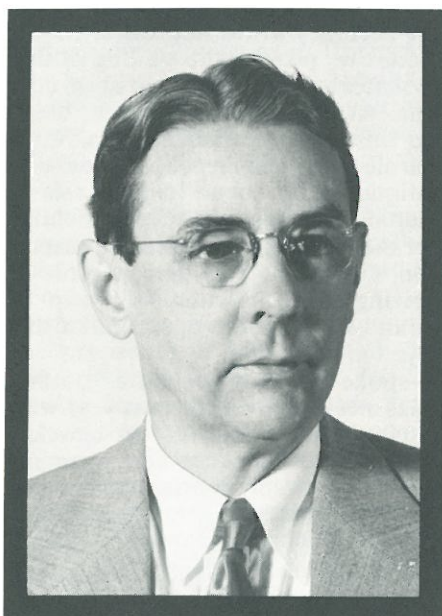


The University  
of Kansas  
Department of Physics  
and Astronomy  
Newsletter

June, 1978

# Physics & Astronomy

N. Wyman Storer  
(1900-1977)



The death of N. Wyman Storer last November 30 brought to a close a long career of warm dedication to the welfare of the department and of the University. Removed from our midst was a good and helpful friend whose support could always be relied upon, in good times and bad. As a small tribute to his memory, I welcome the invitation of Professor Davidson to include in this newsletter some of the remarks which I was privileged to deliver at the memorial service on December 3, 1977.

Among the favorite biblical passages of N. Wyman Storer are these words from the eighth Psalm: "When I consider thy heavens, the work of thy fingers, the moon and the stars, which thou hast ordained; what is man, that thou are mindful of him? And the son of man that thou visitest him? For thou hast made him a little lower than the angels, and has crowned him with glory and honour." These thoughts well typify an essential part of Wyman's outlook on life. His studies over the years had carried him into the deep reaches of our universe and beyond, as he probed the mysteries of apparently infinite space. His searching forced reflections on the insignificance of humankind in these vast stretches of time and of distance; yet, on the smaller scale of man's world, he acknowledged the potentialities of human capacity, the achievements of human effort. He recognized, furthermore, the duty and responsibility of individual humans, whatever the imposed limitations, to strive toward what goals of accomplishment are possible, to help other individuals in this striving, to live the good life of service to others in this world, however infinitesimal it may seem in the incalculable immensity of the universe.

Rather than a formal review of Wyman Storer's many years of dedicated service, I prefer a recital of some remembered personal contacts with him as teacher and scientist. My first association occurred a quarter century ago when, as an adviser to entering students, I sought for a course which would provide for those students resisting traditional courses a sound grounding in basic principles of the physical sciences and of scientific methodology. My search happily ended when I found the course in Physical Science which Wyman had developed and which he regularly taught. Convinced as he was that a liberal education lacking some grounding in the sciences for the non-scientist could only produce another kind of illiteracy, he gave careful and conscientious effort to presenting a course of general interest and appeal. He wrote his own textbook for the course, and there are many former students who remember with pleasure the benefits which they had from his teaching.

ten, there were all those Friday nights of clear skies when Wyman led the observatory to the general and, with my young son, I led the stairs of Lindley Hall to the telescope on whatever only phenomena he had on display to listen to his enthusiastic commentary. Ever since, we have looked at the night sky with different eyes, keenly attuned to richer perception and appreciation through his calm persistent tutelage.

Years later I remember a Sunday morning when I had at home a small group of students and had asked Wyman to come and talk with them. We spent an exciting two hours of comment on some of the latest work of the astronomers, and a stretching of minds and imaginations as Wyman responded to questions often touching upon the very heart within the framework of the cosmology which he pictured for us. Wyman always enjoyed such informal exchanges of ideas: his own thinking wide-ranging; clearly his influence as a teacher extended well beyond the confines of his classroom.

