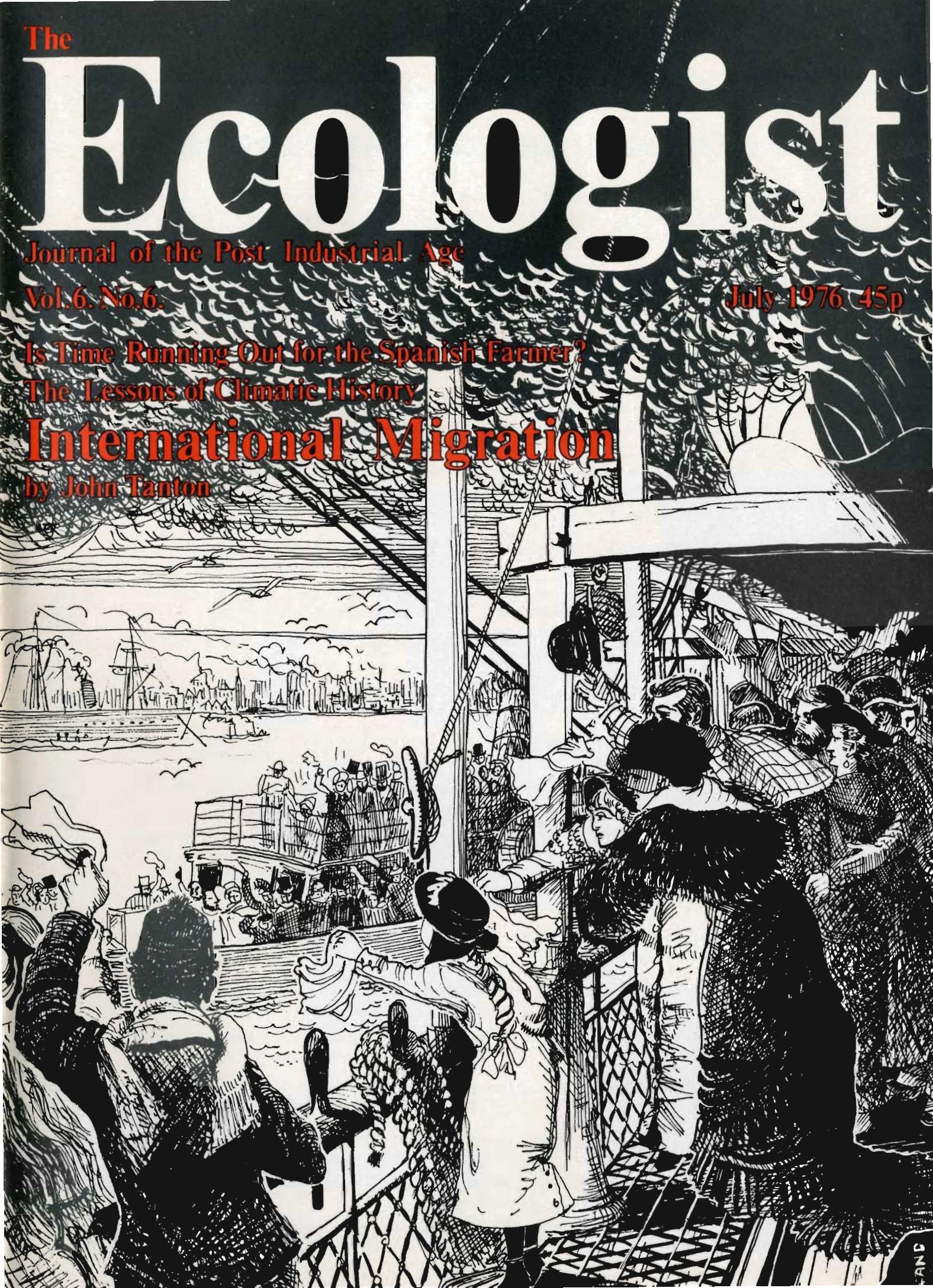
Is Time Running Out for the Spanish Farmer?

The Lessons of Climatic History

International Migration

by John Tanton



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Editorial

A Letter to The Director of the Food and Agriculture Organisation of the United Nations

Dear Sir,

We have recently received your press release 76/15. I would like to ask you the following questions:-

1. What do you mean by 'acceptably low environmental contamination'? How do you calculate it and what are the 'ground and air spraying methods' which can achieve it while at the same time eradicating tsetse fly?

2. To my knowledge, the only way to eradicate an insect species is to remove its niche; for example mosquitoes have disappeared where marshes have been drained. All attempts to eradicate insect species by waging chemical warfare against them have failed in the long run, largely because resistance builds up against the chemicals, and also for logistical reasons. On what then is your optimism based? Clearly not on experience. Do you have at your disposal insecticides to which resistance does **not** build up? Have you devised a programme which is free of logistical problems, i.e. for whose application the resources and capital will always be available, or is this just wishful thinking?

3. It has been agreed, you say, that special attention must be paid to the protection of wildlife from chemical hazards and from the reduction of their present habitat by expanding cattle herds, in the future. Does this mean that you plan to use insecticides which only infect tsetse flies and which have no effect on non-target species including birds and mammals? If you have, then indeed you have achieved a noteworthy breakthrough. What are the insecticides involved? Since your plan is to 'boost herds in tropical Africa from twenty million to one hundred and twenty million head' you will have to find grazing for some hundred million domesticated animals. The soils of tropical Africa are very thin and poor in organic material. At least twenty acres of land are required to support a single head of cattle, and this in the best conditions. This means that two thousand million acres, or two million square miles of land will be required. In such conditions how do you propose to protect wildlife? Presumably you mean that zoos will be built for them in urban areas. There is no other way of protecting them if their habitat is to be sprayed with poisonous chemicals and subsequently taken over for domestic cattle. It seems that the concern you express for wildlife is simply an attempt to placate those who will express their fears because they understand the hideous destructiveness implicit in your enterprise. It is very much like saying: "We have decided to explode a hydrogen bomb over your city, but all measures will be taken to ensure that no damage will be done to life or property."

Continued on next page.

Campaign against Tsetse of Africa for

Rome, April 5 — A massive but long and difficult campaign to eradicate the tsetse fly could boost herds in tropical Africa from 20 million to 120 million head — opening up one of the world's greatest potential untapped sources of protein food and almost doubling Africa's total number of cattle on the hoof, according to the UN Food and Agriculture Organisation.

The Joint FAO/Industry Co-operative Programme Task Force on Animal Trypanosomiasis and Tsetse Control held its second session here last week as part of the preliminary talks leading to an inter-agency and governmental funding conference to be convened later this year.

Animal trypanosomiasis, a disease similar to human sleeping sickness, carried by the tsetse prevents cattle rearing in most of tropical Africa, a broken semi-humid and humid belt stretching across the continent from the Atlantic to the Indian Ocean — considerably hampering agricultural and economic development of some thirty countries.

According to FAO calculations, a vigorous, well-planned and adequately funded campaign against the fly and the disease could lead to a dramatic change in the situation, with substantial gains in livestock production before the end of the present century.

In discussions based on a draft report on insecticides and application equipment for tsetse control prepared by Peter Haskell and his team from the Centre for Overseas Pest Research, London, U.K., who served as consultants to FAO, the Task Force meeting agreed there is not yet any simple, foolproof and cheap method by which the carrier flies can be eradicated without causing harm to the environment. Nevertheless, ground and air

fly could open vast area cattle raising

spraying methods which cause acceptably low environmental contamination have already cleared parts of the infested area.

However the campaign can succeed only if local governments carry it on relentlessly, because even a short interruption might permit the fly to re-invade pest-free areas, thus ruining the previous effort.

More efficient and less pollutant insecticides are now under test; and it is in this sphere, as well as in the development of new drugs, both for the prevention and treatment of the disease in animals subject to tsetse attack, that industry has a special role to play.

Plans are already under consideration to guide future economic development and particularly cattle rearing in the reclaimed areas in accordance with modern principles and national development plans, to the benefit of traditional and industrial farming.

Special attention, it was agreed, must be paid to the protection of wildlife from chemical hazards and from the reduction of their present habitat by expanded cattle herds in the future.

In addition there is the danger of overgrazing, if the growth of herds and land use is not properly planned and controlled. However, experts from industry express confidence that a concerted effort and a political will to control tsetse and trypanosomiasis would benefit both wildlife reserves and grazing resources because of the increased attention that would focus on them.

The meeting was chaired by R. B. Griffiths, Acting Director of the Animal Production and Health Division of FAO, and Fritz Bauer, Head of Veterinary Research, Hoechst AG, Fed. Rep. of Germany.

Press Release 76/15
Issued by FAO 5.4.76.

4. You write that 'experts from industry express confidence that a concerted effort and a political will to control tsetse and trypanosomiasis would benefit both wildlife reserves and grazing resources because of the increased attention that would focus on them.' Who are these experts from industry and what are they experts on? On tsetse and trypanosomiasis control? Since such control has been particularly ineffective so far, their expertise cannot be of very much value. If they are experts on the control of insect pests in tropical areas they must be aware that systematic eradication programmes are unlikely to work. There are far too many niches for insects in such areas, thousands more than there are in temperate zones. Perhaps they are just experts in the use of insecticides; in which case the expertise they will provide will but serve to rationalise a prior decision to adopt a course of action to which they are psychologically and financially committed.

5. Do you really believe that wildlife reserves would benefit from being sprayed with poisonous chemicals and reduced to a minute fraction of their present size, simply because 'increased attention' is to be focused on them? Is there any precedent which might serve to justify this claim? Is the world attention at present being focused on the Blue whale, the Indian tiger, the Highland gorilla and the orang-utan going to save these magnificent creatures? We know that it will not. Current trends show that all are doomed to extinction by the end of this century. This increased attention will also, it is claimed, prevent over-grazing. Can you justify this? Over-grazing is one of the main causes of the world's most terrible problem — desertification. Indeed it is estimated that some six hundred and fifty million hectares of land have already been lost to the expanding Sahara, which is estimated to be advancing, at some points, at the rate of thirty kilometres a year; a rate which could reduce all Africa to desert in little more than a century. Desertification is receiving ever wider attention. Indeed next year it is due to be the subject of a full United Nations Conference. What is likely to be the outcome? Quite a predictable one I am afraid. Attention is unlikely to be focused on the *causes* of the disaster, such as over-grazing, but on the resulting famine, for which the accepted remedies are precisely those measures you now propose. Measures which involve further increasing the impact of man's activities on an environment ever less capable of sustaining it, and which, in the long run, can only accelerate the process of desertification leading to famine on an as yet unprecedented scale.

Yours faithfully,

Edward Goldsmith

Comments

Associate Editors Take Up the Cudgels in Defence of Aid

Eco-Fascists or Nuclear Ostriches?

The American environmental right recently took a full page ad. in the Wall St. Journal to blame the whole of the "so-called" food crisis on Third World population growth. One more indication of the anticipated voter-appeal in lurches to the right in Presidential politics? Such lurches are to be expected from those associated with Republican contenders, but among the signatories of the Statement by the *Environment Fund* (which included such predictables as William Paddock and Garrett Hardin, and less predictably Paul Ehrlich who one would have expected to insist on some reference to over-consumption by the rich), was the name of Professor Zbigniew Brzezinsky, the noted Sovietologist from Columbia University, who is currently advising Mr. Jimmy Carter on foreign policy matters.

When the same Statement turned up in the May *Ecologist* and between articles chiding the *Environment Fund* for still espousing even a diminished concern with helping poor nations, on the grounds that it only encourages them to breed, to destroy the environment and to dislike us even more, one began to wonder if *The Ecologist's* editor was also seeking an advisory position with some Presidential hopeful. One also began to wonder what had happened to any semblance of editorial judgement or balance, no trace of either being visible in the two Comment pieces which flanked the *Environment Fund's* Statement.

The view that the earth will probably not support eight billion people by 2010, and certainly could not do so in Western-style affluence, will be readily endorsed by regular *Ecologist* readers. It was, however, more than a little unfortunate that the whole issue of affluence got left out of the discussion of what to do about this largest of human dilemmas. Without reference to the pressures of affluence we are left with the message that we, the lucky ones, must inevitably strip the seas of fish, hog the world's feed grains for 9:1 conversion to concentrated protein in our livestock, and corner the oil for our machines and fertilizer while only being able to suggest that "millions of our fellows" — I quote from Mr. Gordon's piece — "ought to die as quickly as possible".

Perhaps Mr. Gordon does to some extent correct the balance when he includes in his rather casual and widespread death sentence "many who are at present well-fed". Because if the West is willing and able to apply triage to the poor countries rather than to its own domestic distribution of protein consumption, then a substantial proportion of the victims will indeed be among the well-fed. Apart from those who die of obesity (the American Medical Association has stated that American health would be greatly improved if the population's protein consumption were reduced on average by *one third*), a sizeable number of the well-fed are probably doomed not to starvation, but to something possibly more unpleasant, which afflicted several tens of thousands of the citizens of Hiroshima, and will affect the children of many thousands more.

Europe and America are now sprinkled with potential nuclear terrorists, already forming complex alliances, so that they now do "jobs" for each other, taking in each other's terroristic washing, swapping a diplomat here for a bombing there. Apart from the Carlos-style brigades, the West is busy ensuring that such potential pressurisers as Gadaffi of Libya, Park of South Korea, Rabin of Israel, Videla of Argentina, Bhutto of Pakistan, Geisal of Brazil or even Vorster of South Africa, will be ready, when they have either their research reactors or their re-processing plants, to rattle their A-bombs, many of which, if not brief-case sized, will get through in the "diplomatic bag". We can be fairly sure that one or other will use nuclear blackmail in the fairly near future, either to make their point about who should move in relation to some demarcation line, or who should acceed what in the new numbers game of the New Economic Order, or simply to score a diplomatic "first" for the history books.

If the West calculates that they will not dare to risk a massive nuclear "tat" for their nasty little "tit", we should reflect on what, historically, desperation has done to the minds of leaders faced with internal upheaval, especially if they can claim the provocation of Western statements to the effect that they "ought to die as quickly as possible". We live today not in a frontier town or in a lifeboat, but jam-packed in a lift, squeezed so tightly by technology that someone can be stabbed with a nuclear device in the heart of his national capital without his armed forces, however "super" their power, having the first idea of who to punish. Only the most irresponsible or self-deceiving can suggest that with today's technology we can triage even a finger of the human body politic without the gravest . risk of nuclear cancer spreading throughout the system.

What stood out from this whole revamp of the people menace argument was that it was bogged down in the perceptions of the 1960s, while the world has moved on. Had any of the *Statement* signatories been to the World Population Conference of 1974, they would not claim that the poor nation representatives there said that it was the responsibility of

the rich West to feed them. What they did say was that the rich nations, which had so long exploited their resources and used their wealth to cushion the Western demographic transition, had a responsibility to help the poor to achieve that transition to stable low birth rates, in ways other than showering them with contraceptives.

Also apparently unnoticed by the *Environment Fund* is the fact that one major poor nation has cut its birth rate by more than half, and has done so without benefit of help and advice from the West, but by achieving a social revolution which incorporates birth control as one factor among many in social betterment. The Chinese example appears also momentarily to have slipped the editor's mind, despite the fact that in the very same issue as his Comment and the *Statement* is a good article showing how human excreta — the *Taboo Resource* — is used to help support China's immense population with minimum environmental impact.

The hardening plasticene lumps of rich and poor nations have changed a lot in the last decade. They have softened and melted into complicated particoloured patterns. A part of the old Third World has shown that it can throw the old rich elite of the West into chaos and probably, in the future, with the joker of nuclear terrorism in the pack, into internal conflict and disintegration as well. The old lifeboat theory is trundled again down the slipway, but the lifeboatmen cannot see that if launched the boat will fill not with Hardin's Bangladeshi starvelings, but with water.

While the *Environment Fund* were fulminating in the Wall St. Journal, UNCTAD IV was proceeding in Nairobi. It was a rather different UNCTAD to its predecessors. Most of the West — including the United States in its fashion — were there for real negotiations, because they were aware, like Dr. Kissinger with his resources bank proposal, that the world of the mid 1970s was a world of trade deals rather than aid, and that all the cards were not stacked in the City of London or Wall St.

The real question of the coming years, under the new "multipolar" power balances, in which Britain and Bangladesh both get aid from Iran and in which the decision as to whether to throw a rope from the leaky old lifeboat may be made in Riyad or Bahrein just as effectively as in The Hague, Paris or Washington, is not so much whether America will give food aid or withhold it, as when she sells her food, who will buy it, and for whom?

Lester Brown and others liken the US grain surplus to the oil under Arabian deserts. Indeed the CIA predicted in 1974 "agripower will pave the way for the US to regain the primacy in world affairs it held in the immediate post-war era". But the outcome of America's first major attempt to use food power seems to suggest otherwise.

In July 1974 the US decided to halt grain exports to the Soviet Union pending their coming to terms over SALT. Moscow, which badly needed the grain, nevertheless reversed the US decision by October without any significant concession. Though undoubtedly inconvenienced, the Russians simply turned to the same transnational corporations which had been setting up the American deal, and imported many millions of tons of assorted grains from other countries. Moscow was inconvenienced, but it was not held to ransom. Instead it was the US which took the brunt of the embargo. The prairie farmers, who had previously been called on by the government to get all possible acreage into production, and who often had gone into debt to do so, suddenly were filling the elevators with unwanted grain. By October, US market prices had dropped from $4.70 to $3.80 a bushel. That controversial embargo resulted in new farm lobby demands for unrestricted access to world markets, which is why Congress has so taken against the stockpiling of food for political aid. On top of which the aid climate is such in the United States, that, as Goldsmith points out, seven eighths of the wheat exported from the United States is now sold, less than 15 per cent being shipped as "aid", and the drop in the aid share has been 40 per cent in the last two years. So with the potential combination of a credit to Bangladesh from the Soviet Union, Iran or Kuwait and the support of US farmers as willing sellers backed by Congress, the chances of running a lordly lifeboat policy with food seem pretty slim.

There remains the question of the appropriateness of other aid supplied. Here the Comment articles have a point. *Ecologist* readers are familiar by now with disasters caused to the human and natural ecology of regions by massive hydro-dams; the water schemes designed on Western lines, but so complex that no one can make them work; the aid which finances arms used to suppress minorities or whole populations; the sports arenas, airlines and presidential palaces; the almost carless highways; to say nothing of the agricultural and industrial technologies which massacre the environment while reducing jobs and adding to the wealth in a few hands. Certainly the West is culpable. But are the writers saying that these ways are immutable?

As I write this we are in the middle of a World Employment Conference, the entire purpose of which is to ensure that, regardless of past cost-benefit calculations of the return on automated steelmills and other intellectual devices to prove that the accumulation of foreign exchange is the most significant measure of a poor country's advance, future investment is made with the *first* consideration that of creating jobs. The revolution in thinking has also penetrated to water supply and sewage. The old thinking here, that Western systems must be replicated to European standards, is also being thrown out of the window. The Habitat Conference's main message is that, given the basic rudiments, people do best building their own communities.

The goals of the late Seventies, even in conservative Western-dominated aid agencies, are no longer those of the Sixties, where replicative development was the scarcely questioned aim. A supply of clean water, the chance and knowledge to raise your own food and some work to do: these are the "basic needs" goals now. *Appropriate* technical aid, designed round a 25 year plan that is adapted to local social conditions and is ecologically sensitive to surroundings, could see these basics in the possession of everyone by the year 2000.

In the past we have ineptly delivered much dangerous or inappropriate "aid" and done so often mainly for our own benefit. Must we therefore suddenly abandon all help because we are bound to make equally grave mistakes? And if we abandon aid, does this mean that we halt all commercial investment which makes up around 70 per cent of the West's total economic (and ecological) impact on developing countries? Such a hiatus — even if restricted to countries with "irresponsible" population attitudes — would certainly have a marked impact in reducing Western affluence. The Signatories of the *Statement*, might be less than enthusiastic about such hard-headed self-sacrifice.

We have been building a house in an unfamiliar location with unfamiliar materials. The walls are

unsafe, the roof is like a sieve and the chimney has just fallen in. Do we decide to abandon housing altogether and return to the trees? Or when the client complains, do we return to our own comfortable dwellings abandoning him in the ruin, claiming *caveat emptor*?

The Ecologist Magazine gives the impression of a commitment to change: better, more sustainable ways of growing food, generating energy, cooling, heating, moving about, keeping healthy, enjoying leisure. It also appears to support the view that these better, more sustainable ways, are ways which may reduce our impact on the delicate natural systems of the environment and may be more in tune with the natural balances that have traditionally kept societies stable. *The Ecologist* believes, presumably, that these discoveries and re-discoveries open new vistas, new possibilities for doing more with less. Are the ideas that it has been expounding, over six fruitful years, of no use or interest whatsover to those of our fellow men who, from causes for which we were very often responsible, are faced with reduced environmental carrying capacities and little leeway for mistakes in their calculations?

The question has a particular significance for someone like myself, whose name appears on the "masthead" as an Associate Editor. I believe that *The Ecologist* has made a useful contribution to discussing ways in which we could help ourselves and our fellows to change our values and our techniques so as to come to terms with our environment. But perhaps I got it wrong. Perhaps change for most of us — especially those that wield the power in aid agencies, industry and government — is not even to be recommended. Pehaps we must therefore be prepared to write off a significant proportion of mankind while we concentrate our ecological insights on making our own predatory societies more stable and sustainable. If this latter is the conclusion, then I deserve no place as an editorial associate. I am not worthy of this company.

For like many feeble mortals, if I am permitted to shrug off the moral constraint of caring for my past actions, why should I care for my present ones, which will soon be past? If I can forget the crimes and messes that I have perpetrated, if I can apply triage to my past, and decide which bit I will save for the record, then I'm damned if I see why I shouldn't sip champagne over my caviar in Concorde while enjoying the in-flight movie of Space Odyssey 2000. But don't anyone copy me, or I may have to lose you in the triage.

Brian Johnson
Associate Editor

The Logic of the Heart

As Pascal said there is the logic of the mind and there is the logic of the heart, and damned be those societies which are governed by the former alone. I find the arguments of the Gordons and the Ehrlichs about the ineffectiveness of modern aid both logically impeccable and economically compelling; yet at the same time I find them *morally repellant*.

