



Editor and Business Manager J. Robert Betten

FEBRUARY 1989 Vol 85-No. 2

Contributing Editors

Larry Dwon Joan Spink George Brown Alan Lefko



The BRIDGE is published by the 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, \$7.50; Life Subscription, \$30.

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.

INTERNATIONAL EXECUTIVE COUNCIL

President Vice-President Executive Secretary Virgil G. Ellerbruch Robert J. Kennerknecht J. Robert Betten

INTERNATIONAL BOARD OF DIRECTORS

Stuart McCullough Irving Engelson John D. Mitchell Donald S. Stoica

AWARD COMMITTEES

OUTSTANDING EE SENIOR AWARD COMMITTEE (Alton B. Zerby Award)

Chairman: Mr. Marcus D. Dodson, P.E. Consulting Engineer 9302 Grindlay Street

9302 Grindlay Street Cypress, CA 90630

OUTSTANDING EE JUNIOR AWARD COMMITTEE

(Norman R. Carson Award)

Chairperson: Ms. Jo Dale Carothers P.O. Box 26382 Austin. TX 78755

OUTSTANDING YOUNG EE AWARD COMMITTEE

Chairman: Dr. Irving Engelson

Staff Director
Technical Activities Board
IEEE Headquarters
345 East 47th Street
New York, NY 10017-2394

OUTSTANDING TEACHING AWARD COMMITTEE

(C. Holmes MacDonald Award)

Chariman: John H. Spare

Engineering and Research Department Philadelphia Electric Company

Philadelphia Electric Comp 2301 Market Street

P.O. Box 8699 Philadelphia, PA 19101

OUTSTANDING CHAPTER ACTIVITIES AWARD COMMITTEE

Chairman: Mr. Alan Lefkow 17 Jacobs Road Thiells, NY 10984

AVERAGE NO. COPIES EACH ISSUE DURING PRECEDING 12 MONTHS	ACTUAL NO. COPIES OF SINGLE ISSUE PUBLISHED NEAREST TO FILING DATE
21,595	21,268
-0-	-0-
20,987	20,849
20,987	20,849
-0-	-0-
20,987	20,849
608	419
-0-	-0-
21,595	21,268
	21,595 -0- 20,987 -0- 20,987 -0- 20,987 -0- 20,987 -000000000

CONGRATULATIONS LARRY DWON

LARRY DWON, P.E., HAS BEEN SELECTED
TO RECEIVE THE IEEE-USAB AWARD
FOR LITERARY CONTRIBUTIONS FURTHERING
ENGINEERING PROFESSIONALISM. . . .
MORE ABOUT THIS IN THE NEXT ISSUE.

NOTICE

CONSTITUTIONAL AMENDMENT
Proposed by HKN Board of Directors
"Broadening Eta Kappa Nu
Membership Requirements"

Eta Kappa Nu is an electrical engineering society. The field of electrical engineering has grown tremendously since Eta Kappa Nu's founding in 1904, and indeed since its constitution was last amended in 1958. Our constitution states that in order to be eligible for membership, an undergraduate student must be in an accredited degree program in electrical engineering. The Board of Directors is responsible for the interpretation of the constitution. Boards have, during the past several years, been studying the definition of electrical engineering, and in particular have addressed the question: are computer engineers who are in programs leading to baccalaureates in computer engineering eligible for membership in Eta Kappa Nu? The issue is an important one because some computer engineering students receive EE degrees while others receive CompE degrees. We do not wish to exclude from Eta Kappa Nu students who have similar backgrounds and interests.

As a result of these studies, the board has reached a clear consensus that Eta Kappa Nu should regard computer engineering students who are actually pursuing an engineering curriculum with substantial electrical content on the same basis as other students who are pursuing other branches of electrical engineering.

Chapters are therefore permitted and encouraged to accept computer engineering students whose course of study is in accordance with the foregoing philosophy, and who meet all other established criteria for membership in Eta Kappa Nu. Computer engineering curricula that are accredited by ABET may be considered as generally containing the desired electrical engineering content.

Furthermore, to make evident the increased scope of electrical engineering, the Board of Directors recommends that the Eta Kappa Nu Constitution be amended as follows:

Add to Article II a new section 6:

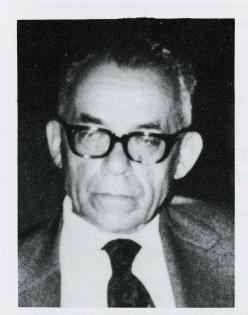
Section 6. For the purposes of this Constitution, Electrical Engineering shall be interpreted to include those overlapping branches of Engineering that are based substantially on the application of electrical science, which branches are deemed to include, but not be limited to, Computer Engineering.

Amendments to the constitution require ratification by the chapters. Ballots for the ratification of the amendment will be distributed at the next Mail Convention which will be held later this year.

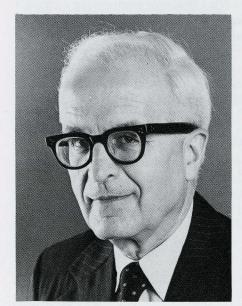
Dr. Peter L. Bellaschi, P.E.

"THE LIGHTNING MAN"

by
Larry Dwon, P.E.
Contributing Editor



Dr. Peter L. Bellaschi



Author, Larry Dwon

Introduction

The first lightning stroke produced by man was the result of Peter L. Bellaschi's leadership of many associates at Westinghouse Electric Corporation. He was the principal technical contributor. It occurred in 1936 at the Sharon (Pennsylvania) High Voltage Laboratory. This momentous occasion followed several years of intensive theoretical and experimental study.

Prologue

The history of the Outstanding Young Electrical Engineer's Award, OYEE, which Eta Kappa Nu has sponsored since 1936 is replete with successful achievers over a lifetime career. Dr. Peter L. Bellaschi is an example.

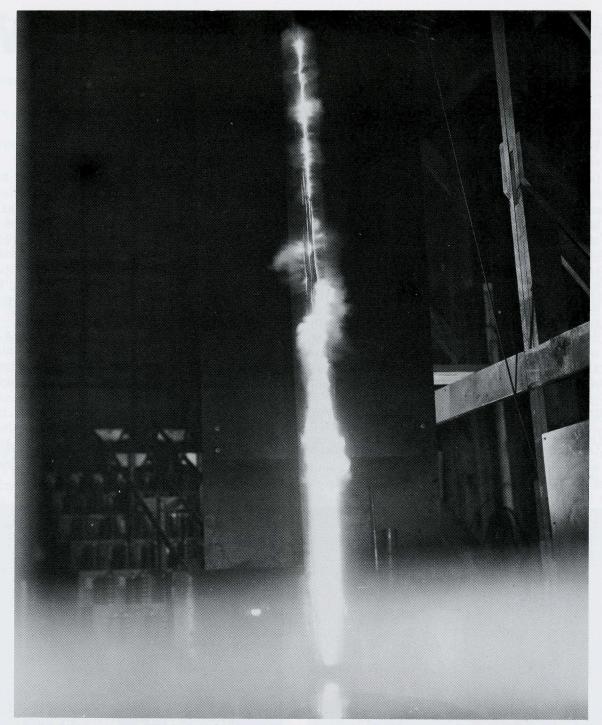
He is one of the first three persons who received an Honorable Mention in the 1936 award. His colleagues with similar honors were E. W. Boehne (deceased), A. C. Seletzky (deceased) and C. G. Veinott. The 1936 award recipient was F. M. Starr (deceased). That first award dinner was a classic occasion.

It lasted until the early hours of the next morning. Almost every one had a speech. Roger I. Wilkinson's was the shortest. Even the principal entertainer, Dr. Vladimir Karapetoff, played the Unfinished Symphony on the piano to highlight the affair. It was the lightest moment of the evening when he announced it and added that there really wasn't any time to finish it.

The Beginning

But this is a story of "man-made lightning"—Peter Bellaschi—as many people think of him. It really is a story of lightning strokes in field and laboratory throughout the world; and of international contributions to high voltage engineering. His USA patents 2032904 and 2228070 are fundamental in this field of work.

Peter was born on February 13, 1903 in Piedmont, Italy. He came to the United States in 1913. He graduated from Fitchburg High School (Massachusetts) in 1922.



The First Lightning Stroke Tests on Electric Power Transmission Lines (Wood Poles) Produced in the Laboratory (1936)

It seemed natural for Peter to go to the Massachusetts Institute of Technology where he earned a BSEE degree in 1926 and an MSEE degree in 1928. He writes that he studied under the "... guidance of a top educator and engineer, Dr. Vannevar Bush." In 1940 he received an honorary degree of Doctor of Science from Washington and Jefferson College.

In 1936, HKN honored Peter as mentioned above. That same year, Westinghouse Electric Corporation,

gave him its Order of Merit for Outstanding Contributions to high voltage engineering lightning research. In 1940, IEEE/AIEE elevated him to Fellow member. In 1982, Peter received the IEEE Harbishaw Award.

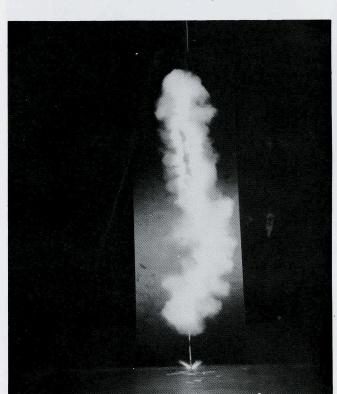
In the 1943-47 period, he contributed significantly to the research of Tidd Project, which projected the USA into extra-high voltage (EHV) at 345kv and 500kv. And we have accounted for only about half his life span of accomplishment, which continues today. At

age 85, he is still doing useful consulting work. He continues to spread the gospel about the enormous power of lightning, as follows:

- When a thunderstorm threatens, avoid open spaces; leave the golf course in time, and suspend field games (football and others).
- Keep away from isolated trees in the open field and from metal fences.
- With lightning on the horizon and coming, do not venture out on the lake in a small boat.
- In the country, on the farm and at work in the field, take shelter in time, during a lightning storm; get off the top of the hay wagon and off the horse or tractor, down to the ground.
- Mountain climbers and hunters beware of lightning!
- If you drive out in the country and run into a lightning storm, stay in the car. It is the safest place that you can be . . . a closed metal car. If you must leave the car during or after the storm, make sure there are no wires touching the car, which fell down from the electric power lines above. Keep away from all wires on the ground.
- And, by the way, don't build fires under high voltage transmission lines . . . it is dangerous!

