



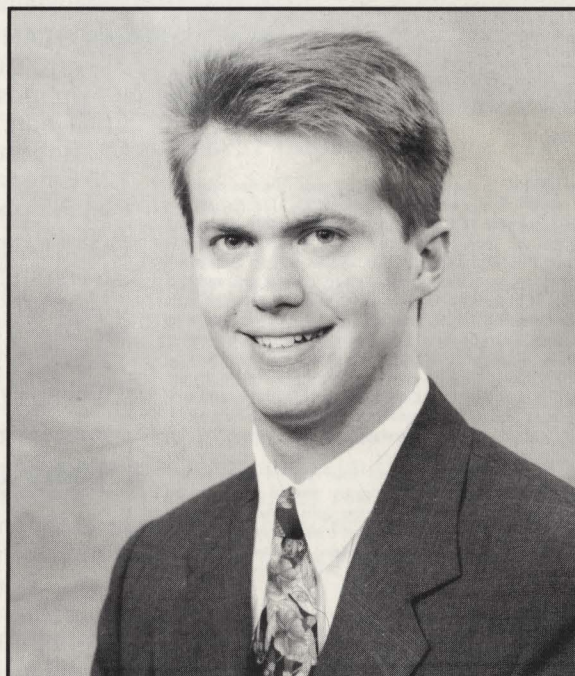
# BRIDGE of Eta Kappa Nu



Dr. Wen-Mei Hwu  
Outstanding Young Electrical Engineer



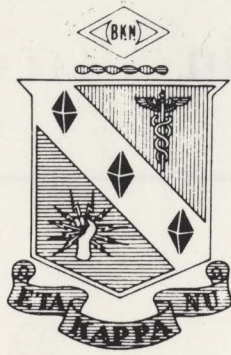
Dr. Denice D. Denton  
Outstanding EE Professor



Mr. Kenton L. Epard  
Outstanding EE Junior

## 1993-WINNERS





**Editor and Business Manager**  
**J. Robert Betten**

**May 1994**  
**Vol 90 - No. 3**

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**Robert F. Arehart**  
**Richard R. Gallagher**  
**The Late Paul K. Hudson**  
**Ralph J. Preiss**  
**Michael Schoenfelder**



The BRIDGE is published by Eta Kappa Nu Association, an electrical engineering honor society. Eta Kappa Nu was founded at the University of Illinois, Urbana, October 28, 1904, that those in the profession of electrical engineering, who, by their attainments in college or in practice, have manifested a deep interest and marked ability in their chosen life work, may be brought into closer union so as to foster a spirit of liberal culture in the engineering colleges and to mark in an outstanding manner those who, as students in electrical engineering, have conferred honor on their Alma Maters by distinguished scholarship activities, leadership and exemplary character and to help these students progress by association with alumni who have attained prominence.

The BRIDGE is published four times annually—November, February, May, August and is published by Eta Kappa Nu, Haywood Printing Company, 5th & Ferry Sts., Lafayette, Indiana. Second class postage paid at Lafayette, Indiana. Eta Kappa Nu Association, Subscription price: three years, \$15, Life Subscription, \$60.

Address editorial and subscription correspondence and changes of address to:

**HKN BRIDGE, P.O. Box 2107**  
**Rolla, MO 65401**

Postmaster: Send address changes to: HKN Bridge, P.O. Box 2107, Rolla, MO 65401.

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## 1993-94 Special Mail Convention In Progress Please Return Your Ballot Now

### 1992-93 Special Mail Convention National Constitution Revisions Unresolved

135 Chapters sent in ballots.  
142 ballots were required for resolution  
(Needed 3/4 of 189 chapters to respond).

**Many, many thanks to each chapter.**

# The Royal Chapel at Granada

by Paul K. Hudson

*EDITOR'S NOTE: This article was prepared by the late Paul K. Hudson just before his death. We felt it appropriate to include it in this issue.*

Every school-child knows about Ferdinand and Isabella of Spain mainly because they were the people who sent Christopher Columbus on his voyages in search of the New World. Also, it was their marriage of convenience that united Aragon and Castile to form Spain pretty much as we know it today. At the time of their marriage they had no permanent Court because they were so busy driving the Moors out of Spain. It was not until they finally captured the Kingdom of Granada that the reconquest could be considered completed and a stable law and order established. It is very fitting, therefore that these pioneers of Spain should have their place of burial in Granada.

In the great Cathedral of Granada there is a very handsome and elegant Royal Chapel. Within the Chapel and within a fenced-in enclosure will be seen four tombs with a carved effigy above each. As might be expected, the two in the center are Ferdinand and Isabella. But who are the other two? A first time visitor would be quick to guess that they are other famous members of the clan—Charles V, or perhaps Philip II, or even Philip IV. That is not the case. These two do not get much of a spread in the Spanish history books and there is a good reason. Spain is not very proud of them. Nevertheless theirs is one of the greatest love stories in the history of the world. They are Philip I and Queen Joanna. Joanna was the daughter of Ferdinand and Isabella.

Isabella was determined to marry all of her children to royalty and was, for the most part, successful. Her daughter Catherine was married to Henry VIII of England for a while and his desire for a divorce led to the establishment of the Church of England. The man picked for her daughter Joanna was Prince Philip, son and heir of the German Emperor Maximilian I. They made a beautiful couple. Philip was so good-looking that he was known in history as Philip the Handsome. Joanna was a dark, slender and very beautiful Spanish girl. Also, she had a brilliant mind and was quite poised.

The first meeting of Philip and Joanna was memorable. Joanna had been taken to the royal court in northern Europe and, with others, was waiting in a room for Philip to arrive. He had ridden a horse all day to get there and must have been tired, dirty, sweaty, and smelling like the horse. He walked into the room, took one look at Joanna, she took one look at him, and the bells rang loud and clear. It was love at first sight for both of them. He said to his Aid,