We cannot exist as human beings and humane societies on logical and economic grounds alone. It is as simple as that. The recognition of our Humanity is the recognition of our compassion for others. Whenever we *can* help we *must* help, for it is our duty to do so. We, the privileged ones, are where we are because we have reaped the benefits of processes which made others less fortunate. Even if we had attained this privileged position at nobody else's expense and entirely on our own (but can you imagine a situation in this contingent world where achievements can be made *without* affecting other people?) — we would still have had a duty to help the less fortunate.

The maxim "let them die" is heartless to the point of stupidity. Yes, heartlessness at one point does become stupid, for wisdom must always be tempered with compassion. We need not only shrewd economic cunning, but a great deal of wisdom to help the wretched of the world, for in helping them we are helping ourselves. And we must never forget that it has been, to a large degree, *our* ideology and *our* technology that incapacitated them and added to their helplessness.

Granted there are various forms of help. As Confucius said: "If you give a man a fish you will help him for a day. If you teach him how to catch fish you will help him for life." We have to provide aid which really aids the underprivileged nations, but we must never refuse it even if it is ineffective. Yes, even if it is ineffective; moral intentions are of great human significance. If we refuse to give aid on selfish grounds then, sooner or later, we shall reap the wrath of the morality in which *homo nomini lupus est*.

The arguments of the super lifeboat ethic are bankrupt and unsustainable either on ecological or ethical grounds. *The Ecologist* may wish to present them, but I am sure it does not wish to identify itself with them.

Henryk Skolimowski
Associate Editor

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Editors Comment

Oiling The Wheels of The Doomsday Machine

At the United Nations Habitat Conference at present being held at Vancouver, two thousand Government delegates are engaged in discussions based on *totally false premises* which all serious students of the world we live in know to be false and which many of the delegates themselves know to be false. Unfortunately, it is politically expedient to adopt these premises, and political expediency always gets a higher priority than biological and social reality.

What they are discussing is the type of settlements that will be required by the six to seven billion people who they assume will be living on this planet in the year 2000. Needless to say, there will never be that many people on the earth — not even for a single generation, *for it cannot conceivably support them.* Indeed one can be quite confident that long before the end of the century, world population will have been drastically reduced by famine and disease. This is the point made by Paul Ehrlich, one of the most humane and compassionate men I have ever had the pleasure of meeting, in his guest editorial in the June issue of *The Ecologist.*

Now my life is almost entirely spent among people who study these problems, and all those for whose judgement I have the slightest regard will agree with this statement, though many may not be in a position to make it themselves. For some reason, it is the man who announces a catastrophe who is considered evil, *not those who help to bring about the conditions that make such a catastrophe inevitable* — which is precisely what highly respected Government experts are doing by condoning, indeed formulating, policies which do not take into account our planet's limitations.

The Environmental Fund, in their statement published in our June issue, point out that trying to produce more food on ever more marginal land by ever more dubious methods will not prevent the impending population crash, nor for that matter will family planning.

Whether we like it or not, both these statements are true. World per-capita food production is now falling, and taking all relevant factors into consideration, we can predict with confidence that it will continue to fall, while the ineffectiveness of family planning is manifest to all but the most naive.

The Environmental Fund suggested that aid should be given only to those areas where it could in fact serve to offset disaster. This is a perfectly logical conclusion, if one accepts the premise, which I do not entirely, that aid actually helps. If there is not enough aid to go round, then it must clearly be rationed, and this is the most sensible way of rationing it.

In my comment in the June issue, I pointed out that it was suicidal for any country to become dependent on foreign food supplies — either from aid or trade, because, among other things, there was no guarantee that they would be obtainable for much longer. Indeed, the world food shortage, in the next few years, is likely to be on so massive a scale that if nations are to be sure of feeding their populations they must contrive to become self-sufficient.

I am convinced that this is true, and I do not know of any serious student of these matters who would not agree that to achieve self-sufficiency in food supplies must be one of the top priorities of Government policy in every country that has not already done so — and there are very few that have.

Victor Gordon went much further and suggested that all aid is counter-productive in that it just helps to perpetuate the problem without contributing to its solution. His comments may have appeared callous, and I understand Brian Johnson's and Henryk Skolimowski's objections to them. It is also true that he overestimates the extent to which aid, as such, has contributed to the world's present predicament, but much of what he says is valid.

To see aid in its true perspective, I think it must be looked at as part of the whole developmental process. I am qutie sure that the cause of poverty and starvation in the world today is development. There is neither poverty nor starvation among hunter-gatherers nor among slash-and-burn agriculturalists. Indeed, the most affluent and best fed people in India today are the primitive tribes in such areas as the North East Frontier Territories, which have so far escaped the ravages of development. They live in an unspoilt environment and their biological and social needs are perfectly satisfied. The fact that they do not have plastic buckets and electric toothbrushes and the rest of the rubbish produced by our Western factories is irrelevant — what basic human needs do they satisfy?

As soon as development occurs, i.e., as soon as people are made to abandon their traditional way of life in order to adopt that of the West — population starts increasing as does consumption while the environment becomes systematically degraded by overgrazing, overcropping, overeverything — with a consequent reduction in its food-producing capacity.

Development is, in fact, the most callous confidence trick ever perpetrated by man. All its benefits are illusory while its costs are very real and very cruel.

A few years ago the W.H.O. was boasting that 500 lives had been saved by its anti-malaria campaign. It was ecologically impossible however to exterminate an insect species by waging chemical warfare against it. Inevitably the mosquito returned, and a disease which once killed off mainly the old and the weak will now wreak havoc among populations which have been systematically deprived of their natural controls. *Indeed, W.H.O. will in the end have increased not decreased the number of victims of this disease.*

Reducing infant mortality by means of modern medicine is also a largely illusory benefit, for what is the point of allowing so many sickly children to survive if they cannot be provided with the basic amenities of life?

The Western attitude to death is sordid, even pathological. Death is a normal indeed necessary phenomenon; however, what is abnormal and unnecessary is the poverty, misery, squalor and hunger which we, in the West, are systematically creating on a hitherto unprecedented scale.

I agree with Victor Gordon that infant mortality is normal. I go further and say that it is necessary — an essential part of the process of natural selection to which every species must be subjected if its viability is to be maintained. The notion that science has somehow exempted us from the operation of this basic law is one of the most pernicious of the many illustrations under-

lying the developmental ethic. In Britain, by reducing infant mortality, we have increased the number of old people, but not that of healthy old people. Many are sick, incontinent and demented, and a large number have been abandoned by their degenerate families to linger on in some institution where they are kept under heavy sedation until they die — stored like unwanted furniture, out of sight and out of care.

The advantages of the urban way of life are illusory. Human misery and squalor have reached unimaginable heights in the vast conurbations of the West — and no amount of consumer goods and institutional services can reduce them. But for the Third World urbanization also means extracting resources from the countryside — forests for their timber, causing soil erosion, landslides, increased runoff to rivers and floods, like the recent ones in Bangladesh which wiped out crops over a wide area. Agricultural land is built over, and worst of all, water, the principal limitation to food production, is diverted from agriculture to industrial and domestic use — to be wasted in flush-toilets and washing-machines and other such ludicrous devices — all of which must have the effect of further reducing food producing potential.

As for the benefits of international trade, they are probably the most illusory of the lot. To participate, Third World countries, unless they happen to have large mineral resources, must export forest and agricultural products — for they have nothing else to sell — in order to earn the foreign exchange with which to buy the materials for equipping office-blocks and luxury villas, and manufactured goods for use by the growing urban population.

Thus vast areas which should be producing food for their own people, are now growing cotton, jute, coffee, tea, sugar, cocoa, bananas etc for sale to the West. In Kerala, untouchables used to eat shrimps; they cannot any more for they are required for export. This year, India sold twenty thousand tons of potatoes to Britain — but no-one complained of the hideous immorality of this particular transaction.

International trade is, in fact, best regarded as negative aid. It is, for the West, a means of obtaining food and other essential commodities and at the same time it creates a market for the manufactured rubbish to whose production it has become committed.

Seen in this context, aid, whether it be the official aid that we provide to the Third World or that which they provide for us, via International trade, is but a means of oiling the wheels of the doomsday machine that is leading the Third World towards mass starvation and the West towards economic and social breakdown with all its horrible consequences.

Rather than oiling the wheels of the doomsday machine, we should be putting on the brakes, and starting to dismantle it as fast as we can.

There is a proviso, of course. If a Third World country should establish a realistic plan for really controlling its population, for ensuring its de-urbanization, and for putting an end to the sytematic degradation of its physical environment by deforestation, soil erosion, and salinization (which we have so far actively fostered with the Green Revolution for instance), then it is our most sacred duty to provide every penny we can muster to ensure the success of an enterprise to which all others should be subordinated. But then this would be a totally different sort of aid — one that is no longer part of the developmental process — one that does not serve to oil the wheels of the doomsday machine.

Edward Goldsmith

Environment and the Industrial Society

Nicholas Holmes, Editor

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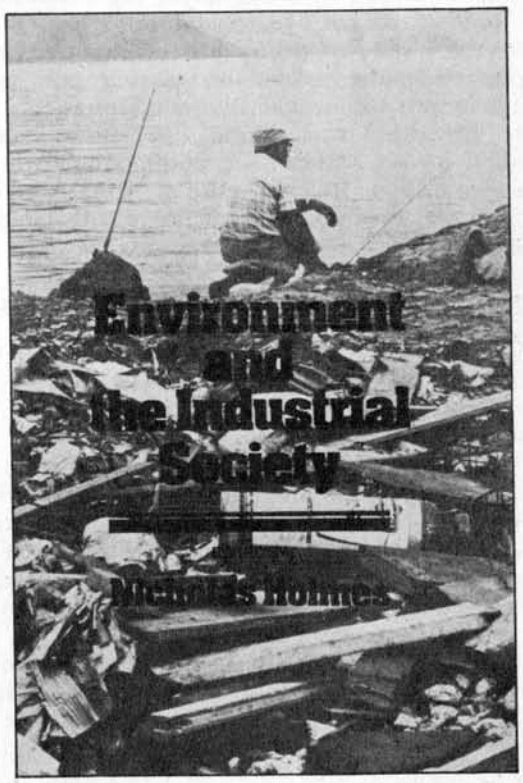

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The Lessons of Climatic History

by Reid A. Bryson

In the early years of the 1970's, climate and climatic change became the subject of world-wide discussion. Droughts, storms, floods, and frosts, were occurring in patterns and combinations which were perceived as being beyond the range of normal climate, and which had far reaching economic and human impact. Concomitant poor crop seasons in many countries dangerously depleted world food-grain reserves, and the failure of the Peruvian Anchoveta fishery dramatically changed the demand for and price of soybeans.

In 1974, heavy rains delayed corn (maize) planting in the United States 'cornbelt'; then a dry July and early frost contributed to a drastic reduction of yield. Even high technology had been no match for the elements. Events of this kind, repeated around the world, made the question of future climate one of great concern; were these isolated, chance events in the course of climatic variation, or were they part of a developing pattern that was different from that which characterized the 'normal' 1931-60 period? It appears that the latter is the true explanation, and there is now a growing consensus among climatologists that the world pattern of climate has been changing. The over-riding question of today is whether that change will continue; for the complex of world wide climatic problems that has appeared, especially since 1971, is totally incompatible with the high population growth-rate of the world.

Climatic research has not yet produced a deterministic, predictive model of world climate with which we can state what the character of the coming decades will be — or even what next year will be like. However, there are lessons that can be learned from the study of climatic history and that give us some insight into the likely nature of the coming climate.

The Lessons of History

The facts of past environmental history, especially if we restrict our attention to the last ten millennia, teach us some non-theoretical lessons. Certainly we can state unequivocally that what has actually happened is possible. If we combine a knowledge of climatic history with what we know of the mechanics of the atmosphere-earth system, we can see some patterns that can be used to assess the probable future course of the climate.

In brief the lessons of climatic history are:

1. *Climate is not fixed.* On a long-time scale it has varied from glacial, with vast continental glaciers, to non-glacial, such as has prevailed for the last 10,000 years. On the scale of centuries there have also been significant climatic changes associated with significant ecological changes.
2. *Climate tends to change rapidly rather than gradually.* The change from a glacial to a non-glacial climate may take less than a century, though full response of the biota and full adjustment of the environment to the new condition may take much longer. Smaller, but still significant, changes of the climate may occur in a few decades.
3. *Cultural changes usually accompany climatic changes.* The relatively small climatic changes of the past ten millennia have changed the human possibilities of the environment enough to make important changes in whole cultures (Wendland & Bryson, 1974: Bryson et al., 1974).
4. *What we think of as normal climate, at present is not normal in the longer perspective of centuries.*
5. *When the high latitudes cool, the monsoons tend to fail.* This is especially important because the high latitudes have been cooling in the last three decades, and the hungry half of the world is concentrated in the monsoon lands.
6. *Cool periods of earth history are periods of greater-than-normal climatic instability.*

The Evidence

The atmosphere, and thus the climate, is driven by solar energy. The unequal heating of high latitudes and tropics, which arises from the sunlight falling on a spherical earth, produces a temperature differential that controls the circulation pattern of the atmosphere in an interaction with the distribution of land and sea. This in turn determines the distribution of rainfall.

Climatic records show that the variation of the contrast between tropical and high-latitude temperatures is primarily due to temperature changes at high latitudes. Thus, times of warming or cooling in the sub-Arctic are critical times to examine. Because there has been rapid sub-Arctic cooling in recent decades, the following pages will concentrate on some similar times in the past.

We are all familiar with the changes of climate which accompany high-latitude temperature changes, for these changes occur every year to produce the seasons. Thus cooling of the polar regions in winter produces polar caps of cold air that reach to the subtropics. In the summer's warmth these cold-air caps contract. In essence, decades and centuries of cooler subarctic temperatures are periods of more extensive cool polar air, and have a more wintry character, than normal.

The Arctic Expansion around 1900 B.C.

North of the forests of Canada lie the treeless 'barren grounds' of the tundra. Extending into the tundra, beyond the area occupied by forest, is a band in which forest palaeosols may be found, so it is clear that the forest formerly extended farther north (Sorenson *et al.*, 1971). Where the 'fossil' soil has been buried by wind-blown sand, a layer of charcoal at the top of the soil profile has been preserved. Dating of this charcoal shows that the forest extended its maximum distance poleward in 1900 B.C. but its northern edge had retreated at least 200 km southwards by 1800 B.C. (When B.C. dates are given here and following, they refer to calendar dates, whereas 'years ago' refers to radiocarbon dates. Calendar dates of 1900 B.C. are comparable with radiocarbon dates of about 3,500 years before the present.)

Something had evidently changed in the environment that had been favourable to forest for at least a millennium, and all lines of evidence point to this being a climatic change. The northern border of the boreal forest is the southern edge of the cap of Arctic air in summer (Bryson, 1966). For some reason, that is as yet only dimly perceived, the arctic air regime had expanded and the forest border retreated southwards — not to return even part-way for about 700 years.

Climate is a world-wide, integrated system. Significant changes cannot take place in one part of the system without other changes occurring in other places. Not all climates must change, but there are dynamic connections that interlink climatic changes in various parts of the globe.

At the outer edge of the polar cap of cold air is the region of maximum lateral contrast of that air with the warm air of lower latitudes. In the region between the outer edge and the North Pole there is a general poleward decrease of temperature, and this produces westerly winds in the upper air flow about the Pole in a circumpolar vortex. Near the outer edge of the circumpolar vortex, over the region of maximum temperature contrast, lies the *jetstream*, and around the outer edge of this are the eddies known as the subtropical anticyclones (Fig. 1.). These anticyclones are critical, for the sinking air in them produces the subtropical deserts of the world, and their position and movement strongly influences the location and duration of the monsoon rains.

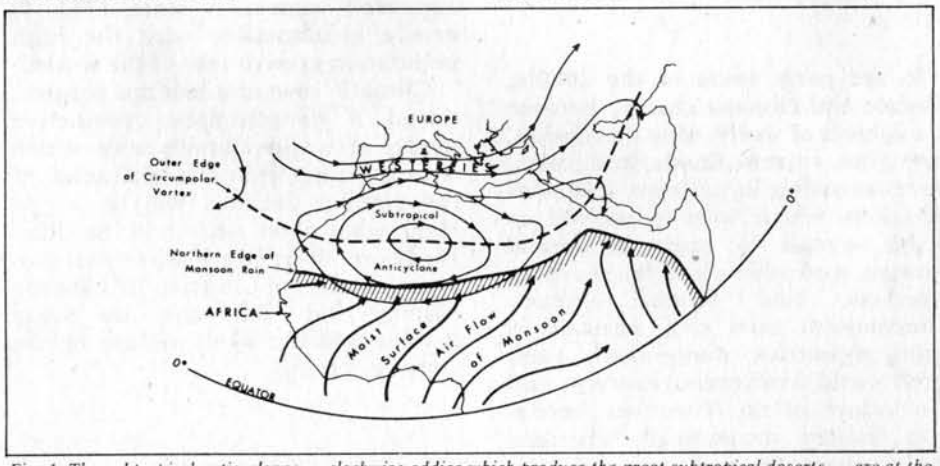

Fig. 1. The subtropical anticyclones — clockwise eddies which produce the great subtropical deserts — are at the outer edge of the westerlies of the circumpolar vortex. The monsoon rains, between the anticyclones and the Equator, follow the anticyclones north and south with the seasons. If the anticyclones do not move as far poleward in summer as usual, the monsoon rains are also less extensive and the deserts reach closer to the Equato.. The light arrows over northern Africa and Europe represent air-flow in the mid-atmosphere and the heavy arrows extending northwards from the Gulf of Guinea represent the air-flow near the ground.

The circumpolar vortex contracts in summer. As the polar regions warm, the subtropical anticyclones also move poleward, and where there are tropical seas equatorwards of the continents, moist air penetrates the continents to replace the dry, sinking air of the anticyclones. It is from this moist air that the monsoon rains fall.

When the circumpolar vortex is larger than average, then the subtropical anticyclones and the associated subtropical deserts are closer to the Equator and the monsoon rains do not penetrate as far into the continents. There are, of course, more details to the monsoon systems, but the general principle is well understood. The point of all this discussion is that there is a connection between high-latitude cooling, the size of the circumpolar vortex, and the monsoons.

The evidence of the fossil soils in the sub-Arctic is that there was an arctic cooling and expansion about 1900 B.C. Was there a related reduction of the northern hemisphere monsoons? The evidence shows that there was, and with drastic consequences.

In the millennium before 1900 B.C. a great empire had developed in what is now north-west India and Pakistan. Its greatest cities, Harappa and Mohenjo-Daro, were on the Indus River, but lesser cities and towns spread over nearly all of what is now called the Rajputana Desert. It was an agricultural empire, with huge granaries. It paralleled and traded with Sumer. After 1900 B.C., the cities were abandoned, the land becoming unoccupied. Some towns were buried under the sand-dunes which drifted across the area. Seven hundred years later, Aryan nomads arrived, building their settlements on other sites, or occasionally on the dunes over the old towns. For example, the 'new town' of Osian, near Jodhpur, was built around 500 B.C. on dune sand which covers the walls of an 'old town' lying beneath.

The dunes themselves are mute testimony to the failure of the monsoons that had watered the fields of the Indus civilization, but there is other evidence as well.

During the last ice-age, when the polar regions were very cold and the circumpolar vortex was very large year-round, dunes had formed in Rajputana. There was no monsoon. When the ice-age climate ended 10,800 years ago (Fig. 2.), the monsoons began, the ground water level rose, and freshwater lakes formed between some of the dunes (Singh *et al.*, 1972). Into these lakes fell the pollen of the plants that grew in the

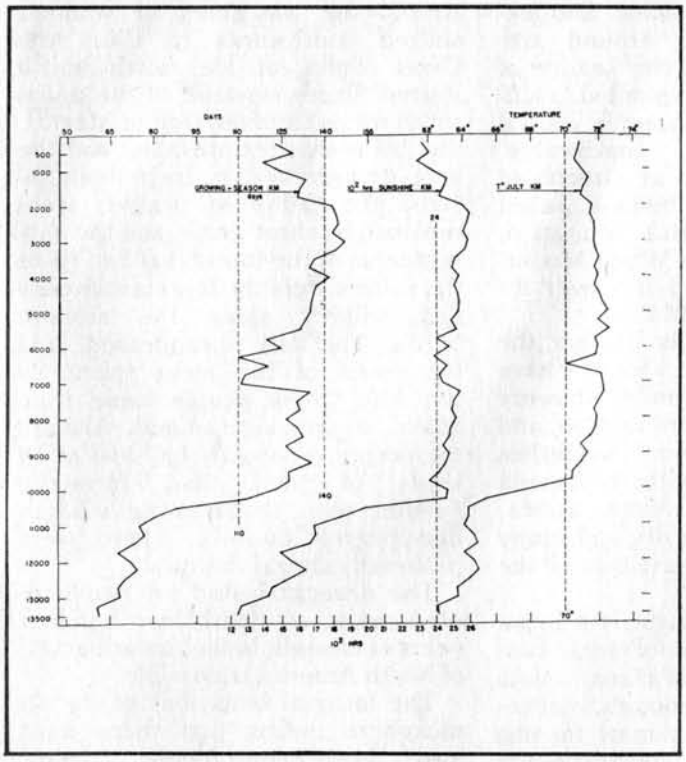

Fig. 2a. Reconstructed climate of the last 13,500 years at Kirchner Marsh, Dakota County, in southeastern Minnesota. KM = Kirchner Marsh. Notice the abrupt change of climate, starting 10,800 years ago as the Pleistocene 'ice-age' ended [Bryson 1974].

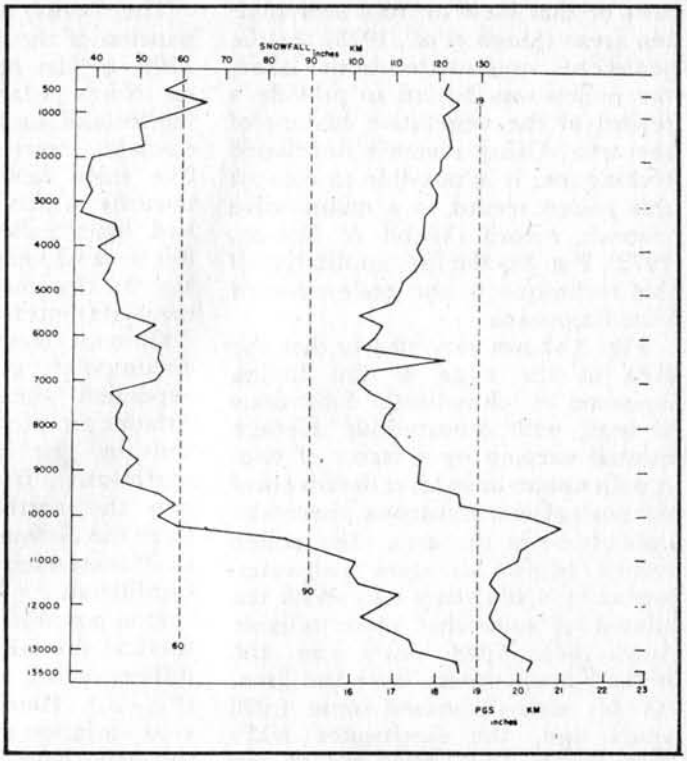

Fig. 2b. Reconstructed climate of the last 13,500 years at Kirchner Marsh, Dakota County, in southeastern Minnesota. PGS stands for precipitation during the growing-season. KM = Kirchner Marsh. 1 inch = 2.54 cm. Notice the abrupt change of climate, starting 10,800 years ago as the Pleistocene 'ice-age' ended. [Bryson 1974].

