# SPECTRUM

*A Newsletter for Alumni and Friends of the Department of Physics and Astronomy of the University of Nebraska–Lincoln*

No. 5 Fall 1984 M. Eugene Rudd, Spectrum Editor

## New Chairman Appointed

*Anthony F. Starace*

Last December, in a letter to Dean Meisels and the Faculty, Professor David Sellmyer announced that he would not seek reappointment to a third three-year term as Department Chairman. He expressed his desire to devote more of his attention to his research and to his students. Dean Meisels conducted a search among the department faculty and appointed Professor Anthony Starace, who took up his new duties on July 1st. Professor Robert J. Hardy is the new Vice-Chairman.

Professor Starace has been at Nebraska since 1973. He was educated at Columbia (A.B. '66) and Chicago (M.S. '67, Ph.D. '71). He has held a postdoctoral position at Imperial College (London, England, 1971-72), and visiting positions at Chalmers University (Gothenburg, Sweden, 1973 and 1977), Freiburg University (Germany, 1979-80), and Innsbruck University (Austria, 1982). He has been awarded an Alfred P. Sloan Foundation Fellowship (1975-79) and an Alexander von Humboldt Research Fellowship (1979-80). His research in theoretical atomic physics is currently supported by both a DOE contract and an NSF grant.

His teaching duties at Nebraska have concentrated on junior-level electromagnetic theory and graduate-level quantum mechanics. He has supervised three Ph.D. theses. For the six years prior to his becoming department chairman, he served as Chairman of the Graduate Committee. Professor John Weymouth is now the new Graduate Chairman.

## Coes Honored During UNL Visit

In our 1983 Newsletter we reported on the major annual gift for laboratory equipment provided by Mr. and Mrs. James C. Coe of Phoenix, Arizona. Mr. and Mrs. Coe were guests of the College of Business Administration and the Department of Physics and Astronomy during a visit to UNL last May. They were honored at a luncheon attended by Governor Kerrey, Chancellor Massengale, many civic leaders of Lincoln, and the faculty of CBA and our Department. Mr. Coe was made an "Honorary Professor of Physics," and the Department presented the Coes with an engraved plaque as a token of our affection and esteem.

The $24,000 provided by the Coes in the first year was used for a variety of state-of-the-art equipment for undergraduate and graduate student instruction and research. Briefly, a microprocessor-based multichannel analyzer was purchased for several experiments in the junior-senior lab and five modern oscilloscopes were obtained for our two advanced electronics courses. Two atomic physics groups benefitted from new equipment including a mass spectrometer gas analyzer and a high-vacuum turbo pump. The astronomy group was able to purchase some of the components for a new CCD-based electronic camera. Finally, our light scattering group has purchased a modern laser, in part with Coe funds.

This equipment already has had a significant impact on our teaching and research programs; the Coes have our heartfelt thanks.

## Graduate Wins Prestigious Award

*Chris Greene*

In February the White House Office of Science and Technology announced that Chris H. Greene, Associate Professor in the Department of Physics and Astronomy at Louisiana State University, was among the first group of scientists and engineers given Presidential Young Investigators Awards. This award, presented by the National Science Foundation, is for $100,000 a year for five years. Among close friends Chris is known as the "half million dollar man."

Chris received his B.S. with high distinction here in 1976 with a double major in math and physics. During his four undergraduate years he worked in the laboratory of Professor Donal Burns. He wrote an undergraduate thesis, "Alignment and Orientation in Beam-Foil Excited He," which Professor Burns says was comparable in quality to a Ph.D. Thesis. He then went to the University of Chicago where he earned his Ph.D. in 1980 in theoretical atomic physics under Professor Ugo Fano. His thesis research concerned the generalization of quantum defect theory to potentials with non-Coulomb long-range behaviors. During 1980-81 he returned to alignment and orientation problems, this time as a theorist, as a postdoctoral research associate in Professor Richard Zare's group at Stanford. He also continued quantum defect theory work at the Université de Paris-Sud. Since 1981 he has been on the faculty of Louisiana State University. The presidential Young Investigator Award is not his first honor: in 1983 he was awarded an Alfred P. Sloan Foundation Fellowship.

In October 1984 Chris presented a colloquium in our department, "Torques in Photo-Fragmentation." He visits Lincoln regularly, as his parents are in Greenwood, Nebraska, where he grew up. While an undergraduate at UNL he played golf avidly, particularly at the Ashland Country Club. He remarked, however, that he no longer has time for competitive amateur golf. Chris's wife, Christy, is currently an instructor in the Speech Department at LSU.

*Mr. and Mrs. Coe, center, David Sellmyer, left, and Tom Morgan, right.*

## Chairman's Letter

Dear Alumni and Friends,

It is impressive to me, in reading again the first four issues of this newsletter, how large our "family" is and how many fields of endeavor are represented by our graduates and former staff. Only in taking such a long view, does one realize the impact of this Department on Society. It is therefore with an added feeling of responsibility that the faculty and staff carry out their roles and plan for the future.