Finally, only a few years ago, after Wyman had retired from active teaching and I was occupying an administrative position, I recall our long discussions in my office over what he decided was a scandal in our academic program. Somehow—I don't really know how—our flexible curriculum had allowed the introduction of a course in which the instructor allegedly lectured on astrology—yes, astrology—the subject of serious study and of demonstrated influence. Now, as is well known, that very word, "astrology" could transform Wyman from a kindly soul tolerant of human foibles to an armed gladiator confronting a ferocious beast. As a scientist, he could not tolerate any treatment of astrology as an academic subject worthy of the serious attention of serious students. It was all right to read about, to discuss its impact in past ages, to be inspired by it, or to be distressed—since so many people appeared still to believe in its teachings. But to include it in a university curriculum as a subject worthy of study on its own merits? That was not to be endured!

Now, as a scientist always should, Wyman was careful in getting the facts straight; he attended the erring class; he talked with the instructor in order to be certain that there was some substance in the frightful rumors which had reached him. His suspicions were confirmed—the class was even casting horoscopes! That was enough; that was too much. Up to Strong Hall he went, and, calmly, but with fire in his eyes, he laid his evidence before dean

and vice-chancellor. Nothing happened—it was midway in the semester; the faculty member overseeing the young instructor gave assurance that the case against the course was overstated. Back to class went Wyman—it was worse than before; now the day's instruction had been given over to a professional astrologer from Kansas City! Up to Strong went Wyman again. Well concealing his wrath and indignation, he once more in calm and orderly fashion presented his brief. He persisted in what he knew was right. And he won, not without some cost, for he never wanted to make people angry, but he was a man of iron firmness when right principle, as he saw it, was at issue. There has not since been listed in our class schedules a similar course.

Others can easily recall other instances of the quiet persistence of this admirable man, always honest, kind, keen, modest, friendly—a humble seeker after truth, a firm support to those in need. Now, in the words of the poet, Shelley:

*"He is made one with Nature: there is heard*

*His voice in all her music, from the moan*

*Of thunder, to the song of night's sweet bird;*

*He is a presence to be felt and known*

*In darkness and in light, from herb and stone,*

*Spreading itself where'er that Power may move*

*Which has withdrawn his being to its own;*

*Which wields the world with never-wearied love,*

*Sustains it from beneath, and kindles it above."*

Ambrose Saricks  
Professor of History

## Editor's Message

There is just one point I would like to make in this second annual newsletter. We need more letters from alumni to publish in the future. The samples received in the last year appear unedited in this issue. They are high in quality, but too few in number. I was hoping that these letters would form the bulk of this newsletter.

The comments I have received from alumni about the newsletter have been very enthusiastic. The only negative type of comment received is from alumni who failed to obtain a newsletter in the first mailing. This is a difficult problem, which we are only able to solve with the help of the Alumni Association. The Alumni Association has been of great help in our mailing and in advice on preparation of the newsletter. In turn, they could use your help. Address corrections should be sent to them directly. They have the computer program to handle this problem. At present they estimate 75 to 80% accuracy in the addresses. In addition, they provide the mailing of this newsletter to our department at no cost to us. At present they are able to extend this service to all of our alumni, regardless of membership. They will continue to do so as long as this is economically possible. Consequently, your membership in the alumni association, while not a prerequisite to receiving the newsletter, will help to guarantee the smooth operation of this project in the future.

I spoke to many of you at professional meetings over the past year who promised me an item for our newsletter. You can still keep this promise. The form for reply is once again available. Please write!

Paul Goldhammer

## Chairman's Message

This past year has been one of significant change for the Department of Physics and Astronomy. Professor Wyman Storer's sudden and unexpected death in November broke another link in the chain of the long history of our Department in astronomy. However, Professor Shawl and others are continuing the vigorous program in astronomy that Professor Storer carried on for so many years at the University of Kansas. This summer saw two well-filled two-week astronomy summer camps as well as the initiation of a two-week physics camp under the supervision of Professor

Sapp. These camps are all under the general direction and administration of the Midwestern Music and Art Camp. Young high school students from a dozen states were represented, a good omen for our Department and future enrollments in science.

