



# BRIDGE of Eta Kappa Nu

*Feature Article:*

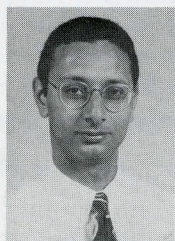
## **The Ubiquitous PC**

*by*

**Andy Grove**

*President and CEO, Intel*

**Also Featured:**



**Outstanding  
Young Electrical  
Engineer**

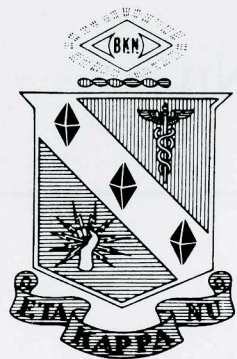


**C. Holmes McDonald  
Outstanding Teacher**



**Norman R. Carson  
Outstanding EE  
Junior**

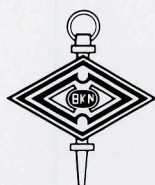




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**J. Robert Betten**

**February 1995**  
**Vol 91 - No. 3**

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**Andy Grove**  
**Alan Lefkow**  
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**Michael Schoenfelder**



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# The Ubiquitous PC

by Andy Grove

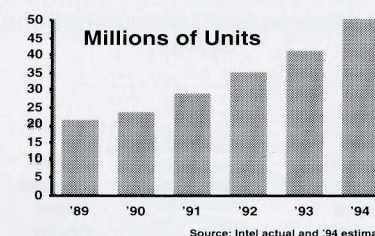
*Following is a summary of the keynote speech delivered by Andy Grove, Intel's President and CEO, at PC Expo, June 28, 1994.*

The PC is getting difficult to avoid, whether you are at the checkout counter, sitting at your office desk, in an airport or in your home. Around 10 million people will start using PCs this year. That works out to around 35,000 a day, the contents of a football stadium. This ubiquity is due to two factors: mass production and adaptability.

### Mass Production

Like the automobile and television before it, the PC has become widespread through the economies of scale of mass production. PC components like microprocessors, disk drives and monitors are all manufactured in the tens of millions of units. Unlike the building blocks for previous computers, they are standardized and interchangeable. This requires enormous investment by suppliers, but the resulting

Intel Architecture PC Shipments

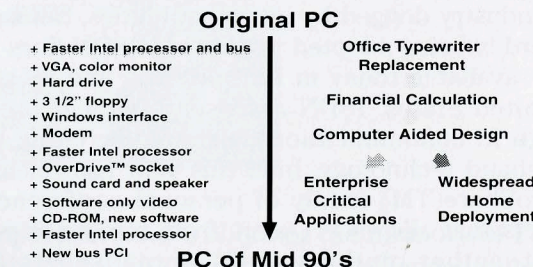


economies of scale have transformed the computer industry and put computers in the hands of tens of millions of people all over the world.

### Adaptability

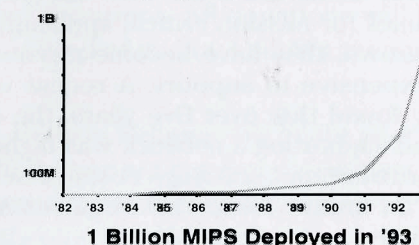
There is a second reason for the growth of the PC: adaptability. The PC has changed continuously since it was introduced. At the beginning, it was principally a typewriter replacement. Step by step the processor, software and I/O were upgraded, and with the development of spreadsheet software it became an indispensable financial tool. By the late 80s, with more processing power and a new graphics system, the PC had become the workhorse for Computer Aided Design, transforming the working lives of architects and designers. More recently, CD-ROMs, new applications and higher performance have made

it the highest growth product line in consumer electronics as the PC has moved into the home. All of these changes have taken place in evolutionary steps, with the newer PC designs largely compatible with the older generation.



This combination of mass production and adaptability is producing stunning results. The amount of computer processing power purchased worldwide in 1993 was more than a billion MIPS, or millions of instructions per second. Roughly 90% of installed PC MIPS were shipped in the last two years. This phenomenal growth rate is making the PC the Information Appliance of our time.

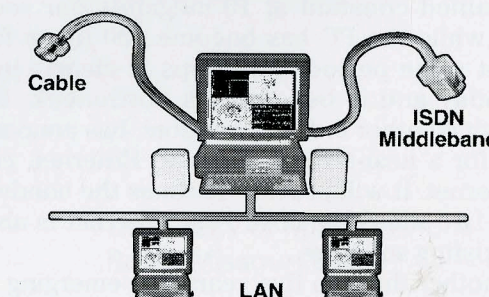
Intel Architecture MIPS Deployed per Year



### Communications

The next step in the PC revolution will come in the area of communications. Over the next two to three years there will be a new generation of low cost, high speed communications links installed at home and in the office. This combination of mass produced high performance computers and new high speed communications lines will change forever the way people work with each other. This will be the reality of the "Information Highway."

## The PC in Communications





### Arrival of "Middleband" in the Office

A major new technology in the office is Integrated Services Digital Network, or ISDN, a "middleband" digital service that runs at 128 kilobits per second, about 10 times faster than the fastest existing modem communications. Most importantly, in an industry dogged by incompatibilities, the same standard is being adopted worldwide. ISDN lines are widely available today in Europe, Asia and most of the United States. ISDN represents a clear breakthrough in communications technology. Using this middleband technology, Intel this year has released the ProShare(TM) family of personal conferencing products that allows PC users from remote sites to work together on documents, spreadsheets and other applications while seeing and talking to each other using video conferencing technology.

### Better LANs at the Office

Middleband will be applied for "point-to-point" communications, such as video conferencing to a distant party. But another key method of communication is the Local Area Network (LAN). LANs made up of PCs and workstations have become an indispensable foundation of business communications. Initially used to share disk storage and printers among several users, LANs are now used by most large companies for mission critical applications. As LANs have grown, they have become more complicated and expensive to support. A recent Gartner Group study found that over five years, the cost of managing and supporting a network was higher than the total hardware and software costs of setting it up. This is an urgent issue that requires a cross industry initiative.

The Desktop Management Task Force, an industry-wide cooperative effort, has proposed the Desktop Management Interface (DMI) to meet the challenges of LAN management. DMI will help link PC platforms, components, management applications, peripherals and management consoles based on a standard supported by more than 300 companies. DMI is a landmark agreement and promises to revolutionize the way LANs operate and integrate.

### Faster LANs at the Office

The capacity of the LAN, large as it is, is constraining communications. Since the introduction of Ethernet, the primary LAN standard in the early 1980s, the available bandwidth for data transmission has remained constant at 10 megabits per second (Mbps), while the PC has become 100 times faster over that same period. Ten Mbps is clearly inadequate today and is becoming a bottleneck. Intel, along with 40 other industry vendors, has announced support for a near-term upgrade to Ethernet, called Fast Ethernet. It will provide 10 times the bandwidth at about two times the cost. Fast Ethernet is able to utilize existing software.

In another three to five years, the emerging ATM

(Asynchronous Transfer Mode) technology will also reach the desktop. This will provide further performance improvement, and the design is optimum for multimedia applications.

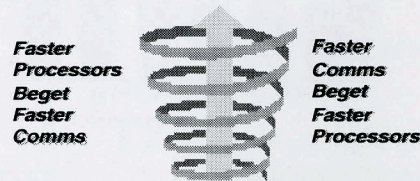
### Middleband Communications in the Home

High speed modems have opened up a new world to telecommuters and other home PC users. However, the relatively slow speed of these products has constrained their use to simple text documents. Middleband ISDN services are about to take the home PC one step further. In the mid-1990s, ISDN lines are becoming the best and most reasonably priced method of connecting home-based PCs to offices, schools, libraries, government agencies and other PCs. Home users will be able to access their office-based LANs from home and access large files that were previously too big to work on from a remote location. Graphics, pictures, presentation files and lengthy text documents can be accessed from home without a lengthy wait.

### Broadband Communications in the Home

As computer-based communications technology develops further, PCs will also be connected to each other and computers all over the world over installed cable lines. Coaxial cable has enormous bandwidth compared to telephone lines. Within the next two to five years, downloading five or 10 megabit files to your PC will take seconds instead of minutes over installed, always-ready cable connections. This will permit the development of a whole new class of applications, rich in pictorial and video content.

### The Processor/Communications Spiral



### Conclusion: The Computing/Communications Spiral

The relationship between the modern mass produced computer—the PC—and increasingly high bandwidth communications has become interdependent. The bigger the communications pipeline, the more powerful the computer needs to be to handle the data flowing through the pipeline. And the more powerful the processor, the bigger the pipe required to transmit data to it. The computing/communications spiral is the determining force for both industries in the 1990. By the late 1990s, we expect 100 million PC units to ship worldwide each year—more than cars, and TVs. In a world that is increasingly digital, and which will be interlinked by a powerful communications infrastructure, the PC is at the center.