Where does our department stand now? Using 1982 figures our department ranks 65th nationally in terms of total research expenditures. We would rank even higher but for the fact that the "big science" research specialties, such as experimental particle physics, are not represented in our department. For example, in our department's largest research area, atomic and molecular physics, we rank 3rd nationally in terms of 1983 research expenditures, behind only Yale and Princeton. In terms of 1984 figures, our department now spends $1.5 million on research, most of which comes from our 25 external grants and contracts.

Our graduate program now comprises 38 students, half from America and half from the rest of the world: 5 from Taiwan, 4 from Korea, 4 from the People's Republic of China, and 1 each from Bangladesh, Germany, India, Malaysia, Sri Lanka, and Turkey. Of these, 4 are Astronomers. The size of our graduate program is determined roughly by the amount of financial aid we can offer. This fall we have 6 Teaching Fellowships (i.e., 1/3 fellowship support, 2/3 teaching assistantship support), 15 Teaching Assistantships, and 12 Research Assistantships. The current TA/RA stipend is $6,570 for the 10 month academic year. During the 1983-84 academic year we had 8 M.S. and 5 Ph.D. graduates.

Our undergraduate program currently comprises approximately 60 majors. This is up significantly from a few years ago and is comparable to the levels of a decade ago. The decrease in the number of majors in the late 70's and the current increase are symptomatic of national trends and of the course of our economy. Of these 60 students, approximately 14 receive partial financial aid, typically $300-$500 tuition scholarships. Tuition is now $47/credit for in-state students, and $112/credit for out-of-state students.

While numbers are comforting, I assure you that we are ever concerned with that intangible, the quality of our teaching, research, and service. This is determined primarily by individuals: our faculty, staff, and students. The University has recognized fully 1/3 of our faculty with Outstanding Teaching Awards. In research, one of our faculty is a Regent's Professor, and 3 have been recognized for their research. As all grant and contract awards are each reviewed by half a dozen or so reviewers, the fact that our department has 25 grants and contracts testifies to the quality of our research. As reported in this issue, our faculty also provide valuable service to their professions. The positions attained by our alumni, as reported in these newsletters, is a good indicator of the quality of our students. Finally, our department would simply not be able to function without the capable and increasingly sophisticated work of our machinists, electronics technicians, demonstrations manager, word-processing secretaries, business manager, and accounting clerk.

How can you help us to improve our department further? Despite the large amount of state support and of external grant support for our department, there are nevertheless needs which are not met. In these cases we must either muddle through or else appeal to our alumni and friends for help. To give one example, in an April 18, 1984 *NSF Science Resources Studies* article it was reported that: "University researchers classified about one fourth of . . . their 1982 research equipment inventories as obsolete . . . ," ". . . only 16% was characterized as 'state-of-the-art,' " ". . . but 31% was more than 10 years old." Due to the generous endowment provided by Mr. and Mrs. James C. Coe (B.S. '23), The Kositzky Memorial Equipment Fund, whose income is earmarked "for the purchase of major items of . . . scientific equipment used to support the purposes of instruction or research . . . ," our department's greatest needs in this area are now being met. If any of you are similarly interested in helping our department with a substantial gift, please contact me to discuss our needs.

Most of us, unfortunately, are not so well off financially, but because even small gifts can over the years amount to something substantial, our department has recently established two endowment funds at the Nebraska Foundation: the Physics and Astronomy Scholarship Endowment Fund and the Physics and Astronomy Lecture Endowment Fund. These address two serious needs. Firstly, though we have a number of scholarship funds for junior and senior physics majors, we have very little scholarship money to offer our best freshmen and sophomore majors. Since the quality of our undergraduate program depends on the quality of our majors, it is a shame to us that we cannot honor our best majors sooner. Secondly, in contrast to the Chemistry and Life Sciences departments at UNL, our department has no endowed Lectures with which to bring prominent physicists to campus to lecture to our students and faculty. University resources for this purpose have declined and, as you know, the cost of travel has increased enormously.

Contributions to either or both of these two endowment funds may be made in any amount. See the enclosed pledge card and envelope from the Nebraska Foundation. Your contribution is tax deductible. If you work for a corporation, please check whether it will match your contribution. A list of companies which do match is enclosed. In the past year, we have received matching contributions from Atlantic Richfield, Bell Laboratories, and IBM. Alternatively, you may designate your gift for the Physics and Astronomy Development Fund, which is for unrestricted gifts. As an example of how useful unrestricted gifts are, this fall we are using unrestricted funds provided by Jerry E. Ruckman (B.S. '62) to host a meeting of Lincoln and Omaha area high school plysics teachers with our faculty to discuss physics education in Nebraska and how it can be improved.

