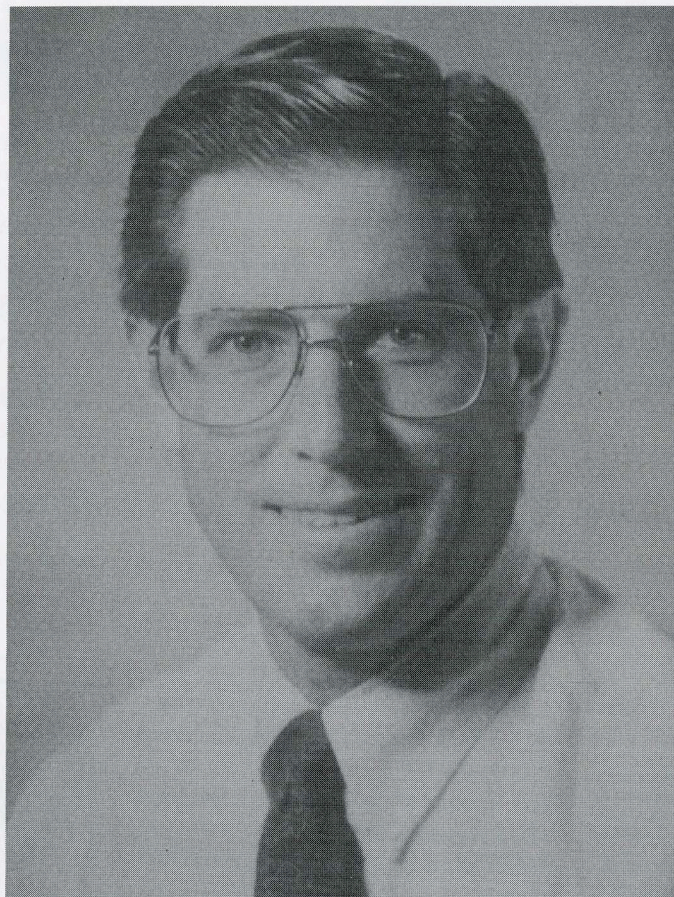
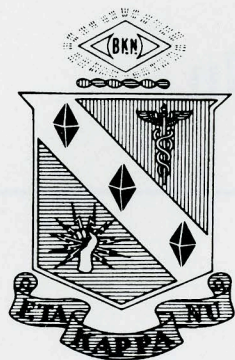


BRIDGE of Eta Kappa Nu



John D. Wolf
Author, Feature Article:
The Ancient Art of Globalization



Editor and Business Manager
J. Robert Betten

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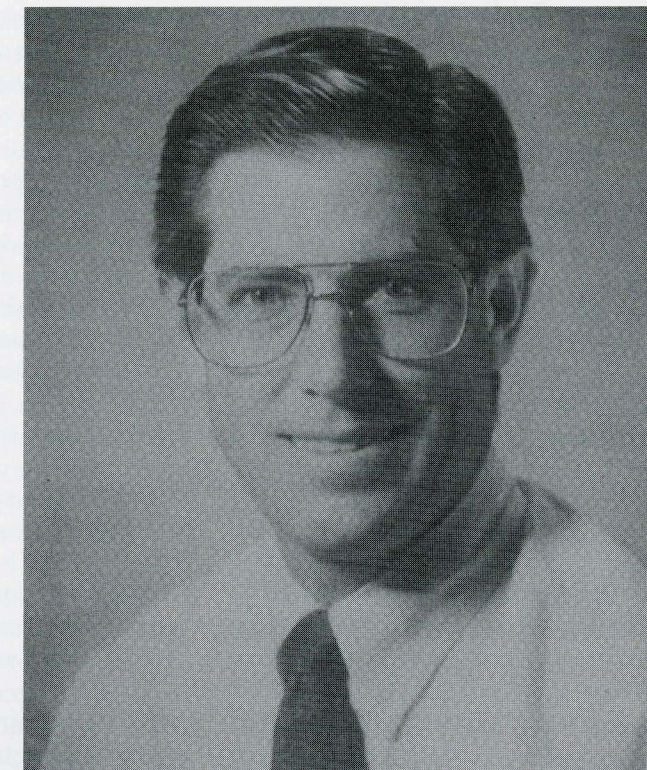
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The Ancient Art of Globalization

by John D. Wolf
Executive Vice President - Development
McDonnell Douglas Corporation



Editor's Note: This article was previously published in the London Financial Times.

Picture this...

At last, after months of intense negotiation, an agreement is reached. Representatives from companies in countries separated by thousands of miles of earth, sea and sky shake hands.

The next weeks are busy ones. Licensing accords are signed. Two aircraft are crated and shipped unassembled as patterns.

Company representatives soon arrive in Southern California to undergo two years of intensive study in American production methods. When they return to their native land, manufacturing techniques are adapted and production begun on an aircraft which will be used in another nation.

Sounds like an increasingly familiar scenario—part of the new trend in globalization that we're dis-

cussing today. Actually, this story is based on the pre-WW II partnering arrangements between Douglas Aircraft Company, today the commercial component of the McDonnell Douglas Corporation, and the Russians.

In 1938, Boris Lisunov was sent to Santa Monica to study Douglas production methods. After returning to his homeland, he was put in charge of adapting DC-3s to Soviet production methods and operating conditions. The Russian version became the PS-84. Production began in Moscow and later was transferred to Tashkent, farther away from German enemy forces.

This is just one of a number of partnerships that have led to MDC's more than 50 years experience in globalization. Interestingly, it looks like Douglas Aircraft planes will

again be penetrating the Russian marketplace, today with MD-80s flown by Alaska Airlines to the Russian Far East, including flights from Seattle to Petropavlovsk-Kamchataski as well as to Khabarovsk, Magadan and Vladivostok starting this summer. And plans are under way for MDC partnering with Russia on space programs as well.

Within the aerospace industry, MDC has been a pioneer in establishing collaborative partnerships with companies around the world and on both sides of our business—commercial and military.

Why partner?

Not simply to fund non-recurring investments—massive investments for massive aircraft.

Not simply to satisfy offset requirements in order to sell to a particular company in a particular

country.

Nor as an attempt to demonstrate that a company has placed jobs in regions other than its own. Nor because "globalization" is the hot new buzzword in *Fortune*, *The Financial Times* and the *Wall Street Journal*, not to mention conferences like this one.

But because globalization is the best way to assure the highest quality products at the lowest cost. And more importantly, because globalization is the key to promoting the welfare of the world community as a whole through revitalizing economies and bettering the standard of living of people worldwide.

Clearly, we now live in a world where the capabilities that go into designing, manufacturing and servicing aircraft are no longer the province of one or two nations or companies. Like the market for aircraft, capabilities for producing them have also become global. To serve our customers in this truly global arena, it is our responsibility to secure the best of the best, measured on the scale of quality and cost.

When partnering, we are not simply looking for a fabricator of machine parts who can also make financial investments, but the best fabricator of parts. The best manufacturer of winglets. The best in design, in product support, in maintenance, in the whole spectrum of tasks and expertise associated with this business.

And all of us on this panel today must be prepared to recognize that the best may not necessarily be ourselves.

We at McDonnell Douglas have not just accepted this 21st century truth, but embraced it wholeheartedly because it is integral to our entire conception of how we do business and why we do business.

To better appreciate this point, let's take a closer look at the nature of global business today and its ramifications on the aerospace industry.

International trade has been described as the Olympic Games of

business, in which enterprises from dozens of nations compete for a handful of medals in a number of events. In the economic sense, for the manufacture and sale of automobiles, computers, airplanes and integrated circuits.

It's an interesting metaphor, but not entirely accurate. As John McDonnell, Chairman of McDonnell Douglas, has explained, reality is a lot more interesting than this simple if glamorous model of a global sports competition which presupposes that every enterprise is trying to out-sell and out-compete every other enterprise operating under a different flag.

Approximately one half of what is called international trade consists of cross-border transactions between different parts of the same company operating in different parts of the world. In other words, the internal transfer of goods and services.

An integrated circuit label reads, "Made in one or more of the following countries: Korea, Hong Kong, Malaysia, Singapore, Taiwan, Mauritius, Thailand, Indonesia, Mexico, Philippines. The exact country of origin is unknown."

A similar label might appear on a Pontiac LeMans, a popular car with a General Motors nameplate but made with parts and components from both Asian and non-Asian countries. Or on a Honda, a supposed Japanese car with more U.S. value-added than the General Motors vehicle.

Nowhere is increased globalization more evident than in aerospace. Our MD-11 is just one example. Its overwing fuel tank is made in Spain; the winglet in Italy; the tailcone in Japan and sections of the fuselage in Korea.

And given that this aircraft is such a perfect fit for Asia-Pacific we can expect to see more suppliers and subcontractors of MD-11 derivatives hailing from Asia-Pacific in the future.

Our MD-80 is another example. With nose and main gear doors from

China, access doors from Austria, elevators from Australia and the trailing edge from Japan, it is symbolic of globalization at its best.

Today, anywhere from 18% to 32% of the content of one of our commercial aircraft is of foreign origin, and we expect a substantial increase in this percentage in the years ahead. But this is only part of the story. It's important to recognize that international partnering in the fullest sense is an art, not a science. And to perfect that art takes commitment, know-how, perseverance and time. Like learning to ski, at a certain point perfecting your technique is a matter of mileage.

At MDC, we've got a lot of partnering miles under our belt. From Italy to Korea. From Australia to Switzerland. From Spain to Japan.