Another milestone has been the sale of the 4 MV Van de Graaff to the University of Oklahoma's Department of Physics and Astronomy. Purchased in 1962 to replace a homemade Van de Graaff of lower energy, it formed the central research instrument of the Nuclear Physics Group. For many years this group was well-supported by the (then) Atomic Energy Commission and accounted for a significant number of the Department's Ph.D.s, men and women now working in industries and universities all over the world. We are, indeed, fortunate that the proceeds of this sale will be returned to the Department to continue to support research in experimental nuclear physics now principally done by Professor Francis Prosser working with the Tandem Van de Graaff group at Argonne National Laboratory. The space in Room 55 in the basement will be reassigned to a relatively new and vigorously growing group doing space physics under the direction of Professor Thomas Armstrong.

The department is also expanding its efforts in laser physics, especially as used in our solid state physics studies. Professor Wesley Unruh and his students have been conducting studies of the properties of MgO crystals using the light from He-Ne lasers. The University has recently purchased a tunable dye laser for this group, and the department has also ordered a He-Cd laser for Professor Unruh's use. This latter instrument is being purchased mainly with our Endowment funds.

Another vigorous research group is our High Energy Physics Group which has been successful in obtaining an increase in their funding from the National Science Foundation and in the fall will begin scanning photographic emulsions which have been exposed in a large bubble chamber at Fermilab. This cooperative venture in neutrino physics expands the department's programs in experimental physics in an important area of research.

Another important purchase has been that of a solar prominence probe by the Astronomy Associates of Lawrence (a student-community group associated with the department's astronomy program) with some of their endowment funds. This instrument will be used cooperatively by the department in our teaching of solar astronomy.

In closing, let me again thank each of you who have contributed so generously to our Physics and Astronomy Development Fund with the Endowment Association. The examples above of the use of your contributions in maintaining our leadership and vigor in both research and teaching attests to their importance for our programs. Again, many thanks from all of us. Let us hear from you, and when you pass through the Midwest, plan to stop and visit.

J. P. Davidson

## The News at Home

Y. S. Koh



**Professor Y. S. Koh**, of Seoul National University, is visiting us for one year under the US-AID program. Koh obtained his Ph.D. at the University of Nebraska in 1963 (Prof. Goldhammer was his thesis adviser there). He has been at Seoul National University for the past thirteen years, serving as chairman of the physics department three years. He was director general of the Korean Physical Society in 1974-75. While at Kansas he will renew his research work in nuclear structure theory.

**Professors Beard and Shawl** will be on sabbatical leaves for the 1978-79 academic year. Professor Beard will spend his leave at Imperial College, London. Professor Shawl will be at the Lunar & Planetary Laboratory, University of Arizona, Tucson.

**Professor Kwak** attended the fifth International Workshop on Weak Interactions at Kobe University (Japan) from July 19 to 28, 1977. He was promoted to Full Professor as of July 1, 1978.

C. N. Yang



**C. N. Yang**, Nobel laureate, visited us for two days, and delivered a colloquium on Fiber Bundles. He discussed the applications to gauge theories of fundamental interactions, and speculated on the distance of magnetic monopoles.

**Professor McKay** was a visiting faculty member at the Ames Lab (Iowa State Univ.), summer 1977.

**Professor Krone** was a member of the National Science Foundation Panel evaluating local course improvement proposals in Phoenix, Arizona, Nov. 9-11, 1977.

**Professor Stump** visited the Physics Department of the University of Edinburgh, Scotland, summer 1977.

**Professor Goldhammer** attended the International Conference on Nuclear Structure, Tokyo, September 5-8, 1977. He attended three pre-conference symposia on the "Few Body Problem and Nuclear Forces" (Sept. 2), "Effective Interactions" (Sept. 3) and on the "Shell Model" (Sept. 4). He gave a talk at the first one entitled, "Comparison Between the Bethe-Faddeev Equations and the Variational Method in an Oscillator Basis."

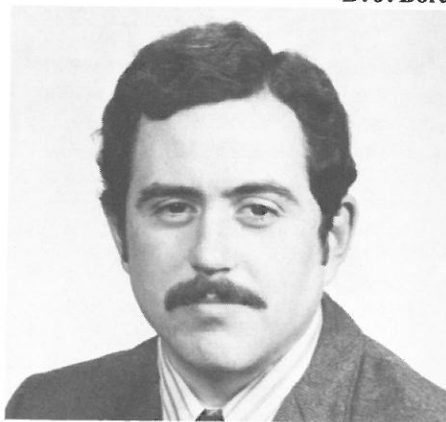
**Professor Ammar** spent the summer of 1977 at Fermilab.