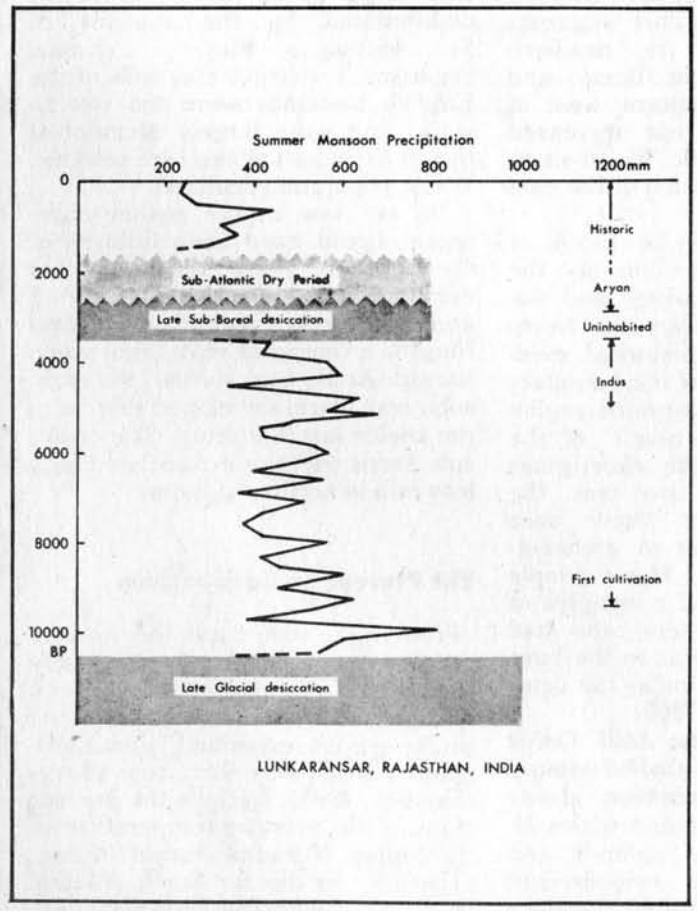

Fig. 3. Tentative reconstruction of the summer monsoon rainfall in Rajasthan over the past 10,800 years, based on fossil pollen accumulated in a lake. The lake contained fresh water until shortly before it dried up about 3,500 years ago.

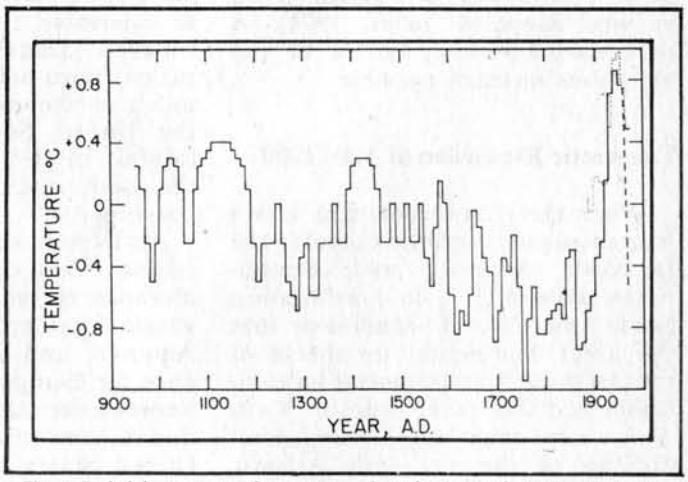

Fig. 4. Dedadal mean annual temperature in Iceland over the past millennium, after Bergthorsson [1962]. The dashed line on the right indicates the rate of temperature decline in the 1961-71 period [based on additional data], and the dotted line shows the variation of mean temperature in the Northern Hemisphere plotted to the same relative scale.

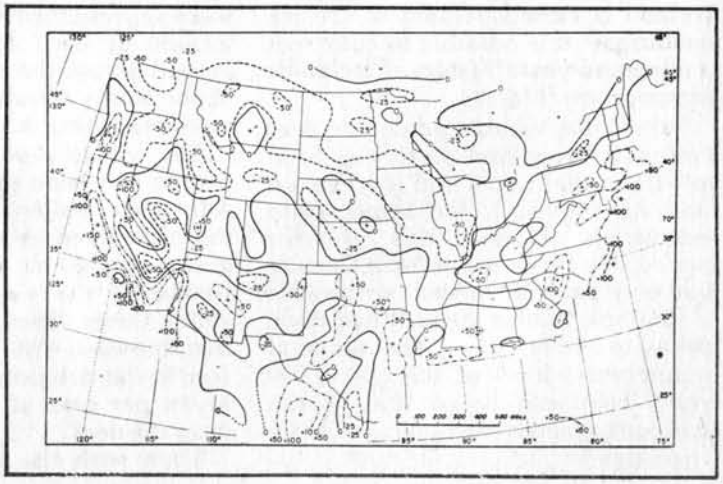

Fig. 5. July precipitation changes, in per cent, to be expected with a southward shift of the westerlies, i.e. from weak westerlies over the 35-55 latitude band to stronger westerlies in that band. Based on 20 years of modern data.

area or that blew in from surrounding areas (Singh *et al.*, 1973). As the sediments accumulated in the lakes, the pollen was buried to provide a record of the vegetative history of the area. Using recently developed techniques, it is possible to convert this pollen record to a quantitative climatic record (Webb & Bryson, 1972). Fig. 3 is the first application of this technique to the pollen record from Rajputana.

Fig. 3 shows very clearly that the area at the edge of the Indian monsoon is climatically hazardous at best, with century-long average rainfall varying by a factor of two. A millennium or so after the advent of the post-glacial monsoons, there was agriculture in the area. The pollen record begins to show cultivated grains by 9,400 years ago. With the advent of somewhat more reliable rains about 5,000 years ago, the Indus culture spread over the area. As the rains decreased some 4,000 years ago, the freshwater lakes turned salt, then dried up as the ground-water level fell, and the Indus civilization disappeared. When the Arctic cooled, the monsoons failed, not only in India, but in the Sahel savanna region of North Africa as well (Geyh & Jakel, 1974). A seven-centuries-long failure of the monsoons is clearly possible.

The Arctic Expansion of A.D. 1200

When the Arctic cools, the effect is greatest in northern Canada, the far-north Atlantic, and Scandinavia. Indeed it is in northeastern North America and Scandinavia that the great continental ice-sheets of the last great glaciation were located. (India and the Sahel zone of North Africa were much drier then, also.) Cooling of the far-north Atlantic expands the sea-ice cover, for which there is a thousand-years' record in Iceland.

As the average temperature in Iceland is closely related to the ice conditions, it is possible to construct a thousand-years' history of Icelandic temperature (Fig. 4.).

When the Vikings settled in Iceland and Greenland there was little sea-ice in the region and the climate was mild enough for some grain cultivation. During this warmer period, the forest in northern Canada had once again advanced northwards — but only half as far as it had done prior to 1900 B.C. The general temperature level of the last 2,000 years has been below that of the mid-post-glacial of 5,000 — 4,000 years ago.

Then came the cooling and expansion of the Arctic. Around A.D. 1200, or just before, the sea-ice of the North Atlantic expanded, chilling Iceland, and the forest in central Canada retreated southwards. The main landmark in Greenland towards which the Vikings sailed had been called Black Mountain, but became known as White Mountain, as the snow and ice-cover increased (Pettersen, 1914).

Climatic theory tells us that the circumpolar vortex should have expanded, sweeping mild, showery Atlantic air into western Europe, and shifting the summer westerlies southwards, from southern Canada into the northern United States. Here the air would be dry and sunny as it descended the east face of the Cordillera.

It is possible to construct a hypothetical rainfall map for such conditions, using modern climatic data (Fig. 5.). There is enough year-to-year variation in the climate for one to select those years which have the indicated features of the circulation, and average them to produce a climatic chart that represents the pattern of an era in which that circulation pattern prevailed (Bryson & Baerreis, 1968). This suggests reduced rainfall in the northern plains, corn-belt, west Texas, and much of the intermontane west of the United States, but increased rainfall in the Pacific North-west, the south-east, and much of the east coast region.

An hypothesis must be tested, of course. This can be done by the methods of palaeoecology and environmental archaeology for North America, and with historical evidence for Europe. Near the boundary between the tall-grass prairie region that is now the 'corn-belt' of the United States and the short-grass prairie plains that are now the spring-wheat regions, there once was a culture known to archaeologists as Mill Creek. These people were representative of a complex of groups of corn farmers who had spread across the plains to the base of the Rocky Moutnains in the centuries preceding A.D. 1200.

The villages of the Mill Creek people had been established around A.D. 900. Pollen evidence shows that they lived in a region with tall-grass prairie on the uplands and woods on the valley terraces and valley floors. They hunted the deer that browsed the woods and grew corn in the rich bottomlands. Ninety-seven per cent of their meat came from the deer.

Then with the expansion of the Arctic, the westerlies of summer shifted southwards to cross the Great Plains of the north-central United States. Instead of the moist south winds from the Gulf of Mexico, the dry westerlies prevailed and the long drought began. In perhaps 20 years the tall-grass prairies were replaced by short-grass, and the only remnants of the forest that had filled the valleys were the few cottonwoods and willows along the stream-banks. The deer disappeared, and two-thirds of the meat eaten by the Mill Creek people came from bison, a grazing animal, though the people apparently had less of all kinds of food than formerly. Farther west the farming villages disappeared entirely. There were profound cultural changes.

The drought lasted for two hundred years, so clearly two hundred years of drought in the 'breadbasket' of North America is possible.

The integral behaviour of the atmosphere means that there must have been concomitant climatic changes in other regions. Europe, with its steady flow of showery maritime air, had widespread outbreaks of Ergot Blight of its grain, and large areas were essentially depopulated by the ravages of St. Anthony's Fire — chronic ergotism. The heavy clay soils of the English midlands were too wet to work, and were largely abandoned by the early part of the 14th century. World population declined.

As we saw in the earlier case, there should have been failures of the monsoon. There is little detailed evidence, but if one looks at Figs 3 and 4 together, one may see that roughly a thousand years ago, when the sub-Arctic was warmer, the monsoon was better developed than in in the cooler last 500 years. The cooler sub-Arctic was again associated with less rain in northwest India.

The Present Arctic Expansion

From A.D. 1600 until the present century, the sub-Arctic was very cool. The population of Iceland declined in a series of famines, the arctic sea-ice expanded, and European winters were very cold (Bergthorsson, 1962). Early in the present century the average temperature of the higher latitudes started to rise, especially in the far-North Atlantic (Fig. 4). The Indian monsoons became more reliable (Fig. 6). European winters were less severe, and mid-summer frosts in the north-central United States ceased.

The amelioration of the climate

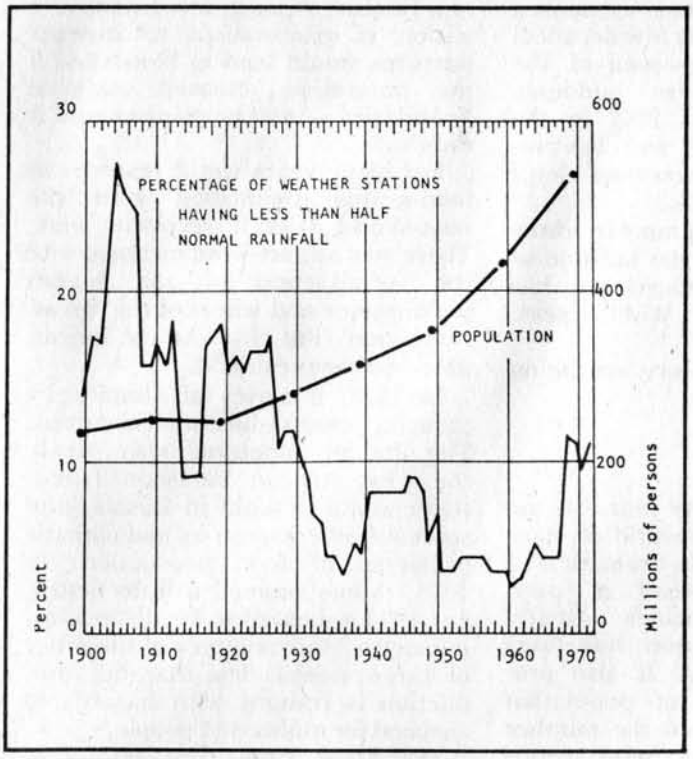

Fig. 6. Trends in the percentage of weather stations in northwestern India reporting less than half of normal annual rainfall in a given year. Overlapping ten-years averages.

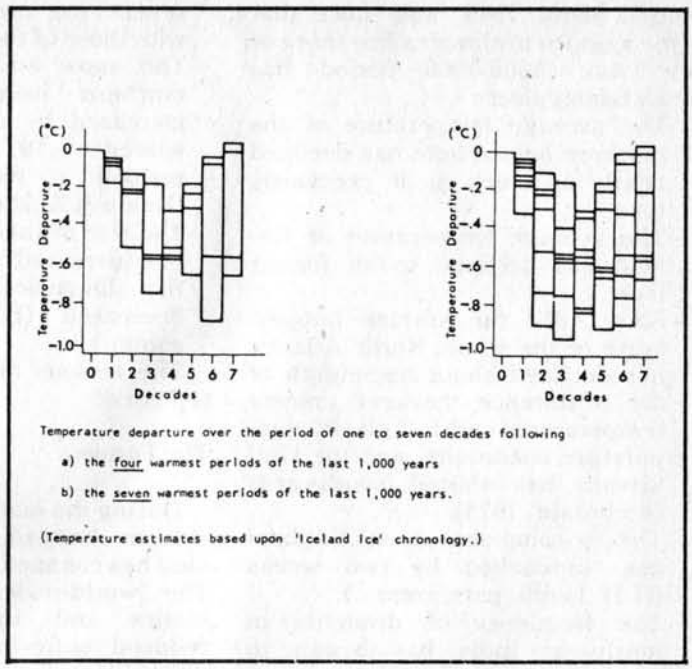

Fig. 8. 'Superposed epoch analysis' made by plotting the temperature departure of each decade following a peak decade of temperature. The rate of decline varies and the total magnitude of the decline varies, as shown by the short horizontal segments representing individual decades. Sudden returns to the original value have not happened in the last millennium, however. The left-hand figure [a] is based on the four most prominent times of decline, and the right-hand figure [b] on the seven most prominent, [by courtesy of Professor J. Kutzbach].

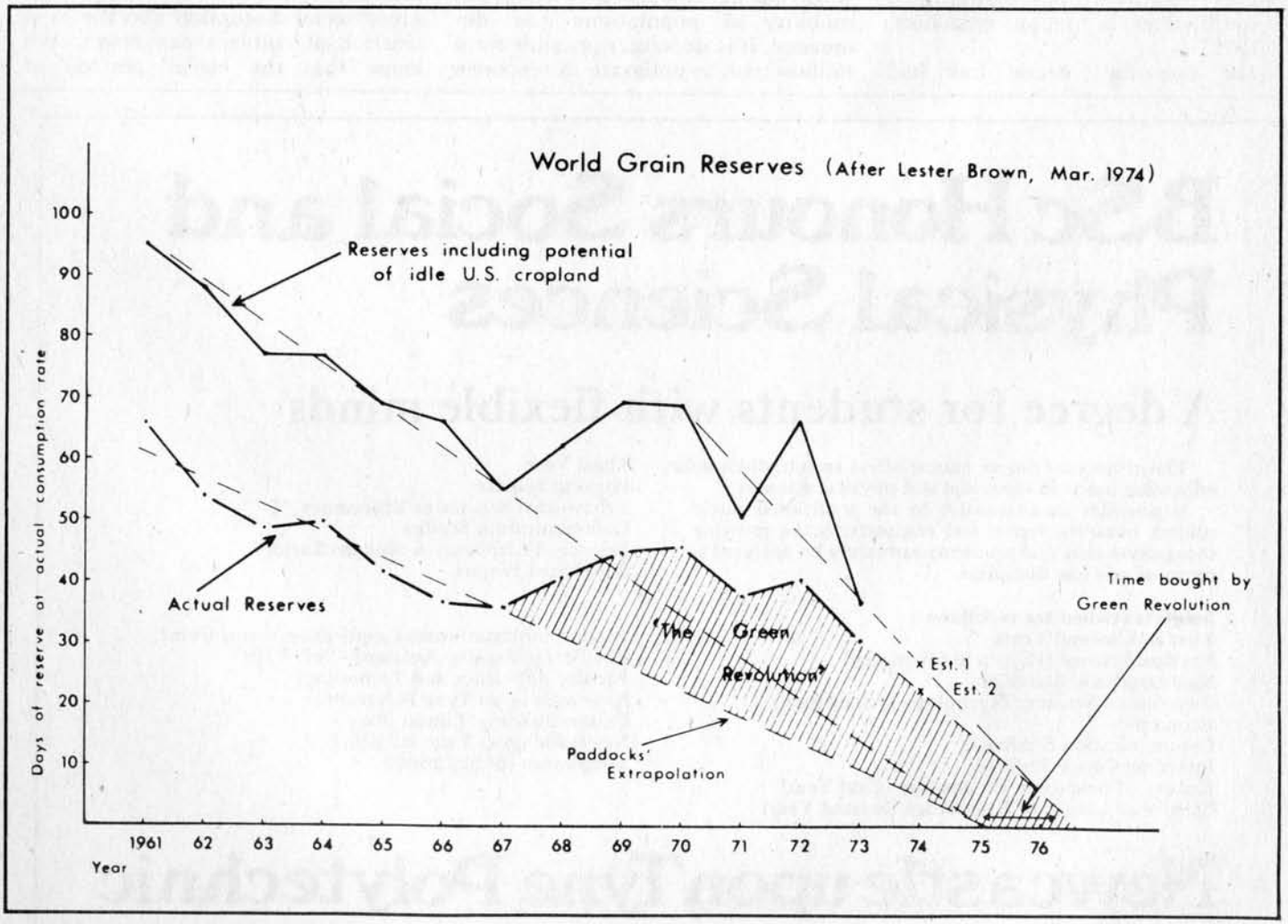

Fig. 7. World food-grain reserves, year by year, since 1961 show a rather steady decline with only a minor offset produced by the 'green revolution'. The graph shows that the world consumed more than it produced from 1961 to 1967, then again after about 1970.

ended about 1945, and since that time a return to climates like those of the A.D. 1600-1900 period has been taking place:

- The average temperature of the northern hemisphere has declined nearly as much as it previously rose.
- The average temperature of Iceland has declined to its former level.
- Since 1951 the surface temperature of the whole North Atlantic has declined about one-eighth of the difference between recent temperatures and full glacial temperature conditions, and the Gulf Stream has shifted southwards (Rodewald, 1973).
- The growing-season in England has diminished by two weeks (H.H. Lamb, pers. comm.).
- The frequency of droughts in northwest India has begun to increase.
- The monsoon has gradually retreated towards the Equator in West Africa, culminating in seven years of famine (Bryson, 1973).
- Midsummer frosts returned to the upper midwestern United States.
- The monsoon has withdrawn southwards in Japan (Asakura, 1972).
- The Canadian Arctic has had severe ice conditions compared with those of the past few decades.
- The snow and ice-cover of the northern hemisphere suddenly increased by about 13% in the winter of 1971-72, and has remained at the increased level (Kukla & Kukla, 1974).
- The size of the circumpolar vortex has increased and the latitude of the subtropical anticyclones has decreased (E.W. Wahl, pers. comm.).

The lessons of history are being repeated.

The Future

During the last thirty years, as the climate changed, the world of mankind has changed quite dramatically. The world-wide spread of antibiotics and insecticides greatly reduced suffering from infectious diseases and malaria. It also produced an explosion of population that has about doubled the number of inhabitants of our finite world, and done even more in the monsoon countries. The rapid rate of population growth continues. As the world has become more crowded, the mobility of populations has decreased. It is no longer possible for a million Irish to emigrate in response to a famine. A mass movement of a nation of pastoralists to greener pastures would lead to bloodshed if the migration crossed national boundaries — and perhaps even if it didn't.

For many years world reserves of food-grains diminished after the post-World War II recovery peak. There was a short-lived increase with the introduction of the higher yielding rice and wheat of the 'green revolution' (Fig. 7.). The the inexorable decrease resumed.

In 1972, a series of climatically induced crop-reductions occurred. The Indian monsoon was weak, the west African monsoon failed, there was a drought in Russia, and scores of other countries had climatic problems of food production. In 1973, things seemed a little better, but 1974 appeared to be disappointing again. With reserves of the order of three weeks, less-than-full production is fraught with hazards to survival for millions of people.

We know from the lessons of climatic history that significant climatic changes can occur rapidly, and that the changed climate can last for centuries. We know that great social disruption and the destruction of cultures can result. We know that the cooler periods of

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climatic history are periods of highly variable climate. (Look back at the A.D. 1600-1900 data of Fig. 4 again!) We know that the high latitudes have been rapidly cooling, and that the people of the monsoon lands cannot reduce their food consumption much more and still survive. We know that the world food-grain reserves will prove inadequate if more years like the last few recur soon. And we know that the rapid expansion of high-technology agriculture would require large inputs of energy and capital, both of which are in short supply.

What, then does the future hold? Climatic theory is not sufficiently developed to give a definitive prediction. Indeed, the scientific effort to develop this capability has yet to be made. However, we can still turn to the past for guidance into the future. Examination of the record of past climates shows us that coolings such as that of the post-1945 period have not, in the past millenniums, lasted less than forty years; nor has the hemisphere climate returned to the original state in less than seventy years (Fig. 8). This suggests that the coming decade will be either like the last few years or else more glacial — not like the unusual 1931-60 period.

