

BOOKS: ASTRONOMY

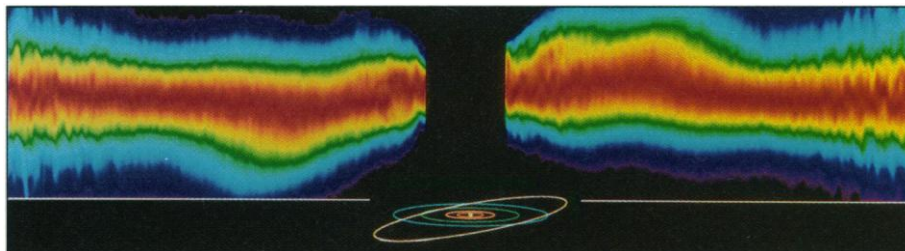
Seeking Planetary Systems

Jack J. Lissauer

One of the great scientific advances of the 1990s has been the discovery of planets in orbit about stars other than our sun. The first such planets to be discovered were found by Wolszczan and Frail (1) in 1992. These bodies have masses and orbits similar to those of terrestrial planets in our solar system, but they orbit a pulsar (a dense stellar remnant produced by a supernova explosion of a massive star). The first planet detected orbiting a normal (main sequence) star was discovered in 1995 by Mayor and Queloz (2), who found

Looking for Earths: The Race to Find New Solar Systems presents a popular account of the colorful and checkered history of searches for extrasolar planets. Alan Boss tells this story from the perspective of a quasi-insider. He is not an observer directly involved in the search, but rather a theorist who has followed it with great interest and also influenced its direction by serving on NASA panels that have recommended which observational projects to support. He gives the reader a sense of the excitement and surprise as major discoveries

Looking for Earths
The Race to Find
New Solar Systems
by Alan Boss
Wiley, New York, 1998.
252 pp. \$27.95, C\$39.50.
ISBN 0-471-18421-7.



Pull of a planet. The warp in the disk of dust around the star Beta Pictoralis (viewed in visible-light with the Hubble Space Telescope Imaging Spectrograph) supports the presence of an unseen planet. (The central star is blocked, and the orbits of our solar system are added for scale.)

it through Doppler measurements of the reflex motion induced in the star 51 Pegasi by the planet's orbit. The companion to 51 Pegasi has a mass greater than that of Saturn, but orbits the star at a distance only one-twentieth that from Earth to the sun—again a surprising difference from our solar system. To date, all of the extrasolar planets discovered orbiting main sequence stars have been found through this Doppler technique, and most have been detected by Marcy and Butler's team (3). None appear to be less massive than 51 Pegasi's planet, and most either orbit very close to their stars or travel on much more eccentric paths than do any of the major planets in our solar system. Nonetheless, the observations do not preclude the possibility that the majority of planetary systems closely resemble our own. Because the sun's planets are all either low in mass or travel on distant orbits, they would be more difficult to discover by using the Doppler technique.

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refers to them as "brown dwarf stars." But these objects could well have been scattered onto their orbits by other planets (which may have been ejected to interstellar space by the encounter), and their discoverers have classified them as planets because of their low masses.

Astronomers looking for broader perspectives or for more technical details on planetary detection techniques will probably prefer two articles in this year's *Annual Reviews of Astronomy and Astrophysics* (5). Readers interested specifically in detection of planets similar to Earth should examine the Web sites of two proposed spacecraft missions that would have such capabilities (6). Nevertheless, *Looking for Earths* provides the general audience with a substantial amount of information about the search for extrasolar planets, as well as a good story.

References and Notes

1. A. Wolszczan and D. A. Frail, *Nature* **355**, 145 (1992).
2. M. Mayor and D. Queloz, *ibid.* **378**, 355 (1995).
3. An overview of Marcy and Butler's planet detection program is available at www.physics.sfsu.edu/~gmarcy/planetsearch/planetsearch.html
4. Strong observational evidence now supports the classical nebula theory, which states that planets form within disks orbiting about young stars. Almost all specialists believe that terrestrial planets accumulate from initially small solid bodies known as planetesimals. Most models for the formation of Jupiter-like planets begin with the accretion of a solid core from planetesimals, but Boss models the formation of giant planets from gravitational instabilities in the gaseous component of the circumstellar disk.
5. G. W. Marcy and R. P. Butler, *Annu. Rev. Astr. Astrophys.* **36**, 57 (1998); N. Woolf and J. R. Angel, *ibid.*, p. 507.
6. <http://ast.star.rl.ac.uk:80/darwin/> and www.kepler.arc.nasa.gov/

BOOKS: VIROLOGY

Small Sources of Great Affliction

Robin A. Weiss

It is the vogue to include the word plague in the title of books on infections. There is William McNeill's classic *Plagues and Peoples* (1976), which reviews the demography of infections to show how infectious diseases have affected the course of human history; *Plague's Progress* by Arno Karlen (1995) provides a social history of man and disease; and Laurie Garrett's

Viruses, Plagues, and History
by Michael B. A. Oldstone
Oxford University Press,
New York, 1998. 223
pp. \$25, £18.95. ISBN
0-19-511723-9.

The Coming Plague (1995) looks to the future. Michael Oldstone's *Viruses, Plagues, and History* differs from these in being written by an eminent and active research scientist, who has taken the bacteriologist

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