Obituaries

Prepared by the Historical Astronomy Division

ARTHUR DODD CODE (1923–2009)

Former AAS president Arthur Dodd Code, age 85, passed away at Meriter Hospital in Madison, Wisconsin on 11 March 2009, from complications involving a long-standing pulmonary condition. Code was born in Brooklyn, New York on 13 August 1923, as the only child of former Canadian businessman Lorne Arthur Code and Jesse (Dodd) Code. An experienced ham radio operator, he entered the University of Chicago in 1940, but then enlisted in the U.S. Navy (1943–45) and was later stationed as an instructor at the Naval Research Laboratory, Washington, D.C. During the war, he gained extensive practical experience with the design and construction of technical equipment that served him well in years ahead. Concurrently, he took physics courses at George Washington University (some under the tutelage of George Gamow). In 1945, he was admitted to the graduate school of the University of Chicago, without having received his formal bachelor's degree. In 1950, he was awarded his Ph.D. for a theoretical study of radiative transfer in O- and B-type stars, directed by Subrahmanyan Chandrasekhar.

Following a one-year appointment at the University of Virginia (1950–51), Code was hired onto the faculty of the Department of Astronomy at the University of Wisconsin-Madison (1951–56). He then accepted a tenured appointment at the California Institute of Technology and the Mount Wilson and Palomar Observatories (1956–58). But following the launch of *Sputnik*, Code returned to Wisconsin in 1958 as full professor of astronomy, director of the Washburn Observatory, and department chairman so that he could more readily pursue his interest in space astronomy. That same year, he was chosen a member of the Space Science Board of the National Academy of Sciences (created during the International Geophysical Year) and shortly became one of five principal investigators of the original NASA Space Science Working Group. In a cogent 1960 essay, Code argued that astrophysical investigations, when conducted from beyond the Earth's atmosphere, "cannot fail to have a tremendous impact on the future course of stellar astronomy," a prediction strongly borne out in the decades that followed.

In 1959, Code founded the Space Astronomy Laboratory (SAL) within the UW Department of Astronomy. Early photometric and spectrographic equipment was test-flown aboard NASA's X-15 rocket plane and Aerobee sounding rockets. Along with other SAL personnel, including Theodore E. Houck, Robert C. Bless, and John F. McNall, Code (as principal investigator) was responsible for the design of the Wisconsin Experiment Package (WEP) as one of two suites of instruments to be flown aboard the Orbiting Astronomical Observatory (OAO), which represented a milestone in the advent of space astronomy. With its seven reflecting telescopes feeding five filter photometers and two scanning spectrometers, WEP permitted the first extended observations in the UV portion of the spectrum. After the complete failure of the OAO-1 spacecraft (launched in 1966), OAO-2 was successfully launched on 7 December 1968 and gathered data on over a thousand celestial objects during the next 50 months, including stars, nebulae, galaxies, planets, and comets. These results appeared in a series of more than 40 research papers, chiefly in the *Ap.J.*, along with the 1972 monograph, *The Scientific Results from the Orbiting Astronomical Observatory (OAO-2)*, edited by Code.

Between the OAO launches, other SAL colleagues of Code developed the Wisconsin Automatic Photoelectric Telescope (or APT), the first computer-controlled (or "robotic") telescope. Driven by a PDP-8 mini-computer, it routinely collected atmospheric extinction data. Code was also chosen principal investigator for the Wisconsin Ultraviolet Photo-Polarimeter Experiment (or WUPPE). This used a UV-sensitive polarimeter designed by Kenneth Nordsieck that was flown twice aboard the space shuttles in 1990 and 1995. Among other findings, WUPPE observations demonstrated that interstellar dust does not appreciably change the direction of polarization of starlight, thereby supporting its possible composition as graphite.

Code was the recipient of numerous awards, including the Professional Achievement Award of the University of Chicago Alumni Association (1969), NASA's Public Service Award (1970), and its highest honor, the Distinguished Public Service Medal (1992). He was elected to the National Academy of Sciences (1971), the International Academy of Astronautics (1972), chosen a Fellow of the American Academy of Arts and Sciences (1974), and elected vice president (1976–78) and president (1982–84) of the AAS. He was a member of the Board of Physics and Astronomy of the National Research Council and served for many years on the board of directors (and later was appointed chairman, 1977–80) of AURA, Inc. Code was closely involved with AURA's bid to manage the Space Telescope Science Institute and served as the latter's interim director (15 January–1 September 1981). He also played a significant role in establishing the WIYN (Wisconsin, Indiana, Yale, and NOAO) consortium and Observatory. Code's numerous achievements reflect his competencies as both a theorist *and* experimentalist/observer, along with noted administrative skills.

During his lengthy career at Wisconsin, Code supervised twenty doctoral dissertations (one of which was co-directed with Robert Bless). Following his retirement in 1995, he and his wife relocated to Tucson, Arizona, where he was appointed adjunct professor at the University of Arizona's Steward Observatory and concurrently WIYN Observatory Scientist. At the time of his death, he was the Joel Stebbins and Hilldale Professor of Astronomy Emeritus at UW—Madison. Code belonged to the First Unitarian Church of

Madison. He is survived by his wife of 65 years, Mary Guild Code, their four children, Alan, Douglas, Edith, and David, and six grandchildren.

Among other sources, this essay draws upon the 1982 oral history interview with Code, conducted by David H. DeVorkin (National Air and Space Museum/Smithsonian Institution); remarks made by the late Donald E. Osterbrock at Code's 80th birthday dinner (2003), Frank K. Edmondson's (1997) history of AURA, and previous work published by the author on the WEP. One box of Code's papers (1958–1985) is preserved at the Memorial Library Archives, UW—Madison. Additional contributions toward this essay have come from Robert W. Smith, Robert C. Bless, and the members of Code's family.

Jordan D. Marché II

RODGER DOXSEY (1947–2009)

Rodger Doxsey, an astronomer at the Space Telescope Science Institute, passed away on October 13, 2009, after a prolonged illness. For the past 20 years, Rodger has been known to be truly the go-to guy for making the Hubble Space Telescope perform as it has. I have always argued that no person is truly irreplaceable. I still believe that to be true. However, my colleague and friend Rodger Doxsey came probably as close as anyone ever could to being irreplaceable. I know of no one who had a deeper and more thorough understanding of the workings of HST than Rodger had. In fact, there used to be a joke around the Institute, that when Rodger goes on vacation, the telescope experiences some malfunction.