Speaking of contributions, a small sample from his massive biography follows:

- Over 200 published papers, articles and discussions.
- Consultant since 1947 throughout the world.



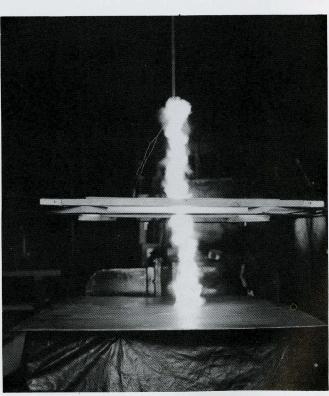
- Contributed extensively to Bonneville Administration's work on high voltage transmission system, transformers, insulation coordination and designs at 500kv and 1200kv levels.
- A worldwide recognized authority and participant in international conferences.
- Registered Electrical Engineer in the state of Oregon.
- Member of the High Voltage Test Techniques Subcommittee for over five decades.
- Speaker at many section meetings and national conferences.
- International speaker in Brazil, Argentina, Chile, Peru and European countries, often in native languages—Spanish, French, Italian and English.

Peter is not only a visionary, but, perhaps more passionately than most, he understands the vital importance of national and international standardization. He considers IEEE 4/C68, "Standard Techniques for High Voltage Testing," to be a classic.

Also, to Peter, the overhead ground wire is a marvel of modern technology that protects from lightning over a quarter million kilometers of high voltage transmission lines, that supply the nation and the world with electric power.

Epilogue

Dr. Peter L. Bellaschi, P.E., is truly the "whole person" to which the Eta Kappa Nu ritual directs the attention of its initiates.



Basic Work on Lightning Channel Conducted in the Laboratory—See References: "Lightning Strokes in Field and Laboratory," P. L. Bellaschi, IEEE/AIEE TRANSACTIONS, Fall, 1937

Misadventures in Mexico

by Joan Spink

We left JFK that morning in a nasty snowstorm. It had taken us twice as long as we had anticipated to reach the airport and then we waited several hours for the plane to be de-iced. Not a very auspicious start for our first trip to Mexico, we thought. How very wrong we were! Imagine leaving home under those dreadful conditions and ending up, that very same evening, dining out under the stars with the gently rolling Pacific Ocean just a few feet from your table. I can still smell the ocean and see the flowers; oh my, how wonderful flowers look to a northerner in the middle of January! It was as if you had stepped into a time machine and advanced to "Summer."

All this great warm weather was our first big surprise; our second was the delightful people that we met. No matter where you went or what the circumstances were, someone was always "trying" to help you. All you had to do was be patient and have a sense of humor and things would turn out fine. Keeping this in mind, what follows will be my attempt to capsulize our many adventures, or misadventures, in Mexico.

We spent our first few days of this trip luxuriating in the sun on the beautiful beach of Ixtapa, then flew on to Mexico City to see the sights. It was here that we had our first encounter with Mexican helpfulness. We had come to see the pyramids and ruins of Teotihuacan. Since I just couldn't wait for a regular tour, we rented a car to go out to the site and catch the "sound and light" show. Our hotel clerk was very accommodating and hired one for us with an English speaking driver. When the car arrived I was touched, this considerate man had sprayed the inside with a lovely smelling perfume. Now wasn't that sweet? He also, upon our arrival at the site, purchased our tickets and rented a blanket for us. He explained that we would need the blanket as "It gets very cold here after dark." Of course we would not be impolite and refuse his kind gesture, so we took the blanketgingerly to say the least—and proceeded in to see the show. Once inside my husband put the blanket carefully on the seat beside us. He knew that it would later have to be returned to its rightful owner, the horse! As the show progressed, though, a strange thing happened. That dirty old blanket went from its isolation on the next seat, right on over our laps to keep our legs warm. A bit later we found it over our shoulders, and before the show was over we were huddled under it with just our two pair of eyes peering out. "Pepe" was right, it gets cold at the pyramids after dark!

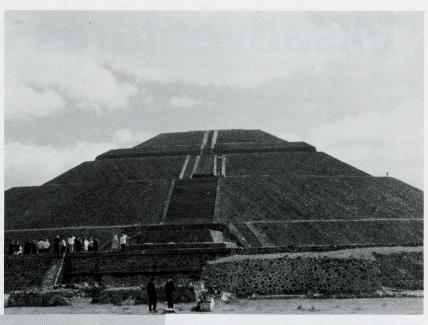
When the show was over we returned to Pepe's car and another surprise. Remember the perfume that he had kindly sprayed about? Well now, several hours later, it had dissipated and we knew at once "who" had been in the car before us. As an old farmer's daughter, I can tell you that only one animal causes such an odor, but to this day I can't figure out how they got that herd of pigs into the back of that little car!! It was a long ride back to our hotel but you'll have to admit, Pepe had tried to make our trip more pleasant—

I couldn't leave Mexico City without telling you about the Pyramids of Teotihuacan. I have had the good fortune to have visited the sites of both the world's great pyramids, the ones in Egypt and the ones outside of Mexico City. The ones in Egypt are of course much older, but for sheer grandeur, the Teotihuacan pyramids are their equal. The setting here is perfect, the plain on which they rest encompasses a 100 square mile area and is as flat and empty as on the day of creation. The largest of the monuments, the Pyramid of the Sun, is the same base size as the largest one in Egypt, though it does lack a considerable amount in height. Still, when you have made the exhausting climb to the top of the "Sun" you surely feel as though you can command all you survey. So must the high priests have felt as they offered sacrifice to their gods from the very spot on which I now stood!

Imagine also the awe that the "common man" must have felt as he watched the great ceremonial processions make their way down the $2\frac{1}{2}$ mile long "Street of the Dead," stopping at one temple after another to pay homage to the gods. Everything was color and pageant, but above all the brightly arrayed nobles and priests stood the "Great Pyramid." One million tons of pyramid painted a *bright red*. Can you picture it, can you feel the awe—even now, 2,000 years later, I can! Is it any wonder that these people worshiped the sun and its mighty temple? To this I might add that all this was accomplished without the benefit of a draft animal or the wheel—fantastic!!

Mexico City has so many other interesting things to do and see, but I will just mention one more, their famous Archaeological Museum. It is here you will get a tantalizing look at many of the ancient cultures of Mexico, including the Olmec, Toltec, Mayan, Zapotec and Aztec. It was a very good beginning for us as we were to spend many wonderful vacations seeking out these ancient peoples.

Photo at right Pyramid of the Sun Outside Mexico City



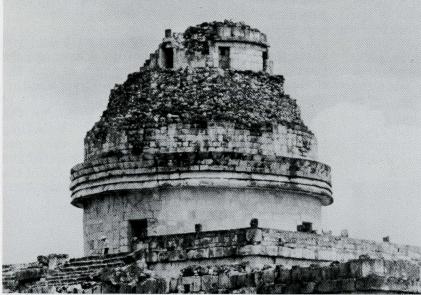


Photo at left The Caracol at Chichen Itza

Photo at Right Castle of Kukulkan at Chichen Itza



On our next trip to Mexico we again chose a beach resort and an archaeological site. Our beach this time was lovely Cancun on the Yucatan peninsula. Once again we left New York in a near blizzard and landed a few hours later in a dream world of warm tropical breezes and beautiful clear water. If you have never seen Caribbean water you are in for a real treat. It is the color that is so astonishing—a true aquamarine, and here at Cancun the pure white beaches make this water seem even more vibrant and colorful. Quite a "heady brew" for a person in an overcoat and galoshes!

On Cancun we again discovered how hard our Mexican friends "try" to make us happy. We had just returned from a long tiring trip to the ruins of Chichen Itza and I was sick. I was being paid a visit by Montezuma himself, and his "revenge" is far from sweet for the person that he visits! Anyway, I was too sick to go down to the dining room to eat, so my husband called room service for me. The man who answered was very solicitous and so sorry that I was sick. Yes, he would send up an order of tea and toast right away. With this assurance my husband left to have his dinner. Upon his return he found that I hadn't received my tea and so he once more called room service. Again the person who answered was extremely polite and sorry to hear that I was ill. He promised to have my tea and toast delivered "uno momento." After another half hour went by my husband suddenly lost his "cool" and went flying downstairs to see the manager of the hotel. When he returned he was in a much better mood; as a matter of fact, he was grinning from ear to ear. The answer was very simple, he had been told, our hotel "does not have room service"-The poor man who had answered the phone had not wanted to disappoint us by telling us so!!! By the way, I did get my tea and toast shortly thereafter, the manager himself brought it to me-

I have mentioned Chichen Itza and I would certainly be remiss if I didn't tell you a bit about this famous Mayan-Toltec ruin. Chichen Itza was an ancient ceremonial site and there are many important structures here: temples, palaces, pyramids, ballcourts, etc. It would take pages for me to describe all of them; so I have decided to select just two, the "Caracol" and the "Castle."