Lastly, please keep in touch. Please continue to return the attached postcards indicating your news and that of other alumni you know. If you ever plan to come to Lincoln, please stop to visit the department. If notified in advance, I can arrange a tour for you. If you are interested in learning more about the department, please drop me a note and I will send you copies of our latest "Graduate Studies and Research" booklet and our department's profile in the American Institute of Physics book, *Graduate Programs in Physics, Astronomy, and Related Fields.*

Best wishes until next year.

Yours sincerely,

Anthony F. Starace
Professor and Chairman

## Researchers Find Cancer Risk From Alpha Radiation Less Than Thought

With the recent emphasis on energy conservation, the possibility of a hazardous buildup of radon gas in homes with tightly sealed windows and doors has been a concern. Three researchers here in the department have studied the question of whether low levels of radon pose a risk of cancer. Previously available data are for incidence of cancer at high levels of radiation but no one knows how to extrapolate those results to lower levels.

Professor Robert Katz had as visitors last year Dr. Zhang Chunxiang from the Department of Physics at Zhongshan University in the People's Republic of China and Dr. Werner Hofmann from the Department of Biophysics at the University of Salzburg in Austria. Dr. Zhang brought with him the results of extensive Chinese investigations of cancer incidence in areas of high radiation background in China. Collaboratively the group at Nebraska has interpreted these data using track theory. Their analyses of the Chinese data suggest that recent widely publicized reports overestimate the radiation risk from alpha particles at low doses, yielding an estimate of excess cancers (due to radiation) at Chinese environmental levels which is greater than the total number of cancers found. They conclude that the extrapolation of epidemiological data from high to low doses should be quadratic rather than linear, and that there is little danger from alpha particles in the home environment except in extreme cases where the dose of alpha particles approaches the levels experienced by uranium miners.

*View of part of library.*

## Behlen Lab is Falling Down?!

Well, no, not really. But this past summer when we were checking on the possibility of adding more shelves in our departmental library in Behlen Laboratory we found out that we were already exceeding the design limits on floor loading. So, we have made application for funds to remodel the northeast part of the first floor of Brace Laboratory as a new location for our library. Since this involves a lot of square footage, many dominoes fall, and more remodelling will be needed in Brace and Behlen Laboratories. Our request includes funds for this also. If our plan is accepted, our space usage will be improved as this rather major move has forced us, with the help of an architectural firm, to make decisions on the optimal use and arrangement of our space in Brace and Behlen Laboratories.

## Midwest Solid State Conference at Nebraska

The University of Nebraska was host this year to the 32nd Midwest Solid State Conference held November 2 and 3. Professors John A. Woolam and Sitaram Jaswal of our department are Program Co-chairmen. The invited speakers are Dr. Allen Hermann (SERI), Dr. Neville Connell (Xerox), Prof. K. Huang (People's Republic of China and U. Missouri-Kansas City), Prof. Alvin Compaan (Kansas State), Dr. Ivan Schuller (Iowa State) and Prof. Sergio Rodriguez (Purdue). Professor K. Huang is an internationally recognized authority on lattice dynamics and co-author (with Max Born) of the well-known book, *Dynamical Theory of Crystal Lattices*. The conference was well attended with about 80 participants from Midwest Universities.

*John Weymouth with Richard Boston, graduate student in anthropology*

## Weymouth Surveys 18th Century Archaeological Site

As part of a continuing program to apply physics to archaeological problems, Prof. J. W. Weymouth conducted a magnetic survey in 1982 over a French colonial period site in Illinois 50 miles south of St. Louis. This site was the possible location of the first of three forts named Fort de Chartres. The fort was built in 1721 but lasted only a few years. Total magnetic field readings were obtained at one meter intervals over the site using proton magnetometers with a sensitivity of 0.25 nT. Anomalies on the resulting magnetic maps were interpreted as south and north wall lines, and interior structures. Excavations carried out in 1983 and 1984 located the wall lines where predicted and uncovered various French Colonial period military artifacts.

*Left to right, Edward Schmidt, Norman Simon, and graduate student Terry Teays.*

## Astronomers Study Cepheid Variable Stars

Norman Simon and Edward Schmidt have undertaken an observational study of Cepheid variable stars in four nearby galaxies. The observations will be made at McDonald Observatory in west Texas using an electronic camera. When complete light curves have been obtained they will be analyzed at the University of Nebraska using the Fourier decomposition technique. This work was recently supported by a grant of $110,000 from the National Science Foundation.

Simon, Schmidt, and Terry Teays, a graduate student, attended the 82nd Colloquium of the International Astronomical Union in Toronto in May where they presented a paper entitled "Cepheids: Observation and Theory." Schmidt also served on the scientific organizing committee of the meeting.