**Professor Prosser** was a Visiting Scientist with the heavy ion group at Argonne National Laboratory June 6-July 22, 1977.

**Professor Friauf** has been selected as the Ninth Argonne Universities Association Distinguished Appointment Award for the 1978-79 academic year.

He will spend the period August 1, 1978-July 31, 1979 with the Solid State Science Division and the Materials Science Division at Argonne National Laboratory.

D. J. Bord



**Dr. Donald J. Bord** has taken a leave of absence from Benedictine College in Atchison, Kansas to be with us as a Visiting Assistant Professor. Dr. Bord received a B.S. in physics from Hamilton College, an M.Sc. in physics at Clarkson College, and his Ph.D. in Astrophysics from Dartmouth College in 1976. He has been an assistant professor at Benedictine since 1976. His research interests involve high energy astrophysics (X-ray astronomy), in particular the spectroscopic and photometric monitoring of X-ray sources in the visual region of the spectrum. In addition to his research papers, he has published a paper on the instructional uses of the computer to show stellar orbital motion in the galactic plane. Dr. Bord is a member of Phi Beta Kappa, Sigma Xi, Sigma Pi Sigma, the AAPT, and the AAS.

## Research Spotlight

Professors Munczek and McKay work toward understanding the weak interactions among elementary particles. The weak interactions, of fundamental importance in their own right, also provide clues for the discovery of new features of strong interactions. Present ideas about the composition of hadrons as bound states of quarks have been greatly influenced by discoveries about the weak interactions of hadrons. In fact, the recently discovered "charm" quantum number of the strong interaction was anticipated for many years because the extra charm-carrying particles provide a simple way to explain the experimental fact that weak interaction decays don't change the strangeness of hadrons unless the electric charge of the hadrons also changes.

Munczek and McKay are searching for clues of the type that led to the charmed particle discoveries in order to simplify the description of particle data. At the same time, they predict new phenomena which test these simplifying hypotheses. In work which they have reported this spring, the fact that the electron mass is so much smaller than the muon mass and the idea that the parity violation in weak interactions originates in the vacuum state and not in the interaction itself have led them to a theory where new leptons, much heavier than the electron and muon, and new heavy hadron constituents, or quarks, are required to exist. A new family of stable or nearly stable hadrons with masses greater than five proton masses is predicted. They are now developing an explanation of the experimentally observed, but extremely small, violation of time reversal invariance by requiring that it exist only in interactions between the known hadrons and the predicted, heavy ones. If they are right, a new particle domain with many unique features, including large violations of time reversal symmetry, should be discovered by the next generation of experiments at Hamburg, Germany and Stanford.

## Publications

"Nuclear Charge Distributions Deduced from the Meionic Atoms of  $^{232}\text{Th}$ ,  $^{235}\text{U}$ ,  $^{238}\text{U}$  and  $^{239}\text{Pu}$ ," J. P. Davidson, *et al.*, *Phys. Rev.* C17 1433 (1978).

"Elemental Variations in Whole Blood Following Gamma Radiation Injury of Mice," R. C. Bearer, C. E. Burns, D. A. Close, and J. J. Malanify, *Nuclear Instruments and Methods* 142 (1977) 143.

"A Determination of the K-edge Energy of Plutonium," T. A. Canada, R. C. Bearer, and J. R. Tape, *Nuclear Instruments and Methods* 142 (1977) 609.

"Elemental Analysis of Water Using Proton-Induced X-Ray Emission," Y-C. L. Lien, R. R. Zombola and R. C. Bearer, *Nuclear Instruments and Methods* 146 (1977) 609.

"Proton Induced X-Ray Emission Analysis of L-Cells Grown *in Vitro*," R.R. Zombola, P.A. Kitos and R.C. Bearer, *Analytical Chemistry* 49 (1977) 2203.

"Development and Implementation of a Faculty Interest Database," R.C. Bearer and B.D. Maxwell, *Journal of the Society of Research Administrators* IX (1978).