Within the aerospace industry, MDC has been a pioneer in establishing collaborative partnerships with companies around the world and on both sides of our business-commercial and military. DC-3As, for example, were manufactured in partnership with Japan over 50 years ago.

The Mitsui Company Ltd., the U.S. based subsidiary of the Mitsui Trading Company, Mitsui Bussan Kaisha, acquired licensing rights in 1938 to build and sell DC-3s in Japan and Manchukuo. 13 DC-3s and 7 DC-3As were then purchased with wings, tail surfaces and propellers unassembled. Two other DC-3As were delivered unassembled as patterns for Japanese production. Our strong business tradition with Japan continues in this century, most recently with the delivery of JAL's first MD-11 this past December, and Mitsubishi's production of the F-15.

But to acquire the know-how, to rack up the miles, requires something more.

As John McDonnell has said, "International partnering requires a shared vision and a shared desire to overcome any and all obstacles to achieving a set of common or highly compatible objectives."

Our relationship with Alenia of

Italy is another example of a mutually beneficial collaboration, evolved over time as experience, familiarity and trust have grown along with the business we do together.

Alenia has gone from a supplier of parts for our commercial business to becoming a major subcontractor to both our commercial aircraft business and our space component. In addition, Alenia is a partner with MDC in the development of the radar-equipped AV-8B Harrier II Plus short takeoff and vertical landing aircraft.

The Harrier II is itself a joint development—one of the most successful in the aerospace industry. Working from an original design developed by British Aerospace, MDC teamed with BAe and Rolls Royce to create the enhanced capability Harrier II. More recently, MDC expanded the international nature of the AV-8 program by teaming with Alenia in Italy and CASA in Spain on the radar integration program for the new Harrier II Plus. British Aerospace and Rolls Royce continue as teammates for the airframe and engine. International collaborative programs will increase as the Defense industry continues to consolidate worldwide. The challenge is to demonstrate the long-term commitment, flexibility and performance necessary to make such alliances work effectively.

MDC has consistently met those criteria through programs such as the AV-8 and T-45 with European partners, and the F-4 and F-15 co-production programs with Mitsubishi Heavy Industries in Japan. And we are now building a strategic relationship with Malaysia. Our commercial business is truly global in nature. More than 1.97 billion U.S. dollars or 44% of our total commercial aircraft revenues for 1993, came from the delivery of aircraft to customers outside the U.S., such as KLM which took its first MD-11 this past December. But MDC's continued commitment to globalization goes far beyond sales or a desire for market entry.

Aircraft production enlists many manufacturing skills and draws on a wide range of advanced technologies being developed throughout the world.

In order to provide the highest value to our customers and fulfill the vision of world growth and human development set out by our co-founder James McDonnell over 50 years ago, we have a duty to manufacture aircraft using parts and technical experience of the highest quality, regardless of their origin in the world.

That's why we at MDC have an aggressive, proactive attitude toward international collaboration of various range and scope. We believe such collaboration is essential to producing the highest value aircraft.

Such collaboration, says John McDonnell, "is an opportunity to be grasped, rather than an obligation to be borne."

Our partnering with the People's Republic of China is one excellent example. This partnership, unlike others, involves cooperative design and production, rather than an equity relationship.

Our co-production program with the People's Republic of China—the first in the world—ranks as the largest US-China technology transfer program both in dollar value of goods produced (well over 2 billion U.S. dollars) and in technology content. Shanghai Aviation Industrial Corporation has assembled 35 of our MD-80 twin jets from parts and subassembly provided by MDC. All certified by U.S. FAA.

How did we achieve such a partnership?

Not just by being in the right place at the right time, but through a concerted effort and long-term commitment; a commitment heralded by the establishment of McDonnell Douglas Pacific and Asia Ltd. in Hong Kong in 1985 and that continues today with the opening of Douglas Aircraft's Beijing office.

We submitted our first PRC proposal in 1975. It took a full decade

to receive final co-production go-ahead. It was well worth the wait and the effort. Our most recent partnering agreement with PRC involves the purchase and co-production of another 40 aircraft in China.

In terms of subcontracting in PRC, we began in 1979. It's an interesting case in point because it illustrates a side of partnering not always appreciated. China had aviation manufacturing experience, but it was with military aircraft. The PRC had no commercial experience, and there is a significant difference.

Recognizing these facts, we began partnering with the production of small parts.

Soon came access doors, then cargo doors, until factories in mainland China were producing complex sections of the aircraft, including horizontal stabilizers and the nose, the most complicated parts except for the wing.

The fact of the matter is that if Shanghai can build quality stabilizers and Chengdu the nose—and they can and are—then the PRC can build anything. In less than two decades, manufacturing capabilities have gone from small parts to the most complex manufacturing operation at world class standards.

Significantly a cultural change—more accurately a cultural exchange has been integral to this remarkable achievement. There was never a question that the Chinese were highly qualified and experienced in military production techniques. But they lacked an understanding of and appreciation for commercial business.

"Through hard work and a building of trust and understanding over time," explains Douglas Aircraft Company President Bob Hood, "there is now a total acceptance of commercial aviation quality, as well as the evolved ability to deliver to the highest standards of excellence."

Similar changes and exchanges of ideas and capabilities are happening elsewhere in Asia-Pacific. We expect and are committed to devel-

oping these partnerships of various range and scope in other nations. Partnership arrangements have resulted in 111 million U.S. dollars worth of orders from PRC manufactured assemblies, and over 2 billion U.S. dollars in sales to the PRC.

In the past year, MDC has negotiated firm contracts in the region, including new partnering in Singapore where we began selling Harpoon missiles in 1986 and this past year placed MD-11 box bulkheads at Singapore Aerospace Manufacturing.

Malaysia has signed a Letter of Offer and Acceptance for eight FA-18s. An important order which has opened up a whole strategic relationship for both commercial and military products. A relationship we're very excited by and committed to.

Right next door in Indonesia, we have participated in some very interesting programs involving shared technology. Experts at Douglas Aircraft Company have completed design reviews and conducted training programs for the N-250.

A strong relationship with Korea began in 1985 when we sold and began subassembly of MD-82s. In 1987, we began our MD-11 program there, providing technical assistance on spoilers and manufacture of wing fillets and fillet ribs. Other MDC components are doing business with Korea as well. For example, South Korea has been a Harpoon customer for some time and we look forward to continuing our relationship into the next century.

The fact of the matter is that MDC is second to none in aviation partnering around the world in terms of quality of goods and services and longevity of partnering experience of all types.

These partnerships are the culmination of hard work on all sides. They provide a springboard for considerably larger opportunities for all concerned, including the birth of global alliances that will transform

our commercial aircraft business. Alliances that will institutionalize our already strong on-the-ground presence in regions around the world where large numbers of jetliners are purchased and will potentially be purchased. And clearly Asia-Pacific tops the list.

Alliances that will allow the best and the brightest people regardless of where they live and work to collectively produce the highest quality aircraft the world has ever seen at the most cost-effective prices.

These alliances will have many other ramifications as well. They will transform not only what and how airplanes are manufactured, but also the structure of our commercial company. It will be based not on a linear conception of what it means to "do business," but on a holistic understanding that a new century will bring new methods of transacting business; new definitions of design, development, manufacture, assembly, marketing, training and servicing.

Today, we're taking a fresh look at both our products and our relationships with our customers. Our DC-9X program, for example, is redefining the role of manufacturer and customer and providing us with the ability to add a new dimension to the value of our products.

This program breaks new ground. For the first time, customers will be participating with us in the manufacturing process. We'll be offering Douglas warranted products manufactured not by us, but by our customers. It's a revolutionary approach that will help shape the business of the 21st century.

Finally, we are committed to building a truly global alliance for another reason as well—to pool financial resources in order to ensure that research and development continues at the highest standard of excellence. This is of critical importance not only to our industry, but to bettering the quality of life of all peoples, worldwide.

For ultimately that is the goal and the vision of the founders of our

company, Donald Douglas and James McDonnell. Pioneers committed to blazing new trails from one end of the globe to another.

We truly will be a global industry only when we produce globally. Not fueled by the desire for more capital or greater market entry alone. Or the desire to build a bigger jumbo jet than a competitor. But by a commitment to better the nature of our lot as human beings, working in partnership to achieve higher ends.

It is in accord with this philosophy that we will produce the next versions of the MD-11, MD-80 and MD-90, and the next generation of aircraft. Aircraft that take the best the world has to offer to create the best products ever manufactured, regardless of industry.

It is a corporate philosophy based on the strength of a vision for a better world and a brighter future. Ultimately, this is the reason to embrace globalization, as we at MDC have for over 50 years.

James McDonnell perhaps expressed it best back in November of 1935:

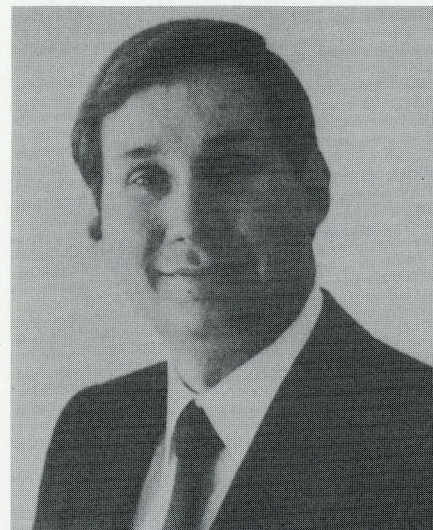
"I desire to find some activity to which I can devote all of myself, which will lift me out of my small self and enable me to serve the creative evolution of life on earth as a whole....

"In the present state of evolution, some degree of universal national defense is probably essential to a balanced state of affairs conducive to an orderly and happy and creative life on earth....