The sea cannot change temperature with extreme rapidity because of its enormous thermal inertia. This also precludes an immediate return to the climate of a decade ago.

In Bonn, Germany, in May 1974, a meeting of scholars called by the International Federation of Institutes for Advanced Study reached a consensus that the present climatic trend would continue for the rest of the century, that climate would be more unstable than latterly, and that a climatically related disaster was likely within the coming decade. The summary of the consensus statement of the IFIAS Workshop on 'The Impact on Man of Climatic Change' follows:

'A particular world climatic pattern, generally thought of as normal, has prevailed during the lives of most people now on the Earth. During this time the population of the world has more than doubled, the resource demands of affluence have increased, the easily arable land has been occupied, and the barriers to migration have increased.

'The studies of many scholars of climatic change attest that a new climatic pattern is now emerging. There is a growing consensus that the change will persist for several decades, and that the current food-production systems of Man cannot easily adjust. It is also expected that the climate will become more variable than in recent decades.

'We believe that this climatic change poses a threat to the people of the world. The direction of the climatic change indicates major crop failures almost certainly within the decade. This, coinciding with a period of almost non-existent grain reserves, can be ignored only at the risk of great suffering and mass-starvation.

'We urge the nations, individually and collectively, to plan and act to establish the technical, social, and political, means to meet this challenge to peace and well-being. We feel that the need is great and the time short.'

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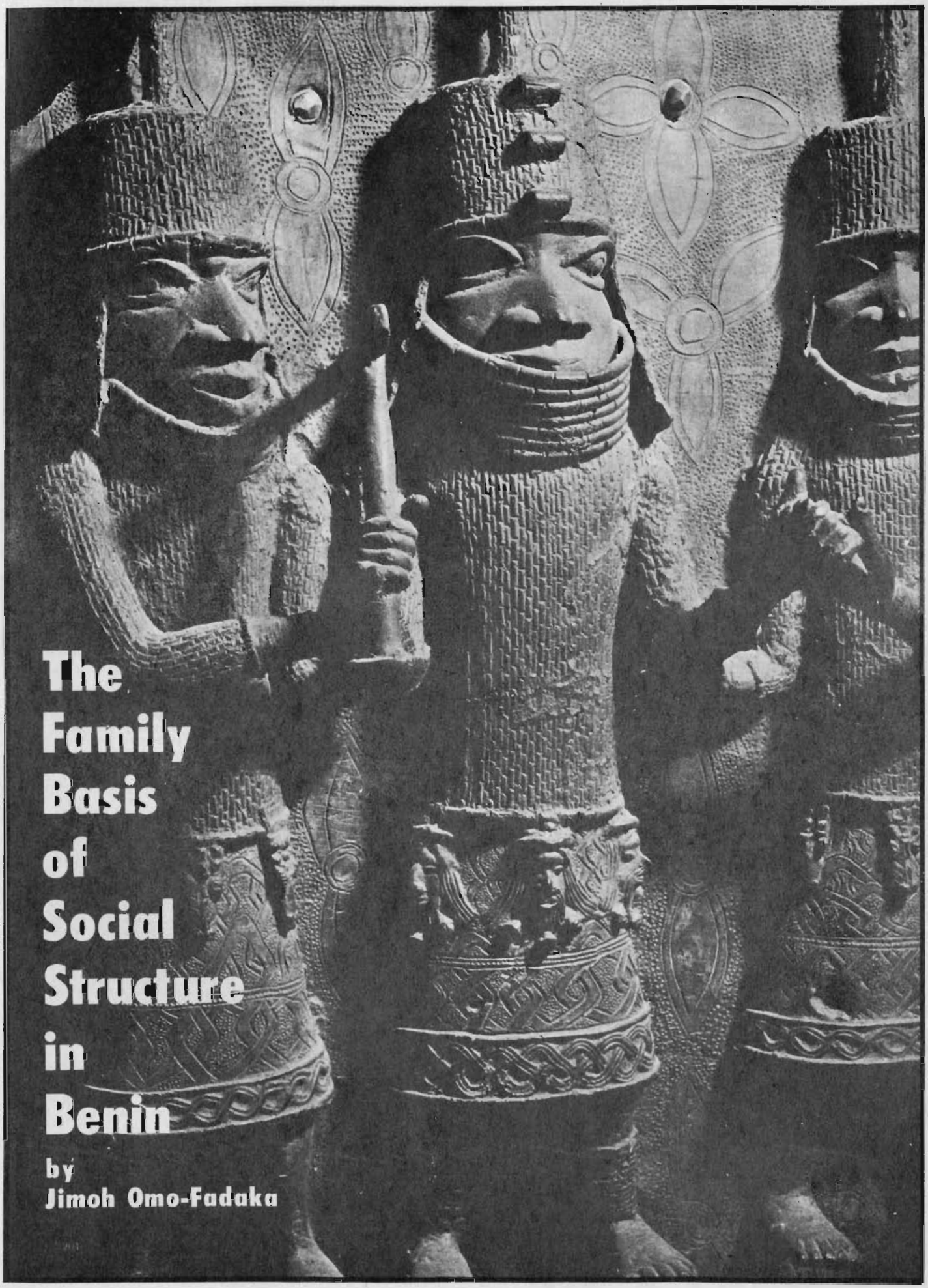


The Family Basis of Social Structure in Benin

by
Jimoh Omo-Fadaka

The Edo people number about three million and they live in Bendel State, one of the 19 states of modern Nigeria. They are divided into different ethnic groups, the Binis, the Ishans, the Afenmais, the Urhobos, and the Ikas. They have much in common and speak very similar languages. Foremost among them are the Binis who are organised into the kingdom of Benin.

Benin is famous throughout the world for its art, in particular its bronzes, the work of a caste of smiths. It was visited by Ibn Battuta in the Middle Ages, who gives a vivid description of the capital city. Its independence came to an end in 1897 when the British expedition rased the city to the ground sending the Oba (king) into exile.

Bini history, however, has never been written down. The annals of the Obas, their wars and triumphs are transmitted orally from generation to generation, together with the customs and traditions of the Bini people.

The Oba

The most important institution of Benin is the kingship. The Oba is the divine king, as was the pharaoh of Egypt, the king of the Akans, the Ashanti, and the Shilluk on the Nile, and the kings of the ancient Greeks in Homeric times.

Sir James Frazer has described in great detail what were the principles of divine kingship and these principles apply to the Oba of Benin. The Oba is the custodian of Bini culture and also the high priest of the cult of his own ancestors, which is the national religion of Benin. It is also in his person that resides the power or vital force or 'mana', as the Polynesians call it, of the whole kingdom — the Etin-Oba as it is referred to in Benin. The survival of the kingdom is considered to hinge on the preservation of this power; if it is allowed to ebb, there is danger of natural calamities, floods, droughts, enemy invasion. On the other hand, if the right measures are taken to assure its preservation, then the society will prosper. We find the same notion in the Jewish Old Testament, when catastrophes of all sorts were attributed to the king's transgressions, in particular to his building graven images to live gods, i.e. breaking the society's most firmly entrenched taboos. To preserve the Etin-Oba, the Oba's behaviour must be subjected to a very exacting set of cultural constraints. One such constraint is that, during the Igue Festival held every year, he must not see any foreigners. It was his refusal to see a group of British traders on this important occasion, their refusal to take 'no' for an answer, and their subsequent intrusion into his palace that led to their massacre and to the punitive expedition of 1897.

The function of all national festivals is to renew Etin-Oba, and of these the most important is the Igue Festival. If the rituals performed during the national festivals renew the Etin-Oba, the breaking of a taboo surrounding the Oba's person reduces it. This explains why the violation of such a taboo is one of the two crimes that are punished by death.

The family is the basis of Bini society; it is an economic political and religious unit which regulates every aspect of their lives and is thus an effective tool of social control. In Benin today there is growing dissatisfaction with a western way of life which threatens their traditional culture.

If the Oba's power shows any signs of diminishing, he must immediately be replaced by a more vigorous successor. If it is the people's opinion that this is the case, then they will make this apparent during the Igue Festival and create disturbances or riots. If this occurs then the Oba must abdicate. In practice it has never yet occurred.

The Prime Minister and the Chiefs

The Oba rules through his Prime Minister, who is appointed for life, and a council composed of 15 chiefs. In theory the Oba has the power to dismiss the council or for that matter any of the chiefs who compose it, but in reality this has never happened. The Oba is truly a constitutional monarch.

Some of the social power or Etin also resides in the chiefs (Etin-Ogie). Like the power residing in the Oba, it must be renewed through special ceremonies, either at tribal or at village level.

The Family

The family is the basis of Benin society. It is an economic, social, political and religious unit. It is economic in the sense that agricultural activities are carried out in family holdings, although co-operation will occur among groups of families at special times (harvest for instance). Traditional crafts are also family affairs, in that the necessary know-how is handed down from father to son.

The relationship between the members is laid down by custom. It has great cohesion and is held responsible for the performance of certain social functions, for instance the education of children born into it; also for the crimes committed by them until they have reached the age of ten. If a child breaks a taboo surrounding the person of the Oba, it is the parents who are held responsible. If a person wounds or even kills another, he must pay compensation to the latter's family. Marriage is also not only something which concerns two people; it is a contract between two families which links them together in all sorts of culturally determined ways.

The father is head of the family. He has great power over its members. This power he derives from his status as the head of the family, and from his position of priest of the cult of his family's ancestors. There is also power or Etin vested in the father and hence in the family (Etin-Eta). Ceremonies are carried out at family level to ensure the preservation of this power, whilst the violating of taboos likely to break it is scrupulously avoided. The Bini family is polygamous and includes members of several generations. It is what is normally referred to as an 'extended family'.

Settlement Patterns

The custom is for women to have their own huts in which they live with their children. The huts are arranged in a circle around the husband's hut. This does not mean that he will live alone; one or two of his wives will tend to be with him, possibly too his widowed mother or other female relatives.

If a man dies, his wife and children immediately become the responsibility of his eldest living brother. This means that one is also likely to find other female members of the family with their children in the settlement or compound — a divorced sister for instance. If a woman gets divorced, the property she inherited from her father is taken away from her husband and becomes hers again.

The Village

The village is made up of several such compounds. The members of a village tend to be related to one another which makes co-operation among its members very much easier. The village is usually run by a village chief (to be distinguished from the advisory chiefs making up the Oba's council). The chief is not hereditary, but is elected for life by the villagers — in general, on the basis of his prestige and social service. The government of the village is democratic, every adult man being expected to take part. If he does not he is very much looked down upon. Each one of them has some practical role to play in the government of the village and each one can also be dismissed if he does not observe its established rules of conduct. There are no formal institutions. Everything is very informal, and at village meetings, all comments and ideas, however critical, are listened to, indeed encouraged. Usually unanimous agreement is obtained on important issues. When this is not possible, the majority decision is accepted by the opposing minority.

Land Tenure

Land is held by the head of the family, who acts as custodian on its behalf. When he dies, his eldest son divides the land up as he sees fit among his brothers and sisters. They too will hold it as custodians for their families. No land can be sold without the agreement of the whole family and this is very unlikely to be given. It is passed on from one generation to the next, contributing in this way to social and ecological stability.

If the Government wishes to acquire land for some development scheme, it must first get in touch with the village council, composed as we have seen of all the heads of families. The only way to get around the general reluctance on the part of families to sell their land is to lease it from them. In this way, they know that one day it will be theirs again and their status within the community is relatively unimpaired. It is impossible, however, for foreigners to acquire land in Benin.

Clans

The Binis are divided up into five exogamous clans — that is to say, people may not marry within their clan. The clan is not a territorial unit, which means that people living in different villages will be linked together by virtue of being members of it. Yet it plays a very big part in Benin social life. This is because people are closely identified with their clans, perhaps as much as they are with their family and village. Some clans are prestigious, others are not. It is very much in a person's favour if he is a member of a prestigious clan. It is very much against him if he is a member of one that has little prestige. As a result, there is a good deal of competition between the clans so that they may increase their respective standing. Each clan is run by a chief, assisted by an elected council. Clans hold annual festivals which are very lavish affairs, when gifts are presented to the members of other clans who happen to reside in the same area. The clan's prestige is highly dependent on the lavishness of its ceremonies and the gifts given to other clans.

Welfare

In times of hardship or crisis, any Bini can depend on help from his family or his clan. As we have already seen, widows are looked after by their husband's brother, while divorced women obtain possession of the property previously passed on by their father to their husband. In general, the extended family looks after any of its members who might be in need, either temporarily or permanently. In addition, it is one of the functions of the clan to provide material help for its members. No clan wishes to see its members suffering material hardship, as their standing would be greatly reduced. The clan is thereby highly motivated to ensure the welfare of its members. In this way a Bini has a very great sense of security, which cannot be provided either by money or state welfare systems.

Crime Control

As already pointed out, if a child breaks a taboo its parents are held responsible and will be punished. If an adult breaks a taboo and the crime does not menace the security of the state, he must pay compensation to the victim's family. On the whole, however, there is very little crime in Bini society; this is because of the powerful social control exerted by public opinion. If a person's behaviour diverges from the expected norm, he is boycotted (bizu-gbe). No-one goes to his feasts and this is a terrible insult, so great in fact that few people are willing to take the risk of having it happen to them.

Among many African peoples, the persistent criminal is expelled from the tribe. He then loses his social status and becomes an isolate, which is the most terrible fate for anyone. Among the Binis, an isolate neither belongs to a family, nor a community, nor a clan and is referred to as an Azan. He is despised and feared, and children who don't behave themselves are threatened with the Azan, the bogey man, so to speak. However in Benin isolates are not expelled from their tribe although the death penalty is meted out to persistent criminals as it is to those who violate the taboo surrounding the Oba's person and threaten the security of the tribe as a whole.

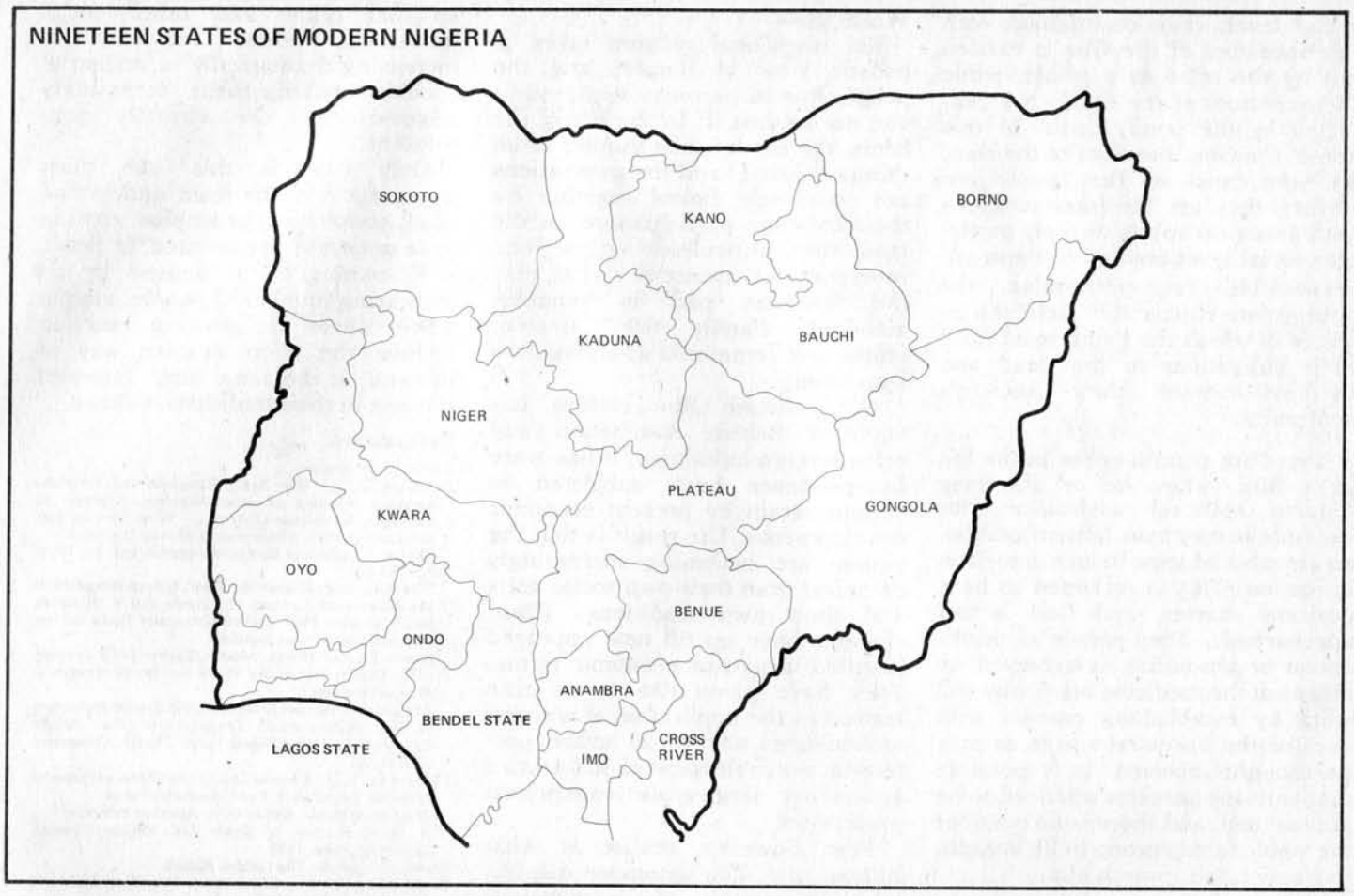
Education

There is no formal education in the sense in which we know it in the West. Children are educated by growing up. As this occurs, they pass through four different age groups. From zero to ten the child lives within the family unit and is subjected exclusively to parental influences; at the age of ten he enters another age grade, where he remains until he is twenty (during this period he learns to fulfil communal and tribal functions as well as family ones and is increasingly under the influence of his peer group). From the age of twenty to forty, if a boy, he becomes a warrior; it is by getting married, however, that a person really becomes an adult member of his society — only then, once he has reached the age of forty, and thereby become an elder, can he take part in the government of his village.

The purpose of Bini traditional education is to prepare the child for participation in the life of the community, the ideal of which is correct relations with, and behaviour towards, others. The communal organisation and educational system reinforces the principle that one's behaviour towards others is what matters most. The strength and number of social ties between members of the same family, clan and age group and between different families and clans means that the community can very easily be mobilised for co-operative activity. The building of houses, fences, bridges, cultivation and harvesting, even sowing, are usually group activities. The people know that if a job has to be done, they must do it together. Families and family groups work together to provide what they need.

Religion

Religion plays a predominant role in the life of the Binis. It is totally enmeshed in their social activity, so much so that there is no true notion of religion as conceived in the West and no word for it in their vocabulary.



In Bini traditional religion, there is no official priesthood, nor is there any religious preaching. Converting 'pagans' or 'unbelievers' is a thing unknown. This is due to the fact that religion is interwoven with the tradition and social customs of the people. Thus all members of the community are automatically considered to have acquired, during their childhood, all that it is necessary to know about religion and custom. The duty of imparting this knowledge to children is entrusted to the parents, who are looked upon as the official ministers of both religious and social customs.

Deity Worship

The Bini believe in one god, the creator and giver of all things. God has no father or mother or companions of any kind. His work is done in solitude. The Binis have no temples; they select huge trees, under which they worship and make sacrifices to God. These sacred trees are regarded in the same manner as most Christians regard churches, as the 'House of God'.

God is not visible to the mortal eye; he manifests himself in various ways: the sun, the moon, the stars, the rain, rainbows, lightning and thunder are looked upon as manifestations of his powers. Through these signs, he can reveal his love or hatred. For instance, when there is thunder and lightning, it is taken as a warning to clear the way for God's movement from one sacred place to another.

In the ordinary way of everyday life, there are no organised prayers or religious ceremonies, such as 'morning' or 'evening' prayers. So long as everything goes well, it is assumed that God is pleased with the general behaviour of the people and the welfare of the society. In this happy state there is no need for prayers.

Another aspect of Bini traditional religion remains. Inevitably, the people are daily and hourly in the most intimate contact with nature. We have already seen that certain natural phenomena, thunder and lightning, are regarded as direct manifestations of God and his works. He controls not only the health and lives of people and animals on whom people depend, but also rain and the supply of food which the rain brings from the soil. Hence all these phenomena of Nature are in some degree, like thunder, imbued with the spirit of God, and give rise to sacrificial practices. Any description of Bini traditional religion which left these out of account would be incomplete.

Binis do not speak of 'nature worship' as a separate part of their religion; it is a quality that runs through the whole, vitalising it and keeping it in constant touch with daily need and emotions. There is no distinction between the Spiritual and the Temporal. Religion is integrated into the whole of society's structure and is indistinguishable from other aspects of its activities.

Bini traditional religion can, therefore, be defined as being based on belief in a supreme being, God, and on constant communication with nature. To make use of European terminology, it might be said that religion in Benin is 'state established', but it would be even more true to say that church and state are one. Indeed, Benin religion is a social institution. It serves to sanctify the tribe's character and structure and hence to preserve it.

The Ancestors

Very important in the life of the Binis is the cult of their ancestors. When a man dies, he does not move to some distant heaven but remains part of his family, his village, his clan and his tribe. He remains therefore a member of Benin society. Ancestors, because they retain their social status, can be regarded as organised in the same way as is Benin society. Communion with them is carried out at the appropriate

social level; thus communion with the ancestors of the Oba is carried out by the tribe as a whole, while the ancestors of the family are contacted by the family itself. In this sense, the Oba, the chief of the clan, and the head of the family are priests; they are the intermediaries with ancestral spirits at their particular social level, and all of them are responsible for performing the appropriate rituals and sacrifices by virtue of which the living must fulfil their obligations to the dead and thereby ensure their society's continuity.

There are certain crises in the life of a Bini, when he or she may require spiritual assistance: for example he may have broken a taboo, and attributed some ill luck to such an infraction. This is reckoned to be a personal matter, and God is not approached. The person's purification or absolution is achieved by means of the medicine man, who will work by establishing contact with such of the ancestral spirits as may be thought involved. It is possible that only one ancestor will need to be approached, and there is no need for the whole family group to be brought into action to approach him.