"The Magnetic Field of Mercury," D.J. Jackson (Ph.D. 1975) and D.B. Beard, *Geoph. Res.* 82, 2828 (1977).

"Thermodynamics of Liquid 'He,'" W. Meyer, K.W. Wong, Lin-lu Kung, *Phys. Rev.* B17, 5283-5295.

"Hard Sphere Roton Interaction," W. Meyer and K. W. Wong, *Phys. Rev.* B17, 1067-1069 (1978).

"Critical Analysis of the Hard-Sphere Model for Superfluid 'He. I,'" W. Meyer and K. W. Wong, *Phys. Rev.* B17, 1102-1129 (1978).

"Single-Site Theories for Systems having Goldstone Modes," R. Bass, *Solid State Phys.*, 10, L325 (1977).

"Calculation of Strain and Polarization Fields at the Surface of MgO Crystals, Breathing Shell Model," R. N. Barnett and R. Bass, *J. Chem. Phys.* 67, 4620 (1977).

" $^{25}\text{Mg}$  Superhyperfine Structure of V-type Defects in MgO," W. P. Unruh, *Phys. Rev.* B15, 4149 (1977).

"New Differential Botcher-Onsager Method Used to Determine Polarizability and Apparent Radius of  $\text{SiO}_4(\text{WO}_3)_{1/2}^{4-}$ ," J. A. Crumb (TA), *et al.*, *J. Phys. Chem.* 81, 696 (1977).

"Experimental Evidence For Double-Pomeron Exchange at ISR Energies," Kwak, N., DeKerret, H., Nage, E., Orr, K. S., Regler, M., Schmidt-Parzefall, W., Schubert, K. R., Winter, K., Brandt, A., Busser, F. W., Dibon, H., Flugge, G., Niebergall, F., Schumacher, P. I., Aubert, J. J., Broll, C., Coignet, G., Faviar, J., Bartl, W., Eichinger, H., Gottfried, C., and Neuhofer, G., *Phys. Lett.* 68B, 385 (1977).

"An Optical Search for Ionized Hydrogen in Globular Clusters II," S. J. Shawl, *et al.*, *Astrophys. J.* 217, L143 (1977).

"Effect of Space Charge on F Centers near the Stopping Region of Monoenergetic Protons," G. Dreschoff and E. J. Zeller, *J. Appl. Phys.* 48, 4544 (1977).

"CP Violation, Radiative Symmetry-Breaking Effects, and Higgs-Particle and Fermion Masses," D. W. McKay, *Phys. Rev.* D16, 286 (1977).

## Faculty Receive University Research Awards

Nine physics faculty have had research proposals approved for funding by the Kansas University Faculty Senate Research Committee. Each year the University makes a number of small research awards to enable faculty to start, continue or finish research projects. This year the physics depart-

ment fared extremely well in the competition. The successful faculty, their projects and size of their awards are:

**Armstrong**, Propagation of Charged Particles in Interplanetary Space, \$2,258.

**Bass**, Surface and Bulk Properties of Irradiated Magnesium Oxide, \$5,283.

**Davidson**, Theoretical Investigation of Some Properties of Exotic Atoms, \$2,208.

**Goldhammer**, Investigation of the G-Matrix Method for Atomic Nuclei, \$3,626.

**McKay**, Comparison of Weak Inter. Theory With Exp. Low Energy Neutrino Data, \$3,915.

**Munczek**, Direct Interaction of Neutrinos with Nuclear Matter, \$3,152.

**Prosser**, Analysis of Heavy-Ion Nuclear Physics Data, \$2,375.

**Unruh**, Light Scattering From Defects in Refracting Oxide Single Crystal, \$3,915.

Unruh/with M. E. Bickford (Geology), Rare Earth in Zircons: Relationship to Magnetic Properties, \$4,615.

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## Outside Funding

**Ammar & Stump**, Research in High Energy Physics (NSF), \$142,000.

**Armstrong**, Data Analysis Work on IMPs H and J (APL-Johns Hopkins U), \$8,800; Voyager Mission Operations and Data Analysis (APL/JHU), \$30,300; Project Galileo (NOAA), \$10,000.