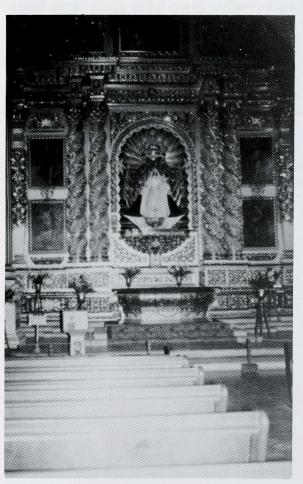
The Caracol was actually an observatory. It has a circular stairway on the inside, hence the name Caracol or "snail" in Spanish. This stairway leads up to a dome-like upper structure from which, without a telescope or any other instrument, these people studied and made calculations of the heavens. Indeed, these calculations were so precise that they were able to develop an exacting calendar from them which predated our own Gregorian one by hundreds of years. The Caracol is partly in ruin today but if you're lucky, and a bit daring, you can make your way to the top and perhaps experience a "Maya" sunset through one of the apertures in the dome—

The other structure, the Castle of Kukulkan, is a large pyramidal shaped temple. This temple is so precisely oriented to the sun that on two days of the year a startling phenomenon occurs. The play of sun and shadow on the side of the main stairway causes the form of an undulating serpent to ascend on the Spring equinox, and then descend again on the Fall one. This incredible event takes about three hours and is a tribute both to the Mayan building ability as well as to their astrological knowledge and skills. It is also one *terrific* show for the lucky visitor who happens to be there on the right day!

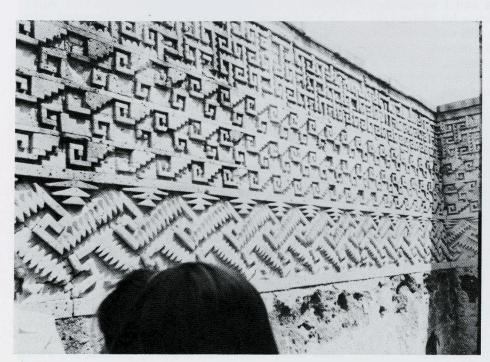
Before we left Cancun we were privy to a uniquely Mexican boat launching. I am sure that the whole strange and hilarious affair started because the lads who were handling the large rowboat did not want their "guests" to get wet shoes. At any rate, this group of people had assembled on the beach to take the boat out to a waiting motor launch. The young Mexicans had hauled this 20 foot rowboat out of the water and up on to the sand. They then asked all the waiting people to climb in-much to the amusement of many of them. After everyone was in the boat the two fellows proceeded to try to push the now heavily laden boat out into the water. First they tried from the back—pushing. Then they tried from the front pulling—all to no avail of course. Finally, they positioned themselves on opposite sides of the boat and began to "rock and push" it for all they were worth. By this time the poor folks in the boat were laughing so hard that they couldn't hold on and so began to spill over the sides onto the sand. This would never do! The lads motioned for them to climb back in—and then the vigorous "rocking and pushing" began anew. I do wish I could tell you how the whole affair ended but at about this time we had to leave the beach for a tour of our own. So, for all I know, those people are still down there laughing and rocking—but I can assure you of one thing, they all have dry shoes!

The next time we went to Mexico we decided on something a bit different and so we flew into the interior of the country to a city named Oaxaca. Again we were looking for warm weather and ancient ruins and, as always, we found more than our share of both. Oaxaca is a lovely old Spanish colonial city filled with quaint buildings, flowers and cathedrals. It was here that we were to find Mexico at its best and, perhaps, its worst. There are without a doubt poor people in Mexico. It is usually only when you venture away from the gay beach resorts and grand luxury hotels though that you will find them. Here at Oaxaca we found Mexico's poor!

We had been told that once each week the second largest market in the country was held here, and we were looking forward to seeing it. I must admit that this market was hardly the kind that I was expecting. I guess I was looking for a "tourist" market with gold and silver jewelry, blankets, statues, souvenirs, etc. What we actually found was a centuries' old farmers' market, and a real education. Briefly, this market covered an area of 10 square blocks, was roofed over and held dozens of small stalls. In these stalls were poor farmers selling everything from ground-up limestone to empty shrimp shells; the latter I believe were used to make soup. Outside the market area there was a large field, a donkey parking lot. There







Photos-Top left: Santa Domingo Cathedral at Oaxaca.

Top right: The Chapel of the Rosary at Oaxaca.

Bottom left: Mitla

were a few old cars and trucks here, but mostly, tied securely to "parking posts," were the country folks' donkeys. A most unusual sight in this age of the suburban shopping mall!!

Inside the market we found mostly food, or in some cases, what passed for same. The vegetables and fruit were beautiful. As a housewife I could have fallen in love with the farmer who grew them! We saw heads of cauliflower piled 15 feet high, huge piles of squash, beans, peppers, bananas, oranges, etc. A vegetarian's delight!

The meat on the other hand was a nightmare. My husband had to run out for fresh air after passing only a few of the meat stalls. I have never seen anything like it, nor do I want to again. Meat, all of unknown origin and all cut exactly the same, in slabs an inch thick and six inches long, was piled on top of the counters. Above, along the top of the stalls were a series of hooks from which were suspended all manner of things-tongues, hooves, tails and a few other items that I can only guess at. This in itself was bad enough but when you add to that an afternoon temperature of 98°, no refrigeration or cooling of any kind, and then the swarms of flies and insects-ugh. Since this market usually lasts for two days, can you imagine the condition of the meat on the second day? Well, this we were told was when the poorest people were able to make their purchases! As I said before, it was quite an education. With all of this poverty you would expect there to be a great deal of theft in Oaxaca, wouldn't you? Not at all. Let me give you an example. There are many cathedral-like churches in the city and all are adorned with gold—tons of it. The gold was actually layered onto the whole inside of the churches. In some places there is as much as a 32nd of an inch of gold covering the columns, wall surfaces, etc. Since these churches are open to the public and are unguarded, you'd think that these poor people might, just once in awhile, help themselves to a bit. Never!! This to me is surely Mexico at its "best!"

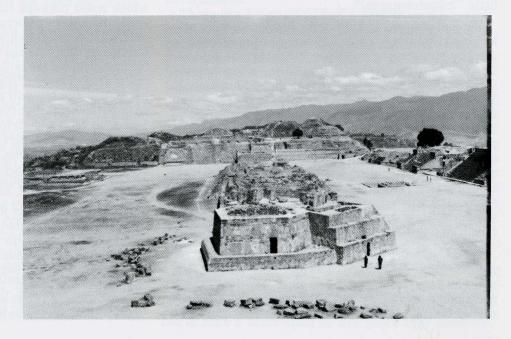
The main reason that we had come to this city was to visit the ruins of Monte Albin and Mitla. The first is a site to steal your breath away, a whole mountaintop that was cut away basket by basket, to build an enormous ceremonial city. The second, Mitla, is a very small site in comparison, but a true "gem." Here you will find some of the finest geometrically patterned friezes in existence. This is a completely radical change in decoration, and one found only in this area. Even without the grand site of Monte Albin, the mosaics of Mitla are worth making the trip to see.

As for Monte Albin, I will not even attempt to describe all the wonderful things that we saw atop the "White Mountain." I will only say that I found it very difficult to believe that these people could manage to carry away part of a mountain, then cut, haul and erect all the buildings that stand on the flat plain that remained. Truly a "site" to remember!

Since Monte Albin is one of the few sites in Mexico that was both a ceremonial complex and a burial site, we then went back into the city to the museum to see some of the things that had been uncovered in the burials. This museum is quite large and houses many Zapotic treasures, the most astonishing of which were a few small statues. The sculptor, hundreds of years before the "new world" was discovered, had used his imagination (we were told) to make a perfect likeness of an Oriental person, another of an African and most astonishing of all, of a turbaned Indian, complete with a jewel in the center of his forehead! That sculptor certainly had an "accurate" imagination!

It was here also in Oaxaca that my husband's favorite "incident" occurred. We were eating in a very nice restaurant in our hotel when he saw a "Cornish Ham Chicken" listed on the menu. Out of curiosity he decided to order it. The waiter said that he was sorry but they did not have it that night. It should have ended there but no, my husband had to ask *why* they did not have it. The waiter very seriously replied, "Oh Señor, we do not have it because the chicken she

Photo At Right Monte Albin



run like hell and we could not catch her." A good thing to remember in Mexico, never ask "why"—

As long as I've told my husband's favorite story I have to give myself equal billing and relate mine. This also takes place in a restaurant, the best one in the city, we were told. This place had an outdoor veranda on which you could dine, and since it was a nice warm night, we chose to do so. When we were shown to our table I noticed that everything, the table, dishes, and even the glasses, were covered with little leaves which had drifted down from the surrounding trees. I mentioned this fact to our hostess; she looked puzzled for a moment and then, ah yes, she would take care of the problem-and she did. She started huffing and puffing and blowing-she blew the leaves off our dinner plates, she blew them off the tablecloth and then, she blew them out of each glass! When she was finished she proudly proclaimed, "See, all clean." In the future I will be content with a few little leaves—

Before I end this tale I would like to say a bit about one more city in Mexico, Merida, the White City. Once again we had flown here to tour some nearby Mayan ruins and, as always, found additional delight in both the city and its people. I am certain that you have heard about the Champs Elvsees in Paris, but did you know that there is another one here in Merida? It seems that in the mid 1800's a group of wealthy sisal barons decided that they wanted to make their city more "aristocratic" and since money did not seem to be any object, they set about re-creating Paris. I have never been to Paris so I cannot judge how successful they were in their re-creation, but I do know that they made Merida a charming city of wide boulevards, elegant mansions and a most beautiful opera house. We had a delightful stay in the "Paris of the Yucatan," spending a good deal of time just strolling the boulevard, eating in nice restaurants and enjoying the flowers and warm weather. It was on one of these "strolls" that we had another of our little "misadventures!"