"In designing commercial transport I feel that I am ...serving the creative evolution of life on earth in that swift transport is conducive to world travel and trade and thereby conducive to the gradual welding of the people of the earth into a more friendly and more harmonious and purposeful community....

"I feel that a world of flying people will be a world of better people...."

NEW OFFICERS AND DIRECTORS



Michael R. Hajny
President

Michael Hajny is a Registered Professional Electrical Engineer with over twenty years experience in power measurements, metering, system losses, demand side management, wheeling and interconnected power pool operation, data telemetry, supervisory control and data acquisition (SCADA) systems, and energy management systems (EMS). He has fifteen years experience with a major electric utility holding company, four years experience with major manufacture of power measuring equipment, and one year experience with a major manufacture of weighing, load transducers and scales.

Michael received his B.S.E.E. Degree from Santa Clara University in 1970. He received his M.S.E.E. Degree from the University of Michigan, Ann Arbor, in 1973.

Michael is a Registered Professional Engineer in the States of California, New York, Ohio and

South Carolina. He has a General Radiotelephone Operator's License in the Commercial Service of the Federal Communications Commission, and he has an Extra Class Operator's License in the Amateur Service (NC8Z).

Michael attended the American Electric Power System's Management Program at the Graduate School of Business Administration, the University of Michigan in 1980. He attended General Electric Company's Power Systems Engineering Course (PSEC) in Schenectady, New York in 1977-1978. He attended the Quality Institute, ISO 9000 (Q90) Quality Systems Training Programs of the University of South Carolina, Spartanburg, including the programs for Documenting An ISO 9000 (Q90) Quality System, and Internal Auditor Training.

Michael is a Principal in Metering Engineering, Inc., which provides world wide engineering and management services related to metering (engineering, operations practices, budgets, human resources, policies and procedures), system losses, demand side management, data telemetry, SCADA systems, and EMS.

At Mettler-Toledo, Inc., a world wide leader in the manufacturing of weighing instruments, Michael lead the research and new products development department. A wide range of scales and force transducers were developed and supported. Capacities of various models ranged from a few grams to tens of tons. Accuracies ranged from 1 part in 1,500 to 1 part in 20 million. This work involved liaison with associated research and development groups in Brazil, China and

Switzerland.

At American Electric Power Service Corporation (AEPSC), from 1973 to 1988, he was responsible for the engineering, design, procurement, installation, start-up, and training associated with all revenue metering, meter record systems, demand side management, system losses, data telemetry, SCADA, power plant computers, and generation control. This included expense, capital and lease budgets; policies and procedures; procurement; and, technology planning. While at AEP, five major SCADA, power plant, and generation control systems were developed and brought on line.

At Scientific Columbus, Inc., from 1988 to 1992, he was responsible for research, development of new products, moving new products into manufacture, and ongoing support of products. Scientific Columbus is a leading manufacturer of high accuracy multifunction revenue electric meters, laboratory and field standards, transducers, and associated personal computer based data systems.

While at American Electric Power and at Scientific Columbus, Inc., Michael was a leader in the development and updating of metering standards published by the American National Standards Institute (ANSI), New York City; the International Electrotechnical Commission (IEC), Geneva; and, the Legal Metrology Branch of the Canadian government. He represented AEP and Scientific Columbus to the ANSI and Canadian Standards meeting. He represented the United States to the 1990 General Session of the IEC metering Standards meet-

ing in Beijing, China.

In the mid 80's he spear-headed the multi-utility, multi-manufacture task force that developed and implemented the bar coding of meters and instrumentation transformers for electric utilities. He consulted to the transmission and distribution groups on the corresponding bar coding of high power and distribution transformers.

Michael has been involved in the revision of many ANSI metering standards, particularly: C12.1, Meter Performance Testing; C12.10, Electromechanical Watthour Meters; C12.13, Time of Use Meters; C12.16, Solid State Electricity Meters; and, C12.17, Solid State Cartridge Recorders.

Michael was also active in the U.S., Canadian and International developments of standard communication protocols for metering. In the mid 80's he was a member of an Edison Electric Institute's committee that prepared and proposed a standard on metering communications. In the early 90's he was Chairman of the Data Protocol Working Group of the Legal Metrology Branch of Industry and Science Canada (the Canadian equivalent of the U.S. National Institute of Standards and Technology). In the early 90's he represented the U.S. (manufacturers, utilities, and regulatory agencies) to the Working Group 14 (Communication Protocols) of Technical Committee 13 (Metering and Load Control Devices) of the IEC.

Michael has extensive experience in the whole range of utility operations, and the interrelations of the various groups. At Metering Engineering, Inc., AEPSC, and Scientific Columbus, Inc., he worked closely with System Operations, System Planning, Customer Accounting/Billing, Information/Computer Systems, Division Operations, Purchasing, Finance,

Legal, Rates Research and Design, and Public Affairs Departments.

From 1980 to 1988 Michael was very active in the Edison Electric Institute's Meter and Service Committee. He lead various investigations, and, as previously mentioned, was a member of the committee which prepared and proposed a standard protocol for metering communications.

Michael was inducted into Tau Beta Pi while at Santa Clara University. He was inducted into Eta Kappa Nu while at the University of Michigan.

He is a Senior Member of the Institute of Electrical and Electronics Engineers, and is an active member of the Power Engineering Society, and the Instrumentation and Measurements Society. He is a Past Chairman of the Power Engineering Society's Columbus, Ohio Chapter.

Michael is a member of the International Conference on Large High Voltage Electric Systems (CIGRE), Paris. He co-wrote a paper published in the CIGRE Journal *Electra*.

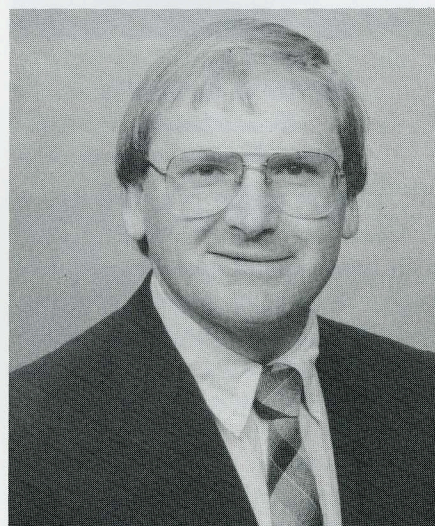
Michael has also written papers presented at the Distribution Automation and Demand Side Management Conference, the American Power Conference, the IEEE Winter Power Meeting, the American Public Power Association Conference, the Canadian Electric Association, the North Carolina Meter School, and the Pennsylvania Electric Association.

Michael is a member of the American Consulting Engineers Council (ACEC), and the Consulting Engineers of South Carolina (CESC).

In addition to extensive work in Canada and the United States, Michael has also worked in China, France, India, Russia, Spain, Switzerland, Ukraine, and Thailand.

Michael has been very active in Eta Kappa Nu. In the early 70's, as a young engineer in New York City, he worked on the annual Awards Banquets for HKN's Outstanding Young Electrical Engineer (OYEE) award. From 1985 to 1987 he served on the Board of Directors of Eta Kappa Nu. In the late 80's he represented HKN headquarters at the installation of the Eta Kappa Nu Chapter at the University of Dayton, Dayton, Ohio. In the early 90's, he was the Chairman of the Award Organization Committee (AOC) that administers the OYEE award. He is presently a member of the AOC.

Michael's election as the 1995-96 President of Eta Kappa Nu is a continuation of his many years of service to HKN.



Robert I. Egbert
Vice-President

Robert I. Egbert was born in St. Louis, Missouri on May 25, 1950. He attended Riverview Gardens High School in St. Louis and graduated in May, 1968. He entered the University of Missouri-Rolla (UMR) in the fall of 1968 as an electrical engineering major.

At UMR he was a member of Eta Kappa Nu, Tau Beta Pi, Phi Kappa Phi, and IEEE. During his senior year at UMR he became involved in a research project with a

faculty member in the UMR Electrical Engineering Department. Involvement in this research activity ultimately led him to decide to attend graduate school.

After receiving his B.S.E.E. from UMR in 1972 he enrolled in graduate school at UMR and received an M.S.E.E degree in 1973 and Ph.D. in Electrical Engineering from UMR in 1976. During his graduate studies he was employed first as a Graduate Teaching Assistant (GTA) and later served as a Graduate Instructor (GI) in the UMR Department of Electrical Engineering.

In 1976 he joined Black & Veatch Consulting Engineers in Kansas City, Missouri, where he was employed as a Systems Engineer in the Power Division. At Black & Veatch he was involved in performing technical and economic feasibility studies of both conventional and alternative forms of electric power generation for electric utilities and research organizations.

In 1980 he joined the faculty of the Electrical Engineering Department at Wichita State University (WSU) in Wichita, Kansas as an Assistant Professor. At WSU he has taught courses in circuit and systems analysis, control theory, and electric power.

In 1983 he received the American Society for Engineering Education (ASEE) Dow Outstanding Young Faculty Award for the ASEE Midwest Section. He has also been nominated for the Kansas Board of Regents Outstanding Teaching Award.

Dr. Egbert was promoted to Associate Professor of Electrical Engineering in 1986. In 1987 he was appointed Director of the WSU Center for Energy Studies, an interdisciplinary university-wide research center with an emphasis on applied energy-related research. In 1995, he was promoted to the rank of Professor.