Usually when we retire a computer, we make sure that all the information on it is stored elsewhere. Unfortunately we cannot do the same with the human brain. Rodger was always driven by one passion—the desire to make the Hubble Space Telescope the most productive scientific instrument ever. He has been involved with, and often led, every effort to prolong the life of the telescope, and to make it operate more efficiently.

Here is a description by another Hubble pioneer, astronomer John Bahcall, of the birth of the "Hubble Space Telescope Snapshot Program," a wonderful example of one of Rodgers many brainchildren:

"The Snapshot program originated in a lunchtime conversation between Rodger Doxsey and myself in the STScI cafeteria sometime in the spring of 1989. We were both late to lunch and probably were the only people in the cafeteria. The principal topic of conversation was the expected low observing efficiency of the HST. Rodger described the extraordinary difficulty in making a schedule that would use a reasonable percentage of the available time for science observations. Slewing was slow and changing instruments or modes of observing was time-consuming. Also, the scheduling software that existed in 1989 was not very powerful. I asked Rodger, without thinking very carefully about what I was saying, if it would be possible for the software he was developing to insert new objects in the holes in the schedule. I wondered aloud if one could improve the efficiency by choosing new objects, close to the directions of the scheduled targets, from a previously prepared list of interesting objects scattered over the sky. I remember that Rodger suddenly became very quiet, thought about the question, and finally replied something like: 'In principle, it is possible.' The Snapshot program was born at that lunch."

Rodger Doxsey was born in Schenectady, New York, on March 11, 1947. He is survived by his companion, Vicky Balzano, who also works at STScI; his father, John, of Cleveland, Ohio; and his four siblings, Martha Doxsey of Edmonton, Alberta; Douglas Doxsey of Ironwood, Michigan; Virginia Doxsey of Boston; and Mary Lou Shane of Duxbury, Vermont. As a boy, his sisters described, he used to be absorbed in crossword puzzles and jigsaw puzzles. At MIT, where he studied physics and earned his Ph.D., he became fascinated with rowing, and he kept returning every year to race with his old crewmates in the Head of the Charles Regatta. He was also very fond of the work of the American artist Alexander Calder, and a lithograph of one of his drawings hung on the wall of his office.

Very few people know of a ritual Rodger and I have developed over the years. During the first servicing mission and subsequent observatory verification, Rodger and I used to spend nights at the Institute, following all the tests for the instruments. After the performance test of each instrument, we shook hands ceremoniously. This became somewhat of a superstition, and consequently, in all the following servicing missions we continued with the same ritual. During SM4, Rodger was already too weak to attend all the activities continuously. We did meet, however, after the completion of SM4, and performed the ritualistic handshake to celebrate all the instruments.

Goodbye friend. Hubble's Guardian. To me, you will always be irreplaceable.

Mario Livio
Space Telescope Institute

FRANK K. EDMONSON (1912–2008)

Hanging in the basement of Kirkwood Observatory on the Indiana University campus is a battered sign, dated Aug 31, 1932, announcing "Indiana Univ. Eclipse Station." While the path of totality passed well north of Bloomington, IN, where only 80% of the Sun's disk was covered, the eclipse made a lasting impression on the young Frank Kelley Edmondson, then an undergraduate student at Indiana University.

Frank was born on August 1, 1912, in Milwaukee, Wisconsin, to Clarence Edward Edmondson and Marie (Kelley) Edmondson. Growing up in Seymour, Indiana, he became interested in astronomy at an early age, reading voraciously from the "Book of Knowledge" at an aunts house (The Book of Knowledge Set of Encyclopedias). He learned magic and was acquainted with Blackstone, the magician. He took ballet lessons and performed with his brother. He was a YMCA Camp Counselor at Camp Bedford where he taught natural sciences to the campers. He worked one summer as a cook on an ore boat on Lake Michigan. In high school he sang in a musical—and wore a false beard. In 1944 he grew his own beard, one of only two on the IU faculty at the time, and he kept the beard all the many years since. In 1996, Frank was elected to the Shields High School "Wall of Fame."

After graduating from Shields High School in 1929, Frank enrolled at Indiana University. He was a member of the IU intercollegiate debate team for four years. He was initiated into Phi Beta Kappa as a junior and was a member of Sigma Xi. He graduated in 1933 and earned a Master's degree in 1934 based on a thesis ("An Analysis of the Radial Velocities of Twenty-One Globular Star Clusters") and professional experience earned while holding the Lawrence Fellowship at the Lowell Observatory in Flagstaff, Arizona in 1934–35, where he worked as an observing assistant to Clyde Tombaugh. Despite his close association with Lowell, Tombaugh, and Pluto, Frank approved of the decision of the International Astronomical Union in 2006 to change Pluto's status to a dwarf planet.

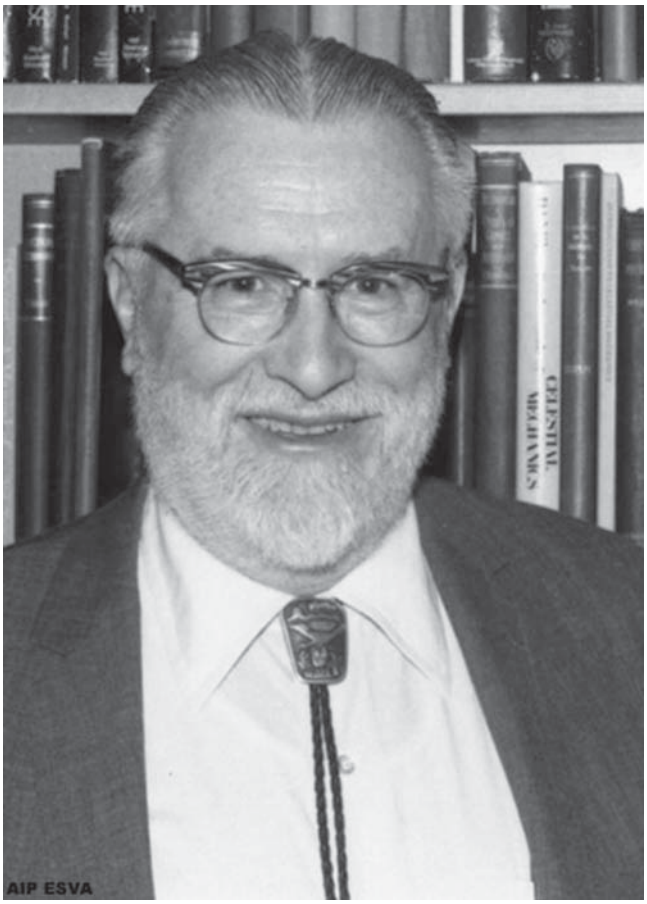
While in Flagstaff, Frank met Margaret Russell, the youngest daughter of famed American astronomer Henry Norris Russell of Princeton University. The young couple instantly bonded and became engaged after only two weeks. He and Margaret were married on November 24, 1934. Frank and Margaret remained inseparable until her death in 1999, always together at meetings of the American Astronomical Society, the International Astronomical Union, and elsewhere.

