physical problems. Since the theory of plasma turbulence is one of the most important aspects of plasma physics from an astrophysical point of view, anyone concerned with plasma astrophysics will profit greatly by studying this book.

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Photopolarimetry

Planets, Stars and Nebulae Studied with Photopolarimetry. T. GEHRELS, Ed. University of Arizona Press, Tucson, 1974. xvi, 1134 pp., illus. $27.50.

Polarization (linear and circular) is the most recent and perhaps the last of the properties of light to be utilized to gain information about stars and planets. This book heralds the maturity of the use of polarization in the remote sensing of astronomical objects.

To produce this book a colloquium was held. About a dozen reviewers were invited long in advance to produce papers treating major topics and dealing in a logical manner with the many complexities of the subject. Guidelines for the terminology, symbols, and conventions to be used were established beforehand in the hope that the book would become a cohesive whole without the confusion of terms and the redundancy that obtain in most symposium volumes. After the colloquium the papers were rewritten and edited for publication.

Appreciating that the astronomer's development of photopolarization methods would be interesting to scientists outside of astronomy and would be of special interest to environmentalists, the editor has included papers on polarization in ocean water, the general environment, and the turbid atmosphere of Los Angeles. There is also a paper on the nature of polarimeters in animals.

As an astronomer who does not practice the art of making polarimetric measurements or designing polarimeters, I found the article by K. Serkowski especially interesting. He gives directions for producing accurate polarimetric measurements for those who are not already experts in the field. Many early results and interpretations of polarimetric observations were spurious, often because of systematic errors. Five or ten years ago, in my own field of planetary physics, I tended to discount any conclusion based upon polarization measurements. The book reveals that the situation has changed. In recent years the precision of polarimetric measurements has increased from a part in a few hundred to a part in a few thousand, and in some cases to parts per million, as the result of close attention to sources of errors.

As for the editor's attempt to make the volume a "cohesive whole," the reviewer feels that it was only partly successful. For example, a number of authors independently introduce the Stokes parameters and their transformation through Mueller matrices, and in each case a different notation is used.

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Sea Borders

The Ocean Basins and Margins. ALAN E. M. NAIRN and FRANCIS G. STEHLI, Eds. Vol. 1, The South Atlantic. xvi, 584 pp., illus. + maps. $38. Vol. 2, The North Atlantic, xiv, 598 pp., illus. $38. Plenum, New York, 1973–74.

The vast amount of information that has been gathered along the continental margins and in the ocean basins of the world during the last decade has contributed mightily to the revolution that has taken place in the earth sciences, and it is of great value to have it summarized in a single set of volumes. The editors of *The Ocean Basins and Margins* have assembled a group of contributors who are eminently (often uniquely) qualified to provide such a summary.

Volume 1 deals with the South Atlantic region from the Scotia Arc to the equatorial region. An introduction by the editors sums up the geological and geophysical data relevant to the history of the South Atlantic and provides a good background for the more detailed treatments that follow. These are excellent papers, but the collection is not what the title of the work would lead one to expect. Bigarella provides an excellent description of the Amazon and Parnaiba basins of Brazil, but these are primarily internal to the South American craton. The marginal basins are discussed by Asmus and Ponte. Both the internal and the marginal basins of Argentina are treated by Urien and Zambrano. Dalziel and Elliot present a long discussion of the Scotia Arc and Antarctic margin that provides a summary of the geophysical data together with a detailed treatment of the geological structure and development of the region. Rust provides a discussion of the Paleozoic evolution of South Africa. Martin similarly summarizes the geology of the west side of Africa from the Cape of Good Hope to 17° south latitude. Franks and Nairn deal with the marginal basins of equatorial West Africa and Machens with those of the Gulf of Guinea.

These papers treat the Cambrian and later geology of the South Atlantic region with some style, but they discuss to only a limited extent the transition from continent to ocean and they hardly deal with the ocean basin at all. They are followed by excellent treatments of the Precambrian chronology of lands bordering the South Atlantic by Hurley and Rand, discussions of the Precambrian chronology of the South American craton by Almeida *et al.*, and a discussion of late Precambrian-early Paleozoic events in West Africa by Grant. The geology of South Atlantic islands is covered by Baker and the history of the opening of the South Atlantic by Ladd *et al.*

The second volume, dealing with the North Atlantic, shows some improvement in focus. It includes articles by Keen on the continental margin of eastern North America, concentrating heavily on the Canadian margin and neglecting many of the recent data obtained off the eastern United States; by Noltimier on the geophysics of the North Atlantic basin, unfortunately underillustrated; by Owen on the western approaches; by Vigneaux on the Bay of Biscay; and by Stehli on the Blake-Bahama region. The late Precambrian and Paleozoic geology surrounding the North Atlantic is summarized by Williams *et al.*, Birkelund *et al.*, Dewey, and Nicholson for the Appalachian-Caldonide region, including Scandinavia and Greenland, and an excellent paper by Dillon and Sougy on West Africa and the Canary and Cape Verde islands supplements the paper by Grant in volume 1. Noë-Nygaard provides a first-rate summary of the volcanism in the far North Atlantic, Ridley *et al.* cover the Azores, and Fitch and colleagues provide an excellent summary of radiometric ages and their significance in the North Atlantic region.