Dr. Egbert has been a manuscript review consultant for a number of textbook publishers and has served as an expert witness in sever-

al law cases related to electric power. He has published over thirty articles in leading research journals and conference proceedings. In addition, he has obtained over six hundred thousand dollars in funded research from a variety of federal, state, local, and private sources, including the National Science Foundation (NSF), the U.S. Department of Energy (DOE), and the Electric Power Research Institute (EPRI).

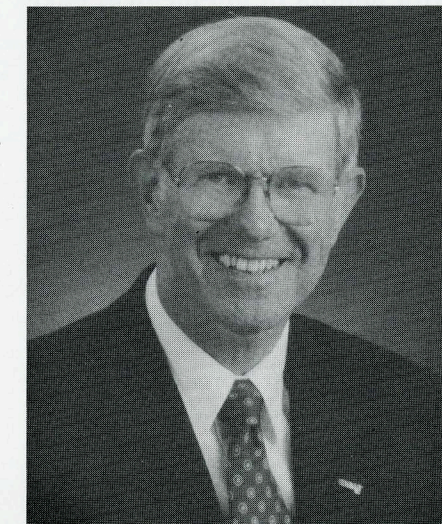
He is a registered professional engineer in the states of Kansas and Missouri and has been active in a variety of technical, professional, and honor societies. At WSU he has been the faculty advisor for the WSU chapter of Eta Kappa Nu for the past thirteen years and served as the faculty advisor for the WSU student chapter of the National Society of Professional Engineering from 1981 to 1986. He is a member of the American Society for Engineering Education (ASEE) and served as the Papers Chairman for the 19th Annual Midwest Section ASEE Meeting in 1984.

Dr. Egbert is a Senior Member of IEEE and served as Secretary/Treasurer of the Wichita Section in 1981 and 1982, Vice-Chairman in 1982 and 1983, and Chairman of the Wichita Section in 1983 and 1984. He is also a member of the Kansas Engineering Society (KES) and has served a member of the KES Long Range Planning Committee, the Energy Policy Task Force, and was Chairman of the Student Professional Development Committee for four years.

He is a member of Sigma Xi, the honorary society for scientific researchers and Pi Mu Epsilon, the mathematics honor society. He has also served on the EPRI Energy Storage Program Committee and has been a member of the EPRI Compressed-Air Energy Storage (CAES) Working Group. In 1992 he was appointed to the Kansas Energy Policy Committee by Governor Joan Finney.

Dr. Egbert is married and his

wife, Anne, is an Associate Professor of Internal Medicine at the University of Kansas School of Medicine-Wichita. They live in Wichita. His hobbies include hunting, fishing and other outdoor activities.



Richard J. Gowen
Director

Dr. Richard J. Gowen became the 15th President of the South Dakota School of Mines and Technology on January 1, 1987. He first joined Tech in July of 1977 as the Vice President and Dean of Engineering and helped guide the development of new approaches to the education of engineers and scientists.

In August of 1984, he was appointed President of Dakota State University to implement its new mission as a center for the enhancement of all levels of education through the use of computers and other advanced technologies.

Born in New Brunswick, New Jersey, Dr. Gowen received a BS degree in Electrical Engineering from Rutgers University in 1957. Shortly after joining the RCA Research Laboratories, he was called to active duty with the Air Force as a communications-electronics officer. In 1959, the Air Force selected him to pursue graduate studies at Iowa State University

and in May 1961 he was awarded the M.S. in electrical engineering with a minor in bio-medical engineering. The Air Force continued to support his graduate studies, and in May 1962 he received the Ph.D. from Iowa State in electrical engineering with minors in bio-medical engineering and mathematics.

Dr. Gowen was selected to join the faculty of the Air Force Academy and was promoted through both academic and military ranks and remained at the Air Force Academy until his retirement in 1977 as a professor of electrical engineering with the rank of lieutenant colonel.

While at the Air Force Academy, he helped establish undergraduate and graduate studies in electrical engineering and assisted in the development of the faculty research program. From 1965 to 1977, he directed the joint NASA-Air Force space medical instrumentation program specializing in the effects of weightlessness on the cardiovascular system. He led the design of medical experiments in the Apollo and Skylab space programs. He was a member of the NASA astronaut medical launch recovery team for the last six capsule space flights. He also served as a consultant to various government agencies for the development of medical, communications, and computer systems.

After joining the South Dakota School of Mines and Technology in 1977, Dr. Gowen applied his experience in the development of technology to help guide the continued growth of excellence in the education of engineers and scientists. He led the improvement of computer facilities in support of educational programs at Tech and encouraged the improvement of teaching through programs for faculty development, research, and other scholarly activity.

With the growth of new computer information oriented business in South Dakota, the legislature recog-

nized the need to develop new approaches in education to prepare the workers and managers for this growing industry. In 1984, Dr. Gowen was invited to serve as the President of Dakota State and lead the application of advanced computers and communications technology to improve education in the humanities, liberal arts, business, computer science, teacher education, mathematics, and science. Under his leadership, Dakota State has pioneered new ways to increase the effectiveness of the learning processes that are now being applied at colleges and programs in the elementary, secondary, and vocational schools.

Dr. Gowen's goal as President of the South Dakota School of Mines and Technology is to guide this technological university in the preparation of leaders in the engineering and science professions. Under his leadership, South Dakota Tech has experienced a 30% growth in enrollment, increased program offerings by over 10%, expanded research activities by 67%, and developed an extensive system of technical assistance and support for industrial growth.

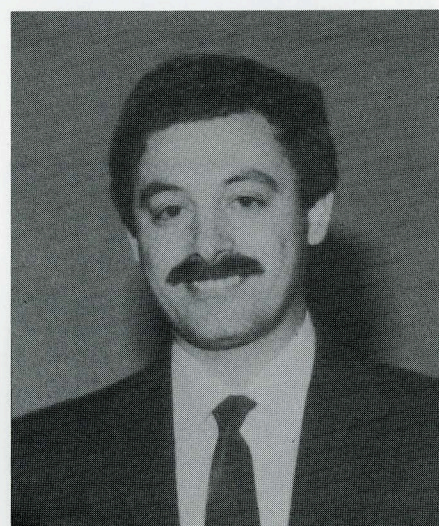
Dr. and Mrs. Gowen (the former Nancy A. Applegate) have five children: Major Jeffrey B., United States Army; Cindy A. Schlimgen, Rapid City; Elizabeth M. Kluksdahl, Houston; Susan L., Sioux Falls; and Kerry B. Larson, Rapid City.

Dr. Gowen is a leader of the engineering profession, and in 1984 he was elected to serve as the President of the Institute of Electrical and Electronics Engineers, the world's largest professional organization, in its centennial year. In this position he guided an organization with a \$100 million budget, the publication of 15 percent of the world's electro-technology literature, and operations in 128 countries. He is a fellow of the IEEE.

Dr. Gowen was the 1988 Chairman

of the Board of Governors of the American Association of Engineering Societies, the umbrella organization of engineering technical societies in the United States representing over a million engineers. He serves on boards and committees of these and other engineering organizations. He has also received many other honors and awards for his leadership and contributions to the engineering profession.

He has served as a consultant and director for companies. He was a founding director of the ETA Supercomputer Company.



Mohammad Shahidehpour
Director

Mohammad Shahidehpour is a professor in the Electrical and Computer Engineering Department and serves as the Dean of Graduate College at Illinois Institute of Technology. He was born in 1955, and completed his undergraduate studies in electrical engineering in 1977 in Tehran, Iran. He received his master's degree and doctor of philosophy degree in electrical engineering from the University of Missouri-Columbia in 1978 and 1981, respectively. During his graduate studies at UMC, he was a teaching assistant for the power engineering laboratory and a research assistant working on a DOE-funded project.

Mohammad Shahidehpour joined the Dearborn campus of the University of Michigan, shortly after graduation in 1981, as an assistant professor of electrical and computer engineering. At the University of Michigan, he received the distinguished faculty award in 1983 for outstanding teaching. In 1983, he joined the faculty of the Illinois Institute of Technology as an assistant professor of electrical and computer engineering. He was promoted to associate professor in 1987 and to full professor in 1991. At Illinois Institute of Technology, he developed a new curriculum in power engineering, established a power engineering research laboratory, and won the best teacher's award in 1991. Mohammad Shahidehpour was the faculty advisor for the HKN chapter at Illinois Institute of Technology and participated in many student activities sponsored by the HKN chapter. Between 1985 and 1991, he served as Director of Graduate Studies, Assistant Chairman as well as Associate Chairman of the Electrical and Computer Engineering Department at IIT. Later in 1993, he was appointed the Associate Dean of Engineering for Research and Graduate Studies, and was promoted to the Dean of Graduate College

in 1994.

Professor Shahidehpour's research contributions are in power systems operation, planning and control, non-linear dynamic systems, fuzzy sets and artificial intelligence applied to large scale systems optimization. He has published over 130 technical papers in various journals (mostly IEEE) and conferences. In 1993, he published the highest number of transaction papers among the members of the IEEE Power Engineering Society. Dr. Shahidehpour's work on the application of artificial intelligence to large scale power systems operation and control has received national recognition and has been cited frequently in technical articles. He has conducted research under contracts from EPRI, NSF, DOE and electric power companies. He has graduated 16 doctoral students and 4 master's degree students since 1983, and collaborated with seven post-doctoral scholars in his Power Systems Laboratory at Illinois Institute of Technology. He is on the PhD Advisory Committee of the San Juan University in Argentina.

He received two national awards for his contributions to electrical engineering research and education, including the HKN's C.

Holmes MacDonald Outstanding Young Electrical Engineering Professor Award (1991) and the Edison Electric Institute's Power Engineering Educator Award (1993). He was listed as one of the 50 R&D Stars to Watch in the United States, in the December 1994 issue of the Industry Week.