Studying under astronomer Bart Bok, Frank received his Ph.D. in astronomy in 1937 from Harvard University, where he completed his dissertation on "The Absorption of Light in the Galaxy," and joined the faculty as an Instructor in Astronomy at Indiana University. Frank became the second member of the Astronomy Department, with Professor W. A. Cogshall, housed in Kirkwood Observatory. Frank served as chair of the department from 1944 until 1978. Under his leadership, the University acquired the Goethe Link Observatory in Brooklyn, IN, (a gift from Dr. Goethe Link, a noted Indianapolis physician and avid amateur astronomer), established a graduate program in astronomy, and enlarged the Department of Astronomy from two faculty members to eight. In one of his favorite stories, Edmondson bet Professor Cogshall a chocolate ice cream cone that President Herman B Wells would fund a new position for the Department, knowing full well that Wells had already agreed. Frank retired from IU in 1983.

When many asteroids were lost during World War II, Frank and his colleague James Cuffey established the Indiana University Asteroid Program. Frank is credited with determining the orbits of 119 asteroids from 7000 photographic plates taken with a 10″ astrographic telescope at the Goethe Link Observatory. Frank selected names for each of these asteroids, honoring IU Presidents, prominent scholars, and important Hoosier and astronomical landmarks. Asteroid 4300 Marg Edmondson he named for his wife Margaret.

During his years as a faculty member at Indiana University, Frank advised Dr. Alfred Kinsey on statistical techniques for his pioneering studies of human sexuality, and also shared with Kinsey an abiding interest in classical music. The music and the programs at the IU School of Music brought great joy to Frank over his career at IU. His memory for programs he had heard in the past was phenomenal.

Frank is best known in Bloomington for his remarkable skill as an educator. He loved teaching. He taught elementary



astronomy to literally thousands of students, often taking advantage of his knowledge of music to introduce astronomical topics with appropriate musical selections. His popular, award-winning, televised astronomy course was broadcast to students throughout the state and is widely remembered even today.

Following in the tradition of IU's legendary President Herman B Wells, whom he greatly admired, Frank devoted his career to service. In 1957 Indiana University became one of the seven founding members of the Association of Universities for Research in Astronomy (AURA), which founded the Kitt Peak National Observatory. Following the formation of AURA, Frank served as a Program Director for Astronomy at the National Science Foundation (1956–1957), helping to assure funding for the new national observatory. He served as Vice President of AURA from 1957–1961, as President of AURA (1962–1965), and as a member of the Board of Directors (1957–1983). Upon his retirement in 1983, he became the AURA Historian writing "AURA and its US National Observatories" (Cambridge University Press, New York, 1997), based on his personal experience plus 10 years (1978–88) searching archives and taping 85 oral histories. In 1964 Frank was awarded the Order of Merit by the Republic of Chile for his work in helping to establish the Cerro Tololo InterAmerican Observatory. In 2007, he commemorated the 50th anniversary of the founding of AURA by naming one of the remaining Indiana asteroids Aurapenenta.

Frank served as the Treasurer of the American Astronomical Society for 21 years, from 1954 until 1975, and was also a leader of the Minor Planet Center of the International As-

tronomical Union, serving as its President from 1970–1973, and chairing the U.S. National Committee of the International Astronomical Union in 1963–1964. Frank was honored in 2001 for his attendance at American Astronomical Society (AAS) Meetings over a seventy year span 1931–2001. Professor Cogshall took Frank to his first AAS meeting at Perkins Observatory while he was still a junior at Indiana University. In his reminiscence in the American Astronomical Society's First Century volume, Frank recalls that Einstein played the violin at the banquet of the Princeton meeting in 1935, and that Koussevitsky conducted a concert by the Boston Symphony Orchestra in Harvard Yard at the 1936 meeting, Franks fourth AAS meeting. Frank's fifth AAS meeting, in 1937, was held in Bloomington shortly after he joined the faculty.

Closer to home, Frank assisted Indiana University in many ways as it continued to grow during the 20th century, and he received a Distinguished Alumni Service Award from the University in 1997. His contributions to astronomy where honored by the Indiana State Legislature on the centennial of the Department of Astronomy in 1995. Frank's commitment to service is a hallmark of our campus, and one that the Department of Astronomy is proud to continue.

Indiana University Emeritus Professor Frank Kelley Edmondson passed away on December 8, 2008, at Bloomington Hospital, at the age of 96. His wife, his parents and two brothers (W. T. Edmondson and Richard H. Edmondson) predeceased him. He is survived by his two children: Margaret Olson (Edward) of Urbana, Illinois, and Frank K. Edmondson Jr. (Vickie) of Seattle, Washington, a sister-in-law (Sally Edmondson of Philadelphia) and by six grandchildren (Mylene Melson, Yvonne Edmondson, Catherine Edmondson, Eric Olson, Jeffrey Olson, Charissa Young). He is also survived by twelve great-grandchildren, three great-great-grandchildren, and by several nieces and nephews.