We had stopped to have some lunch in a very nice looking restaurant. After lunch my husband went to use the men's room and upon his return he told me this story—He said that it was a *very* elegant room. (I guess that men's rooms are usually just functional.) The floors and walls were marble, there were even marble vanities, ornate mirrors, beautiful crystal-like lighting fixtures, etc. There was only one *tiny* little problem; the "facilities" were not hooked up! Instead of your usual plumbing, these resourceful people had dug out the marble of the floor and made a little trench which ran along the wall to a hole on the far side of the room. From there—who knows where it went—My husband's comment, "I didn't ask questions!" We were learning—

While we were in Merida we of course went "old ruin hunting." There are two sites, both Mayan, that you can tour from here. The first, Chichen Itza, I mentioned previously, so I will concentrate on the other, Uxmal. It was here that we saw our only

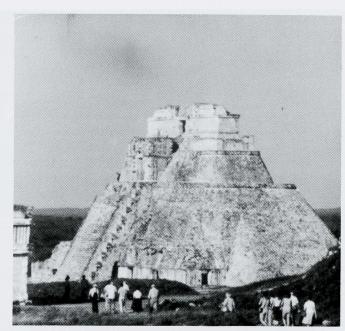


Photo-Temple of the Sorcerer at Uxmal

"round" pyramid (yes, it is possible) called the Temple of the Sorcerer. Here also we discovered another amazing fact about the Mayans. These people had worked out and were using the mathematical concept of zero—and this, centuries before it was introduced into Europe! The ancient Mayans were a very intelligent people and when you travel around this part of Mexico, you soon come to appreciate that fact.

No one is at all sure why, in just this one area of the Yucatan, a rounded pyramid was built. Then again, no one is sure about anything when it comes to these ancient Indian cultures. Their books and writings, which could perhaps have shed some light on their civilization, were unfortunately destroyed. So, we have only what was left behind in stone to speak for them, but this certainly speaks volumes. Right here at Uxmal, for instance, we see buildings that are more like huge sculptures. The craftmanship is unbelievable; imagine seeing the top half of an entire building covered with lattice work—carved in stone. Another building had a 10 foot wide frieze of columns going entirely around it, again all carved in stone. There were hundreds of heads, faces, serpents and gods, richly ornamented and all exquisitely carved. A remarkable testament to a truly remarkable people!

We had started our journeys looking for a respite from Winter, but found ever so much more. I hope that I have conveyed to the reader a little of our love for our Mexican friends and some of our enthusiasm for their rich and varied past. If I may, I would like to end with a "borrowed" philosophical thought:

"Blessed are those who can wait and smile, for they shall surely enjoy themselves"—in Mexico.

WHY DON'T WE STANDARDIZE?

by

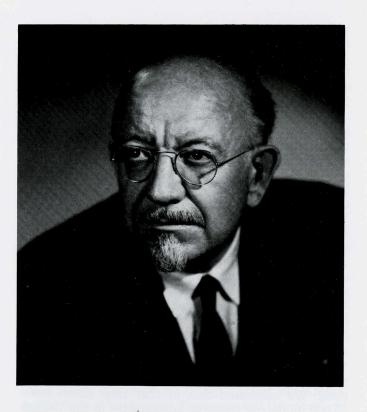
George H. Brown

Before his death in December of 1987, Dr. Brown submitted to BRIDGE a transcript of a one-time talk which he presented to the National Association of Broadcasters in 1983. It is reproduced here for the possible stimulation of thought and the smiles which it may again arouse in so many in the BRIDGE audience who have enjoyed Dr. Brown's contributions for so many years.



It pleased me very much to be invited to talk at this Engineering Luncheon of the National Association of Broadcasters. The years slip by so fast that I suddenly find that I have not for a long time enjoyed the pleasures of being with my friends in the broadcasting business. I assure you that while you have been out of my sight you have not been out of my mind.

Just fifteen years ago I spoke at the Engineering Luncheon of the NAB on the subject TRENDS, TECH-NOLOGY, AND ECONOMICS IN BROADCASTING. It has become quite conventional for a speaker on such an occasion as that to launch into a prediction of what this brave new world has in store for us. I regard such an approach with trepidation for my record as a prophet is not unblemished. In 1948 I was asked on rather short notice to speak on an assigned subject, 'Whither Radio?' In that speech, I predicted the number of television receivers which would be purchased in the next ten years. My guess proved to be less than twenty percent of the actual figure. At the same time, I stated that commercial television broadcasting in the ultra-high-frequency region would not come about for five years. A few months later, the Federal Communications Commission imposed a freeze on the television situation, which step made this latter prediction completely accurate but not for any of the reasons which I had used in reaching my conclusion.



One can seldom scan a newspaper or magazine without finding at least one article on the world of tomorrow. I have observed that almost all the devices and systems that are daily imagined depend very little on future research results but could be brought about with today's technology. The common ingredient needed in every case is money for design and development, accompanied by the conviction on the part of a person or persons that the object of our attentions, the potential customer, will develop an overwhelming desire to partake of the bounty about to be offered.

There is a long and tortuous path from the germination of an idea into a salable product. This is particularly true of the complex systems in which we find ourselves involved. The ideas must first be tested by experiment, often with a lengthy development to remove obvious faults. It is at this point that compromises are accepted to lend practicality. Field testing sometimes adds significantly to the cost and the time. Then comes the engineering design and engineering models, followed by drafting, purchasing, and tooling. All these steps are logical and necessary but not glamorous. It is relatively safe to say that for any reasonably complicated and significant product to be available on a large scale in the next five years the really basic research has been done. This is not to say that further research is not needed for the ancillary results of continuing research flow into the product line long after the devices or systems reach the market place.

In the same vein, it is unfortunately inevitable that for extremely complex products to be widely available in such a short span as five years they must be well along in the development stage at the present

We are all familiar with the barrage of public relations staffs who tell us of the great things that can be done with the burgeoning technology. Only recently, I read a story in the WALL STREET JOURNAL to the effect that the nation's automated clearing houses will soon be prepared to transfer corporate trade payments electronically thus eliminating paper invoices and checks. A Chase Manhattan Bank manager was quoted as saying that this will eliminate mailing of invoices, improve turnaround time, reduce errors, and of course save money for the companies. But a Westinghouse Electric Corporation spokesman seems skeptical, according to the article, and states that electronic payments could save the company twomillion dollars a year on processing but it could also cost the company more than twice as much by eliminating float, that is funds in transit on which Westinghouse is a net gainer in interest. Surely trade terms will have to be renegotiated to make up for this loss of float which has been used so frequently to enhance profits.

Some years ago when I had a staff doing studies of new products, we found some rather startling situations. We estimated that at that time there were 15,000 industrial research laboratories in the United States and that in the same year 10,000 new technical products were announced, less than one per laboratory. Incredibly, eighty percent of these new products died in infancy. Most of the survivors did not represent substantive innovations but mere style modification.

And then there are the offerings of products which resemble cures for diseases which do not exist. There have been announcements of products which are about to be born, announced with great fanfare, picked up by the popular press, stimulated by more announcements and more promises, but not a word when early demise takes place.

Would you like examples? Some of you may remember when in 1964 CBS announced the birth of the video home player to end all home players. EVR, meaning Electronic Video Recording. The response by RCA was immediate. The corporate marketing team seized upon a development at RCA Laboratories which used a laser-beam technique for embossing holograms on a plastic tape to carry color-television information. The method was far from perfected but, against my advice, the RCA marketing people began to promote it as the RCA bulwark against the inroads of EVR. I had grave reservations concerning the RCA marketing team for they had been discovered by the RCA chairman who was apparently untroubled by the fact that as a team employed by Ford they had done the marketing research for the Edsel.

In any event, the CBS project and the RCA project expired quietly and simultaneously in 1971 but with separate funeral services.

For most of my professional life I have believed that the customers—the users—should be consulted and often involved in the developments which will affect their futures as broadcasters. In the thirties I was brought into the problems of broadcasters through the wisdom of Irving R. Baker, the manager of the RCA Broadcast Equipment Division. Whenever station managers of broadcast engineers came to visit Baker he made it a point for me to chat with them about their problems. He encouraged me to go on trips around the United States to learn what was troubling the station people concerning technical problems. I would not have learned that the now long-gone guved-cantilever antenna was a fading antenna instead of an antifading antenna, if I had stayed in the restful seclusion of a research laboratory. Nor would I have learned of the need for phase indicators for directional antennas and many other devices which I invented on demand. I am sure that I would not have been stimulated to develop the Antennalyzer if Baker had not so generously offered my services in designing countless directional antenna systems for broadcast stations.

In some manner you broadcasters must get your views and your needs proclaimed to the manufacturing industry. Remember you are God's gift to the manufacturers. Somehow you must overcome the nonstandardization of equipment which is becoming more and more a problem. It is this growing nonstandardization that holds back new broadcast services. A case in point is the proliferation of noncompatible news gathering equipment. I do not see how you do business with this situation as it exists.

The FCC is no help. They seem to have become enamored with the philosophy that the market place will settle everything. It seems years since the debate started on standards for AM stereo and FM stereo and it is far from settled. The market place will never settle this issue.

I well remember that during the color-television hearings of 1950 one of the commissioners asked if I would submit a drawing which showed how, "by taking out parts and simplifying the circuitry," we could have a television receiver which could then receive all three of the color systems being proposed. He said that the market place could then make the choice of system. My answer was, "No!"

A couple of years later, when we were trying to convince the FCC that their decision in favor of the CBS system was wrong, our chief executive again came up with the "let the market place decide theory" and I incurred a certain amount of frigidity by giving my frank opinion.

But we should not criticize the FCC because that might stimulate them to call hearings and make decisions which will be worse than no decisions at all. The record is not good. The FCC deliberated in 1949 and 1950 before setting standards for the field-sequential color system which was born dead.

Occasionally the FCC has set specifications which are vague enough to do no real harm. For instance, in the FCC Technical Standards Amended to Incorporate Color, adopted December 17, 1953, Section 3.682, paragraph (8), we find, "During active scanning inter-

vals, the scene shall be scanned from left to right horizontally and from top to bottom vertically, at uniform velocities." But what scene? The scene in the studio? Perhaps the scene in the camera tube or the scene on the receiver picture tube? I have no trouble with top-to-bottom where ever the scene may be but left-to-right leaves open the question as to whether we are to look into the front or the rear of the camera. Really of no consequence since we only have to reverse two leads in the camera to make it conform to all the other cameras in the world.