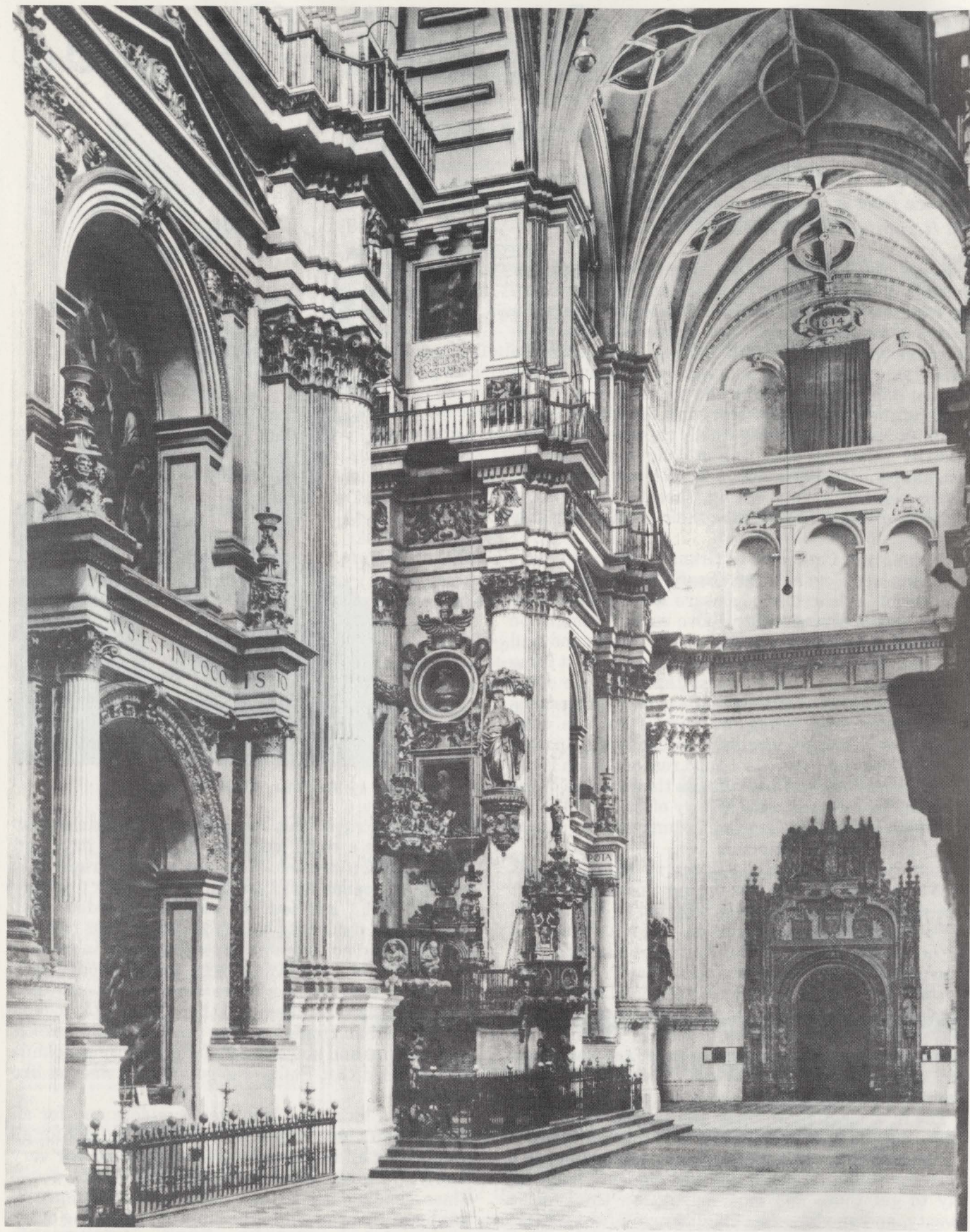


Author, Paul Hudson

"Get me a Priest." His Aid replied, "You can not do that. This is a royal wedding. It will take days and weeks." Philip replied, "Get me a Priest right this minute or Joanna and I are going to a room together without being married." It was not recorded what Joanna said about that but since the love was mutual, she likely did not register any complaints. In spite of her upbringing, she was a very warm blooded girl. So, there was nothing to be done except call in a Priest. He married them and then Philip took Joanna by the hand and together they ran to a room, tore off their clothes and stayed there for a long time. Joanna did not mind that Philip was gamey and smelled like a horse.

Joanna's love for Philip was complete and for all time. Philip's love for her was complete but not for all time. After a few years he started treating her very poorly. He would order her around like a child, sometimes sending her to her room in the presence of company. He even got to the point of romancing other women of the court in the presence of Joanna. But she never turned against him and loved him as much as ever.





The Royal Chapel

Sometime later they visited Ferdinand and Isabella in Spain. When Isabella saw how poorly Philip was treating her daughter she told him that if he did not change his attitude then she would not permit Joanna to return to Germany with him. He replied, "That is great news. I have been trying to figure out some way to get rid of Joanna. I can just leave her here with you until you die and then I will return and lock her up someplace and take over your country." Nice guy, huh? When it came time for Philip to leave, Isabella told Joanna that she could not go with him. But Joanna had other ideas. Her love for him was so great that she could not give him up or even think about such a thing. She told her mother that she was going and no one could stop her. Isabella had to lock her up in a gatehouse to restrain her. Joanna kicked the doors and screamed and fought with her jailers day and night. She managed to escape a couple of times but was soon captured and sent back. Finally Isabella just gave up and told Joanna that if she was so determined to live with that terrible man that she could go ahead and leave. Joanna left immediately. But Philip did not treat her any better than before.

Several years later Philip and Joanna started out on another trip to Spain to visit her parents. One afternoon they established camp in a beautiful woodland meadow in France. There were no Hilton Hotels in those days. Philip could have no way of knowing that the Angel of Death was waiting for him in that lovely meadow. During the afternoon he challenged one of the soldiers of the guard to a wrestling match. It is not known exactly what happened. It may be that he injured his spleen or some other vital organ. In any case, a few hours later he took a severe chill. Two days later he died.

When Philip died, Joanna just went wild with grief. Preservation of the dead was not much of a science in

those days with results that can be imagined. Nevertheless Joanna would not allow Philip to be buried and just kept him with her all the time. Each evening she would open the lid of the box to look at him but she would not allow any other woman to look at him or be in the room with him. When she arrived in Spain she kept him at the altar of her church the rest of her life.

In due time Isabella died. Since she was the Sovereign, Joanna promptly became Queen. But Ferdinand had different ideas. He announced to the people that Joanna was not mentally able to serve. He locked her up in a castle and took over the government. When Ferdinand died, Joanna's son Charles locked her up again and took over the government. So, the three men who were important in her life—her husband, her father, and her son—had all been cruel to her. Because of that and the fact that she had been locked up for so long, she did indeed become mentally incompetent. People who loved her started a revolution to put her back on the throne but by then she was unable to cooperate and the revolution failed before it was well started.

As we stand (either in person or in our imagination) in the Royal Chapel at Granada and view the last tangible remains of the early Spanish government, our sympathy has to go out to Joanna. "Joanna the mad," if you must, but Joanna all the same. She lost her crown and mind for no worse reason than the fact that she loved someone with her whole heart and for all time. How many other people are there in the world who love someone that much? Or who are loved that much? If we look carefully we see that the sculptor has Joanna looking away from Philip. I am sure it was done knowingly but Joanna would never have done that in life.

## Paul Hudson's Favorites

A visitor entered a western bar and found several men and a dog seated at a table playing cards. "Can that dog actually read cards?" asked the visitor. "Yes," replied the dealer, "But he is a terrible poker player. Every time he gets a good hand he wags his tail."

Any 20-year-old who isn't a liberal doesn't have a heart, and any 40-year-old who isn't a conservative doesn't have a brain.

Winston Churchill

Our Founding Fathers objected to taxation without representation. They should see it today *with* representation.

A gray-haired old lady, long a member of her community and church, shook hands with the minister after the service one Sunday morning. "That was a wonderful sermon," she told him, "just wonderful. Everything you said applies to someone I know."

"How could you have a son that age?"  
I didn't. When I had him he was just a baby."

Father was always bothered by flat feet. They kept giving him tickets for speeding.

Most of us can keep a secret. It's the people we tell it to that can't.



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)

\_\_\_\_ Century Fellow (\$1000 - \$1999)

\_\_\_\_ Sustaining Fellow (\$500 - \$999)

\_\_\_\_ Supporting Fellow (\$100 - \$499)

\_\_\_\_ Fellow (\$25 - \$99)

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

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

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY, STATE, ZIP CODE \_\_\_\_\_

Return to: Eta Kappa Nu International Headquarters  
Box HKN

University of Missouri-Rolla  
Rolla, Missouri 65401

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



Dr. Vladimir Karapetoff

Nominations for the fourth Vladimir Karapetoff Eminent Members' Award are now being solicited. Nomination forms and guidelines may be obtained from Donald Christiansen, Eminent Member Committee Chairman, 434 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.