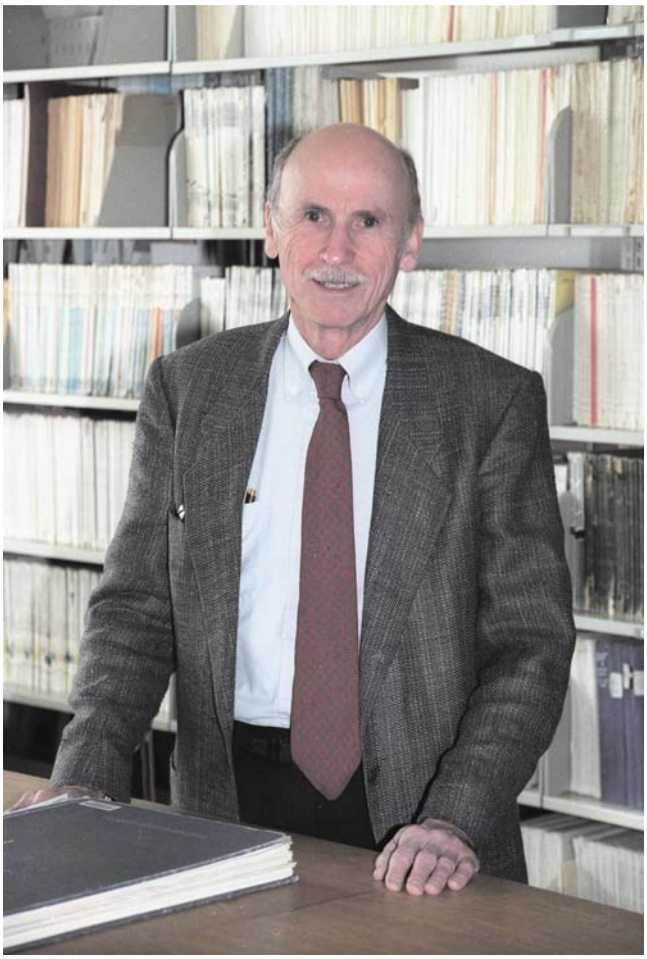
Frank enjoyed the many coincidences that sparked new connections and initiatives in his career. He liked to say that he was the right person in the right place at the right time. That was almost always true, and often because Frank himself understood and anticipated what would be needed, and made sure to be ready with an answer or guidance. He has been an inspiration to generations of students and colleagues and will be long remembered.

Catherine A. Pilachowski
Indiana University
Margaret Edmondson Olson
Frank K. Edmondson Jr.

JOHN W. FIROR (1927–2007)

John W. Firor, a former Director of the High Altitude Observatory and the National Center for Atmospheric Research, and a founder of the Solar Physics Division of the American Astronomical Society, died of Alzheimer's disease in Pullman, Washington on November 5, 2007, he was 80. He was born in Athens Georgia on October 18, 1927, where his father was a professor of agricultural economics.

John had an unusually diverse scientific career. His interest in physics and astrophysics began while serving in the army, during which time he was assigned to the Los Alamos



National Laboratory, where he guarded highly radioactive materials (many have heard him describe how informal the protections were compared to later times). After his service he returned to college and graduated in physics from Georgia Tech in 1949. He received his Ph.D. from the University of Chicago in 1954, writing his thesis on cosmic rays under John Simpson. John Firor would later remark that: "If you needed cosmic rays to actually do anything, you are sunk." That thought, partly in jest, may help explain his motivation for moving to so many new scientific and management pursuits.

John moved from cosmic ray physics to radio astronomy (particularly of the Sun) when he began work at the Carnegie Institution of Washington's Department of Terrestrial Magnetism, where he remained until 1961. During this time, he met Walter Orr Roberts, then the Director of the High Altitude Observatory (HAO) in Boulder, Colorado. HAO was then affiliated with the University of Colorado. In 1959, a movement began to upgrade the atmospheric sciences in the United States by establishing a National Center, where the largest, most important atmospheric research problems could be addressed. Roberts became the first Director of NCAR, as well as the first president of the University Corporation for Atmospheric Research (UCAR), the consortium of universities that was commissioned to manage and staff the new Center. HAO became a scientific division of NCAR (Roberts made it a requirement if he was to be NCAR Director). He chose John to be the new HAO Director. John was 33 then; his leadership potential was recognized very early.

While Director of HAO, John presided over a very active scientific program that focused on non-equilibrium thermodynamics, radiative transfer, plasma physics, coronal spectroscopy, geomagnetism, physics of the Earth's upper atmosphere, and solar activity. Prominent scientists such as Jack Evans, Sydney Chapman, Gene Parker, Leo Goldberg and Donald Menzel visited to share their insights and enthusiasm with the HAO staff. John was also an active participant in HAO's well-known solar eclipse expeditions, traveling to New Guinea and to Lake Chad in Africa. Late in his tenure as HAO Director, he took the lead in helping to improve the involvement of the AAS in solar physics, and solar physicists in the AAS. Having led the AAS committee that planned its birth, he was the founding chair of the new Solar Physics Division. Much less importantly, he gave me a summer position in 1966 when I was joining the faculty at CU—that is when I first met John.

In 1968, John became the Director of NCAR when Walter Roberts decided to split the directorship from the Presidency of UCAR. As NCAR Director, John had responsibility for a vastly broadened program compared to his HAO days. NCAR, the largest NSF supported research center, conducted research covering all of atmospheric sciences, as well as oceanography and solar-terrestrial physics. It also provided major observational and computational facilities to the atmospheric sciences community. John showed very quickly he understood and could guide all of it. I came to know John best during this period, because in 1971 he chose me to head the Advanced Study Program, which supported (and still supports) postdoctoral and graduate education.

In that time, budgets were good, and NCAR was a relatively collegial, informal place. But in December 1973, that all changed suddenly. NCAR management was reviewed by an NSF-appointed Joint Evaluation Committee (JEC), whose report raised many questions. Walter Roberts resigned as UCAR President, and John had the task of working with the UCAR Board to make major changes. During this time, John asked me to put aside my ASP duties to assist him. Over the next 18 months, NCAR was restructured, several Division Directors replaced, a new, more rigorous scientific appointment system was developed, and a major budget cut was absorbed. John did all of this; in my view, it was heroic. Then the UCAR Board appointed a new UCAR President and NCAR Director, Francis Bretherton, and John became the NCAR Executive Director. John used to say that many people asked him how he felt about being 'demoted'—always gracious, he said he never saw it that way. In fact, he was mentoring Bretherton, who was very junior to John in experience, never having held a major management position. The Bretherton–Firor 'team' managed UCAR until 1980.