## PAUL K. HUDSON HKN DEVELOPMENT FUND ANNUAL CAMPAIGN

Paul K. Hudson  
1916-1988

Eta Kappa Nu Executive Secretary  
and BRIDGE Editor,  
1958-1988



Established by the Board of Directors in April 1992, this important fund will honor the memory of Paul Hudson, a devoted servant of HKN and a man who truly exemplified the qualities that "balance the bridge."

The Hudson fund, managed by the HKN Board of Directors, will be used to support the general development of Eta Kappa Nu. For example, the fund will be used where necessary to help support HKN's national award programs; expansion, including the development of new college chapters and alumni chapters; and chapter visitations by current and past national officers and directors to assist with special occasions. All of these examples represent activities which Paul so heartily endorsed. Other developmental projects will be considered by the Board as funding grows and new objectives important to HKN become established.

As we honor Paul, we also honor donors to the fund by recognizing them as Paul K. Hudson Fellows. Five levels of giving are recognized, as in the form below. One-time donations at any level will be gratefully accepted. In addition, donors may now make pledges for annual donations. All donations will be counted cumulatively for the purpose of establishing the donor's current level of giving. Fellows at each level will be recognized annually by name in the BRIDGE.

Eta Kappa Nu thanks those who have already become Paul K. Hudson Fellows. We invite all members and friends of HKN to join the growing list of Fellows. And whether or not you are presently a Fellow, consider extending your support of the Hudson Fund on an annual basis. Simply fill out and return the form below. Thank you for your part in supporting and strengthening Eta Kappa Nu.

\_\_\_\_\_ I wish to become a Paul K. Hudson Fellow at the level of (check one)

\_\_\_\_\_ Distinguished Fellow (\$2000 and above)

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with the enclosed contribution of \$\_\_\_\_\_.

\_\_\_\_\_ I wish to pledge a total of \$\_\_\_\_\_ to the Hudson Fund, at \$\_\_\_\_\_ per year for \_\_\_\_\_ years, beginning \_\_\_\_\_.

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Return to: Eta Kappa Nu International Headquarters  
Box HKN

University of Missouri-Rolla  
Rolla, Missouri 65401



## Nominations Invited for The Fifth Vladimir Karapetoff Eminent Members' Award



Dr. Vladimir Karapetoff

Nominations for the fifth Vladimir Karapetoff Eminent Members' Award are now being solicited. Nomination forms and guidelines may be obtained from Donald Christiansen, Eminent Member Committee Chairman, 434-A West Main Street, Huntington, N.Y. 11743.

In 1991, the Eta Kappa Nu Board of Directors announced the establishment of an award in honor of Vladimir Karapetoff, an Eminent Member of HKN and Fellow of IEEE, who died in 1948. The first award was given on April 27, 1992.

The award, the Eta Kappa Nu Vladimir Karapetoff Eminent Members' Award, is made annually to an electrical engineering practitioner who has distinguished him/herself through an invention, a development, or a discovery in the field of electrotechnology. The fund to support the award was initiated through a bequest from Dr. Karapetoff's wife, R. M. Karapetoff Cobb, herself a distinguished chemical engineer.

A monetary honorarium is provided to the recipient (or shared by the recipients) of the award.

Factors that will be weighed by the jury will include the impact and scope of applicability of the invention, development, or discovery; its impact on the public welfare and standard of living and/or global stability; and the effective lifetime of its impact.

Dr. Karapetoff was born in St. Petersburg, Russia, January 8, 1876.

His father was an engineer and his mother a student at a military medical school.

Dr. Karapetoff emigrated to the United States in 1902, and became a naturalized citizen in 1909.

In 1904 he joined the engineering faculty of Cornell University as an assistant professor. In 1908 he was made a full professor and continued in that capacity until he retired from active teaching in 1939.

In an account of Dr. Karapetoff's career, his Cornell University colleagues R. F. Chamberlain, N. A. Hurwitz, and Everett M. Strong, recalled his continuing dedication to Eta Kappa Nu. During World War II he was commissioned a Lt. Commander in the U. S. Navy. But beginning in 1942, Kary, as he was known to his associates, began to lose his sight in both eyes, and despite temporary relief through operations, he ultimately lost his sight and schooled himself in Braille and "talking books."

Even after his blindness he seldom missed the annual Eta Kappa Nu Award dinner in New York City, and would address them in "refreshingly original and lucid expositions" of his technical interests. Fellow HKN members viewed these occasions as sort of a "national Kary reunion." His handicap notwithstanding, his cheerfulness, determination, and ingenuity prevailed.

His colleagues remembered him as an accomplished musician on piano, violincello, and double bass. He toured the country giving recitals

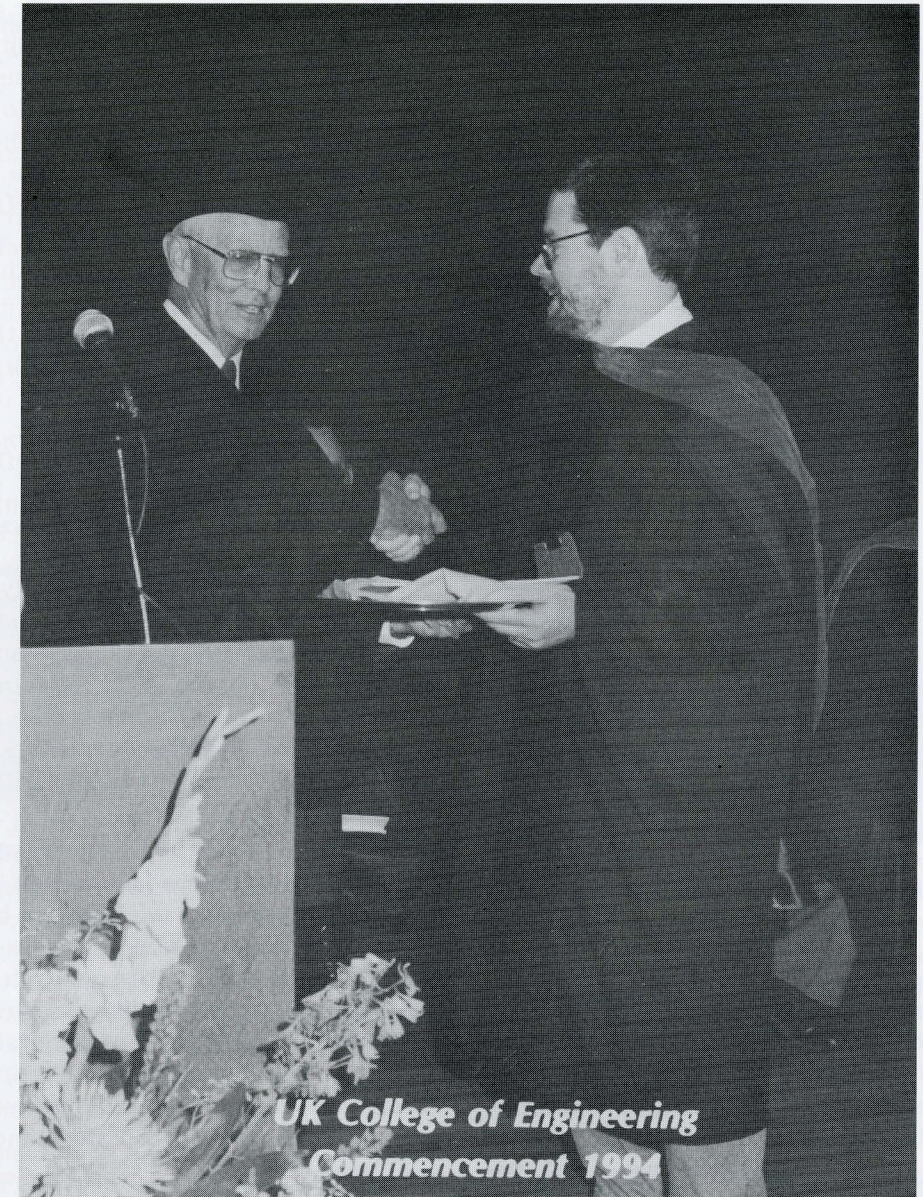
and lectures on Wagner, Liszt, and other major composers, and developed a five-string cello on which violin music could be played. He received an honorary Doctor of Music degree from New York College of Music.

Professor Simpson Linke, writing in the Winter 1984-85 *Engineering Cornell Quarterly*, cited the following excerpt from Karapetoff's *Electrical Laboratory Notes*, published in 1906, as reflective of the flavor of EE studies in that era:

In coming to the laboratory, bring with you a slide rule, an inch rule or tape, a speed counter, a screw driver and a pair of plyers [sic]. This will save you time and trouble of looking for them or borrowing them. Do not forget to have a pocket knife for skimming off wire; a bicycle wrench is also sometimes very handy to have.

