

# Introduction to Theoretical Geophysics

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## A Textbook on Geonomy

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By J. A. Jacobs  
*Halstead Press (John Wiley and Sons),*  
 328 p., 1974.  
 \$19.75.

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In an attempt at a definition of geonomy, the late Sidney Chapman is purported to have rhymed 'geonomy is to geology as astronomy is to astrology'. Chapman was of course a geophysicist as is Jacobs and both have undoubtedly felt constrained by the word geophysics as a description of a field of study which now extends from the centre of the Earth to the extremities of the solar system. Indeed Jacobs' book itself may be the best definition of geonomy yet given. Individual chapters deal with the solar system, Mercury, Moon, Mars and Venus, seismology and the physics of the Earth's interior, the figure of the earth and gravity, geomagnetism and aeronomy, paleomagnetism, the thermal history of the Earth, plate tectonics, the rheology of the Earth and the structure and composition of the mantle and core.

Jacobs' style is not to let mathematical arguments become the focus of the reader's attention. When they begin to become complex they are invariably broken and a reference to a more complete treatment is given. This allows him to pack the text with discussion and detail. Considering the all encompassing nature of the book, an astounding amount of information is packed in on individual topics. The references given at the end of each chapter are very extensive and exceptionally well chosen. Very few important papers escape Jacobs' notice.

*A Textbook on Geonomy* will be found useful by a wide range of readers. Because of the absence of all but elementary mathematical arguments, students at all levels and with varied backgrounds will be able to read and understand much of the book. While the specialist in a single field of geophysics is unlikely to learn much new in his own area by reading the book, because of the concentration of up to date information

throughout the text he will find it a rapid method of getting abreast of recent development in other areas of geophysics. Mature scientists in related fields such as physics and chemistry would find perusal of this textbook a method of gaining a remarkable currency in modern geophysics in a short time. In fact, the only reader the book will not satisfy is the student of geophysics who wishes to dig very deeply into the nitty gritty of some aspect of the subject. For him, Jacobs has provided an effective exit through the extensive bibliography of original papers.

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## Introduction to Theoretical Geophysics

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By Charles B. Officer  
*Springer-Verlag, New York, 385 p., 1974.*  
 \$19.80

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In contrast to the book by Jacobs reviewed above, Officer's book makes the mathematical arguments the focus of the reader's attention. Once again the field covered is very broad, consisting of solid earth geophysics plus physical oceanography. While ocean dynamics is a welcome addition to the usual accounts of physics of the Earth's interior, it adds further breadth to the subject matter, accentuating an already superficial treatment.

Readers familiar with modern theoretical geophysics will feel an air of unreality in reading Officer's book. Just at the point where most of the mathematical foundations have been constructed and one expects the real subject matter to be presented, the reader is repeatedly abandoned high and dry. Perhaps length is a constraint but at least some necessarily brief qualitative indication of the current state of each subject could have been given. The references at the end of each chapter offer no escape. They are all to rather elementary books and monographs, many of them decades out of date. The student introduced to theoretical geophysics through Officer's book as a text would be at a serious disadvantage, unless of course he happened to stumble on *A Textbook on Geonomy* as supplementary reading and an entry to the modern literature.

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