# OUTSTANDING YOUNG EE AWARD

by Ralph J. Preiss, Chairman, OYEE Committee



Dr. Wen-Mei Hwu

Dr. Wen-Mei Hwu, Associate Professor at the University of Illinois Coordinated Science Laboratory, has been chosen by the Jury of Award as the Outstanding Young Electrical Engineer of 1993, and Dr. Christopher P. Yakymyshyn of the GE Research and Development Center as the Honorable Mention. In addition, three new finalists were picked by the Awards Organization

Committee for possible further consideration in next year's judging. These three include Scott Campbell of the NCR Corporation in Dayton, Ohio, Paul MacGregor of the General Electric Company in Schenectady, New York and Steve Watkins of the University of Missouri-Rolla. The 1993 awardees were recognized at Eta Kappa Nu's fifty-eighth annual awards banquet on April

25, 1994 at the Princeton Marriott in Princeton, New Jersey.

This year's Jury of Award panel consisted of the following distinguished members:

- Charles F. Fuechsel, the Director for Communications and Data Systems at the National Aeronautics and Space Administration
- Saleem A. Kassam, the chairman of the Department of Electrical Engineering at the University of Pennsylvania
- David G. Meyer, Electrical Engineering Department, Purdue University, and 1993 President of the Eta Kappa Nu Association
- Gregory H. Olsen, President of Sensors Unlimited, Inc.
- Bruce A. Renz, Vice President, Transmission and Distribution Services of the American Electric Power Service Corporation
- Peter Schneider, Vice President, World Wide Development of the International Business Machines Corporation.

Dr. Hwu's citation reads, "By virtue of his very significant contributions to computer engineering, and for his dedication as an outstanding teacher, advisor, and leader in his profession." He was recognized for his innovations in computer architecture and compiler technology which have been embraced by almost every major computer manufacturer. After founding the IMPACT architectural framework project at the University of Illinois in 1987, his work has contributed substantially to the design of superscalar microprocessors at such corporations as NCR, Intel, Advanced Micro Devices, Hewlett-Packard, and SUN Microsystems. The concept of non-trapping instructions developed by Hwu and his students has been adopted by the SPARC V9 architecture, and his work in compiler optimization techniques has also been adopted by many of these companies. In addition, the University honored him with a faculty initiate for both his excellent teaching and advising activities, and many of the PhD students he supervised have assumed leading positions within the above companies. Also, he has been involved with the program committees of many IEEE- and ACM-sponsored conferences, including the chairing of the very successful 1992 International Symposium on Microarchitecture. Despite his very busy professional schedule, he still managed time to become a certified teacher in bible studies, and to devote many hours to bible teaching activities.

Dr. Yakymyshyn, an OYEE Finalist last year, was cited, "By virtue of his extraordinary abilities as a scientist and problem solver, his dedication to helping others, and his outreaching approach to recreation through sports, nature, and the arts." His recognition comes not only because of his many papers and patents, but also

because he has been recognized by his colleagues and managers as an engineer, in the best sense: one who solves real problems that other people want solved. He acts alone, or in a consultative and/or trouble-shooting mode, when asked. His PhD work involved tunable laser systems, in which he discovered "additive pulse modelocking," a technique that debunked all previously held theories on soliton lasers and opened up a new field for ultrashort pulse generation. In addition to his R&D effort, he regularly helped in various outreach efforts to generate interest in secondary school children via science fairs, demonstrations, and telling kids about science. His interest in sports, music, and outdoor activities, and his outgoing friendly manner has earned him many friends among his colleagues and others in the community in which he lives.

Scott Campbell is still working on his PhD, but already he has been selected as an OYEE Finalist because of his leadership in design for both NCR and now AT&T, which merged its computer design group with that of NCR's a few years back. He also volunteers as a carpenter in the summer time as part of the Habitat for Humanity projects, and at other times keeps busy constructing sets, or designing lighting or sound for various Dayton theaters. He teaches Sunday school and is a member of Emmaus, a group dedicated to the development of Christian leaders. In addition, he holds a professional engineers license, a pilot license, and an Amateur Radio license.

Another OYEE Finalist is Dr. Paul MacGregor, who possesses outstanding technical abilities and breadth, with over thirty publications to his credit. He has strong commitment to the business goals of his company, and he received customer satisfaction awards for such diverse projects as a comprehensive market forecast of the potential of nuclear energy in the United States; a crucial equipment evaluation which indicated the superiority of an aero-derivative gas turbine project over competitive offerings; an electricity generation planning evaluation of the entire United States turbine equipment market; and a new market evaluation and system planning techniques for the municipal and cooperative electric utility market. Off the job, he works with high school students in both a junior achievement and a mentoring program. He serves as an officer of the local branch of the IEEE Power Engineering Society and is involved as a member of the Working Groups in Long Range System Planning, and in Engineering and Planning Economics.

The third OYEE Finalist, Dr. Steve Watkins, is also an educator, and is an Assistant Professor of Electrical Engineering. He received a teaching rating of 3.4 (out of 4.0) by graduate students (where the university and department averages at 2.7). He developed a graduate course on fiber and integrated optics, and revised a second one, entitled "Fourier Optics." In addition to his technical talks and published papers, he supervises



four undergraduate projects and directs two technical projects in fiber optics. Also, he serves as adviser for the very active local chapter of Eta Kappa Nu and for the Toastmasters Club, which doubled its membership under his guidance. He founded the Applied Optics Laboratory in 1991 at the University, and possesses a basic knowledge of spoken and written Japanese. In addition to being an officer of Toastmasters International, he was the 1992 Toastmaster of the Year of District 8, consisting of 96 clubs.

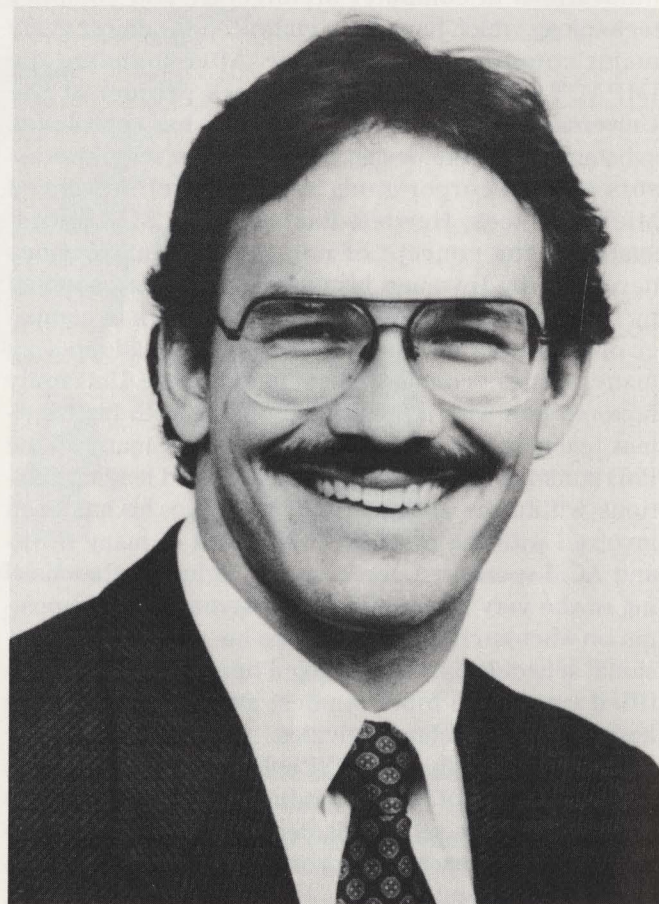
You will notice that the award winners are honored for their contributions to electrical, computer, and communications engineering, as well as to society at large. Selection of the OYEE, the honorable mention, and the finalists is based on individual accomplishments. It is not influenced by newsworthiness or the commercial value of a contribution. In the same way, contributions to local neighborhoods and schools, religious organizations and the arts is measured only in personal contributions, and not for newsworthiness or sensationalism. It is Eta Kappa Nu's emphasis on the well-rounded individual that leads it to recognize people who, in addition to striving for excellence in their profession, also give of themselves to the betterment of society, community, and family. We hold that an education based upon the acquisition of technical knowledge and the development of analytical and logical thinking is a prerequisite to achievement in many lines of endeavor. This year's awardees join a long list of individuals who have brought distinction to themselves, their community, and to our profession.