Mohammad has been associated with the American Power Conference, an annual forum for 3500 engineers, since 1983. He has served as Secretary, Assistant Director as well as Associate Director of the Conference, and has organized and promoted various technical activities during the last ten years. In addition, he was the Vice-Chairman of the 1992 IEEE Systems, Man and Cybernetics Conference, a member of the Technical Committee of the IEEE PICA (1995), and a member of the Executive Committee of the IEEE Transmission and Distribution Conference (1994). He is a technical reviewer for a number of funding agencies, technical societies, journals and conferences, and has reviewed over 250 technical articles during the last twelve years.

He is married to his wife Jamie, and they have two boys. He and his family live in Naperville, Illinois.

In Memoriam

George Balderston
1921-1995

George Balderston, 74, of Paoli died Friday, April 14, 1995, at his residence. He was the husband of Margaret Smith Balderston.

Born in Philadelphia, he was the son of the late George and Virginia

Maxwell Balderston, grew up in West Chester. He has been a resident of Paoli, PA for the past 39 years. He was a 1943 graduate of Drexel University.

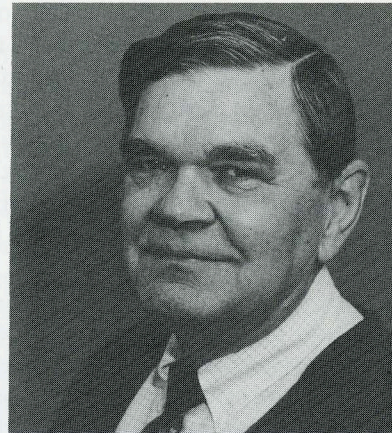
He was an electrical engineer for PECO Energy Co. for 39 years and participated in many industry associations, including Eta Kappa Nu, IEEE and EPRI.

He was a long-time member and

elder of the Paoli Presbyterian Church. He was active in Chester County, Boy Scouts of America for more than 60 years, including leadership in Paoli Troop 100 and the Order of the Arrow. In addition to his wife, he is survived by two sons, David M. Balderston of Spring, Texas, and Philip A. Balderston of West Chester, PA, a sister, Margaret Gotch of Moorestown, NJ; and six grandchildren.

John Moll is 1995 Winner Vladimir Karapetoff Eminent Members' Award

by
Nancy T. Hantman



John L. Moll, a senior scientist and corporate advisor at Hewlett-Packard Laboratories in Palo Alto, Calif., received Eta Kappa Nu's Vladimir Karapetoff Eminent Members' Award at the annual recognition banquet on April 24 in Princeton, N.J. The fourth recipient of the award, Dr. Moll was cited for his contribution to the classic Ebers-Moll transistor switching analysis, his guidance of Bell Laboratories in the development of silicon technology that became the basis of integrated circuits, and his leadership of Hewlett-Packard in the development of LEDs and optoelectronics. He was nominated for the award by Dr. Nick Holonyak, Jr., the 1994 recipient of the award and also the 1995 recipient of the Japan Prize.

Dr. Moll received the B.S. and Ph.D. degrees from Ohio State University in 1943 and 1952 respectively, and received an honorary doctorate from Katholieke Universiteit, Leuven, Belgium, in 1983. He was a staff researcher at RCA Laboratories from 1943 to 1945 before joining Bell Laboratories as a Member of the Technical Staff in 1952. It was there that he convinced Jack Morton to let him pursue diffused silicon technology.

In 1958 Dr. Moll left Bell Labs to become a professor of electrical engineering at Stanford University. (His effect on generations of electrical engineers was demonstrated at the awards ceremony, when Prof. Jim Harris, a former student, introduced his own student, Bardia Pezeshki, as one of the Outstanding Young Electrical Engineer Honorable Mention recipients.)

In 1969, Dr. Moll became technical director of the optoelectronics division of Fairchild Semiconductor. In 1974 he became the director of integrated structures research for Hewlett-Packard.

A Fellow of the IEEE since 1962, Dr. Moll has been awarded several patents and is the author of some 50 papers, the most frequently cited being the famous "Large-signal Behavior of Junction Transistors," Proc. IRE, Vol. 42, 1761 (1954), co-authored with J. J. Ebers. Dr. Moll has also written Physics of Semiconductors (McGraw-Hill, 1964). His IEEE awards include the Ebers Award (1971) and the Edison Medal (1991).

He became a Guggenheim Fellow in 1964. He received the Franklin Institute's Howard N. Potts Medal in 1967 and Ohio State University's Distinguished Alumnus Award in 1970. Dr. Moll is a member of Sigma Xi, the American Physical Society, the National

Academy of Engineering, the National Academy of Sciences, and the American Academy of Arts and Sciences.

Dr. Moll was introduced at the recognition banquet by Dr. Leonard S. Cutler, a colleague at Hewlett-Packard. Dr. Cutler spoke of Moll's modesty, reserve, devotion to engineering, and extraordinary ability to concentrate. A farmer's son, Moll started to turn away from agriculture and toward technology when one of his teachers noticed his mathematical ability and entered him in a competition.

HKN President Bruce P. Johnson presented the award certificate and honorarium to Moll, who then addressed the attendees. He was "fortunate to be at BTL" when work on transistors and switches was being done. While others had contributed importantly to the work with silicon, he felt that he had kept the staff focused on the project. When asked to approve an experiment, for example, he would inquire whether the experiment, if successful, would bring them closer to a silicon switch. If it would not, he would not give approval. Although he later turned the project over to William Shockley, he found that Shockley was very dependent upon him and his staff for information.

Dr. Moll thanked Eta Kappa Nu for honoring him with the award. The Vladimir Karapetoff Eminent Members' Award is given to an electrical engineering practitioner for career achievement. It recognizes that the recipient has distinguished him- or herself through an invention, development, or discovery in the field that has had a major impact on society through the improvement of the standard of living, the public welfare, and/or global stability. The award was established in honor and through the estate of Vladimir Karapetoff, an Eminent Member of Eta Kappa Nu and a Fellow of the IEEE. The fund to support the award was initiated through a bequest from Dr. Karapetoff's widow, R. M. Karapetoff Cobb, a chemical engineer. Dr. Karapetoff emigrated from St. Petersburg, Russia, in 1902. He became a U.S. citizen in 1909, and was a professor at Cornell University from 1904 until his retirement in 1939.

The Karapetoff award is administered by the HKN Eminent Members' Committee. Nominations are now being accepted for the 1996 award. For nomination forms or information, the contact is Donald Christiansen, Chairman, VKEMA, 434 West Main Street, Huntington, N.Y. 11743; Fax 516-385-4940.

Princeton, NJ...

OYEE AWARD DINNER

by Ralph J. Preiss
Chairman, Award Organization Committee

The fifty-ninth annual Eta Kappa Nu Awards banquet was held at the Princeton Marriott, in Princeton, New Jersey on Monday, April 24, 1995. It started at about six in the afternoon with a no-host bar, light refreshments, and good fellowship. Friends and co-workers of the honorees had a chance to visit with each other for about an hour before the banquet started. Of course they also could meet and mingle with all the honorees, guests, ETA KAPPA NU officers, and friends during this time.

The evening was reserved to honor the Outstanding Young Electrical Engineer of 1994, Dr. Khalid E. Ismail of the IBM T. J. Watson Research Center and of the University of Cairo, and Dr. John E. Moll, the recipient of the 1995 Vladimir Karapetoff Eminent Members' Award for career accomplishment in electrical engineering, who is currently a senior scientist and corporate advisor for Hewlett-Packard. Ismail, because he showed promise before his first ten years after his BSEE degree, and Moll, for a proven career.

Also honored were six runners up with promise, namely Dr. Bardia Pezeshki, manager of the Photonic Physics and Devices group at the IBM T.J. Watson Research Center and David Thomson, a supervisor in the Services and Speech Technology Department at the AT&T Bell Laboratories, who were recognized as Honorable Mentions. Also, William T. Mayweather III, Head of the Systems and Integrated Circuit Design Group at the SRI David Sarnoff Research Center, Robert S. Olyha, Jr., a group leader in Central Scientific Services at the IBM T. J. Watson Research Center, Dr. K. Wendy Tang, assistant professor at the State University of New York, Stony Brook, and Dr. Susan M. Lord, assistant professor at Bucknell University, were

named Finalists for the first time. All except Professor Tang were at the banquet to receive their certificates in person.

One other person honored that evening, through the auspices of the Board of Directors, was Carla Wilkinson, who received Eta Kappa Nu's Distinguished Associate Award. Mrs. Wilkinson, if you will recall, is the widow of Roger Wilkinson, the person who established the OYEE award in the early 1930's, and with her husband, was a long-time supporter of Eta Kappa Nu and its mission, and a frequent attendant at the annual awards banquet. Mrs. Wilkinson, upon receiving the award, considered it a great privilege, and always found hearing about the accomplishments of the young awardees a "renewing experience."

Seated at the Karapetoff Award table, in addition to Dr. Moll, were his wife, Isabel, his nominator, from Hewlett Packard, Leonard S. Cutler, Donald Christiansen, chairman of the Karapetoff Award, and Raymond Sears, one of the Karapetoff jurors. Others included Fern Katronetsky, Awards Organization Committee (AOC), Dinner Subcommittee member, George Watson, IEEE Proceedings, and Nancy Hantman, IEEE Spectrum.

Seated with Carla Wilkinson at the Lockheed-Martin Table were James D'Arcy, Past President of Eta Kappa Nu, and his wife, Beatrice, and John and Joan Logrando, Tom and Julie Gennaro, Roger and Victoria Chiei, Dave and Marilyn Staiman, and John Sekula, all of Lockheed-Martin.