## Graduate Killed in Avalanche

*Glen Brindeiro*

Glen A. Brindeiro, 38, was killed in an avalance on Pakistan's Gasherbrum II mountain on July 2, 1982. Two other members of the 8-man climbing team were caught in the snow slide at the 23,300 foot level but were able to extricate themselves. This mountain is the 13th highest peak in the world.

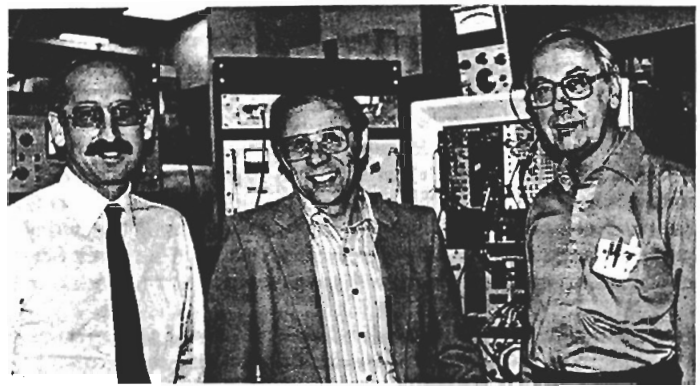
Brindeiro, who earned a bachelor's degree from Fresno State College, received his master degree here in 1969. He was employed as an engineer at the Boeing Airplane Co. in Renton, Washington.

An experienced mountain climber, Brindeiro had once climbed the south face of Mt. McKinley with light supplies and had been selected to be a member of the 1984 Ultima Thule Everest Expedition. In 1981 he was cited in the Congressional Record for having assisted a group of disabled individuals in climbing Mt. Ranier. He was not married.

## Department has another million dollar year

The department has received over a million dollars per year in outside grant funds for a number of years now and already in the first 9½ months of this year we have topped the $10^6$ figure. The new grants which we received from January 1 to October 15 are listed below.

| Principal Investigators | Title | Amount (thousands) |
|---|---|---|
| Burrow | Anion formation in hydrocarbons (NSF) | $82 |
| J. Hardy | Theor. studies of fundamental lattice absorption in highly transparent solids (ONR) | 158 |
| J. Hardy | Improper ferroelectricity (ARO) | 107 |
| Jones | Studies in topological theory (NSF) | 18 |
| Leung | Study of close binary systems (NSF) | 5 |
| Macek | Theory of atomic collisions (NSF) | 70 |
| Macek, Starace | Hyperspherical coordinate theory of two-electron atomic processes (DOE) | 65 |
| Macek, Starace | U.S.-France Cooperative Research Grant (NSF) | 15 |
| Rudd, Jaecks, Burns | Inelastic processes in atomic collisions (NSF) | 250 |
| Samson | Interaction of radiation with planetary gases (NASA) | 27 |
| Schmidt | Investigation of extragalactic Cephieds (NSF) | 110 |
| Sellmyer | Physics of thin films (Dale Electronics) | 2 |
| Sellmyer | Physical properties of aluminum-based metallic glasses (Alcoa) | 7.5 |
| Simon | Classical pulsating stars (NSF) | 100 |
| Weymouth | Magnetic surveys of Illinois sites (Illinois Dept. of Conservation) | 11 |
| Weymouth | Magnetic surveys of Fort Atkinson (Nebraska Game & Parks Commission) | 2 |
| TOTAL | | $1,029.5 |



*Left to right, Donal Burns, Duane Jaecks, Eugene Rudd.*

## Atomic Collisions Group Grant Renewed

A joint proposal for atomic collisions research has been funded by the National Science Foundation. The project's principal investigators are Eugene Rudd, Duane Jaecks, and Donal Burns. Funding for this year is $250,000 and under the terms of the continuing grant, NSF expects to extend it for another two years at an approximate total amount of $811,000 for the entire period.

Subjects to be studied are electron ejection cross sections in ion-atom collisions, Auger spectra, excitation mechanisms in atomic and molecular collisions, threshold behavior of three-body decay, and the dynamics of ionization near threshold for electron-atom collisions.

The National Science Foundation has continuously supported the atomic collisions work here since 1966, making it one of the longest running projects supported by the Atomic Physics section of NSF. The project grew out of Prof. Jorgensen's pioneering work in atomic physics in the 1950's which was supported by the Atomic Energy Commission.