Dr. Karapetoff was the author of several standard texts on electrical engineering that were widely used and revised through several editions, as well as other texts on electrical and magnetic currents, electrical testing, and engineering mathematics.

He was a member of AIEE, the Franklin Institute, the AAAS, the American Mathematical Society, the Mathematical Society of America, the American Physical Society, the U. S. Naval Institute, and the U. S. Naval Reserve Officers' Association.



**BRUCE L. WALCOTT**

**WINS**

**C. HOLMES MACDONALD**

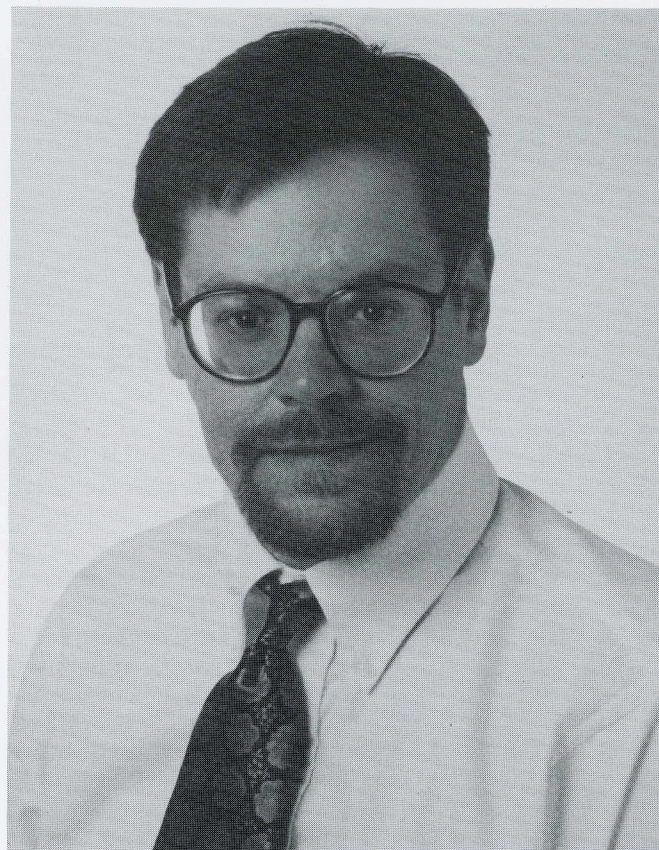
**OUTSTANDING TEACHING AWARD**

by Robert F. Arehart

On a warm May morning, inside an auditorium filled to capacity, students, parents, and faculty listened with hopeful attentiveness to the 1994 University of

Kentucky College of Engineering commencement ceremonies. In addition to the excitement and anticipation accompanying such occasions, the audience was





**Dr. Bruce Walcott**

avored by two special visitors who had returned to the Bluegrass of Kentucky. The first such visitor, Dr. Ray M. Bowen, returned from his position as newly elected President of Texas A&M to give an inspirational commencement address to 1994 Engineering Graduates. Dr. Bowen served as Dean of the College of Engineering at the University of Kentucky throughout most of the 1980s. The second visitor, Dr. Earle L. Steele, returned from his home in Melbourne, Florida to the campus where he taught innumerable students electrical engineering until his retirement in 1992. Dr. Steele, past national president of Eta Kappa Nu, had the honor of presenting the 1994 Eta Kappa Nu C. Holmes MacDonald award for Outstanding Teaching in Electrical Engineering. This year's recipient of the prestigious award is Bruce Lanier Walcott, Associate Professor and Director of Graduate Studies in the Department of Electrical Engineering at the University of Kentucky.

Bruce L. Walcott was born in Akron, Ohio, on May 23, 1959. He received the B.S.E.E., M.S.E.E., and Ph.D. degrees in electrical engineering from Purdue University in 1981, 1982, and 1986, respectively. Following his Ph.D., Walcott also served as a Visiting Assistant Professor of Electrical Engineering at Purdue. In fact, he received his first teaching award at Purdue where he was awarded the 1984 Magoon Award for

Outstanding Teaching Assistant in the School of Electrical Engineering. Walcott credits much of his current recognition to his mentors at Purdue. "I am deeply honored to receive the 1994 C. Holmes MacDonald Award," he commented. "To me, the prestige of this award can be easily measured by the list of exceptional people who are past C. Holmes MacDonald recipients," Walcott added. "Dr. David G. Meyer, a former winner, is one of my role models from my Purdue days and I have tried to incorporate many of Dave's teaching techniques into my courses here at the University of Kentucky. I am sure many of the Bridge's readers cut their EE teeth on Dave's Little Bits of Digital Wisdom. Dave and another Purdue professor, Dr. William Hayt, Jr., demonstrated the profound effect an excellent teacher can have on a young person. In fact, I can trace my initial desire to enter academics directly back to these two great instructors."

Walcott also credits other faculty at Purdue for the continued kindling of his interests in academics. "Faculty like the late Violet Haas, Stanislaw Zak, Hannis Thompson, P.M. Lin, R.L. Kashyap, and Dr. John Lindelaub continued to inspire me at Purdue during my upperclassman and graduate days. I've tried to mold my academic career in keeping with their high standards."

Since coming to the University of Kentucky in July of 1987, Walcott has had success in both research and teaching. He has been the Principal Investigator or Co-principal investigator on 9 contracts or grants totaling over 1 million dollars. His research interests include intelligent control of nonlinear systems, adaptive control, deterministic control of uncertain systems, robust vibration control of machine tools, and computer-aided control design. He has authored over 50 articles and is co-inventor on a U.S. Patent and has applied for another patent.

Walcott had this to say about his success in teaching and research: "This award reflects positively on the faculty and staff in the Department of Electrical Engineering at University of Kentucky. Although the Commonwealth of Kentucky has cut its portion of the University's operating budget by nearly 15%, our hard-working faculty and staff have endeavored to maintain, if not augment, the excellent educational experience our students receive." When asked about the students at U.K., Walcott exclaimed, "They make educating a joy! I wish I had enough time to acknowledge all of them. In particular, I'd like to thank the current and past presidents of Eta Kappa Nu I've had the pleasure to teach here at U.K.: Gretchen Bandy, Lance Reid, Matt Flach, Ron Garnett, Steven Hill, and Cherie Sanders. I'm anxious to see to what professional heights these fine young men and women soar!"

Currently, Walcott serves as Director of Graduate Studies for the Department of Electrical Engineering at the University of Kentucky. He says of his position,

"Encouraging students to further their education is a challenge unto itself. I strongly believe that every student considering graduate school should make an informed decision as to the University, the degree, and when to attend. I'm extremely pleased and proud when students who have been accepted to both our program and top-ranked graduate programs such as Purdue, Illinois, Georgia Tech, opt to come to U.K. We have one of the youngest, most energetic electrical engineering faculty in the nation. These quality people are full of new ideas and devote much of their energies to improving both the undergraduate and graduate experience at U.K."

Students at the University of Kentucky seconded the opinion of the C. Holmes MacDonald award committee concerning Walcott. Michael Marra, the President elect of U.K.'s Eta Kappa Nu chapter stated, "Dr. Walcott has played a deciding role in my academic career. His enthusiasm and encouragement gave me the inspiration I needed to further my education. As a role model, he has given me the motivation to pursue a doctorate in Electrical Engineering, and, eventually, to teach at a university."

Stuart Williams, a former U.K. EE undergraduate and current graduate student adds, "Dr. Walcott was the deciding factor in my decision to stay at U.K. for my graduate studies. He is the most energetic and enthusiastic professor that I have worked with! Stuart adds, "Dr. Walcott's fame as a teacher is even more amazing since he has the reputation of being one of the most demanding teachers at the University. He manages to cover more material in greater depth in his classroom than most textbooks. Yet, by employing interactive teaching methods, I retain more of the subject material than in my other courses."

Walcott was also the recipient of two ASEE/NASA Summer Faculty Fellowships at the Marshall Space Flight Center in Huntsville, Alabama. During this time, he designed and implemented a microcomputer-based yaw rate control system for NASA's unique two-ton air bearing vehicle. This vehicle is used, in conjunction with NASA's articulated arm mounted on an overhead gantry, to perform complex satellite rendezvous and capture simulations. Walcott's design utilized control moment gyros to decouple the yaw rate of the air-bearing vehicle from translational modes.

In terms of prior teaching recognition, Walcott was the recipient of the 1989 and 1990 Outstanding Teacher Award in the Department of Electrical Engineering. The following year, he was one of the first two Assistant Professors to win the Chancellor's Award for Outstanding Teacher within the entire University of Kentucky. Walcott also won the 1992 Henry Lutes Award, which honors the best teaching faculty member in the entire College of Engineering. On the national level, Walcott was a recipient of the 1993 SA Teetor award, given annually to outstanding young engineering

faculty. This year, in addition to winning the national Eta Kappa Nu C. Holmes MacDonald Award, he won the Tau Beta Pi Outstanding Professor Award given by the local chapter of Tau Beta Pi.