Then a new UCAR and NCAR management was chosen, and John had to decide what to do next. He took a sabbatical and became more deeply involved in environmental issues. But this interest had been kindled much before. As early as 1970, he was writing and speaking about environmental questions while NCAR Director. When he returned to NCAR, he became the Director of the Advanced Study Program (ASP), what I had been a decade before. He served NCAR in that role until 1996. When he stepped down, he remarked that he had been a member of the NCAR Directors Committee for 34 years; a record that he judged should never be broken.

While John was attentive to the needs of the post-docs and graduate students his program supported, ASP was a platform for him to pursue his environmental interests. He spoke and wrote clearly and influentially on environmental issues. He served on the Boards of several important environmental organizations and wrote two well received environmental books: "The Changing Atmosphere: A Global Challenge" (1990), and, with his wife Judith Jacobsen "The Crowded Greenhouse: Population, Climate Change and Creating a Sustainable World" (2002). After ASP, he continued his focus on environmental issues as a member of the Environmental and Societal Impacts group at NCAR. John retired from NCAR in 2005.

John had many active pursuits beyond his professional work. He was an accomplished pilot, with licenses for flying single and multiengine aircraft, sailplanes, and balloons. He piloted a sailplane in at least one meteorological field program. He also was an avid river rafter.

John faced the disease that took his life as he did all events in his life, with grace and dignity. He endured the loss of two spouses to cancer, Merle Jenkins Firor in 1979, and Judith Jacobsen in 2004.

John is survived by his four children with his first wife, Daniel Firor of Seattle, Washington; Kay Firor of Cove, Oregon; James Firor of Hotchkiss, Colorado, and Susan Firor of Moscow, Idaho; a sister; a brother; and three grandchildren. His children and his many friends in Boulder and elsewhere gave him loving support during his days battling Alzheimer's.

John used to define a 'southern gentleman' as a man dressed in white linen suit on a hot dusty summer day in a small Georgia town who could cross the street without breaking a sweat. John and his intellect and his management ability were like that; he could deal gracefully and successfully with almost anything that came his way. A man of great accomplishment, he rarely showed an ego to match. In the darkest days following the JEC Report, he almost single-handedly invented a new NCAR scientific appointment system. He chose the first cadre of 'senior scientists' to populate the top rank. There were about eighteen members in this group, but there was one name conspicuously absent—his own. This 'error' was quietly corrected by the UCAR Board.

Peter A. Gilman
National Center for Atmospheric Research

RUSSELL MAKIDON (1971-2009)

Russell Benjamin Makidon died at the age of 38 in Baltimore on June 22, 2009. Complications following surgery to remove a tumor cut his life tragically short.

Russ was a Mission Systems Scientist at the Space Telescope Science Institute (STScI), which he joined straight out of graduate school in 1997. He brought both the force of his intellect and his superb people skills to STScI, where he served the Institute and the broader community with extraordinary effectiveness. Russ was pivotal in helping to develop the wavefront sensing and control system of the James Webb

Space Telescope (JWST). He was also a member of the NSF Center for Adaptive Optics at Lick Observatory.

Born to Cathy Ann and Peter Makidon, a worker at General Motors, on January 22, 1971, in Bay City, Michigan, Russ was an only child. He was raised by his mother, in Florida, and her parents, in Munger, Michigan. He is survived by his mother, his grandfather Benjamin Franklin Histed, and his father.

In addition to his interest in science, Russ was a talented artist and his sketches had appeared in statewide and national competitions. Turning down a scholarship at the Savannah College of Art and Design, he studied physics and astronomy at the University of Michigan, followed by a Masters under Stephen Strom at the University of Massachusetts. He measured pre-main sequence stellar rotation in NGC 2264 and other OB associations, providing insight on the role that circumstellar disks play in setting stellar angular momentum in young stellar clusters and associations. This work, and his extraordinary skills in facilitating scientific exchange, led to his co-investigatorship on the Hubble Space Telescope (HST) Orion Treasury Project.

Russ advanced the understanding of high contrast imaging, especially the relation between the properties of a wavefront control or adaptive optics systems and the physics of coronagraphic imaging. He developed a practical understanding of coronagraphy, performing timely and relevant numerical studies that laid a foundation for several recent extreme adaptive optics coronagraphs. He co-founded the Lyot Project coronagraph used at the US Air Force AEOS telescope on Maui. This instrument produced the first images of the disk surrounding the star AB Aurigae showing structure at the scale of our solar system. Russ' detailed modeling of AEOS' imaging prompted the US Air Force to upgrade their system with a fully-functioning deformable mirror, which improved its coronagraphic performance markedly. The existing P1640 integral field coronagraphic spectrograph on Palomar Hale and the state-of-the-art Gemini Planet Imager coronagraph, both dedicated to imaging extra-solar Jovian planets and protoplanetary disks, owe a debt to Russ' organized quantitative forays into the unknown.

At STScI Russ worked on several essential aspects of HST: its Fine Guidance Sensors, maintaining the telescope's focus, and helping to produce the Hubble Deep Field South, one of the deepest images of the sky at that time. In his last few years Russ played a key role in preparing to monitor and control the optical quality of JWST after launch. This crucial activity will affect the quality of JWST's entire scientific output. Russ understood the optical, mechanical, and operational complexities of JWST, in addition to appreciating its overarching scientific mission. He effectively drew together experts from Ball Aerospace, Northrop Grumman, Goddard Space Flight Center, JPL, and STScI, gathering diverse threads of systems engineering, optics, detector characteristics, observational, and operational constraints in one skein while tactfully holding aloft JWST's guiding science goals.

Russ had a special touch with people. He was able to draw astronomers, optical engineers, mission planners, programmers, systems engineers, project leads, in fact, anyone, into comfortably exchanging concerns, results, opinions, and more. His gift was in making friends with everyone he met, hearing and remembering their stories. These talents set him apart as a truly extraordinary person, as well as a highly effective channel of technical and scientific communication in any project that he worked on.

Russ combined a lively scientific interest with an eagerness to learn and apply new methods. As it became clear to Russ that a set of computer simulations he had set up would definitively outline or constrain future approaches, an excited glint would kindle behind his usually quiet gaze. He would then retire from further discussion, saying "Well, we'll see what we can do," to re-emerge from seclusion hours or days later, visibly delighted with the swath his work cut through pre-existing uncertainties, a path his colleagues would necessarily have to study when charting their courses.