## Department History

The Department of Physics and Astronomy has had over a hundred years of history which we would like to preserve. We have gathered some rather sketchy data on past department chairmen which we present below. Perhaps some of you can help us fill in unknown dates and names or make corrections in our list.

| | |
|---|---|
| 1881-1882? | A. Collin |
| 1882-? | H. H. Nicholson |
| 1888-1905 | DeWitt Bristol Brace |
| 1906-1919 | C. A. Skinner |
| 1920-1922? | John E. Almy |
| 1922-1949? | Henry H. Marvin |
| 1949-1952 | Theodore Jorgensen |
| 1952-1953? | Nels Bengston |
| 1953-1962? | Robert L. Chasson |
| 1962-1966 | Edward J. Zimmerman |
| 1966-1970 | Henry S. Valk |
| 1970-1972 | M. Eugene Rudd |
| 1972-1978 | Leo Sartori |
| 1978-1984 | David J. Sellmyer |
| 1984- | Anthony F. Starace |

## Electronics shop 1984

In past issues we have highlighted the various experimental and theoretical research groups. Since the instrument and electronics shops are vital parts of our research and teaching program in the department, we are going to tell you a little about them. This time it is the electronics shop.

The electronics shop welcomes Brian Farleigh as a new technician who joins Don Miller and shop supervisor Bob (or is it John?) Kelty. Brian's primary work is in support of other departments such as Geology, Life Sciences, and Computer Science, but his cabling experience has already helped us with our new Mini-VAX terminal connections. Speaking of the Mini-VAX, Bob got a lot of comments on his "pig shed" type of temperature controller for it, but it does work and, after all, we are an agricultural state.

The shop has built a number of relatively compact, yet heavy duty CMOS logic-based diffusion pump controllers. This has been a very popular item, especially in the sub basement laboratories. The "Juliet" data acquisition system built in 1982 for Prof. Rudd has collected over 3000 sets of data now and is still going strong. It was recently adapted to take charge transfer data in addition to ionization cross sections.

Stepper motor drive and positioning systems seem to be another popular item, with the conversion of a system for Prof. Samson, including a complete computer setup for doing multiple scanning. A new customized system is being built for Prof. Sellmyer's sputtering lab. This system is to rotate a 15-pound copper plate quickly and accurately.

Terak computers have become a maintenance problem. The resource room alone has a half dozen in working order thanks to the shop's repair efforts. The large number and various kinds of computers, terminals, plotters, printers, and other devices has the shop wishing it had a logic analyzer. The design of new interfaces and the use of increasingly sophisticated digital electronics certainly would justify the purchase, especially since there has been no major equipment purchase in the electronics shop for at least five years.

Nearly every member of the department has had some need fulfilled by the electronics shop. In many cases graduate and undergraduate students have played major roles in the construction or repair of electronic equipment and this, of course, helps relieve what would otherwise be an intolerably large load on the electronics shop. In the process the students gain valuable experience as well.

## Visiting Staff Members

**Dr. Y. Shaefer** from Hebrew University in Jerusalem, Israel worked with Prof. Samson from August 1983 to June 1984. **Dr. Gordon Angel** from Queen's University in Belfast, Northern Ireland started work with Prof. Samson in January 1984. **Dr. Zhang Chunxiang** from Zhongshan University, Guangzhou, People's Republic of China spent the last academic year with Prof. Katz. **Dr. Werner Hofmann** spent 5 weeks with Prof. Katz. He is from the University of Salzburg, Austria. **Dr. Akio Itoh** from Kyoto University in Japan and the Hahn-Meitner Institute in West Berlin is working with Prof. Rudd. **Dr. Sam Cipolla** of Creighton University in Omaha is working with Professors Jaecks and Rudd. **Dr. Toshiki Aikawa** from Tohoku-Gakuin University in Japan is working with Prof. Simon. **Dr. Guo-Jun Qiao** of Peking University in China is working with Prof. Leung. **Dr. Julian Uschersohn** of Lund University in Sweden works with Professors Jones and Campbell. **Dr. Charles Robbins,** who has a PhD from the University of Illinois, is working with Prof. Sellmyer. **Dr. Mike Waligorski** from the Institute of Nuclear Physics at Krakow, Poland has received an International Atomic Energy Agency fellowship to work here with Prof. Katz next year.

## 1983-84 M.S. and Ph.D. Graduates

During the 1983-84 academic year five of our students received their doctorates and eight received their master's degrees.

**December 1983 Graduates: Michael Alan Day,** Ph.D. (Supervisor: R. Hardy), is an Assistant Professor of Physics at Thiel College in Greenville, Pennsylvania . . . **Charles Ray Hummer,** Ph.D. (Supervisor: D. Burns), is a postdoctoral research associate in the Physics Department at the University of Connecticut in Storrs . . . **Alan Roy Johnston,** Ph.D. (Supervisor: P. Burrow), joined Bell Laboratories in Holmdel, New Jersey . . . **Md. Harunor Rashid,** Ph.D. (Supervisor: D. Sellmyer), joined Universal Energy Systems in Dayton, Ohio . . . **Akhter Uddin Ahmed,** M.S. (Supervisor: D. Sellmyer), is studying in the Electrical Engineering Department at UNL . . . **Michael Engelhardt,** M.S., is working on his Ph.D. thesis with D. Sellmyer . . . **Cathy Engelhardt (Schneider),** M.S., is working on her Ph.D. thesis with D. Jaecks . . . **Chulan Kwon,** M.S., is studying in the Physics Department of the University of Washington . . . **Chii-ling Wang,** M.S., is working on her Ph.D. thesis with J. Macek.