These awardees were brought to the attention of the Jury of Award after the top dozen were selected from a ranking provided by the Awards Organization Committee (AOC) as a whole. 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). Of course, we depend on the persons who had the foresight to nominate the outstanding young electrical engineers in their organizations. Without nominations, we would have no one to recognize. Nominations are solicited by the AOC in the spring of every year, and usually close around the first week in August. Nominations remain active as long as the nominees remain eligible and update their resumes at least every second year. At times, the AOC which solicits and maintains the nominations, may request additional information from the nominees, so it is important that nominees maintain contact with the AOC by sending them any changes of their addresses. Beginning in 1994, the AOC will not require a picture of the nominee with the nominee's resume.

The members of the 1993 Award Organization Committee were:

- Mark G. Adamiak, General Electric Co., Protection & Control, Malvern, 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 Division, Princeton, NJ
- Larry Dwon, Consultant (Retired), Columbus, Ohio
- Irving Engelson, Institute of Electrical and Electronics Engineers, Piscataway, NJ
- Quayne Gennaro, Design by Hilton, Inc., Vienna, VA
- Willard Groth, Consultant, Boca Raton, FL
- Michael Hajny, Metering Engineering, Inc., 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 Corporation, Purchase, NY
- Lawrence Wechsler, General Electric (Retired), Dewitt, NY



**Christopher Paul Yakymyshyn**



**The 1993 Jury of Award: Standing, from left to right, Dr. Peter Schneider, Mr. Bruce A. Renz, P.E., Dr. David G. Meyer, Mr. Ralph J. Preiss, 1993 Awards Committee Chair. Seated from left to right: Mr. Charles F. Fuechsel, Dr. Saleem A. Kassam, Dr. Gregory H. Olsen**

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 prestigious 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.

#### **To review the nomination process again:**

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 1994 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, 1994 for forwarding to the AOC.

An eligible candidate for OYEE is one who:

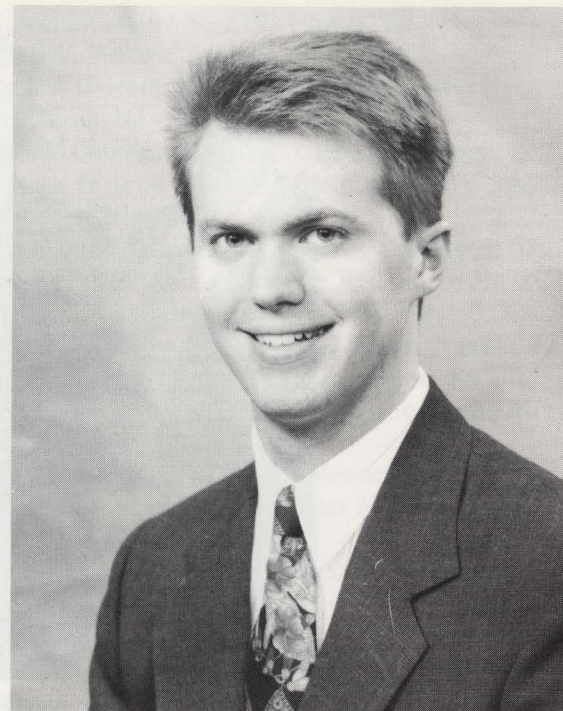
- has an electrical engineering degree (BS, MS, or PhD) from a recognized U.S. engineering school,
- will have been graduated not more than ten years as of May 1, 1994 from a specified baccalaureate program, and
- will not have reached his or her thirty-fifth birthday as of May 1, 1994.

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.



# KENTON L. EPARD WINS NORMAN R. CARSON AWARD AS OUTSTANDING EE JUNIOR

by Michael Schoenfelder  
and Richard R. Gallagher



## 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 and diverse applications. The diversity of the applicants made judging this year's award exceedingly difficult. After careful consideration, one winner, three runners-up and four honorable mentions were selected.

### Winner

Kenton L. Epard, Beta Kappa Chapter,  
Kansas State University

### Runners-up

Jeffrey J. Bain, Theta Kappa Chapter,  
California State University, Fresno

Duane Allen Spence, Delta Pi Chapter,  
Colorado State University

Bret Buckley Colby, Theta Xi Chapter,  
Norwich University, Northfield, Vermont

### Honorable Mentions

Anita Sharma, Iota Xi Chapter, University  
of Arizona

Colleen Marie Kane, Sigma Chapter,  
Carnegie-Mellon University

Robert Dahlgren, Iota Upsilon Chapter,  
University of Washington  
Zachary S. Sachs, Gamma Delta Chapter,  
Worcester Polytechnic Institute,  
Massachusetts.

## WINNER

**Kenton L. Epard, Kansas State University.** Kenton Epard truly is a person who leads, persuades and influences the actions of a wide variety of people. His plethora of leadership positions is by far the most extensive list that this committee has seen in many years. Kenton is or has been President of his fraternity, a Vice-President of the Inter-Fraternity Council, State Vice-President of the Kansas Federation of College Republicans, and Vice-President of the Kansas State University College Republicans. He has also held officer's positions in Eta Kappa Nu, Engineering Student Council, and Phi Beta Lambda. Furthermore, he has been active in student government, Engineering Student Council, US/Soviet Youth Exchange, Student Alumni Board, Colby Chamber of Commerce, and the Kansas State University Telefund.

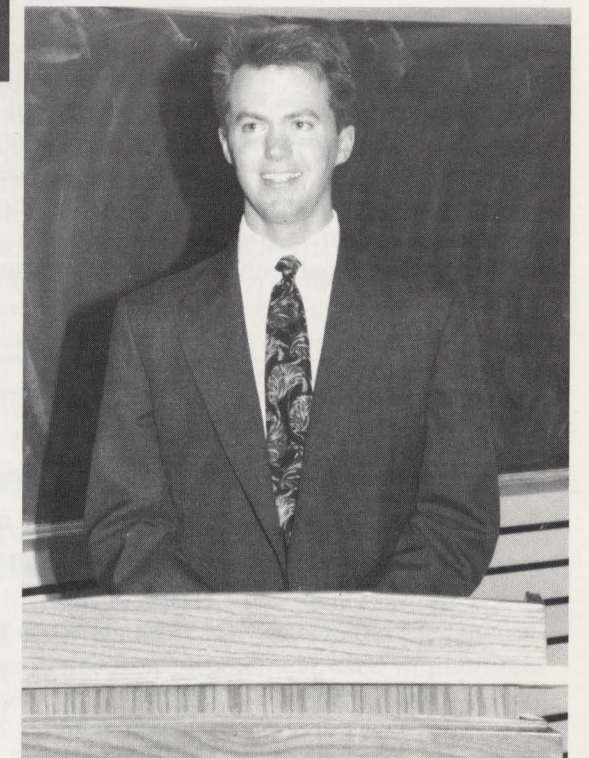
In the summer of 1992, Kenton spent a considerable amount of time in Washington, D.C. researching science and technology policy for the Society of Automotive Engineers. The research was part of the Washington Internships for Students of Engineering program. Based on his findings, Kenton published a paper entitled "Changing U.S. Government Science and Technology Structure to Enhance Industrial Competitiveness."

