grand Western design aimed at dismembering its empire and murdering its peasants.

Careful reading of the book shows that Davis is actually well aware of these—and many other—social, cultural, and political complexities. Sprinkled through the text are explanations and judgments that apportion the blame much more realistically. This awareness of complexity is even more exemplary when Davis traces the mystery of monsoons, narrates the discovery of the ENSO phenomenon (he knows there is "no canonical ENSO event"), and explains El Niño's fascinating dynamics and its vagaries and consequences (which are felt far beyond the Pacific realm of its periodic occurrence). These are the best chapters of the book.

Thus, *Victorian Holocausts* can be read very profitably by historians, economists, nutritionists, and climatologists, and by environmentalists of any stripe. All will learn more about the effects of climatic teleconnections on the 19th-century famines, colonial mismanagement in India, the demise of imperial China, or the plight of Brazil's arid Nordeste. And none need subscribe to theories of murderous global conspiracies planned and executed by a small number of zealots from the smoggy capital of Victorian England.

The book ends abruptly, without any recapitulation or conclusion. As a coda it would have been nice to acknowledge what common-sense policies and, yes, freed markets can do to combat ENSO in the modern world. In 1980, after decades of Maoist misery, China began disbanding its communes and privatizing its farming. Does Davis know that just a few years later, when the powerful 1982–1983 El Niño was affecting its climate, the country had two years of record grain harvests, which made it possible to abolish the food rationing that had lasted since 1954? Anybody out there willing to credit this to a Wall Street conspiracy?

BOOKS: ASTRONOMY

More Than a Mass of Incandescent Gas

J. R. Jokipii

The Sun has fascinated mankind for eons, and must surely have been one of the earliest objects of human veneration. Who cannot but fear and wonder about such a powerful object, which governs so much of what we do. Although the Sun was one of the first objects of scrutiny as the methods of science were brought to bear on understanding nature, until recently solar studies were limited to observations from beneath Earth's atmosphere. But the Sun's radiations include many different wavelengths of light and energetic particles, which are distorted or much diminished before reaching the ground. Therefore, many important solar processes remained unknown until scientists found means to surmount the obstacles presented by Earth's atmosphere and magnetosphere. Initially, balloons and rockets and then satellites and space probes were used to study the Sun from vantage points that minimized or even removed these obstacles. Each methodological advance revealed unsuspected and fascinating solar phenomena. The new insights have greatly increased our understanding of solar processes; the Sun we now know is vastly more dynamic and complex than it seemed 40 years ago. As instrumental development continues, future observations will undoubtedly produce changes equally dramatic.

CREDIT: JAN CURTIS/GEOPHYSICAL INSTITUTE, UNIVERSITY OF ALASKA FAIRBANKS

Sun sparked. This aurora over Fairbanks, Alaska, was produced by the intense solar activity of late March.

The Sun from Space
by Kenneth R. Lang
Springer, New York, 2000. 373 pp. $64.95, DM129. ISBN 3-540-66944-2.

In *The Sun from Space*, Tufts University astronomer Kenneth Lang presents a lucid and coherent view of the perspectives opened up over the past decade by three spacecraft: Yohkoh, the Solar and Heliospheric Observatory (SOHO), and Ulysses. Yohkoh and SOHO use sophisticated detector systems to monitor and image a wide range of solar radiations from near Earth but beyond its atmosphere and magnetosphere. Ulysses is in a near-polar orbit around the Sun, which enables it to observe phenomena far above (and below) the ecliptic plane for the first time. Findings from these three spacecraft have combined to change considerably our view of many aspects of the Sun and its effects on Earth. Other spacecraft, such as the Advanced Composition Explorer (ACE) and the Voyagers are also contributing much to this story, although on a broader scale. Lang focuses more closely on the Sun and the inner solar system.

The author begins with a short overview that introduces the Sun and the roles of Yohkoh, SOHO and Ulysses in solar research. The subsequent six chapters each examine a different aspect of the physics of the Sun and the space around it. They also highlight how our understanding has been enhanced—and, in some cases, revolutionized—by these three spacecraft. For example, the chapter on the solar wind discusses the existence of two distinct kinds of wind, the fast and the slow, with dramatically different characteristics.

The book is quite well-written and is organized to make the material accessible and useful to readers with a range of backgrounds. Most of the discussions contain charts or graphs but no mathematics. In addition to this self-contained presentation, each chapter includes one or more "focus" sections, which dig a bit deeper into the topic at hand and which contain some elementary algebra. Although these supplementary sections are helpful to readers with the proper background, they are not necessary to follow the author's main arguments. Each of the six chapters concerned with solar and space physics ends with a list of major events in the development of our understanding of their topic. One could quibble with a few specific choices for these lists, but I found no serious faults or omissions in the areas where I was familiar with the history. Clearly, Lang is knowledgeable and has done his homework.

In the midst of heightened fears concerning changes in Earth's atmosphere and climate, it is appropriate that the book's final chapter focuses on the effects of solar processes on our environment, over both the short and the long term. This is a significant part of the new discipline of space weather. Improving our understanding of the Sun's effects on weather and climate will help us separate out anthropogenic effects and, thus, enable rational decision-making. In this context, Lang provides an important book.

I can recommend *The Sun from Space* to anyone interested in a coherent and accurate account of recent advances in our understanding of the Sun and the many ways in which it affects our lives.

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