

## EXCERPT.....

### → **THE LIVING COSMOS: OUR SEARCH FOR LIFE IN THE UNIVERSE**

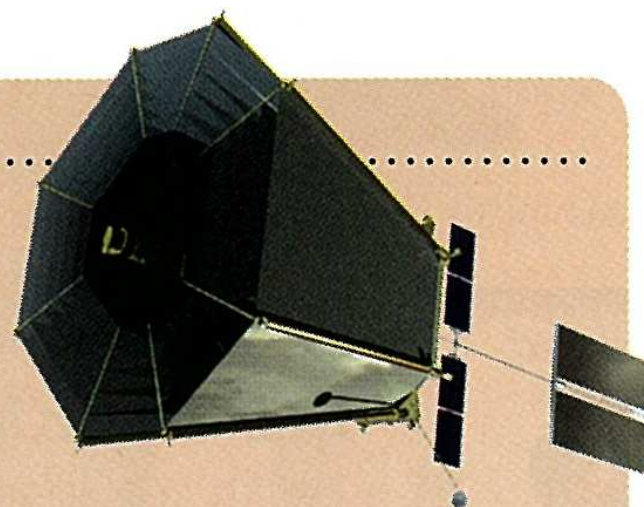
by Chris Impey. Random House, 2007 (\$27.95)

*Impey, who is at the University of Arizona's Seward Observatory, provides a comprehensive, and at times philosophical, examination of whether we are alone in the universe. Much of the culminating discussion*

*focuses on a famous equation used to assess the possibility of life elsewhere in the universe:*

"The young researcher went to the blackboard and paused. The meeting had no agenda, and he wanted to give some structure to the discussion. After thinking for a bit, Frank Drake wrote an equation on the board, not realizing that it would later bear his name and attain iconic status...."

"The Drake Equation is a series of numerical factors that combine to give  $N$ , the number of communicating civilizations in the galaxy at any particular time.... The first factor is the raw material for communication, or the rate at which stars are born that will live long enough to host biology. The next six factors account for the odds that there is any transmission to listen to, either deliberate or inadvertent. Two are astronomical: the fraction of stars with planets and the mean number of habitable planets per star. The next two are biological: the fraction of habitable planets where life actually develops and the fraction of these where intelligent life evolves. The last two depend on culture or sociology: the fraction of civilizations that do communicate over interstellar distances and the typical lifetime of the communicating technology."



**NASA's Terrestrial Planet Finder, scheduled for launch in 2015.**