pate and achieve mastery—a quintessentially American pastime.

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Geoculprit

The San Andreas Fault System, California. ROBERT E. WALLACE, Ed. U.S. Geological Survey, Denver, CO, 1990. vii, 283 pp., illus. Paper, $20. USGS Professional Paper 1515.

"California Does Have Its Faults." Rarely a week goes by that I fail to encounter this expression on a tee shirt or a bumper sticker in my town of Santa Cruz. Despite some tongue in cheek, the banner underlies the fact that there has never been a time when public awareness of California's geological faults and the earthquakes they cause has been so acute. The United States Geological Survey seems to have sensed this increasing interest and demand for authoritative information in publishing *The San Andreas Fault System, California.* Released in the summer of 1990 and now in its second printing, the volume contains 10 reviews that cover diverse aspects of geology, geomorphology, seismology, geodesy, and geophysics. Written at a level comparable to that of *Scientific American*, the reviews aim to be both a popular presentation to a general audience and a lasting resource to earth scientists. The former goal is reinforced through a generous number of maps, photos, and illustrations. The book's resource value stems from more than 1000 follow-up references.

In its title and throughout its text the book strives to distinguish the San Andreas fault from the San Andreas fault system. The system of course includes *the* fault, plus two-score less familiar ones like the Maacama, the Rinconada, and the South Cuyama, which also account for a portion of the 5 centimeters per year of relative motion between the Pacific and North American plates. Evaluating the configuration and current seismic potential of each fault in the 200-kilometer-wide system is a complicated task that occupies much of the book, as it does much of the professional time of the authors.

In its present form, the San Andreas fault system has been working the landscape of California for about 5 million years. The first several contributions in the book amount to a mystery story in which displaced marine terraces, alluvial fan deposits, and stream channels are the clues and the geodetectives try to unravel the rates, styles, and even dates of culprit faultings. "A photographic album of fault features," a sequence of 41 captioned air photos of the San Andreas, nicely portrays the battle between erosion and tectonic slip, folding, and warping that together mold its geomorphic expression.

Annually, the system endures about 8000 tremors. A dozen maps and cross sections in chapter 5 locate 64,000 recent quakes. Surprisingly, minor faults often present a clear signature in seismicity, whereas large sections of some major faults lie ominously quiet. The geographical variability of earthquake mechanisms and the fact that the majority of seismicity in the system does not occur on the San Andreas fault are not lost here or in the following chapter, which compiles the size and location of all significant historical earthquakes from 1769. Still more detective work: Did the stone roof of Mission San Juan Capistrano fall in 1812 because of strong shaking from a large, distant quake, strong shaking from a smaller, closer one, or weak shaking from a

distant event coupled with poor construction brought on by the death of the master mason?

Illuminating the attitude and behavior of faults 5 or 15 kilometers below the surface is an inverse problem for which the geodetic, gravity, and magnetic models of chapters 7 and 9 hold sway. Although new space geodetic techniques such as the Global Positioning System or Very Long Baseline Interferometry are barely given a nod, the sense of how locked and creeping portions of faults can be imaged by monitoring slow crustal deformations over a 50- or 100-kilometer-wide zone is easily visualized. One thing that struck me is that certain gravity and magnetic data suggest the existence of dips in the upper 5 kilometers of the fault that are substantially different from 90°—for example, one of 55° to the southwest near the Big Bend and a northeasterly one of 40° north of Point Arena. The oblique thrust mechanism of the 1989 Loma Prieta quake has made it easier to accept a San Andreas fault that is not everywhere a simple vertical cut in the lithosphere.

Capping the volume is a lucid survey of the San Andreas heat flow paradox, a two-decade-old contradiction between the high shear stress measured in the upper 1.5 kilometers of the crust and the low shear stress that is apparently being dissipated in major earthquakes. The fault must have incredibly low strength. I wonder how it got that way.

The theme of the book is the complexity of the San Andreas fault system and the variety of tools that earth scientists have available to expose it. Depending on the reader's interests, certain contributions will surely seem overly simplified or overly detailed, but the collection well supports its thesis. Maybe they should supply one of those tee shirts with each copy.

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Reprints of Books Previously Reviewed

For the Love of Enzymes. The Odyssey of a Biochemist. Arthur Kornberg. Harvard University Press, Cambridge, MA, 1991. Paper, $14.95. *Reviewed* 244, 852 (1989).

The Tiger and the Shark. Bruce R. Wheaton. Cambridge University Press, New York, 1991. Paper, $19.95. *Reviewed* 224, 277 (1984).

To Infinity and Beyond. A Cultural History of the Infinite. Eli Maor. Princeton University Press, Princeton, NJ, 1991. Paper, $16.95. *Reviewed* 237, 666 (1987).

Books Received

Acoustical Imaging. Vol. 18. Hua Lee and Glen Wade, Eds. Plenum, New York, 1991. x, 557 pp., illus. $110. From a symposium, Santa Barbara, CA, Sept. 1989.

Advanced Quantum Theory. And its Applications Through Feynman Diagrams. Michael D. Scadron. 2nd ed. Springer-Verlag, New York, 1991. xviii, 410 pp., illus. Paper, $49.95. Texts and Monographs in Physics.

All You Need to Know About Dinosaurs. Mark Norell. Sterling, New York, 1991. 96 pp., illus. $12.95.

Amphibian Cytogenetics and Evolution. David M. Green and Stanley K. Sessions, Eds. Academic Press, San Diego, CA, 1991. xvi, 456 pp., illus., + plate. $89.50.

Analysis of Human Genetic Linkage. Jurg Ott. 2nd ed. Johns Hopkins University Press, Baltimore, MD, 1991. xxiv, 303 pp. $47.50.

Animal Models in Psychiatry, II. Alan A. Boulton, Glen B. Baker, and Mathew T. Martin-Iverson, Eds. Humana, Clifton, NJ, 1991. xx, 368 pp., illus. $89.50. Neuromethods, 19.

Artificial Intelligence and Mathematical Theory of Computation. Papers in Honor of John McCarthy. Vladimir Lifschitz, Ed. Academic Press, New York, 1991. xiv, 475 pp. $59.95.

Backlash. The Undeclared War Against American Women. Susan Faludi. Crown, New York, 1991. xxiv, 552 pp. $24.

The Batak. Peoples of the Island of Sumatra. Achim Sibeth. Thames and Hudson, New York, 1991 (distributor, Norton, New York). ii, 240 pp., illus. $45.

Biologically Inspired Physics. L. Peliti, Ed. Plenum, New York, 1991. xii, 394 pp., illus. $105. NATO Advanced Science Institutes Series B, vol. 263. From a workshop, Cargese, France, Sept. 1990.

Biotechnics and Society. The Rise of Industrial Genetics. Sheldon Krimsky. Praeger, New York, 1991. xx, 265 pp., illus. $47.95; paper, $17.95.

C++ for Scientists and Engineers. James T. Smith. Intertext (Multiscience) and McGraw-Hill, New York, 1991. xii, 322 pp., illus. Paper, $29.95.

Cajal's Degeneration and Regeneration of the Nervous System. Oxford University Press, New York,