Walcott has also been successful in inspiring High School students to choose Electrical Engineering as a profession through seminars and workshops at local high schools as well as his role as faculty investigator for NSF Engineering Ahead! This program brings high school juniors in from all over the state to the U.K. College of Engineering for three weeks during the summer where faculty, staff, and graduate students work directly with them on surprisingly challenging engineering projects.

Stuart Williams, who worked as a lab assistant for this year's Engineering Ahead students, commented, "I gained a full appreciation of Dr. Walcott's teaching ability when he taught high school students participating in Engineering Ahead all the mathematical tools they needed to completely model a DC motor in three hours. Dr. Walcott made the material comprehensible and fun, too!"

"Engineering Ahead! is a wonderful program. I am afforded this opportunity to preach electrical engineering to young people only through the hard work and dedication of two U.K. faculty members, Dr. Charles Hamarin and Dr. Jim Wang," Walcott explained. "I never fail to be amazed at what young, pre-college students can comprehend. In fact, my teaching philosophy for all levels has always been based upon my firm belief that a student's performance rises or falls with the instructor's expectations. I expect the best from my students and am rarely disappointed."



**Dr. Walcott displays commemorative inscribed bowl.**



# ANDREW L. SEARS WINS NORMAN R. CARSON AWARD AS OUTSTANDING EE JUNIOR

by Michael Schoenfelder

*Editors Note: Material for this article is taken from the award applications, which were received in May 1994.*

## INTRODUCTION

**Annual Program.** Each year Eta Kappa Nu honors a junior in electrical engineering for his or her leadership abilities, scholastic and technical achievements, and service contributions. This award, the Norman R. Carson Outstanding Electrical Engineering Junior Award, was established by Mr. and Mrs. Carson to recognize the student's ability to lead, persuade, and influence the actions of others, as well as to recognize his or her diligence, intelligence and technical competence. The HKN Lone Star Alumni Chapter of Austin, Texas, which administers this award, received many outstanding applications. After careful consideration, one winner, two runners-up and three honorable mentions were selected.

### Winner

Andrew L. Sears, Gamma Theta Chapter, University of Missouri-Rolla

### Runners-up

Janice Hedrick, Theta Zeta Chapter, University of Colorado at Denver; Jerry Mahler, Beta Tau, Northwestern University

### Honorable Mentions

Charlotte Anne Belisle, Delta Pi, Colorado State University Dawn Hastreiter, Omicron, University of Minnesota Jason Patrick Torrey, Beta Kappa, Kansas



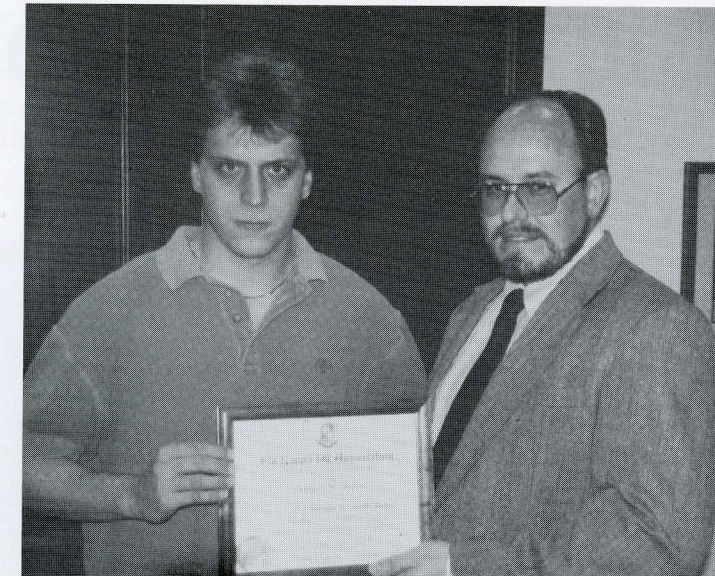
State University

## WINNER

Andrew Sears has clearly demonstrated his collegiate leadership abilities by participating in and leading an extremely wide variety of campus organizations and committees. His posts have included not only high visibility positions such as Student Body President, Vice-President of External Affairs, and Sigma Chi Treasurer, but also uncelebrated(yet important(committee memberships such as the Curriculum Review Committee, Facilities Planning Committee, and Scholastic Appeals Committee. In fact, Andrew has served on 19 councils and committees. Not satisfied with the status quo, he has initiated new programs and activities such as a Campus Complaint Line and campus-wide student government newsletter. He is also a member of IEEE, Phi Eta Sigma, Phi Kappa Phi and writes for the school newspaper.

Andrew's leadership extends beyond the University of Missouri-Rolla campus. He has attended the international Conference on Student Government Associations and National Student Leadership Education Summit. He serves on the Intercampus Student Council, where he set up the first state-wide student government video teleconference. Furthermore, Andrew is a Big Brother, teaches Sunday school, spent one summer working for a

Andrew L. Sears receives the Outstanding Junior Award certificate from Dr. Steve E. Watkins, HKN Gamma Theta Chapter Advisor and Sears' Honors Advisor.



Mr. Sears is shown in the Fiber Optic Telecommunications Laboratory in which he does honors research.

homeless youth shelter in Kansas City, and spent another summer as a missionary in South Africa.

Andrew has a 4.0 GPA and has been accepted into the Undergraduate Honors Research Program in which he will perform research at the Applied Optics Laboratory. He plans to obtain a doctorate in EE and specialize in applied optics. Andrew's career goals include being a professor and potentially establishing EE departments in developing countries.

The Lone Star Alumni Chapter congratulates Andrew Sears on his outstanding accomplishments.

## RUNNERS-UP

Janice Hedrick has been very active in Eta Kappa Nu. She has served as Bridge Correspondent and Vice-President, and has been elected President. She has also served as President of Tau Beta Pi. Janice is a member of SWE and IEEE. As a co-op student, she works at Hughes Aircraft in test, design, and analysis. Prior to attending college, Janice served in the

United States Air Force as an aircraft control and warning radar specialist. She also participates in bowling and softball leagues and has served as an Engineering Week Tour Guide.

Jerry Mahler has served as Secretary of Eta Kappa Nu and Vice President of Industrial Relations in Tau Beta Pi. He is currently a member of the Design Competition Committee, which plans the annual engineering design competition. Jerry and his team won the design competition in the previous year. The goal of the competition was to design an autonomous robot that searched for and picked up recyclable items. The main logic board of the robot failed the night before the contest and Jerry had to redesign hardware and software overnight, gaining the admiration of his peers for an amazing engineering feat. Jerry's work as a co-op student at Rauland-Borg has been amazing as well. He has been responsible for designing several systems that have been released for marketing, including a 10 MHz analog application.



# OUTSTANDING YOUNG EE AWARD

by Ralph J. Preiss, Past Chairman, OYEE Committee



Khalid E. Ismail

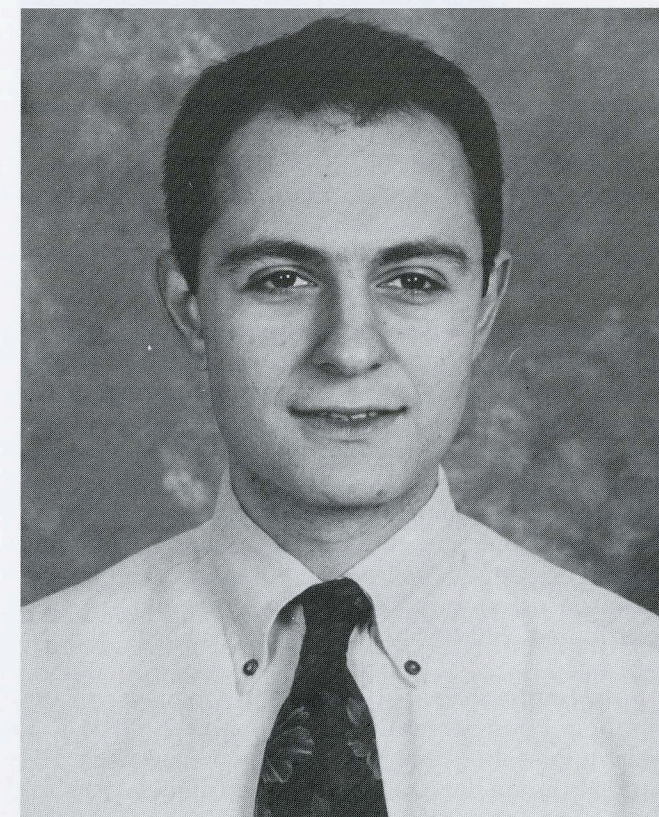
Khalid E. Ismail, IBM T. J. Watson Research Center and the University of Cairo, was honored as the Outstanding Young Electrical Engineer of 1994. His award was presented at the 59th Eta Kappa Nu Awards Banquet at the Princeton Marriott, in Princeton, New Jersey on Monday, April 24, 1995.