At right, Kenton L. Epard, accompanied by HKN Faculty Advisor, Richard Gallagher, receives award from past HKN BOARD Member, James R. Rowland



In photo at the left, Winner Kenton Epard is accompanied from left to right by Donald E. Rathbone, Dean of Engineering; Richard R. Gallagher; Professor Rowland; and David L. Soldan, EECE Department Head

In photo at the right, Kenton Epard responds with an expression of thanks for having been selected as Winner of the Carson Award





In addition to his work as a student leader, Kenton has found the time to be a volunteer worker in the Kansas Senate President's Office, 4-H Cares Pageant. He is also an accomplished guitar and piano player, forming a "top-forty" band in his freshman year of college.

Maintaining a high GPA, Kenton is a member of several honor societies and has received numerous honors, awards, and scholarships, including All-American Scholar. Donald E. Rathbone, Dean of Engineering at KSU wrote,

"There is little doubt about Kenton's intellectual breadth. Kenton is outward looking and has a diverse and well-rounded background of experience and interests. I feel we have truly an outstanding individual that is certainly worthy of the Norman R. Carson Award."

The Lone Star Alumni Chapter wholeheartedly agrees. Congratulations, Kenton Epard!

#### RUNNERS-UP

**Jeffrey J. Bain, California State University, Fresno.** Jeffrey J. Bain has clearly demonstrated his leadership abilities to the Central California bagpiping and Scottish heritage community. He founded the Piping Society of Central California and has served as its Secretary and Pipe Major. He has also initiated a scholarship program and beginners' lessons. In 1990, Jeffrey joined the Scottish Society of Central California and in 1993 was the youngest member ever elected to Life membership status. In 1991, he reinstated the inactive Scottish Heritage Society and served as its President. He is also a member of the Clan MacKay Society and the Clan Campbell Pipe Band.

Jeffrey has been active in HKN and IEEE. He was named President of Technical Design for the Micromouse Project and has written several papers concerning micromouse development. Jeffrey plays tenor saxophone in a CSU jazz band and has participated in many piping and drum majoring competitions.

**Duane Allen Spence, Colorado State University.** As a sophomore in 1991-92, Duane Allen

Spence served as Secretary of the IEEE Student Branch. For that year's accomplishments, the CSU branch was awarded the Region V Outstanding Student Branch award. Serving as IEEE President for 1992-93, Duane was responsible for many activities, including the Annual Thanksgiving Food Drive, which served more than 100 needy families in Fort Collins. He is active in HKN, where he has been elected Vice-President for 1993-94. Duane is also active in Tau Beta Pi, the CSU RAM Marching Band, the CSU Basketball Pep Band, and the CSU Campus Club.

While a participant in the Undergraduate Scholars Program with the Optoelectronics Computing Systems Center, Duane wrote an optical system simulator that is now being used in an educational environment to assist students in understanding optics. He wrote and presented a paper entitled "OPSSIM: An Optical System Simulator" at the Western Multiconference on Computer Simulation.

**Bret Buckley Colby, Norwich University, Northfield, Vermont.** Bret Buckley Colby has been very active in Tau Beta Pi. In 1991-92 he organized a campus recycling program, in 1992-93 he served as Secretary and also organized the tutoring program, and in March 1993, he was elected President. He has also been active in Eta Kappa Nu, Drum Major of the Regimental Band, Administration Officer of the Norwich University Christian Fellowship, Cadet Master Sergeant of the Corps of Cadets, and Midshipman Lieutenant in the NROTC Midshipman Battalion. Since 1988, Bret has served in the United States Navy, currently as Electrician's Mate Second Class (E-5). Bret is also currently working as a student tutor in the Learning Support Center.

The Lone Star Alumni Chapter reviewed many, many fine entries. All the applicants are to be congratulated on outstanding qualifications. This year's selection committee consisted of Nasr Ullah, Greg Yeric, Laureen Parker, Kirk Fertita, Adrian Holmes, Flip Lockhoof, and Michael Schoenfelder. Special thanks to Laureen Parker for coordinating and supervising the entire award process.

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## DENICE D. DENTON WINS C. HOLMES MACDONALD

# OUTSTANDING TEACHING AWARD

by Robert F. Arehart

At a ceremony held by the Department of Electrical and Computer Engineering (ECE) on Commencement day, December 19, 1993, Professor Denice D. Denton, winner of the 1993 Eta Kappa Nu C. Holmes MacDonald Outstanding Teaching Award, was presented with a Certificate and an engraved pewter plate. The ceremony was attended by graduating ECE students, parents, and guests. Professor Bahaa Saleh, the Department Chair, made the presentation.

The above remarks, provided by Professor Saleh, describe the official presentation of this prestigious award, which was made several months after Dr. Denton learned that she had won the 1993 Award. Because she was on leave of absence to participate in a special overseas program, the award presentation was delayed.

Dr. Denice D. Denton is an Associate Professor in the Department of Electrical and Computer Engineering at the University of Wisconsin-Madison. She spent the Fall Semester of 1991 as a visiting scientist and the summer of 1993 as a visiting professor at the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland. She received the B.S., M.S. (1982), and

Ph.D. (1987) in Electrical Engineering from M.I.T. Her dissertation focussed on the characterization of polyimide, a polymeric insulating material used in integrated circuits as an intermetal insulator and passivant.

Particular emphasis was placed on monitoring the effects of moisture on the dielectric properties of this film. In the course of this work, she began to investigate the possibility of the use of polyimide as a capacitive moisture sensor. Her current interests include the design of an integrated "smart" moisture sensor, the investigation of the long term reliability implications of the use of polymers in integrated circuit applications, and the use of micromachining in solid state actuator design.

Dr. Denton heads the Plasma Deposition and Polymerization Thrust Area of the NSF Engineering Research Center (ERC) for Plasma-Aided Manufacturing at UW-Madison. Her work in the ERC focuses on plasma deposition of polymers used in photonics applications. Dr. Denton is a member of the National Research Council Plasma Processing and Processing Science Panel. She is a recipient of the National





**Dr. Denice D. Denton**

Science Foundation Presidential Young Investigator Award (1987-1992) and Digital Equipment Corporation Faculty Grant (1990-1991). While at Madison, she has also won the Electrical and Computer Engineering Professor of the Year (UW-Madison Teaching Award) (1988); Polygon Outstanding Instructor Award (ECE 1989); the UW Kiekhofers Distinguished Teaching Award (1990), and the Wisconsin Student Association's Top 100 Educators Award (1992). In addition, she is the recipient of the American Society of Engineering Education AT&T Foundation Teaching Award (1991) and the Eta Kappa Nu C. Holmes MacDonald Distinguished Young Electrical Engineering Teaching Award (1993).

She is a member of the National Academy of Sciences/National Research Council Board on Engineering Education (1991-1996) and the NAS/NRC Committee on Undergraduate Science Education (1993-1995). Professor Denton has developed a Micro-fabrication Demonstration Kit which is being used in K-12 classrooms in more than 30 states to introduce students to microelectronics. She also works actively to encourage women and underrepresented minorities to consider careers in Science and Engineering.

At the time when she was being considered by the award committee, numerous testimonial statements were provided by both colleagues and students in support of Dr. Denton. Although space does not permit the total collection of these supporting documents to be presented here, the following statements have been selected to indicate the high regard and esteem in which she is held by those who have benefited first hand from her remarkable approach to engineering education.

Professor J. Leon Shohet writes, "I have known Denice since her arrival in Madison four years ago both in my capacity as Department Chairman as well as being the Director of our NSF Engineering Research Center for Plasma-Aided Manufacturing. Denice has been an essential participant in both the Department and the ERC. I say this because both the Department and the Center require a strong educational component to their activities. Of all of the faculty and staff in the Center, Denice exhibits the strongest commitment to education.

