

The University  
of Kansas  
Department of Physics  
and Astronomy  
Newsletter

Fall 1981

# Physics & Astronomy

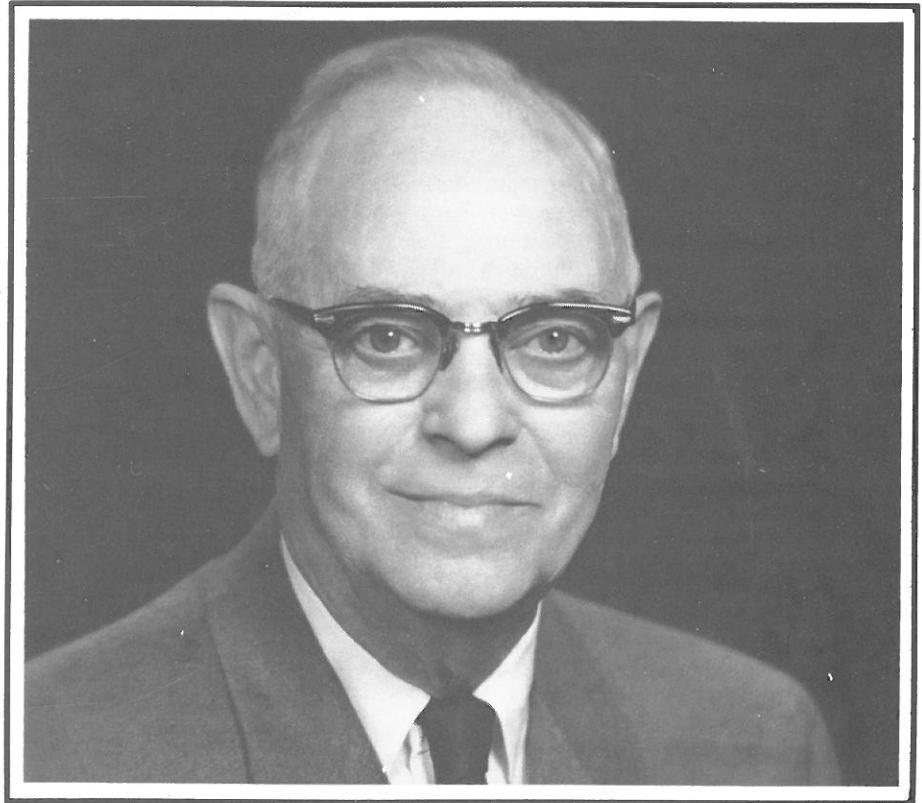
## James D. Stranathan 1898-1981

James D. Stranathan, Professor Emeritus and former chairman of the Department of Physics and Astronomy, died unexpectedly at his home May 22, 1981. Characteristically, he had been working in the physics shop a few hours before his death.

He was born in Kansas City, Mo., Nov. 2, 1898, and was married to Lena Monroe in 1921. He earned two degrees from KU: a Bachelor of Science in Electrical Engineering in 1921, and a Master of Science in 1924. He also held a faculty position as instructor 1921-24. He then went to the University of Chicago where he earned his doctorate, studying with such persons as A. J. Dempster, A. H. Compton, K. T. Compton, and A. A. Michelson. A. J. Dempster was his research director. Accepting a position as assistant professor, Jim returned to KU in 1925 where he was to remain until his retirement 44 years later, after 47 years of service on our faculty.

Jim's record of published research, distinguished by clever design of equipment, thorough understanding of the physics involved, and insightful attention to important details, began in 1925 with an article in *Physical Review*, "Simultaneous High Frequency and Direct Current Resistances of Fine Wires at Various Temperatures." His last paper, "Some Effects of Vapors on Electret Behavior," appeared in the *Journal of Chemical Physics* in 1960. In between was a series of papers on condensed matter phenomena, most of them related to dielectric polarization of liquid and solid systems.

In 1941 he completed the work for which he is most widely known, a pioneering textbook on atomic, nuclear, and particle physics which, with characteristic foresight, he entitled "The Particles of Modern Physics." This extremely well-documented and timely



James D. Stranathan

textbook became widely used as an inspirational textbook for young physicists throughout the country. Because he was an excellent writer and perceptive critic, he was called upon to serve as associate editor of the *American Journal of Physics* and as a contributor of the section "Radiation, Rays" in the *Encyclopaedia Britannica*. For his achievements in physics, he was designated as a Fellow of the American Physical Society and the American Association for the Advancement of Science.

At the outbreak of World War II, a number of Jim's colleagues in important positions invited him to become a group leader of various projects. But he had accepted the chairmanship of this department in 1941, and he chose to stay at Kansas where he became a

leader in providing basic scientific education to large groups of students sent by the U.S. Signal Corps, Army, and Navy.

