

the-century robber barons. Instead, they propose a third way: policymakers ought to adopt a set of well-defined objectives and then step aside, allowing private industry to decide how best to achieve them.

Without offering a fully realized alternative policy, the authors suggest four objectives that would produce a competitive, flexible, consumer-friendly system, one that they label the “open communications infrastructure.” “Open architecture” would permit different companies and technologies to interconnect, as cellular and wired telephones now do (and as VHS and Beta videocassette players do not). “Open access” would eliminate that mainstay of traditional telecommunications regulation, the legally designated monopoly. “Universal access” would ensure that competition would not deprive remote communities of telecommunications services. Finally, “flexible access” would let consumers send and receive digital data in a variety of ways: “The telephone company can deliver multichannel television; the cable company can provide telephone service; and each of these formerly distinct services (along with other competitors) can provide electronic home shopping, electronic encyclopedias, magazines and newspapers—all delivered to high-speed home printers.” With the old regulatory distinctions rapidly falling away, this cogent, clear-headed book invites a national debate on where we go from here.

—Janice Obuchowski

PLANET QUEST:
*The Epic Discovery of Alien
Solar Systems.*

By Ken Croswell. Free Press.
324 pp. \$25

Until a few years ago, only three human beings in history could claim to have discovered a planet, and only one of them—the late Clyde Tombaugh, discoverer of Pluto—lived in the 20th century. Today, however, a growing number of astronomers can make that claim. We now know of more planets beyond our solar system than within it, all of them discovered in the 1990s.

Croswell, an astronomer and the author of *The Alchemy of the Heavens* (1995), tells the stories behind these and earlier breakthroughs. We learn of the discoveries of Uranus, Neptune, and Pluto (the three planets in our solar system not visible to the

naked eye), the failed search for a “Planet X” beyond Pluto’s orbit, and the quest for planets outside our solar system. The first discovery of an extrasolar planet was made in 1992 by Alexander Wolszczan, and was soon followed by a raft of similar breakthroughs by Swiss and American astronomers.

Unfortunately, the history of searches for planets—whether inside or outside our own system—has not always been a happy one. Croswell explains why claims for the discovery of other planets get made in the first place, and how the continued refusal of the data to back up some claims eventually leads to their rejection. He also explains why these searches always involve indirect evidence—usually the distortion of a star’s motion by the gravitational pull of its partner—rather than direct observation.

Croswell re-creates one of the shining moments of 20th-century science. In 1991, English astronomer Andrew Lyne and his team announced the detection of planets around a pulsar (a dead star), which seemed to be the first extrasolar planets. In 1992, however, Lyne found a flaw in his data that invalidated his conclusion. Rather than send a terse letter of retraction to a professional journal, Lyne stood up and explained his error before a gathering of the American Astronomical Society in Atlanta. When he finished, the auditorium of astronomers gave him a standing ovation.

If Croswell’s book has a weakness, it is his excessive attention to side issues and even nonissues, including a chapter-long semantic quibble over whether a “brown dwarf” is or is not a star. As a result, the main story about modern planetary discoveries doesn’t begin until page 180.

That said, Croswell’s command of the nuts and bolts of the profession enables him to explain what would otherwise be rather esoteric debates. A nice touch is his inclusion of interviews with a number of astronomers involved in the story, together with thumbnail sketches of their careers and accounts of how they came to be astronomers. No parent reading this book can fail to be impressed by these scientists’ testimonies to their earliest shaping experiences: “My parents bought me a telescope” or “My father showed me the constellations.”

—James Trefil