"She has won *three* teaching awards since her arrival—the outstanding ECE Professor Award, the Polygon Teaching Award, as well as the University of Wisconsin-Madison Distinguished Teaching Award. The first two of these are awarded on the basis of student votes. It is totally unprecedented that a new faculty member would be awarded such honors. She has taught the introductory solid state electronics course with great spirit and innovation and has sparked a renewed interest in the field by our undergraduate students.

"Denice is also a Presidential Young Investigator, the latter being awarded immediately after her arrival in Madison. I believe that she was able to obtain all of the industrial matching funds within a few months of receiving the award. In the Engineering Research Center, Denice is a member of our Executive Committee and is actively working on plasma etching and polymerization experiments—one of which uses modern engineering statistics to optimize the process. We rely on her greatly both for her knowledge of microelectronics as well as for her considerable organizational and interaction skills with all aspects of the ERC program—industry, faculty, administration, staff and students. She has given several presentations to various review groups and all have commented on her abilities to describe her activities and the obvious enjoyment she gets from her research work.

"Denice's teaching ratings are categorically the highest that I have ever seen in my 25 years of teaching here at Wisconsin. It is a pleasure to listen to Denice lecture, converse with students, and make technical presentations."

Julie Morasch states, "I am currently a senior majoring in electrical engineering, specializing in microelectronics. I have known Professor Denton for two and a half years. Initially I knew her as a student in

ECE 240, Electronic Devices, which she taught, and subsequently as a student hourly in her research group. I am looking forward to the class which I will be taking with her during the upcoming semester.

"As a teacher she was outstanding. In class she was able to communicate complex ideas in a manner that could be easily understood. She stimulated thinking by use of practical examples and real world problems to complement the theoretical aspects of the subject. Students were motivated by her lectures. She was also readily available and willing to help students at all times. I remember many afternoons working with her on homework problems. She would repeat things until everyone understood. It is obvious that Professor Denton takes teaching very seriously.

"My decision to specialize in microelectronics was much due to Professor Denton's influence early in my academic career. I have chosen her as my advisor and have benefitted greatly from her knowledge and guidance. Since then, I have also had the opportunity to gain hands-on experience in microelectronics processing by working with her on research projects. I believe this has significantly contributed to my professional development, acquiring skills and abilities which would otherwise be hard to gain as an undergraduate.

"In summary, I would say that Professor Denton is the best professor I've ever had, a view that I believe most students share."

Professor and Center Director for X-Ray Lithography, Franco Cerrina, remarks, "I have known Professor Denton since she joined our faculty in 1987 and consider her an outstanding educator and colleague. She has taught both undergraduate and graduate courses, mainly in the solid state and electronic devices areas, and her students consistently have ranked her highly (generally in the top fifth of our faculty). Although she has taught many courses, I would like to single out the one we taught together, Solid State Electronics (ECE 240), because it gave me the opportunity to witness firsthand her great skill as an educator as she roused the students and sparked their interest in what is sometimes a dry subject. The experience also left me deeply impressed with her ability to dissect the material and then reassemble it into an organic presentation where the most important topics stood out and then could be discussed neatly and rigorously.

"Although we haven't taught a course together since that semester, it is always a pleasure to have students in my classes who have taken previous courses from Professor Denton. After taking into account the variations intrinsic to any group, on the average these students display a better understanding of the material and a better attitude toward learning than the others. To me, this is direct evidence of her mastery as a teacher. In addition, by preparing her students in this way, she helps me and our colleagues do a better job. She is truly an asset to all of us.

"From time to time, I have listened to students critiquing our faculty. The consensus seems to be that Professor Denton's students hold her in high regard. There is ample proof for this in the official teaching awards she has earned, as well as in the unsolicited awards that the students themselves have given to her for the quality of her teaching.

"As a colleague, my praise for her ability to impart knowledge is as strong as that of the students. She is an excellent communicator; her sound preparation is the base onto which her elegant lectures are built. She is always accurate, but never dry. She possesses the unique talent of first gaining and then holding the listener's undivided attention. I have seen this in the classroom, as well as been present when she has spoken to faculty and other groups on campus, where the audiences tend to be a bit more jaded and impatient. These audiences appear to find her presentations as riveting as the students obviously find her classroom lectures to be.

"Professor Denton demands excellence from her students, while managing to establish great rapport with them, both as individuals and as a group. This goes beyond purely academic subjects. She is a tireless advocate for the students and an advisor in the best sense of the word. She will help her students plan their academic careers and help them, when necessary, cut through the bureaucratic red-tape which is, unfortunately, part and parcel of a large university. It is a rare faculty member who will take the time to help students in this way, and I believe Professor Denton deserves great credit for her efforts on behalf of students inside and outside of the classroom.

"Professor Denton's reputation as a compassionate person, a top-rate researcher, and an outstanding teacher has not gone unnoticed. This is evident by the great number of students who seek her as an advisor and as a mentor. She reaches beyond the boundaries of academia and into the social issues that weigh heavily on our society. She is, for example, extremely active in minority programs, both socially and professionally. Since I share with her the belief that it is necessary to expand the role of minorities in engineering, groups vastly underrepresented in the discipline, I truly believe she should be honored for her commitment and hard work in this area. Teaching is not done in a vacuum, so it is important that we, as educators and scientists, reach out to those who are at a disadvantage. Professor Denton certainly goes the "extra mile" to help minority students succeed, which I find more than worthy of commendation.

"In summary, Professor Denton's students revere her because of her exceedingly high standards and her serious code of teaching and, more simply, because she truly cares about her profession and about the success of her students. I am familiar with the teaching records of all faculty in our department, and Professor Denton is one of our best undergraduate teachers, and excels,



as well, as a teacher and advisor to graduate students."

Reza Ghodssi writes, "Professor Denton has consistently provided me challenging and exhilarating instruction over the last three years of my undergraduate career and beginning of advanced graduate study. I am a first year graduate student in Electrical Engineering. I began my academic career at the University of Wisconsin-Madison five years ago and have been extremely satisfied with the education I have received here. Professor Denton has added greatly to my studies, and through her instruction my work has found direction and valuable guidance. I am presently working with Professor Denton on a research project related to micromachining.

"My experience with Professor Denton began with the introductory course, ECE 240: 'Electronic Devices.' This is a fundamental and compulsory course, which is essential for continued study in Electrical Engineering. ECE 240 is a large lecture course which often precludes contact and thus creates an impersonal, inaccessible student-teacher relation. Professor Denton, however, diminished such barriers by continuously encouraging class discussion and offering dynamic lectures. Professor Denton incorporated a brief history of the subject while teaching thoroughly the key conceptual material necessary to the course, as well. ECE 240 aims to establish basic knowledge necessary to continued study in any branch of Electrical Engineering; hence, Professor Denton's teaching and research experience and expertise were invaluable and had tremendous influence on beginning students' future work. I believe that her course benefited all students enormously. It was because of this course that my interest in Microelectronics developed, and I have since continued this area of research. During my undergraduate study I took the following advanced courses with Professor Denton: ECE 555, Digital Circuits and Components; ECE 904, Sensors and Actuators; and ECE 699, an Independent Study: Gravimetric Measurement in Moisture Uptake in Polymers. On the basis of my experience with Professor Denton in ECE 240, I chose those courses because I distinguished her as an excellent instructor, researcher, and role model for my own advanced study.