Here with characteristic aplomb and grace he developed harmony out of an administrative nightmare: three military bureaucracies entangled with University and state regulations, transient personnel subject to military draft, and chronic shortages of equipment. Classes and laboratories were scheduled from 7:30 a.m. to 9:30 p.m. with tutorial sessions after that, some running by semesters, some on quarters, and some on trimesters. Occasionally, whole groups of students would enter or leave unexpectedly during the middle of a term, or groups scheduled for training would not appear. Not until the wartime emergency ended was Jim

able to expend a major effort toward rebuilding the department.

Jim was only the second chairman of the Department of Physics and Astronomy. Frederick E. Kester, who had received his doctorate from Cornell and had been associate professor at Ohio, was chairman from 1909 to 1941. Most of us remember Jim in his role as department chairman which lasted for 24 years, the period of the department's maximum growth. When he assumed the chairmanship, the department consisted of five faculty with doctorates (H. H. Barschall, C. V. Kent, F. E. Kester, N. W. Storer, and Jim), one associate professor (M. E. Rice), and two temporary assistant instructors (Charles Dickey and Gene Feaster). During his tenure, Jim showed the University administrators that faculty resources and physical facilities allocated to the Department of Physics and Astronomy were well administered and produced disproportionately large returns. When Jim reached the mandatory age limit for administrators and David Beard became chairman, the department included 20 tenure line faculty with doctorates and one assistant instructor. During this period, the department saw a comparable growth in its facilities and its prestige as a center for research and graduate study. Included in the growth of physical facilities was the department's share of Malott Hall. However, during the design of this building, it was Jim's duty to effect the painful compromises between the department's projected needs and the constraints that were imposed by the architect's building modules and a limited appropriation. His foresight and judgment here were characteristically sound.

In addition to his administrative duties, teaching, and research, Jim served as a consultant to the petroleum industry, using his experience with electronics to develop ultra-sensitive electrometers and ionization chambers rugged enough to measure radioactivity in the oil fields. He also served as the leader of a group of physicists, chemists, engineers, and mathematicians at KU who fulfilled the need of the U.S. Navy in the early 1950s for a comprehensive analysis of all conceivable methods for launching and landing carrier aircraft.

Always an expert with automobiles—Jim and his friend Verner Smith of the School of Architecture regularly overhauled their own engines—he developed an expertise for analyzing automobile accidents that put him in demand as an expert witness in court cases. This became an avocation that lasted well into his retirement years un-

til the Stranathans' winter jaunts to Florida interfered.

It was under Stranathan's guidance and with the cooperation of Dean J. O. Jones of the School of Engineering and Architecture that the department developed in the mid-1940s a curriculum leading to the bachelor's degree in Engineering Physics. This curriculum was one of the first in the nation and has produced many of our outstanding graduates.

Always a scholar and a zealot for research, Jim was a member of the honorary engineering societies Tau Beta Pi and Sigma Tau, an organizer and charter member of the campus chapter of the honorary physics society Sigma Pi Sigma, and a president of the research society Sigma Xi.

Upon leaving the chairmanship, Jim continued teaching until the summer of 1969, when he reached the age of mandatory retirement. As Professor Emeritus he continued to serve the department very effectively by designing and managing the department's lecture-demonstration equipment. In this endeavor, his cleverness as a designer and skill as a teacher yielded a legacy of vivid and reliable demonstrations that will continue to improve our courses for many years.

Soon after retiring to emeritus status, Jim established and funded the Stranathan Award which is given each year to the outstanding physics major who will be a senior the following year.

All of us who worked with Jim were enriched by the example of his rigorous scholarship, his flow of ingenious ideas, and his scrupulous craftsmanship.



## Chairman's Message

Again this year the Department of Physics and Astronomy has been saddened by the death of one of its longtime members and on the other hand, has been heartened by having its faculty enlarged with two new young people and by the vigorous changes which are enhancing more traditional areas and augmenting and initiating new areas of research.

With the sudden and unexpected death of Professor Stranathan in late May, the last link this department had with the great physicists of the past, particularly of the late 19th and early 20th century, has been cut. In particular, I am thinking of the relationship with an extremely important classical experimental physicist and one whose mark is known to all of us, Professor A. Michelson of the University of Chicago. (It is interesting to note that Professor Michelson made one of the two speeches at the dedication of the original Blake Hall in the 1890s.)

The laboratory programs have been enhanced to a great extent by the arrival of a new young staff member, Robert Curry, who now is director of laboratories. He has reorganized our efforts in that line and has made much progress. We have also been pleased to have as a temporary addition to our staff Dr. Robert Phillips, who obtained his Ph.D. at Iowa, the same institution where Professor Thomas Armstrong obtained his advanced degree. Professor Phillips is working in radio astronomy, is one of the users of the Very Long Baseline Interferometer Array, and is involved in some very exciting discoveries of quasars and rapidly-moving (superluminary) objects.

It is this infusion of new people and new ideas which maintains the vigor of this department, and indeed, any other physics and astronomy department.