If a person falls sick, or has an injury, it is not at first a matter for God or supernatural treatment. Ordinary medical knowledge is applied. If this does not succeed, the nature of the case is changed. Then the ancestors are communicated with. With the aid of a diviner, it may then be found that one of the ancestors has been offended. Atonement is made and the invalid recovers. Yet even when it is certain that no ancestors remain offended, the illness may still not yield to the treatment. Then the father of the family must organise the next appeal to God through a sacrifice.

Now the living and the dead of the family together approach God. This assures God that the occasion is serious and that the whole family is indeed at one, having exhausted all other means, in pleading for his help. The living and the dead make the approach by means of a sacrificial ceremony which is essential in Bini religion. These two cases of an ordinary illness and of an injury throw light on the respective parts played in the actual lives of the people by God, worship, communion with ancestors and sacrificial practices or ceremonies. This demonstrates the essentially religious aspect of Benin social behaviour.

World View

Bini traditional religion takes a holistic view of nature, and the people live in harmony with nature and not against it. In the life of the Binis, the earth is the mother of all things animate, and the generations are so closely linked together by their common participations in the land that agricultural ritual and reverence for ancestral spirits play the foremost part in religious activities. Family ties, kinship, ethnic and communal groupings are very strong.

Even though Bini culture has survived British domination and other foreign influences, it has since Independence been subjected to serious strain by present economic developments. The result is that the people are becoming increasingly detached from their own social units and their own traditions. These changes have up till now appeared justified in narrow economic terms. They have given rise to an elite trained in the application of western technologies and to an urban proletariat available for work in factories and other large-scale commercial enterprises.

Few, however, realise at what human cost. The ignorance displayed by the majority of our politicians as to the true nature of the cultural patterns of so-called primitive peoples has not enabled them to appreciate their extraordinary value, both in human and even in economic terms. As a result, they do not understand what an effective tool of social control such a culture provides so that crime and other social deviations, whose incidence is increasing dramatically in industrial societies making them increasingly ungovernable, are virtually non-existent.

Only now is this, the most important and the least understood of all sociological principles, coming to be generally appreciated. In Benin it is coming to be sensed by an increasing number of people, among whom there is growing reaction against the alien western way of life and, at the same time, renewed interest in their traditional culture.

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Is Time Running Out for the Spanish Farmer?

by David L. Greenstock

Until comparatively recently the majority of Spain's population was agricultural; although wages were low food was abundant and cheap. Over the past decade industrial development and punitive taxes have played havoc with this stable economy, and today Spain's farmers face imminent disaster unless radical reforms are introduced to save them. The situation in Spain now should serve as a timely warning to other countries who fail to appreciate the consequences of subordinating the just needs of the agricultural sector to industrial development.

A former Spanish Minister of Labour, Sr. Licinio de la Fuente, most popular with the working classes, has just published two articles on Spain's industrial development in relation to her agricultural policy. Since much of what he has to say provides food for thought and may prevent other developing countries from making the mistakes Spain has made, we have no hesitation in presenting a summary of his articles, together with some examples and comments of our own, which the ex-Minister did not care to mention.

The extraordinary industrial developments in Spain over recent years are obvious, and have led to a rise in the standard of living in general and of wages in the industrial zones. One has only to study the feeding habits of the people to see the truth of this. The austere and frugal habits of the past have now given place to over-consumption of the wrong kinds of food, with a consequent increase in what are known as the diseases of civilization.

The great fault of most economists and sociologists is the temptation to use figures and graphs as if they gave a complete and true picture of the situation in any country. As Licinio says, it is easy to manipulate numbers and graphs, but it is becoming increasingly difficult to deceive anyone by means of them. He insists that, for a true appreciation of any increase in the *per capita* earnings, it is important to know how this increase has been distributed among the population of the country concerned. In a word, who has benefited most?

There can be no doubt that the present industrial development in Spain was made possible mainly through the enormous sacrifices of the agricultural section of the population, in terms of investments of savings, manpower and the willingness to pay high prices for the agricultural machinery produced by those growing industries. Twenty or so years ago the majority of Spain's population was agricultural, which meant that, in spite of lower standards of wages compared with other countries, food was abundant and cheap, there was no need to import meat, milk or other products, and on the other hand it was possible to export many of the fruits of agriculture which were in high demand, such as the 'hard' wheats necessary for the making of good bread, citrus and other fruits, olive oil and wine.

This situation contributed to a great political stability in the country as a whole, because farmers are too busy to indulge in strikes and other industrial luxuries. This attracted the great, multi-national firms, who began to invest capital in setting up industries in Spain, where labour was cheap and there were few industrial disputes. This was looked on with favour by the Spanish Government then in office and led to a deliberate policy aimed at the transfer of manpower from agriculture to industry at the rate of 150,000 persons a year.

Naturally, the tendency was to group the new industries near the larger cities, where special 'industrial zones' were set up on land expropriated by the Government at

very low prices and afterwards sold to the large industrial firms under very attractive conditions. The technocrats then in charge of Spain saw in this industrial revolution the answer to all Spain's problems. However, this policy soon led to very serious difficulties in the nearby cities. Apart from the contamination of the atmosphere and rivers (mainly due to an entire lack of any ecological surveys before the new industries were set up), there was the problem of disposal of urban refuse, and insufficient houses and water supplies for the influx of the industrial workers.

The immediate results of all this are that most of the large cities in Spain are now suffering from over-population, mainly through lack of imagination in the planning schemes, while there are now not enough agricultural workers to support the country in terms of basic foods. As the ex-Minister of Labour says in his article :— 'When one travels along the roads and through the villages of Spain, one gets the impression of great solitude, poverty and desolation in the rural areas . . . The income of the agricultural worker is much lower than the average income of the rest of the population.'

Licinio de la Fuente does not give more details, but it is easy to supply a few of the many examples which illustrate the truth of his words. By any standards a farmer is a skilled worker in his own field, and therefore it is a sin crying to heaven for vengeance that the monthly wages of an *unskilled* industrial worker are three times greater, for fewer working hours, than those of the farmer.

The rural areas also suffer from many other injustices which are even more important than the wage-packet and which would seem to form part of the plan to force workers to leave the land for industry. Their share in the National Health Services is not so complete as that of the urban zones; the schools are not so efficient (the main reason why so few children of agricultural workers go on for higher studies). The medical attention in the villages is not so skilled, because few doctors want to bury themselves in a village practice if they can avoid it, and in most cases prescriptions have to be taken to the nearest town, unless the village doctor runs his own chemist's shop — which he is not supposed to do! There are fewer facilities for recreation, sports, youth clubs etc., and, naturally, fewer chances of 'getting on in life'. No wonder that the younger generation does not want to work on the land under present conditions.

Twenty years or so ago the majority of Spain's population was agricultural which meant that, in spite of low standards of wages compared with other countries, food was abundant and cheap and there was no need to import milk or meat.

If anyone doubts the truth of all this he has only to question those who have deserted the land to live in the suburbs of cities and find work in industry. There are many beautiful villages in Spain now reduced to eight or ten inhabitants, all of them too old to migrate! The land round those villages now lies fallow because there are not enough able-bodied men to work it. The present inhabitants limit their activities to the cultivation of a few acres of kitchen garden, barley for their hens or pigs and pasture for a cow or two. It is the story of the 'Deserted Village' all over again. Probably, some thousands of years from now, the ruins of these villages will be discovered, and scientists will ask why we were so foolish as to allow them to perish. Or are we so stupid as to think that our generation will never come under the scrutiny and criticism of those who come after us?

However, farmers in Spain have other serious complaints not mentioned by Licinio de la Fuente, possibly because they do not fall within his competence or because he did not wish to embarrass his colleagues in the Ministries of Finance and Agriculture. Three of those complaints are worthy of special mention, because unless they are solved rapidly, we can expect a collapse of agriculture in Spain which will be difficult to repair. Farmers urgently need larger long-term credits at a lower rate of interest; an increase in the prices paid to them for their products at source, and a reduction or elimination of certain heavy tax burdens which should never have been imposed on them in the first place.

Leaving aside the question of the need for investment of more capital in agriculture and more longer-term credits — an obvious need — we may concentrate on the other two complaints.

In his articles Licinio admits that the prices paid to farmers for their products are ridiculously low, especially if we compare them with the prices the housewife has to pay for those same products in the shops. Much of the blame for this must be laid at the door of Government Departments, which over the years have acted under the influence of the mistaken idea that, if you control the prices paid to farmers, shop prices will automatically be controlled as well. This is simply not true, unless some attempt is made to curb the activities of the middlemen, who are the ones who rake off enormous profits. Again, examples speak louder than words.

The price paid to the farmer for sugar beet is controlled by the

Government. A year or so ago the farmers asked that it should be increased, to meet the rising costs of production. The request was refused. Instead it was decided to import raw cane sugar from Cuba to meet the needs of the country and refine it in Spain – a policy which cost the State four times as much as it would have cost to meet the farmers' just demands!

Milk, sold through a Monopoly and not of very high quality, costs the housewife five times the price paid to the farmers, while vegetables can often cost more than seven times their price at source. Over the past few years many farmers have decided to plough their crops into the ground as manure rather than sell them at the prices offered. When we consider such basic protein foods as meat and fish, the prices paid at source compared with those in the shops are ridiculous, being at times 150% higher. No wonder farmers and fishermen complain!

The same is true of the prices paid the farmers for maize – a staple element in animal feeding stuffs. At the moment Spain produces one third of the maize she needs to cover the demands of cattle farmers, but everyone admits that the country could produce twice as much if the prices paid for this product were higher. The 'Maize War', as it is called, has now reached the point of a major scandal, since it has been discovered that maize imported from the United States to meet the demands has proved to be of such poor quality that it has given rise to Mycotoxicosis diseases of cattle, especially in the Pontivedra area, where thousands of animals have died through being fed on this contaminated maize. The price of importation of this poor quality grain is estimated at thirty five thousand million pesetas. If only half that sum had been paid to Spanish farmers it would have enabled them to produce more maize, with a considerable reduction in the imports.

However, it is when we come to consider the question of taxation that we come up against one of the greatest difficulties the farmers have to face and one of the greatest injustices done to them, for which there is only one Government Department responsible, the all-powerful Ministry of Finance. The Ministry of Agriculture and even the President of the Government himself, are powerless against this ravenous giant, which increases its demands year by year (together with its enormous staff of bureaucrats, always too busy to answer questions put to them) and whose land-tax forms are completely incomprehensible to anyone!

Today as one travels through rural Spain one gets the impression of solitude, poverty and desolation . . . many villages are reduced to eight or ten people who are too old to emigrate . . . and the land round those villages is untilled because there are no men to work it.

It would take a book to describe the offences committed by this Ministry against the basic principles of good economics, both in general and where farmers are concerned. Again we shall limit ourselves to a very few examples which illustrate this statement. We may just mention in passing the petty annoyances caused the farmer by the quantity of forms he has to fill up (in triplicate, of course) together with the taxes he has to pay his Union and the local Municipal Authorities for practically everything he has on his farm, from the motors for his irrigation pumps to his carts! No one has yet thought of taxing the manure from his animals, but that day may yet come!

The farmers complain, and rightly so, that they have to pay taxes in full even when their crops are destroyed by adverse weather conditions. Spain is a land of uncertain climate where the farmers are concerned. There are areas where frosts in late June or summer hail may destroy whole harvests – and often do. There is no State Insurance Scheme to cover such losses, and if the farmer wishes to insure with a private company, there will be little difference between the high premium he has to pay and the value of his crops. It is simply not worth while for the small farmer especially! He must simply take the risk.

Even if the disaster is so great that the area concerned is declared a 'disaster zone', compensation is more often than not too little, and by the time it reaches the farmer he is in debt. The problem has a solution, of course, but it is so simple in its basic principles that it cannot penetrate the twisted minds of those responsible for the Ministry of Finance.

There are two laws sponsored by this Ministry, one of which affects all farmers and the other a great many. If we consider these laws in some detail the Government indifference to agricultural problems becomes obvious.

In 1974 the Ministry of Finance imposed a tax of 15% at source on the interests on all savings deposits, no distinction being made between old age pensioners, the small saver or the man who has millions in the Bank. This tax hit many farmers a hard blow, because over the years they had invested part of the income from their farms in Savings Banks with the idea of using the interests to pay off loans, hire purchase of farm machinery, seeds and other types of Government tax. It is interesting to note that this stupid

law was passed just when the country needed to increase savings and decrease expenditure!

However, there was worse to come for those farmers whose lands bordered on cities and towns when a law came into force which authorized the change over from rural to urban taxation rates on all lands which came under any Urban District Planning Scheme. To see how much harm this law has done to the farming community all we need to do is consider briefly what it implies.

The local Councils in towns of any size have the power to draw up Urban Development Schemes, to be carried out within a reasonable period. Up to the time of this recent legislation, however, any lands which came under such schemes but were still under the plough were considered rural from the point of view of land tax, until they were actually taken over under the planning schemes. The farmers did not object to this, even though the land tax at rural rates is still too high. However, this recent legislation implies that there is now no limit to the area of lands which can be included by a local Council in its planning schemes, and all such lands, whether under the plough or not, have to pay urban tax rates instead of rural ones. They will also be subjected to other Municipal taxes, which include such things as water supply, sewage, street lighting and so on *ad infinitum*.

Since 90% of this new tax goes into the Local Council coffers and the other 10% to the Ministry of Finance, it was natural that Municipalities should take due advantage of this stupid legislation to increase their plans for Urban Development Schemes to an extent which can only be described as ridiculous, and which could not be put into effect for a hundred years or more! Examples abound, but two are worthy of special mention. One city of 300,000 inhabitants immediately increased its projected Urban Development Zone to four times the area of the present city, and in another case the law was used to slap a building-site tax on the central patio of the local Archbishop's Palace!

All this might seem amusing until we see what it implies in the case of those farmers whose lands were near enough to the city or town to come under these absurd development schemes. In land tax alone, without taking into consideration other Municipal taxes which have been mentioned, this means an increase of 13,000%! This is not a printer's error; the figure is in the region of thirteen thousand percent. We know of one case of a farmer who previously paid 2,500 pesetas a year land tax on his farm, and who now has to find 170,000 pesetas a year unless he wants to see his lands taken over from him without compensation of any kind.

So far, all the efforts made to get this law repealed or modified have failed, mainly because there are too many vested interests at stake, beginning with the local Councils! Yet the farmers' claims are entirely reasonable – while the lands are still under cultivation they should pay rural taxes, but once they are expropriated for development purposes, they should pay urban rates. While the situation remains as it is Municipal Authorities are in no hurry to put any of their development schemes into effect, since they can get more money from this tax without lifting a finger!

It remains to be seen whether, when the moment does come for expropriation of any of these lands for development purposes, the prices paid will be the minimum fixed for urban properties or whether they will then be considered rural lands because they are still under cultivation. Many farmers think that the latter will be the case – in which event it could be the last straw!

Spanish farmers are now tired of vague promises and kind words of encouragement. They are fed up with being treated as third class citizens, whose valid claims are rejected while generous concessions are made to industry. However, there are some signs of a change of attitude on the part of the Government, as the articles of Licinio de la Fuente show. Those in authority are beginning to realise that industry is all very well in its right place, but that, in the long run, people cannot eat cars, refrigerators, radio and television sets! Those with capital to invest are also coming round to the idea that, while industry once gave quick returns, investment in agriculture might be safer and more profitable in the long run.

The need to reduce imports has also induced the Government to pay more attention to food production within the country. It is obviously absurd that Spain should have to import milk from the south of France, meat, sugar and other basic foods, when she can easily produce enough to feed the population, given a little help at Government level. However, to make this possible it is vital that the simple demands of farmers should be met, not on the basis of charity, but as an act of social justice. This is the immediate need – the rest will follow.

Recently it has become obvious that the King of Spain is prepared to take a personal interest in the farmers' problems, but the vital question still remains to be answered: is the help promised to agriculture going to be too little or come too late to repair the damages done by the Industrial Revolution?

Spain is a country of magnificent plans and projects, seldom if ever put into effect, which are reflected in the phrase 'Castles in Spain'. It remains to be seen how far the Government can increase the power and resources of the Ministry of Agriculture and put a rope round the necks of the all-powerful Ministry of Finance, the middlemen and the Monopolies – the three enemies of agriculture in this country.

International Migration as an Obstacle to Achieving World Stability

by John H. Tanton

The migration of the educated elite from the less to the more developed countries of the world is actively encouraged by the receiving nations; but exploitation of their human resources is as damaging to the under-developed nations as the exploitation of their material resources. At a different level migrant workers seeking employment in countries richer than their own are at the mercy of the host nation's economy. When growth rates fall and job opportunities are scarce, they are the first to be discharged, and consequently to become a burden on the welfare of the receiving country. When controls are tightened, frustrated hopes of better opportunities lead to an increase in illegal immigration.

This paper was originally given at the Limits to Growth Conference 1975 and won third place in the Mitchell Prize Competition.

Continued population growth is now widely recognized as a major component of the social, economic, and environmental problems facing mankind. The inevitability of some form of stationary state is gaining wider acceptance. In contemplating the possible forms of a stationary state, it seems certain that one of its attributes must be human populations of relatively stationary size. Further, the spatial distribution of human populations is importantly related to such phenomena as urban areas insufficiently dense for mass transit, and the loss of prime agricultural land to development. Migration from the rural to the urban, and from the urban to the suburban, has many associated problems. Age structures in many regions result in high dependency ratios. The huge size of some population units even if stationary, would make their management difficult. The environmental literature has extensively discussed these and other aspects of the population problem.

Conspicuous by its absence from the environmental literature, however, is the role international migration plays in the demographic and other problems facing mankind.

This omission is perhaps due in part to oversight. So much stress has been laid on the role of reducing births in controlling population growth, that the role of international migration in perpetuating population growth has largely escaped notice. Agencies such as the U.S. Department of Health, Education and Welfare issue reports on births, deaths and resultant natural increase as part of their vital statistics, but make no mention of the contribution of immigration to the country's population growth. Even the papers laying out the ground rules for the Mitchell Prize defined a population of constant size as one where the birth rate equals the death rate, ignoring the migration factor in regional or national population growth. Migration also proves to be a factor in global population growth, surprising as that may seem at first glance. International migration has also escaped attention because it has been the province of sociologists and economists, who have generally shown little concern about population and environmental problems. Conversely, those interested in environmental and population problems tend to be drawn from the physical and biological sciences, disciplines not traditionally touching the migration question.

Complexity of the topic is another barrier. The U.S. Immigration and Nationality Act runs to 179 pages, and is said to be second in length in federal law only to the Internal Revenue Code.

Fear may well be another factor suppressing the discussion of international migration in environmental (and other) circles. I have often encountered otherwise thinking people who reject out of hand the consideration of immigration questions, as being too sensitive or controversial. This visceral reaction is understandable, as most of us have immigrant roots, and we feel compromised. It is, however, no more inconsistent for the offspring of immigrants to consider the limitation of immigration than it is for the

products of conception to plan to limit births, or the beneficiaries of past economic growth to consider its limitation.

An aversion to discussing immigration is also understandable in light of the seamy history surrounding past efforts to limit immigration. These were marked by xenophobia and racism, and gave rise to the likes of the Know-nothing political party, and the Ku Klux Klan. Other -isms of past debates that we seldom hear today include jingoism and nativism. The subject was often highly emotional and divisive(2). Any person who attempts discussion of immigration policy will soon learn as has the author that the situation is unchanged in this regard.

These difficulties must be overcome. In the inevitable stationary state to which man is consigned by the finiteness of our globe, the growth of both human numbers and material consumption must eventually end. We can now see that the inevitable stationary state may actually be an improvement over our present one and perhaps should be actively sought, rather than postponed as long as possible.

Similarly, international migration on its current scale is destined to end in the near future, owing to the same finiteness of the globe. As the principal countries currently receiving immigrants — the United States, Canada, Australia — reach or surpass the limits of population which they can support, they will likely move to curtail immigration. As with the coming material equilibrium we should ask whether this is a good or a bad thing. Is the end of significant international migration an evil to be deferred as long as possible, or could it be a benefit to be welcomed and encouraged with all deliberate speed?

It is time for environmentalists to deal with this important question. They will need to acquire knowledge in a field new to them, conquer its difficulties, and deal with controversy as they have so often in the past. Otherwise a whole new set of problems will catch us unawares, and the achievement of material equilibrium will be significantly delayed.

Historical Background and Demography

A short historical background is advisable to provide a common basis for considering the international migration question. These notes generally follow Davis(3).

As civilization advanced and cities developed, the dominant pattern of migration through the 1700s was from less developed to more developed areas, and from the rural to the urban. Nor was all of this migration free, for slavery was a common source of energy for developing civilizations.

These patterns persisted until the middle 1800s, when in Europe populations began to press hard upon the resource base and environment. Timber resources had become depleted and epidemic diseases such as the potato blight fed upon monocultures which had developed to support increasing populations. Grave difficulties were avoided as the less developed world of that day — North America, Latin America and Australia — opened to comparatively easy migration at about the same time. Steamships came into use, lessening the difficulty and danger of the voyage(4). Excess population was exported and resources were imported, lessening pressures in Europe.

The twin factors of the "push" to leave home and the "pull" of opportunity abroad thus served to reverse the historic trend of migration. People began migrating from the then developed world to the less developed in massive numbers. Between 1840 and 1930 at least 50 million persons emigrated from Europe. In the past 100 years, 25 million persons have emigrated from Italy alone, a huge movement when compared with its present day population of 55 million. This trend of migration continued in pulses of varying strength through 1950, with the recipient countries developing and in some cases surpassing the countries of origin in their stage of development.

Since the end of World War II, the flow of migrants from the developed countries of northern Europe has slowed, and the historic pattern of migration from the less to the more developed countries has re-

Table 1. Immigrants from Europe to principal overseas destinations: 1951-1970, based on statistics of receiving countries.

(in thousands)

Country or Region	Total 1951-1970	1951-1955	1956-1960	1961-1965	1966-1970
Total . .	9,478.6	2,791.6	2,504.0	1,876.6	2,306.4
Australia	2,391.6	513.1	524.9	588.8	764.8
New Zealand a/	309.7	82.3	70.9	86.1	70.4
Canada	2,327.9	699.9	672.9	365.2	589.9
United States b/ . . .	2,460.5	628.2	700.1	531.6	600.6
South Africa	341.9	68.4	45.2	78.6	149.7
Latin America c/ . . .	1,647.0	799.7	490.0	226.3	131.0

a/ Years ending 31 March.
b/ Years ending 30 June.
c/ From Italy, Portugal and Spain only, based on statistics of the sending countries. Migrants from these three countries constituted about 95 per cent of all European migrants to Latin America.