I could give you other examples of officialdom groping in the dark while making important rulings with far-reaching consequences, but I shall relate one such incident which gives me a certain amount of restrained pleasure whenever I think of it. It came about when I was serving on a subcommittee of the Defense Science Board. We were charged with making recommendations concerning incentives for research and development contracts to be awarded to research laboratories of industrial and educational institutions. I could understand monetary rewards on manufacturing contracts for exemplary performance with respect to the time element or to economies effected by the contractor but I had difficulty in visualizing how to reward a purely research task. Together with other committee members, I expressed the feeling that incentive contracting should at least be reserved for very large research and development contracts and that contracts below a certain level should not contain such supposed rewards.

The committee discussed this matter through several meetings, endorsed the principle, but could not arrive at a suitable figure to mark the boundary. Then came time for drafting the final report and I was assigned the task of writing the part dealing with exemptions.

I postponed a decision on exactness by writing, "It is recommended that incentives shall not be included in contracts where the total amount of the contract is less than _____ million dollars."

While typing my treatise, my secretary asked, "What goes in the blank space?"

I replied, "Mrs. Baker, nobody could decide on this so just put in X for an unknown quantity. We shall have to resolve this point at the next meeting."

This she did so my typed draft went off to the Defense Department carrying the phrase, "less than X million dollars."

At the next committee meeting, I was delighted to see that some well-educated typist in the Defense Department, in putting together the total report, had now written, "less than ten million dollars."

An Assistant Secretary of Defense came to our meeting to review our opus before presenting it to the Secretary of Defense. As we went through the draft line-by-line, he asked, "Why ten million dollars for the cutoff point?"

Our chairman had been in the habit of leaving our meetings before lunch each day on some undisclosed mission and therefore had taken very little part in our earlier discussions. But he was not about to display any ignorance so he replied, "Sir, that is where the curve breaks."

Not to be outdone, the Assistant Secretary nodded sagely and said, "That does seem logical."

He then announced that we had an appointment after lunch to present our document to the Secretary of Defense. So in the afternoon we assembled in the office of this great man and our chairman suggested that the Assistant Secretary might wish to read our report aloud.

He did so with the Secretary interrupting with a few harmless questions until the point was reached where my controversial sentence appeared, whereupon the Secretary asked, "Why ten million dollars for the cutoff point?"

His assistant, ready with the answer, said, "Sir, that is where the curve breaks."

Apparently this made it all clear to the Secretary for he nodded and stated, "That does seem logical." And thus another regulation was born.

There was a happy time when it was possible for the standards committees of professional societies, staffed by representatives of all interested parties, to formulate standards for equipment and practices. A court ruling of a year or two ago against the American Society of Mechanical Engineers and the members of its standards committee in a rather simple matter of a low-water fuel cutoff in boilers has developed states of nerves in corporate lawyers and in professional societies. With the present atmosphere, it is very unlikely that standards for black and white television and color television could be formulated as was done by the first and second NTSC's. And in addition strong leadership as provided by Dr. W.R.G. Baker of General Electric was required in both cases to bring together a meeting of the minds of so many diverse interests. And some of you may be under the impression that the second NTSC functioned as an advisory committee to the FCC. Not so. To quote from my recent book:-

In early January, 1950, W.R.G. Baker, representing the Radio Television Manufacturers Association, proposed to the FCC Chairman, Wayne Coy, that a second National Television System Committee be formed to guide the FCC as the first NTSC had done in 1940 for black-and-white television.

Chairman Coy grudgingly agreed that such an NTSC, if formed, could testify in the hearing if Baker so desired but he testily stated, "This NTSC would be designed to serve the industry, not the FCC."

And further on:

Dr. Baker had invited the FCC to send staff engineers to attend the various NTSC panel meetings but Coy permitted attendance at only a limited number of demonstrations. Finally on February 21, 1952, Coy left the FCC and the new chairman, Rosel Hyde, immediately allowed staff engineers to take part in the NTSC activities.

It takes give-and-take, discussion and compromise, all of which is of great difficulty without the interference of government departments and courts. But we are the only country in the world where government and industry are adversaries. It is high time that the regulators go on vacation so that we can do what needs to be done.

Thirty years ago, when we were trying to convince the FCC that the time had arrived to set standards using the NTSC principles, I wrote a statement which reflected my philosophy on the matter of standards. After all this time has passed, I continue to believe in the validity of my statement. While the statement was aimed at a standard for color television, it is equally applicable to many of the present-day situations, assuming that all the legal and antitrust problems are quiescent.

'It is important that any set of specifications adopted as standards be neither circumscribed by presentday equipment limitations, nor unnecessarily restrictive, so that the fruits of research and invention may result in more stable performance, better pictures and simpler equipment both at the transmitter and receiver. That is to say, the ceiling performance of the system must be sufficiently high to insure continued equipment improvement without a collision with restrictive standards. It is of course difficult to disengage signal specifications from equipment development entirely, since it is the equipment available at the moment which must be used to test the concepts which bring about the growth of the system. Thus the systems engineer must be guided by practicalities which

his engineering judgment tells him will not be easily overcome, perhaps for economic or physical reasons, and at the same time he must be able to envisage possible solutions to present obstacles even though the details of the solution are not apparent at the present time.'

I am going to take another thirty seconds to tell you about a standardization matter in Russia. Many years ago, in December of 1964 to be exact, several of my colleagues and I went to Moscow to give lectures on color television in an attempt to convert the Russians to the NTSC system. In Russia, the ice cream is very good. However, every day, every meal, we ordered plain vanilla ice cream.

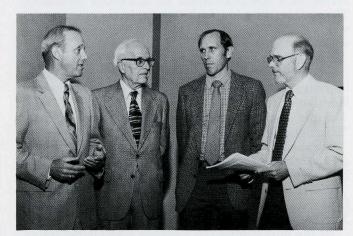
The waiter always seemed to understand our desires but we always received a dish of vanilla ice cream embellished with half an apricot, half a plum, a lot of plum juice, and a sweet pretzel parked on top. This happened over and over again.

Finally, at a banquet on our last night, I told this to the big boss who was sitting beside me. He called the head waiter, gave long instructions in Russian, and assured me that everyone would have plain vanilla ice cream just to show me that it was possible.

The waiter bowed and left. Ten minutes later, in came waiters with big trays of dessert. You guessed it. We all had vanilla ice cream—with apricots, plums, plum juice, and sweet pretzels. The Russians have learned the value of standardization.

THREE PRESIDENTS AND MAURICE F. CARR

A recent event hosted by Gulf States Utilities (GSU) brought together three former national presidents of Eta Kappa Nu electrical engineering society. They are Tony Gabriel, left, GSU vice-president for computer applications, who served as president from 1970-71; Larry Dwon, second from left, an electrical engineering consultant, president from 1958-59; and Dr. William Klos, right, head of the University of Southwestern Louisiana (USL) electrical and computer engineering department, who was president from 1974-75. Gabriel resides in Beaumont, Texas, and Dwon, who spoke at the meeting, is from Apex, N.C. With them is Maurice F. Carr, assistant professor of electrical and computer engineering at USL, who is grandson of Maurice L. Carr, founder of Eta Kappa Nu. USL's affiliation with Eta Kappa Nu extends into several other areas. USL student Gary Sonnier won the Alton B. Zerby award as the nation's outstanding electrical engineering student in 1981, and USL alumnus Dr.



PHOTO—Left to right Messrs. Gabriel, Dwon, Carr and Klos.

Andy Blanchard won the C. Holmes MacDonald Award given annually to an outstanding young electrical engineering professor. Blanchard teaches at the University of Texas at Arlington. The awards are the highest honor given nationally to a student or a young faculty member by Eta Kappa Nu. Founded in 1904 at the University of Illinois, Eta Kappa Nu now includes over 150,000 members and 176 college chapters.

OUTSTANDING CHAPTER-ACTIVITIES AWARD, A THIRTEEN-YEAR REVIEW

"Hats Off" to Beta Chapter at Purdue

by Alan Lefko OCAA Committee Chairman

The chartered responsibility of every college chapter is the recognition of electrical engineering excellence in accordance with the bylaws of Eta Kappa Nu. Today, there are 176 college chapters that carry out that responsibility every year. Many chapters, however, do much more. As a result, deserving chapters receive recognition for outstanding achievements of service to their department, school, and community by way of the Outstanding Chapter-Activities Award (OCAA).

Winners of the OCAA are selected on the basis of their annual chapter report. At the end of the spring semester, each college chapter is asked to report on its activities for the past year. The reports are submitted to National Headquarters during the summer and fall, and are judged by the Award Committee in the winter. The winners of the OCAA for the past 13 years, including the latest winners for 1986-87, are listed below. Each of these chapters has achieved excellence by virtue of its outstanding program of activities, as evidenced by their annual chapter report.

