

Climatic pipe dreams

R. P. Pearce

The Cooling. By G. Ponte. Pp. 306. (Prentice-Hall: Englewood Cliffs, New Jersey, 1976.) \$8.95.

THE author of this book is described on the fly-leaf as having been an arms control researcher and who has since worked as a television and radio commentator. The book is about world climatology, its scientific as well as its wider human aspects. I, the reviewer, am a meteorologist who has spent a large part of his life in a University environment, attempting to solve some of the enormously difficult scientific problems which the atmosphere poses, of which those relating to longer-term climatic changes on the global scale are perhaps the most challenging of all.

I can only describe the experience of reading this book as having been something resembling a meteorological nightmare. Such a hostile instinctive reaction to a book makes it difficult for any reviewer to present what he feels he will regard in retrospect as a fair and reasoned appraisal, and I will therefore make every effort to give the author as much credit as it seems possible to give him, bearing in mind the highly controversial nature of the topic on which he has chosen to write.

The first part is an account of existing knowledge of climatic trends, particularly those of the past 20,000 yr or so, and of the physical factors determining climate. The presentation emphasises the role of solar radiation and discusses processes likely to result in variations of solar energy output. The second part examines the influence climatic factors have had on human activity from prehistoric to more recent times. The increasing susceptibility of the rapidly expanding and technologically developing human population to climatic variability is strongly emphasised; an appreciation of this by governments is illustrated by their involvement in discussions of schemes to control weather in various ways—for example, by hurricane modification, rain enhancement by cloud seeding, and the construction of barriers to modify ocean currents. Illustrations are also drawn, mainly

from the US experience in Vietnam, of the use of weather modification as a weapon of war. The severe consequences of adverse weather such as droughts and hailstorms on food production over large parts of the globe are discussed in some detail, and the activities of weather modification groups to alleviate the worst effects of these phenomena are given some prominence. The legal aspects of these activities are also discussed.

The third and final part of the book looks to the future. Taking as its basic proposition that there is a one-in-ten chance that the Earth's climate will cool and become more hostile to and seriously affect human activity over a large part of the globe within the next hundred years, it examines in some detail three possible options (apart from doing nothing) open to us for meeting this situation. The first is to adapt ourselves to the anticipated new conditions (for example, by introducing mandatory birth control to stabilise the world population, accompanied by food, water and energy rationing); the second is to try to modify climate locally—for example, by building a dam across the Straits of Gibraltar; and the third is to try to alter the global climate by, for example, blackening the polar ice caps or damming the Bering Straits. The author, after a brief reference to present international research efforts under the Global Atmospheric Research Program and stressing the urgent need for more research, concludes that the wisest course is a flexible mix of options.

The work is written in a highly sensationalist style which never lets up. The author's insatiable urge to impose his ideas on the reader and saturate him in his verbal imagery frequently leads him to use phrases which are logically absurd and amount to little more than scientific mumbo-jumbo. An example of this occurs in his description of a stationary high pressure area over Greenland as "causing a slight vacuum effect in wind patterns that increased cold winds sweeping down into Europe". Another is his description of tornadoes as "masses of cold air bumping into each other in thunderstorms". Some of his diagrams, too, are inaccurate. One of these shows the intertropical convergence zone as penetrating north of the Himalayas and up into Mongolia during the period 1900–1940!

But there is another aspect of this book which I find highly irritating and irresponsible. This is its almost total disregard and arrogant dismissal of the substantial progress made by the

worldwide scientific meteorological community in recent years in getting to grips with the fundamental problems concerning the physical basis of climate. The Global Atmospheric Research Program gets a mention here and there, but this hardly compares with the attention given, for instance, to the work of those who predict that an ice age could be upon us in seven years, or who talk of "punching holes" through the ozone layer with laser beams as a possible means of waging war on an enemy. The US National Academy of Sciences has recently produced a highly professional and valuable report (*Understanding Climatic Change: A Program for Action*) but this is referred to only briefly in an Appendix; and the Academy itself is cursorily dismissed as a "staid group".

All this is a great pity and, I fear, could even be dangerous. Lay individuals reading this book (including politicians, one of whom has contributed a foreword) could easily be misled into thinking that meteorologists know enough about global atmospheric behaviour to make a reasonable guess at what will happen to our climate over the next hundred years; and that we are on the verge of being able to change climate to provide a more favourable environment for mankind. The impression is given that only those meteorologists prepared to indulge in climatic prediction and weather modification have any real concern for applying their science to the benefit of humanity and that the others are just sitting back and taking little effective action.

It is a pity that the author has not directed his obvious talents as a publicist primarily towards drawing the attention of those who read his book to the great economic importance of weather and climatic research and to the need for strong financial support for the activities of those who are, and have been for many years, attempting to fill the large gaps in our scientific knowledge of the atmosphere and oceans, and the factors determining their behaviour, particularly on the longer time scales. Contrary to the impression conveyed by the author, most meteorologists see these as the primary goals of the science at this stage in its development. Until we have made more progress in this direction, reliable climatic prediction and control, the main themes of this book, are but pipe dreams. □

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