"Professor Denton clearly has a thorough and extensive knowledge of Microelectronics. While providing abstract theoretical concepts in class which are fundamental to this branch of engineering and academic research, Professor Denton integrates practical application of those concepts in the field. In doing so, her courses are both interesting and rewarding. For example, during a lecture on integrated circuit design, Professor Denton brought to the class an IC chip, thereby demonstrating an actual application of the design concept. Consequently, students were able to visualize the result of abstract theory; and at the same time gain the intellectual background for advanced study. Because I

was so impressed by Professor Denton's expertise and teaching methods, I chose to take an Independent Study course with her which provided me with essential lab experience. Moreover, as a graduate student I continue to benefit from her knowledge and commitment to teaching in both roles of advisor and instructor.

"Beyond her knowledge and command of the subject material, Professor Denton was easily approached and available for outside class contact. Her demeanor in class was always professional and her lectures were well organized; also she encouraged creative discussions and if necessary offered further explanation of course material during office hours. Furthermore, Professor Denton is an excellent and highly engaged advisor to students in any branch of electrical engineering.

"I have very much enjoyed working with Professor Denton, and value my learning experience with her. Based upon my experience over the past five years at the University of Wisconsin-Madison, I can easily say that Professor Denton stands out as the most outstanding Professor I have had."

Jennifer Hall declares, "Denice Denton has served as a role model for me over the three years I have known her. In addition to being an excellent teacher both in the classroom and the lab, she has been a means of emotional support for me.

"When I had Professor Denton for an introductory course to microelectronics, she taught me the basics well. Her style of breaking a problem down to its simplest form and then using common sense with the fundamental rules of physics to arrive at the solution has helped me in her class as well as others. I found myself applying her methods of problem solving to homework and to practical job related problems. When confronted with these problems, I would ask myself how Professor Denton would approach them. My self confidence and ability in problem solving increased the more I worked with her. I took two graduate level courses with her and found her teaching style to be the same even at a higher level. She has been by far the best teacher I have ever had.

"The work most of my fellow students did for their professors did not challenge them. Instead they were merely graduate student helpers. I have worked for Professor Denton for five semesters. In contrast, Professor Denton gives her undergraduate workers research projects. In many of the projects we used statistical methods to run and interpret our experiments. Now that I am in industry, I realize how valuable the exposure to such experimental design techniques was. Professor Denton does not isolate her lab from the rest of campus but incorporates other fields of study into her research. For example having statistics graduate students working with us on our experiments provided a useful non-engineering viewpoint on projects.

"Professor Denton is certainly not the stereotypical dry engineering professor. At our group's potluck din-

ners at her house we often saw pictures of trips she has taken to other countries. She does not separate herself from the students, but mingles quite well. When breaking for dinner during problem sets, we would often give her a ring in her office and all go out. As the advisor for the Society of Women Engineers, she has been able to share her undergraduate and graduate experiences with us. At times in the beginning of my undergraduate career, I, like many others, could not see graduation day as a reality. Support from someone who has made it through the whole program was very important to me.

"Through Denice Denton's exceptional teaching skills, challenging work opportunities, and openness with students she has become a person that is a great attribute to the University of Wisconsin's engineering school."

Professor Leon McCaughan comments, "Denice Denton and I co-taught an undergrad course, ECE 240, for two semesters. This course, Electronic Devices, is an electrical engineering student's introduction to the concepts of semiconductor devices. It is, in my opinion, the most difficult of the introductory courses because it requires the instructor to present a relatively sophisticated synthesis of modern physics (in particular, solid state physics and quantum mechanics) and device modeling to students with no previous exposure to either methodology.

"Three years ago Professor Denton reorganized and modernized the material for this course. Students who successfully complete this course now have (a) mastered the fundamental physics of the three principal semiconductor devices, (b) can analyze their devices in an electrical circuit, and (c) are familiar with the modern tools for design, fabrication and testing of these devices. Because no one book covers the material, it was necessary for Dr. Denton to produce sets of class notes on selected topics. These are now used to augment the text. I am very impressed with the organization as well as with the content of this course. It is my feeling that our students are now getting a modern introduction to semiconductor devices, thanks to Denice.

"During the two semesters we worked together, I had the opportunity to observe her teaching methods. She presents difficult material in a clear, entertaining fashion. Denice makes the added effort to intersperse the lecture with relevant examples and topical anecdotes. Professor Denton makes herself readily available to our students. She can be found surrounded by ~10-20 students during office hours which, as a consequence, usually have to be held in a conference room. For introductory courses, she regularly holds evening review sessions before exams. Not surprisingly, she is well liked and respected by students. Her manner with students is, nevertheless, always professional.

"With regard to the day-day running of a large undergraduate course, it is efficiently run without compromising its quality. Professor Denton eschews repeti-

tion of homework sets. Exam questions are crafted to test the student's understanding of the material, not to simplify grading. Homework and laboratory assignments are synchronized with the lectures. (Dissatisfied with the quality of the laboratory instrumentation, Dr. Denton has recently secured funds from the department to upgrade the equipment, much of which is older than the students using it). This is accomplished in parallel with an active research program (five graduate students and a postdoctoral scholar).

"I have the greatest respect for Dr. Denton's teaching abilities as may be seen from her vita. Professor Denton has been recognized three times within the university for her teaching. In 1988 she received the ECE Professor of the Year Teaching Award. In 1989 Polygon named her Outstanding Instructor. In 1990, Dr. Denton received the University of Wisconsin-Madison Distinguished Teaching Award. Professor Denton has, at least for me, set a high standard for teaching. My own teaching is today better for having been associated with her. Finally, what to me best sums up her relationship with students is exemplified during final exams when she will quietly point with pride to her more talented students, identifying them by name and relating something they have told her about themselves."

Jill Marie Thiede states, "As president of the University of Wisconsin-Madison Society of Women Engineers, I have had the opportunity to work closely with our advisor, Professor Denice Denton. Dr. Denton became our advisor two years ago and has been very supportive of our section's activities, especially our outreach programs to area schools.

"This past December, Professor Denton helped us coordinate a trip to 16 high schools in Northern and Northeastern Wisconsin to enlighten high school students about careers in engineering, provide female role models, and encourage students to continue their education at UW-Madison. She also accompanied three of our members on the trip, offering insight into electrical engineering. She has an ability to take difficult concepts of microelectronics, her specialty, and explain them clearly to people of many different levels of technical expertise.