**Beard**, Particles & Currents in the Geomagnetic Field (NSF Supplement), \$4,900.

**Davidson/with Bricker**, Junior Science and Humanities Symposium, \$9,800.

**Friauf**, Increasing Elementary Teacher's Knowledge of Science Concepts and Processes (NSF), \$30,100.

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## Letters from Alumni

These are the letters from alumni and are unedited.

**Bruce Richard Barrett** (BS 1961): I did my Ph.D. in theoretical physics at Stanford U., graduating in 1967. After 3 years as a post doc in Israel (Weizman Institute) and at the U. of Pg., I came to Tucson as an Assistant Professor in September 1970. I was promoted to Associate Prof. in 1972 and full professor in 1976. From 1972 to 1974 I was an Alfred P. Sloan Research Fellow. During the 1976-77 academic year I was on Sabbatical Leave at the

Max Planck Institute for Nuclear Physics in Heidelberg, West Germany. After my return to Tucson, I became Associate Chairman of the Physics Dept. on October 1, 1977. I am doing research on the microscopic theory of nuclear structure and recently on the theory of energy transfer in deeply inelastic heavy ion collisions. I think that your newsletter is a great idea. I enjoy learning about what is happening at KU in the Physics Dept. I am already a Life Member of the KU Alumni Association.

**James G. Berryman** (BS 1969): Completed Ph.D. in physics at Univ. of Wisconsin in 1975. Spent 1975-76 at UW Mathematics Research Center. Worked for Continental Oil Company on seismics from 1976-77. Spent 1977-78 at the Courant Institute, NYU, as an NSF postdoctoral fellow. Will join Bell Labs this fall as a staff member working on problems in underwater acoustics. Recent publications: Evolution of a stable profile for a class of nonlinear diffusion equations, *J. Math. Phys.* 18, 2108, (1977). Discrete inverse scattering theory and the continuum limit, *Phys. Letters A* 65, 13 (1978). My address in the fall will be: Bell Laboratories, Whippany Road, Whippany, NJ 07981.

**Leon Berube** (BS 1948, MD 1953): I thoroughly enjoyed the Newsletter. Would like to know about former faculty members, similar to the alumni news.

**John D. Bierlein** (Ph.D. 1968): Present Position: Research Supervisor, Silver Halide Photosystems.

**Glenn E. Conklin** (Ph.D. 1963): Much of my work appears in a rather dry publication known as the Federal Register. The Federal Register is a publication for public documentation of certain steps taken in the development of administrative law. Two publications that will appear in the near future are (1) Approval of Variance for Laser Linemaker, Model 81-11L (Coherent Radiation, Palo Alto, CA) and (2) Performance Standard for sunlamp products. The first in a minor variance from the Performance Standard for Laser Products (21 CFR 1040.10 & 1040.11). The sunlamp standard is a proposed law published for public review and comment. We hope the proposal has broad public support in order to keep down the number of adverse comments. The standard is designed to reduce the incidence of sunburns arising from the use of sunlamps. The standard will require timers, virtual elimination of the ultraviolet spectrum between 180 nm and 260 nm, monoval controls, a unique lampbase and warning of the carcinogenic and premature skin aging properties of the ultraviolet

radiation.

**Bill Daeschner** (BA 1961): Received Ph.D. in field of Operation Research at the Naval Postgraduate School, Monterey, California 93940 in 1975 . . . the only Ph.D. in the field of Operations Research in the Supply Corps of the U.S. Navy.

**Richard R. Eckert** (Ph.D. 1971) is Full Professor of Physics at Catholic University of Puerto Rico. He recently received a research grant from the National Institutes of Health: "Atmospheric Particulates as a Public Health Hazard." His wife, Doris, a Puerto Rican physicist, gave birth to a baby girl last year.

**Larry J. Friesen** (BA 1967): I've taken a strong interest, the past couple of years, in Gerard O'Neill's ideas for using lunar materials to build large space habitats and solar power satellites. So strong an interest that I am currently Committee Coordinator for the Houston chapter of the L-5 Society. Say—is there an L-5 Society chapter at KU yet? My work at McDonnell Douglas is primarily writing software requirements for the Space Shuttle. I hope I'll be able to get back into research at some future date. (Any openings at KU)?