Throughout the recent past, a highlight of chapter activity has been 'innovative and significant contributions' to the local community. Several are worth men-

AWARD	CHAPTER	SCHOOL
1986-87 Winner	Beta	Purdue University
Honorable Mention	Gamma Chi	New Mexico State University
Honorable Mention	Psi	University of Texas at Austin
Certificate of Merit	Delta Omega	University of Hawaii at Manoa
Certificate of Merit	Delta Omicron	University of New Mexico
Certificate of Merit	Rho	University of Colorado
1985-86 Winner	Beta	Purdue University
Honorable Mention	Psi	University of Texas at Austin
Honorable Mention	Gamma Theta	University of Missouri-Rolla
Certificate of Merit	Gamma Chi	New Mexico State University
Certificate of Merit	Delta Omicron	University of New Mexico
Certificate of Merit	Delta Omega	University of Hawaii at Manoa
1984-85 Winner	Beta	Purdue University
Honorable Mention	Psi	University of Texas at Austin
Certificate of Merit	Delta Omicron	University of New Mexico
Certificate of Merit	Delta Omega	University of Hawaii at Manoa
Certificate of Merit	Gamma Theta	University of Missouri-Rolla
1983-84 Winner	Beta	Purdue University
Honorable Mention	Psi	University of Texas at Austin
Honorable Mention	Delta Omega	University of Hawaii at Manoa
Certificate of Merit	Beta Gamma	Michigan Techological University
Certificate of Merit	Delta Omicron	University of New Mexico
Certificate of Merit	Rho	University of Colorado
1982-83 Winner	Beta	Purdue University
Honorable Mention	Beta Gamma	Michigan Techological University
Honorable Mention	Delta Omega	University of Hawaii at Manoa
Certificate of Merit	Rho	University of Colorado
Certificate of Merit	Psi	University of Texas at Austin
Certificate of Merit	Gamma Theta	University of Missouri-Rolla

Gamma Xi

University of Maryland

Certificate of Merit

AWARD	CHAPTER	SCHOOL
1981-82 Winner	Beta	Purdue University
Honorable Mention	Gamma Theta	University of Missouri-Rolla
Certificate of Merit	Gamma Gamma	Clarkson College of Technology
Certificate of Merit	Epsilon Beta	Arizona State University
Certificate of Merit	Epsilon Zeta	University of Lowell
1980-81 Winner	Gamma Theta	University of Missouri-Rolla
Honorable Mention	Beta	Purdue University
Honorable Mention	Xi	Auburn University
Certificate of Merit	Rho	University of Colorado
Certificate of Merit	Gamma Gamma	Clarkson College of Technology
Certificate of Merit	Gamma Mu	Texas A&M
1979-80 Winner	Xi	Auburn University
Honorable Mention	Beta	Purdue University
Certificate of Merit	Gamma Gamma	Clarkson College of Technology
1978-79 Winner	Xi	Auburn University
Honorable Mention	Gamma Mu	Texas A&M
Honorable Mention	Zeta Theta	Cal. State Poly. University
1977-78 Winner	Beta	Purdue University
Special Achievement	Delta Omicron	University of New Mexico
1976-77 Winner	Gamma Theta	University of Missouri-Rolla
Honorable Mention	Beta	Purdue University
Honorable Mention	Xi	Auburn University
1975-76 Winner	Gamma Chi	New Mexico State University
East. Regional Winner	Gamma Gamma	Clarkson College of Technology
East. Cent. Reg. Winner	Xi	Auburn University
W. Cent. Reg. Winner	Omega	Oklahoma State University
1974-75 Winner	Gamma Chi	New Mexico State University
Honorable Mention	Xi	Auburn University
Honorable Mention	Omega	Oklahoma State University

tioning. Gamma Theta Chapter, at the University of Missouri-Rolla, has helped install a lighting system that included 1100 feet of wire and 200 lamps, in support of a local Junior Miss Pageant. The chapter also installed electrical wiring for a needy family, has cut firewood for distribution to poor families, has donated candy to Boys Town, and has provided Boy Scout Merit Badge instruction and testing.

Each year, Beta Chapter of Purdue University has helped construct and operate a Haunted House attraction for the March of Dimes. Using money from their own fundraisers, they have regularly donated \$1000 to a local soup kitchen. Epsilon Kappa Chapter, at the University of Miami, set up a campus booth and collected canned food for a community refuge center. Thirty members of the chapter also participated in a March of Dimes walkathon, and raised \$750 as a result. Xi Chapter at Auburn University has helped renovate a local community center for underprivileged children. They have regularly assisted the Red Cross by collecting goods, donating money, and manning craft shows. They also cleaned up debris in the yards of many homes after a tornado hit the area. In one case, they removed the old roofing from a damaged home and relaid a new one.

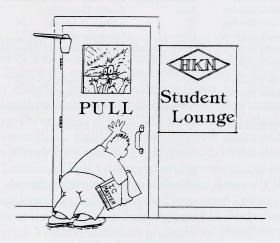
The OCAA brochure that is sent to the chapters each year describes many other chapter activities.

Chapters find these descriptions useful in planning their future programs. However, chapters also need to know the best way to report on their achievements, and the OCAA brochure does not completely answer that question. A better answer is to examine a winning chapter report, and a good one is the latest report from Beta Chapter, the National Winner for 1986-87. Beta has been a national winner of the OCAA for six years in a row, and their latest report has been reproduced in its entirety in the pages that follow.

From the Committee's point of view, the annual report represents the chapter. As such, its content, quality of writing, thoroughness, and appearance, all contribute to the image created by the report. Since the report is the basis for selecting Award winners, a well prepared report is the precursor to recognition as an outstanding chapter.

Many chapters, however, haven't received recognition for an otherwise excellent program because they did not adequately report their accomplishments. Clearly, generating a report of the caliber reproduced here takes special planning and extra work, and many chapters simply don't get around to doing that. However, outstanding chapter programs cry out for recognition. Eta Kappa Nu wants to encourage all chapters to report on their activities to the best of their abilities. See below, Purdue-Beta's Winning Report.

The 1986-1987 Annual Report



Beta Chapter Eta Kappa Nu Purdue University

About the cover:

ctive member Ron Harber has a title trouble making his way into e student lounge. Artwork purtesy of Linda Ludek.

Table Of Contents

An Overview of Beta Chapter	
The Officers and Advisors	
The Committees	
Wednesday Nights	
The Lounge and Lab	
Financial Summary	
Industrial Relations	1
Service	1
Funstuff!	1
Looking Ahead	1
Appendix	2

A Letter From The Presidents

This year was without a doubt a great one for Beta chapter. We also had a very fun year, and we accomplished a lot of activities and ... I guess it's difficult to summarize the entire year in one line! We have had a very successful year, as we were able to continue our many existing activities and even perform some new services. More importantly, though, in the past year we've made some new friends, and we've taken time out of our busy schedules to help our school and our community. We've shared a lot, accomplished a lot, and even had fun doing it! We would like to thank all the officers, the advisors, the committee members, and the actives who were willing to give their time in order to make our activities possible. The tasks that we've accomplished, the times that we have shared, and the friendships that we have established have truly made this a great and memorable year!

In this annual report, We will review the major events of the '86-'87 school year and try to give credit to the people that made these events possible. We have tried to make this a fairly complete review while keeping the report brief. We hope that this report also conveys the warmth and friendliness of our chapter that have helped us maintain our reputation as "The Nice Guys."

Respectfully submitted,

Glenn T. Colon-Bonet President - Spring 1987

Amy L. Dickmann

1. An Overview of Beta Chapter

At Beta Chapter, we strive to provide service to our school, our community, and our profession. Each year, we work on a variety of projects in each of these areas to accomplish this goal.

Our community activities this year included working on the March of Dimes Haunted House where we built and staffed a room. The event raised over \$5,000 for the March of Dimes. We also held a Soup Kitchen Day each semester, in which we donated our lounge proceeds to a local soup kitchen. We donated over \$1,200 to the soup kitchen which helps feed the hungry of our community.

We also performed many service projects for the EE school. These projects included running the HKN lounge/lab, staffing the EE Phone-A-Thon, helping with the Engineering High School Day, providing orientation seminars to new graduate students, providing a photocopier for students' use, adding a laser printer in the lounge, maintaining homework solutions, supplying integrated circuits and other parts to students, providing manufacturers' data books, maintaining graduate pictures, updating professor photos, displaying "Meet Professor.." posters in the EE building, and planning the celebration of the EE centennial.

In addition, our chapter offers a variety of professional opportunities for students. Over the last year, these activities included taking plant trips to McDonnell Douglas and GE, offering seminars on resume writing and entrepreneurship, compiling a resume book and distributing the book to companies, holding technical presentations sponsored by industry before our meetings, and sponsoring several scholarships for undergraduate

Aside from these activities, we also held many social events throughout the year. Among these were many TGIF parties, two picnics, two canoe trips, a ski trip to Michigan, a trip to Chicago to see The Second City comedy show, a hockey game, and a hayride/bonfire. In addition, the chapter played several sports; we sponsored two softball teams and a volleyball team in intramurals.

2. The Officers and Advisors

Many of the activities that our chapter performs depend on the hard work and dedication of our officers. These officers perform not only the daily business of the chapter, such as placing lounge orders or recording treasury information, but also they oversee some of the larger functions of the chapter such as the initiation banquet. Most of the new officers are quickly surprised by how much work it takes to manage the chapter! Fortunately, we have had a group of very dependable, enthusiastic, and somewhat crazy officers to lead the organization. The list of officers that served during the 1986-1987 school year is shown below.

- 2 -



Back: Rich Kulawiec, Raja Kadiyala, Mike Phillip, Glenn Colon-Bon Middle: Amy Dickmann, Jim Ott, Toni Carstens, Chris Ruebeck

Office	Fall, 1986	Spring, 1987
President	Amy Dickmann	Glenn Colon-Bone
Vice President	Mike Phillip	Jim Ott
Treasurer	Chris Ruebeck	Jim Jozwiak
Recording Secretary	Rich Kulawiec	Jon Whalen
Pledge Trainer	Pete Hazen	Mehrdad Saniei
Workshop Chairman	Raja Kadiyala	Tom Underwood
Lounge Secretary	Jim Ott	Mike McSherry
Social Director	Glenn Colon-Bonet	Toni Carstens
industry Secretary	Toni Carstens	Anna Lam

19

Spring HKN Officers

Clockwise from left: Jim Jozwiak, Glenn Colon-Bonet, Jon Whalen,
Jim Ott, Toni Carstens, Anna Lam, Mehrdad Saniei
Center: Mike McSherry, Not pictured: Tom Underwood.