It is also heartening to note that the number of students completing their degrees, while not large, gives evidence that the quality of their education is superior. You will note elsewhere in this newsletter that most of our seniors have been graduated with some honor or distinction. Our doctoral candidates are moving out of the University to other universities or into industry and obtaining very fine positions based upon their graduate training here. The output of degree candidates is balanced by new young men and women who are coming to the University to major in or begin their studies in physics at the graduate level.

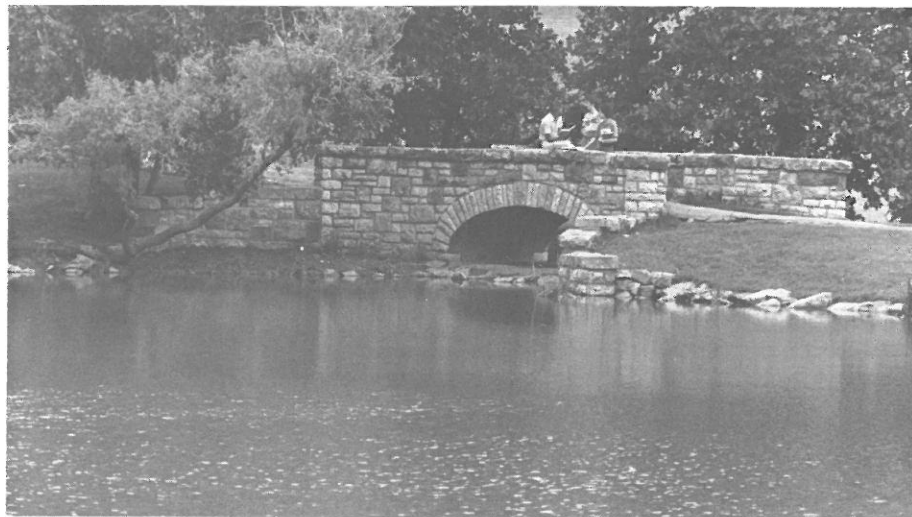
We continue to interact very strongly with other national and international

programs. The high energy group has an on-going collaboration with similar scientific groups in Poland and Russia, as well as Fermi Laboratory, the University of Washington, etc. Professors Armstrong, Beard, Enoch, and Wiseman have maintained their outside support and continue to interact strongly with the space plasma physics community both here and abroad. Professor Beard has been spending his summers for the last year or two in England, and has a collaboration going not only with the University of London, but also with an observatory in the Canary Islands. He continues to pursue his interest in the interplanetary and planetary magnetic fields as well as the study of comets. This, with the approach of Haley's comet again, means a very exciting time for all of us here. In this regard, we have just completed the installation of a new Dec (Digital Equipment Corporation) data computer VAX11/750. This machine will replace the old IBM 1800 which was purchased in 1965 for use with the long-since sold Van de Graaff, and also will replace a computer purchased in the early '70s, the Modcomp. The new machine is much more versatile and powerful, and we expect all of our data reduction programs to make use of it.

The astronomy group with Professor Stephen Shawl and adjunct Professor Donald Bord continues to be vigorous in the work they do. Professor Shawl has been able to maintain his interaction with the Inter-American Observatory at Cerro Tololo, Chile, and has spent this past summer working with the group at the Dominion Observatory in British Columbia.

Again, I wish to point out to each of our alumni how important their contributions to our Physics and Astronomy Development Fund as well as to the Stranathan Fund have been this past year. I also would urge you again to drop us a line, tell us what you are doing, what your latest address is. If you are in Lawrence at any time in the coming year, drop by and see all the new things we are doing, and let us share with you what we do, as well as your telling us about your life and how your professional work is going.

J. P. Davidson, Chairman



## Faculty Publications

A. A. Actor, "Multimeron Solutions of the  $CP^{n-1}$  Model," *Lett. Math Phys.* 4, 147 (1980).

A. A. Actor, "Classical Solutions of Yang-Mills and  $CP^{n-1}$  Models With Scalar Fields," *Z. Phys. C* 6, 223 (1980).

R. G. Ammar, R. E. P. Davis, N. Kwak, R. Stump, et al, "Study of the Reaction  $\nu n \rightarrow \nu p \pi^-$ ," *Phys. Lett.* 92B, 363 (1980).

R. G. Ammar, R. E. P. Davis, N. Kwak, R. Stump, et al, "Production and Decay of  $F^+$  (2030) Observed in  $\nu\mu$  Interactions in Emulsion," *Phys. Lett.* 94B, 118 (1980).

R. G. Ammar, R. E. P. Davis, N. Kwak, R. Stump, et al, "Inclusive  $K^0$ ,  $\Lambda^0$ ,  $K^{*\pm}$  (890) and  $\Sigma^{*\pm}$  (1385) Production in pp Collisions at 300 GeV/c," *Phys. Rev. D* 22, 573 (1980), (with Eklund).