Russ was notable for his gentle and serene character and attitude toward people and things. He was the type of person you look for when you have a preliminary and confused idea in your mind, and you need someone to talk with, someone who has the patience to hear you and ask the right questions, to help you to settle things correctly and clearly in your mind. He was smart, with a genuine passion for science. He really enjoyed new, good results, and was often the first person to congratulate a colleague on a new finding or a noteworthy publication. Russ was also extremely approachable, and willing to help complete strangers. He would spend hours explaining the details of his work to a newly-met graduate student, working through the intricacies of detailed simulations of a point spread function affected by a crosswind over the telescope aperture. However, on the racquet-

ball court or in other games Russ displayed a highly competitive streak, giving no quarter to those he vanquished!

A talented artist, Russ appreciated the fine details and the seldom noticed beauty that the world has to offer. His smile was freely given, his quick wit and wry sense of humor was second to none. He had a special ability to bring people from many walks of life together; he was a loyal friend, a loving son and grandson, and a highly valued colleague. Russell faced his final decisions on uncertain and risky surgical procedures with a quiet, strong faith, surrounded by his family and friends. If the length of a man's life is measured in the number of friends he loved, instead of the number of years he lived, he lived longer than all of us.

Anand Sivaramakrishnan
American Museum of Natural History

WILLIAM A. RENSE (1914 2008)

On March 28, 2008, the space research community lost another of its pioneers. William A. Rense, professor emeritus of physics at the University of Colorado in Boulder, who died in Estes Park, Colorado, following complications from cancer. He was 94. Bill, as he was widely known, was born in 1914 in Massillon, Ohio, the son of German immigrants. His was a large family—five brothers and one sister. His father, Joseph Rense, worked for the city of Cleveland while his mother, Rosalia (Luther) Rense was a housewife.

As a child, Bill developed a love of astronomy which led him to earn a bachelor's degree in physics and astronomy from Case Western Reserve University in Cleveland, followed by master's and PhD degrees in physics at Ohio State University. He held teaching positions at Rutgers, University of Miami (Florida), Texas A & M, and Louisiana State University before taking his final appointment at CU in 1949. While teaching at LSU, he met and in 1942 married Wanda (Childs) Rense.

In addition to teaching physics at CU, Bill did research in CU's Upper Air Laboratory. His early work there included studies of polarized light and its implications for the analysis of zodiacal light. He and his co-workers also began developing instrumentation to be flown above the Earth's atmosphere in sounding rockets. In 1952 he obtained the first photographic spectrogram of the solar Lyman-alpha line of hydrogen (121.6nm).

This work was followed in 1956 by the first full disk spectroheliogram in Lyman-alpha. These results could not have been possible without the use of pointing control systems for sounding rockets. "These sun trackers" kept the payloads pointed at the sun long enough for the measurements to be made, and CU was a pioneer in their development.

The expanding research venue led the Upper Air Laboratory to be renamed the Laboratory for Atmospheric and Space Physics (LASP), and Bill Rense was its first director. He continued his research into the properties of the solar atmosphere with high resolution observations of He I and He II (58.4 and 30.4 nm) and O I (130.5nm), as well as terrestrial atmospheric absorption measurements, utilizing the sun as an Extreme Ultraviolet source. In the meantime, the pointing control business proved to be so popular that it was transferred to a then-small local business owned by Ball Brothers Research Corporation. It is now the Ball Aerospace and Technologies Corporation.

Bill retired from CU in 1980. He had a successful and productive career at LASP, but teaching was his first love. Besides teaching undergraduates, he trained graduate students and post-doctoral fellows in the latest research techniques. His family recalls the joy he took in teaching honors classes at their home in Boulder as well as the many letters he received from the students he inspired. He had a constantly enquiring mind and loved to share his curiosity with others, whether the subject was beat frequencies heard on a jet plane or stellar constellations seen from Estes Park.

Bill was a devoted amateur naturalist and kept detailed records of the weather and of the first appearances of birds and flowers observed at his summer cabin in Allenspark, Colorado. One of his earliest publications concerned the nighttime observation of migrating birds, seen as they flew in front of the moon. It is a technique employed by birders as far back as 1902 and still used today. Working in collaboration with George H. Lowery, Curator of the Museum of Zoology at LSU, Bill established the observational ground rules that would enable ornithologists to determine the compass heading, altitude and density of birds along their nocturnal flyways.

When people are asked what Bill Rense was like, a word that frequently comes up is "courtly." In all his transactions with other people, Bill was unfailingly soft spoken and gracious. When confronted with a profoundly bad idea, his typical response would be to say, "Well—that's different." In a field sometimes dominated by large egos, his unassuming manner may have been what made him stand out as a teacher and as a friend. A quote from Alexander Pope seems to fit him: "True politeness consists in being easy one's self, and in making everyone about one as easy as one can."

William A. Rense is survived by his wife, Wanda Rense of Estes Park, Colorado, and three sons: William of Estes Park, John of Anchorage, Alaska, and Charles of Los Alamos, New Mexico. A memorial service was held on April 2, 2008, at Good Samaritan Village, Estes Park.

Glen Cushman
University of Colorado

JÖRN ROSSA (1969–2009)

Jörn Rossa (often spelled Joern Rossa) passed away on September 19, 2009 at the young age of 40 in Mainz, Germany from a virulent fast-acting blood cancer. He was born in that same city on March 17, 1969 to Alfred and Gudrun Rossa, who survive their only child.

Joern had a deep, lifelong love of astronomy, as evidenced by the handwritten letters he wrote in his youth to prominent astronomers and astronauts for their perspectives, signatures and reprints, the popular astronomy magazines which he collected for decades, the decision to abandon a career as a locomotive driver and relearn the math and physics required to pursue his passion, the many papers he published himself, and the numerous space shuttle launches he made a point to personally attend at Kennedy Space Center. Since High School, Joern carried out observations using his own tele-

scope, traveled with friends to remote locations to practice "serious" astrophotography, and lectured at a local amateur club.