Susan Lord was accompanied by her proud parents, Art and Rose Marie Lord, and also seated at the Bucknell University table were Bucknell colleagues, Maurice Aburdene, Victor Chang, and Margaret



Dr. Khalid E. Ismail receives OYEE Award Certificate from Dr. Bruce P. Johnson, 1994 HKN President

Martonosi, together with Dexter Johnson, AT&T Bell Labs, one of her references, and Irving Engelson, IEEE, Mark Adamiak, GE, and Jim Hebson, PSE&G, all members of the AOC.

Seated at the Eta Kappa Nu Board of Directors table were current President Bruce Johnson of the University of Nevada - Reno, and past Presidents David Meyer, Purdue University and Robert Arehart, PECO (Retired) and Helen Arehart, also Vice President Michael Hajny, Metering Engineering, Inc., and Director Robert Egbert, Wichita State University, together with Robert Betten, Executive Secretary.

David Thomson, a Finalist last year and Honorable Mention this year was accompanied by Judith Tschirgi, his manager and seated at the AT&T Bell Laboratories table. Also at the table were Joe Strano, NJIT, and member of the AOC, David Tuomenoksa, AT&T and 1989 OYEE Finalist, Dr. Sohrab Rabii, University of Pennsylvania EE Department Chair and two of his students, Achal Agarwal and Michael Dempsey, plus John D'Arcy, Gwynedd-Mercy College.

Seated among the three IBM tables were Khalid Ismail, the 1994 OYEE; Bernard Meyerson of IBM Research, his nominator, with wife, Vicki; Dr. Frank Stern, IBM, one of his references; Saber Mansour, Consul of the Consulate General of Egypt in New York;

Al Kheir, with son, Ali Abdul Kheir, Khalid's host in the USA; and Dr. Hatmund Presting and Professor Jim Strum, both of Princeton University and colleagues of the OYEE. Ralph Preiss, IBM-Retired, Past AOC Chairman, together with his wife, Marcia, hosted the first table. Kurt Trampel, IBM-Retired, hosted the second table at which Robert Olyha was seated with his wife, Stacey; also Tony Costellano, his nominator, with Alice Costellano; Robert Lemay, his manager, with wife, Arlene; and Joseph Jasinski, IBM Research. Professor James Harris, Stanford University, was seated with Dr. Bardia Pezeshki, for whom he was a reference. He had travelled especially to the banquet when he heard that two of his former students, Bardia and Susan Lord, were to be honored. Sol Triebwasser, IBM Director of Technical Publications, hosted the third table.

William Mayweather together with his wife, Theresa, were seated at one of the David Sarnoff Research Center tables, accompanied by James Carnes, 1991 Juror and President and Chief Executive Officer of the Research Center and his wife, Nancy; Bob and Janice Bartolini; Michael and Marilyn Ettenberg; and Mike and Josephine Patti, all from the Center. Seated at the second David Sarnoff Research Center table were 1988 OYEE Honorable Mention Michael Isnardi and his wife,



Mrs. Carla Wilkinson receives Eta Kappa Nu's Distinguished Associate Award from HKN President Johnson for her devoted loyal support of HKN

OYEE Honorable Mention Winner, David Thomson, receives Award Certificate from Bruce Johnson



Dr. Bardia Pezeshki receives Honorable Mention Award Certificate from Dr. Johnson

**William T. Mayweather III,
OYEE Finalist, receives
Award Certificate from
HKN President Johnson**



**Robert S. Olyha, Jr.
receives HKN Finalist
Award Certificate from
Dr. Bruce Johnson**



**Dr. Susan M. Lord is
presented the OYEE
Finalist Award Certificate
by President Johnson**



**HKN hereby expresses
grateful thanks to all
corporate table sponsors
for helping to make
OYEE possible**

Catherine; and Terry and Catherine Smith, all associated with the Center; as well as 1977 Outstanding Young Electrical Engineer, John Henderson of Hitachi America, and his wife Nancy, and Jack Fuhrer, Senior Director of Hitachi America and a reference for Mayweather, accompanied by Susan Fuhrer

Bob Bartolini served as master of ceremonies, and the awards were presented by President Bruce Johnson. Don Christiansen presided over the presentation of the Karapetoff Award [see story elsewhere in this issue].

A description of the OYEE Award and shortened biographies of Khalid Ismail, David Thomson, and Bardia Pezeshki appeared in the May 1995 issue of THE BRIDGE. This article continues with the biographies of the Finalists

Robert S. Olyha Jr. was nominated as an outstanding young electrical engineer on the basis of his latest accomplishment, for solely engineering the IBM TrackPoint II computer pointing device which was first used in IBM's ThinkPad computer line of notebook computers. Olyha designed, developed, and transferred this device incorporating analog, digital, and software parts from the research laboratory into production in record time.

Robert had a long association with IBM Research through the MIT Co-operative Program from May 1981 through May 1984. During this period he worked on various research projects which formed the basis of his thesis, "Non-Contact Defect Detection in Silicon," which was a requirement for earning both his BS and MS degrees simultaneously in EE and Computer Science on June 4, 1984. Following graduation, he took a permanent position with IBM and expanded the work reported in his thesis, resulting in the co-invention, with A. Castellano and T. DiStefano, of the Scanning Surface Photovoltage Tool. This was a machine which conducted nondestructive tests of silicon wafers in real time, replacing X-ray topography equipment which was significantly slower and destructive

He then contributed significantly to the field of computer-aided surgery by developing key hardware positioning components for the robotic system called Robodoc, a trademark of Integrated Surgical Systems, Inc. This system was first used in 1992 to perform a cementless total hip replacement surgery, the first in US medical history that robotics technology was actively and successfully employed as part of an invasive surgical procedure.

Among many other inventions, Mr. Olyha designed and produced a signal processing system which solved critical yield problems that were introduced by a line width reduction at IBM's semiconductor manufacturing facilities. His design reduced the rework rate by 33%, a rate sustained since the system was installed in IBM's manufacturing facilities worldwide.

In 1992, Robert Olyha was one of two IBM engineers participating in the U.S. FIRST national creative engineering championship in Manchester, New Hampshire. The mission of the event was to showcase science and

technology to America's youth. This involved teaming two engineers with a local high school science class in designing a robotic vehicle with a constrained set of materials in a constrained timeframe (six weeks). At work he is regularly assigned PhD candidates to help them gain the kind of experience that he himself received through MIT's Co-op program.

In addition, since 1987, Mr. Olyha has been an active member of the Occupational Education Advisory Committee for the Yonkers, New York public school system. The committee's goal is to provide guidance to the educational community on the trend of technology in industry, and the evaluation of occupational programs on a local and state level. He is also active in the Boy Scout movement, as an Eagle Scout and an Assistant Scoutmaster since 1979. He is a member of the Board of Directors of Camp Roly, Inc., a non-profit organization which supports camping facilities for Yonkers Troop 6. These duties involve fund raising and the developing of good character and citizenship traits in city youths during weekly troop meetings and monthly camping trips. He also makes use of his fund-raising skills as a regular canvasser in the IBM annual employee charitable contribution campaign.

K. Wendy Tang came from Hong Kong and received her B.S. in 1986, her M.S. in 1987, and her Ph.D. in 1991, all in electrical engineering from the University of Rochester. She worked at the University as a Research Assistant in her Senior year, and then as a Teaching Assistant while earning her Masters, again as a Research Assistant while working on her Ph.D. Upon graduation, Dr. Tang joined the State University of New York in Stony Brook as an Assistant Professor. Since then she has published five journal papers and nine conference papers on her research interests in the area of computers and communications. These include the design of interconnected networks and applications of neural networks. In her Ph.D. dissertation, Wendy attempts to answer one important question regarding the maximum density of a network, namely how dense can a network be? This is a graph-theoretic problem to determine the maximum number of nodes that are possible in a network given a maximum number of node-to-node links separating any two nodes. She has answered this question with a graph-theoretic formulation which produced a method to construct networks that were closer than other attempts to the maximum density possible. Now she has extended her thesis work on interconnection networks for massively parallel computers to the design of wavelength division multiplexed optical local area networks.

Professor Tang has taught several graduate level courses and has developed a new one for SUNY. Her teaching skills have been recognized with a formal nomination to the Eta Kappa Nu C. Holmes MacDonald Outstanding Teaching Award for Young Electrical Engineering Professors. In addition, she has received external funding for developing software tools for use in magnetic antenna design, and further funding for a

project in robotic control.

She is the advisor and counselor of the student section of the Society of Women Engineers at Stony Brook, where she devotes a considerable amount of her own time to encouraging women to pursue careers in engineering. She also plays an active role in the parent organization. She works as a reviewer for IEEE/ACM Transactions on Networking, and on Computers, and has been involved in the selection of papers for conferences in her sphere of interest.

Susan M. Lord was nominated for the OYEE award on the strength of her combination of contributions to molecular beam epitaxy (MBE) and novel material growth, and activism in promoting education and the engineering profession for minorities and women. It is interesting to note that Bardia Pezeshki, one of this year's Honorable Mentions and she co-authored a number of physics papers while both were Ph.D. students at Stanford University. Although both went their different ways after graduation, both were nominated independently for the OYEE award. As one of her references pointed out, "...the main focus of Susan's Ph.D. work was in developing techniques for successful MBE growth of significantly lattice mismatched InGaAs on GaAs such that one could monolithically integrate detectors, modulators and non-linear optical devices suitable for long wavelength communications with GaAs high-speed electronics. In addition to her own MBE work, Susan has collaborated with a number of other students...to demonstrate the application of this material to a variety of applications...her success with this material has probably had greater impact and use by other students..."