R. G. Ammar, R. E. P. Davis, N. Kwak, R. Stump, "Study of Single-Pion Production by Weak Neutral Currents in Low Energy  $\nu\delta$  Interactions," *Phys. Rev. D* 23, 569 (1981).

R. G. Ammar, R. E. P. Davis, N. Kwak, R. Stump, "Reaction  $K^+p \rightarrow K^0p\pi^+$  at 6.5 GeV/c," *Phys. Rev. D* 23, 1500 (1981).

T. P. Armstrong, "Report of the Jupiter-Io Session at the 1980 AGU Spring Meeting," *EOS Transactions, AGU* 61, 594 (1980).

D. B. Beard, "Photosphere," in *The Encyclopedia of Physics*, Eds. R. G. Lerner and G. L. Trigg (Addison-Wesley, 1980), p 751.

R. C. Bearnse, "An Operational Advanced Material Control and Accountability System," *Inst. of Nuc. Mat. Management J.* 9, 30 (1980).

R. C. Bearnse, "Computer Assisted Audit Trails on the Los Alamos DYMAC System," *Ibid* 9, 55 (1980).

D. J. Bord, "Mr. Pitt's Telescope: A

Short History of the 27-Inch Reflector at the University of Kansas," *Trans. Kansas Acad. Sci.* 83, 187 (1980).

J. P. Davidson, "Nuclear Structure," in *The Encyclopedia of Physics*, Eds. R. G. Lerner and G. L. Trigg (Addison-Wesley, 1980), p 697.

P. Goldhammer, "Perturbation Procedure for Strong Short-Ranged Interactions," *Phys. Rev. C* 22, 287 (1980).

D. W. McKay, "Vector-Meson Dominance and Other Models of Parity-Violating D and F Decays," *Phys. Rev. D* 21, 2636 (1980), (with Bing-Lin Young).

D. W. McKay, H. J. Munczek, "Leptonic Signals for Nonstandard Heavy Quarks," *Phys. Rev. D* 22, 1809 (1980).

J. J. Munczek, "Regularization and Renormalization of Four-Fermion Systems," *Phys. Rev. D* 22, 2001 (1980).

R. B. Phillips, "Temporal Variation in the Compact Radio Structure of NRAO 150 at 1671 MHz," *Ap. J.* 241, L73 (1980).

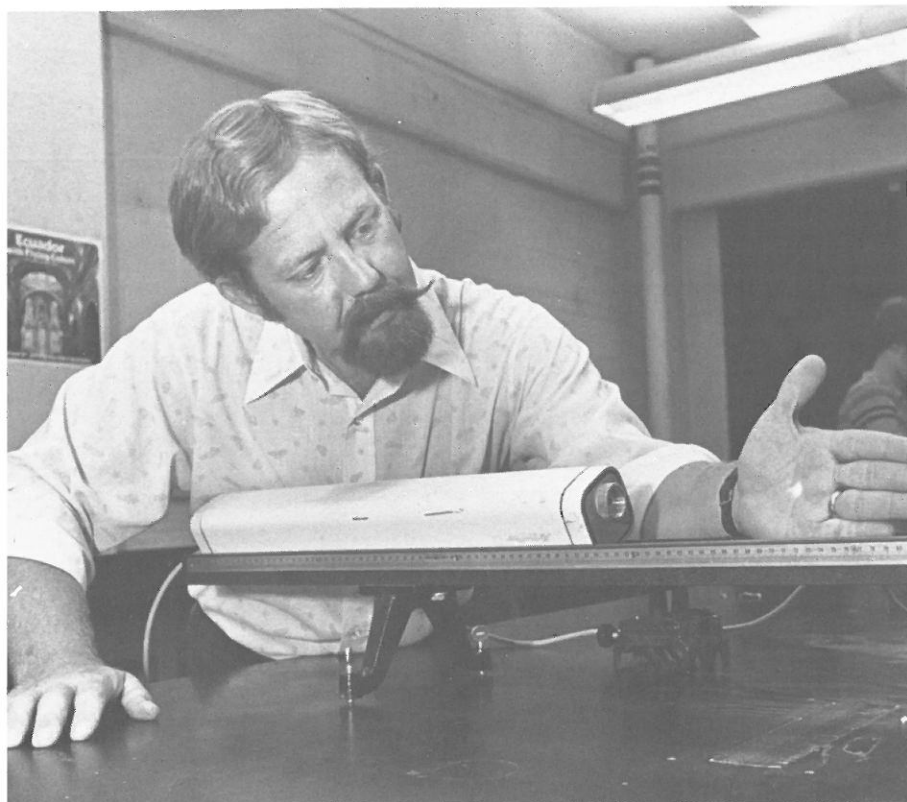
R. B. Phillips, "Millisecond Structure of 0428 + 205, 1518 + 047, and 2050 + 364 at 1.67 GHz," *Ap. J.* 244, 19 (1981).

