

IN MEMORIAM

DR. HAROLD P. KLEIN (1921 – 2001)



The flag flew at half-mast today at NASA's Ames Research Center in honor of Dr. Harold P. ('Chuck') Klein, Mars scientist and the 'father' of Astrobiology. He passed away Sunday July 15th at the age of 80 due to complications from cancer with little suffering and after having been visited by both family and friends the night before. Klein was an unassuming, hard-working man and dedicated scientist



Origins of Life and Evolution of the Biosphere **31**: 549–551, 2001.

whose exceptional career touched many of our lives. Chuck is best known in the scientific community for having served as Biology Team Leader for the Viking mission to Mars. The first Viking lander touched down on the Chryse Plain of Mars 25 years ago today, July 20, 1976. The mission, which sought to answer age-old questions about life on Mars, disappointed some, yet provided tantalizing 'evidence of interesting chemistry' and demonstrated what Klein called the 'miracle' of safely landing a complex craft on a distant planet to perform such important experiments. It had been his responsibility to find the best compromise between the spacecraft engineers, who wanted to keep the spacecraft as lightweight and simple as possible to ensure that it would successfully arrive at and land on Mars, and the scientists, who were loath to exclude any of their experimental instruments from Viking and possibly diminish their chances of finding evidence of life. Eminent scientists associated with the Viking mission have stated that there would not have been a Viking mission at all without Klein's intensive scientific and managerial initiative, wisdom, and creativity. From January 1963, when he arrived at NASA's Ames Research Center to become the first Chief of the nascent Exobiology Division, until 1984 when he retired after having served as Ames' first Director of Life Sciences, Chuck played a seminal role in the creation and implementation of many programs in space and life sciences. He was responsible for the establishment or initiation of many programs at Ames or within NASA, including: NASA's Exobiology Program (the foundation of the current NASA Astrobiology Program), NASA's Gravitational Biology Program, Ames' Biomedical Program, and the Space Shuttle biological flight experiments program, the SL-1 mission (NASA's first dedicated life sciences space laboratory). His efforts to build these programs included overseeing the construction of a dedicated life science laboratory building and attracting a permanent staff of life and space scientists of international caliber as well as a host of visiting scientists. Klein felt that involvement in the international scientific community was vital and he was an important figure in joint US/USSR scientific ventures at a time when communications between the two countries was very restricted. He was involved with activities on the Cosmos project from the very beginning. He recalled the conversations when the newly formed Joint Working Group for Space Biology and Medicine met for the first time in 1971. 'Most of the discussion at the time centered around biomedical and life support issues. But I had some informal conversations with Gazenko and Genin about what they were investigating with lower organisms. I think the seeds for what was to become the Cosmos interaction were sowed at that time. If we had not gotten along so well then, there would have been nothing'. In 1974, the Soviet Union invited the US to participate in the Cosmos program. 'At first, we didn't know there would be a continuing series of Cosmos flights on which we could participate. We were just invited onto one flight. The Soviets probably wanted to see how things would go from their side. Since the first time worked out well and the results were interesting, they invited us onto the next flight two years later'. The first US experiments on Cosmos, and the process to implement them, were

both quite simple. 'They were not anything like the later experiments. There were no announcements of opportunity, no big peer reviews. We just did them because the spacecraft was available, specimens were going to be available, and we saw a chance to get some work done'. In testament to his being named to the Ames Hall of Fame in 2000, it was stated that 'Throughout his career, [Chuck] was the primary force which established Ames' reputation as the key NASA institution for the study of astrobiology in all its various facets, including exobiology, gravitational biology, and biomedicine, (with the initiation of Space Shuttle experiments in these areas) ... More than any other individual, Harold P. Klein is the one who built the foundation upon which rests Ames' current leadership in astrobiology'. Because of his vision and leadership, Ames has attained recognition as the key NASA center for many new programs in these areas as well as a national and international reputation for excellence in scientific research. In addition to his key role within NASA, Chuck contributed to the greater scientific community. He was an educator and served as a senior advisor and consultant on issues related to exobiology and Mars science within the international scientific community. Before coming to Ames, he was for many years a Professor and Chair of the Dept. of Biology at Brandeis University in Massachusetts. During his years at Ames he was a frequent lecturer on exobiology and taught special courses at Stanford University, Santa Clara University, and San Jose State University; he also enjoyed presenting lectures on Mars to school and community groups. He freely gave interviews, answered letters and e-mail from school children and members of astronomy clubs about Mars. He was involved for most of his career with COSPAR (the Committee for Space Research) and ISSOL (the International Society for the Study of the Origin of Life), presenting and publishing papers, serving on top scientific advisory committees, peer review boards, and editorial boards. Never one to rest upon his laurels, Chuck had remained active in his scientific pursuits after his retirement from the civil service, as a Principal Investigator with the SETI Institute. He continued his scientific collaborations with Ames' Space Science Division personnel until just weeks before his death. His most recent research interests focused on selection of sites for collection of and subsequent analysis of returned Mars samples and on development of planetary protection guidelines for Mars exploration. Klein is survived by his daughter, Juidi Alongi, granddaughters Sara and Gina Alongi, grandsons Joshua and Simon Troll, and great-grandson Kyle Troll. He was respected for his intelligence, dedication, and good sense; loved for his playfulness, humor, and generosity; valued for his steadfast friendship and wisdom. He was a good cook and made very good martinis. We shall miss him dearly. Condolences can be directed to his daughter Juidi Alongi at alongiclan@aol.com.

Sara Acevedo, July 20, 2001