Book Reviews

A Record of Achievements

A History of Scientific Endeavour in South Africa. A Collection of Essays Published on the Occasion of the Centenary of the Royal Society of South Africa. A. C. BROWN, Ed. Published by the Royal Society of South Africa, c/o the University of Cape Town, Rondebosch, 1977. xii, 516 pp., illus. $22.50.

In these days when it is fashionable to denigrate South Africa and all its works this volume commemorating the centenary of the Royal Society of South Africa is a salutary reminder of the complexities of the situation, to say nothing of the work of a large band of liberal-minded savants concerned only for the welfare of the society in which they lived. The book is not a monument to apartheid.

White settlement in southern Africa dates from 1651 and was motivated by the need for provision of fresh fruits and vegetables (sources of the as yet undiscovered vitamin C) as an antiscorbutic for the ships of the Netherlands East India Company bound for what is now Indonesia. A permanent settlement gradually took shape, and early in the 19th century, in consequence of the Napoleonic wars, the Cape Province was established as a British colony. Previous to that time there had been a few notable scientific visitors, such as the astronomer Lacaille and the botanists Sparrman and Thunberg. The first permanent scientific institution came in 1820, with the foundation of the Royal Observatory. Since that time scientific progress and the growth of scientific institutions have been continuous and indeed highly enlightened, but the initial growth must be seen in the context of an extraordinary isolation. For some half a century from the time of its foundation the Cape Observatory was the only scientific institution within a radius of perhaps 8000 kilometers, and for southern Africa some degree of physical isolation of intellectual activity still remains.

The leading scientific achievements of South Africa have been in petrochemistry (notably the complex at Sasolburg) water treatment, thunderstorm research, paleontology, medicine (from nutrition to organ transplantation), mining technology, geodesy (including the tellurometer), nature conservation, veterinary research, and astronomical research (especially the determination of the distance to the Magellanic Clouds, which revamped the scale of the universe). These are almost all described in the 21 essays that make up the book. The essays vary considerably in readability for the nonspecialist, who will find the section on organic chemistry hard going in contrast to the more general historical essays. The essay on astronomy is disappointing in its concentration on somewhat anecdotal past history and its lack of a critical assessment of the important influence that modern work done in South Africa has had on the progress of that science. This is a pity considering that astronomy was the most important seed science in the area.

Understandably there are touches of parochialism in the book, and one wonders why so many of the excellent photographs should be full-page ones of the essays' authors and their immediate colleagues. But as a piece of production this is a noble reference work. The record is one to be proud of and compares excellently with the achievements of any population group of similar size anywhere in the world.

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Episodes in Ecology

Nature's Economy. The Roots of Ecology. DONALD WORSTER. Sierra Club Books, San Francisco, 1977. xii, 404 pp. $15.

Donald Worster is an intellectual historian who rejects the view of progress in science as separated from the rest of cultural history. He prefers to approach scientific ideas as products of specific cultural conditions, and often finds that scientific "truth" is more a matter of contemporary personal and social needs than most scientists are willing to recognize. Although he sees this in all the natural sciences he finds it strongest in ecology, because ecology "has never been far removed from the messy, shifting, hurly-burly world of human values." A major purpose of this book, written at a time when ecology burgeons as both a science and a cult, is to show that ecological science has always been shifting ground.

Many ecologists recognize that their views about society tend to be consistent with their work in ecology. Human societies evolved out of natural systems and show many parallels with such systems in structure and function. More than most natural sciences, ecology seems directly transferable to societal problems. Less obvious is the truth of the reverse statement, that ecologists hold views about ecology that reflect their cultural experience and background. Worster demonstrates this effect in each period of the history of the discipline.

Because science and society are always interacting Worster believes that different cultures can produce different scientific traditions, and he limits his analysis to the development of ecology in England and America. Continental events are included only when they had significant effects upon British or American ecologists. At times Worster notes differences between cultures—for example, he notes that Darwin's ecological perceptions were products of Anglo-American Victorian society that would not have been possible in France or Germany at that time.

The early development of ecology is traced by intimate examinations of a few individuals. Linnaeus and Gilbert White represent the 18th century, Darwin and Thoreau the 19th. These four studies are enriched with many flashbacks and sideglances to other people and events that were significant in the interplay between ecological ideas and the rest of culture. Many threads are traced into modern times, leading the reader again and again from the past into the present.

Cultural shifts in attitude are followed, the most prominent being repeated swings between the urge to dominate and reorder nature and the desire to live as part of it. Such opposing views have not been reconciled in society, either under the assumption of divine creation or after the acceptance of evolution. Most interesting is evidence that opposing ideas can persist without reconciliation within individuals (as in the case of Thoreau). Indeed, the espousal of clashing paradigms is sometimes thought appropriate as a way to comprehend nature. Worster shows that dilemmas in society are also found in ecologists and in ecology, a perception that should help us to understand much better problems in the modern ecological movement.

Ecology in this century begins with the