

logic by invoking an adaptation-driven 'cheater-detector algorithm'. But their approach, surely novel and stimulating, never did manage to beat more traditional alternatives. The evolutionary psychologists are still in desperate need of patented, specifically Darwinian, mental devices to cash in their vaulting ambitions. □

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Shades of Green

The Doubly Green Revolution: Food for All in the 21st Century

by Gordon Conway
Penguin: 1997. Pp. 335. £9.99 (pbk)

N. W. Simmonds

This is a serious and substantial book by a thoughtful and well-informed author. An entomologist with 30 years experience, much in the Asian tropics, Gordon Conway is now head of the Institute of Development Studies at the University of Sussex and will soon become president of the Rockefeller Foundation in New York. He therefore occupies

prominent niches in development organizations.

Starting from the historical achievements of the 'green revolution', the book's general theme is how we can feed the human population in the next few decades. The green revolution is well enough described and the author avoids the vulgar error of writing about 'high-yielding varieties' (HYV in the jargon); he recognizes the fundamental genotype-environment interaction but avoids the plant-breeding terminology. He states clearly the essentially local nature of the achievement and the impossibility of duplicating it in any serious sense in other places, times and crops. In future, he rightly says, any major advance must be 'doubly green'. He seems to assume, but does not plainly state, that we must 'buy' enough time for the demographic transition to take over and for food supply to catch up with population growth.

The task is difficult: human population, predominantly in developing countries, is still increasing faster than ever, even though the rate of increase has declined slightly. The 750 million people now chronically underfed will have increased by about another 2,500 million by about 2020, unless agriculture is extraordinarily successful. The cru-

cial requirement will be a vast and sustained rise in yields in diverse crops in diverse environments. The human needs far exceed the good but small achievements of the 'green revolution' with two cereals grown in favoured areas with high inputs of fertilizer and pesticides.

Conway is an enthusiast for concentrating on the needs of the poorest sectors of societies and for farmer 'participation'. The latter has long been recognized as sensible and valuable but is now attaining cult status. 'Farming systems research' was the phrase of the 1970s and 1980s; Conway evidently understood and practised it from an early date but does not call it that any more. Indeed he seems not to have read much of the literature of the 'common goods system', although he praises the achievements. Conway well recognizes the many and heavy side issues that are either already there or can only grow with time. They include global warming and its many uncertainties, pollution, soil erosion, water conservation and use, wood supplies, 'sustainability' (a politicized term), land tenure, communications, food aid and the tragedy of the misused 'common goods'.

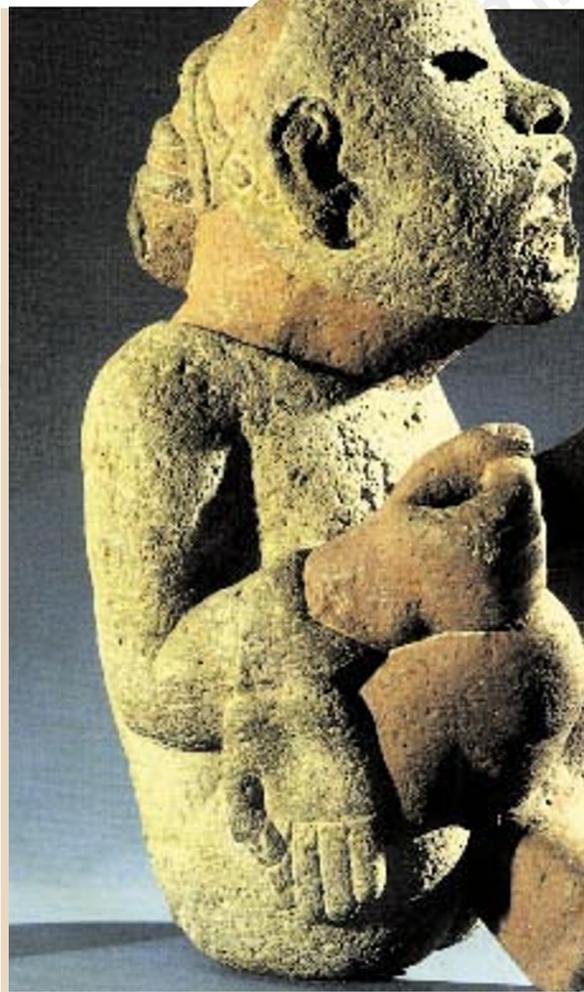
The author is undoubtedly experienced, orders his book well and writes lucidly. The figures are mostly good and clear, but a few are trivial. Although the book is on the whole good, I am unhappy about several fairly weighty matters. First, Conway is an uncritical enthusiast for 'biotechnology', without noticing that its plant breeding achievements so far are nil and that magic is unlikely. He even writes about 'designer plants and animals' as though new varieties were jeans. Second, he ignores the place and potential of cash as a complement to food, and the thought that small farmers might profit from rubber, palm oil or sugar seems as foreign to him as it does to the 'common goods system'.

Third, he recognizes the importance and value of competent agricultural research but does not seem to have read Derek Tribe's books and, apart from participatory enthusiasm, does not reveal how research is to be effectively exploited (even if it gets done, which today seems ever less likely).

Fourth, Conway knows that minerals are essential and that what gets exported from the farm must be replaced, but he does not quite face the fact that fertility comes out of polythene bags and that mucking about with animal composts is, at best, marginal. Here, of course, he hits 'sustainability' (or something) head on because he well knows what some Greens don't yet seem to have learned, that high yields demand high inputs.

If people are ever going to eat more-or-less decently, there will have to be limits to eco-friendliness (which is not to excuse diverse environmental outrages now in progress). □

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Getting under their skins

This sculpture shows Xipe Totec, the 'Flayed One', the Aztec god of spring renewal, dressed in the facial and body skin of a sacrificial victim. In Aztec rituals, priests impersonated the god by

wearing the skins of flayed victims. "The bizarre yet apt metaphor of a flayed skin for spring seems quintessentially

Aztec: from death and macabre horror life is reborn." The Almanac calendar dictated the timing of rituals. From *Spirits of the Jaguar: The Natural History and Ancient Civilizations of the Caribbean and Central America* by Paul Reddish (BBC/Parkwest, £18.99, \$32.95), the book that accompanies the BBC television series of the same name.