At the same ceremony, Bardia Pezeshki, also of the IBM T.J. Watson Research Center and David Thomson, A. T. & T. Bell Laboratories were honored as Honorable Mentions and Willam T. Mayweather III, SRI David Sarnoff Research Center, Robert S. Olyha, Jr., IBM T. J. Watson Research Center, K. Wendy Tang, State University of New York, Stony Brook, and Susan Lord, Bucknell University were recognized as Finalists for the first time. All of the above were chosen from over sixty nominations which were solicited and received by the Awards Organization Committee, and selected in a two-tier process.

The Eta Kappa Nu Outstanding Young Electrical Engineer Award is presented annually to young (under thirty-five) electrical and computer engineering graduates (within ten years from their BS degree) for meritorious service in the interest of their fellow man as well as for outstanding achievements in their chosen profession. Those honored with this presti-

gious award are selected each year through a well-defined process which has remained virtually unchanged since its inception in 1936. The nomination process involves the initiative of the nominator and the participation of at least three references in support of the candidate. The dossiers of all nominees are carefully screened by the Awards Organization Committee, a standing committee of Eta Kappa Nu, which is responsible for soliciting and updating the nominations every year, and which then selects up to a dozen Finalists for submission to the Jury of Award, which then selects the OYEE, and one or more Honorable Mentions.

Dr. Khalid E. Ismail teaches at the University of Cairo, in Giza, Egypt, and spends his vacation time continuing his high-technology research work at the IBM Research Center in Yorktown Heights, New York. He received his BS and MS in electrical engineering from the University of Cairo, Egypt and then his government sent him on a full scholarship to the Massachusetts Institute of Technology in Cambridge, Massachusetts to earn his Ph.D. which he received in 1989 in the field of quantum effect devices. The importance of the results obtained during his thesis research was underscored by about fifteen publications, and two invited talks at international conferences while he was still a graduate student.



Bardia Pezeshki  
HONORABLE MENTION



David Thomson  
HONORABLE MENTION





**Jury of Award: from left to right, Mr. Joseph Trench, Dr. Robert Bartolini, Mr. Donald Fagan, Jr., Dr. Donald Bolle, Mr. Lionel Barthold, Dr. Bruce Johnson.**

After graduation, Dr. Ismail joined the IBM T. J. Watson Research Center in Yorktown Heights, New York, as a post-doctoral fellow, where he quickly and correctly identified a problem that had stymied researchers for four years. He published a paper that revolutionized the field of using two-dimensional electron gas transport in viable silicon based devices. His new structures produced 2D electron gases having mobilities ten-fold greater than prior work. More recently, Dr. Ismail has focused on optimizing the room temperature properties of carrier transport in SiGe layers, again creating device improvements measured in factors rather than percents. Despite having received lucrative offers to work in Europe, Japan, and the United States after completing his studies at MIT, Dr. Ismail chose to return to Cairo University in 1990 to inspire and train the next generation of students on a professor's salary, to bring up his two young sons, Ahmed and Moustafa with his wife, Sherine, to consult with his

government in developing the microelectronics industry in his country, and to be involved in the course design of Egypt's first high technology institute. He has since trained a number of fine students and placed them throughout the USA. Besides mentoring to his students, he organizes workshops and conferences and spends summer vacations at IBM in Yorktown Heights to continue his research. He holds four patents and has three more pending, and he has authored or co-authored over seventy papers, and contributed chapters to five books.

Dr. Bardia Pezeshki is presently manager of the Photonic Physics and Devices group at the IBM T. J. Watson Research Center in Yorktown, New York. His interests are in developing optoelectronic devices for short- and long- distance telecommunications. He graduated as valedictorian from Harvey Mudd College in Claremont, California with a degree in applied physics in 1987. He was awarded a General

Electric Fellowship to study electrical engineering at Stanford University and obtained his masters degree in 1988. He ranked first place in the Stanford PhD qualifications exams at the start of his thesis work, and won an IBM fellowship for the rest of his graduate studies. His PhD thesis on quantum well optical modulators won him the Tucker prize for outstanding graduate work on electronic materials.

After obtaining his PhD in 1991, he spent an additional year at Stanford as a Research Associate, directing his former adviser's research group of about 25 people and teaching classes during his professor's absence on sabbatical. He started at IBM Research in the fall of 1992, and was promoted to manager of his current group in the spring of 1994. Dr. Pezeshki has published some thirty refereed journal articles, given numerous contributed and invited presentations, and obtained four patents.

Dr. Pezeshki's thesis work focused on quantum well optical modulators, a class of optoelectronic switches that can form the basis of optical interconnections or optical communications. His contribution has been in optimizing their performance, extending their wavelength range, and developing new configurations for phase modulation and beam steering. At IBM, Dr. Pezeshki has concentrated on devices for wavelength division multiplexing (WDM), where many different wavelengths are channeled through the same fiber to increase bandwidth capacity. He has developed a new class of devices that are intrinsically wavelength- sensitive, and can be seen as a bridge between waveguides and Fabry-Perot resonators. In addition to the interest generated by these advances internally at IBM, Pezeshki recently has obtained a multi-year grant from the Advanced Research Project Agency (ARPA) of \$400,000 annually to continue the development of these devices.

Since his student years, Bardia Pezeshki has been active in community and cultural activities. At Stanford, he was president of the engineering graduate student dormitory and also managed the dining facilities. He organized social and cultural functions, bringing in speakers and setting up recreational events. As an Iranian immigrant, he also organized social events in the Iranian Club, and established a series of seminars where people from other countries could talk about their communities and backgrounds. After leaving the university, he continued his involvement in community service in promoting education and community outreach. He devotes time to the United Way fund drive, and participates in its "day of caring" program at Dobbs Ferry, New York. He volunteers weekends for the Bridgeport, Connecticut "Discovery Museum" to re-engineer some hands-on exhibits, and repair others. He is involved in Engineers Week, lecturing to middle-school students about careers in engineering. And in

winters he participates in IBM's hands-on science program for fifth- to eighth-grade students. In addition, Dr. Pezeshki enjoys poetry, photography, and philosophy; he builds his own furniture; brews his own beer; and participates in hiking, camping, skiing, tennis, and running.

David Lynn Thomson was born in Rexburg, Idaho, in 1959. He graduated Summa Cum Laude from Brigham Young University in Provo, Utah in 1983 and received his MSEE from the same university the following year. He then started working for A.T. & T. Bell Laboratories, as a member of the Technical Staff. He was promoted to Supervisor of the Speech Processing Group in November, 1990. The group is responsible for developing speech technology, including speech recognition, speech synthesis and speech compression.

Thomson received two patents for work done to provide voice communication over standard phone lines without risk of wiretapping. This work was used in the AT&T STU-III for the U.S. army in secure communication during "Dessert Storm." He also developed a method to implement the algorithm for code excited linear prediction (CELP) using an order of magnitude less computing power than previous implementations. CELP is now the most widely used method for compressing speech to a bit rate of 4.8 to 16kb/s range. He then headed the team that developed an AT&T speech recognition system (in Spanish) for use during the 1992 Olympics in Barcelona. He has since received five more patents, in addition to having published and presented numerous papers about his work on audio signal processing at international conferences.

Thomson's career in signal processing actually developed as a result of his interest in music. As a member of several music groups, he designed and built electronic music synthesizers, and his first signal processing studies involved methods of simulating musical instruments.

David Thomson spent two years in Sweden as a missionary for the Church of Jesus Christ of Latter Day Saints (Mormons), where he learned to teach in Swedish. In his spare time, David volunteers as a sign language interpreter for the deaf, interpreting at church functions and at various social activities. He has taught night classes on computer hardware and software at a local community college. He also does voluntary home teaching (visiting church members at home).

Among his other talents are singing, composing songs, arranging music, and dancing. (He even received a "best musical score and best original song" recognition in a competition.) For his own enjoyment, he has taken up Tae Kwon Do (Karate),



rock climbing, playing the trumpet in the Bell Labs jazz band, performing magic tricks, and designing electronic gadgets. He is also an avid reader of novels, biographies, science fiction, and the Bible.

The 1994 group of outstanding young electrical engineers joins a long list of individuals who have brought distinction to themselves, their community, and to their profession. They were brought to the attention of the Eta Kappa Nu Award Organization Committee by the persons who had the foresight to nominate them. For example, Dr. Ismail was nominated by Dr. Bernard S. Meyerson, an IBM Fellow, who spotted Khalid Ismail while he was still a graduate student at MIT. Dr. Pezeshki was nominated by Emilio E. Mendez, IBM-retired, and currently teaching at the State University of New York in Stony Brook. David L. Thomson was nominated by M. Iwama, of the AT&T Bell Laboratories in Naperville, Illinois in 1992, and was selected a Finalist that year. This year he was upgraded to Honorable Mention by the Jury of Award.