F. W. Prosser, "Complete Fusion of  $^{15}N + ^{27}Al$ ," *Phys. Rev. C* 21, 1819 (1980).

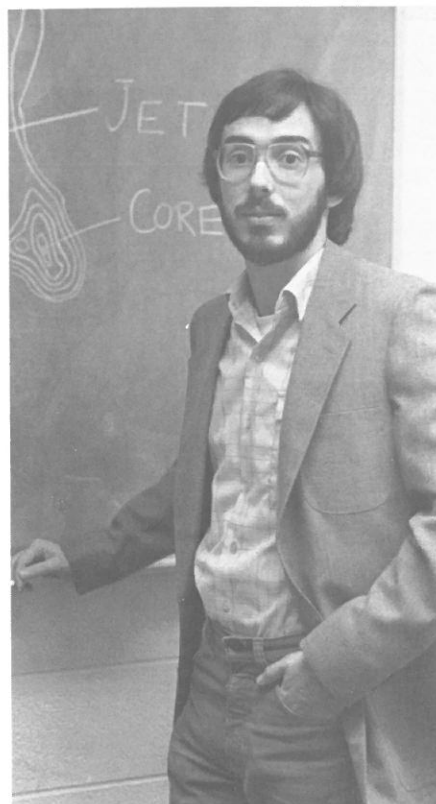
S. J. Shawl, "Axial Ratios, Orientations and Center Coordinates of Galactic Globular Clusters," in *Star Clusters*, ed. by J. E. Hesser (IAU, 1980).

S. J. Shawl, "Accurate Equatorial Positions for the Centers of Six X-ray Globular Clusters," *Ap. J.* 239, L61 (1980).

K. W. Wong, et al, "Study of the Mathematical Approximations Made in the Basis-Correlations Method and the Mode in the Canononical Transformation Method for a Many Boson System," *Phys. Rev. A* 22, 1272 (1980).



Robert T. Curry



Robert B. Phillips

## New Faces in the Department

Robert B. Phillips joined the faculty as a visiting professor in August 1980. Bob has a B.S. in Physics from Syracuse University (1973), an M.S. in Astronomy from the University of Iowa (1975) for optical studies of stars with peculiar abundances; and a Ph.D. in Physics from the University of Iowa (1979) for a dissertation project titled "Fine Structure of Extragalactic Radio Sources." Bob also assisted on construction and operation of the University of Iowa's North Liberty Radio Astronomy Observatory.

During the 1978-79 year, Bob was a post-doctoral research fellow at Brandeis University where he studied the structure of radio sources, and produced data reduction software for the Very Large Array and Very Long Baseline Interferometer.

Robert Curry assumed the position of director of laboratories in July 1980. Before that he was physics chairman at Claremore College, Claremore, Okla., and instructor of mathematics at Benedictine College, Atchison, Kans. He received his B.S. in Physics and M.S. in Mathematics from Kansas State University in 1966 and 1968.

His primary fields of interest are science education and the theory of numbers.

## Outside Funding

Professors Raymond G. Ammar and Robert Stump, Research in High Energy Physics (NSF), \$214,300.

Professor Thomas P. Armstrong, Research Equipment for Interactive Data Analysis (NSF), \$35,000.

Professor Armstrong, Project Galileo (NASA), \$6,300.

Professor Armstrong, International Solar Polar Mission (NASA), \$7,500.

Professor Armstrong, Data Analysis Work on IMPs H and J (JHU/APL), \$9,200.

Professor Armstrong, Voyager Mission Operations and Data Analysis (APL/JHU), \$36,000.

Professor Armstrong, Project Galileo (NOAA), \$6,311.

Professor Armstrong, NSF travel grant to attend 17th International Cosmic Ray Conference in Paris, July 13-26, 1981.

Professor David B. Beard, Cometary Atmospheres (NASA), \$22,000.

Professor J. P. Davidson, 1981 Junior Science and Humanities Symposium, Academy of Science, \$9,800.

Professor Davidson, Effects of Supersonic Prop-fan Velocities on Acoustic Structural Fatigue (with Professor Howard Smith) (NASA), \$15,900.

Professor Francis W. Prosser, Fusion Measurements in Light and Medium Heavy-Ion Reactions (DOE), \$55,100.

Professor Wesley P. Unruh, Elastic Light Scattering Investigations of the Defect Substructure of Refractory Oxides (NSF) \$44,100.

## General Research Fund Awards

Professor Thomas P. Armstrong, Numerical Study of Charged Particle Motion in the Jovian Magnetosphere, \$4,975.

Professor David B. Beard, The Spatial Origin of Aurora and Magnetic Storms, \$2,487.

Professor J. P. Davidson, Search for Heavy Metals in International Ultraviolet Explorer Data, \$3,317.

