Distant Wanderers: The Search for Planets Beyond the Solar System. Bruce Dorminey. Springer-Verlag, 37 East 7th Street, New York 10003, USA. 226 pp. US$ 29.95.

This book could not have been written ten years ago, for it was in 1991 that claims for discovery of planets around stars other than the sun began to be made. Today, the number of extra-solar planets is approaching a century and Bruce Dorminey has described efforts (past, present and future) to enrich this growing field of astronomy.

The Greeks named some heavenly bodies 'planets' to emphasize their apparently irregular motion. The name means 'wanderers' in Greek. The planets certainly stood out as odd ones against the vast stellar background, by their sometimes forward and sometimes retrograde motions. However, they were far from being wanderers, as was shown by Johannes Kepler and Issac Newton in the seventeenth century. The planets are moving the way they do because of the force of gravitational attraction of the sun. Their initial apellation has, however, struck.

Although astronomers have long believed that planet formation is somehow a part of the star formation process, and as such the sun should not be unique in having a planetary system, the search for planets around other stars did not gather momentum till the last decade of the previous century. Dorminey has written an entertaining non-technical account of how this search has proceeded so far.

The search for extra-solar planets, however, began with a hiccup! In 1991, Andrew Lyne and his colleagues at the Jodrell Bank Radio Observatory of the University of Manchester, UK announced the finding of a planet around the pulsar PSR 1829–10. The announcement made at the General Assembly of the International Astronomical Union at Buenos Aires caused quite a sensation. However, the claim was later withdrawn as an observational artifact at a meeting of the American Astronomical Society at Atlanta in 1992. By a coincidence, at the same meeting came the announcement of another pulsar having planets. This was the pulsar PSR 1257 + 12, discovered by Alexander Wolszczan of Cornell University, USA. This second claim has been duly confirmed and may be considered the first example of extra-solar planets.

Dorminey begins his book with this account. The principle behind the discovery is based on the very same law of gravitation; only in this case one is looking at the force of attraction of the planet on the star. As the mass of the star vastly exceeds that of the planet, the effect of this force is to cause a very tiny wobble in the star. Pulsars being very accurate time-keepers, this tiny wobble can be detected and used to infer the mass and orbital period of the planet. With sufficient sophistication, the method can also detect if there are two or more planets.

The first few chapters describe how this method has been used by optical astronomers with relatively modest observatories at their disposal. The Observatoire de Haute Provence in southern France is one such observatory and the author describes his visit and discussions with those who participated in the discovery of a Jupiter-like planet around the star 51 Pegasi, in 1995. The wobble of the star is detected by spectroscopic method using the Doppler effect.

There are other methods too, which are increasingly employed in planetary searches. Later chapters describe the gravitational microlensing method, where even a dark object like a planet may be detected by the bending of light by its force of gravity. Astrometry, interferometry and even the partial eclipse of the star by the planet are methods being tried. That sky is the limit for human efforts, is borne out by the ambitious space-borne projects described in Chapter 14. Whether the expected level of accuracy is reached or not, the levels in themselves show human ambitions to scale greater and greater heights in this quest for the tiny effect that a planet may produce on the parent star.

Even a relatively young subject is not free from its controversies, occasionally aired by the author to warn the reader that not all is smooth-running. Thus there is an account of David Black's doubts about planets discovered by looking for wobbles, spectroscopically. The account of Barnard's star and the claim for one (or two) planets round it and how it was shot down also makes interesting reading, although it belongs mostly to the pre-1990 era.

Towards the end, the author touches upon the question of life: are we alone in the universe? Since life is more easily nurtured on a planet moving at a suitable distance from a star which provides the necessary energy for sustenance, the search for other planets is linked with the above question as well. It is somewhat surprising and disappointing that while describing ideas on life in space, the author bypasses the highly original ideas (relating to panspermia) of the 1970s and 1980s, of Fred Hoyle and Chandra Wickramasinghe, which are now beginning to be taken more seriously.

The author is a journalist and a science writer. This could be inferred from his style, which is inevitably different from that of a professional scientist writing for the lay public. Thus there is frequent reporting of what the participating scientists say and an uncritical acceptance of their statements. The informality of writing and accounts of personal visits to far-off places like Chile or Mauna Kea in Hawaii (where many large optical telescopes are to be found) help put the reader at ease, but they also sometimes detract from the scientific account.

To the lay reader, most of the media hype is showered on such exotic topics as big bang and black holes. While big and glamorous telescopes grab all the headlines, a quiet revolution is taking place in the field of planetary astronomy, the field which nurtured astronomy in the old historic days. It is a revolution to which tiny 1–2 m class telescopes are contributing in no small way. As the searches for extra-solar planets grew, it was necessary that some non-technical account for the layperson appeared in print. By writing a very readable account, Bruce Dorminey has filled a much-needed slot.

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