**May 1984 Graduates: Yan-feng Li,** M.S., is working on his Ph.D. thesis with K. Leung . . . **Suraiya Nafis,** M.S., is working on her Ph.D. thesis with D. Sellmyer.

**August 1984 Graduates: Mohammad Bolorizadeh,** Ph.D. (Supervisor: M. E. Rudd), is an Assistant Professor of Physics at Kerman University in Iran . . . **Srikrishna Udupa,** M.S. (Supervisor: F. Ullman) is now teaching high school physics in San Bernadino, California.

## Faculty Members Serve on Important Committees

Committee work can be very time consuming and sometimes tiresome. But the work of many committees is important and has far reaching effects. The faculty members of our department are involved not only in departmental, college, and university committees, but many are on state, national, and international committees, and thus have an influence on the physics community as a whole. Some of these are as follows:

**Prof. William Campbell:** co-organizer of the August 1985 Aspen Workshop on Many-Electron Theory.

**Prof. Robert Fuller:** chairman of the AAPT Student Confidence Workshop Committee.

**Prof. Duane Jaecks:** president of the Nebraska Section of the American Association of Physics Teachers.

**Prof. Sitaram Jaswal:** co-chairman of the 1984 Midwest Solid State Physics Conference.

**Prof. Kam Leung:** member of the Organizing Committee of Commission 42 (Close Binary Stars) of the International Astronomical Union and co-chairman of the U.S.-China International Symposium on Close Binary Systems to be held in Beijing, China in 1985.

**Prof. Joseph Macek:** member of the NRC/NAS Physics Survey Committee (Brinkman Report), member of the NRC/NAS Committee on Atomic and Molecular Science, Member of the NRC/NAS Committee on Computation, chairman of the NRC/NAS Report on Atomic Physics, member of the DEAP Subcommittee on Theory Institute Projects, member of the Editorial Board of the Journal of Physics B, and member of the Board of Editors of Physical Review A.

**Prof. Eugene Rudd:** member of the Resource Letter Editorial Board of the American Association of Physics Teachers.

**Prof. J. A. R. Samson:** member of the NRC/NAS Committee on Line Spectra of the Elements-Atomic Spectroscopy, member of the AIP Committee on Applications of Physics, and chairman of the 1985 Mees Medal Committee of the Optical Society of America.

**Prof. Leo Sartori:** chairman of the Forum on Physics and Society of the American Physical Society.

**Prof. David Sellmyer:** member of the Committee on Magnetism for the NRC/NAS Physics Survey.

**Prof. Anthony Starace:** member of the DEAP Program Committee, Chairman of the DEAP Subcommittee on Fellowship Programs for Atomic Theory, and member of the NRC/NAS Committee on Line Spectra of the Elements-Atomic Spectroscopy.

# We Heard From These Alumni:

ACKERMAN, Charles B. (M.A. 1950, Ph.D. 1954), Paradise Valley, AZ 85253 Is Senior Staff Scientist at Motorola Inc. He is really impressed with the evident growth in the graduate program when he see the numbers of graduates. Says quality must be there too judging by the numbers in the academic pursuits.

ANDERSON, Milo V. (M.A. 1955), Dept. of Physics, Pacific Union College, Angwin, CA 94508. Professor of Physics at Pacific Union College. Five years at the National Bureau of Standards. Teaching physics at Pacific Union College for 20 years. In recent years has been assigned to general education, introductory courses in physics and astronomy. It is a very different challenge from physics for physics majors.

AYDIN, Mehmet (M.S. 1960), Ege University, Faculty of Engineering, Bornova, Izmir/Turkey. He has been doing research as an X-Ray crystallographer and Mossbauer physicist. Is very happy to receive our "Newsletter." Appreciates very much our kind effort to get in touch with the graduates of the Department of Physics and Astronomy of the University of Nebraska and certainly needs to hear from us often so that he may be able to know where his friends are and what they are doing. Is always proud of being a graduate of the University of Nebraska. Received his Master of Science Degree in Physics on January 30, 1960 at the University of Nebraska. Became a full Professor of Physics in 1979 at the Middle East Technical University in Ankara. The same year moved to Izmir and joined the Ege University where he teaches at present. His research area is mainly X-Ray Crystallography. For the last few years he has been doing research on Cu-rich Cu-Fe alloys, Fe-Ni alloys and iron meteorites using the Mossbauer spectroscopy technique. Sends his best regards and season's greetings.