At times, some of the officers are relatively new to the organization, or they are unfamiliar with the duties of their office. In order to keep things working smoothly from year to year, the Executive Committee, formed from past HKN officers, provides assistance and ideas to the new officers. The members of the executive committee are listed below:

Executive Committee Members

Carla Bauer	Mark Bettinger	Luis Duran
Ron Harber	Ray Hayes	Pete Hazen
Raja Kadiyala	Ellen Krulewich	Rich Kulawie
Mike McLennan	Mike Phillip	Kirk Smith

5 -

Resume Book: (Fall Only) Beta Chapter publishes a resume book annually to help graduate and undergraduate students find full time and summer employment. EE Students submit resumes to appear in the book using a computer program installed on the Engineering Computer Network at Purdue. The 1986-1987 edition features 350 students' resumes and has been sold to about 120 companies at a cost of \$40 per book. The task of compiling such a book is not simple. The Resume Book Committee must not only prepare the book, but must also advertise and sell the books.

Haunted House Committee: (Fall Only) One of our annual service projects is participation in the local March of Dimes Haunted House. In the fall, Haunted House Committee members design and construct a room in the haunted house. The committee members and many volunteers then staff the room during the month of October. This event annually raises over \$5,000 for the March of Dimes to help in their fight against birth defects.

EE Centennial Committee: The Centennial Committee was formed to commemorate the 100th year of Electrical Engineering at Purdue. We wish to make 1988 a special year for students and alumni by organizing events throughout the centennial year. The committee has met with EE school officials and come up with several ideas, including making an Electrical Engineering Alumni Directory, having a commemorative medallion made, and running a centennial logo design contest. The committee manages these events, and is working with the school to plan other events.

Photocopier Committee: The photocopier committee was formed in response to the demand for an easily-accessed copier for homework solutions, HKN business, and general student use. The Committee orders supplies for the Toshiba BD5610 copier, provides maintenance, and keeps track of photocopier sales.

Awards Committee: There are many opportunities for students and faculty to receive local or national recognition through HKN. This committee oversees these awards by contacting eligible students or faculty, distributing award applications, screening the applicants, and nominating the recipients for the national awards. In addition, the committee engraves the names of award recipients on the plaques in the lounge and presents the winners with award

Soup Kitchen Committee: Another service that our chapter provides is to donate all lounge proceeds from one day to a local soup kitchen. Typically, this amounts to over \$1,200 annually which is used to feed the hungry and homeless of our community. The Soup Kitchen Committee must handle the paperwork and business associated with this venture by advertising the event, collecting canned goods throughout the week, and taking the contributions to St. Anne's Soup Kitchen.

Another source of leadership is our advisory committee of EE faculty members. The officers and faculty advisors meet each semester to discuss the status of the chapter and set new goals. Many new ideas come out of these meetings, and this interaction with the faculty helps us to work closely with our school when planning for the semester ahead. The faculty advisors for the year are listed below.

Professor Jorge I. Aunon, head advisor Professor David G. Meyer Professor John A. Nyenhuis Professor Samuel N. Stevens* Professor Hannis W. Thompson

* retiring advisor

3. The Committees

The work required for our many projects is mostly handled by committees. A committee chairperson and committee members are selected from volunteers at the second meeting of the semester. The chairperson is responsible for organizing the committee and keeping the President informed. A short description of each committee follows:

Homework Committee: As a service for students, the Homework Committee maintains a set of course homework solutions in our student lounge. Each semester, the committee announces the service to the faculty, accepts and binds the solutions provided by professors, and maintains these solution books.

Take-A-Prof-To-Lunch / Brown Bag Lunch (TAPTL / BBL): The TAPTL and BBL Committee was organized to provide more interaction between faculty and students in an informal setting. TAPTL's are held every few weeks throughout the semester, and at these events the students and HKN treat the professors to lunch at a local establishment. At a Brown Bag Lunch, a professor or graduate student gives a presentation about a current research topic. BBL's are held during lunch in a classroom in the EE building, and sandwiches are available for the attendees. The committee finds professors who are interested, publicizes the event, and makes all eating arrangements.

Scholarship Committee: The scholarship committee makes available corporatesponsored scholarships to EE undergraduates. The committee manages the
existing scholarship programs, and invites companies to pledge money for
new undergraduate scholarships. Scholarship forms are distributed to all
interested juniors and seniors. The Scholarship Committee and the
sponsoring company then select the recipient(s) of the award. The money
for our scholarships was acquired through contributions from Delco, Hughes
Aircraft Company, IBM, General Motors, and AT&T.

- 6 -

Laser Printer Committee: In order to provide students with a high-quality printer, the EE department has purchased an Apple LaserWriter for general student use. This printer, managed by HKN, is located in our student lounge and is available to all engineering students on a pay-per-sheet basis. Committee members credit students' accounts, order printer supplies, perform printer maintenance, and keep track of sales/cost information.

4. Wednesday Nights

On every other Wednesday night, we held our HKN actives' meetings. At these meetings, we conduct our "standard" business, such as officer reports, committee reports, old business, and new business. Although we conduct a lot of business at these meetings, they were usually very informal, with several skits, practical jokes and an occasional bombing of the officers with paper wads or plastic coffee can lids. Often, the Recording Secretary livened up the meetings by presenting the minutes in a strange and unpredictable way. The following is a brief summary of some key events at each of the actives' meetings.

programs for the HP41 ranging from Electrical Engineering Solutions and Advanced Mathematics to Home Construction Planning and Celestial Navigation. Students have also written their own programs and stored them on our cassettes to share with others.

Key Topics Discussed

Pig Latin minutes, lounge duty roster, softball team, Slimy TGIF at

Bruno's, committees

Canoe trip, pledge social, Haunted House, committees, resume book,

photocopier demo, Hughes scholarship
Detective story minutes, MDC plant trip, GE plant trip, picnic, High

School Day HKN paddles, softball teams, new lounge products, TGIF at Veno's,

resume writing seminar, Kiosk discussion
Smitty's stamps, initiation, historic NO vote on Kiosk
Hat TGIF, pledges, banquet, laser printer on its way, tear down

Great equipment giveaway, 61 new actives, TGIF, election procedure

Welcome back, filling lounge duty roster, luau TGIF, laser printer, Second City trip, EE phone-a-thon Phone-a-thon, filling committees, lounge theft investigation, laser printer available, Road Rally

Rockwell plant trip, paddles, Pre-St. Patrick's day TGIF, ski trip, apple juice, Cherry Coke voted down, Hughes scholarship, Outstanding prof.

President returns, softball teams, banquet tickets, lounge theft report 11%, new paddle company, Delco scholarship, picnic, Zerby senior

Entrepreneurship seminar, Spud, picnic with SCAVMA, 60's TGIF, new bottle opener, initiation, HKN Ball/Banquet, whoopie cushion Canoe trip, picnic moved - Hills closed, Pan Am games, election

procedure, Mugwai in a blender Elections, output bins, new refrigerator?, free coffee, end of semester

The largest single project of Beta chapter continues to be the operation of the student lounge and lab in the Electrical Engineering building. A minimum of about 1500 man-hours is required *each semester* simply to keep the lounge in operation. The lounge

is a place to study and a place to relax. Students can take a break between classes, have a

pop, read a paper, or even occasionally sleep. In the lounge, we provide an assortment of

pop, juice, coffee, chips and donuts at reasonable prices. We've also recently installed a

tape deck and FM cable so students can listen to a variety of music in the lounge. Our

collection of donated tapes covers a very wide variety of tastes, from classical music to

very un-classical new music! The table below gives an idea of the volume of our lounge

Impeachment vote, 40 pledges, Rube Goldberg winner, ski trip

award, Outstanding Junior award, Vicki Michaelson Award

Date

8/27/86

9/10/86

10/8/86

10/22/86

11/20/85

1/14/87

2/11/87

2/25/87

4/1/87

4/15/87

4/29/87

5. The Lounge and Lab

Haunted House

Three general-purpose terminals are also available in our lab area. These terminals are hooked up to the Engineering Computer Network (ECN) at Purdue, and provide students with access to over 40 minicomputers and Sun workstations on the campus network. For students who want to work on a program while listening to the stereo, the lab is a great place to work.

The newest addition to our lab is an Apple LaserWriter. This laser printer was purchased by the Electrical Engineering department and given to our chapter to fill the need for a high quality printer available to undergraduate students. The laser printer is available to all engineering students on a pay-per-sheet basis. We currently charge 4 cents per page to cover our operating costs. All of the accounting software was written by active member Kirk Smith, who did an excellent job of getting everything working within two days from the time we received the printer! The much-needed printer allows undergraduate students to prepare typeset resumes, cover letters and reports at a reasonable cost. We've currently sold over \$1,800 worth of accounts on the printer in just 4 months.

Each semester, the actives and pledges spend about 50 man-hours on a weekend to clean the lounge, arrange the books in the library, steam-clean the carpets, and take a thorough inventory of parts. In addition, the lounge was repainted this summer to keep the area looking nice. Without a doubt, the lounge is one of our largest single operations, and it is also one of the most important services that we provide.

6. Financial Summary

Serving as treasurer for Beta chapter has to be the most difficult of the offices. The treasurer keeps track of all lounge income, makes deposits, pays bills, and, in general, handles all of the "red tape" associated with a student organization. The report below shows our cash receipts and disbursements for the academic year and illustrates how important our treasurer is to us.

Cash Receipts	Amount
Banquet Income	\$260.00
Donations	337.53
Food & Drink Sales	64,663.76
Initiation Dues	3,680.00
Interest Income	1,082.72
Laser Printer	1,878.30
Magnetic Tape Sales	444.00
Photocopier	4,299.45
Resume Book Income	3,300.00
Total	\$79,945,76

- 8

Item	Amount Sold
Apples	2,576
Chips	24,240 bags
Coffee	56,000 cups
Donuts	67,900
Granola	8,064 bars
Juice	14,256 cans
Pop	68,000 bottles
Raisins	1,440 boxes
Laser Printer	43,608 pages
Photocopier	87,908 pages

In addition to the items that we sell, we also maintain a wide variety of company brochures and periodicals. We currently make available many IEEE publications and transactions as well as several trade journals. We also receive the Chicago Tribune and provide copies of the campus newspaper for students to read.