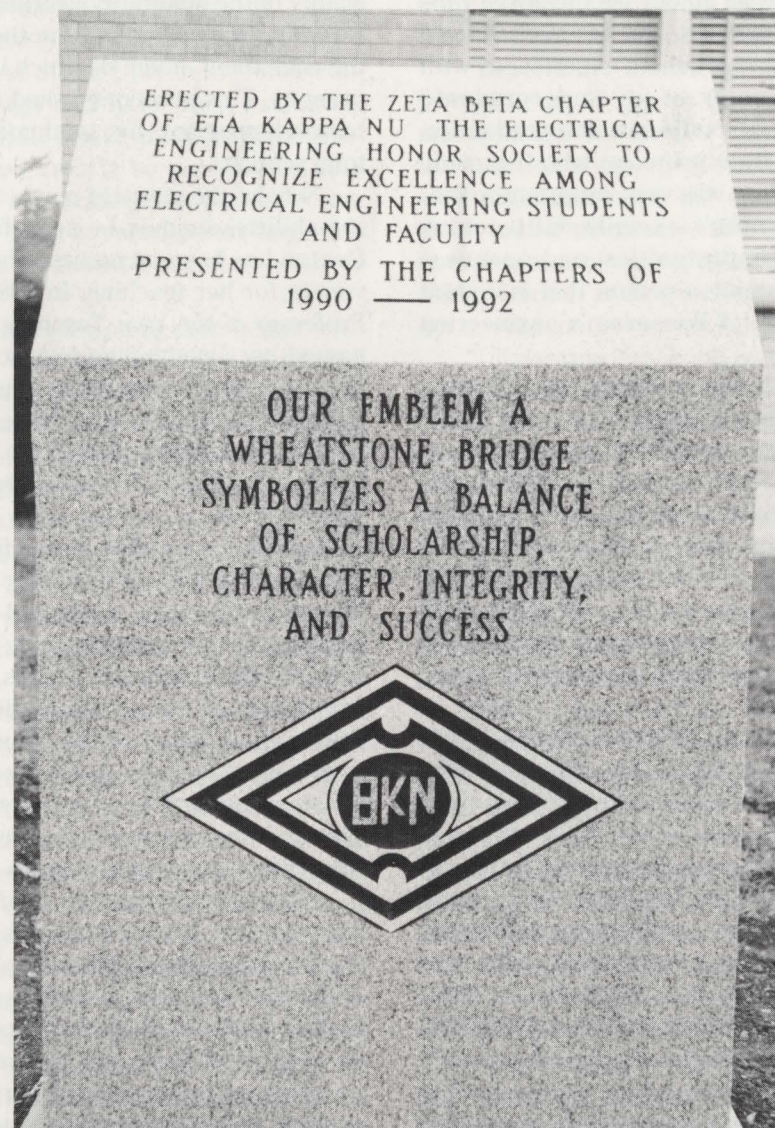
"Professor Denton has given numerous presentations for various campus organizations including a presentation at last spring's HKN Electrical Engineering Forum. She has willingly done many tours of her research facility for various conferences and programs.

"While I have never had Professor Denton as a Professor at UW-Madison, I do feel I have learned a lot from her. She has coached me and other SWE members on how to deal with companies and other organizations. She has always been willing to make herself available to students to answer questions, to advise, and to discuss problems.

"As a member of the UW-Madison HKN section, I am very pleased to provide these remarks concerning Professor Denice Denton."



# Chapter Activities



## Zeta Beta's Monument Project 1990-1992 A Story in Pictures

### Zeta Beta Chapter Texas A & I University

#### Monument

The Zeta-Beta chapter decided to erect a monument to symbolize the perseverance and dedication the professors and students have instilled in the department. The first step we took in starting this project was to contact the Zeta Pi Chapter, State University of New York at Buffalo, to obtain literature pertaining to their monument design.

The Zeta Beta Chapter decided to go with the monument design of Zeta Pi and began the process of getting the idea approved by the university. The monument dealer assisted us in the dimensions, the foundation layout, and the price of the stone.

The monument is a podium shaped column with the Wheatstone Bridge set in the front. There is an inscription on the top and front of the column.

The inscriptions were developed and a contractor was obtained.

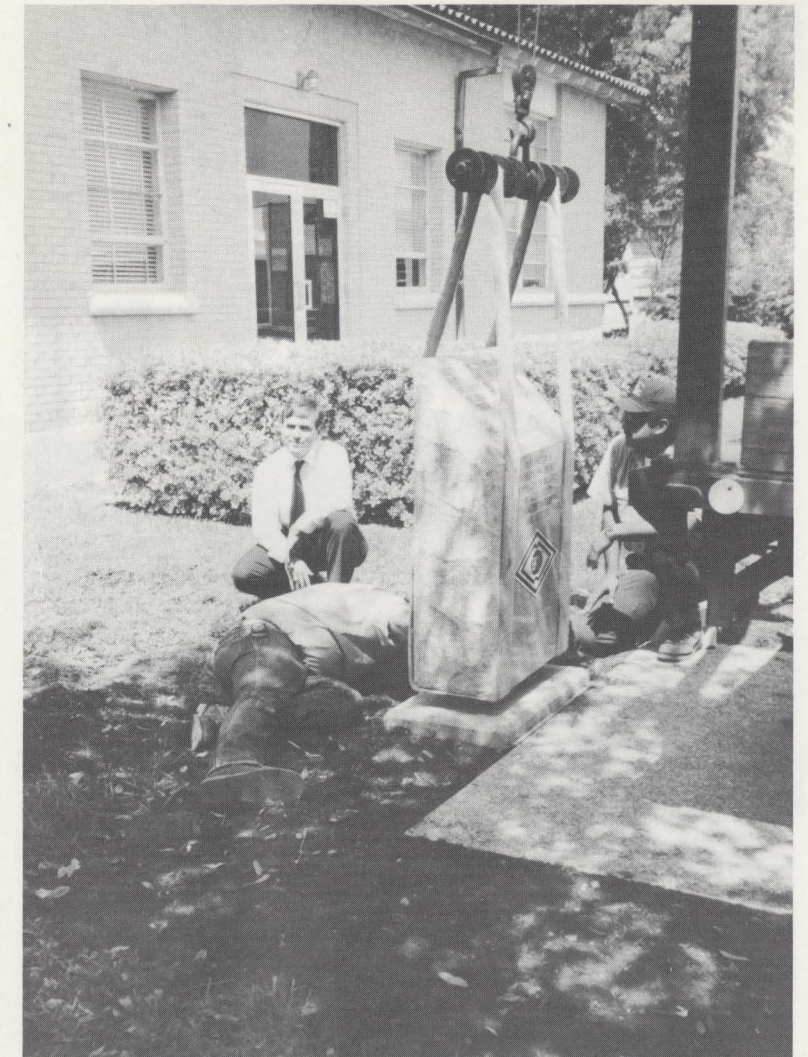
Funding was provided through

HKN alumni, faculty, and fajita sales. The stone was then purchased, and the place to locate the monument was then established and approved. The actual setting and dedication of the monument was set for April 1992.

The funding for the monument continued and the student committee board continued organizing the endowment.

The monument was erected in late March. Bushes and other plants will be added later to beautify the area. The monument and foundation were cleaned during initiation week.

At Right, Monument  
being installed



Below, Monument Foundation  
being cleaned







At Left, Monument  
being cleaned

Below, Monument Founda-  
tion being waterproofed



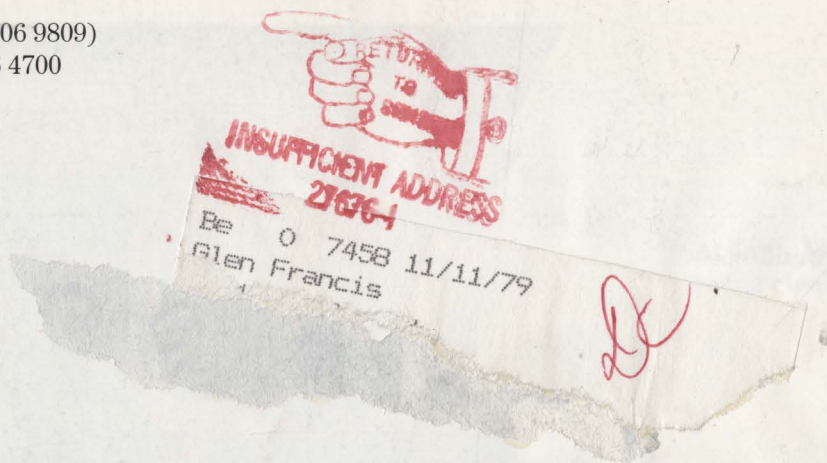
At Right, Zeta Beta Officers Surround  
Monument

Below, Zeta Beta Chapter Members at  
Monument Site

*(Photos continue on page 24.)*







**Zeta Beta Initiates Preparing  
for Fajita Sale, Spring 1992**



**Zeta Beta Fajita Sale  
Helps Pay for Monument**

# MOVING?

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