

information into knowledge." This is not that book.

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Introduction to Comets

J. Brandt, R. Chapman

246 pp. Cambridge, New York, 1981. \$45.00 cloth, \$11.95 paper

"Scarfed in a Filmy Bit of It, We'll Whirl On In Our Dance Through Space, Unharmed, and Most of Us, Unheeding." This delightful subheadline from *The New York Times* was referring to the Earth's impending passage through the tail of Halley's comet in May 1910. When it returns in 1986, Halley's comet will again be largely unheeded. This is particularly true in the United States, which has seen fit not to risk scarfing even a space probe in the comet's tail; and since this celebrated member of the solar system will be far to the south at its brightest and best, the US public will be doubly denied the pleasure of witnessing it with any clarity.

Introduction to Comets is one of the better entries in a field in which works are rapidly multiplying as Halley quickens its own pace toward perihelion passage on 9 February 1986. Its senior author is one of the world's leading authorities on the processes that take place in the plasma tails of comets. It is thus not surprising that the book should include a description of the enormous accelerations and other curious motions observed in plasma tails, Karl Wurm's 1943 acknowledgment that the traditional concept of repulsion due to solar radiation pressure would not account for the observed accelerations, Ludwig Biermann's introduction of the concept of the solar wind and momentum transfer with the tail of a comet, and Hannes Alfvén's consideration of the role played by magnetic fields in this interaction. There is a detailed examination of the whole cometary phenomenon, from the information obtained from studies of their orbits, through suppositions concerning the structure of cometary nuclei, to the chemistry involved in the formation of the gas coma, and the dynamics of particulate matter released from the nucleus to develop into the dust coma and tail. The authors also discuss various theories of cometary origin and the relationship of comets to other bodies in the solar system. Special chapters are devoted to new observational results from the bright comets of the 1970s and to plans for cometary space missions in the 1980s.

In short, much of the Brandt-Chapman book is an excellent, mathematically rigorous text for the beginning

and advanced student of cometary astronomy. This serious material is curiously intermingled, however, with accounts of less "scientific" studies of comets. Here we can read of the attribution to a comet of an "epidemic of sneezing sickness among the cats of the Rhenish areas of Westphalia," how Edward Emerson Barnard earned enough money to build a house, and just what the Christmas Monster of 1973 was expected to bring. The authors deliberately divided their work into four "perspectives"—the historical, the current, the future and the lay—and they are to be commended for their attempt to bring together in the hoped-for Golden Decade of cometary research all the various ideas ever promulgated on the subject. But it doesn't work. The armchair reader intrigued by the comet lore of chapter 10 is not going to want to wade through the treatment of molecular collisions and vaporizing flux and the integration of Clapeyron's equation on page 131. On the other hand, it is but a disconcertingly small step from the above-mentioned feline sneezes (page 218) to the seemingly serious Hoyle-Wickramasinghe conclusion (page 212) that influenza germs are brought on wings of comets; from the Daumier cartoon on the anticipated breakup of the world in 1857 by collision with a comet (page 220) to Van Flandern's theory of comet formation by planetary breakup (pages 152-154); from the *Book of Joel's* description of heavens filled with "fire and pillars of smoke" (page 218) to Vsekhsvyatskij's views of comet production by volcanic eruptions from Jupiter and its satellites (page 41).

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new books

Atomic, Molecular and Chemical Physics

Advances in Magnetic Resonance. Vol. 10. J. S. Waugh, ed. 223 pp. Academic, New York, 1983. \$35.00. *compendium*

Advances in Chemical Physics. Vol. 52. I. Prigogine, S. A. Rice, eds. 528 pp. Wiley, New York, 1983. \$70.00

Adsorption on Metal Surfaces: An Integrated Approach. J. Benard, ed. 337 pp. Elsevier, New York, 1983. \$83.00. *reviews of research*

Optics and Acoustics

Optical and Laser Remote Sensing. D. K. Killinger, A. Mooradian, eds. 383 pp. Springer, New York, 1983. \$34.00. *compendium*

Physical and Biological Processing of Images. Proceedings of an International

Symposium Organized by The Rank Prize Funds, London, September 1982. O. J. Braddick, A. C. Sleight, eds. 403 pp. Springer, New York, 1983. \$33.00

Sound and Sources of Sound. A. P. Dowling, J. E. Ffowcs Williams. 321 pp. Wiley, New York, 1983. \$59.95. *undergraduate text*

Molecular Light Scattering and Optical Activity. L. D. Barron. 408 pp. Cambridge, New York, 1983. \$69.50. *monograph*

Electro-Optics/Laser International '82 UK. Conference Proceedings, Brighton, March 1982. H. G. Jerrard, ed. 320 pp. Butterworths, Woburn, Mass, 1982. \$69.95

Physical Acoustics: Principles and Methods. Vol. 16. W. P. Mason, R. N. Thurston, eds. 481 pp. Academic, New York, 1982. \$72.00. *compendium*

Molecular Light Scattering and Optical Activity. L. D. Barron. Cambridge U. P., New York, 1983. \$69.50. *reference*

Waves and Photons: An Introduction to Quantum Optics. E. Goldin. 211 pp. Wiley, New York, 1982. \$25.95

Particles, Nuclei and High-Energy Physics

Physics in Collision: High-Energy ee/pp Interactions. Vol. 2. Second International Conference, Stockholm, June 1982. P. Carlson, W. P. Trower, eds. 432 pp. Plenum, New York, 1983. \$62.50

Quantum Electronics and Lasers

Laser Theory. Reprint. H. Haken. 320 pp. Springer, New York, 1983. \$34.00

Fluids and Plasmas

Photon Correlation Techniques in Fluid Mechanics. Proceedings of the Fifth International Conference at Kiel-Damp, May 1982. E. O. Schulz-DuBois, ed. 399 pp. Springer, New York, 1983. \$33.00

Solid-State Physics and Electronics

Electron Correlations in Solids, Molecules, and Atoms. Proceedings, Turnhout, Belgium, July 1981. J. T. Devreese, F. Brosens, eds. 435 pp. Plenum, New York, 1983. \$55.00

Desorption Induced by Electronic Transitions. DIET I. Proceedings of the First International Workshop, Williamsburg, Virginia, May 1982. N. H. Tolk, M. M. Traum, J. C. Tully, T. E. Madey, eds. 269 pp. Springer, New York, 1982. \$29.50

VLSI Fabrication Principles: Silicon and Gallium Arsenide. S. K. Ghandhi, 665 pp. Wiley, New York, 1983. \$47.50. *reference*

Solid State Physics: Advances in Research and Applications. Vol. 37. H. Ehrenreich, F. Seitz, D. Turnbull, eds. 385 pp. Academic, New York, 1983. \$47.50. *compendium*