The Jury of Award is constituted once a year from highly respected leaders of the profession for the final selection of the winner and honorable mention(s). The 1994 Jury of Award consisted of the following individuals:

- Dr. Robert A. Bartolini, Eta Kappa Nu AOC Chair, SRI David Sarnoff Research Center, Princeton, NJ
- Mr. Lionel O. Barthold, Vice Chairman & Principal Consultant, Power Technologies, Inc., Schenectady, NY
- Dr. Donald M. Bolle, Vice President, IEEE Technical Activities, Polytechnic University, Farmingdale, NY
- Mr. Donald A. Fagan, Jr., Director, Engineering & Design, Philadelphia Electric Company, Philadelphia, PA
- Dr. Bruce P. Johnson, President, Eta Kappa Nu Association, University of Nevada-Reno, Reno, Nevada
- Mr. Joseph W. Trench, Director, VF Engineering, Martin Marietta Astro-Space, King of Prussia, PA

The members of the 1994 Award Organization Committee which was in charge soliciting the nominations and selecting the Finalists for presentation to the Jury of Award consisted of:

- Mark Adamiak, General Electric Protection & Control, Malverne, PA
- Clarence Baldwin, ABB Power T&D Company, Muncie, Indiana
- Robert Bartolini, David Sarnoff Research Center, Princeton, NJ
- Donald Christiansen, IEEE-Retired, Huntington, NY
- James D'Arcy, Martin Marietta Astro Space, Princeton, NJ
- Larry Dwon, Retired, Columbus, Ohio

- Irving Engelson, IEEE, Piscataway, NJ
- Quayne Gennaro, Design by Hilton, Inc., Vienna, VA
- Willard Groth, Consultant, Boca Raton, FL
- Michael Hajny, Consultant, Charleston, SC
- James Hebson, Jr., PSE&G, Newark, NJ
- Cecelia Jankowski, Grumman Aircraft Systems, Bethpage, NY
- William Murray, Douglas Aircraft Company, Long Beach, CA
- Ralph Preiss, IBM-Retired, Poughkeepsie, NY
- Berthold Sheffield, RCA-Retired, Belle Mead, NJ
- Joseph Strano, New Jersey Institute of Technology, Holmdel, NJ
- Kurt Trampel, IBM-Retired, Katonah, NY
- Lawrence Wechsler, GE-Retired, Dewitt, NY

Nominations for the award are solicited each year through the Eta Kappa Nu Award Organization Committee. Nominations may be made by any member or group of members of Eta Kappa Nu; by leaders from industry; by any Section or Society of the Institute of Electrical and Electronics Engineers, Inc.; by the heads of electrical and computer engineering departments of any U.S. College or university; or by any other individuals or groups, who, in the opinion of the Awards Organization Committee, are properly qualified to make nominations.

Nomination forms for 1995 may be obtained from the Executive Secretary of Eta Kappa Nu, P.O.Box 2107, Rolla, MO 65401, and should be returned to him by August 1, 1993 for processing. An eligible candidate for OYEE is one who:

- has an electrical engineering degree (BS, MS, or PhD) from a recognized U.S. engineering school,
- will have been graduated not more than ten years as of May 1, 1995 from a specified baccalaureate program, and
- will not have reached his or her thirty-fifth birthday as of May 1, 1995.

Awards are based upon (1) the candidate's achievements of note in his or her chosen work, including invention of devices, circuits, or processes, improvements in analyses, discovery of important facts or relationships, developments of new methods, exceptional results in teaching, outstanding industrial management, or direction of research and development; (2) the candidate's service to community, state, or nation, such as activity in philanthropic, religious, charitable, or social enterprises, leadership in youth organizations, or engagement in civic or political affairs; and (3) the candidate's cultural and aesthetic development, such as work done in fine arts, architecture or the performing arts. Studies in history, economics, or politics are also highly valued, as well as any other noteworthy accomplishments, including leadership participation in professional societies and other organizations.

## Marquette's Beta Omicron Celebrates 50<sup>th</sup> Anniversary

by Regie R. Ganon

Marquette University's Beta Omicron chapter of Eta Kappa Nu celebrated its 50th anniversary on March 27, 1995. The special 50th year commemorative spring initiation banquet was held at the Lunda Room in Marquette University's Alumni Memorial Union in Milwaukee, Wisconsin.

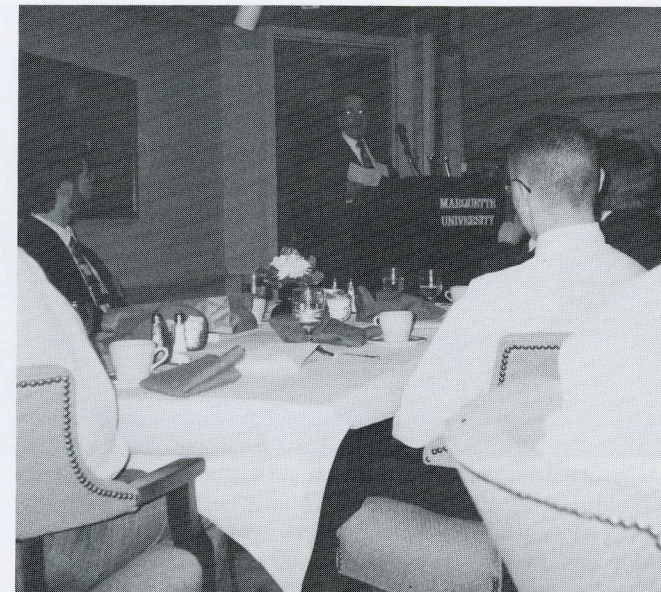
The highlight of the evening was the initiation of 7 new members into the chapter. The students, who have excelled in their academic ability and have portrayed notable personal character, are Ala'a Al-Bawab, Carlo Cotrone, Joseph Mollen, Kenneth Ore, Patrick Rice, Sheila Ross, and Mathew Sullivan. These new Eta Kappa Nu members presented an interesting and informative technical talk on an area in which they are interested.

Proud friends, relatives, and faculty gathered to share this honorable experience as the initiates received their certificate of initiation into Eta Kappa Nu.

In celebration of the golden anniversary of the chapter, the 25 inspiring men who established the Beta Omicron chapter of Eta Kappa Nu were invited to be guests at the banquet. Fortunately, three of these 25 original charter members were able to attend. Those present were G. Frank Risley Jr., Lindon E. Saline, and Ned L. Zeigler. A few, namely Joseph E. Kane, Erik M. Pell, and Lawrence A. Zechel, expressed regret for their absence in messages that were read by the president of the chapter, David Chevalier.

Not only were the 25 original charter members invited, but also chapter presidents from past years were invited to join in on the festivities. Steve Gage, president in 1981, and John Hildebrand, president in 1982 were present.

Due to the fact that many of the guests—parents and friends—present at the banquet were not members of Eta Kappa Nu, an explanation of the history of the association was presented. Russell



**Guest speaker Lindon E. Saline, charter member of Beta Omicron, shares his 1945 HKN experiences**

Niederjohn, the Beta Omicron chapter's advisor, provided these guests with an understanding and insight of Eta Kappa Nu. He also noted that the initiates this semester are the charter members for the second fifty years of the Marquette Eta Kappa Nu chapter.

The guest speaker of the evening was Lindon E. Saline, one of the original charter members. After congratulating the new initiates, he shared his thoughts on his observations of the differences of the organization from its beginnings. Among these differences include the fact that women are now members of the organization, and the fact that the slide rules and the ancient drafting tools he once used in class have now been replaced by new technology. He also commented on his Marquette experience and displayed memorabilia from the first Eta Kappa Nu initiation.

A part of the schedule of events was the presentation of the annual teaching excellence award which highlights the accomplishments of a Marquette electrical engineering professor. The award is given to a professor, chosen by the chapter members, for his or her outstanding teaching ability. This year's award was presented by Mark Hattas, the chapter's treasurer, to Jeffrey Hock, associate professor in the Marquette Electrical Engineering Department.

The evening came to a close with a Beta Omicron tradition—the performance of the initiate song. As part of the Marquette tradition, the initiates composed and performed an initiate song about the Electrical Engineering department. This semester's group sang a parody to the tune of "The Star Spangled Banner" composed by Carlo Cotrone.