Professor Douglas W. McKay, Origins and Violation of Time Reversal Symmetry, \$4,420.

Professor Herman J. Munczek, Direct Interaction of Leptons with Nuclear Matter, \$4,949.

Professor Francis W. Prosser, Analysis of Heavy-Ion Nuclear Physics Data, \$2,488.

## News from Home

**Professor Alfred A. Actor** joined the faculty for the academic year as a visiting associate professor.

**Professors Raymond G. Ammar** and **Nowhan Kwak** attended the International Conference on High Energy Physics in Madison, Wisconsin, July 17-24, 1980. They also attended the Fixed Target Workshop at the TeV Region at Fermi National Laboratory, July 24-August 1, 1980.

**Professor Thomas P. Armstrong** spent November 10-17, 1980, at Johns Hopkins University Applied Physics Laboratory for the Voyager I Saturn Fly-by. He also visited NASA Headquarters in Washington, D.C. Armstrong gave the MASUA Honor Lecture entitled, "Voyager Exploration of the Outer Solar System (Jupiter, Saturn, and all that)," at the University of Nebraska-Lincoln, University of Nebraska-Omaha, and the University of Missouri-Columbia.

**Professors Ronald Bass** and **Wesley P. Unruh**, **Dr. Andrzej Maziewski**, and **Robert M. Bunch**, Ph.D., attended the APS Meeting in Phoenix, March 16-20, 1981.

**Professor Ronald Bass** was promoted to associate professor with tenure effective July 1, 1981. He finished 294th in the Lincoln Marathon in a starting field of 1,160. His time was 3 hours, 12 minutes, and 41 seconds. He also ran the Dallas White Rock Marathon.

**Professor David B. Beard** attended the International Astronomical Union Colloquium #61 in Tucson, Arizona, March 11-14, 1981.

**Professors David B. Beard**, **Robert B. Phillips**, and **Stephen J. Shawl**, and **Bret Goodrich**, **Merle Reinhart**, and **Stan Howerton** attended the Mid-American Regional Astrophysics Conference in Kansas City, April 3-4, 1981.

**Professor Robert C. Bearse** visited Los Alamos Scientific Laboratory January 4-9, 1981.

**Dr. Manfred Bucher** is a postdoctoral visitor from Goethe University, Frankfurt, Germany. He is working with **Professor Robert J. Friauf**.

**Professor Jack W. Culvahouse** and **Dr. Andrzej Maziewski** attended the Conference on Magnetism and Magnetic Materials in Dallas, Texas, November 11-14, 1980.

**Professor J. P. Davidson** attended the annual meeting of the Corporate Associates of the AIP at Bell Labs, Murray Hill, New Jersey, October 30-31, 1980.

**Professors J. P. Davidson**, **Robert B. Phillips**, and **Stephen J. Shawl** at-

tended the American Astronomical Society Meeting in Albuquerque, New Mexico, January 11-14, 1981.

**Professors J. P. Davidson** and **Francis W. Prosser**, and **Robert A. Racca** attended the APS Meeting in Baltimore, April 20-23, 1981.

**Professors Gisela Dreschoff** and **Edward Zeller** have been awarded a U.S. patent for a process for providing identification markings for gemstones using proton beams.

**Professor Jacob Enoch** and **Scott Brandon**, **Rebecca Chaky**, and **Joseph Nonnast** attended the Spacecraft Charging Technology Conference in Colorado Springs, Colorado, November 12-14, 1980.

**Professor Jacob Enoch** attended the APS Plasma Physics Division meeting in San Diego, California, November 10-14, 1980.

**Professor Robert J. Friauf** visited Eastman Kodak Research Laboratory in Rochester, New York, and Clemson University, Clemson, South Carolina, in January, 1981.

**Professor Paul Goldhammer** attended the International Conference "Recent Progress in the Many Body Problem," Oaxtepec, Mexico, January 9-17, 1981.

**Professor Nowhan Kwak** spent the academic year on sabbatical leave at DESY. He attended the Microcomputer Conference on High Energy, Physics Applications at CERN, Gen-

eva, in May, 1981. He also gave a talk on "ARGUS Monitoring System" at ITEP, Moscow, June 14-21, 1981.

**Dr. Andrzej Maziewski** has been working with **Professor Culvahouse** this year. He is visiting from the University of Warsaw, Poland.

**Professor Douglas W. McKay** has spent the past year at the Institut Fur Theoretische Physik, Universitat Hamburg, having received a Von Humboldt Fellowship.

**Professor Robert B. Phillips** has spent the past year with the department and will be here for the 1981-82 year. His field of interest is radio astronomy. Professor Phillips appeared on (Topeka, Kansas) Channel 27's "Spectrum" program on September 14, 1981, where he discussed such astronomical matters as radio sources and extraterrestrial life. From October 7-12, 1980, he was at Cal Tech working at the CIT/ JPL VLBI processor.

