anniversary of the discovery of the Van Allen radiation belt.) Magnetospheric research has evolved through the preliminary stage of first-order discovery and qualitative description to a more mature, sophisticated level wherein experiments are flown to answer specific detailed questions; theories, which are becoming more quantitative, are closely restrained by a growing body of rather definitive data. The next decade of magnetospheric research should see the unification and generalization of much that is contained in this volume. Meanwhile, I would commend this book to students and research workers who are interested in having a complete, well-edited collection of review papers that covers magnetospheric physics as it appeared to leading experts in the field in September 1968.

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## Geomorphology

**Weathering.** C. D. OLLIER. Elsevier, New York, 1969. viii + 304 pp., illus. $14.50. Geomorphology Texts, vol. 2.

When I first glanced through this book, I found that Ollier had used a photocopy of one of my published diagrams without mentioning its source. Somewhat annoyed, I was in a poor mood to read this book with the care that it deserves. Fortunately, I persevered and found, contrary to initial expectations, a thoroughly documented book, generally well written, and, above all, interesting and informative. Soil scientists and geologists who desire a general review of weathering will find this book useful. Details of physical chemistry are avoided, however, so the serious student of weathering will still do well to read Krauskopf's *Introduction to Geochemistry* or Keller's classic volume *Principles of Chemical Weathering*.

The first part of Ollier's book gives a general description of physical, chemical, and biotic weathering of rocks and minerals. This section contains enough elementary geology and mineralogy to make it understandable to anyone with a minimal background in science. The central part of the book describes the effects of hydrology, climate, and time on the nature and rates of weathering. A discussion of weathering in past geologic ages and a review of study techniques conclude the book.

North American geologists will be pleased with photographic illustrations of many unfamiliar geomorphic features found in Australia. They will be dubious, nevertheless, concerning many statements in the book. A noneolian origin of loess is suggested in two separate sections. Insulation weathering is emphasized strongly. Weathering to depths of several thousand feet is described. Constant-volume weathering is championed. Part of the potential differences in understanding can be related to Ollier's use of technical terms. For example, if loess is defined as a well-sorted, homogeneous silt, no argument exists about the noneolian origin of some loess. Or, if all chemical changes induced by circulating meteoric water can be called weathering, then weathering certainly extends to depths of several thousand feet.

Although the book contains some quantitative information, most North American geomorphologists will probably share my impression that too much emphasis has been placed on descriptive terms and the classification of surface forms. Do we really need an 11-term classification of *Karren* and do we need to know that *visors, plinths,* and *imprisoned boulders* are found along our coastlines? I think not. Careful measurements and experiments will advance geomorphology much more rapidly than giving a name to every bump molded by the capricious hand of nature.

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## Lunar and Other Eclipses

**Eclipse Phenomena in Astronomy.** F. LINK. Springer-Verlag, New York, 1969. x + 272 pp., illus. $19.50.

It might be expected that a book with this title would cover the entire field of eclipse phenomena in astronomy. The reader discovers, however, that phenomena related to solar eclipses and eclipsing binaries are entirely omitted. A glance at the table of contents soon reveals the author's intention. He is concerned principally with phenomena related to the attenuation of light as it passes by the eclipsing body and with the information that can be gathered about this from photometric studies of the eclipsed body. It is then clear why the author concentrates on a very thorough analysis of phenomena associated with lunar eclipses, which comprises 45 percent of the book. After a short section on the geometrical conditions of lunar eclipses and a sample computation of the circumstances of an eclipse, the author covers such subjects as the general photometrical theory of the umbra, molecular scattering of light, aerosol scattering, attenuation of light by refraction, normal densities of the shadow, theory of refraction and air mass, climatic influences on the refraction of air mass, climatic variations of the shadow density, and atmospheric illumination of the eclipsed moon.

The author then takes up the problem of photometry of the moon during eclipse, describing first the theory of luminescence and instrumentation involved in experiments, and then moving on to discuss the increase of the shadow, shadow flattening, and thermal phenomena during eclipse.

In the remaining half of the book, the author covers such subjects as eclipses of artificial earth satellites, twilight phenomena, occultations and eclipses by other planets, transits of planets over the sun, eclipse phenomena in radio astronomy, and finally Einstein's deflection of light. The text for this book arose from a series of lectures given at the Faculté des Sciences in Paris in 1967–68, and perhaps because of this each subject is treated independently of those that precede and follow it.

Each chapter gives a short historical review and a survey of the fundamentals and concludes with the latest experimental results. For the casual reader this is an advantage, for it is possible to follow one subject through completely without having to backtrack for fundamentals. Each subject section is followed by a fairly complete bibliography, some references being as recent as 1968.

The book is profusely illustrated, there being 201 figures and tables within the 268 pages of text. This interesting and informative volume is marred only by evidence of hasty proofreading and the distraction caused by occasional awkward English expressions in translation from the original French.

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