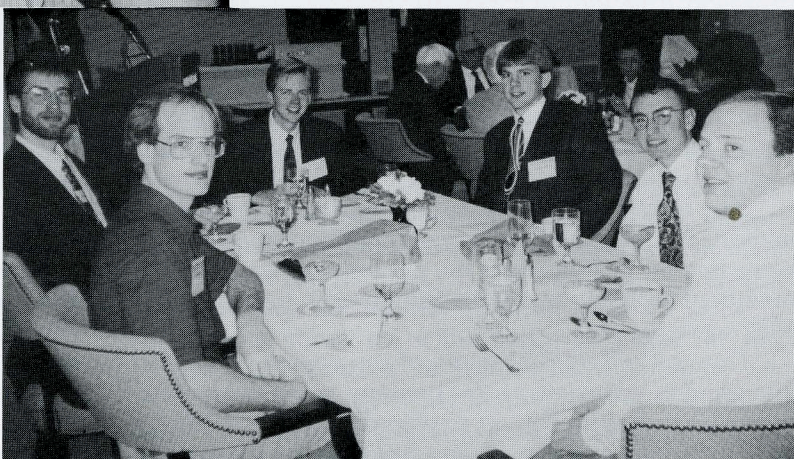
From left to right are Mr. and Mrs. Frank Risely, Mr. and Mrs. Lindon E. Saline, and Mr. and Mrs. Ned L. Zeigler

New member Mathew Sullivan is congratulated by Lawrence Jetzer, secretary of the chapter, as he receives his certificate of initiation



Dr. Jeffrey Hock, Professor in the Electrical Engineering Department at Marquette University accepts annual teaching excellence award

From left to right: Edward Brey, communications director, David Chevalier, president, Mark Hattas, treasurer, Lawrence Jetzer, secretary, Robert Mangiafico, member and Jason Pionke, member



# 1992-93 Chapter Awards

by Alan Lefkow

The Outstanding Chapter-Activities Award program epitomizes the characteristics of a successful member of Eta Kappa Nu. Members' election to Eta Kappa Nu demonstrates their academic ability. But members, working together in concert as a college chapter demonstrate their humanitarian side with their activities of service to their fellow students, their department, their school, and the community at large. In return, the Chapter Award program provides recognition of college chapters for their programs of service to their students and community.

For the academic year 1992-93, seven college chapters received awards for having an outstanding program of activities. Awards are broken into three categories. *Certificate of Merit* winners are recognized as up-and-coming chapters whose programs demonstrate unselfish dedication to their fellow students and community. *Honorable Mention* winners are recognized as truly outstanding chapters whose extensive program of activities stands out from the rest. The *National Winner* is simply that chapter whose program stands out above all these others.

For the 1992-93 school year, seven chapters received recognition for their programs of excellence. Beta chapter of Purdue University copped the National Winner award, their twelfth win in as many years. Beta Epsilon chapter of the University of Michigan, and Iota Xi chapter of the University of Arizona received Honorable Mention awards. Four other chapters were cited for their meritorious programs and received

Certificates of Merit. They were Gamma Mu chapter of Texas A & M University, Delta Pi chapter of Colorado State University, Nu chapter of Iowa State University, and Zeta Pi chapter of the State University of N.Y. at Buffalo.

Outstanding chapters are selected based on their annual chapter report. Any chapter that sends in an annual report is automatically entered into the competition. Reports arrive at National after the end of the academic year and into early fall. They are judged in the winter, and the winners announced by spring. The Chapter Award program is also unique. One winning award can touch the hearts of a whole chapter. The award plaques themselves have been made as rich as possible. The National and Honorable Mention winners receive metal plaques engraved in color. The Certificate winners receive their awards laminated in walnut.

Winning chapters send in reports of distinction that do justice to their programs of activities, and many of these reports have been published in the pages of BRIDGE as examples to others. Desktop publishing and other professional services on campus have contributed to annual reports that look as good as the chapter they portray. A winning report requires hard work, but then so does an outstanding program of activities. The Certificate of Merit Report of Delta Pi is presented here as an encouraging example of a Winning Report.

## Eta Kappa Nu Delta Pi Chapter Colorado State University

### 1992-1993 Annual Report

President's Letter  
September 14, 1993

One of the major goals of the Delta Pi chapter is to always improve on the accomplishments of the year before. For the 1992-93 academic year, I believe that we have succeeded in reaching this goal. The year started off with a complete reorganization of the chapter, not only with the election of new officers, but also with the appointment of an interim adviser. This left the new officers the ability to completely reorganize activities and the methods in which they are accomplished. As a result we have continued activities which are becoming "tradition" for the Delta Pi chapter including: The adopt a highway program to cleanup scenic roads. Tuesday night tutoring for struggling (if not all) students. Organizing industry field trips so students may glimpse of the "here after". And of course, our pride and joy, the annual HKN and IEEE Thanksgiving Food Drive.

However, in working toward meeting our goal, we have added a few new activities with hopes they will ultimately reach the Delta Pi "traditions" list. Those activities include: A social tailgater for members before one or more of the home football games. A very successful Faculty Dunk Tank during Engineering Days where students may seek revenge on deserving faculty members from all disciplines. And finally, a senior picnic where seniors may present joke awards or "roast" deserving professors and "will" helpful traits or devices to the rest of the undergraduates.

With another successful year behind the Delta Pi chapter of Eta Kappa Nu, I'd like to thank my officers for their hard work and support, as well as all the members who showed their commitment to HKN. I Thank YOU! Now I am able to pass leadership to next year's officers and present them the challenge to "Maintain and Surpass the Accomplishments of the Past Year!"

Sincerely,

*Kevin C. Keane*

Kevin C. Keane  
President of Delta Pi Chapter





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### 1992-1993 Delta Pi Members

#### Current Members

Elizabeth Callahan	Duane Louderback
Min-Fon Chang	Sankaran Menon
Marian Chao	Jim Ott
Sarah Christensen	Roy Pitt
Tony Eimen	Ken Richardson
Marsha Heibein	Galen Short
Krystal Holderness	Rick Snyder
Kevin Keaney	Joe Sroda
Dirk Kunselman	Tracy Wallen
Henry Lo	

#### New Initiates

Blake Buhlig	Erich Reiter
Greg Dix	Duane Schmitt
Ken Fay	Will Schulke
Rose Goldberg	Peter Sebestyen
Sheila Gray	Duane Spence
Kathryn Interholzinger	Pat Stanko
David Mielke	

#### Interim Faculty Advisor

Dr. Mike Thompson

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### 1992-1993 Officers

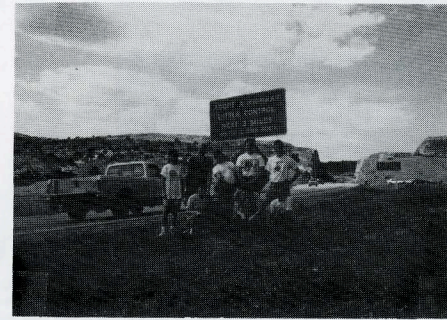
President.....	Kevin Keaney
Vice-President.....	Dirk Kunselman
Recording Secretary.....	Elizabeth Callahan
Corresponding Secretary.....	Marian Chao
Bridge Secretary.....	Duane Louderback
Treasurer.....	Marsha Heibein
Engineering Legislator Representative.....	Rick Snyder

### 1993-1994 Officers

President.....	Greg Dix
Vice-President.....	Duane Spence
Recording Secretary.....	Blake Buhlig
Corresponding Secretary.....	David Mielke
Bridge Secretary.....	Rose Goldberg
Treasurer.....	Erich Reiter
Engineering Legislator Representative.....	To be elected

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Thanksgiving Dinner Drive as service projects for initiation.



The Delta Pi "Cleanup Crew" standing by the sign that marks the end of their efforts.

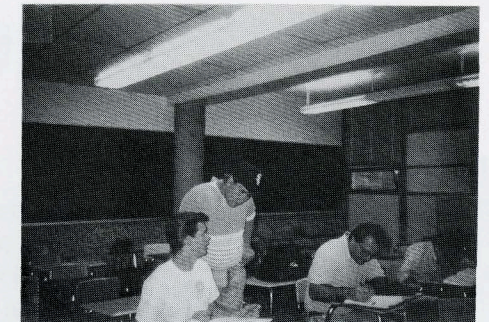
### Academic and Career Enrichment

#### HKN Tutoring

Every Tuesday night, HKN reserves a room and provides tutors for electrical engineering students needing help in anything from microprocessors to electromagnetic fields. Students also found the tutoring sessions were a good time to meet and do homework or study. The interaction between HKN members and fellow EE's was mutually beneficial. Students were able to get much needed help

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and HKN members were able to review previous material and see it in a new perspective.



"Your supposed to find what?", the HKN tutor asks.

### Engineering Field Trips

Each semester, the Delta Pi chapter arranges engineering field trips for the department of electrical engineering. Engineering firms are found that will provide detailed tours of their facilities. Sign-up sheets are then used to inform the companies of what size group to expect. Field trips varied from Apogee Robotics to Hewlett-Packard. Most students find the trips enlightening. They get to see the things they have been learning about used in a practical situation. The Budweiser tour was

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### Initiation

The Delta Pi chapter inducted 13 new members during the fall semester. After the new members went through the traditional initiation ceremony, the night was topped off with dinner at the Moot House. The private room and delicious food provided an opportunity for new members and current members to socialize and get to know each other. A good time was had by all!