**Professors Richard C. Sapp** and **Gordon G. Wiseman**, **Robert T. Curry**, **Tom Collison**, **Karen Roth**, and **Erik Ramberg** attended the Arkansas-Oklahoma-Kansas section of the AAPT in Conway, Arkansas, November 7-8, 1980.

**Professor Stephen J. Shawl** and **Bret Goodrich** spent November 6-10, 1980, doing an observing run at Kitt Peak National Observatory.



*The circular stairway in the lobby of Raymond Nichols Hall*

## Visiting Speakers

- Marvin Abraham**, Oak Ridge National Laboratory, Oak Ridge, Tennessee: "EPR Investigations of Actinides in Lanthanide Orthophosphates (with Applications to Radioactive Waste Disposal.)"
- R. L. Boudrie**, Los Alamos Scientific Laboratory, Los Alamos, New Mexico: "Pion Scattering at EPICS."
- Doug Brothers**, Benedictine College, Atchison, Kansas: "Exitons in Layered Compounds."
- Carl Cook**, Phillips Petroleum, Bartlesville, Oklahoma: "Measurements of the Seismic Wave Field."
- Don Gurnett**, University of Iowa, Iowa City, Iowa: "Planetary Radio Emissions."
- Noble Johnson**, Xerox Palo Alto Research Center, Palo Alto, California: "Characteristic Defects and the Effects of Hydrogenation at the Si-SiO<sub>2</sub> Interface."
- Lin-Ing Kung**, Institute of Nuclear Energy Research, Atomic Energy Committee, R. O. C.: "Application of Optics in Nuclear Technology."
- Paul Levy**, Brookhaven National Laboratory, Upton, New York: "Radiation Damage in NaCl and Radioactive Waste Disposal."
- David Ling**, Harvard University, Cambridge, Massachusetts, and IBM Watson Research Center, Yorktown Heights, New York: "Critical Fluctuations and the Order of Phase Transitions."
- David Logan**, Kansas State University, Manhattan, Kansas: "Detonation Waves."
- Joel Martin**, Oklahoma State University, Stillwater, Oklahoma: "Radiation Effects in Alpha Quartz."
- Marvin Querry**, University of Missouri at Kansas City, Kansas City, Missouri: "Optical Properties."
- Peter Richards**, Sandia Corporation, Albuquerque, New Mexico: "Hydrogen in Metals."
- Robert Robinson**, University of Texas, Austin, Texas: "Double Degenerate Interacting Binary Stars."
- Greg Salamo**, University of Arkansas, Fayetteville, Arkansas; "Coherent Optical Effects Using Pulse-Trains from a Mode-Locked CW Dye Laser."
- Harvey Stapleton**, University of Illinois at Urbana-Champaign, Urbana, Illinois: "Electron Spin-Lattice Relaxation in Proteins Viewed as Fractals."
- Richard H. Tipping**, University of Nebraska at Omaha, Omaha, Nebraska: "The Dipole Spectrum of HD," MASUA Honor Lecture.

## News From Alumni

- Sandy Appl** (B.A. 1979) is a teaching assistant at Iowa State University in the Physics Department.
- Robert N. Barnett** (PhD. 1980) presented a paper (with others) entitled, "Screening of Pseudopotentials at a Metal Surface," at the APS Meeting in Phoenix, Arizona, March 16-20, 1981.
- Marco S. Figueroa** (M.S. 1967) is working for the Venezuelan Foundation for Seismological Investigation (FUNVISIS) in Caracas. His address is Res. Los Jardines, Ap 121-13 La Bogeca, Caracas, D.F. 1981, Venezuela.
- Roy Anthony Hamil** (M.S. 1969) obtained his Ph.D. in 1980 from the University of Arizona and is now working for the Laser Projects Department at Sandia National Laboratory (Dept. 4212) in Albuquerque, New Mexico. His home address is P.O. Box 730, Tijeras, New Mexico, 87059.
- Boh-Sheng Harn** and **Gloria Chen** (Mrs. Harn) (Ph.D. 1973 and 1975, respectively) are at the University of Chung-Li, Taiwan. Dr. B-S Harn is dean of the School of Science and is working on a 5kJ O-pinch machine studying plasma impurity diffusion spectroscopy. Chen is working with dye lasers. Their home address is PTO 49 Mha-Tzahn, New Village, Chung-Li, Tau-yuan, Taiwan, R.O.C. 335.
- Bette Ann Krenzer** (B.S. Engineering Physics 1955) was inducted into the KU Women's Hall of Fame at the Women's Recognition Ceremony this spring. She is a foreign technology division liaison officer with the U.S. Air Force stationed in Omaha, Nebraska.
- Felix Lee** (Ph.D. 1975) spent the year at the Physics Department of Florida State University. He published "Three-Particle Distribution Function in Liquid 'He'," *Phys. Rev. B* 22, 206 (1980).
- Leo LeSage** (B.S. Engineering Physics 1957) was promoted to the position of director of the Applied Physics Division of Argonne National Laboratory.
- James Liebert** (B.S. 1968) received the Trumpler Award of the Astronomical Society of the Pacific. This award is made each year to a recent recipient of the Ph.D. whose "published thesis research is considered unusually important to astronomy." Dr. Liebert is at the Steward Observatory of the University of Arizona, Tucson. He published "White Dwarf Stars" in the *Annual Review of Astronomy and Astrophysics* 18, 363 (1980).