BENTZ, Wilbur (Lee) (B.S. 1964), 15620 27th Ave No., Plymouth, MN 55447 Manager of Products at McQuay Inc. Residence in suburb of Minneapolis MN. First time he's heard from the Univesity at Nebraska in 20 years. Moved around a lot since college. Guess we never caught up to him.

BROWN, Bradley A. (B.A. 1977), 2624 Blue Bird Ln, Mesquite, TX 75149. Engineer of Test Systems Design and Development at Texas Instruments. After graduating from UNL he obtained the Master of Theology degree from Dallas Theological Seminary in 1981. Currently he is in charge of microcomputer controlled test system design at TI in their Optoelectronics group. Is pursuing a masters in computer science at University of Texas at Dallas (though he may switch to physics!). He has 3 children named Sarah, Emily and Nathaniel (ages 3 mos., 2 yrs. and 4 yrs.).

CHAPMAN, Elvin B. (M.S. 1930), 1105 Kramme Dr., Fort Dodge, Iowa 50501. Formerly head of Science Department at Iowa Central Community College but now retired. Thanks for the newsletter. He remembers Prof. John E. Almy, Prof. Henry H. Marvin and Prof. T. T. Smith, "whom we affectionately called T squared Smith."

COPENHAVER, Thomas W. Dr. (B.S. 1968), 401 Windsor Ave., Wayne, PA. 19087. Very nice job on your newsletter!

CRANDALL, David H. (M.S. 1967, Ph.D. 1970) 20649 Anndyke Way, Germantown, MD 20874. Branch Chief, Experimental Plasma Research, Applied Plasma Physics Division, Office of Fusion Energy at the U.S. Dept. of Energy. Although he is no longer in active research, his first year at DOE has been stimulating. Is trying to learn enough plasma physics to "keep up" in this highly active field.

DAY, Michael A. (M.S. 1978, Ph.D. 1983), Greenville, PA 16125. Assistant Professor, Dept. of Physics at Thiel College.

DELONG, Ralph (B.S. 1966), 1111 16th Ave SE., Minneapolis, MN 55414. Research Associate at the Dental School of the University of Minnesota.

DUNNING, Neal H. (M.S. 1948, Ph.D. 1950), 8309 Bryant Dr. Bethesda, MD 20817. Director, Office of Small Manufacturers Assistance at FDA/HHS, U.S. Food and Drug Admin., 5600 Fishers Lane, Rockville, MD 20857. Appreciates our newsletter—lets him find good friends he lost 20 years ago. Keep it up! Last October he had the honor of delivering the Donald E. Fox Lectures in Chemistry at Kearney State. Subject: Science and Common Sense in Regulatory Agencies. At the same occasion, he had the pleasure of meeting his 7th and *First* grade teachers!!

EMMONS, R. Brace (B.A. 1952), 169 Walter Hays Dr., Palo Alto, CA 94303. Senior Scientist at Lockheed.

ESKEW, Lt. Mitchell A. (B.A. 1981), Golf Co, 2/8 Camp Geiger, NC 28542. Current Employer: USMC.

GASS, Clint (M.A. 1943, Ph.D. 1954), Greencastle, IN 46135. Profesor and Chairman, Dept. of Mathematics and Computer Sciences at DePauw University. Is completing another 3 year term as chairman and, after seving 24 years as chairman, is returning to full-time teaching. The newly appointed chairman is Dr. John R. Anderson, M.A. *Nebraska* 1954; Ph.D. Purdue. Thanks for the good newsletter!

GAU, John (M.S. 1971, Ph.D. 1975), 49 Warwick St., West Hartford, CT 06119. Project Manager at Andersen Labs, Bloomfield CT. Designs surface acoustic wave filters used for RF signal processing.

GREEN, Timothy J. (B.S. 1981), 220 Executive Bldg., 1624 Douglas, Omaha, NE 68102. Business Sales Rep. at Liberty Mutual. Analytical background that Physics provided has been very useful in the business insurance field. Physics instruction teaches *how* to *solve* problems - useful for any employment situation.

HEINZE, Walter W. (B.S. 1954, M.S. 1956), 79 Bethany Road, Holmdel, NJ 07733. Member of Technical Staff at Bell Co Re. As a result of the break-up of the Bell System on 1/1/84 he transferred from AT&T Bell Laboratories to Bell Communications Research (owned by the regional telephone companies) where he will continue with work providing technical support to telephone companies. Early in 1985 he expects to move into the Navesink Research and Engineering Center in Red Bank, NJ, which is now nearing completion. For general background on Bell Communications Research (aka Bellcore) see Physics Today, May 1984 pp 79-80.

HUTTON, S. Ray (B.S. 1966), Box 1300, Colorado Springs, CO 80132. Digital Equipment Corporation is his current employer.