**Nelson Fuson** (MA 1935): Ph.D. University of Michigan 1939. Now Professor of Physics Fisk Univ. I've been at Fisk since 1949. Will retire in '79. I have taught at Rutgers U. (N.J.), Howard U. (D.C.), Fisk U (TN), Vanderbilt U. (TN), Univ. of Bordeaux (France). I have been a research associate at Univ. of Mich., Johns Hopkins Univ.

**G. Warren Griffing** (MA 1948): Received Ph.D. from The Queen's University of Belfast, North Ireland in 1954 in Applied Math. Research and publications, Aurorae: Scattering of positive and neutral ions; Reactor kinetics; Inelastic scattering of neutrons; Neutron thermalization; Molecular production by thunderstorms; Meteorological influences on the diurnal variation of the extinction coefficient; Acoustical Propagation and scattering; Solar radiation propagation in the atmosphere and interaction with pollutants. Joe Beeker was at NCSU working in Solid State but has apparently left. Worth Seagon-dollar is a Professor in the Physics Dept. at NCSU.

**Arlen W. Harbaugh** (BS 1971): 1205 Linden Ave., Morrisville, Pa. 19067.

**James E. Hesser** (BA 1963): My family and I moved to Victoria from La Serena, Chile in December, 1977. I had been on the staff of the Cerro Tololo Inter-American Observatory in La Serena for nine years at the time of our move. The last year we were in

Chile I edited, and to a large extent wrote, a 500 page book describing in detail the facilities of the only US national facility for optical astronomy in the rich and relatively untapped southern skies. In the midst of the activity associated with the book, packing, saying goodbye to our friends, etc., I attempted to continue my research on the oldest stars in the Galaxy, those in the globular star clusters. My present interest centers largely on trying to understand the discontinuity (implied by observation) in the formation of heavy elements during the earliest phases of the collapse that formed the Galaxy. A major effort has been carried out in the past few years with Prof. Shavl to study the motions of the galactic globulars by application of a new technique. The results have been exciting, and future analysis should enable a major advance to be made on this problem after a period of nearly 20 years of relative neglect. I am in the process of extending my interests toward our nearest neighboring galaxies, the Magellanic Clouds, and Prof. Shavl and I hope to apply our particular approach to the dynamics of those galaxies and their enigmatic stellar clusters. In my new position here at the DAO I will pursue many of the above topics, as well as prepare for "first light" of the new, large Canada-France-Hawaii telescope in 1979. Frank Younger, who received an MA in astronomy at KU a year or two after I got my BA, is also working at the DAO: he recently suffered a mild heart attack from which he is recovering nicely. I suspect the road will be rough as you try to establish the new departmental newsletter, but I applaud your efforts. It seems to me the long-range effects will be very beneficial. I hope you will attempt to include news of former faculty, too, as well as engineering physics students.

**James W. Liebert** (BA 1968): I read your newsletter with great interest and some nostalgia! Particularly amusing to me was the note that my good friend, Ed Sion, has recently published *The Space Motions . . . of White Dwarfs* in the Sp. J. I was coauthor with my old K.U. friend on that paper. I am a post-doctoral research associate at U. of AZ (in astronomy). My principal research (and Berkeley Ph.D. thesis) has been in the specialty of white dwarf stars.

**Michael J. Mehl** (BA 1973): Dr. W. L. Achaich and I recently published *Theory of neutral atom scattering at long range from metal surfaces*, Phys. Rev. A 16, 921 (Sept. 1977). I hope to complete my Ph.D. in Solid State Theory within the next 18 months.

**Harry G. O'Brien** (BS 1959, MS '60): Presently a senior Nuclear Engineer at the Tennessee Valley Authority, Knoxville, TN. Supervisor of a group of nuclear engineers responsible for the safety aspects of two nuclear power plants.

**James D. Patterson** (Ph.D. 1962): Dr. James Patterson, physics professor at the South Dakota School of Mines & Technology, completed a year's sabbatical. He took his leave at the University of Nebraska in Lincoln where he served as a visiting professor in physics, teaching graduate courses each semester. He also engaged in solid state physics research on metallic alloys. He currently is completing papers describing his research. One of the papers will be presented at the 23rd conference on Magnetism and Magnetic Materials in Minneapolis in November. Patterson has been with Tech since 1963. His first sabbatical leave was at Notre Dame in 1970.