**Jim Roller** (B.S. 1972) is now living at 864 Middle #4, Menlo Park, California, 94025.

**Steven Sommars** (B.A. Physics 1974) obtained his Ph.D. last August in high energy physics at SUNY Stony Brook. He is working on networks of computer systems at Bell Laboratories in Naperville, Illinois.

**David Tholen** (B.S. Astronomy and Physics 1978) is a graduate student at the Department of Planetary Science, University of Arizona, Tucson. He published "The Unusual Asteroid 216 Kleopatra," *Sky and Telescope*, September 1980, p 203.

**Fred L. Wilson** (Ph.D. 1964) is currently professor of science, technology, and society at the Rochester Institute of Technology, Department of Science and Humanities. His home address is 496 Wornell Road, Pittsford, New York, 14534.

## Degrees Awarded

1980-81 Academic Year Ph.D. Degrees:

Robert Maxwell Bunch, "Thermally Induced Changes in the Defect Substructure of Pure and Doped Magnesium Oxide."

Master of Science Degrees:

Scott T. Brandon  
Robert J. Frigo  
Dean C. Hirschi, Jr.  
Claude M. Laird  
Gul F. Tariq

Seniors Graduated:

Thomas H. Collison, B.S., Physics  
Robert P. Johnson, B.S., Physics with Highest Distinction and Departmental Honors (December, 1980)  
Russell D. Johnson, B.S., Engineering Physics  
Thomas W. Laming, B.S., Physics with Highest Distinction  
Jerry D. Lumpe, B.S., Engineering Physics with Distinction  
Erik J. Ramberg, B.S., Physics with Departmental Honors  
Phoebe Y. Shulman, B.A., Physics  
Alan G. Wiseman, B.S., Physics with Departmental Honors

## Physics/Astronomy Superminicomputer System

In August the department took delivery of a VAX 11/750 Superminicomputer. This machine housed in the basement of Malott Hall, is to be dedicated to Department of Physics and Astronomy research, and will be operated by faculty and graduate students.

With one megabyte of semiconductor memory and access to 120 megabytes of virtual memory through the VAX/VMS multi-user, multi-tasking operating system, the computer has a wide range of advanced software, both for number crunching and for driving such peripheral devices as the Tektronix color graphics terminal.

One of the more unusual features of the machine is that it can telephone the DEC Diagnostic Center in Colorado Springs in order to perform diagnostic testing.

The computer already is in use for a wide range of research projects: reduction and analysis of Voyager spaceflight data, simulation of plasma interactions with insulating surfaces in space, modeling planetary magnetospheres and simulating charge particle dynamics, analysis of multiparameter nuclear reaction data, interpretation and modeling of light scattering measurements from defects in magnesium oxide, analysis and interpretation of ultraviolet spectra from the International Ultraviolet Explorer spacecraft, and analysis and interpretation of observational data on globular clusters.

It is expected that as more members of the department become familiar with the computer, its contribution to research will continue to expand.

## Departmental Awards

### **Outstanding Senior in Physics and Astronomy 1981:**

Steven C. Woronick

### **Outstanding Senior in Engineering Physics 1981:**

Jerry D. Lumpe

### **Outstanding Teaching Assistants 1981:**

Robert Kessel

Robert P. Johnson

Steven V. Reinert

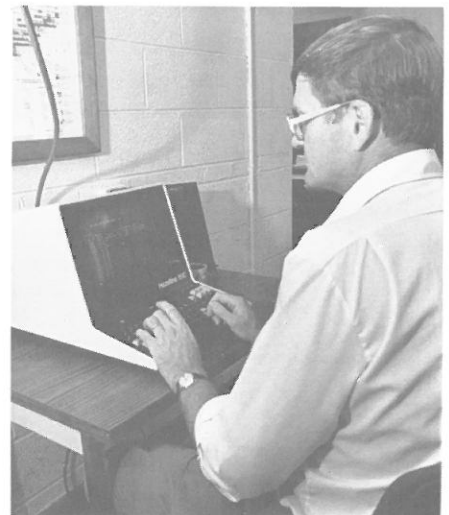
### **The N. Wyman Storer Award for Service to Astronomy:**

David J. Tholen (1980)

Thomas H. Collison (1981)



*Prof. Thomas Armstrong is a frequent user of the new Superminicomputer*



*He analyzes the data he regularly receives from Voyager II*