From International Migration Trends 1950-1970. U.N. Secretariat Background Paper for the Bucharest World Population Conference. Document E/Conf. 60/CBP/18, 22 May 1974. (5)

turned. The poorer countries around the Mediterranean Sea, and those of Latin America, Africa, and Asia are now supplying increasing numbers of migrants. Times have changed, however. This present day migration must be viewed in the context of the massive populations and overpopulation of many of the sending and receiving countries. There are no remaining virgin continents waiting to be peopled or to have their resources exploited.

What is the current scale of international migration? There have been very large movements of people since World War II. More important than the current scale are the trends and causes of migration. These promise large increases in migration pressures in the future if conditions continue to deteriorate in the less developed countries.

In Europe, since the end of World War II, more than 10 million "guest workers" have migrated from southern Europe and the Mediterranean area into northern Europe, to participate in and facilitate the economic recovery and prosperity which followed World War II(5, 6). This phenomenon has reached its zenith in Switzerland, where migrants make up 30 per cent of the work force(20).

In North America, the United States has a current population growth from natural increase of about 1.2 million persons per year, supplemented by about 400,000 legal immigrants. (Emigration is estimated at 37,000 yearly by the Bureau of the Census.) Legal immigration thus increases the U.S. rate of growth about one-third over what it would otherwise be. More than 55 per cent of these legal migrants now come from the less developed countries(7). In addition, a new phenomenon of the last decade — large-scale illegal migration — adds an inaccurately known though apparently large number. Estimates range from 800,000 to 1 million or more yearly, most of whom come from a wide variety of less developed countries(8). Combining the lower estimate of 800,000 for illegal immigrants with 363,000 net legal immigrants, immigration accounts for about 50 per cent of the current annual population growth of the U.S. Continued to the turn of the century, these rates of immigration will account for the addition of an estimated 15 million (for legal)(9) and 40 million (for illegal)(10) persons to the U.S. For comparison, natural increase at replacement level fertility will add 38 million by the year 2000(11). Similar situations exist in other major industrial nations.

The United States situation may be contrasted with its developing neighbour to the south. Mexico has 59 million people, an annual growth rate of about 3.2 per cent, which dictates a doubling time of 22 years. Forty-six per cent of its population is under 15 years of age (12), poised to enter a labour market in which unemployment / underemployment may be as high as 40 per cent(13, 20). Mexico's natural increase is 1.8 million persons per year — 50 per cent larger than that of the United States, which has nearly 4 times as large a population. Differentials in per capital GNP across the border are perhaps 10 to 1(14), a ratio of averages which doesn't take into account that income distribution is generally more unequal in less developed countries(15).

Mexico is one source of illegal migrants to the U.S. The driving force behind the migration northward is the great disparity in employment opportunity and income between the two nations. This differential promises to increase with time, not so much from economic growth on the American side, as from a lack of economic growth on the Mexican side, relative to its high rate of population growth.

Conditions similar to those in Mexico exist throughout the rest of Latin America, which as a whole had a 1974 population of about 325 million, a 2.7 per cent annual growth rate, a doubling time of 26 years(12), and generally high underemployment/unemployment rates. Asia and Africa have similar situations. There is obviously a great storm brewing. Any scenario for the future should take into account these massive pressures to migrate from the less to the more developed countries, whether legally or illegally.

So much for the historical setting of the immigration dilemma and the numbers involved. The phenomenon of international migration touches many other aspects of human life, and significantly affects the prospects for achieving material equilibrium. Let us look at some of these effects.

Effects on the Country of Emigration

The sociological and economic analysis of international migration has focused heavily on the effects of immigration on the recipient country, and the immigrant as a person. Let's look at the largely neglected effects on the country of origin, and those individuals who are left behind.

The damaging effects of the "brain drain" have long been argued. The term originally applied to the migration of highly skilled persons and students from the war-torn yet developed countries of Europe to North America. Concomitant with the recent shift to migration from the less developed nations of Asia, Latin America, and Africa, this transfer of highly skilled persons has continued and even accelerated(16).

This new form of the brain drain has a more profound impact. It is now the developing nations that lose not only some of their most talented citizens, but also the scarce capital which has gone into their rearing and training. They also lose the very persons on whom campaigns of social and economic development must be based: those with the highest expectations, the greatest initiative and intelligence, and those most dissatisfied with conditions at home. Educational systems continue to produce persons with skills inappropriate to the level of development of the country, often perpetuating patterns handed down from colonial times. Pressure to change the system is relieved as its products leave the country(17).

While there is widespread discussion in the developed countries about the effect on the less developed countries of exploitation of their material resources, there has been little concern in the same circles about the exploitation of their human resources. These are perhaps the scarcest and most valuable resources of all. The policies of the developed nations which perpetuate the brain drain, whether so intended or not, in effect are a new and subtle and highly effective form of colonialism. The brain drain helps ensure that the less developed nations will stay that way. Thus they will not become competitors of the more developed nations for raw materials and for markets for manufactured goods.

The loss of physicians and health workers in particular retards the development of birth control programmes in the less developed countries(18). Resultant population growth further hampers their development efforts. Emigration also tends to remove persons of productive age, leaving behind the children and old people, aggravating the already high dependency ratios of the less developed countries(3).

The dollar value of the "brain drain" from the less developed nations to the United States has exceeded its foreign aid to some of these same countries(17, 19).

This is a form of "reverse" foreign aid. It is another example of the poor of the world subsidizing the rich. It is one more reason that the disparity in incomes between the developed and less developed countries is so large. One of the most effective forms of aid which the developed nations could give to the less developed ones is to stop appropriating their human resources.

The term "brain drain" should not blind us to the fact that most who emigrate, whether or not technically skilled or educated, have high motivation. These persons are an important key to develop at home, if they are given the tools to work with.

Traditional analysis holds that these deleterious effects are in part balanced by remittances from migrant workers in the developed nations, and that this may be one of the more effective forms of foreign aid, instilled as it is at the bottom of a social structure. However, developing nations dependent on such payments are doubly vulnerable to the conditions in the developed countries. As rates of growth decline and employment falls, foreign workers are often discharged. The less developed country loses not only the foreign exchange, but often gets the unemployed worker back home as well. This is true whether the decline in the developed nation is unintended, as in Europe today, or planned, as in the transition to a stationary state. Stationary state planners in countries with large foreign worker populations will have to pay particular attention to these effects.

The value of remittances has been questioned by Jonathan Power in an excellent analysis of costs of migration to the country of origin (20). He contends that such monies are spent mainly on consumer goods, often imported, and not on financing development. In the end, trade deficits are increased. Native agricultural systems are undermined. Sights are set on emigration, and enterprising families are lost to the economy of the less developed country.

Table 2. Estimates of net migration and its relation to total population size and natural increase in selected countries of Europe, North America and Oceania, 1950-1970.

Region and Country	Net migration a/ (Thousands) Total 1950-1970	1950-1960	1960-1970	Average annual net migration 1950-1970 as a per cent of 1960 population	Ratio of net migration to natural increase 1950-1970 (per cent)
Europe	-3 028	-2 653	- 375	-0.04	- 4
Western Europe	+8 748	+3 882	+4 866	+0.3	+ 51
Austria	- 103	- 141	+ 38	-0.1	- 17
Belgium	+ 211	+ 59	+ 152	+0.1	+ 27
Federal Republic of Germany	+4 780	+2 723	+2 057	+0.4	+ 81
France	+3 258	+1 080	+2 178 b/	+0.4	+ 55
Luxembourg	+ 22	+ 7	+ 15	+0.4	+105
Netherlands	- 50	- 142	+ 92	-0.02	- 2
Switzerland	+ 630	+ 296	+ 334 b/	+0.6	+ 72
Southern Europe	-7 301	-3 475	-3 826	-0.3	- 29
Greece	- 651	- 196	- 455 b/	-0.4	- 36
Italy	-1 958	-1 166	- 792	-0.2	- 23
Malta	- 81	- 43	- 38	-1.2	- 89
Portugal	-1 952	- 662	-1 290	-1.1	- 90
Spain	-1 377	- 826	- 551	-0.2	- 19
Yugoslavia	-1 282	- 582	- 700 b/	-0.3	- 26
Eastern Europe	-3 777	-2 559	-1 218	-0.2	- 21
Bulgaria	- 178	- 163	- 15	-0.1	- 13
Czechoslovakia	- 174	-	- 174	-0.1	- 8
German Democratic Republic	-2 488	-1 874	- 614	-0.7	-215
Hungary	- 161	- 164	+ 3	-0.1	- 14
Poland	- 526	- 220	- 306	-0.1	- 6
Romania	- 250	- 138	- 112	-0.1	- 6
Northern Europe	- 698	- 501	- 197	-0.05	- 8
Denmark	- 32	- 52	+ 20	-0.03	- 5
Finland	- 214	- 73	- 141	-0.2	- 26
Ireland	- 558	- 397	- 161	-1.0	-101
Norway	- 10	- 14	+ 4	-0.01	- 2
Sweden	+ 297	+ 93	+ 204	+0.2	+ 41
United Kingdom	- 181	- 58	- 123 b/	-0.02	- 5
Northern America	+8 698	+4 086	+4 612	+0.2	+ 17
Canada	+1 802	+1 105	+ 697	+0.5	+ 31
United States	+6 896	+2 981 b/	+3 915 b/	+0.2	+ 15
Oceania	-1 857	+ 933	+ 924	+0.7	+ 55
Australia	+1 712	+ 831	+ 881	+0.8	+ 65
New Zealand	+ 145	+ 102	+ 43	+0.3	+ 19

a/ Unless otherwise indicated, the estimates of net migration have been derived by subtracting natural increase from population growth during the specified periods which run from mid-year to mid-year.

b/ Adjusted estimates.

From *International Migration Trends 1950-1970.* U.N. Secretariat Background Paper for the Bucharest World Population Conference. Document E/Conf. 60/CBP/18, 22 May 1974. (5)

Effects on the Countries of Immigration

Let us now take a look at brain drain and related migration phenomena from the standpoint of the developed country, and in the context of the quest for the stationary economic state.

Brain drain effects. In recent times the countries of immigration — the Statue of Liberty's pronouncement not withstanding — have actively sought out the skilled persons of the world as immigrants. The clear purpose has been to stimulate and facilitate perpetual economic growth and development, a purpose only recently challenged as a social good. The 1952 McCarran-Walter Immigration Act set aside 50 per cent of U.S. visas for those in the professions, who would "substantially benefit prospectively the national economy, cultural interests or welfare of the U.S."(21). There is no mention of the effect on the country of origin. There is little doubt that the infusion of highly skilled persons has been an effective economic stimulant (19, 20), just as the ready supply of cheap labour provided by earlier immigrations was one of the essential factors in industrial growth.

At the same time that international migration is raising the dependency ratios of the developing nations, it reduces this ratio in the developed nation. The developed country gains highly motivated, ambitious, and hardworking persons whose goal is personal economic growth. All these factors stimulate growth.

On the pathway to stabilized world material consumption, the developed nations must not only consume absolutely or at least relatively less, but also some provision must be made for improving the living standards of the world's poor. The international migration of skilled persons has tended to increase the gap between the less and the more developed countries: its cessation is one step which would move us toward a more stable and less disparate world.

Internally, the importation of skilled persons delays the modernization of educational systems in the more developed countries as well as those of the less developed country. For instance, doctors are imported rather than trained. This denies opportunities for upward mobility to native citizens, particularly minorities. In the United States, there are more Filipino than black doctors(9).

The developed countries have promoted skilled migration because of a faulty analysis of where their interests lie. They have asked what is good for their own country, ignoring the effect on the country of origin and on the world as a whole. It is as if the analysis of purse snatching ended with a determination of what was good for the thief, and ignored the effects on the victim. We need a new, broader, and world view of what is good for the developed countries. It must look not only at short-term advantages, but also at the long-term price to be paid in world instability for further increases in their prosperity, especially if a portion of that increase comes at the expense of the world's poor.

Illegal immigration is at least a step-child of the brain drain, for it is increasing the economic disparity between nations that is the chief impetus behind this phenomenon. There is a measure of retribution about to be meted out, however, for some of the steps that will be required for the developed countries to control illegal migration promise to very directly affect some of their most cherished liberties and freedoms. These will likely include Orwellean measures ranging from considerable restrictions on movements across international borders, to the carrying of identity cards to establish one's right to social benefits, a job, and to be in the country. Thus will the residents of the developed countries most directly experience the effects of rampant population growth and the dire economic straits of the less developed nations.

Resource effects should be considered. Immigration helps to perpetuate the population and economic growth of the developed nations, which, in turn, will tend to increase their draw on the world's resources. Further population growth in the food exporting countries will likely consume more agricultural land, decreasing their food production capacity. At the same time their domestic food con sumption will increase. These changes will decrease the amount of food available for export. These are deleterious changes for both the developed and the underdeveloped nations.

Demographic implications for the developed nations were outlined in the historical section using the U.S. as an example. To the extent that legal migrants from the less developed countries bring their traditionally high fertility patterns with them, the estimates for their increase are

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understated, for the presented data assume replacement levels of fertility. The developed countries lose some of the benefits of their declining fertility, to the extent that averted births are replaced by immigrants.

Since the mean age of migrants is in the early twenties(7), and since the bulk of the post-World War II children are just entering this same age range, immigration adds further to the existing distortion of age pyramids caused by the excessive births of that period. This is another move away from stability.

Socioeconomic problems should not be side-stepped, though mentioning them immediately opens one to charges of the various -isms. Migrants tend to concentrate in urban areas, where jobs and their relatives are found. In the U.S., with the resident population at replacement level fertility, immigrants will account for 23 per cent of all urban growth between 1970 and 2000. They thus add to already massive urban problems. Immigrants concentrate in a few states and cities, impacting these areas in particular(9).

Illegal immigrants tend to take jobs at the bottom of the socioeconomic scale, and thereby help to perpetuate some of the resource consumptive practices of the developed nations. Without this input of inexpensive labor, the developed society will have to choose between improving the pay and working conditions to have the job done, or going without(20). The former course would tend to level incomes, the latter would decrease consumption. Either course is desirable en route to a stationary state. As Daly has pointed out, "The rich only ride their horses — they do not clean, comb, curry, saddle and feed them, nor do they clean the stables" (22). Without someone to do the servile tasks, consumption is perforce limited by a lack of time, for the individual must do his own maintenance work. I judge this a more healthy situation both physically and ethically.

By taking jobs at the bottom of the socioeconomic scale, illegal migrants compete for jobs with the disadvantaged and highest unemployment sectors of society: minorities and teenagers, and minority teenagers in particular. This again helps to prevent levelling of incomes, and frustrates their ambitions.

The achievement of material equilibrium, and many of the emerging qualitative environmental goals of the developed countries, will require a great unanimity of values and purposes among their populations. These are unlikely to be shared by the bulk of illegal immigrants who migrate looking for personal economic growth. As with the developed countries in their early stages, and the developing countries today, the ethic of environmental quality will doubtless come a poor second to economic growth. Any language barriers will increase the difficulties. These factors will weigh against the achievement of a stationary state.

The World View

There is evidence that countries which traditionally export a large proportion of their excess population postpone necessary internal demographic changes which would make such emigration unnecessary(3). Thus emigration facilitates a segment of continued world population growth, which might otherwise be avoided. In the special case of Italy, it is interesting to speculate upon possible changes that could have occurred in the Roman Catholic attitude on birth control-related matters, if emigration had not relieved its population pressures. Such changes, if they had been brought about several decades ago could have markedly ameliorated the population problems many nations face today.

International migration moves people from less consumptive lifestyles to more consumptive ones — the chief reason behind migration is the hope of improving one's economic position. It thus contributes to increasing world consumption. The change needed in the world today is just the opposite: reduction of excessive and wasteful lifestyles. The resources required to support the migrant in his new, more affluent lifestyle could support many more of

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his former countrymen in their less consumptive lifestyle(23).

As we approach the stationary state, throughput must be minimized, for people as well as material goods. Demographically, this implies low birth and infant mortality rates, and long life expectancy, with births equal to deaths. It also necessarily means minimal throughput from migration, with low levels of immigration equal to emigration.

The world population problem cannot be solved by mass international migration. If the developed nations took in the annual growth of the less developed nations, they would have to accommodate 53 million persons yearly. This would give them an annual growth rate of 6.3 per cent, and a doubling time of 11 years(3). In the face of this impossibility, the main avenue open for the developed nations to help the less developed ones is to restrict their own growth, and seek to apply the resources thus conserved to the solution of the problems of the less developed nations.

Conclusions

It is time to take a fresh look at international migration in the light of the need to *slow* the economic growth of the developed nations, rather than stimulate it, and in turn to *promote* the economic growth of the less developed countries, at least to some minimal acceptable standard. Current migration policy pushes both considerations in the wrong direction, and stimulates overall population growth as well.

As certain portions of the globe deal with their problems more effectively than others, they will stabilize more quickly. This will doubtless increase their attractiveness, especially if other regions are not making progress, or are even slipping backwards. This will increase pressures for international migration which, if it is allowed, will tend to destabilize those regions otherwise approaching stability. Thus international migration will have to be stringently controlled, or no region will be able to stabilize ahead of another. If no region can stabilize ahead of another, then it is likely that no region whatsoever will be able to stabilize in an orderly and humane fashion. A more hopeful scenario calls for some regions stabilizing at an early date, and then helping others to do so.

Given the demographic and development situation of the world, the control of international migration will be one of the chief problems the developed countries will face in approaching equilibrium conditions.

Immigration may be good for the vast majority of the migrants themselves. They find new economic opportunities and in the special case of refugees, new freedoms. It emerges, however, that their migration in the main runs counter to the real interests of both the countries of origin and the recipient countries, and the world as a whole. This is true whether the analysis is conducted in the traditional growth framework, or in the context of the stationary state. What first appears as a new area of conflict between the interests of the individual and those of society, is really a conflict between the interests of the individuals who migrate and those who do not. It is time for the larger and longer range interests of the latter to prevail. We need in particular to give more weight to the interests of the unseen countrymen of the immigrant who are left behind, to live with the conditions the migrant might have helped to change.

Future historians may well record such a broadened examination as one of the factors that led to the end of the age of international migration, one of the alterations that will necessarily accompany the transition to a stationary state.

The question we face is not whether immigration should be restricted, for it has been for decades in all countries. Rather, the question is, what restrictions are appropriate to today's world? Re-examination of this question is made easier by the realization that current limits are arbitrary in their origins. Many were set decades ago without consideration of population, resource, environmental, and other factors that can and should be taken into account today.

Happily, it is possible to envision a world in which international migration could become free and unfettered. Appropriately, it is the world of a stationary state, in which people in different regions are in equilibrium with resources, and in which there is a reasonable chance in each region for self-fulfillment, matched with social equity. Under these conditions, international migration could be unfettered, because there would be little incentive to move. Contentment with conditions at home, coupled with man's strong attachment to things familiar, would serve to keep most people in place. While the freedom to migrate at will is incompatible with the physical realities of today's world, it is one of many things that can be restored as man achieves balance with his environment.

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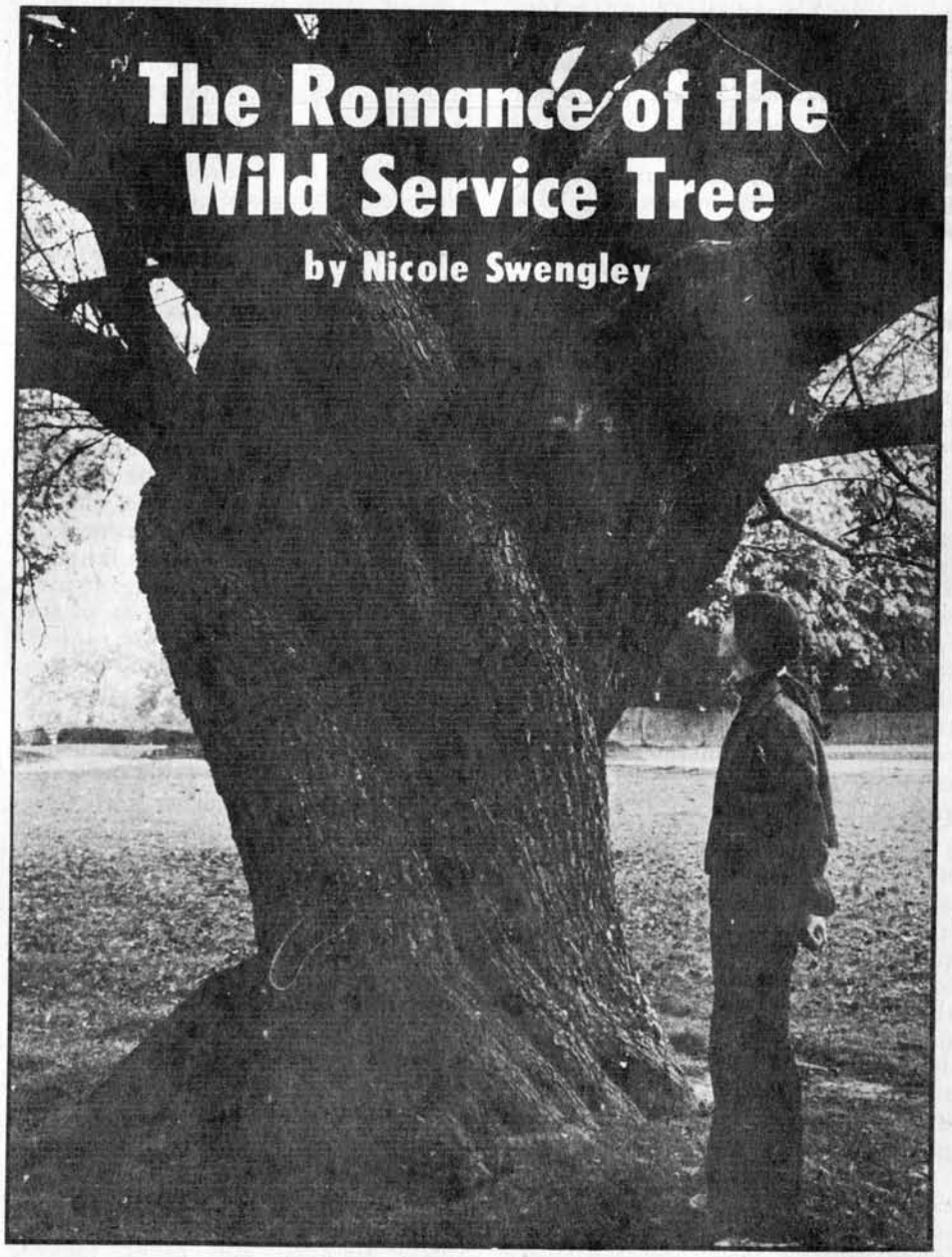
The Romance of the Wild Service Tree

by Nicole Swengley



Wild Service trees once graced many parts of Britain, and were highly prized, particularly for their fruit. Today, a few of these attractive trees still stand in pockets of woodland, little known, their former uses forgotten, and with saplings obtainable only from very few nurseries. For the Wild Service is just one example of a rarer native tree which is gradually being allowed to die out.

