

palaeontological/archaeological fraud. But it is most revealing of the cultural sentiments of entire generations of European-Americans: Yankee versus recent immigrant, whites against what they perceived as the culturally unsophisticated American Indians. It was indeed a case of "extraordinary interest". □

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Science matters

Kenneth Green

The Management of Science. Edited by Douglas Hague. Macmillan/St Martin's Press: 1991. Pp. 180. Hbk £40/\$59.95; pbk £14.99.

THIS collection was first presented at the 1989 meeting of the British Association for the Advancement of Science. The nine papers fall into two groups: five are based on economic, historical and sociological research in the growing field of 'science policy studies'; four are by 'practitioners', recently or currently involved in shaping, setting and administering scientific budgets. Unfortunately, there are no contributions from any industrial practitioner of research management — so the 'management' being referred to concerns state-funded research, almost all of it to be carried out in universities or government laboratories. Management is also being considered mainly at the strategic level — of research-council organization and national decision making — rather than at the operation level.

Nevertheless, taken together, the papers give a quick look into the arguments behind the debate on the future of scientific research in Britain. The practitioners' contributions are, perhaps inevitably, idiosyncratic and anecdotal. Douglas Hague is especially provocative; as one-time chairman of the UK Economic and Social Research Council, he has some rude things to say about the scientist-administrators he came across in his dealings with other research councils in the mid-1980s. They did not necessarily share his enthusiasm for the applications of Hague's personal specialism — managerial economics — to planning and steering their scientific budgets; nor did they take kindly to Hague's espousal of 'corporate planning' of research-council business. Frederick Dainton, chairman at one time or another of many British science policy-making bodies, offers a sharp retort to Hague's managerialism. In a ponderous article, he refers to management techniques "insidiously filtering down, even

Face from the past — still clad in the sealskin parka it was wrapped in for its journey to the land of the dead, this six-month old baby has been preserved in excellent condition for around 500 years, thanks to the low ground-temperature and dry air at the site of its grave, at Qilakitsoq on the west coast of Greenland. In about 1475, six women, a young child and this baby were buried in the traditional way — warmly clothed and provided with goods for their journey. Their graves were excavated in 1978, and the mummies were dated to within 50 years either side of 1475, making them the oldest known find of well-preserved humans in Greenland. *The Greenland Mummies*, edited by J. P. H. Hansen, J. Meldgaard and J. Nordquist, tells the story of the investigation into how they died, a question that is still unresolved, and discusses the customs surrounding death and burial in their society. Published by British Museum Publications, price is £14.95. □



to basic research".

The Hague-Dainton 'debate' is, I fear, about the wrong things. Certainly, science has to be 'managed' and 'corporate planning' will have its place. But what precisely should be the substance of the plans? The 'research' papers suggest a few things, many of them not mentioned by or even in opposition to the views of the practitioners. For example, Keith Pavitt, of Sussex University's Science Policy Research Unit, disputes the notion that managing science is now necessary just because funding resources have become scarce, with science supposedly in a 'steady state'. It is true that publicly funded basic research in Britain has been growing very slowly in the 1980s, but not in other countries.

All but one of the papers are about the management of science in Britain. This is both a strength and a weakness: a strength because the book gives British scientists and policy-makers lots to think about; a weakness because little is said about how our more successful economic rivals actually manage their science.

Whether non-British readers will find much to illuminate their own problems, I doubt, because, as far as the management of science goes, Britain is a peculiar country. It is indeed true that the growth rate of Britain's government-funded spending on scientific research is the lowest of the rich countries. Yet, as Margaret Sharp shows, in some research fields, such as those related to biotechnology, its quality-research productivity (measured by citations) is second only to that of the United States and well ahead of those of Germany and France. The

UK research system is also the least 'self-contained', the most open to 'exploitation' by non-British firms. More than 20 per cent of UK patents taken out in the United States are taken out by foreign firms' UK subsidiaries (only Belgium and Canada are more dominated by foreign transnationals). Further, as Paul Stoneman reports, the most recent figures show that at least 12 per cent of UK industrial research and development is paid for by funds that come from overseas. Will the twenty-first century see Britain as an off-shore floating research-and-development laboratory for foreign transnationals?

Even our political governance of science is strange: John Krige points out how Britain's long-established (and continuing) aversion to 'Europe' means that it contributes to the international nuclear physics organization, CERN, exclusively from domestic research funds. Both the French and the Italians, however, see CERN as a political gesture and thus fund it through their foreign ministries.

All these peculiarities should, I suggest, be the subject of national political debate about the organization and funding of research and the setting of national priorities. The book is full of policy suggestions to keep student seminars and laboratory common rooms buzzing. But new forms of funding and organization are not enough. As Brian Wynne points out, in his analysis of how Cumbrian sheepfarmers reacted to the (everchanging) prognostications of agricultural scientists on the longevity of Chernobyl fall-out, lack of public interest in the funding problems of science in Britain