

attempting serious analysis. It does, however, present the principles of X-ray emission spectroscopy in a readable manner and is a very useful addition to the library of someone new to the method.

R. I. LAWSON

Theory of Satellite Gravity

William M. Kaula

Theory of the Earth's Interior

H. Takeuchi

(Blaisdell Publishing Co., Waltham, Mass.)

These two books in a series in pure and applied sciences edited by Dr G. J. F. MacDonald are excellently concise and authoritative monographs on mathematical geophysics.

Professor Kaula demonstrates how the extremely small deviations of earth satellites from Keplerian orbits (milliseconds) have yielded values of the low degree harmonics of the geopotential. To test the reality of the coefficients found, statistical and computing methods of high sophistication have been developed. Professor Kaula describes the discovery of perhaps the most significant and beautiful data on the Earth's interior which we presently have. The physical interpretation of the details of the geoid seems to the reviewer one of the most important now facing geophysicists.

The mathematical methods used in the various branches of geophysics have many similarities and of course are based on Laplace's equation in spherical coordinates. The concept of poloidal and toroidal vectors, for instance, first suggested for the problem of electromagnetic oscillations of a sphere, is now being found useful in the theory of the geomagnetic field, the long period elastic oscillations of the Earth and the problems of flow in the Earth's core and mantle. Professor Takeuchi's book provides a fine introduction to the mathematical methods being applied to the Earth's interior.

S. K. RUNCORN

**Proceedings of the First Lunar International Laboratory Symposium.
Research in Geosciences and Astronomy**

Edited by F. J. Malina

(Springer-Verlag, Vienna and New York, 1966. 116 pp.)

Manned exploration of the Moon is astronomically imminent. It is appropriate, therefore, that a number of scientists should have gathered at Athens in 1965 to discuss, essentially, experiments that could be conducted with profit from a laboratory on the Moon. The twelve papers presented in this slim volume are reports of lectures given at Athens. Broadly speaking, four of the papers pertain to the Moon itself, and eight to extra-lunar observations.

The reviewer finds the treatment sketchy. Abstracts (which in this book are quite long) are unnecessary when articles are so short; and the abstracts do not always reflect the subject discussed in the main account. Many of the ideas presented in these