Another important service that we provide in the lounge is a photocopier. We purchased a Toshiba BD5610 copier which is available in our lounge area for students' use at 5 cents per page. This is helpful not only for our HKN business, but also for students to make use of our homework solutions. The lounge currently maintains homework solution notebooks for many of our classes and keeps them available for students to check out and copy. Professors provide us with these solutions, and our Homework Committee maintains these notebooks.

Adjoining our lounge is the HKN lab. Our lab provides a wide variety of services, including basic lab facilities, electronic parts, component literature, calculators, computer terminals, and a laser printer. These services are extremely helpful to students because they are accessible nearly all the time.

The workshop area has rudimentary lab facilities including an oscilloscope, power supplies, frequency counter, digital multimeter, and signal generator for students to use outside of class. Also, a wide variety of tools, soldering irons, and accessories are also available. Most undergraduates have no other facilities available to them in the evenings. The lab is extremely helpful when trying to complete a project or fix your stereo!

In addition to the equipment, the lab also has a complete library of component data books and company catalogs. Many times, the lab has a larger and more up to date collection of data books than the campus library. Through company donations, we also have a large selection of transistors, digital IC's, microprocessors, resistors, capacitors, LED's, and other hardware available for students' use - FREE! With over 50,000 components in stock, our lab is usually the best stocked store in town, and the price is definitely right.

Through donations from alumni and companies, we also provide an HP41 calculator with a tape drive and printer, as well as TI58C and associated printer for general student use. These calculators are kept on "leashes" in the back of the lounge for students to use for quick calculations. Also, HKN maintains a library of calculator

- 10 -

Cash Disbursements	Amoun
Audit Fee	\$1,048.34
Banquet Expense	3,929.32
Food & Drink Expense	60,954.02
Haunted House	257.07
Laser Printer Expenses	315.00
Magnetic Tapes	173.00
Maintenance	763.20
Meetings	434.91
National Dues	1,840.00
Office Supplies	285.91
Paddles	1,077.50
Party & Social Expense	1,925.21
Photocopier Expenses	5,510.62
Postage	182.18
Resume Book	290.59
Sales Tax	3,382.82
Miscellaneous	1,306.56
Total	\$83,676.25

Clearly the "simple" task of managing our money should be considered one of our biggest projects! The summary shows that our current spending is well above our receipts. Much of this is due to the purchase of the photocopier during the academic year. Another contributing factor, though, is the reduction of profits in the lounge sales due both to higher costs and an increase in the theft rate. Because our lounge operates on the honor system, we occasionally have problems with people not paying for items. An inventory study done early in the spring semester showed the theft rate to be 11 percent, which is up from the past figure of 7 percent. While this figure is not an alarming one, it does indicate that we will either have to increase prices or somehow decrease the theft rate to reduce our losses.

7. Industrial Relations

An important aspect of our chapter is our involvement with industry through technical presentations, seminars, and plant tours. Corporate representatives are asked to provide technical presentations before our actives' meetings. These talks are on a wide variety of topics and are open to all students. Many of the companies also supplied free pizza to the attendees, and Beta chapter donated the pop. This allowed the people to attend without missing dinner! The following list shows our technical presentations during the 1986-1987 school year.

Date Speaker "Driving Control Systems for Traction and Braking"
"Computer Aided Design"
"Career Opportunities at GTE" McDonnell Douglas GTE

"Flectronics in Space" Hughes Aircraft Co.
MIT Lincoln Laboratorie 'Coherent Optical Systems Architecture and Technology' Delco Electronics "Semiconductor Engineering at Delco"
"Communication System Simulation"

10/8 10/22 11/5 11/19 1/28 2/11 2/25 3/18 TRW Intel "Voltage Contrast Testing"
"System Architecture of the Model 2500 RF Signal Generator Wavetek

American Electric Power Hughes Aircraft Co. "Microprocessor Applications in the Power Industry"
"Photodiodes"

In addition to the technical presentation, our chapter organized several plant tours.

McDonnell Douglas and General Electric both sponsored tours which were well attended. In the past, trips have also been made to Delco and the GM Tech Center. The trips are productive, not only for the students who get a chance to find out more about what goes on in the "real world," but also the companies, as they are able to attract a number of interested students. Also, our chapter has sponsored seminars on entrepreneurship and resume writing to help students grow professionally.

9/10 9/24 10/8

This past year Beta chapter continued its tradition of service to Purdue and the Lafayette community. In the fall our members helped the March of Dimes by working in their Haunted House. Under the guidance of active member Frank Weil, we spent over four weeks setting up and operating a room in the Haunted House. Our room featured a winding hallway leading up to a rope bridge suspended over an eerie "swamp." Customers were chased by a troll across the bridge to another hallway with a few surprises. The room, complete with lightning and sounds of a thunderstorm, won third place for the Best Room Award. The event also helped raise over \$5,000 for the March

- 12 -

In addition to the haunted house, our chapter also continued its tradition of sponsoring a Soup Kitchen Day. During one day of each semester, our chapter donates that day's lounge proceeds to St. Anne's Soup Kitchen. This year, we were happy to donate over \$1,200 to help feed the hungry of Lafayette. In addition, throughout the week of the Soup Kitchen Day, we collected canned goods and dried foods to donate to St. Anne's. A newspaper article about the Soup Kitchen is included in the appendix.



- 13 -

HKN's Soup Kitchen Day

Our chapter has also sponsored several service activities within the school. Each fall, the members of Beta chapter help the department on High School Day. In early September, about a dozen actives gave tours of the EE building to high school students and their parents. The tour showed the high school students our labs, classrooms, and the HKN lounge. Also, the students were able to discover more about electrical engineering and Purdue



- 14 -

Prior to the start of the fall semester, our chapter also sponsored seminars for the new graduate students. We held seminars during the week before classes which introduced our computer facilities to the new students. HKN volunteers guided the students through examples of programming and editing on our system.

We have also continued our involvement with the EE Phone-A-Thon. About 50 active members spent over four hours apiece calling alumni to help raise money for the school. We were able to raise more than \$25,000 for EE, which is a new record! The much needed funds are used by the school to improve facilities for students.



Beta chapter also helped out the school in a few other ways. We currently maintain staff photos of all the EE faculty, and prepare "Meet Professor..." sheets to help acquaint students to new faculty. We also maintain a research display and put together composites of each year's graduating EE class.

Although our chapter works diligently on service projects and general business, we also enjoy having fun! During the past year, we sponsored many different social events so that our members could get together outside of school and get to know one another. All of our social events are open to all students, faculty, and friends.

- 15 -



Officers showing their legs at the Hawaiian TGI

Probably the most popular events that we sponsor are our TGIF parties. Every three weeks, our chapter sponsors half-price pizza at the TGIF, which is held at a local pizza place. The event nearly always has a crazy theme, and people come dressed in their craziest hats, their 60's tie-dyed shirts, or even grass skirts. The TGIF's are a lot of fun and are usually attended by over 75 people.



Each semester, the chapter also sponsors a picnic where we provide free food and beverages. At the picnic, students and faculty have a chance to relax, have fun, and even play some sports. We usually have games of volleyball, softball, football, frisbee, and an occasional water balloon fight. The spring picnic had a record turn-out of more than 120 people. Besides the picnic, our chapter also sponsors a canoe trip each semester on

- 16 -



In the spring semester, several new activities were added to our social calendar, mostly because of our very active social director, Toni Carstens. During the semester, we held a ski trip to Michigan, made a road-trip to Chicago to see The Second City comedy show, went to a hockey game, and held a hayride and bonfire. All of the activities were well attended and a lot of fun.



Skiing in the "mountains" of Michigan



semesters, we had a softball team and a volleyball team. The softball team didn't win very many games, but we had fun playing anyway! Our volleyball team has done very well each semester, thanks to the team captain, Rich Kulawiec. Also, the actives and pledges held a football game each semester. Of course, the actives won both games, as stated in the local by-laws!

- 18 -



Our softball team has a few problems yet.

This spring, we changed the format of our initiation banquet, holding it on a Saturday evening and having a dance afterwards. Our first Initiation Ball and Banquet was a great success and we hope it will be a lasting tradition. Much thanks is owed to Jim Ott who organized the banquet and came up with the idea.

Although our social activities are not our main purpose, they are an important part of what we try to accomplish at Beta chapter. These activities provide many opportunities to have fun and meet other people, something which we sometimes forget to include in our busy schedules.

10. Looking Ahead

Reviewing the past year, it seems hard to imagine adding new services and projects; we already work on so much. Yet, I know that we will not remain content with what we have done in the past, and we will constantly review our goals and add new

Over the next year, we hope to expand our community service involvement. Also, we are working on the celebration of the 100th year of electrical engineering at Purdue. We hope to play an active role in commemorating the centennial. We are working on new sales ideas, looking to replace some of our lounge equipment, and improving our lab facilities. Also, we are setting up an alumni newsletter so that Beta Chapter alumni can keep in touch with our activities at Purdue.

I am indebted to all the officers, advisors, committee members, and actives for their hard work and dedication. We've accomplished a lot during the past year, and we've had a lot of fun! The memories of the times we've shared and the friendships we've established mean a lot. This has definitely been a great year.



Welcoming in the new officers on election night!

- 20 -

11. Appendix

March of Dimes gets awards

Ingredients for a good community

Ingredients for a good community thew 3C are and share Soup Kitchen personnel who operate on donations to carry on their work again express thanks for ing the spring season we were aided by Lambda Chi Alpha mity and by Eta Kappa Nu. a Prudes student organization, y a number of Purdue sororities. The share of the state of the sta

CONGRATULATIONS BETA CHAPTER.