After attaining his undergraduate degree at the University of Heidelberg (Germany) in 1996, Joern continued his education at the Ruhr-University Bochum in Germany, where he worked under the guidance of Ralf-Juergen Dettmar. He received his Ph.D. degree in 2001 with a thesis focusing on extraplanar diffuse ionized gas and dust in the halos of edge-on spiral galaxies. He performed the largest-to-this-day ground-based H-alpha survey of a large number of galaxies, quantified their extraplanar ISM, and correlated its properties with the starburst activity in the galaxy disk. After his graduation, Joern stayed in Bochum for another year as a Postdoctoral Associate. During this time he expanded his interests in the same general subject area through the use of X-ray (XMM, Chandra) and radio observations. His interest in the ISM of nearby galaxies continued through his subsequent postdoctoral career. He analyzed high-spatial resolution Hubble Space Telescope (HST) WFPC2 H-alpha data of the edge-on non-starburst spiral galaxy NGC 891. The data revealed for the first time super-thin filaments, which may indicate an important role of the magnetic fields in the gas and for mass transfer. He then received time with HST/ACS to study four other galaxies to greater depth and resolution. Joern also obtained narrow-band imaging data at Calar Alto Observatory of a sample of Seyfert galaxies, and he supervised a summer student at STScI on the analysis of this sample. Joern's observational work in these areas led to a better understanding of the physical processes that drive gas out of galaxy disks.

After his appointment in Bochum, Joern moved to the Space Telescope Science Institute (STScI) in 2002 in Baltimore, where he worked for four years as a postdoctoral researcher with Roeland van der Marel. During this time he studied and analyzed two different sets of HST data. The first project dealt with the nature of nuclear star clusters found in the centers of spiral galaxies. To study the physical properties of these clusters (e.g., masses, stellar population ages, etc.) and their formation mechanisms, spectra were obtained with HST/STIS of a sample of nuclear clusters in spiral galaxies of various Hubble types. Joern analyzed and interpreted the data, which led to the realization that the stellar populations of these nuclear clusters are often young—indicating still on-going star formation processes—and that the cluster mass correlates with bulge mass in a similar fashion as does the mass of supermassive black holes. The second focus of Joern's work at STScI was the nuclear properties of merger remnants. He used HST/NICMOS to obtain near-IR images and optical spectroscopy of the merging galaxies in the Toomre sequence. The near-IR images penetrate the dusty parts of these galaxies and allowed measurement of the surface brightness profiles down to scales of order 0.1 arcsec. The steepness of the brightness profiles was found to be consistent with scenarios in which merger remnants evolve into ellipticals.

Joern then moved to the University of Florida (UF) in 2006 to work as a core team member of the Flamingos 2 Extra-Galactic Survey. This survey aims at deriving the star formation histories, masses and metallicities of star formation galaxies at redshifts between 2.0–2.5 and also at deriving the properties (e.g., black hole masses) of AGN and at studying the optically obscured AGN at intermediate to high redshifts ($z > 1.5$). Joern was largely responsible for the target selection strategies for both samples (star-forming galaxies and AGN), for coordinating the weekly group meetings, and for designing a web-page for the extragalactic group. He was interested in using the survey to answer several cosmological questions in collaboration with Vicki Sarajedini, Rafael Guzmán, Fred Hamann, Anthony Gonzalez, the Flamingos-2 instrument PI, Stephen Eikenberry (all from UF), and with additional collaborators from the Complutense University of Madrid, Spain. Joern also worked with Vicki Sarajedini on SED fitting of variability-selected AGN in the Chandra Deep Field South. Joern was a very versatile observer, complementing his belief that understanding of the star-formation activity in galaxies can be only achieved through a multi-wavelength study of various galaxy types.

In addition to research, Joern had a strong desire to be involved in the logistical aspects of science. At STScI he participated in the support group for the time allocation committee and at UF he was the postdoctoral representative of the space allocation committee. He photographed the UF staff for the departmental webpage and was a designated photographer at a local conference and other events. He also participated in the public Museum nights at UF. He was always eager to provide his feedback on the scientific and practical issues of astronomy and filled in many surveys distributed to the astronomical community.

His colleagues and friends could always count on Joern to be extremely responsive, punctual, organized, polite and truthful; he did not tolerate false flattery and he held strongly to his own beliefs. Joern ardently loved his family and was faithful to his friends. Joern had several passions outside of astronomy. Among these were music, travel, snorkeling and photography. He played guitar and idolized Fleetwood Mac, The Eagles, and Tom Petty, among many other artists. While visiting 45 U.S. States and many other countries, Joern had a knack for picking up languages and spoke impeccable English.

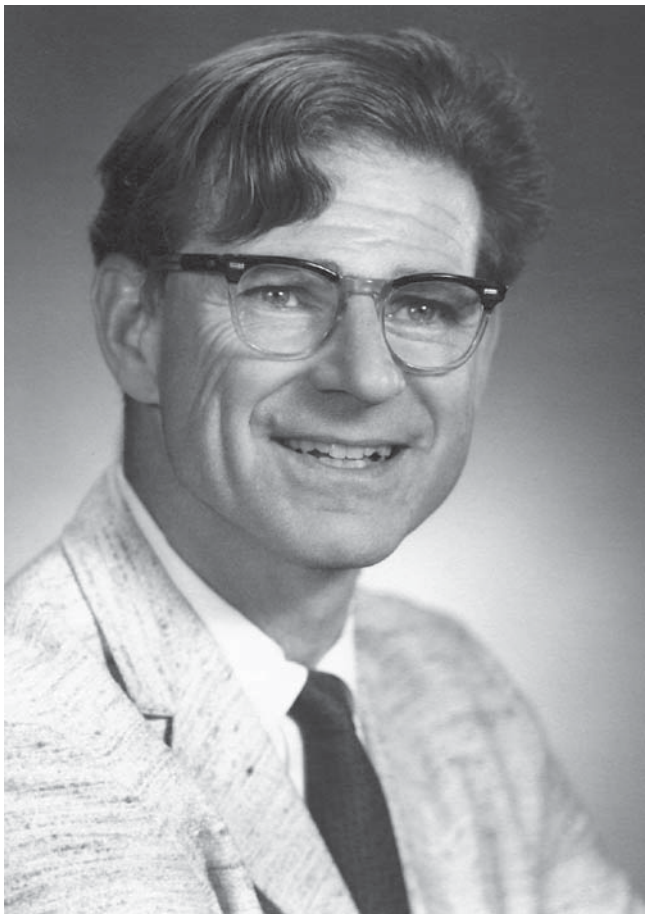
We will miss Joern, a loyal son, friend and colleague.

