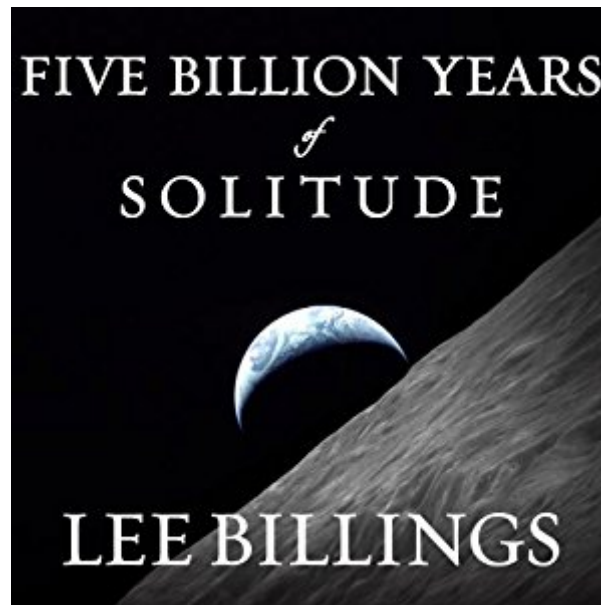


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# Five Billion Years Of Solitude: The Search For Life Among The Stars



## Synopsis

Since its formation nearly five billion years ago, our planet has been the sole living world in a vast and silent universe. Now, Earth's isolation is coming to an end. Over the past two decades, astronomers have discovered thousands of "exoplanets" orbiting other stars, including some that could be similar to our own world. Studying those distant planets for signs of life will be crucial to understanding life's intricate mysteries right here on Earth. In a firsthand account of this unfolding revolution, Lee Billings draws on interviews with top researchers. He reveals how the search for other Earth-like planets is not only a scientific pursuit, but also a reflection of our culture's timeless hopes, dreams, and fears. This is a compelling story of the pioneers seeking the meaning of life in the infinite depths of space.

## Book Information

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## Customer Reviews

About a third of the way into his new book *Five Billion Years of Solitude* (Current, 2013), Lee Billings describes a time capsule that was sealed in July of 1963 near the Cabrillo Freeway in San Diego, though it has since been moved. Within it was a book that looked a century ahead, with contributions from politicians, astronauts, military figures and others about the world of the future. Copies of the book, titled *2063 A.D.* are available, and within them one can find the musings of Nobel-laureate Harold Urey, who worried about our use of energy and noted that largely because of the need for electricity, US fossil fuel consumption had increased eightfold between 1900 and 1955. Was the trend sustainable over the long haul? Urey doubted it, and he was hardly alone, for the need for energy seems to impose sharp limits on what a society can do. Billings notes the work

of Tom Murphy (UC San Diego), who works with a long-term 2.3 percent increase in energy usage per year, yielding a factor-of-ten increase every century. Things happen quickly over time -- by 2112 the world is consuming 120 terawatts, a number that rises to 1200 by 2212. Cover every bit of land with photovoltaic solar arrays and assume 20 percent efficiency and you can supply the world of 2287, which will need something on the order of 7,000 terawatts. You can see where this is going, and Billings is expert at connecting the march of numbers with real events and the people who can explain them. First, here is what happens once we've got all that land covered with solar-power arrays: "From there, increasing the efficiency of the photovoltaics to a miraculous 100 percent and covering the oceans as well as the continents would allow the 2.

This book opens with the visit of the author to Frank Drake the great pioneer of the search for Extraterrestrial Life. In this chapter Lee Billings tells the story of SETI's getting underway and outlines the roles of the various distinguished scientists present in a key first meeting among whom were Drake, Philip Morrison, Harold Urey, Joshua Lederberg and a young and most optimistic Carl Sagan. For this riveting chapter alone the book is worthwhile. In it Billings also explains why SETI has in a sense gone out of fashion and why scientific enthusiasm in astrophysics focuses in good part on the search for Exoplanets. Very simply fifty years of SETI have yielded nothing in the way of concrete results, while in the past twenty years or so there have been revealed close to one-thousand exoplanets including most recently those earth-like in size. Still even in this area as Billings will go on to relate Progress is not where it could be. One major theme of the book is that Humanity and most especially its leading nations are not properly invested in the kind of tools and equipment that could more deeply investigate the Exoplanets. The tools are not available now to know which planets are good candidates for sustaining life. We cannot now read their biosignatures, cannot know whether they have liquid water, suitable atmospheres, methane.oxygen etc. Billings too talks about the search for exoplanets in a series of conversations with leading researchers. These conversations are valuable both in exploring the complicated nature of the search for Life in other worlds, and presenting portraits of the individual scientists. One of the surprising and most appealing elements in the book is Billings meditations on the whole question of human Aloneness and the search for life.

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