reviews

Diseconomics of deforestation

N. W. Pirie

Losing Ground: Environmental Stress and World Food Prospects. By Erik P. Eckholm. Pp. 223. (Norton: New York, April 1976.) Cloth $7.95; paper $3.95.

DESERTS are expanding, hillsides washing away, rivers and reservoirs are silting up and the oceans are becoming polluted. Eckholm argues that the destruction of forests is the main cause of all but the last of these misfortunes. He states a convincing case and points out that it is not new. Hadrian tried to protect the cedars of Lebanon, and, at the end of the eighteenth century, deforestation was blamed for flooding around Grenoble and in Alpine valleys. As a result, reforestation programs were started in the Alps and Appenines.

Iron smelting was responsible for the later stage of deforestation in Britain: agriculture was responsible for the early stages. Eckholm says that more forest is now being destroyed to make farm land than to supply industrial timber, that the swidden (slash and burn) technique destroys more trees than settled agriculture, and that half the wood cut throughout the world is needed for fuel. Destruction for domestic fuel is not new. In four years after the French Revolution, 3.5 million hectares of forest that had been protected by aristocrats was destroyed. Now, 20–30% of the family income in some countries is spent on fuel, and wood costs as much as the equivalent amount of kerosine.

Oil prices are not likely to diminish; the demand for wood fuel will therefore increase in the less developed parts of the world and make planned forestry even more important, both to maintain supplies of wood and to prevent erosion. A survey is quoted showing an annual loss of a few kilograms of soil from forested hillsides, a few tons from pasture, but 8–100 tons from arable land. There is, however, no hope of improvement in methods of land use until the informed consent of the inhabitants has been won. A similar point arises when overgrazing creates deserts. If, as is stated, the Sahel would produce twice as much meat and milk if it carried half the present number of cattle, it should be possible to convince people of this. Before the commons were enclosed, our forefathers had controlled the number of animals each person had the right to graze. If we could do it, others can.

Eckholm does not want to preserve tropical rain forest for sentimental reasons, nor does he support the mistaken idea that forests are a better source of atmospheric oxygen than other forms of plant cover. But he quotes examples of the failure of attempts to replace it by 'western'-type farming, and argues that that approach is never likely to succeed. He is no more hopeful about the more sophisticated forms of swidden that are grouped under the term 'corridor' systems.

Clearly, the ground should seldom, if ever, be left bare. This means that perennial crops will be the mainstay of satisfactory farming in rain forests. Rubber and oil palms are traditional. The products from these crops, as of many other tropical crops, move into world trade; a variable, but usually small, fraction of the money earned moves back to the primary producers. They would fare better if they could grow crops that yield a balanced diet for local use. There will be a revolution in agriculture in the wet tropics when perennial plants are developed from which food with a reasonable protein content can be prepared by simple techniques.

This is a popular account of our mismanagement of Earth's biological resources. British readers should remember that Americans think a 'watershed' is a valley; scientific readers may be irritated by the repetitions, the 'purple passages', and the author's ignorance of the meanings of such words as decimate, hopefully, ineluctable and sedimentation. Scientists will, however, welcome the impressive bibliography—30 close-packed pages of references and suggestions for further reading. □

Norman Pirie has recently retired as head of the department of biochemistry at Rothampsted Experimental Station, Harpenden, UK.

Forest energy for half the world

Forest Energy and Economic Development. By D. E. Earl. Pp. vii+128. (Clarendon: Oxford; Oxford University: London, October 1975.) £5.

WHEN we run out of oil and coal can we use wood? This small book, part of an Oxford series on Science Policy, will be a good start for debates on long-term substitutes for the alarmingly expensive and diminishing fossil fuels.

Dr Derek Earl's answer to the energy crisis is that replacement of fossil fuels by wood is feasible now in countries which have a low per capita demand for energy, a small population and plenty of forest land. Good planning and management are essential, for without control, wood is as temporary a resource as oil or coal. Many developing countries are heading the same way as Europe, which has long since destroyed much of its forests. In most of the richer, highly developed countries forest energy seems to offer little relief from the impending shortage of fuel unless the population is reduced and people can be persuaded to want less energy, a task more appropriate to poets and philosophers than to forest economists.

The statement in the preface that "the world's forests incorporate solar energy into organic material . . . at an annual rate far in excess of the world's present economic needs" is shown later to be almost irrelevant compared with the practical tasks of growing, harvesting, processing, transporting and marketing forest fuels cheaply.

After preliminary chapters putting economic growth and energy resources into perspective, most of the book is devoted to ways of supplying firewood and charcoal for particular situations in developing countries, including several case studies from the author's own wide experience. He has a particular interest in the technology of charcoal production which is well described.

Half the wood harvested in the world is used for fuel and about half the people of the world depend more on wood and charcoal for their cooking and heating than on other sources of energy. Of the world's total recorded