In her last two-and-a-half years of her Ph.D. quest Susan Lord published some fifteen papers and presented papers at six leading conferences on her work. She received the Outstanding Student Paper Award at the AIME Electronic Materials Conference in June, 1993 for her presentation of the culmination of her Ph.D. research.

While still in college, she organized the Solid State Lab orientation program for incoming graduate students, which was copied by the rest of the labs once it got to be known. The School of Engineering then recruited Susan to organize their recruitment program for women and minorities. This in turn lead her to get minorities and women interested in science, mathematics and engineering in high school and even in middle school. By taking her life into her own hands she organized and worked in a math and science program in an East Palo Alto Middle School for some two years, practicing what she preached. In addition, she acted as a Eucharistic minister for the Stanford Catholic community.

Susan received her B.S. in EE and Material Science and Engineering from Cornell University in 1987, (and was named a Cornell University Presidential Scholar). She received her M.S. and Ph.D. in EE from Stanford University in 1988 and 1993 respectively. She spent two

summers at AT&T labs and received an AT&T Bell Laboratories GRPW Fellowship (1987-1993) and one summer at GM Research before beginning work on her Ph.D. at Stanford (1988-1993). She joined the EE faculty at Bucknell in August 1993 as an Assistant Professor, teaching both lecture and lab courses in undergraduate electronics and optoelectronic materials and devices. In addition, she is involved in the Educational Committee activities of the IEEE Electron Devices Society, and during the summer still participates in workshops for high school and undergraduate science teachers.

William Taylor Mayweather III is also a product of the MIT Co-operative program resulting in a simultaneous Bachelor and Masters degree. He received his degrees in June 1987 with a thesis entitled, "A VLSI Median Filter Implementation for Video Signal Processing" which earned him two patents. His co-op assignments were with GE Semiconductor Division, and the David Sarnoff Research Center. After graduation he worked as an engineer for Qualcomm Inc., where he designed and integrated the Qualcomm Dual Direct Digital Synthesizer. In 1988, he became project leader at the David Sarnoff Research Center for the development of the European Adaptive Line Comb integrated circuit. He also designed a video rate rastering integrated circuit to compress or expand the video line in the generation of NTSC compatible HDTV. This work earned him another patent. In 1990 he was promoted to Integrated Technology Leader in the TV Research Laboratory, and in 1991 Head of the Systems and Integrated Circuits Design Group.

His rapid rise in the Research Center is due to the fact that Bill is a natural leader to whom others respond well. He exhibits a unique combination of technical and "people" skills. His verbal skills have helped him attract new clients and new business. Bill is articulate and persuasive, and in addition to being a good manager, he is also a technical contributor to his projects.

These leadership and technical skills also spill over into the community. He was a member and now the leader of a group of volunteers who conduct Sarnoff's Minorities in Engineering Program. This includes not only teaching sessions at Sarnoff but also visits to high schools to interview candidates, explain the program, and sell engineering as a career. His giving of himself as a spokesman for an engineering career and as a role model of a successful minority student, is aimed at attracting impressionable high school students.

With young electrical engineers like those discussed above, the future seems much brighter than is reported in our daily newspapers. Keep up your good work, and pass on your enthusiasm. We have high hopes. The formal ceremonies concluded around nine-thirty in the evening.

This permitted those who were not staying over to get home within a reasonable time.

1992-93 Chapter Reports

Beta-Omega Chapter U of Connecticut Storrs, CT

OFFICERS AND DATA

Fall 1992

Number of New Initiates
Number of Business Meetings.....5

Spring 1993

Number of new Initiates.....24
Number of Business Meetings.....5

Fall 1992 and Spring 1993

President.....Lisa E. Rosner
Vice President.....James Hormuzdiar
Treasurer.....Kwame Eason
Secretary.....Joseph Deptula
Faculty Advisor
.....Francesco Palmieri

PROGRAM AND ACTIVITIES

The **Activity** and **Man Hours** are listed below:

Fall 1992

Tour of General Electric ED&C Plant.10
Engineering Open House #15
Engineering Student Leadership Council
25
Miscellaneous.....50

Spring 1993

Engineering Student Leadership Council
25
Engineering Visitation Day3
University Open House2
HKN Initiation40
Chapter Newsletter.....20
(See attached)
Updated Chapter By-Laws15
Yearbook Photo1
Public Relations15
Miscellaneous.....50

Lisa E. Rosner
President

HKN PRESIDENT'S NEWSLETTER

I'd like to welcome all of you back from Spring Break! I hope all of you had a safe, and relaxing week.

Congratulations once again to our new initiates. (Keep an eye out for your names in your local hometown newspaper!)

NOTICE!

There will be an important Eta Kappa Nu meeting on Wednesday evening, April 7, 1993 in UTEB Room 150 from 7:00-8:30 p.m.!

Meeting agenda will include:

- HKN Officer Elections!
- A photograph will be taken of our society for the University Yearbook!

(Anyone who is interested in running for an office in the honor society must attend this meeting!) In order to be eligible for office, you must plan on being an electrical engineering student at the University of Connecticut, and it is preferable that you will be a student here until May 1994. Offices available within the Beta Omega Chapter of Eta Kappa Nu include:

- President
- Vice President
- Treasurer
- Recording Secretary
- Corresponding Secretary
- Bridge Correspondent

Descriptions of these positions will be made available to all interested society members. Contact me at 456-9533 if you have any questions. I strongly encourage you to run for office!

These positions are highly visible within the School of Engineering, and the University community. As an officer, you will, for example, have the opportunity to attend leadership development seminars, and engineering student leadership council meetings. In addition, you will inevitably broaden your circle of acquaintances, and make numerous contacts both within academic and industry. These are the types of experiences which will absolutely SELL you to a company! Each different position requires a varying level of commitment to the organization for a period of one year, ranging from somewhat extensive to minimal. Pick one that suits you, and RUN FOR OFFICE!!!!

YOU MUST BE PRESENT TO RUN FOR A POSITION, AND YOU MUST BE PRESENT TO VOTE FOR THE PEOPLE WHO WILL LEAD ETA KAPPA NU FOR THE FOLLOWING YEAR!

Something to Look Forward To!

Professionally Engrossed????? Eta Kappa Nu Membership Certificates have been ordered for all February initiates! (These replace the temporary certificate you received at the initiation ceremony.)

You will be contacted when these arrive.

HKN Scholarship Award!

We are pleased to offer Eta Kappa Nu members an opportunity to compete for the Norman R. Carson Award for the Outstanding Electrical Engineering Junior. This prestigious, nationally recognized award consists of a monetary prize, and a certificate of recognition. This award was created to honor students who have not only demonstrated good scholastic abilities, but who have also demonstrated great leadership skills. It is not necessary for the nominee to have "straight A's," however, you must meet Eta Kappa Nu's membership requirements. Nominations must be postmarked before April 15, 1993! Contact me at 456-9533, A.S.A.P. if you are interested!

Engineering Open Houses!

- April 3, 1993
- April 17, 1993

Small groups of students who have been admitted into the freshman class for next year will be led on tours through every department in the school. Eta Kappa Nu members are needed in the mornings to act as co-tour guides and to help faculty answer questions during laboratory demonstrations. In the afternoons, a reception will be held in which faculty and students will act as hosts. Some seniors will be asked to volunteer to discuss their experiences here at UConn.

Call me at 456-9533 to participate in these events!

THANK YOU!!!!

I would also like to thank all the recent initiates for the multitude of suggestions I received for chapter activities. I have enclosed a copy of a letter which was sent to Dean Soulsby, and the Engineering Student Leadership Council, reflecting your valued input.

I look forward to seeing everyone on Wednesday, April 7, 1993!!!

Together, we can make the upcoming year even more productive!

Annual Report Zeta Omega Chapter

University of California, Irvine

OFFICERS AND DATA

Fall 1992

President.....Anthony S. Lai
Vice PresidentI-Te Ted Lin
Treasurer.....Joyti Dadlani
Recording Secretary.....Sajani Shah
Corresponding Secretary

.....Johnson P. Liu
Faculty AdvisorDr. Glenn Healey
Number of Members.....15
Number of New Initiates.....15
Number of Business Meetings.....6

Winter 1993

President.....Anthony S. Lai
Vice PresidentI-Te Ted Lin
Treasurer.....Joyti Dadlani
Recording Secretary.....Sajani Shah
Corresponding Secretary

.....Johnson P. Liu
Faculty AdvisorDr. Glenn Healey
Number of Members.....30
Number of New Initiates.....0
Number of Business Meetings.....5

Spring 1993

President.....Anthony S. Lai
Vice PresidentI-Te Ted Lin
Treasurer.....Samuel Wong
Recording Secretary.....Sajani Shah
Corresponding Secretary

.....Johnson P. Liu
Faculty AdvisorDr. Glenn Healey
Number of Members.....30
Number of New Initiates.....6

Number of Business Meetings.....7

PROGRAM AND ACTIVITIES

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

Fall 1992

Initiation Ceremonies	Old	3
Banquets	Old	3
Picnics	Old	5
Tutoring	Old	60
Talent Shows	Old	3

Winter 1993

Picnics	Old	5
Tutoring	Old	60
UCI Knowledge Tournament	Old	3
Faculty/Course Evaluation	New	5
Award Nomination	New	1
Fund Raising	New	2

Spring 1993

Initiation Ceremonies	Old	3
Banquets	Old	5
Picnics	Old	5
Tutoring	Old	60
Talent Shows	Old	3
Faculty/Course Evaluation	New	5
UCI Visitation Day	New	5
High School Visits	New	5

Annual Report Kappa Epsilon Chapter

Binghamton University

OFFICERS AND DATA

Fall 1992

Number of New Members.....16
Number of New Initiates.....13
Number of Business Meetings.....1

Spring 1993

Number of New Members.....29
Number of New Initiates.....13
Number of Business Meetings.....7

Fall 1992 and Spring 1993

President.....Isaac Sacolick
Vice President.....Craig Hanley
Treasurer.....Bruce Ecklund
Recording SecretaryJim Perry
Corresponding Secretary

.....Michelle Conboy
Bridge CorrespondentKyle Pynn
Faculty Advisor.....Dr. R. Schwartz

PROGRAM AND ACTIVITIES

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

Spring 1993

Building Light Box	New	16
Initiation Dinner	New	15
Watson School Open House Exhibit	New	10
Initiating Member Guide	New	5

PRESIDENT'S MESSAGE

The Kappa Epsilon Chapter was installed on November 20, 1992. From our very first meeting we have been deciding on the goals of the chapter and the kinds of projects we wanted to work on that would assist the Binghamton community, the University, and the Electrical Engineering Department. We also began the process of adapting standard rituals and practices for our chapter.