**James A. Pintar** (Ph.D. 1974): I think the Newsletter is a great idea. I really did enjoy reading it. Under Alumni News, there was no mention of either Carl Cook or Mike Nicholas, both of whom are also at Philips Petroleum Co. (Bartlesville, Ok.).

**Daryl W. Preston** (Ph.D. 1970): The Newsletter is an appreciated publication, and I look forward to the next issue.

**Maxwell T. Sandford** (MA 1968): Sandford now works in the areas of atmospheric nuclear weapons effect, the astrophysics of dusty stellar atmospheres, near-infrared astronomy using I-SIT television detectors, and laser measurements of atmospheric pollution.

**Hugh Siefken** (Ph.D. 1968): Congratulations on a successful First Annual issue. Will look forward to number two. I spent 1976-77 year at the Nuclear Research Centre at the Univ. of Alberta; Edmonton, Alberta. It was rewarding as a sabbatical experience. Spent most of my time doing Inelastic Neutron Scattering with a little work on (P,  $\gamma$ ) & (d, n) reactions.

**Fred L. Wilson** (Ph.D. 1964): Now Professor (Yeh!) and Director of Management Services (a division of NTD). I've been secretary-treasurer of the NY state section, AAPT, since 1972. The NY state section of APS met at NTID in October, and I was local arrangements coordinator. Most of my duties are management-oriented, and include responsibility for data processing, records, facilities maintenance & planning, institutional research, and personnel. I teach one course per quarter now; Science and Human Values or Social Consequences of Technology. However, my major concern is related

to the design of instruction appropriate to the special learning needs of deaf people.

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## Alumni News

**Gary P. Agin** (BS 1963) is now Assistant Professor of Physics at Michigan Technological University at Houghton.

**Gregory Atwood** (BS 1977) has accepted a teaching assistantship at Purdue.

**B. R. Baldwin** (BS 1950) is working as a physicist at EG & G Idaho, Inc., P.O. Box 1625, Idaho Falls, Idaho 83401.

**Kevin Barr** (Ph.D. 1975) is now working in the Heat Transfer Group of the Garrett Corporation in Los Angeles. His address is 1819 S. Crescent Hts. Blvd., Los Angeles, CA 90035.

**Richard L. Boudrie** (Ph.D. 1976) is now with Group MP-10 at Los Alamos Scientific Laboratory, New Mexico. He has been elected to full membership of Sigma Xi.

**Lee Britt** (MS 1978) is now employed by Schlumberger, Inc., and is attending a ten-week training course on oil well logging at Corpus Christi, Texas.

**Humberto Campins** (BA Astronomy 1976) presented a paper at the 9th Annual Mid-American Regional Astrophysics conference, April 14-15 in Kansas City. He is a graduate student at Rice University, Houston, in Space Physics.

**Greg W. Foltz** (BS Physics 1973) is now in the Department of Space Physics and Astronomy at Rice University, Houston, Texas. His research is in the high Rydberg program. He recently published "Ionization of Xenon Atoms in High Rydberg States by Collision with Molecules," *J. Chem. Phys.* 67, 1352 (1977).

**Henry Glotfelty** (Ph.D. 1977) has a post doctoral position at St. Louis University, working for Dr. S. Lee in the field of Dynamic Nuclear Polarization.

**Steven A. Hawley** (BA Astronomy 1973) recently published "Ionization and Abundances in the Dumbell Nebula," *Publ. Astr. Soc. of the Pacific* 90, 39 (1978); "The Red Shift and Spectrum of the QSO 4C 55.27," *Astrophys. J.* 213, 632 (1977); two articles in the *Astrophysical Journal*: "The Spectrum and Magnitude of the Galaxy Associated with BL Lacertae," 219, L85 (1978) and "Improved Abundances in Three Halo Planetary Nebulae," 220, 609 (1978). Hawley was recently designated for astronaut training. He will be involved with the space shuttle program.