Current members pose for a shot before the initiation ceremony begins.

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### Community Involvement

#### Thanksgiving Dinner Drive

The annual Thanksgiving Dinner Drive was once again organized by HKN and IEEE. Donations were collected from students and faculty in the Lory Student Center. The money collected was used to purchase the ingredients for a complete Thanksgiving dinner: a whole turkey, stuffing, sweet potatoes, cranberry sauce, and even homemade pumpkin pie. The dinners were prepared and packed in large boxes. The dinners were then personally delivered to families chosen by the Salvation Army. In all, over 100 Thanksgiving dinners were delivered to needy families in the Fort Collins area. The Thanksgiving Dinner Drive was rewarding for all those who were involved.

#### Adopt a Highway Program

Delta Pi members continued the tradition of picking up the trash along a three mile stretch of highway 287. Three times a year HKN members gather on an early Saturday morning and venture north of Fort Collins to a sign along highway 287 which states "Adopt a Highway Litter Control Next 3 Miles: HKN CSU EE Honor Society". After gloves and orange vests are distributed, members split into a team for each side of the highway and begin the cleanup. About three miles and hours later, the highway is clean and orange trash bags line the highway ready for pickup. New initiates were encouraged to participate in the highway cleanup and

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especially popular since students could perform their own taste "quality" tests on a free beer.

### University Related Projects

#### Dunk Tank

At Colorado State University's Engineering Days, HKN sponsored a dunk tank. Students were able to dunk their "favorite" professors. Soon after the dunk tank opened on Friday morning, a large crowd of people gathered and students waited in line for their chance to dunk the professor that had been talked into donating a half hour of his or her time. The crowds remained all day and judging by the number of wet professors and money taken in, students must have found the price of 5 balls for \$2 a real bargain. Besides having fun, HKN members were able to raise some significant funds.

#### Clay Boat Contest

Delta Pi also sponsored a clay boat contest at E-days. Participants were given a prescribed amount of clay with the instructions to make a boat that could support the most pennies. The winner was then given a prize. Although the clay boat competition barely broke even, those that were involved would agree it was well worth the effort.

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### Senior Picnic

This picnic was organized by HKN for graduating seniors. All students and faculty were invited. Besides food, HKN provided DJ's for the picnic. Faculty awards were presented at the picnic and senior wills were read. Senior wills provided more than one laugh for those attending. The fun had at the picnic was a perfect way to send the seniors off and end the year.

### Fund Raising

#### The Pop Machine

Traditionally, the pop machine is the main source of income for HKN. But the pop machine needed many repairs. After spending nearly \$400 and losing half a semester of potential income, the pop machine was finally open for business. At 40 cents per can, students find the machine to be quite a bargain. Because of the machine's popularity, the number of cans sold is amazing. The machine must be continually refilled which requires cases of pop to be carried up three flights of stairs. Annual sales of nearly 120 cases of pop make this anything but trivial.

### Social Activities

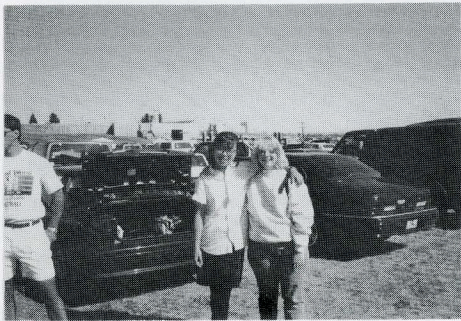
#### Tailgater

Delta Pi members gathered for a tailgater before the football game with rival Wyoming. Members socialized and feasted on hamburgers, chips, and other food. After members had devoured all

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the food, they spent an enjoyable afternoon watching the Rams play the Cowboys.



Delta Pi members Marian Chao and Marsha Heibin waiting for the others to finish eating.

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Financial Report

Starting Balance: \$677.87

Expenses:

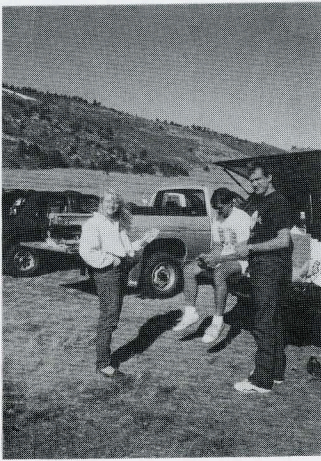
Pop Machine Repairs	395.42
Thanksgiving Dinner Drive	778.90
Field Trips	13.31
Dunk Tank Rental	38.00
Initiation	231.00
Pizza	174.21
Highway Cleanup	18.27
	<u>\$1649.11</u>

Revenues:

Donations (Thanksgiving Drive)	625.00
Dunk Tank	212.50
Pop Machine	<u>652.86</u>
	\$1490.36

Ending Balance: \$519.12

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Krystal Holderness, Joe Sroda, and Duane Louderback check their tickets to determine who the Rams are playing.

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Summary

Eta Kappa Nu - Delta Pi Chapter  
Department of Electrical Engineering  
Colorado State University  
Fort Collins, CO 80523

	Fall	Spring	Summer
Number of Members	19	32	20
Number of New Initiates	13	0	0
Number of Business Meetings	10	11	0
Number of Officer Meetings	2	6	0

Programs and Activities

Activity	Status	Man-Hours	Semester
Initiation	Old	20	Fall
Adopt a Highway Program	Continued	100	F, Spr, Sum
Thanksgiving Food Drive	Old	50	Fall
Tutoring	Continued	100	Fall, Spring
Field Trips	Continued	20	Fall, Spring
Dunk Tank	New	40	Spring
Clay Boat Contest	New	10	Spring
Senior Picnic	New	20	Spring
Pop Machine	Continued	80	F, Spr, Sum
Tailgater	New	10	Fall

Duane Louderback  
Bridge Secretary of Delta Pi Chapter  
9-21-93

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# CHAPTER ACTIVITIES

## 1992-93

### Annual Report Epsilon Rho Chapter

Tennessee Technological  
University

#### Tutoring

The Eta Kappa Nu tutoring service is provided free of charge for any student with a question regarding electrical engineering. The tutoring is done by the members of Eta Kappa Nu who sign up voluntarily to staff the study library for about 10 hours per week. Each volunteer is only responsible for being available for tutoring for one hour per week. This service is great for the beginning electrical engineering students. We have also found it to be very popular with mechanical engineering students who take an overview course in electrical engineering. It seems that cross discipline cooperation is being developed in the university through this program.

#### Scholarship

An effort was started several years ago to establish a fund that would support a yearly scholarship for an undergraduate student in the electrical engineering department. The previous year we gave our first scholarship, two in fact, of \$500.00. The scholarship was designed to reward the good student with

tight finances. There is an emphasis on activities, outside employment, and financial need, as well as academic achievement.

#### Engineering Day

This day is intended to show perspective students and their parents the value of an education in engineering at Tennessee Technological University, and the students in Eta Kappa Nu are happy to show the world of electrical engineering to these students. Eta Kappa Nu volunteers will discuss college life as an electrical engineer, as well as demonstrating some of the equipment in the school laboratories.

#### Social Functions

The two primary social activities are the Spring Picnic and the initiation meals. Before each initiate is actually inducted into the society, Epsilon Rho buys the perspective members a meal at a local restaurant. Teachers, Eta Kappa Nu members, and initiates are all invited to attend, which gives the new initiates an opportunity to see Eta Kappa Nu as a group of people and not just as an honor society. The Spring Picnic provides an opportunity to relax and to have fun with teachers, members, and non-members. It allows all of the components of the electrical engineering community at Tennessee Technological University to enjoy each other and

their commonalities outside of the classroom and laboratory.

Sincerely,  
David Sellers  
Bridge Correspondent

#### OFFICERS AND DATA

##### Fall 1992

Number of Members	32
Number of New Initiates	20
Number of Business Meetings	6

##### Spring 1993

Number of Members	40
Number of New Initiates	10
Number of Business Meetings	6

##### Fall 1992 and Spring 1993

President	Michael Woodall
Vice President	Any Cannon
Treasurer	Britt Blankenship
Recording Secretary	Jeff Dugger
Corresponding Secretary	Adrian Goad
Bridge Correspondent	David Sellers
Faculty Advisor	Dr. Mahajan

#### PROGRAM AND ACTIVITIES

The Activity, Old, New, or C (Continued), and Man Hours are listed below, respectively:

##### Fall 1992

Tutoring	C	120
Initiation Banquet	C	

##### Spring 1993

Tutoring	C	120
Scholarship	C	40
Picnic	C	10
Initiation Banquet	C	
Engineering Day	C	10

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