

**X-Ray Diffraction in Crystals** by W. H. Zachariasen. An incredible recommendation! Zachariasen's book occupies a distinguished niche in the literature but is notorious for being written in a mathematical language that is so elegant and compact that its insights have eluded the majority of practicing x-ray crystallographers for 25 years.

I have the unhappy feeling that most of Cracknell's exposition and literature references have been transplanted from standard texts without adequate understanding or evaluation. This is hardly a fair deal for the poor sixth formers.

ROBINSON D. BURBANK  
Bell Telephone Laboratories

## Immanuel Kant: Universal Natural History and Theory Of The Heavens

180 pp. Univ. of Michigan Press, Ann Arbor, 1969. Cloth \$4.95, paper \$2.45

Immanuel Kant (1724-1804), though now best known as a philosopher, devoted much of his early work to problems in theoretical physics and astronomy. In 1755 he published a book titled *Allgemeine Naturgeschichte und Theorie des Himmels, oder Versuch von der Verfassung und dem mechanischen Ursprunge des ganzen Weltgebäudes nach Newtonischen Grundsätzen abgehandelt*.

This book is now generally recognized as the first serious post-Newtonian attempt to develop a general scheme for the temporal evolution of the universe. (Kant's name is frequently linked with that of Laplace as cofounder of the "nebular hypothesis," although Laplace's theory was mainly restricted to the solar system.) Kant's speculations may indeed be considered the precursors of modern evolutionary cosmologies, foreshadowing the breakdown of the Newtonian "clockwork" view of the universe. (According to legend, however, Kant's own daily movements were so regular that his neighbors could set their clocks by them.)

In view of the historical importance of Kant's book, this moderately priced reprint of an English translation should be acquired immediately by anyone with an interest in the history of science or in modern astronomy. Its value is further enhanced by an 18-page introduction by Milton K. Munitz and by the translations of two other relevant documents: a 9-page essay on the question "Whether the earth has undergone an alteration of its axial rotation," which Kant published in 1754 in a weekly journal, and a newspaper account (1751) of Thomas Wright's *Original*

*Theory of New Hypothesis of the Universe* (1750), which is supposed to have stimulated Kant's thinking on this subject.

This edition does have one serious fault. The cover and title page give the impression that this is a translation of Kant's entire book, and only at the end of the introduction is it revealed that the eighth chapter of part 2 and all of part 3, amounting to nearly 25% of the total contents, have been omitted. The missing sections present (according to the "survey of the contents of the whole book,") Kant's "Universal proof of the correctness of a mechanical theory of the institution of the System of the World, and especially of the certainty of the present theory" and his "Comparison of the inhabitants of the Heavenly Bodies." Perhaps this metaphysical-theological material was just too much for the original late-Victorian translator (W. Hastie), but there is certainly no good reason for omitting it in a modern edition.

Anyone who wants to read the rest of Kant's *Universal Natural History* can easily find it in the original German version, available in at least three editions of Kant's *Werke*, the most recent of which was published in 1960 (Insel-Verlag, Wiesbaden, Germany). Let us hope that a complete English translation of this classic will soon be available.

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## Extra-Terrestrial Matter

(Conf. Proc., Argonne National Laboratory, 7-8 March 1969).

Charles A. Randall, Jr. ed.

331 pp. Northern Illinois U. P., Dekalb, Ill., 1969. \$12.50

In March 1968 a conference was held at the Argonne National Laboratory on extra-terrestrial matter sponsored by the Central States Universities, Inc in cooperation with Argonne, the Atomic Energy Commission and the Associated Midwest Universities. The proceedings of this conference, which dealt with meteorites, tektites, lunar surface, cosmic rays, atmospheric neutrons, comets and interstellar dust, consist of 14 articles by various experts in these areas.

With one or two exceptions, the articles are on the popular side and, to the reviewer's knowledge, do not present much new material. This rather descriptive attitude is well illustrated by the complete absence of any references to scientific literature. Nevertheless, a very useful overall view of the various areas is obtained. It is also instructive to read the pre-Apollo articles on the Surveyor results (by E. Schoemaker) and on the chemical analysis of the

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lunar surface by backscatter (by J. H. Patterson) and to compare them with what has been learned in 1969.

Other articles of interest to the reviewer are those on luminescence of the moon (by J. H. Patterson), on tektites (by J. O'Keefe), on cosmic-ray neutrons (by S. Korff) and last but not least on the effect of these neutrons on passengers in supersonic transport planes (by R. Wallace). The book is amply illustrated with photographs and diagrams, well printed and reasonably well indexed.

ROMAN SMOLUCHOWSKI  
Princeton University

## new books

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**Relativity.** (Conf. Proc. of the Relativity Conference in the Midwest, Cincinnati, Ohio, 2-4 June 1969.) M. Carmeli, S. I. Fickler, L. Witten, eds. 381 pp. Plenum, New York, 1970. \$20.00

**Physics and Chemistry of Fission.** (Conf. Proc. of 2nd IAEA Symposium on Physics and Chemistry of Fission, Vienna, 28 July-1 August (1969.) 983 pp. Unipub, New York, 1969. \$25.00

**Mössbauer Effect Methodology, Vol. 5.** (Conf. Proc. of 5th Symposium on Mössbauer Effect Methodology, New York, 2 Feb. 1969.) I. J. Gruverman, ed. 278 pp. Plenum, New York, 1970. \$19.50

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**Amorphous and Liquid Semiconductors.** (Conf. Proc. of International Conference on Amorphous and Liquid Semiconductors, Cambridge, UK, 24-27 Sept. 1969.) N.

Mott, ed. 626 pp. American Elsevier (North-Holland), New York, 1970. \$30.00

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C. K. Krichbaum. 472 pp. Plenum, New York, 1970. \$75.00

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