KEIM, Chris P. (M.S. 1932, Ph.D. 1940), 102 Orchard Lane, Oak Ridge, TN 37830. Retired from Oak Ridge National Laboratory April 1971; had been Director of Stable Isotopes Division and Director of Technical Information Division. Since retirement, many things: consultant Roane State Community College; Affiliate Broker in Real Estate; principal recreation - fully licensed official of U.S. Rowing Association and leader of program of Rowing for Handicapped (Physically Disabled, Mentally Retarded, Emotionally Disturbed) in vicinity of Oak Ridge. Active in Chamber of Commerce; trustee of three Methodist Colleges.

KHAN, Mahbub R., CDC/MPI, NRMO8C, 7801 Computer Ave. S., Minneapolis, MN 55435. Is Senior Scientist. The newsletter is getting better everytime and I enjoy it.

KOH, Yoon Suk (M.S. 1959, Ph.D. 1963), Seoul, Korea. Professor of Physics and Vice President of Seoul National University. Assumed the office of the Vice President in November 1983 after serving as the Dean of the College of Natural Sciences for 4 years. Would like to welcome all the N.U. physics alumni and friends who have a chance to visit Korea.

KUMAR, Satyendra (M.S. 1975), D.S. 50-320 Tektronix, Inc. P.O. Box 500, Beaverton, OR 97077. Is Senior Physicist at Tektronix, Inc.

LANNAN, William J. (M.A. 1956), 305 East Loucks, Sheridan, WY 82801. "Mr. Lannan no longer resides at the above address and hasn't for over 20 years and did not leave a forwarding address. Newsletter had to be thrown away. If anyone knows where he is would appreciate having his current address."

MACMILLAN, Richard (M.S. 1970), 4426 Sussez Rd, Route 8, Joliet, IL 60436 Programmer/Analyst with Amoco Chemicals (Std Oil Ind)

MAURER, Christopher (M.S. 1973), 4117-251 SW 20th Ave., Gainesville, FL 32607. Is Postdoctoral Associate in the Department of Anthropology at the University of Florida.

MILLER, Daniel (B.S. 1979), Dept. of Geology & Geophysics, University of Hawaii, 2525 Correa Rd., Honolulu, HI 96822. Graduate Student/Research Assistant a the Hawaii Institute of Geophysics. In general, doesn't have much to say, except that he likes Hawaii, is studying seismology, and geophysics is turning out to be quite interesting.

MUELLER, Dennis W. (B.S. 1975, M.S. 1976, Ph.D. 1982) Fakultat fur Physik, Universitat Bielefeld, Postfach 8640, 4800 Bielefeld 1, West Germany. Is Postdoc for Professor H. O. Lutz.

PAREEK, Prem N. (M.S. 1980, Ph.D. 1983), Dept. of Med Physics, Allegheny Gen. Hospital, Pittsburgh, PA. 15212. Postdoctoral Fellow at Allegheny Gen. Hospital.

SCHULZE, Paul D. (M.S. 1966, Ph.D. 1970), 826 Rivercrest, Abilene, TX 79605. Chairman, Dept. of Physics and Director of Academic Research at Abilene Christian University.

SEVERANCE, Ralph H. (B.S. 1931, M.S. 1933), 8324 Waterwolde Lane, Fort Wayne, IN 43825. Must report the death of *C. E. Hoekstra* in Sept. 1983. It will soon be 51 years since he left Brace Lab and U of N. Retired after 27 years with the Magnavox Co. in 1964. Since then Mr. & Mrs. Severance have travled about half the time mostly in North America. They hope to visit U of N in 1984. They are saddened to know of the death of our associate and friend Dr. Roy C. Spencer.

SHUCK, Elmer E. (B.S. 1961), 20 Vine Circle, Whitesboro, NY 13492. Unit Manager, research and development light military, Utica, NY.

VALK, Henry S., Atlanta Georgia 30332. Professor of Physics at Georgia inst. of Tech. "It's good to hear of one's friends and colleagues. The Department has a right to be proud of its achievements. The newsletter is an excellent idea."

VOLZ, Donald J. (M.S. 1965, Ph.D. 1969), W 329 So 7083 Oak Knoll, Mukwonago, WI 53149. X-ray Application Development Manager at General Electric Medical Group. Currently employed in advanced product inputs for new X-ray Medical Products. Worked on development of CAT scanners, now involved in digital process of vascular/cardiac X-ray images. Family enjoys cross-country skiing & sailing in Wisconsin.

**IN MEMORIAM**

Glen A. Brindeiro (B.S. 1969) died at the age of 38 on July 2, 1982.

Dr. Cyrus E. Hoekstra (M.S. 1934) died at the age of 74 on September 17, 1983.

John A. Van Horn (M.S. 1938) 1726 Old Phila Pike, Lancaster, PA died on June 28, 1983.