

Two important twentieth-century botanical artists whose works are included in the exhibition expanded their influence beyond the world's herbaria into environmental conservation and modern art, respectively. English artist Margaret Mee moved to Brazil in the 1950s, where she made 15 expeditions into the

Amazon rainforest and became one of the first conservationists to raise concerns over its exploitation. And Scottish artist Rory McEwen, for whom the placement of flowers, vegetables and leaves in his pictures was as important as the plants themselves, propelled botanical art into modern art galleries, includ-

ing the Museum of Modern Art in New York. His eerie 1977 watercolour of an unfolding young shoot of monk's hood (*Aconitum*) with a ghostly profile of the Scottish island Ailsa Craig in the background, shown on the opposite page, is particularly striking. ■
Colin Martin is a writer based in London.

Flood warnings

The Future of Large Dams: Dealing with the Social, Environmental and Political Costs

by Thayer Scudder

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Christer Nilsson

During the past 50 years the world has experienced an unprecedented increase in the number of large dams, from 5,700 in 1950 to approximately 50,000 today. The International Commission on Large Dams defines a large dam as one spanning 15 metres or more from base to top, or storing more than 3 million cubic metres of water. Almost half of them are in China, but the United States, India, Spain and Japan also have large numbers. The peak years for dam building were the 1970s, but construction continues apace, especially in countries that were late to industrialize.

But how many large dams do we really want? Should old ones be decommissioned and plans for new ones halted because they cause serious, irreversible degradation of life-support systems? For example, dams can eliminate ecosystems and reduce biodiversity, fisheries and bioproduction. Or should we keep our dams because they provide necessary water and energy to populations that have grown beyond the carrying capacity of their environments? These are difficult political questions, and Thayer Scudder adds a human dimension that is surprisingly often ignored or inadequately understood in the planning and building of large dams. In *The Future of Large Dams* he speaks up for the millions of people who are directly affected by large dams and reservoirs, many of whom are "poor, uneducated, relatively powerless rural residents".

Scudder, an anthropologist at the California Institute of Technology, writes with great authority, having been one of the 12 commissioners of the World Commission on Dams. This role has given him a remarkable insight into the global politics of large dams and their social, economic and environmental consequences. His position on large dams has changed from strong support to anger and despair over the poor treatment of people who live near dams. He now believes that most of the really large dams impose unacceptable environmental and social costs.

Hundreds of millions of people are adversely affected by dams, but curiously no precise figures are available. At least 40–80

Water power: large dams such as China's Shuikou Dam can have a huge effect on local populations.

million people have been resettled from planned reservoir basins, and this evacuation also affects the populations who receive them. Additionally, the lifestyles of those living downstream of the dam are changed because the water flow is regulated. Scudder spends a large part of his book discussing the social complexities of these three groups of people.

He discusses the plight of people who have lived for generations close to a free-flowing river but who may suffer from shortage of food and water, or contact with new diseases, after relocation. People may be stressed by having to leave burial grounds or religiously important sites, and local leaders may be undermined whether they oppose resettlement or not. Scudder presents a new study on people whose parents were resettled, involving a total of nearly 1.5 million people affected by 50 different dams across the world. Their living standards improved in only 7% of cases but worsened in 70%, with the rest having no significant change. Scudder also provides an in-depth analysis of a few major dam projects and discusses the institutions involved in the politics and economics of large dams. The book's personal tone makes it enjoyable to read, but this is also a scholarly book

that has numerous footnotes and references.

The story that Scudder tells is rather depressing, but he does try to find a way forwards. In the final chapter, he lists seven sets of recommendations on how to make decisions about the possible construction of large dams in the future. These recommendations are derived from suggestions made by the World Commission on Dams and are expanded to take account of existing dams. They include more thorough investigations into the possible consequences of dams, improved stakeholder involvement, and an active search for alternative solutions to water-related problems.

Scudder concludes by stating that the application of his recommendations would considerably reduce the number of large dams being built. Sustainability should be a top priority, and the book is a valuable reminder of the dangers of destroying sustainable rural societies largely to support unsustainable cities or large industries. Hopefully, Scudder's book will help to lessen the damage caused by the building and maintenance of large dams. ■
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