Until late Medieval times, the Wild Service or Chequer tree (Sorbus torminalis) enhanced lowland forests throughout England and Wales. Although never abundant, groups of trees probably grew wherever there was the clay, or magnesian or carboniferous limestone soils which the species prefers. Today, few grow in the north of England, and even in the south many counties boast only a handful of trees. The main strongholds are the Weald, the Wye Valley and Essex. Trees are also found in ancient and relatively undisturbed areas of lowland primary woodland, such as Epping Forest, the New Forest, Bernwood (Buckinghamshire), Needwood (Staffordshire), and Delamere Forest (Cheshire).

Indigenous to Britain, the Wild Service can grow as tall as the oak and reach heights of 70 or 80ft. Trunks of over 13ft. in girth have been recorded, while a variety of insects including the caterpillars of rare moths such as the Hereford Pygmy (Nepticula torminalis) live on the leaves. These are of a characteristic shape, similar to the sycamore, and since they do not disintegrate as soon as they fall, specimens are almost as easy to find in winter as in summer. Finding the tree can be difficult even in areas where they are known to grow, but track the scattered leaves back to the tree: it may be several hundred yards away.

In April and early May, the rounded green winter buds burst to reveal unfolding leaves and young extending shoots which have a distinctive silvery appearance, like that of its close relation, the Whitebeam. In late May and early June white flowers appear, which at a distance may be confused with Hawthorn, Elder or Guelder Rose. Later in the year, the leaves burnish to a magnificent flame or gold. This gorgeous spring and autumn foliage is one of the tree's main assets as an ornamental species. By this time, the flowers have turned to russet coloured fruits about the size of a cherry, and shaped like fat hawthorn berries.

Without doubt, the Wild Service was greatly revered in former years, so much so, that in the Weald of Kent many houses and farms were named after the "Chequer Tree", the local name for the species. This practice does not recur throughout Britain, perhaps because other areas have known the tree by a different name. In Lincolnshire, they are called "Surries", while in Gloucestershire and Worcestershire, they are recorded as "Lizzories" or "Lessories". In Sussex and Kent, the "Chequer Tree" has also been termed the "Serve" or "Sherve", but has never been known as the Wild Service. "Sharves" is the Essex name for the fruit, whereas they were once known as "Sorbus-berries" in the Isle of Wight. Other parts probably had their own dialect names for the tree and its fruit, but sadly such cognomina may have passed out of our language totally unrecorded.

Much of our knowledge of the folklore surrounding the tree is equally gappy today. Why, for instance, were the berries carried at the head of village festival processions in Northamptonshire? And did fair damsels truly vouch for the efficacy of love-potions concocted from the juice of the berries? And why, like the Rowan, was a reputation for scaring off witches accredited to the Wild Service?

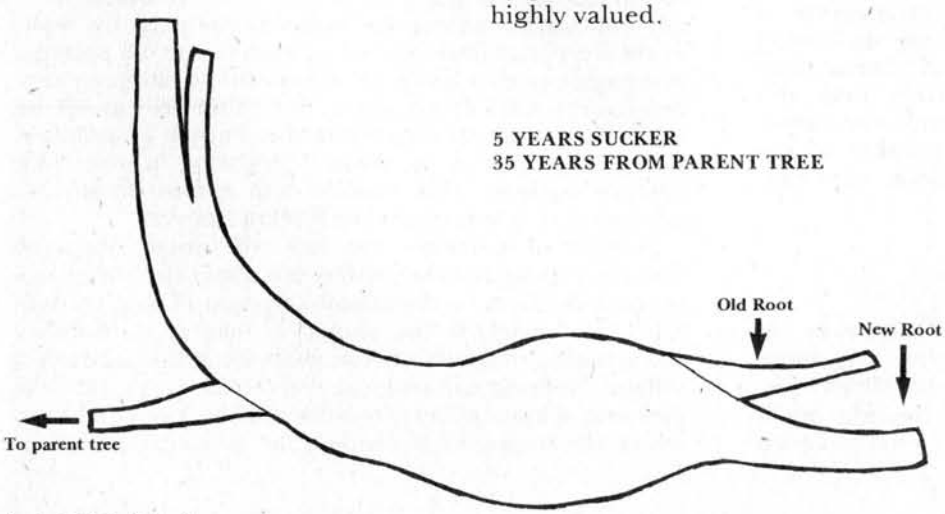
Several hundred years ago, when there were many more trees than now, the fruit was popularly used in the making of jams and jellies. Chequer berry jam was a speciality in Kent and Sussex; it tasted something like quince preserve. Berries were obtainable from markets in Kent, London, the Isle of Wight, Oxfordshire, and probably other places too. They were on sale at Covent Garden until the 19th century and it is still possible to purchase them in some country areas in France. Apart from their reputed ability to cure colic, the berries

A wild service tree growing in parkland at Parsonage Farm, Udimore, Sussex. The tree is probably well over 200 years old and with a trunk of 13ft. 6ins. is the largest ever recorded in England.

WILD SERVICE LEAF

were converted into a drink analogous to cider, or were used to make a fruit liqueur much like cherry brandy or sloe gin, by steeping them in brandy or other distillates.

The wood of the tree is very hard and close-grained, and is useful for carving and turning. Articles such as bowls and spoons were once fashioned from the wood, and it was also used in the construction of furniture, and for making gun-stocks and tool handles. It is not surprising that a tree with such diverse and welcome by-products should have been so highly valued.



The species regenerates principally by root suckers. A mature tree (about 200 years old) will send out a "runner" root which extends greatly beyond the spread of the tree. On finding the right kind of soil and drainage, the far end of the root will start to grow. By the fifth year, the sapling will be about 5ft. high, bearing well-spread branches. If most of our present trees originated from suckers, the majority may indeed be direct descendants of trees of an earlier period. Assuming that previous generations propagated likewise, it is possible that some of today's Wild Service trees originate from seed which germinated before the Norman Conquest, when Britain's ecology would have been very different — with wolves and wild boar in the forest, for instance.

But this vegetative reproduction cannot continue ad infinitum; seedlings have to appear from time to time to introduce younger blood into an ageing stock. So given the present rapid decline in the number of trees, and the lack of attention shown towards preservation, how long will it be before the species dies out completely?

Getting Back to Normal

Among the many beneficial side-effects of the financial crisis is the news that Britain's minor country roads may become again the network of wildlife sanctuaries they once were. It is reported that the County Councils Association is considering adopting a no-maintenance principle for 30,000 miles of least-used roads. Road "improvements" notoriously attract more traffic: presumably neglect will have the reverse effect, and deter what little traffic there is on these lanes. The picture is a pleasant one: grass verges encroaching, pot-holes enlarged by every winter's rain and frost, untrimmed hedges meeting overhead — a hundred square miles, more or less, of new wilderness added to Britain.

But taking a longer view, we have here a sympton of a civilization in retreat: for, as any archaeologist will confirm, it is when people stop *repairing* things that one knows a culture is on its last legs. The collapse of Roman civilization was not primarily a matter of barbarian invasions, but of leaking aqueducts, broken bridges, silted harbours and blocked roads. Today, as then, people insist on regarding the difficulties as temporary, and confidently expect things to "get back to normal" shortly: but *normal* is precisely where things *are* getting back to, as they always have done after the temporary aberration of a top-heavy civilization.

Fiction or Prophecy?

These apocalyptic thoughts prompted me to look again at *After London* by Richard Jefferies. Published in 1885, this book must surely be the first of that long series of "end of civilization as we know it" stories of which the *Survivors* serial on television is the most recent example. Jefferies' first chapter is an unforgettable picture of nature reestablishing itself over the ruins of Victorian England, described with the marvellous eye for detail which is this writer's chief virtue. "The brambles, which grew very fast, had pushed forward their prickly runners farther and farther from the hedges . . . The briars had followed, and . . . starting from all sides at once, these brambles and briars in the course of about twenty years met in the centre of the largest fields. Hawthorn bushes sprang up among them, and, protected by the briars and thorns from grazing animals, the suckers of elm-trees rose and flourished. Sapling ashes, oaks, sycamores, and horse-chestnuts, lifted their heads." As a prophet of the future, Jefferies makes Jules Verne look very old-fashioned!

Conference Tricks: Trade . . .

International conferences cost less than wars, in money and human suffering, but are they any more efficient as a way of solving the world's problems? For the official delegates, no doubt, they provide much congenial wining and dining, and — possibly even more pleasurable — plenty of opportunities for slanging matches with maximum publicity. But as far as practical benefits are concerned, all those man-hours would be much more usefully spent planting trees.

So far this summer we have seen two of these jamborees. At the fourth U.N. Conference on Trade and Development the richest nations were induced reluctantly to take a step or two towards paying the poorer ones a fair price for their commodities. Suggestions that they should also do something to lessen the crippling burden of debt, which for many Third World countries is the most conspicuous result of years of "aid", met with an even cooler response from the moneylender nations of the West.

But perhaps the most significant outcome of UNCTAD 4 was the emergence of yet another pressure group of nations, the exporters of the key commodities which, after oil, make up the bulk of Third World exports — things like tea, cocoa, coffee, sugar, cotton, jute, rubber, copper and tin. If, as now seems likely, prices of these commodities are to be fixed to keep pace with Western inflation, the beneficiaries, obviously, will be the countries with a major export trade in them. The whole exercise will leave the really poor countries — the ones, such as India, which have precious little of *anything* to export — even worse off than before. But the policy seems short-sighted even from the point of view of the beneficiary countries; for it cannot be in their long term interest, that their unhealthy single-commodity economic structures should be perpetuated. In any case, how much of the increased price the West will pay for its tea etc. will find its way to the peasants and workers, rather than lining the pockets of the plantation owners and the big, probably Western-owned, corporations?

. . . and Settlements

Habitat, the U.N. Conference on Human Settlements, was much bigger, had an even more important theme, and seems to have achieved even less. The final declaration of principles was rejected by most of the Western nations, because of the criticisms of Israel which it contained. Those parts of the declaration which were not politically contentious and environmentally irrelevant were, naturally, bland enough to suit all palates. A recognition that it would be desirable to supply every community with fresh water, for example, cannot be regarded as a great leap forward in human knowledge: it might be more to the point to ask why, in most 20th century nations, this modest aim seems harder to achieve than it was under the Roman Empire.

Human settlements are not all cities. Virtually nothing was said at the conference about the sufferings of rural dwellers — the appalling plight of the landless labourer for whom the slums of Jakarta or Bombay are actually *preferable* to the miseries of life in his own village. Nothing will stop the drift to the cities until the problem of rural poverty is solved. *That* is the end from which the urban crisis needs to be tackled. Talk about

making big cities decent places to live is largely a waste of breath — after all, if Europe and the United States have failed, what chance have India, Nigeria and Brazil?

It is abundantly clear by now that human settlements, like other organisms, cannot function properly above a certain size. There is no such thing as a *mere* difference of scale: quantitative changes are inevitably qualitative as well. A city of a million people is like a tree a thousand feet high or a land vertebrate weighing a hundred tons. There are sound scientific reasons why such monstrosities do not work. Cities, as Cobbett saw a century and a half ago, are diseased growths, cancers which need not to be tended, but to be cut away. But try persuading a U.N. conference to agree with that!

Bring Back the Bike

In all the recent debate on transport policy, it is curious how little attention has been given to that splendid piece of Victorian "radical technology", the bicycle. The public are leading the way while the policy-makers lag behind — last year over a million bikes were sold, and mileage increased by about 20 per cent. This led to an increase (actually much less than proportional) in accidents, which the Government has seized on as a feeble excuse to dismiss the bicycle as too *dangerous* to be encouraged. Their view ignores the fact that people tend to be hurt *on,* rather than *by,* bicycles: by the same argument, pedestrians are surely far too dangerous to be allowed on the roads at all?

A few local councils, recognising the merits of the bicycle and aware that in the absence of motor vehicles its safety record is excellent, are toying with the idea of exclusive or priority routes for cyclists. Even the Department of the Environment recently opened a cycle route in Hyde Park. But the most far-reaching scheme was in Portsmouth, where a network of backstreet routes was recently established in which motor vehicles were excluded except for access. Many other councils were watching the experiment with interest. But it became a "political" issue in the local government elections, and now the City and County Councils have squashed the scheme in response to protests from local residents and, in particular, traders.

Even without official encouragement the bike is likely to go on gaining ground. Its direct advantages to the individual are increasingly obvious. But in view of its benefits to society at large, it surely deserves a less lukewarm response from those in authority?

Go Self-Sufficient — It's Cheaper

To work an hour's overtime and spend the extra money in the pub sounds a fairly harmless way of spending an evening. But according to John Shepherdson, Professor of Pure Mathematics at Bristol University, it's only a reasonable financial proposition if you're in the £100,000 a year income bracket. The Professor's sums are based on the amount of after-tax income an hour's overtime brings in: they lead him to conclude that, for example, working to pay someone to do your decorating only makes financial sense for people earning over £16,000 a year. Home-brewing pays anyone on less than £100,000, so all those beer-drinkers who aren't mentioned in Paul Getty's will had better start boiling up the malt and hops right away.

The calculations, of course, leave out a lot. The amount of work people do, and the way they use their spare time, are influenced by all sorts of factors other than the financial one. But the general conclusion may have implications for the ecological movement. People need to be shown how the complex structure of modern industrial society adds to the real cost of things. The claim that large-scale, centralized production of goods is somehow economically superior to its antithesis must be exposed as the lie it is. The details of the wider economic argument are above the heads of most people who are not professional economists (and some of *them* don't seem too clear about it all either): But a saving in this week's housekeeping money is a thing anyone can understand. The natural way for human beings to reason is from the particular to the general, not the other way about. It is not ideological or intellectual arguments that will persuade the mass of people to adopt a more self-sufficient way of life: it is the realization that it is cheaper to do your own decorating; cheaper to make your own clothes and furniture; cheaper (if you can hack a way through the thickets of regulations) to build your own house; cheaper to grow your own food. If they go on to conclude that Adam Smith was wrong and division of labour is not the cure for the economic ills of mankind, so much the better: but in real life the practical implications need to precede the general theory.

A Private Eye on the Farm

Intensive livestock husbandry is often cruel to animals and degrading to the men who practise it, but is it actually *illegal?* The National Society for the Abolition of Factory Farming think a test case should be brought, and somewhere in Britain they have a private detective working incognito on a factory farm, collecting evidence which can later be used in court. This is a commendably original approach, and shows that the N.S.A.F.F. means business. But the Society admits that the immediate aim is simply to gain publicity: it is not so naive as to suppose that a finding in its favour in the courts would in itself do anything to end factory farming. If it were established that current practice broke the law in some way, one of two things could happen — either the industry would make the minimum alteration necessary to conform to the regulations, or, failing that, it would put pressure on the Government to have the law changed. What would *not* happen is that cruelty to animals would be reduced at the cost of a few pence extra on the price of meat.

Nicholas Gould

Books

Destructive Technology

JOBS AND THE ENVIRONMENT edited by Jeremy Dale and Tony Emerson. Independent Labour Publications/Socialist Environment and Resource Association. 12p.

This booklet contains the main points of two papers presented at the SERA Conference held in September, 1975 and attended by representatives from Trades Councils, trade union branches, Constituency Labour Parties, the Communist Party, the Co-op, B.S.S.R.S., and Friends of the Earth. The Chairman was Bill Jones of the Institute of Workers' Control.

The first paper 'The Right to Work and Live in a Safe, Healthy Environment', presented by Patrick Kinnersley, points out just how high is the toll of "occupational injuries and disease" among the working men and women of this country. "It is probable," he writes, "that 3,000 people die every year as a result of accidents and recognised industrial diseases. It is likely that thousands more die from cancer, bronchitis and other conditions, without the occupational causes being identified . . . More than 200,000 workers are now receiving industrial injuries widows' benefit. More than 100,000 have been disabled by deafness caused by noise at work. There are 40,000 miners with coal workers' pneumoconiosis — 'the dust'; one in five cotton workers with byssinosis. By the age of 65, 10 per cent of workers have already retired through ill health. One in three workers over 60 has bronchitis. And so on. The list is endless."

Kinnersely also points out how little is being done to reduce the hazards involved. Standards for exposure to different pollutants tend to be set, not to eliminate adverse effects on health, but to the lowest level compatible with the maintenance of economic stability. For example, small mines, which would have difficulty in meeting the new 'dust' standards, are not covered in the regulations. The 'acceptable' level set for vinyl chloride monomer (VCM), a potent liver carcinogen used in PVC manufacture, was only reduced as industry's controls improved and is still higher here than in the U.S.

Inadequate penalties are another absurdly unrealistic measure designed to enforce standards in factories. "The average fine for a Factories Act offence is now £50; the average factory can expect to be inspected once every four years (compared to the recommendation of the ILO of once a year); there are only 500 inspectors in the field, although under the new Health and Safety at Work Act they have inherited responsibility for an extra five million workers."

One has to agree with Kinnersely that the problem is economic. I cannot agree, however, that the problem could be solved simply by spending enough money on safety measures as is suggested by the Chief Alkali Inspector. One must take into account that a) many industrial enterprises could no longer make a profit if this were the case and would have to close down (this is probably true of the asbestos industry); b) many pollutants such as DDT and radio-active waste cannot be controlled except by not having nuclear power stations and not using chemical pesticides; and c) sabotage and accidents are unavoidable, and so long as we have large-scale industrial enterprises, we will have Flixboroughs (accidents can only be tolerable if we have smaller plants which make less use of toxic substances).

The inescapable conclusion seems to be that the only way to "work and live in a safe and healthy environment" is by developing a society which does not depend for its sustenance on today's highly destructive technology.

In the second paper 'The Right to Work and Produce Socially Useful Products', Mike Cooley (of Lucas Aerospace, Willesden) points out just how irrelevant are some of the products of our industrial system. "We can produce Concorde, but not enough heaters for all the old-age pensioners who die of cold every year." Shop stewards, who once fought for more Concordes, have now changed their stand and are working out a new programme of alternative, socially useful products, which can be made to replace traditional ones whose sale is becoming increasingly difficult. Over 150 new products, some of them very ingenious, have been dreamed up which take environmental problems well into account by reducing pollution and resource damage. In particular, a large-scale windmill is being proposed, where the rotor will run at a constant speed whether you get a high or low velocity wind, the speed being governed by varying the load on it.

It nevertheless appears that many of their products are designed for the capital-intensive society in which we live. It does not seem to have occurred to them that the society of the future will require much smaller enterprises where things are done on a much smaller scale. 'Producing for need rather than for profit' is a largely meaningless theme as needs vary according to the society we live in. People who live in Los Angeles, the city designed around the motor car (drive-in shops, drive-in banks, drive-in churches), need motor cars, and to produce them is to satisfy very definite 'needs', but 'needs' which only manifest themselves among people living in this very aberrant type of society. What Mr. Cooley should be militating for is a very different sort of society in which people do *not* need so many material goods which, as everybody must now have realised, will be increasingly difficult to provide. This is a far more radical message, one which socialists should begin to examine more seriously.

Edward Goldsmith

An Ideal Husbandman

SELF-SUFFICIENT SMALLHOLDING. Available from The Soil Association, Haughley, Stowmarket, Suffolk. 50p.

This exemplary little book describes an exemplary "ideal smallholding", which may sound so ideal that a reader not knowing the holding and the author might suspect considerable author's licence. Can it really be as well-conceived and together as this? Well, in spite of the carefully preserved anonymity (the author wishes to get on with his smallholding and not be overwhelmed by well-meaning visitors) I recognized the place the moment I flipped the book open at the map of the farm, and I can vouch for this being an entirely accurate account of a place that is not ideal at all but very much real, and actually existing.

In a very short time the author has transformed ten acres of grass into a unit of land which might well serve as an example to husbandmen in all temperate climates. From permanent grassland, feeding a few sheep and the odd cow, this has become a plot of land producing a great deal of good food in great variety. If all of Britain was farmed like this we should not only be able to cease importing food — we would be exporting it. *But,* this can never happen until *people get back to the land again.* This kind of carefully planned intensive husbandry (the sort that can feed several people to every acre *without* the use of power-derived chemicals) can only be conducted by men and women — not by huge machines and vast applications of chemicals. On such a holding the hoe — both horse-hoe and hand-hoe — takes the place of selective weed killer (which, by very definition, is poison), the muck-cart the place of artificially fixed nitrogen (which is enormously power-consuming to produce), and hard thought and good husbandry replaces the brute power of expensive machines. If ever we are to survive without the oil wells, at any level of civilization above that of savages, we will have to go forward (not *back* — this kind of husbandry is quite different and far more sophisticated than, say, the crude three-course rotation of the Middle Ages) to something very like the kind of husbandry advocated in this booklet.

Many of the drop-ins from the cities who are trying to get back to their birthright these days are almost diametrically opposed to the author of this book in style and method. The author is a military man (a glance at his holding tells us so). He wears short back and sides, gets up early in the morning, works hard himself and expects others to do so. Furthermore he assumes that those under him will respond correctly to lawful orders of command. This may seem the antithesis of the 'hippie commune' style of popular imagination, with pot-smoking far into the night, lying in bed until mid-day getting over it, and sitting around the docks and the thistles talking philosophy during the afternoon. You won't find many docks and thistles on this farm (if you did they would be in neat rows and counted every morning). But if the current back-to-the-land movement is to survive (I would add if *we,* as a species, are to survive) we must apply this sort of planning and self-discipline to our farms and small-holdings. The greatest need in our world today is people like the one who wrote this pamphlet who bring keen intelligence, a sense of order, and great self-discipline, to the process of growing food organically, which means *without* huge inputs of oil-derived chemicals. Farming is far too serious a business nowadays to be left to farmers.