Dimitri Veras
University of Florida

Acknowledgments: Ralf Hahn, Nadya Gorlova, Seppo Laine and Roeland van der Marel provided crucial information, perspectives and memories needed for the foundation of this obituary; Ralf-Juergen Dettmar, Maria-Cruz Gálvez-Ortiz, Maren Hempel and Stefan Kautsch provided advice and support which helped complete the obituary; the photograph is courtesy of Nadya Gorlova.

EDWIN E. SALPETER (1924-2008)

Edwin E. Salpeter, who died 26 November 2008 at his home in Ithaca, NY, belonged to the "second wave" of Jewish scientific refugees from Nazi-dominated Europe, those who left as children just before the onset of WWII and so completed their educations elsewhere. Salpeter was born in



Vienna on 3 December 1924, and arrived with his family in Australia in 1939, his father was a physicist and a close friend of Erwin Schrodinger. In Australia, he finished high school, and he entered the University of Sydney at the early age of 16. He received his BS and MSc degrees in physics and mathematics from the University of Sydney, before moving on to a PhD from the University of Birmingham in 1948, for work with Rudolf Peierls on the electrodynamic self-energy of the electron, the first of more than 380 inventoried publications. He had chosen Birmingham over Cambridge or Oxford because of Peierls, and then chose Cornell over Princeton because of Hans Bethe's presence there. His autobiography describes those as two of his very best decisions ever. Marrying psychobiology student Miriam (Mika) Mark less than a year after arriving at Cornell was surely the third, and they remained in Ithaca the rest of their lives, eventually collaborating on some projects in neurobiology before her death in 2000. Their household was a secular one, but (Ed told a colleague) their two daughters received a basic Jewish education "just in case." Daughter Shelley Salpeter and her son Nicholas Buckley were also collaborators with Salpeter on 21st century projects in meta-analysis, epidemiology, and other statistics-heavy problems in biomedicine. Ed Salpeter is survived by his second wife, Antonia (Lhamo) Shouse.

Astronomers may be interested to learn that the Cornell press release announcing his death was prepared by Lauren Gold, daughter of Thomas Gold (and Carrie Gold) the co-author of the steady state theory. Apparently, Ed's father Jakob Salpeter late in life considered the anisotropy reported in the Cosmic Microwave Background and wrote in 1968 to Ron Bracewell and Edward Conklin, who had measured it, expressing puzzlement and doubt that there could be preferred frame effects within special relativity.

Ed Salpeter described himself as a generalist, always ready to look at new problems in new fields, and a young colleague quoted him as saying there were problems to be solved on backs of envelopes of various sizes. The result was that he made significant contributions in quantum electrodynamics (the Bethe–Salpeter equation), nuclear physics (electron screening corrections) and astrophysics (helium burning and beyond), stellar populations (the Salpeter initial mass function and galactic chemical evolution), ionospheric physics (his most-cited paper, because of a Raman-like backscatter effect that is useful for measuring electron densities in laboratory plasmas), equations of state for dense matter (e.g. Jovian planet cores), neutrino emission processes, black hole accretion as an AGN energy source (contemporary with a similar idea from Zeldovich, and before the black hole name had even been coined), interstellar atomic and molecular gas, HI rotation curves, and other aspects of astrophysical dark matter. This is not a complete list!

In 2004 a special symposium was organized by his students and colleagues near Siena, Italy, to celebrate the 50 years since his publication of the Initial Mass Function that coincided with his 80th birthday. The symposium proceedings "The Initial Mass Function: 50 Years Later" was dedicated to Ed "from whom we have learned so much, to his insight and friendship."

Ed Salpeter received a security clearance in the mid-1950's and kept it up, so that, in addition to evaluating various anti-ballistic-missile defense schemes as a member of the JASONS, he was one of 17 participants in the 1985–87 APS study of directed energy weapons, also known as Star Wars. The panel was unanimous in technical disapproval of the project, and many undoubtedly shared Ed's moral disapproval. His 21 year term as the astrophysics member of the editorial board of Reviews of Modern Physics (1971-92) remains a record and arose from a combination of extremely good judgment and patience with authors, referees, and other editors. His experience as a member of the National Science Board (1978–84) was a less happy one, and he felt he had not been an effective one when the NSF decided to back out of supporting a national-facility large millimeter dish, leaving that territory to individual university groups and the Europeans.

How many students did Ed Salpeter have? Well, lots. He was advisor or committee chair for students in computer and geological sciences as well as in physics and astronomy, and was sometimes part of teams he called "two chiefs and one Indian" for additional students. No complete list seems to exist, but the incomplete lists add up to at least 55. Of those, you are likely to have heard of or know (because we do!): Hubert Reeves (who has great-grandstudents of his own!), George Helou, Vahe Petrosian, Bill Newman, Nathan Krumm, Bruce Tarter, Jonathan Katz, Lars Bildsten, Allen Boozer, Bruce Draine, Robert Gould, Nicolas Krall, Richard Lovelace, David Stevenson, Hugh Van Horn, Lyle Hoffman, and Edvige Corbelli. Thus he lived to achieve that mark of maturity, being invited to retirement parties for ones stu-

dents. Former students, collaborators, and all spoke uniformly of his generosity, quick understanding, and willingness to discuss science on any and all occasions.

Among the honors Ed Salpeter received were four honorary D.Sc.'s, five academy memberships, and major prizes from the Royal Astronomical Society, the American Astronomical Society, the Astronomical Society of the Pacific, the American Physical Society, the Royal Swedish Academy, and the Astronomische Gesellschaft (AG). The text of his AG lecture was published in English, but he told one of us that he felt he no longer had a native language, because he couldn't really think in German any more, but his English was noticeably accented. EES was not the only Nazi refugee astronomer to deliver the (Karl) Schwarzschild lecture. Martin Schwarzshild (who had a Goettingen PhD) provided his lecture in German, but a 1968 speaker, Peter A.G. Scheuer (who left Germany at age 9) was asked to continue in English after the first two sentences.

In his long and spectacularly productive life Ed Salpeter remained a modest person who loved to have a good time, on the ski slopes, or throwing large parties at his home. Most of all he enjoyed working closely with his students who have been deeply inspired by his keen intuition.

Virginia L. Trimble
UC Irvine
Yervant Terzian
Cornell University
BAAS Obituaries Editor, J. C. Holbrook
Vice Chair Historical Astronomy Division