Since we were a new chapter, we spent most of our efforts on learning the initiating procedure and inducting new members from the junior class. From this experience, I have developed an Initiating New Member Guide that is specifically written for our chapter. It is hoped that using this guide will assist the officers in initiating new members so that they may spend the bulk of their efforts on other projects.

Our most significant project completed this year was the construction of Eta Kappa Nu light box to be used during the initiation ceremony. The box consists of a poster size picture of the shield, mounted on a wooden box. Switches are on the back of the box to control lights that are inside to illuminate different parts of the shield.

On April 25, 1993 the Watson School of Engineering at Binghamton University celebrated its 10th anniversary with an Open House which included many exhibits and demonstrations. Many of our members demonstrated their senior

design projects. A small group of members ran an Eta Kappa Nu table which included our chapter's light box and copies of the BRIDGE. The intent of the exhibit was to inform the guests of our Chapter and its purpose.

This has been a successful first year for our chapter. We have planted the chapter's seeds and hope that future members will work to allow the chapter to grow with success.

THE ELECTRIC LIGHT BOX

The ETA KAPPA NU electric light box, was designed and constructed in order to enhance the initiation for incoming members. The construction of the light box included the ETA KAPPA NU seal on the front. This project was used to help give the new members a better understanding of the HKN emblem.

INDUCTING NEW MEMBER GUIDE

Purpose:

This document is to be used by the current Kappa Epsilon President, officers, and faculty advisor as a guide for initiating new members. It is hoped that as the chapter grows and advances that the current officers will update this document so as to be most useful to the future chapter officers. This guide will not cover details of who should be nominated for membership; these decisions should be based on the current Eta Kappa Nu Constitutional laws, bylaws as voted in by previous members, and any current decisions of the active members.

This guide is organized as a time line and it is hoped that it minimizes the efforts of the officers in initiating new members.

BEFORE SEMESTER BEGINS

(During the summer for FALL initiation, during winter break for SPRING)

Acquiring of Lists

It is the President's and Faculty Advisor's responsibilities to acquire the proper lists of grades. These

lists can be obtained from (1) Lorna Wells at Watson School Advising, and (2) The Registrar. In addition, Dr. Morris (or Mary Lou) also have lists, but they may not be of the correct form. As a last resort, keep in mind that the faculty advisors of Tau Beta Pi must also request these lists and may be able to provide a copy for you. The lists you should request are:

- List of Electrical Engineering Seniors in Grade Point Order
- List of Electrical Engineering Juniors in Grade Point Order
- If applicable, a list for graduate students.

Each list should contain the names of the students, their G.P.A. (which includes the grades of the MOST RECENT SEMESTER), and the total number of credits passed.

Going Over the Lists

The lists should be evaluated by the Faculty Advisor (Dr. Schwartz) and should be compared with lists in the department (Mary Lou) for any students that may have been missed. (This has happened!). Also, some students may be on the wrong list, and so the students should be distinguished as either Seniors or Juniors depending on the anticipated graduation date. Take into account the difference in credit hours of Harpur transfers and external transfer students. Once these lists have been "finalized" it is the Faculty Advisor's job to present a list of eligible students to the President so that he may present this to the active members.

FIRST AND SECOND WEEK OF CLASSES

President and Officers should publicize an active member meeting for the end of the first week. The purpose of the meeting should be to announce the nominations, acknowledge any objections, and open the floor for further nominations (if applicable).

The following should be finalized at this meeting as well:

- The day of the week that initiation should be held (Friday night...). If an exact date can be agreed on, all the better. See ahead for choosing the actual date.
- A date for an "Information Mixer" should be arranged. This mixer should be during the end of the 2nd week or beginning of 3rd. All members and faculty should be encouraged to attend. Details for this mixer (food, beer, location time) should be finalized.
- The post initiation celebration should be talked about. Questions to be answered are: (1) The style - Restaurant? Commons Buffet?, Student Prepared Dinner? (2) A guess of what the cost of the celebration/member should be estimated. Estimates for some locations are:

Common's Buffet—\$10
Restaurant—\$12
Hotel—\$15+

Consider options such as a cash bar.
- A post - initiation dinner committee should be established. 2-3 members who are in charge of the dinner details. Get a good mixture of officer, and non-officer members in the committee.
- The new member cost currently is \$25 (for national) + \$10 (Kappa Epsilon Fee) + \$?? for the dinner.

The officers should use this meeting to announce any other planned activities for the semester.

Letters

A letter of nomination should be written and handed to each nominated member. A sample letter is provided at the end of the guide. The letter should be personable and include the nominated members name. It should also include information as to when and where the information mixer is. These letters should be handed directly to the stu-

dents, preferably by the President or other officers.

WEEK 2-3

Before the Information mixer, the date and location for initiation should be finalized. Take into account that INITIATION MUST BE AT LEAST 3 WEEKS AFTER THE YELLOW NEW MEMBER SHEETS ARE MAILED INTO THE NATIONAL OFFICE.

The Informational Mixer

The following should be discussed at this meeting:

- Introduction of Officers, Faculty Advisor, current active members that are present, and the nominated student members.
- Discussion of what is Eta Kappa Nu, why join, what does it mean to be a member. Solicit the active members to speak and recall what was discussed at your meeting when you were initiated. Remember you must, to an extent, sell the society. Talk about projects that have been completed, and ones for the current semester. Give new members a sense of pride...
- Discuss date and location of initiation. ALL NOMINATED INITIATES MUST ATTEND INITIATION!
- Current dues that must be paid by the end of the third week.
- Fill out yellow sheets for national and the Chapter Application. (See end of guide).

Mailings to National

The yellow student sheets should be typed up by the Corresponding Secretary, checked for spelling errors, and signed by both the Corresponding Secretary and the Faculty Advisor. Photocopy these forms for the records. They should be mailed to the National Office with one check from the Kappa Epsilon account for \$25 * # of

members. (Initiated member's checks should be deposited in the account). Notice that the yellow sheets require the initiation date. This must be absolutely finalized at this point.

Please call the national office a couple of days after mailing the yellow sheets. We have had some trouble mailing things to them and its better to be safe than sorry.

Preparation for Initiation

Please note that some of these things should be completed during Week 1 (Asterisk marked). Most of these details should be worked out either the week before, or of initiation.

- Reserve a room. This can be done through the registrar, EB110 has been used in the past. If the Watson Commons is being used for anything, reserve this room with Watson School Advising. Rooms should be reserved for at least 1 hour before and after the event to allow time for set up and clean up.*
- Have copies of the ceremony made for the six Readers. Inform the Readers of their parts and insure that they will be present for the initiation. Set up a practice reading.
- Check light box to make sure it is operating correctly.
- Make sure there are enough candles and holders for the readers.
- Make sure the Chapter Member Book, the tablecloths, signing pen..are found.
- Make list of the names of the initiates in alphabetical order. Make this part of each Reader's ritual packet.
- Make arrangements for someone to photograph the initiates and the Reading Officers at the initiation. Don Kunkel has done this in the past. These photographs should be part of the Annual report.
- If there is time, make an Initiation

Program. This should include a list of the names of the initiates, a second list of the current active members, and a photocopy of the history of HKN from the Initiation Ritual Guide.

Initiation Day - Set Up

(This Assumes that EB110 is being used for initiation).

- Two tables and six chairs should be set on the stage. Place tablecloths on table, and set up the candles. Plug in the light box and place underneath the table so that no one can see it. (This should be brought out onto the table during the appropriate time in the ceremony).
- Assign two guards to the doors to keep initiates out of the room. Allow guests in and give them the Initiation Program if it was made.
- Have BRIDGE CORRESPONDENT line up initiates outside the door.
- Place desk in front of stage and Signing Book with the pen on the desk.
- Make sure the certificates are signed by the President and Recording Secretary. Place in alphabetical order.

The Ceremony

- Initiates should be seated in the front row, overlapping into the second row if needed.
- SPEAK LOUDLY AND CLEARLY!
- During the part of the ceremony where the initiates are called up, all Readers should leave their seats and line up in front of the stage.

A final Note.

Some members of HKN will undoubtedly also be members of Tau Beta Pi. It is my suggestion that aspects of the Tau Beta Pi initiation not be replicated in the Eta Kappa Nu initiation. We should look for our own traditions....

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