John Seymour

Bread and Guns

WORLD OF HUNGER by Jonathan Power and Anne-Marie Holenstein. Maurice Temple Smith Ltd., £1.95.

A few years ago, the accepted view of the world food problem held that it would disappear if we threw enough money at it. That view has not vanished, but today we believe the money should be thrown in a somewhat different direction. It is not advanced technologies that are needed, so much as ways of redressing the economic and political balances between rich and poor, internationally and within nations. Yet the reality is that most of the money being thrown travels from the poor to the rich and that the political strings attached to the dispensing of what food is available are being drawn tighter.

Mr. Power and Dr. Holenstein devote much of their time to this aspect of the problem. They cover it well, although at times their simplifications lead them to minor distortions. It is not quite true, for example, that food aid encouraged complacency in developing countries. There is much more to it than that. In fact, the aid disrupted internal markets, because with the best of intentions, food surpluses that are withheld from world markets to maintain prices and are released locally outside the main marketing system, find their way into the hands of traders. Thus local farmers find themselves competing economically against food that has virtually been given away. Pursued for too long, aid of this kind can bankrupt local agriculture and there is little that governments can do about it, except to forego aid in that form.

There are other technical inaccuracies, as well, in the discussions of the effect of agriculture on tropical soils. Not all of such soils are lateritic, and leaching is not confined to the tropics. It is a natural phenomenon that occurs everywhere, except possibly in the permafrost regions, and it is the nutrients leached from soils that sustain freshwater and coastal ecosystems. Having said which, their main point stands. Tropical soils are generally less robust than those in temperate regions, and so less able to sustain agriculture. Elsewhere, the authors seem to accept the possibility of cultivating extensive areas of the wet tropics, and of desalinating sea water and so making the Sahara bloom, flights of technological fancy that contradict their concern for the fate of soils. Rightly, they point out that even if such schemes were feasible, economically they would be irrelevant.

Data on world fisheries is several years out of date, a surprising fault in a book that otherwise bases itself on recent statistics.

It is not really possible to compress so vast a subject into one small volume. Such over-simplification and inaccuracies are inevitable and you will find them in any popular book on the subject. All in all, this is a good attempt, written by people who care. It is helpful, too, in that it describes approaches to agricultural development that do not depend on western high technologies. The book's compact format and (for these days) low price should bring it within the reach of the non-specialists for whom it is intended, and so it may help to widen that frighteningly small circle of people in the West who care enough about the fate of their fellows to want to understand what their problems really are.

Michael Allaby

Sense from our Forefathers

THE PRESENCE OF THE PAST by Penelope Lively. Collins £5.25. VICTORIAN FARMING ed. by C.A. Jewell. Barry Shurlock £3.50.

The study of English local history has changed a good deal since the days when its main function was to provide harmless amusement and a sense of purpose for country parsons and retired schoolmasters. Today, thanks to the pioneering efforts of men like W.G. Hoskins and M.W. Beresford, it has taken its place alongside the other subdivisions of history as a serious academic discipline. Probably the most significant change of emphasis in local history in the last generation or so has been the recognition that the *landscape* is our most important historical document: and learning to read that document, a necessity for the professional local historian, can add another dimension to anyone's enjoyment of the countryside. This hedge is not *just* a hedge —

it is the boundary of an Anglo-Saxon estate: the bumps and hollows in that field are the remains of a village deserted after the Black Death; that straight road was designed at the desk of an 18th century Enclosure Commissioner.

Penelope Lively is herself an amateur historian, but a professional writer. The combination makes her book a most readable introduction to the study of landscape history; and those whose appetites are whetted will find her book list useful in pursuing the subject further. Reading, of course, is only half the business of the local historian; and Mrs. Lively rightly stresses the importance of getting out into one's own countryside (or, indeed, town) to ask the questions and guess at the answers for oneself.

A knowledge of history has sometimes been the excuse for apathy in the face of undesirable change — to argue, for instance, that motorways must be all right really because canals and railways, which we are now quite fond of, were considered blots on the landscape when they were new. Penelope Lively toys semi-humorously with this idea — "Will my descendants interest themselves tracing the route of the M1, form preservation societies to cherish the remains of Spaghetti Junction?"— but emphasizes that the accelerating pace of change has made such tolerance misplaced. Since the start of the Industrial Revolution new developments have tended not to enhance the existing pattern of the landscape, but to obliterate it. Ecologists resist the process, broadly speaking, as an assault on *nature*: books like *The Presence of the Past* can help to show them that the landscape is also a marvellously complex, richly-textured work of *art*.

Agriculture has always been the most pervasive force for change in the countryside. By the middle of the last century its accelerating industrial — the farmer's equip- But the *technology* of agricultural activities remained largely pre-industrial — and farmer's equipment was increasingly made in factories, but when it got to the farm it was used to supplement, not to supplant, the muscle-power of man and horse. *Victorian Farming,* to quote its preface, "provides a conspectus of the tools, implements, methods and machines" of mid-19th century agriculture. The book consists largely of extracts from the 1871 edition of Henry Stephens' *The Book of the Farm,* a Victorian textbook which went through five editions and revisions between 1844 and 1909. The charm and much of the value of the present reprint lies in the illustrations — over 300 of them, often extremely detailed, representing everything from a carcass of pork to a horse-driven threshing machine. These give the book something of the appeal of an old Army and Navy Stores Catalogue: but many of them could be of practical value to any of today's Alternative Technologists who fancy constructing a simple, practical turnip slicer, straw-rope spinner or lever cheese press. Less practical but even more evocative are the overall drawings of field operations — scenes full of busy figures milking ewes, planting potatoes or building dry-stone walls, to remind us how recently agriculture was still a labour-intensive industry exercising a largely benign influence upon the rural landscape.

Nicholas Gould

City Digs

THE COMPLETE URBAN FARMER
Growing your own fruit and vegetables in town by David Wickers. Illustrated by Sharon Finmark. Julian Friedmann Publishers Ltd. £3.50. 174 pp.

I remember an English lecture I once attended in Bristol where the difference between poetry and prose was finally narrowed down to "the white space on the right-hand side of the page". Here is the book that makes that definition obsolete. Not all the space is white, however, but beautifully illustrated by drawings from Sharon Finmark — I counted but 80 unillustrated pages. The future urban farmer begins by deciding on the tools and seeds he wishes to buy (stout fencing is another good purchase — the *urban* garden suffers far more from other peoples' cats, dogs and children) and planning the layout of his garden, bearing in mind future crop rotation. He then considers alternative growing spaces, for example, an allotment, window boxes, the office and indoors under the stairs — this is particularly recommended for mushrooms. There are further sections on hydroponics and vegetable and fruit storage and a section on each vegetable considered suitable for the urban grower — how about peas trailing up a trellis in your sitting room? — and 29 recipes to provide incentive for all this hard work.

The 'Further Reading' section is a useful addition which lists literature by such notables as John & Sally Seymour, Lawrence Hills and Richard Mabey and the ubiquitous Henry Doubleday Research Association. I noticed, however, that none of the recent Soil Association booklets were mentioned, the most important one for the reading being, I think, *Make Your Plants Work for You*. I found the section on pests unimaginative and there is a disappointing lack of advice here on intercropping. Pyrethrum, rotenone or derris are advised for cabbage root fly, aphids, Colorado beetle, thrips, white fly, red spider mite, flea beetle, and cucumber, asparagus and bean beetle. Much more emphasis could have been put upon the many herbs and flowers which grow well with certain vegetables and help prevent such pests, as well as providing colour and variety — something which might be particularly welcome in the context of a small urban garden.

The Complete Urban Farmer would make an ideal present for anyone who has never considered gardening in town before or has shown little interest in it; much of the advice may seem obvious even to someone who has had little to do with the soil, but the obvious needs to be stated sometimes. This is a delightfully light and readable book, which although not delving too deeply into any one area is perhaps what is needed to attract the attention of the busy urbanite (the future urban farmer is advised that "the simplest way to propagate seeds is to buy an 'all-in-one' seed propagation kit, containing seeds, the growing medium, individual peat growing compartments, and a plastic 'greenhouse' top designed to speed up the germination process" — we are told at the top of the page what this last is: "Germination is the stage between sowing the seed and the arrival of the seedlings"). Not perhaps the most revolutionary of books, but once hooked on home-grown carrots and spuds who knows what the urban grower will turn to next?

Victoria Hutchings

Letters

A Tax on Waste

Dear Sir,

Peter Bunyard's two contributions on Energy (*The Ecologist* Vol.6, No.3 March/April 1976) were brilliant. This is one subject about which conservationists have been consistently right, with Western governments and energy interests almost always wrong.

I am proud to count myself as one of the few commentators to write about energy conservation back in 1970, alerted, I remember, by one of Bob Waller's editorials in the Journal of the Soil Association in the late '60s. Ever since, the emerging energy gap has obsessed me, with a record of well over 50 letters on energy politics published in the financial and regional press. Indeed, one of my first appeared in the November 1970 issue of your journal, proposing a fuel conservation tax, a matter which is still topical, and unresolved.

I am led to wonder what would have been saved, and how much richer we would all be, had the authorities listened to our dismal forecasts then, and had they acted on some of our tentative recommendations six years ago. I also wonder why those Western experts who so grossly misled us then have not been publicly brought to book.

Indeed, there are powerful interests still promoting the rapid exploitation of non-renewable energy resources.

Coal is in a rather different category from uranium, oil or natural gas. The world resource base is vast, with off-shore deposits untapped. I foresee a new energy revolution — hopefully coinciding with the financial rejection of nuclear power — once we learn to mine coal, and utilise it, with an efficiency as yet unknown to present technology.

I thought Bunyard's claim that the government is deliberately planning to increase our energy consumption a bit unfair, with £5m already spent on energy conservation propaganda, however ineptly or belatedly. It may be true that industrial growth is predicated on increased supplies of energy; it may be true that such supplies are not readily available; energy savings may not match increased demand.

Therefore, I return to the point I was making in 1970: the need for a depletion tax on the exploitation of non-renewable resources, increasing in its incidence as reserves become exhausted, to discourage waste, to steer consumers away from systems based on oil, natural gas or uranium, to encourage R & D into ambient and benign sources of energy.

Yours faithfully,
John H. Goodland,
Taunton.

Big, Sad and Anonymous

Dear Sir,

I write to express my concern at the assumptions made in the short article "Small is Happy" in the "Notebook" Section of *The Ecologist* Vol. 6. no. 3, March/April 1976.

First, I must explain that I have not personally read the publication by the Department of Employment, to which reference is made; I can therefore only comment on the article. However, I do see within the article an assumption which carries considerable implications; to quote — "What the Department of Employment's figures really reveal is that as firms get larger, workers get unhappier." No — what the figures reveal is that "strikes increase in direct proportion to the size of firms . . ."

The implication of the first quoted statement is that the organisation of the firm is at fault. I suspect that this is often true, but is it not also possible that the worker is "at fault"? Is it not possible that large firms attract a person of a different character to those who choose to work in a small firm? Or that work that can be efficiently carried out on a large scale attracts a certain type of person?

In a small group, a person must often be prepared to bear considerable responsibilities, and be directly accountable to one or two others for his work. Someone who is reluctant to be an individual in a small, intimate group may prefer the anonymity of a large group. Similarly, that person may be more easily swayed by persuasive, vociferous leaders, and be less capable of formulating his own opinions when in close discussion with a few others. The very nature of the work may attract people with certain character traits.

You will probably be able to accuse me of making assumptions now, but I hope you understand my point. I agree to a large extent with your article, but you have *assumed* that the fault lies with the organisation of the firm. It may well be so — but you have no evidence; there may be other underlying reasons. I respect *The Ecologist* for the articles and opinions it presents, but please, let statements be based on sound evidence, and not on emotive and topical suppositions.

Yours faithfully,
N. Stedman [Miss],
Glasgow, Scotland.

The Limits of Aid

Dear Sir,

I would like to reply to Mr. Victor Gordon's comments on aid in the May issue of *The Ecologist*.

Mr. Gordon appears to have set up a hypothesis which broadly speaking says — Western aid has been so successful in keeping alive those who "should never have been born or ought to die as quickly as possible" that it should be stopped immediately. His comments appear to be paying aid a hidden compliment which it surely does not deserve — namely that the minimal sums spent on aid to developing countries has been the deciding factor in keeping millions of people alive in the developing world.

He does not claim like many other anti-aid protagonists that aid does little to help anybody but the donors (apparently the view of Edward Goldsmith) but that it has misguidedly ensured "that unwanted and doomed babies survive". He further claims that if aid were stopped there would be a significant population decline through premature death in countries which cannot feed and medicate themselves", and further that the "withdrawal of aid and credit alone can reduce the population of the world to a feedable and sustainable level." That aid flows have such a powerful influence on the world ecological balance is surely a gross exaggeration.

If Mr. Gordon's argument is taken to its logical conclusion, 'useful' aid policies would be ones that helped those who "stop striving to keep

alive those who are surplus to the planet's resources" and programmes that speeded up the extinction of 'unwanted and doomed babies' of the Third World, because, as he claims, everyone would be better off in the long run. (For Mr. Gordon's sake I only hope that he is not someone that the donors of aid decide is surplus to the planet's resources — presumably Mr. Gordon feels he consumes less of the earth's valuable resource than the starving Indian baby unnecessarily nourished and medicated by Western aid.)

How Mr. Gordon feels he can include in his argument examples of projects which resulted in massive salinization of land associated with irrigation works and attack developing country governments for spending too little on feeding their poor and too much on arms accumulation when he believes that "death is the best answer to overpopulation" is clearly beyond my powers of logical understanding.

Yours faithfully,
Denzil Phillips,
London W14.

Refrigerated Wealth

Dear Sir,

Victor Gordon, in his article "Aid — the Arch Enemy" in *The Ecologist* of May 1976 takes an extreme position. His thesis is that the poor (in other countries) must be kept poor, or they will breed and threaten us, and that any aid raises the standard of living and a population increase follows. (Although demographers all argue that a rise in security is followed by a decrease in family size.) He is like a rich man who sees a child run over; it lies screaming and injured in the road. He recognises it as one of a large, poor family and argues with himself that if he leaves the child in the road to die the poor family will be better off as there will be one less mouth to feed. He goes back into his comfortable house, fixes himself a drink from the fridge to restore his shattered nerves, and settles down in front of the T.V.

I agree that population control is absolutely *the* basic problem, but to achieve this by starvation and disease is not the method to be used, least of all by a Christian or a Humanist. What is sauce for the goose is sauce for the gander; let Victor Gordon start at home. Let him campaign for the abolition of the Health Service, closure of most hospitals and a tenfold increase in doctors' fees. This should increase the incidence of disease and death (among the poor) and thus reduce the population of Great Britain. Or perhaps he should consider secretly introducing disease bacteria into the drinking water. This should not give him any twinges of conscience.

Victor Gordon says donors are hated — of course they are. People in Third World countries are not all idiots; they can see well enough that aid does not spring from concern for them. It is a toe-hold for trade (we will give you a tractor and then you will for ever more buy spares from us), or it has strings attached (vote Communist and we will cut off your aid) or it is political manoeuvring, or kudos gathering, or it is an insurance against war. It springs from the wrong reasons and by and large it is administered by the wrong people. Some diplomatic personnel going overseas are entitled to three tons of personal luggage. They arrive with everything, to a country where thousands live in houses with earth floors and no windows. Some, here in Peru, bring three full-sized refrigerators (one for ice, one for drinks and one for food). On returning they sell their hard-ware and load up with Peruvian artefacts. They are said to make $60,000 on the round trip and openly say they can no longer "afford" to live in their own country. United Nations personnel are little different. One such, here, admits that he is in Peru only to get cash to buy land back home. He despises the Peruvians — of course such people are hated.

My husband and I are starting a village industry to demonstrate that the young of places like Izcuchaca need not necessarily be driven by lack of work to swell the millions in the Lima slums, or to seek work down the mines. We started with our own finances and for two years lived in one small room with no light, water or toilet facilities and we worked alongside the villagers. We are not hated, of that I am absolutely certain, but if we move to another district we often are, for Whites are hated not just as aid-givers, but because we are so bloody rich, and our wealth has been to a large extent created by their exploitation. Four centuries after the conquest the Spaniards are still called robbers by the villagers. We do not expect gratitude for what we are doing; why should they be grateful? They are where they are because of us, the White Man. Our ancestors hunted the Australian aborigines for sport; in the U.S. the White Man gave Indians gifts of small-pox infected blankets; in Peru the Spaniards destroyed a fine culture and sent the men down the mines in slavery.

Anything any of us do to help the Third World is a tiny, pathetic gesture of restitution. It is *we* who should be grateful that they even allow us to do this.

Two young visitors from the U.S. recently came from families of 6 and 7 children respectively. All these thirteen will grow up and require a house with electricity, air conditioning, radio, T.V., electric cooker, vacuum cleaner, iron, 'fridge, washing machine, a car and money enough to use air travel. A hundred Izcuchacinos between them would only expect a few simple agricultural tools (a spade, an axe, maybe a hammer). Who is using up world resources? And causing pollution? Each of these thirteen will eat as much meat and other protein foods as 20 of our villagers in the same period (and some of this will have come from Peru in the form of fish-meal to feed chickens). When we in the developed countries achieve a limit of two children per couple then maybe we could legitimately suggest that they limit their families too.

The world *is* over-populated; a crisis *is* ahead of us, but at least if we go down let us go down together, as equal human beings. The White Man has a truly appalling record; let us not be misled by writers like Victor Gordon into compounding the evil by advocating disease as a form of population control. (Disease for the Third World, but oh no, not for us.) For though starvation was once the most effective means of control of numbers it no longer is so, we now have better methods at our disposal, both for them and for us.

Yours faithfully,
May Davis,
Izcuchaca, Peru.

A further selection of letters on this subject will appear in our next issue.

Aid humiliates the receiving country and corrupts the donor.

Ecologist Vol.6.No.4

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PROPERTY

PROPERTY. Young couple with near self-sufficiency objectives looking for dwelling with land to rent or buy. Maximum £6,000 or low rent in return for maintained dwelling and land. Does anyone have a corner not in use. Box 106.

SMALLHOLDING FOR SALE. Small holding with mill house, demonstration gardens and 15 acres of pasture in North Cornwall few miles from Camelford, for sale to genuine organic farmer/gardener. For full details write Box No. 107.

COMMUNE

COMMUNE forming to purchase country mansion in 20 acres requires members with £1000 capital. Survival through craft and rural industries. Interested in return to simple life? Box 105.

Alternative Society

"WHERE DO WE GO FROM HERE?"

Basic study papers on Housing, Energy, Education, Government, Industry & Employment, Land, Money, Agriculture and Transport. Essential reading for those who feel traditional political debate misses the point.

CRAFT CAMPS

July 19-30
August 16-28
Lower Shaw Farmhouse, Swindon.
Skills exchange holidays. Families welcome.

MINI UNIVERSITY

August 2-14
Lower Shaw Farmhouse, Swindon.
12 days of guided study-Energy, Health, Housing, the Arts.

For further information write: Alternative Society, 9 Morton Avenue, Kidlington, Oxford.

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A special invitation
to readers of The Ecologist
to attend

"The Fragile Earth"-
Towards Strategies for Survival

BEFORE

AFTER?

Between November 28 and December 1, 1976 an international congress on man and his surroundings will take place in San Francisco, California.

Called "The Fragile Earth" — Toward Strategies for Survival — and sponsored by the World Wildlife Fund it should be of particular interest to the informed, concerned, readers of The Ecologist.

The Congress will deal with the major ecological problems of our time: over-population and pollution, alternate energy sources and economic growth, wildlife, nature conservation and waste.

This comprehensive approach to the future of our environment is one noteworthy aspect of the congress. There are others. Compromise, not conflict, must be a pre-condition of any long term solution. Therefore, advocates of opposing points of view will be much in evidence. Furthermore, all attendees can submit questions for consideration by the distinguished panelists present.

PANELS YOU WON'T WANT TO MISS

World renowned experts will lead panelists on these vital topics.

The People's Planet? Earth's Capacity for Human Population conducted by Russell Peterson, Chairman, President's Council on Environmental Quality.

Diminishing Returns: The Need for Conservation Economics conducted by Lady Jackson (Barbara Ward), President of the International Institute for Environment and Development.

Enlightened Management and Utilization of Natural Resources conducted by Dr. Raymond F. Dasmann, Senior Ecologist for the International Union for Conservation of Nature and Natural Resources.

Wealth from Waste: Conservation Technology for Industrial Society conducted by Dr. Ruth Patrick, Chairman of the Board of the Academy of Natural Sciences.

Energy: Stewardship and Innovation conducted by Maurice Strong, formerly Executive Director of the UN Environment Program in Kenya and now Chairman and President of Petro-Canada.

Man, Wildlife and Wilderness: Common Destiny conducted by Dr. Lee M. Talbot, Assistant to the Chairman, U.S. President's Council of Environmental Quality.

This four-day international event is being held in a famous San Francisco landmark, the St. Francis Hotel. All attendees' rooms are here. Many of the additional scheduled events are also in the hotel. These events include a free cocktail reception, two luncheons with famous speakers, local nature tours and a film festival.

LESS THAN £365

Costs are remarkably reasonable. For example, an 8 day/7 nights round trip from London including Congress attendance, social functions and four nights accommodation at the famous St. Francis Hotel where the Congress is to be held is £645. Attendees can stay the other three nights at the St. Francis or arrange their own accommodation if they wish.

In addition, 15 and 22 day packages are available for those who want to stay longer. A variety of nature tours have been specially organized to some of the most beautiful conservation areas in America's West, such as the Grand Canyon, Yosemite National Park and Big Sur.

The tours incorporate special environmental features. At many stops local ecologists will be joining the group for evening presentations and discussions. Along the route local experts will be on hand to point out ecological problems as well as successes. As a result, it is hoped attendees will gain useful insight into possible solutions for local conditions.

JUST 126 PLACES FOR THE U.K.

Due to space restrictions attendance at what one eminent ecologist has called, "possibly the most important congress ever held on man, nature, and their interconnected future" is extremely limited. The United Kingdom has been allocated just 126 places. These registrations will take place on a first-come-first-served basis.

For complete details mail the coupon today to:

Ms. Joy Skinner
World Wildlife Fund Congress
Heron House
Chiswick Mall
London W4 2PR, United Kingdom.

Please send by return post full details on the World Wildlife Fund's 4th International Congress and the nature tours which surround it.

Name .....

Company [if applicable] .....

Address .....

City .....

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